

**STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

**In the Matter of the Petition of  
Public Service Electric and Gas Company  
for Approval of an Increase in Electric and Gas  
Rates and for Changes in the Tariffs for  
Electric and Gas Service, B.P.U.N.J.  
No. 17 Electric and B.P.U.N.J. No. 17  
Gas, and for Changes in Depreciation Rates,  
Pursuant to N.J.S.A. 48:2-18,  
N.J.S.A. 48:2-21 and N.J.S.A. 48:2-21.1, and  
for Other Appropriate Relief**

**BPU Docket Nos. ER23120924 & GR23120925**

**DIRECT PANEL TESTIMONY**

**OF**

**MICHAEL A. SCHMID  
VICE PRESIDENT – ASSET MANAGEMENT AND  
PLANNING  
AND  
RICARDO G. FONSECA  
SENIOR DIRECTOR UTILITY FINANCE**

**July 15, 2024**

**P-3 R-2**

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1                                   **PUBLIC SERVICE ELECTRIC AND GAS COMPANY**  
2                                   **DIRECT PANEL TESTIMONY**  
3                                   **OF**  
4                                   **MICHAEL A. SCHMID**  
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6                                   **RICARDO G. FONSECA – SENIOR DIR UTILITY FINANCE**

7   **I.    INTRODUCTION**

8   **Q.    Please state your name and business address.**

9   A.    My name is Michael A. Schmid. My business address is 80 Park Plaza, Newark, New  
10 Jersey 07102.

11 **Q.    By whom are you employed and in what capacity?**

12 A.    I am employed by Public Service Electric and Gas Company (“PSE&G”, “Public  
13 Service” or “Company”) as Vice President - Asset Management and Planning.

14 **Q.    Please describe your professional responsibilities with respect to electric and gas**  
15 **delivery service.**

16 A.    I am responsible for ensuring the reliability of PSE&G’s electric and gas delivery assets  
17 and overseeing various functions that support the provision of safe, adequate, proper and  
18 reliable electric and gas delivery service. My position is responsible for the overall  
19 management of electric and gas delivery assets and system performance. A summary of my  
20 qualifications and business experience is provided in Schedule PANEL-1.

21 **Q.    Please state your name, affiliation and business address.**

22 A.    My name is Ricardo G. Fonseca, and I am the Senior Director of Utility Finance for  
23 PSE&G. My business address is 80 Park Plaza, Newark, New Jersey 07102.

1 **Q. Please describe your responsibilities as Senior Director of Utility Finance.**

2 A. As the Senior Director of Utility Finance, I am responsible for PSE&G's business  
3 planning process, financial reporting and forecasting, and capital governance process. My  
4 position is responsible for the long range financial plan, short term financial forecasting,  
5 ensuring adherence to our capital governance processes, overseeing the Company's capital  
6 operations and maintenance ("O&M") spending plans, execution tracking and variance  
7 analysis. A summary of my qualifications and business experience is provided in Schedule  
8 PANEL-1.

9 **Q. What is the purpose of your direct testimony?**

10 A. In support of PSE&G's base rate filings for its electric and gas operations before the  
11 New Jersey Board of Public Utilities ("Board" or "BPU") Company witness Schmid will:  
12 describe the Company's electric and gas distribution operations, including a discussion of  
13 PSE&G's record of system safety, reliability and operational performance. He will also  
14 describe PSE&G's capital budgeting process and the practices followed by the Company to  
15 ensure the reasonableness of its base capital spending and accelerated infrastructure program-  
16 related capital expenditures, from planning and budgeting through the completion of  
17 construction. Company witness Fonseca supports the test year and post-test year period  
18 forecasts of electric and gas distribution capital expenditures and supports the test year electric  
19 and gas distribution-related expense component of total operations and maintenance ("O&M")

1 costs, including the major drivers of the distribution-related expense and the Company's efforts  
2 to mitigate those costs.<sup>1</sup>

3 **Q. How is this panel testimony organized?**

4 A. In addition to this Introduction section, the panel testimony is organized as follows:

- 5 II. Electric and Gas Distribution Operations and Performance;
- 6 III. Capital Expenditures;
- 7 IV. Operations and Maintenance Expense;
- 8 V. Appliance Service Business; and
- 9 VI. Gas Tariff Changes.

10 **Q. Does the panel sponsor any schedules as part of your direct testimony?**

11 A. Yes. We sponsor the following schedules, which were prepared by us or under our  
12 supervision and direction:

- 13 • Schedule PANEL-1 describes our professional qualifications and business  
14 experience;
- 15 • Schedule PANEL-2(a) R-2 sets forth electric capital expenditure levels by  
16 major category during the test year and post-test year;
- 17 • Schedule PANEL-2(b) R-2 sets forth gas capital expenditure levels by major  
18 category during the test year and post-test year;
- 19 • Schedule PANEL-3 R-1 contains the major event reports for the six storms that  
20 occurred since the Company's last base rate case as well as the cost detail  
21 summaries for each major event.
- 22 • Schedule PANEL-4(a) R-2 contains the annual and quarterly reports of the  
23 Energy Strong II Program Independent Monitor;

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<sup>1</sup> As discussed by Company witness Michael McFadden, the test year consists of the twelve month period starting on June 1, 2023 through May 31, 2024, with adjustments to reflect changes in capital expenditures through November 30, 2024 and changes in certain expenses and revenues through August 31, 2025. Our testimony does not address any post-test year adjustments for electric or gas distribution operating costs; those adjustments are addressed by Mr. McFadden.

- 1 • Schedule PANEL-4(b) R-1 contains a copy of the most recent Energy Strong  
2 Program II Electric and Gas Quarterly Report;
- 3 • Schedule PANEL-4(c) R-2 contains a copy of the most recent Gas System  
4 Modernization Program Monthly Report;
- 5 • Schedule PANEL-4(d) contains a copy of the most recent report of the  
6 Infrastructure Advancement Program Independent Monitor;
- 7 • Schedule PANEL-4(e) R-1 contains a copy of the most recent semi-annual  
8 report for the Infrastructure Advancement Program;
- 9 • Schedule PANEL-5(a) R-2 sets forth total test year electric distribution-related  
10 O&M expense as well as expense by major cost category;
- 11 • Schedule PANEL-5(b) R-2 sets forth total test year gas distribution-related  
12 O&M expense as well as expense by major cost category.

13 **Q. In your previous response you reference both test year and post-test year periods.**  
14 **What are those periods in this proceeding?**

15 A. The test year in this proceeding consists of the twelve months ending May 31, 2024,  
16 and the post-test year period with respect to additional capital expenditures is the six months  
17 ending November 30, 2024.

18 **II. ELECTRIC AND GAS DISTRIBUTION OPERATIONS AND PERFORMANCE**

19 **A. Overview of Electric and Gas Delivery Organizations**

20 **1. Electric Distribution System**

21 **Q. Please provide an overview of PSE&G's electric distribution system.**

22 A. PSE&G is the largest electric utility provider in New Jersey. The Company's electric  
23 distribution service territory covers an approximately 2,600-square-mile corridor from Bergen  
24 to Gloucester Counties serving approximately 2.3 million customers in more than 230 urban,  
25 suburban and rural communities, including the State's three largest cities. Since the Company's

1 last electric rate case, many areas in the service territory have required significant investment,  
2 including new substations, switching stations and circuits to maintain service quality and  
3 reliability. The Company's electric distribution business operates and maintains over 40,760  
4 conductor miles of primary distribution circuits, over 6,235 conductor miles of sub-  
5 transmission circuits, approximately 864,019 poles, and approximately 341,905 transformers.  
6 The Company's electric distribution business operates 50 switching stations, 240 substations,  
7 474 sub-transmission circuits and 2,339 primary distribution circuits. Between 2018 and 2022,  
8 PSE&G installed 173 new primary (13kV and 4 kV) distribution circuits, 33 new sub-  
9 transmission (26 kV) circuits, seven new transmission supplied distribution substations and  
10 eight new switching stations. Section III of my testimony provides further details on the capital  
11 expenditures the Company has undertaken since its last electric base rate case.

12 **Q. Has PSE&G's service territory experienced an increase in the number of electric**  
13 **customers since the Company's last base rate case in 2018?**

14 A. From 2017 through 2023, the Company's annual average number of electric delivery  
15 customers has increased at a growth rate of approximately 1% per year, from 2,186,980 to  
16 2,315,510. Over the six-year period from January 1, 2018 through January 1, 2024 the  
17 Company has invested an average of approximately \$139 million per year to serve electric new  
18 business.

19 **Q. Please describe the workforce and organizational structure that supports the**  
20 **electric distribution system.**

21 A. The employees who physically construct, maintain and operate PSE&G's electric  
22 distribution system are organized in the following main areas: (1) Electric Operations; (2)



1 Asset Management & Planning, (3) Centralized Services; and (4) Delivery Projects and  
2 Construction (“DP&C”).

3 Electric Operations consists of the men and women who physically construct, maintain  
4 and operate the distribution system. These employees are based in four operating divisions  
5 (the Southern, Central, Metro, and Palisades Divisions), each of which has multiple reporting  
6 locations to minimize travel time. These employees have primary responsibility for hands-on  
7 distribution and service activities. Personnel at these locations perform engineering,  
8 construction, operations, inspections, maintenance and repair, emergency response, meter  
9 services, and administrative activities.

10 Personnel in Asset Management & Planning include technical experts and specialists  
11 in various areas, and are located at the Company’s General Office in Newark, the Edison  
12 Training and Development Center, and the Hadley Road office in South Plainfield, as well as  
13 all operating headquarters.

14 Centralized Services consist of multiple departments that support electric and gas  
15 operations. The organization includes the centralized work planning & cultural department as  
16 well as utility operations services. Employees are located in multiple locations within the  
17 PSE&G territory. This organization encompasses all the cultural transformation initiatives and  
18 departments that provide service, materials & equipment and overall support to utility  
19 operations.

20 The DP&C organization manages and executes new construction projects. This  
21 organization is not specific to a particular geographic area or location. DP&C engineers  
22 manage and execute various types of projects statewide. Most employees report directly to  
23 that day’s work site. The organization includes an “Electric Mobile Division” whose field

1 workforce is supplemental to that of the four geographic Divisions, and an expanded “Projects  
2 and Construction Management” group that manages and oversees the work, and ensures  
3 adherence to planned schedules and costs. This organization combines flexibility and  
4 efficiency with strong planning and oversight to ensure a solid execution of all planned capital  
5 projects.

## 6 2. Gas Distribution System

7 **Q. Please provide an overview of PSE&G’s gas distribution system.**

8 A. PSE&G is the largest gas utility provider in New Jersey. Its gas service territory covers  
9 approximately 2,300 square miles serving approximately 1.9 million customers in 267 urban,  
10 suburban and rural communities, including the State’s three largest cities. To meet the needs of  
11 customers within this sizeable area, the Company’s gas business operates and maintains over  
12 18,150 miles of gas mains of various sizes from 3/4 inch to 42 inches in diameter; over 1.27  
13 million service lines that total over 17,400 miles in length; and line valves, pressure regulators,  
14 meters, and associated instrumentation and corrosion protection systems. In addition, gas  
15 distribution operations encompass 56 metering and regulating stations, three Liquid Propane Air  
16 (“LPA”) peak shaving plants, one Liquid Propane Gas (“LPG”) storage facility, one Liquefied  
17 Natural Gas (“LNG”) peak shaving facility, and 54 miles of intrastate transmission lines. Since  
18 the Company’s last gas base rate case, it has made significant investments in many areas of our  
19 service territory, including the replacement of more than 495 miles of cast iron mains, 214  
20 miles of unprotected steel mains and over 81,000 services. Section III of my testimony  
21 provides details on the capital expenditures the Company has undertaken since its last gas base  
22 rate case.

1 **Q. Has PSE&G's service territory experienced an increase in the number of gas**  
2 **customers since the Company's last base rate case in 2018?**

3 A. From 2017 through 2023, the Company's annual average number of gas delivery  
4 customers has increased at a growth rate of approximately 1% per year, from 1,784,484 to  
5 1,870,852. Over the six-year period from January 1, 2018 through January 1, 2024, the  
6 Company has invested an average of approximately \$99 million per year to serve gas new  
7 business.

8 **Q. Please describe the workforce and organization structure that supports the gas**  
9 **distribution system.**

10 A. The employees who construct, maintain and operate the gas distribution system and  
11 service customers' requirements are based in twelve (12) field headquarters throughout the service  
12 territory, strategically located to provide rapid response to emergencies 24 hours a day, seven days  
13 a week. These employees have primary responsibility for hands-on distribution and service  
14 activities. Personnel based at these locations perform construction, operation, maintenance and  
15 repair activities across the entire gas service territory. These services include new and  
16 replacement main and service installations, leak detection and repair, system design and  
17 maintenance, meter and after-meter safety services, surveys and inspections, and administrative  
18 activities associated with this work. The Company also has personnel in Asset Management and  
19 Planning that support delivery of gas into the distribution and transmission systems and are  
20 located at the General Office in Newark, at the Gas System Operations Center in Bridgewater,  
21 and at the peak shaving plants. The Asset Management and Planning employees in the General  
22 Office in Newark include employees who are responsible for asset strategy; planning & design;  
23 technical support to field operations; and management of the transmission and distribution  
24 integrity management programs.

1           **B.     Electric and Gas Delivery Performance, Safety and Reliability**

2     **Q.     Please describe PSE&G’s goals pertaining to the safety, reliability and operational**  
3     **performance of the Company’s electric and gas distribution system.**

4     A.     PSE&G’s business model for both electric and gas distribution reflects three  
5     fundamental goals, and the Company strives to instill these goals in all employees and  
6     contractors: (i) safety and reliability; (ii) cost control; and (iii) customer satisfaction. Simply  
7     put, PSE&G strives to provide safe, reliable and cost effective service at a very high level of  
8     customer satisfaction.

9           The Company’s recent and planned capital investments are aligned with the State’s  
10    Energy Master Plan goals and are designed to: mitigate the increasing impacts of climate  
11    change on core utility infrastructure, ensure the reliability of PSE&G’s system in the wake of  
12    increasingly volatile weather, and ensure the Company’s systems are poised to support new  
13    technologies and greener energy resources and jobs. PSE&G is committed to advancing the  
14    State’s climate, decarbonization, and jobs goals. This is evident from: 1) the Company’s  
15    evolving climate/decarbonization strategy, and 2) the Company’s capital investments over the  
16    last several years, including investments to modernize and increase the resiliency of PSE&G’s  
17    electric and gas distribution systems with programs such as the Second Phase of the Gas  
18    System Modernization Programs (“GSMP II”), as extended, the Energy Strong II Program  
19    (“ES II”), and the Infrastructure Advancement Program (“IAP”). Consistent with the  
20    Company’s evolving climate/decarbonization strategy, PSE&G also has made significant  
21    investments in its Clean Energy Future (“CEF”) programs.

22           The capital expenditures and distribution-related O&M expenses we discuss in this  
23    filing are consistent with these goals.

1 **Q. How does PSE&G ensure that it meets its goals?**

2 A. The Company relies on a combination of external and internal indicators. PSE&G  
3 reviews, monitors and assesses organizational performance based on metrics that rely largely on  
4 common industry standards and objective measures in the following key areas: safety, reliability,  
5 cost containment, and customer satisfaction. Some metrics are common to both gas and electric,  
6 while others are unique to either electric or gas operations. In all instances, there is a continuous  
7 improvement goal intended to encourage improved results year after year. The Company also  
8 has goals that are regulatory and clean energy based. Targets for gas and electric Annualized  
9 Energy Efficiency Energy Savings are approved by the BPU and Open Leaks is a metric  
10 specific in gas operations in which results are shared with the BPU semi-annually.

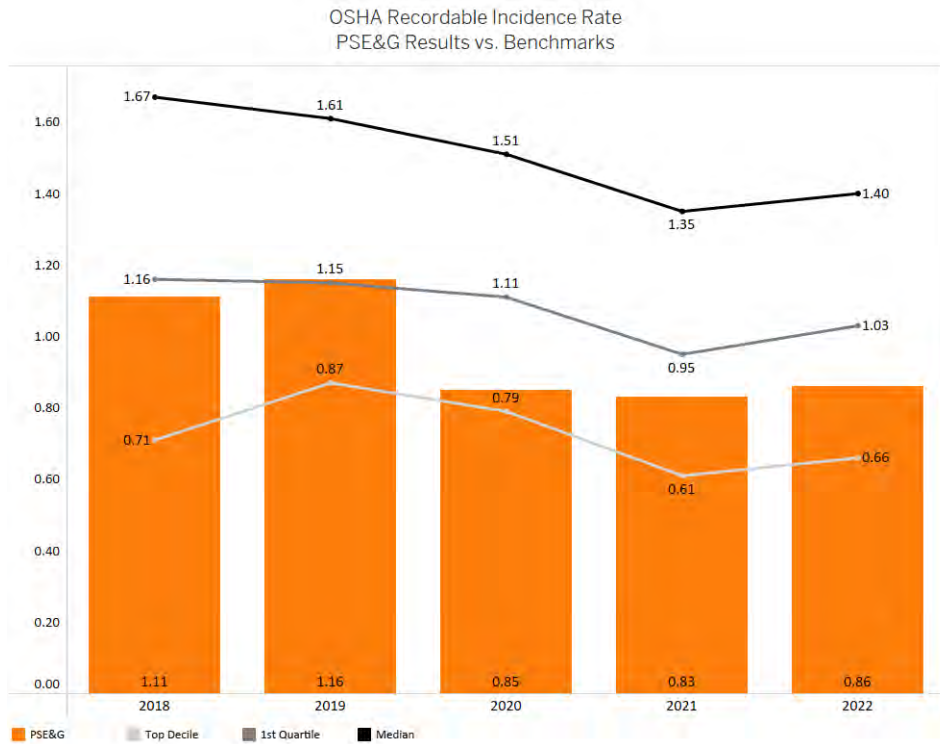
11 **Q. Please describe some of the common safety goals for electric and gas distribution.**

12 A. Common metrics for electric and gas distribution are those tied to Occupational Safety  
13 and Health Administration (“OSHA”) measures such as the OSHA recordable incidence rate,  
14 which tracks the number of OSHA recordable injuries, and the OSHA Days Away Rate, which  
15 measures and tracks the severity of injuries. Because the Company strives to be within the top  
16 decile in this category, PSE&G purposely sets very challenging targets. As illustrated in the  
17 charts below, both our OSHA Recordable Incidence Rate and our OSHA Days Away from  
18 Work rate (which is a measure of severity) from 2018 to 2022 were better than the median  
19 each year, and frequently were at or near top quartile performance. Our Company-wide results  
20 for 2022 were top quarter for OSHA Recordable Incident Rate, while the OSHA Days Away Rate  
21 increased but is still below the benchmark median. In response to the 2022 results, PSE&G  
22 launched the Serious Injury Prevention Committee. This is a cross-functional team with  
23 management and union representation that identifies and implements effective measures across

1 PSE&G to reduce the number and severity of safety-related incidents. Key focus areas of the  
 2 Committee include identification of precursor events, motor vehicle safety, and safety culture  
 3 and change management. This effort helped reduce the OSHA Recordable Days Away Rate  
 4 to improve to 8.92 in 2023.

5

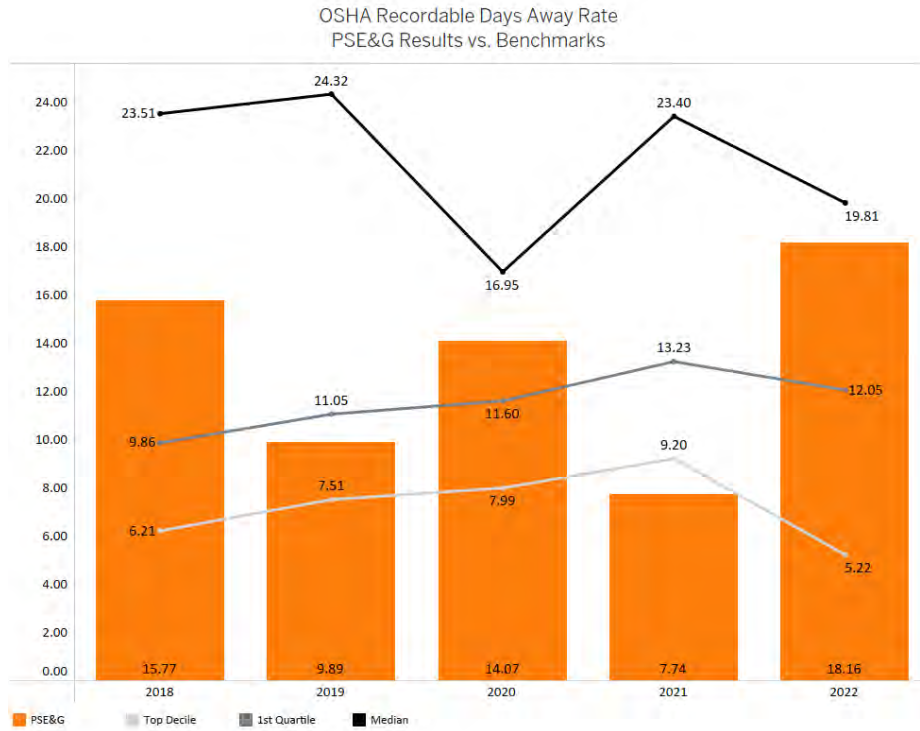
Chart 1



6

1

Chart 2



2

3

For the combined operations, we also measure “Damages Per 1,000 Locate Requests,” which

4

calculates the number of overall damages to gas and electric facilities per 1,000 locate requests,

5

*i.e.*, mark-outs. The State of New Jersey requires that the location of underground installations,

6

such as electrical and natural gas lines, be identified and marked out prior to work that involves

7

any digging operation. Activities covered by this requirement include excavations or trenching,

8

blasting, installation of tents, sign posts or fence posts, amongst others. Results indicate that since

9

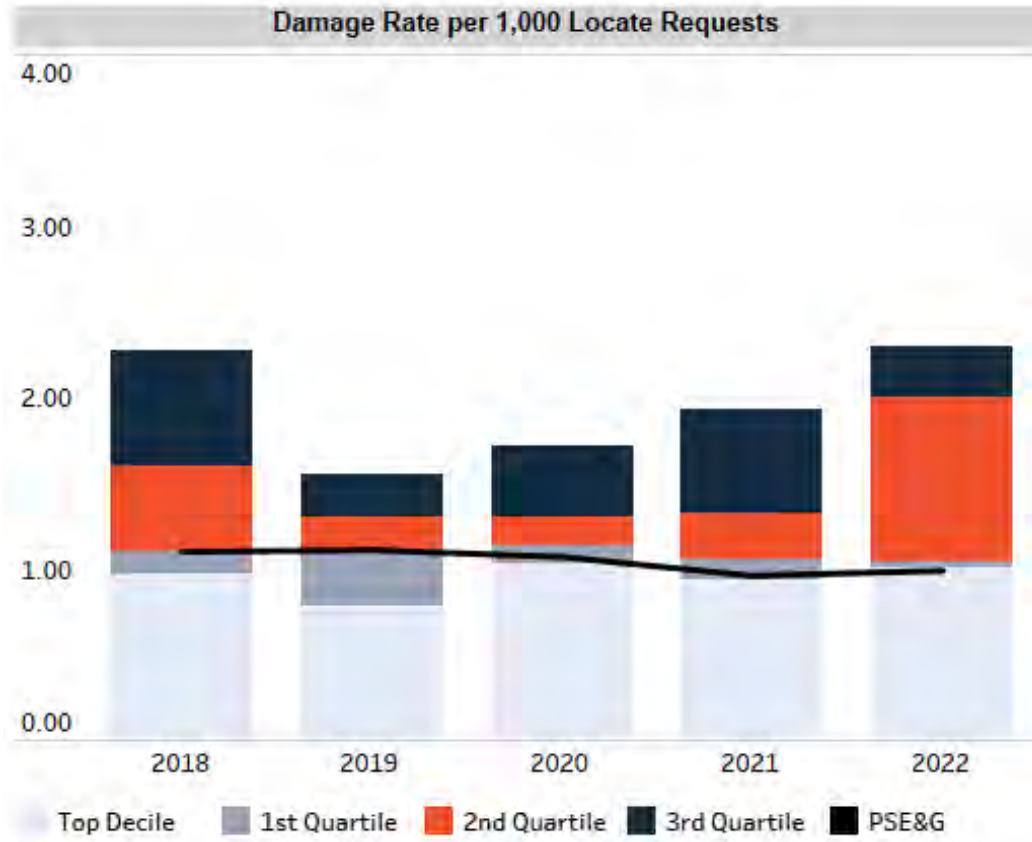
2011 PSE&G’s total damage rate for electric and gas combined is in the top quartile of peer panel

10

companies.

1

Chart 3



2  
3



1 **Q. How does PSE&G measure the reliability of its electric distribution system?**

2 A. The Company relies primarily on three metrics established by the Institute of Electrical  
3 and Electronic Engineers (“IEEE”) to measure reliability:

4 **System Average Interruption Duration Index (“SAIDI”).**

5 This index is based on the amount of time the average PSE&G customer experiences a  
6 sustained outage (being without power for more than five minutes) in a given year.

7 **System Average Interruption Frequency Index (“SAIFI”).**

8 This metric represents the number of times the average PSE&G customer experiences  
9 a sustained outage in a given year; and

10 **Customer Average Interruption Duration Index (“CAIDI”).**

11 This index represents the average outage time when customers are impacted by a  
12 sustained outage. It is determined by dividing SAIDI by SAIFI.

13 The Board’s regulations set forth a minimum reliability level and annual reporting  
14 requirement<sup>2</sup> for SAIFI and CAIDI. Because the Board’s annual reliability performance level  
15 targets are generally set using an individual utility’s five year average, PSE&G’s required  
16 targets are higher than other NJ EDCs as a result of the Company’s strong historical  
17 performance, as I discuss below. The Company also measures SAIDI, with targets to improve  
18 results for all three measures as compared to the Company’s past performance year after year.  
19 Beyond the requirements contained in the Board’s regulations, the Company is similarly  
20 required to report system performance using these measures as part of the reporting  
21 requirements that apply to the Company’s Energy Strong II Program, which is discussed later  
22 in my testimony.

---

<sup>2</sup> Each year, like all other electric utilities in New Jersey, PSE&G is required to submit an Annual System Performance Report to the Board.

1 **Q. What do these reliability measures show?**

2 A. The Company's performance of these indicators is addressed in detail in the testimony  
3 of Company witness Michael J. Adams. The indicators show that PSE&G has a strong and  
4 well-established track record of outstanding reliability and has continued to build upon that  
5 since the last rate case. Mr. Adams reviewed PSE&G's reported System Average Interruption  
6 Duration Index ("SAIDI"), System Average Interruption Frequency Index ("SAIFI"), and  
7 Customer Average Interruption Duration Index ("CAIDI") to those of the other New Jersey  
8 electric companies as reported to the Energy Information Administration ("EIA") via Form  
9 861 and to the IEEE via IEEE's annual benchmarking survey. Mr. Adams' study illustrates  
10 that for the years 2013 through 2022, PSE&G's SAIDI, SAIFI, and CAIDI reported to EIA  
11 were consistently below (better than) that of the other New Jersey electric companies that  
12 reported comparable metrics. Therefore, PSE&G's electric customers, on average,  
13 experienced interruptions of service less frequently than, and the interruptions experienced  
14 were of shorter durations than, those experienced by the customers of the other New Jersey  
15 utilities.

16 The results were the same based on a review of IEEE's annual benchmarking survey.  
17 PSE&G's reported SAIFI was in the first quartile of all utilities' SAIFI reported to the IEEE  
18 during each of the years 2013 to 2022, indicating that, at the very least, PSE&G was in the top  
19 25% of all utilities surveyed. PSE&G's reported CAIDI and SAIDI were also in the first  
20 quartile when compared to the companies participating in the IEEE study.

1 **Q. Can you discuss PSE&G's responsiveness to major storm events and**  
2 **emergencies?**

3 A. PSE&G takes pride in maintaining public safety and responding rapidly to major storm  
4 events and large scale system emergencies, and working in close collaboration with state,  
5 county, and municipal organizations as well as the BPU in accomplishing these goals. The  
6 Company's response during these critical times illustrates PSE&G's commitment to providing  
7 customers with safe and reliable service and PSE&G's ability to respond to widespread damage  
8 and outages.

9 Since the last base rate case, the State of New Jersey has experienced a number of  
10 significant weather events requiring extraordinary preparation, recovery and restoration efforts  
11 and associated costs, including Tropical Storm Isaias, Hurricane Ida, the February 2021 Snow  
12 Storms, the June 2020 Derecho, the July 2019 Major Storm, and the January 2024 Major  
13 Storm. See Schedule PANEL-3 R-1 for the major event reports PSE&G provided to the Board  
14 for the six storms that occurred since the Company's last base rate case and the cost detail  
15 summaries for each. The Company also continues make storm hardening and resiliency  
16 investments on its system to better protect customers and the Company's systems against the  
17 effects of increasingly frequent major storms in our service territory. The hardening and OK  
18 resiliency efforts since 2018 include the raising and rebuilding of substations located in the  
19 FEMA flood zone, additional circuit sectionalizing to minimize customer impact and the  
20 conversion of open wire to spacer type construction for better performance during weather  
21 events. The Company's proposed treatment of the expenditures associated with the Company's  
22 storm recovery efforts since its last base rate case is discussed by Mr. McFadden and Mr.  
23 Swetz.

1 **Q. Has PSE&G received any industry awards related to PSE&G’s electric**  
2 **distribution reliability performance?**

3 A. PSE&G is a participant in PA Consulting Group’s national utility benchmarking  
4 program and has received the regional award for the most reliable utility in the Mid-Atlantic  
5 region/service area every year since 2002 (for 2001 performance forward), including in 2023  
6 for performance in 2022. In 2018, PSE&G became the first public utility in the United States  
7 to obtain Support Anti-terrorism by Fostering Effective Technologies (“SAFETY”) Act  
8 liability protections from the U.S. Department of Homeland Security for the deployment of  
9 physical security measures that are designed to detect, deter and recover from acts of terrorism.

10 In 2018, PSE&G was the recipient of the Edison Electric Institute (“EEI”) Emergency  
11 Assistance Award for outstanding work assisting customers impacted by Hurricane Irma. EEI  
12 also recognized PSE&G in 2022 with the Edison Award in recognition of efforts to protect  
13 New Jersey communities and customers from extreme weather conditions. In 2022, PSE&G  
14 ranked first in the East among large utilities for both gas and electric utility residential customer  
15 satisfaction studies according to the J.D. Power 2022 studies.

16 **Q. What indicators does PSE&G rely on to measure gas distribution safety and**  
17 **reliability?**

18 A. The primary performance indicators for gas distribution are (i) gas leak reports per  
19 mile; (ii) cast iron breaks per mile; (iii) open leaks; (iv) gas damages per 1,000 locate requests;  
20 and (v) leak response time rates. The Company tracks leak data and reports it to the Board.  
21 The Company also reports the estimated volume of methane emissions from the distribution  
22 system annually as part of the Company’s US EPA Greenhouse Gas Reporting Program:  
23 Subpart W reporting. Additionally, the Company tracks the following metrics of gas system  
24 safety and reliability on the Gas T&D Engineering scorecard: the number of verified times the

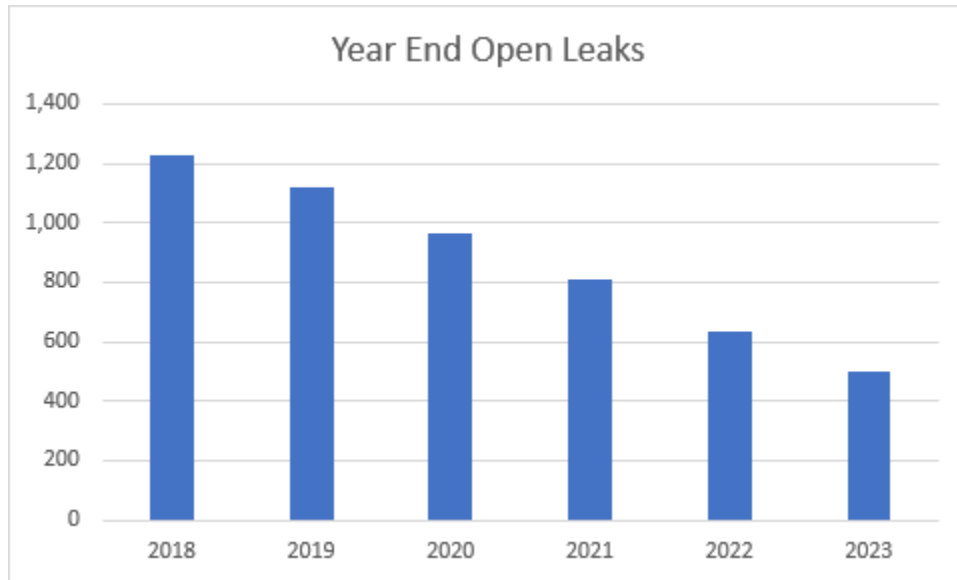
1 system pressure exceeds the MAOP (Maximum Allowable Operating Pressure) (not including  
2 Utilization Pressure systems); the number of localized areas experiencing unplanned pressures  
3 below design minimum (not including Utilization Pressure systems); and the number of  
4 metering and regulating (“M&R”) station or Plant outages due to unplanned events.

5 **Q. What do these measures show?**

6 A. Every year since 2010, PSE&G has maintained cast iron main leak and break rates and  
7 unprotected steel main leak rates below the upper performance limit (“UPL”) established  
8 following the Company’s 2006 rate case, with the single exception of the high pressure cast  
9 iron main leak rate in 2014, which exceeded the UPL by 0.094 leaks/mile or approximately 47  
10 leaks as a result of a very severe winter. Additionally, since 2010 the year end open Class 2  
11 leak total has never exceeded the UPL of 1,500 leaks.

12 Regarding open leaks, the Gas System Modernization Program, discussed later in my  
13 testimony, stipulated that from September 30, 2015 through September 30, 2018, the Company  
14 is required to reduce its September 30, 2015 inventory of open leaks by sixty percent. The  
15 Company has far exceeded that requirement. Through September 30, 2018, this active leak  
16 inventory as stipulated in the GSMP case was reduced by 2,365 leaks or 94%. In the GSMP  
17 II program the Company is required to reduce its year-end open leak inventory by one (1)  
18 percent for each year of the program subject to a year end cap on total open leaks. The  
19 Company has again far exceeded that requirement. From January 2019 to December 2023, the  
20 year-end open leaks has averaged 46% below the cap on open leaks set in the stipulation and  
21 as of December 2023 was 67% below the cap. Please see the chart below for year-end open  
22 leaks for all classes of leaks.

Chart 4

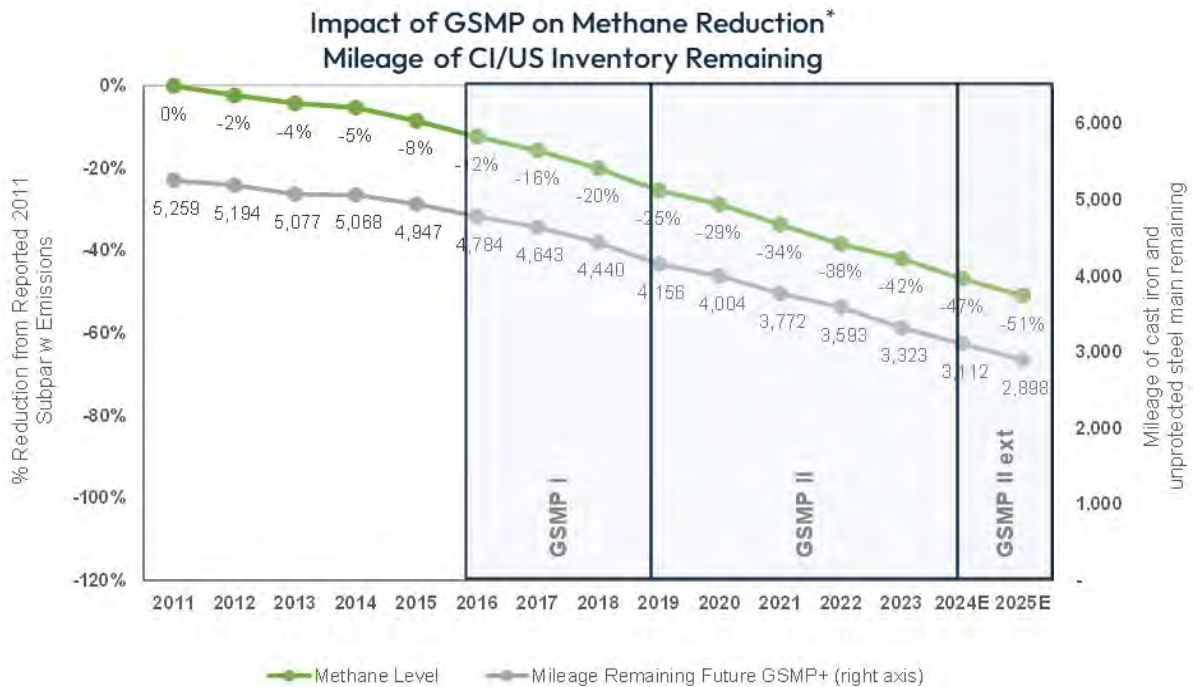


1           With respect to leak response times, in 2023 the Company’s gas service technicians,  
2 inclusive of those who perform appliance service work, responded to over 70,507 emergency leak  
3 calls, with a 99.98% response rate within 60 minutes, which is top decile performance within our  
4 peer group. All identified leaks and hazards were made safe for our customers. Additionally, in  
5 2023 our technicians handled over 173,546 heating related calls in both a timely and expeditious  
6 manner. We continue to offer safety checks of gas appliances for proper installation and  
7 ventilation and have actively promoted, through bill inserts, customer awareness of the dangers  
8 and causes of carbon monoxide poisoning. We conducted 5,469 emergency calls for suspected  
9 carbon monoxide emissions on customer premises in 2023. On 36% (1,963) of those calls, our  
10 responders found measurable levels of carbon monoxide present. In each instance, PSE&G  
11 responders made the premises safe.

12           The Company has reduced methane emissions approximately 6% annually since 2018 or  
13 a total of approximately 173,000 metric tons of Carbon Dioxide equivalent (CO<sub>2</sub>e) as of year-end

1 2023. This correlates to the decline in miles of cast iron and unprotected steel main and services  
 2 in the distribution system as a result of the Company's accelerated replacement programs. Please  
 3 see the chart below demonstrating the relationship between the main replacement under GSMP  
 4 programs and methane emissions.

Chart 5



\* Methane reductions starting from 2011 when greenhouse gas emissions were required to be reported by the U.S. EPA for gas distribution companies.

16 The annual number of overpressure excursions has declined from 9 in 2018 to 8 in 2023. There  
 17 have been no areas experiencing unplanned pressures below design minimum in the years from  
 18 2018 through 2023 and only 2 occasions of unplanned M&R station or plant outages in this  
 19 timeframe, with the last occurrence in 2020.

1 **Q. Please discuss the Company’s efforts to promote New Jersey’s energy policy goals.**

2 A. The Company recognizes and understands that many of our customers have redefined  
3 how they go about their day-to-day activities, including how and where they work, study, and  
4 even fuel their vehicles. This shift makes the provision of safe, reliable, resilient, and  
5 sustainable energy all the more important in meeting the evolving needs of the Company’s  
6 customers, and aligning with the state’s goals for a clean energy future. To date, PSE&G has  
7 recognized the evolution of the state’s energy policies and the Energy Master Plan and aligned  
8 its investment and operating policies accordingly, including by accelerating the modernization  
9 and decarbonization aspects of the Company’s strategy with programs such as:

10 1. The Infrastructure Advancement Program (“IAP”), which includes “last mile”  
11 improvements (or improvements to the portion of the grid that brings power from substations to  
12 customers’ homes and businesses) and updates to PSE&G’s aging electric substations and gas  
13 M&R stations.

14 2. The Energy Strong programs, which serve to further strengthen the Company’s  
15 statewide electric and gas systems to better withstand storms, improve reliability and significantly  
16 enhance resiliency. The latest iteration of the program – Energy Strong II – includes investments  
17 to harden the electric infrastructure from the effects of major weather events, improve resiliency,  
18 allow for faster restoration of outages and ensure safe and reliable service by replacing facilities  
19 when they reach the end of their service lives. Hardening work under Energy II includes  
20 rebuilding or eliminating 16 stations in flood zones, building or modernizing six M&R stations  
21 and upgrading the construction standard on some distribution circuits. Resiliency work includes  
22 technology investments that will improve field communications, make the system smarter and  
23 more efficient, and allow the grid to handle more solar and other distributed green energy sources.



1           3.       The Gas System Modernization Programs (“GSMP”), addresses the potential  
2 safety and environmental concerns associated with leaks from aging cast iron and unprotected  
3 steel pipe in PSE&G’s inventory as well as inside gas meter sets, consistent with the state’s  
4 Energy Master Plan, New Jersey’s Global Warming Response Act, the 80X50 Report,<sup>3</sup> and  
5 federal legislation, and consistent with Governor Murphy’s 2023 Executive Orders related to the  
6 State’s Clean Energy goals.

7           4.       The Clean Energy Future Programs (“CEF”), such as the CEF-Energy Efficiency  
8 Program (“CEF-EE”), CEF-Energy Cloud (“CEF-EC”) (deployment of advanced metering  
9 infrastructure), and CEF-Electric Vehicles (“CEF-EV”) Programs. Together, these initiatives  
10 form the basis for a clean and resilient energy future.

11          5.       PSE&G has supported state goals on solar develop since the last rate case through  
12 ongoing customer solar interconnections. As of November 1st of 2023, PSE&G has  
13 interconnected over 83,000 solar installations with a cumulative capacity of over 1,400 MW (AC)  
14 which represents a 106% and 81% increase from 2018 in installations and capacity, respectively.  
15 These numbers reflect PSE&G’s commitment to support clean energy while maintaining safe and  
16 reliable service to all customers.

17 **Q.     Please address cost containment efforts.**

18 A.     To contain increasing operating costs, the Company has employed a variety of cost control  
19 efforts to minimize customer rate impacts, while continuing efforts to provide safe, reliable and  
20 quality service to our customers. I highlight specific examples of capital and O&M-related  
21 management efforts below in sections III and IV, respectively.

---

<sup>3</sup> New Jersey’s Global Warming Response Act 80x50 Report, <https://dep.nj.gov/wp-content/uploads/climatechange/nj-gwra-80x50-report-2020.pdf>, rel. October 15, 2020.

1 **Q. Please address customer satisfaction.**

2 A. In general, J.D. Power customer satisfaction results demonstrate PSE&G's strong  
3 performance and focus on improvement. PSE&G is included in J.D. Power's Customer  
4 Satisfaction Studies in the "Large Utility East" segment. J.D. Power conducts customer  
5 satisfaction surveys of (1) electric residential customers; (2) electric business customers; (3)  
6 gas residential customers; and (4) gas business customers. As discussed by Company witness  
7 Mr. Adams, among electric residential customers PSE&G was ranked in the first quartile for  
8 customer satisfaction in every year during the period 2013-2023, except for 2013 and 2014,  
9 when it ranked in the second quartile. In the most recent J.D. Power results for the calendar  
10 years 2022 and 2023, electric residential customers ranked PSE&G first overall. PSE&G was  
11 ranked in the first or second quartile by its electric business customers during each of the years  
12 2013 through 2023, including first overall by its electric business customers in the most recent  
13 survey, i.e., 2023.

14 **Q. Does Mr. Adams also provide data on gas customer satisfaction?**

15 A. Yes. PSE&G was ranked in the first or second quartile by its gas residential customers  
16 in each of the years 2013 through 2022. In fact, PSE&G's gas residential customer satisfaction  
17 rating improved year-over-year for nine straight years, from 2014 to 2023. In the most recent  
18 results released by J.D. Power for the calendar year 2023, gas residential customers ranked  
19 PSE&G in the first quartile. Finally, PSE&G's gas business customer satisfaction rating has  
20 been in the first or second quartile each year from 2019 to 2023, including second quartile in  
21 2023.

1 **Q. Has PSE&G received any industry awards related to PSE&G’s gas distribution**  
2 **safety performance?**

3 A. Yes, PSE&G has received multiple industry awards related to gas distribution safety  
4 performance since the last rate case as follows:

5 *2022:*

- 6 • American Gas Association (AGA) 2022 Leading Indicator Safety Award, in  
7 recognition of proactive commitment to enhancing safety
- 8 • AGA 2022 INDUSTRY LEADER ACCIDENT PREVENTION – Mega, for  
9 achieving a DART- incident rate below the industry average for its company type

10 *2021:*

- 11 • AGA 2021 INDUSTRY LEADER ACCIDENT PREVENTION – Mega, for  
12 achieving a DART- incident rate below the industry average for its company type
- 13 • 2021 bronze award in the communications category of the Chartwell Best  
14 Practices Award competition for PSE&G’s 2020 gas-safety customer education  
15 campaign.

16 *2020:*

- 17 • AGA 2020 INDUSTRY LEADER ACCIDENT PREVENTION – Mega, for  
18 achieving a DART- incident rate below the industry average for its company type

19 *2019:*

- 20 • AGA 2019 INDUSTRY LEADER ACCIDENT PREVENTION – Mega, for  
21 achieving a DART- incident rate below the industry average for its company type

22 *2018:*

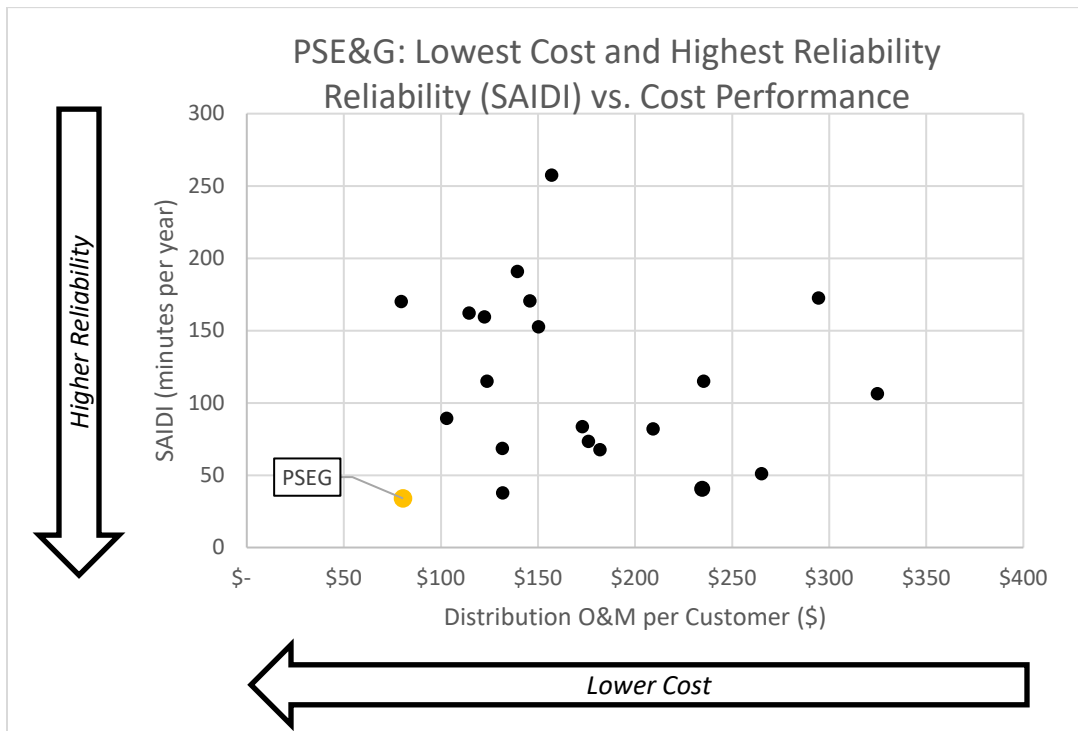
- 23 • PSE&G became the first public utility in the United States to obtain SAFETY Act  
24 liability protections from the U.S. Department of Homeland Security for the  
25 deployment of physical security measures that are designed to detect, deter and  
26 recover from acts of terrorism.
- 27 • AGA 2018 INDUSTRY LEADER ACCIDENT PREVENTION – Mega, for  
28 achieving a DART- incident rate below the industry average for its company type.

1 **Q. Please summarize your conclusions regarding PSE&G's electric and gas**  
2 **distribution operational performance.**

3 A. As an organization, PSE&G is focused on providing safe and reliable service, controlling  
4 costs, and delivering a high level of customer satisfaction. The Company continually strives to  
5 improve performance year after year to meet these goals, and has been successful in these efforts.  
6 This is evident in the two charts below from 2022. Chart 6 below illustrates PSE&G's electric  
7 SAIDI performance compared to distribution O&M while Chart 7 shows our leak response rate  
8 compared to distribution O&M. These charts demonstrate our commitment to providing excellent  
9 service at reasonable costs.

10

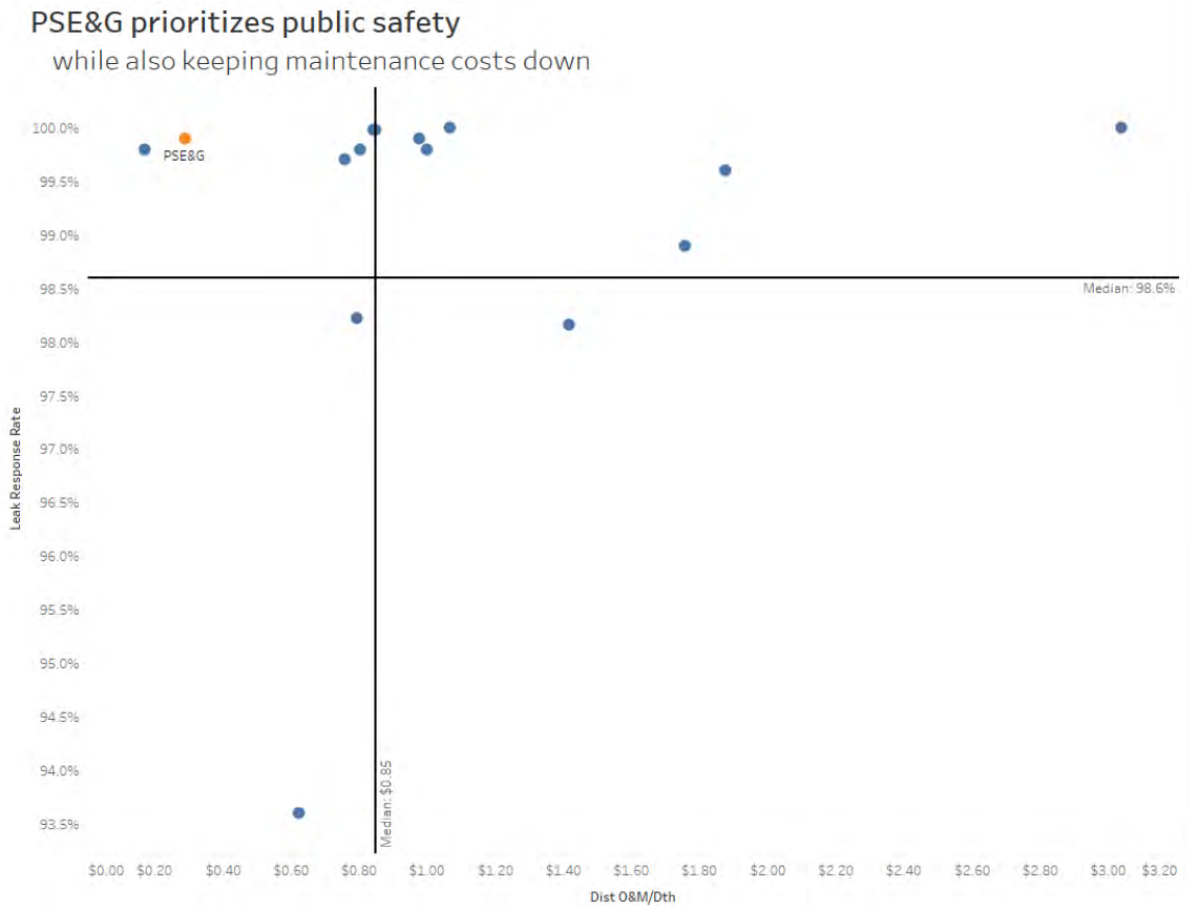
Chart 6



11

1  
2

Chart 7



3

4 **III. CAPITAL EXPENDITURES**

5 **A. Electric and Gas Capital Budget Process/Cost Controls**

6 **Q. How does PSE&G develop its capital budget and review, approve and monitor**  
7 **electric capital expenditures?**

8 A. PSE&G has an extensive, multi-layer process to develop its annual capital plan and  
9 review, approve and monitor capital expenditures from project inception to completion. The  
10 Company’s capital processes have been reviewed favorably by an independent monitor,  
11 Pegasus Global Holdings, Inc. (“Pegasus”) that was retained for the Energy Strong I and

1 Energy Strong II Programs after consultation with Board Staff and the New Jersey Division of  
2 Rate Counsel (“Rate Counsel”).

3 **Q. Why has an independent monitor considered PSE&G’s capital review process?**

4 A. The May 21, 2014 BPU Order (“Energy Strong I Order”) in BPU Docket Nos.  
5 EO13020155 and GO13020156 approving the Company’s initial Energy Strong Program – an  
6 accelerated infrastructure replacement program – required the Company to retain an  
7 independent monitor to review Energy Strong project development and implementation. The  
8 September 11, 2019, BPU Order in BPU Docket Nos. EO18060629 and GO18060630  
9 (“Energy Strong II Order”) (collectively, with the Energy Strong I Order, the “Energy Strong  
10 Orders”), which authorized the Company to undertake a second phase of the Energy Strong  
11 Program, similarly required the retention of an independent monitor. The Energy Strong II  
12 Order authorized the Company to continue making reliability and resiliency investments,  
13 including rebuilding and raising critical electrical equipment, installing stronger poles and  
14 wires, deploying advanced technology, building backup pipes, modernizing critical gas  
15 equipment, and improving customer service. While the requirement to retain the independent  
16 monitor derives from the Energy Strong Orders, the processes reviewed by Pegasus apply  
17 uniformly to all capital investments, not just those related to Energy Strong I and II.

18 **Q. Has the Energy Strong independent monitor, Pegasus, documented its review?**

19 A. Yes. The Energy Strong Orders required that the independent monitor review and  
20 report to Board Staff and Rate Counsel on cost effectiveness, efficiency, appropriate cost  
21 assignment, and other information. Since the retention of Pegasus, all of the monitor’s annual  
22 and quarterly reports (“Pegasus Reports”) have been submitted to Board Staff and Rate

1 Counsel, and non-confidential copies of these reports are included herein as Schedule PANEL-  
2 4(a) R-2.

3 **Q. What do the Pegasus Reports demonstrate?**

4 A. Among other things, the findings contained in the Pegasus Reports support the  
5 conclusion that PSE&G's capital budgeting processes and cost control practices are  
6 comprehensive, sound, and effective. These findings are contained in Schedule PANEL-4(a)  
7 R-2.

8 **Q. Please describe the development of the Company's capital plan.**

9 A. To develop the annual capital budget, each year's spending for individual proposed  
10 projects is compiled and placed into one of three project categories: (i) tariff/legal projects,  
11 which are generally non-discretionary and identified through external parties (*e.g.*, to support  
12 new service, or dictated by environmental or regulatory requirements); (ii) minimum projects,  
13 which are projects required to assure immediate continuity of safe and reliable basic utility  
14 service (*e.g.*, pole replacements, replacement of defective/failed facilities); and (iii) priority  
15 projects, which are discretionary projects. Spending in all categories is based on cost estimates  
16 submitted by subject matter experts from various departments (*e.g.*, project managers, project  
17 cost engineers, system planners) within the organization. Once the annual budget is developed,  
18 it is then reviewed and approved by the Company's Utility Review Board ("URB"), which  
19 consists of senior officers of PSE&G, as well as senior officers from other key support areas.

1 **Q. Are there additional approvals needed before a project or program in the annual**  
2 **capital plan can proceed?**

3 A. Yes. Aside from the capital planning and budgeting process, specific approval must be  
4 obtained for any project or program within the capital plan. All PSE&G major capital  
5 investments, whether undertaken as base capital spending or pursuant to an accelerated  
6 infrastructure program such as Energy Strong, must be approved at the appropriate  
7 management level within the Company. The extent of approval and documentation required  
8 is largely dependent on the expected dollar value of the investment. PSE&G's Utility Capital  
9 Review Board ("URB") reviews and approves blanket spending (aggregated spending on  
10 projects with similar repetitive work, *e.g.*, electric distribution poles, gas pipe, meters) in which  
11 individual items are each less than \$5 million, and specific project investment requests where  
12 capital requests are less than \$20 million. In addition, any capital investment exceeding 5% of  
13 previously approved amounts must be reported to the URB, and any investment exceeding  
14 10% of previously approved amounts requires re-approval. The URB is required to review  
15 project alternatives and to recommend for approval projects requiring consideration by the  
16 Company's Capital Review Committee ("CRC"). The CRC is responsible for reviewing,  
17 analyzing, and approving (to the extent not otherwise required by the Company's Board of  
18 Directors, in which case the CRC recommends approval to that body) capital investments  
19 greater than \$20 million. To be reviewed by the CRC, approval must have been previously  
20 given by the URB. For projects greater than \$50 million, the CRC will recommend approval  
21 to the Company's Chief Operating Officer ("COO"), and for projects greater than \$100 million,  
22 the Company's Board of Directors will review, analyze and approve projects accordingly.



1 For CRC meetings, the PSE&G Finance Department (part of PSEG Services  
2 Corporation, the Company's services company) has the responsibility to assure completeness  
3 of all project financial analyses, record CRC authorizations, and ensure project closeouts are  
4 completed. Notably, the Company uses a phased-funding approach to releasing funds for  
5 projects based on acceptable progress, and for continued project justification.

6 **Q. Please explain how capital projects are selected and optimized.**

7 A. The process used by PSE&G to select and prioritize electric and gas distribution capital  
8 spending plans has been in place since 2004. PSE&G selects projects by evaluating various  
9 factors, including whether the project is legally mandated, its operational requirements, and  
10 the extent to which the project supports the continued provision of safe, adequate, proper, and  
11 reliable utility service. The risk associated with not funding and performing each proposed  
12 investment is also evaluated to identify potential adverse consequences of not performing the  
13 work. PSE&G then determines the optimal portfolio combinations of work to be resourced  
14 and performed, so that value is optimized for the available level of resources within the electric  
15 and gas businesses.

16 **Q. What protocols are followed to ensure that PSE&G's expenditures are reasonable**  
17 **and cost effective?**

18 A. The policies and procedures that PSE&G has in place to ensure effective cost control  
19 for our capital projects are set forth in the Pegasus Annual Report included with Schedule  
20 PANEL-4(a) R-2. The Company undertakes a comprehensive approach applying cost control  
21 measures to all phases of its major capital projects, including Project Initiation, Design,  
22 Scheduling, Contracting, Material Procurement, and Construction. For example, during the  
23 Project Initiation phase, projects undergo a rigorous process of funding requests and project

1 review and are subject to estimating procedures that utilize four cost estimating phases through  
2 which, as a project moves towards certainty, the tighter the cost estimate needs to become.  
3 Numerous procedures are also applied during the Design, Scheduling, Contracting, Material  
4 Procurement, and Construction phases to facilitate cost control, including project scope and  
5 invoice management, competitive bidding, and strict construction oversight. The Company's  
6 policies and procedures are extensive, well documented and afford the Company the  
7 opportunity to discern and mitigate potential project cost overruns and ensure that the  
8 Company's expenditures are reasonable and cost effective.

9 **Q. Please describe some of the specific practices the Company uses to control costs**  
10 **associated with electric and gas distribution capital expenditures.**

11 A. The Company utilizes various methods to cost-effectively manage its electric and gas  
12 distribution capital program including, where possible, undertaking planned rather than  
13 reactive capital work and coordinating capital programs between electric and gas operations,  
14 as well as with third parties. PSE&G also benchmarks costs to help track and manage capital  
15 expenditures. For example, the Company tracks cost per mile and cost per foot information,  
16 allowing monitoring of capital expenditures in relation to original budgets and to make  
17 appropriate changes where possible.

18 The Company's gas distribution business has established a group dedicated to project  
19 management and implemented new software for managing project and construction activities.  
20 PSE&G has also partnered with critical material providers to strategically source construction  
21 supplies, helping to obtain bulk pricing and receive direct deliveries to job sites to help  
22 facilitate cost control and minimize risk of construction work delays.

1           **B.     Electric Capital Expenditures**

2     **Q.     Please describe PSE&G's electric capital spending since its last base rate case.**

3     A.     The Company's electric distribution rates were last reset in a base rate case approved  
4     by the Board in 2018. Since that time, PSE&G has invested a substantial amount of capital --  
5     approximately \$3.3 billion, of which \$2.4 billion was placed in service, net of retirements -- in  
6     new electric distribution plant and services equipment through May 31, 2023. The majority of  
7     these investments were for various projects focused on maintaining and improving reliability.  
8     As reflected on Schedule PANEL-2(a) R-2, the Company projects that during the period June  
9     1, 2023 through November 30, 2024, it will complete investments in electric distribution plant  
10    totaling \$2.0 billion. This level of investment was and is required to maintain and further  
11    enhance safe and reliable service to customers, support a continuation of the Company's  
12    infrastructure hardening and modernization efforts, and facilitate PSE&G's ongoing  
13    commitment to provide excellent service to customers.

14    **Q.     Please summarize the Company's test year and post-test year electric capital**  
15    **expenditures set forth on Schedule PANEL-2(a) R-2.**

16    A.     As reflected on Schedule PANEL-2(a) R-2, the Company expects to incur electric  
17    capital expenditures of approximately \$1.4 billion during the test year and approximately \$0.6  
18    billion in the post-test year period in various spending categories that are described further  
19    below. In service test year investments amount to \$1.4 billion and post-test year investments  
20    total \$0.4 billion. The test year and known and measurable post-test year expenditures that  
21    will be placed in-service by November 30, 2024 are reflected in Mr. McFadden's Schedule  
22    MPM-7 R-2.

1 **Q. What are the test year pre- and post-test year electric capital expenditure**  
2 **categories reflected on Schedule PANEL-2(a) R-2?**

3 A. The test year, pre- and post-test year expenditure categories reflected on Schedule  
4 PANEL-2(a) R-2 include the major categories of electric investment described below:

5 **1. Facilities Replacements**

6 **Q. Please explain the electric Facilities Replacements expenditures reflected on**  
7 **Schedule PANEL-2(a) R-2 for the test year, pre- and post-test year periods.**

8 A. Test year, pre- and post-test year expenditures in this category involve the replacement  
9 of defective or aging equipment and facilities to maintain the integrity of the electric  
10 infrastructure and to replace large equipment failures that may occur. The expenditures also  
11 include ongoing work to replace specific types of electric equipment, such as capacitors, street  
12 lights, poles, transformers, breakers, and replacement meters; underground facilities such as  
13 cables; and inside plant and substation facilities.

14 **2. System Reinforcements**

15 **Q. Please explain the electric System Reinforcement expenditures reflected on**  
16 **Schedule PANEL-2(a) R-2 for the test year and post-test year periods.**

17 A. System Reinforcements involve expenditures associated with increasing electric  
18 system capacity to accommodate customers' peak demand and capacity requirements and  
19 enhance the system's ability to provide high levels of reliable service under adverse conditions,  
20 ensuring that the Company continues to meet its reliability goals and design criteria. These  
21 expenditures predominantly include investments in electric facilities such as new substations  
22 and work done to improve the poorest performing circuits. These circuits are defined as the  
23 4kV and 13kV circuits in each division with the poorest combined performance in terms of  
24 number of outages and total customer hours of interruption. Other expected system

1 reinforcement funding areas include pole reinforcements, animal guards, and other reliability  
2 improvement programs.

3 **New Business Category**

4 **Q. Please explain the types and amounts of costs associated with the electric New**  
5 **Business category reflected on Schedule PANEL-2(a) R-2 for the test year/post-**  
6 **test year periods.**

7 A. The New Business category includes the costs of connecting new electric customers or  
8 upgrading existing services. This includes costs for meters, street and private area lighting,  
9 and the service connections for electric residential and smaller business customers, as well as  
10 the specific connection costs for large electric customer projects. Capital expenditures for new  
11 business are driven primarily by the number and type of new customers that PSE&G is required  
12 to serve. Test year and post-test year expenditures on Schedule PANEL-2(a) R-2 include the  
13 costs to serve new customers in the test year/post-test year period. Historically, large  
14 contributors to the capital plan include data centers, retail business expansions, as well as high-  
15 rise apartments and condominiums throughout the state. To illustrate the size and impact of  
16 data centers, in the past 10 years, PSE&G has invested \$30 million in infrastructure to support  
17 data centers through 2022, with an additional ~\$40 million for projects in the pipeline. Also,  
18 PSE&G has seen an increase in applications for electric vehicles in all customer categories,  
19 though for residential customers the requests are categorized as upgrades to existing service  
20 rather than new service. Businesses, on the other hand, often require new service as the  
21 requirements are large and may not be located near the existing service (e.g., electric vehicle  
22 charging station in far end of supermarket parking lot). Lastly, PSE&G has been monitoring  
23 other expected impacts to electric new business, including electrification of ports,  
24 transportation, fleets, and other large customer categories.

1                           **3. Environmental/Regulatory Category**

2 **Q. Please explain the costs reflected in the electric Environmental/Regulatory**  
3 **category for the test year/post-test year periods.**

4 A. Expenditures in this category include the costs associated with non-discretionary  
5 relocation of facilities and miscellaneous projects needed to meet environmental or regulatory  
6 obligations. The greatest driver of the test year/post-test year expenditures within this category  
7 is the costs to relocate facilities to facilitate municipal construction projects. Other test  
8 year/post-test year expenditures within this category include the costs related to compliance  
9 with the Environmental Protection Agency’s Spill Prevention, Control, and Countermeasure  
10 Program.

11                           **4. Facilities Support**

12 **Q. Please discuss the costs reflected in the electric Facilities Support category for the**  
13 **test year/post-test year periods.**

14 A. Major expenditures included in this category on Schedule PANEL-2(a) R-2 are  
15 associated with support facilities such as buildings, vehicles, and similar miscellaneous  
16 expenditures. This category includes costs related to the replacement of the Company’s  
17 vehicle fleet used to support electric distribution operations. The vehicles being replaced are  
18 at the end of their life cycle and cannot be cost effectively maintained. This category also  
19 reflects expenditures associated with the replacement of electric distribution radio equipment,  
20 which similarly has reached the end of its life cycle.

1                   **5. Energy Strong II (Electric)**

2 **Q. Please describe the Energy Strong II Electric Program.**

3 A. The costs in this category are expenditures associated with Energy Strong II Program  
4 electric investments that will be placed in service during the test year and post-test year. In the  
5 Energy Strong II Order, the BPU authorized a second phase of PSE&G's Energy Strong  
6 Program to make further investments aimed at improving the reliability and resiliency of the  
7 Company's electric and gas systems by rebuilding and raising critical electrical equipment,  
8 installing stronger poles and wires, deploying advanced technology, building backup pipes,  
9 modernizing critical gas equipment, and improving customer service. The Energy Strong II  
10 Program has a four-year term, commencing on October 1, 2019, with work expected to  
11 conclude by December 31, 2023, subject to certain exceptions in the Board's Order. Under  
12 the Energy Strong II Program, PSE&G is authorized to make \$641 million in electric capital  
13 investments, spread among the following sub-programs:

- 14           • \$389 million for Electric Station Flood Mitigation, to mitigate storm risks at 16  
15           identified electric stations;
- 16           • \$145 million for Contingency Reconfiguration, to harden its electric distribution  
17           system and increase system resiliency by implementing contingency  
18           reconfiguration strategies;
- 19           • \$72 million for Grid Modernization, Communications, which includes installation  
20           of a private wireless communications network and eliminate the use of dedicated  
21           phone lines for remote communication for both PSE&G and customer equipment;  
22           and
- 23           • \$35 million for Grid Modernization, to replace the existing Outage Management  
24           System with an Advanced Distribution Management System ("ADMS") that will  
25           incorporate data from Geographic Information System and SCADA, intelligent  
26           fault indicators, Smart Meters, and other advanced metering infrastructure.

27 In addition, \$100 million was also designated for stipulated base, which includes outside plant  
28 higher design and construction standards and/or electric life cycle subprogram project.

1 **Q. Please describe the Energy Strong II Program electric investments in service and**  
2 **projected through the end of the Program.**

3 A. For Energy Strong II the cost placed into service are shown in the table below:

<b>Program Summary</b>	<b>Total Cost Placed in Service (\$M)</b>
Electric Stations Flood Mitigation	\$ 336.1
Contingency Reconfiguration	\$ 145.5
Grid Modernization, Communication	\$ 63.6
Grid Modernization, ADMS	\$ 17.4
Stipulated Base	\$ 77.7
<b>Total</b>	<b>\$ 640.3</b>

<b>Stipulated Base</b>	<b>Total Spending Through Program</b>
Total	\$ 100.0

4

5 **Q. Have any of these Energy Strong II capital investments been placed into rates?**

6 A. The Energy Strong II Program approval Order permits the Company to file for rate  
7 adjustments to include Energy Strong II electric investments in the Company's rates.

8 Since the Company's previous base rate case, the Board has authorized four rate  
9 adjustments for Energy Strong II electric investments, which included capital investments of  
10 \$447.1 million, or \$456.9 million inclusive of allowance for funds used during construction.  
11 These investments were authorized by the Board to be included in base rates on a provisional  
12 basis subject to review in this rate case.<sup>4</sup>

13 The reasonableness and effectiveness of the costs underlying the rates implemented  
14 pursuant to these adjustments, as well as the success of the Energy Strong II Program, is  
15 supported by the findings contained in the Reports of the Energy Strong Independent Monitor  
16 that are attached as Schedule PANEL-4(a) R-2. In addition, the Company provides quarterly

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<sup>4</sup> On November 1, 2023, PSE&G filed a fifth rate adjustment request under Docket No. ER23110784.



1 reports to Board Staff and Rate Counsel pursuant to the Energy Strong II Order that contains  
2 detailed information about Energy Strong II Program costs, ongoing reliability performance,  
3 and satisfaction of program goals. A copy of the most recent Energy Strong II quarterly report  
4 is attached as Schedule PANEL-4(b) R-1.

5 **Q. Turning now to Energy Strong II Program expenditures that will be incurred**  
6 **during the test year, are these expenditures reflected on Schedule PANEL-2(a) R-**  
7 **2?**

8 A. Yes. Schedule PANEL-2(a) R-2 reflects Energy Strong II electric investments that will  
9 be undertaken during the test year. As explained by Company witness Mr. McFadden,  
10 PSE&G's filing in this case reflects certain ratemaking adjustments to ensure the Company  
11 does not double count the revenues associated with Energy Strong II investments that are  
12 expected to be captured in the rate adjustments expected to occur during the test year.

## 13 **6. Infrastructure Advancement Program**

14 **Q. Please describe the Infrastructure Advancement Electric Program ("IAP").**

15 A. The costs in this category are expenditures associated with IAP electric investments  
16 that will be placed in service during the test year and post-test year. The IAP was authorized  
17 by Board Order dated June 29, 2022, in BPU Docket Nos. EO21111211 and GO21111212  
18 ("IAP Order"). The IAP Order authorizes the Company to invest up to \$281.2 million in  
19 electric system upgrades to improve last mile reliability while supporting the electrification of  
20 the transportation sector and increased use of Distributed Energy Resources. The authorized  
21 IAP electric investments are split into two sub-programs:

- 22 • \$91 million for the Electric Outside Plant Subprogram, including the Spacer Cable  
23 Conversion Project, the Lashed Cable Replacement Project, Electric Station Flood  
24 Mitigation, the Spacer Upgrade Project, the Conventional Underground Cable  
25 Replacement Project, and the Voltage Optimization Project; and

1           • \$190.2 million for the Substation Modernization Program, which includes the 26kV  
2           Station Upgrade Project and the 4kV Substation Modernization Project to upgrade  
3           equipment at 5 stations. The IAP Order also requires the Company to spend a  
4           Stipulated Base of \$160 million on certain capital projects to be recovered through  
5           base rates, \$142.6 million of which shall be spent on electric system investments in  
6           specified categories.

7           **Q.     Have any IAP electric expenditures been reflected in rates?**

8           A.     There are currently no IAP electric expenditures included in the Company’s rates. The  
9           Company filed for its first IAP rate adjustment on November 1, 2023 in BPU Docket No.  
10          ER23110783.

11          **Q.     Are any electric expenditures related to the IAP included in the test year or post-**  
12          **test year, as shown on Schedule PANEL-2(a) R-2?**

13          A.     Schedule PANEL-2(a) R-2 reflects IAP electric investments that will be undertaken  
14          during the test year. As explained by Company witness Mr. McFadden, PSE&G’s filing in  
15          this case reflects certain ratemaking adjustments to ensure the Company does not double count  
16          the revenues associated with IAP investments that are expected to be captured in the rate  
17          adjustments expected to occur during the test year and post-test year periods.

18                               **7.     NJ Transit Mason Substation Replacement**

19          **Q.     Please describe the Company’s NJ Transit Mason Substation Replacement**  
20          **Project.**

21          A.     By Order dated November 21, 2017, the Board approved a plan to demolish facilities  
22          known as the Mason Substation, comprising a number of facilities and electric plant that at the  
23          time was owned by New Jersey Transit Corporation (“NJ Transit”), and to rebuild and  
24          modernize the facilities under PSE&G ownership. The substation, which is a crucial facility  
25          for both NJ Transit and northern New Jersey, suffered severe damage during Superstorm  
26          Sandy.

1           The cost of the rebuilt facility is shared between NJ Transit and PSE&G. The Board  
2 authorized PSE&G to recover its prudently incurred investment of up to \$100 million plus an  
3 Allowance For Funds Used During Construction in a later base rate case. Through May 31,  
4 2024, \$79 million has been placed into service with an additional \$17 million expected to be  
5 placed in service in August 2024, and the remaining \$4 million in November 2024. PSE&G's  
6 final cost to complete the project will be \$100 million. This cost was prudently incurred to  
7 enable PSE&G to continue to provide safe and reliable electric service in the northern New  
8 Jersey portion of its service territory. There is no question that the Mason Substation is  
9 necessary to support the electricity requirements of both NJ Transit and PSE&G and its other  
10 customers. Moreover, in proceeding with this Board-approved project PSE&G followed all of  
11 the practices and procedures I have described previously that ensure that PSE&G's share of  
12 the cost of this essential facility remained reasonable.

13 **Q.     What costs for the NJ Transit Mason Substation Replacement Project are being**  
14 **included in rates?**

15 A.     The Company has included in rates \$100 million of costs prudently incurred to rebuild  
16 the structure. That figure includes costs that will be incurred in the post-test year period.

17           **C.                   Gas Capital Expenditures**

18 **Q.     Please describe PSE&G's gas capital spending since its last base rate case.**

19 A.     Since the Company's last gas distribution rate case it has invested a substantial amount  
20 of capital -- approximately \$4.3 billion -- in new gas distribution plant through May 31, 2023.  
21 The majority of these investments were for the replacement of aging infrastructure and the  
22 hardening of the gas distribution system. As reflected on Schedule PANEL-2(b) R-2, the

1 Company projects that during the period June 1, 2023 through November 30, 2024, PSE&G  
2 will complete investments in new gas distribution plant totaling almost \$1.8 billion. As with  
3 electric distribution, this level of gas distribution investment was and is required to maintain  
4 and enhance safe and reliable service to customers, support a continuation of our infrastructure  
5 investment efforts, and facilitate our ongoing commitment to provide excellent service to our  
6 customers.

7 **Q. Please summarize the Company's test year and post-test year gas distribution capital**  
8 **expenditures set forth on Schedule PANEL-2(b) R-2.**

9 A. As reflected on Schedule PANEL-2(b) R-2, the Company expects to incur gas system  
10 capital expenditures of approximately \$1.2 billion during the test-year and approximately \$0.6  
11 billion in the post-test year in various spending categories that are described further below. In  
12 service test year investments amount to \$1.2 billion and post-test year investments total \$0.6  
13 billion. The test year and known and measurable post-test year expenditures that will be placed  
14 in-service by November 30, 2024 are set forth in Mr. McFadden's testimony at Schedule  
15 MPM-7 R-2.

16 **Q. What are the test year and post-test year gas capital expenditure categories**  
17 **reflected on Schedule PANEL-2(b) R-2?**

18 A. The test year/post-test year expenditure categories reflected on Schedule PANEL-2(b)  
19 R-2 include the major categories of gas investment described below:

1                                   **1. Facilities Replacements**

2   **Q.     Please describe the Facilities Replacements gas expenditures reflected on Schedule**  
3   **PANEL-2(b) R-2 for the test year and post-test year periods.**

4   A.     The Facilities Replacements category reflects expenditures associated with replacing  
5   defective or aging gas facilities. Test year and post-test year gas expenditures in this category  
6   include the replacement of approximately 238 miles of cast iron and unprotected steel  
7   mains, 18,154 services, 63 regulators, 168,291 gas meters and 15,882 house regulators. Mains  
8   and services replacements are prioritized in accordance with PSE&G’s federally-mandated  
9   Distribution Integrity Management Program (“DIMP”), with the objective of enhancing safety  
10  by identifying and reducing gas distribution pipeline integrity risks. A pipeline integrity risk  
11  assessment is conducted as part of the DIMP and considers risk factors such as leak and break  
12  history, consequence of pipeline or pipeline component failure, operating and maintenance  
13  experience, and regulatory requirements. Expenditures in this category also include the  
14  replacement of certain metering and regulating equipment, and the replacement of certain  
15  pounds-to-pounds regulating station equipment. Notable projects in this category include the  
16  reconstruction of the Glen Rock pounds-to-pounds regulating station with a total projected cost  
17  of \$19.5 million and replacement of a section of the Harrison lateral transmission line crossing  
18  multiple railroads with a total projected cost of \$28.0 million.

19                                   **2. System Reinforcements**

20   **Q.     Please explain the System Reinforcement expenditures reflected on Schedule**  
21   **PANEL-2(b) R-2 for the test year and post-test year periods.**

22   A.     System Reinforcement expenditures are costs associated with increasing gas system  
23   capability to accommodate customers’ peak demand and capacity requirements and for  
24   enhancing the system’s ability to provide high levels of reliable service under adverse

1 conditions. Test year and post-test year gas expenditures in this category include the  
2 encapsulation of approximately 5,919 cast iron bell joints of various sizes, the installation of  
3 16.9 miles of new gas mains and two new pounds-to-pounds regulating stations to reinforce  
4 system pressures, and the installation of cathodic protection devices, including testing stations,  
5 anodes and insulators on existing protected steel mains. Two major projects in this category  
6 are the Chatham System Reinforcement Project (“Chatham Project”), with a total projected  
7 cost of \$19.7 million and the Haddon Township System Reinforcement Project (“Haddon  
8 Project”) with a total projected cost of \$15.7 million. The Chatham Project involves the  
9 conversion of the existing M&R station from a 15 PSI outlet pressure station to a 120 PSI  
10 outlet pressure station, the installation of approximately two miles of reinforcement main, and  
11 the installation of a new 120 PSI to 15 PSI pounds-to-pounds regulating station. This project  
12 enables the Company’s Northern 15 PSI system to maintain adequate pressures at system low  
13 points in Springfield under design day demand conditions. The Haddon Project involves the  
14 installation of approximately two miles of reinforcement main and the installation of a new 60  
15 PSI to 15 PSI pounds-to-pounds regulating station. This project enables the Company’s  
16 Brooklawn-Camden 15 PSI system to maintain adequate pressures at system low points  
17 Haddon Heights, Barrington and Haddonfield under design day demand conditions.

18 **3. New Business**

19 **Q. Please describe the gas New Business expenditures reflected on Schedule PANEL-**  
20 **2(b) R-2 for the test year and post-test year periods.**

21 A. New Business expenditures are costs incurred to connect new gas customers or upgrade  
22 existing services. Capital expenditures for gas new business depend largely on the number and  
23 type of new gas customers that PSE&G is required to serve. The expenditures reflected on

1 Schedule PANEL-2(b) R-2 reflect the costs associated with service connections for new  
2 residential, commercial and industrial customers in the test year/post-test year period.

3 **4. Environmental/Regulatory**

4 **Q. Please describe the Environmental/Regulatory gas expenditures reflected on**  
5 **Schedule PANEL-2(b) R-2 for the test year and post-test year periods.**

6 A. Environmental/Regulatory expenditures are costs associated with projects needed to  
7 meet mandated environmental or regulatory obligations. Test year and post-test year gas  
8 expenditures in this category include various items related to environmental/regulatory  
9 compliance. Major test year expenditures in this category include the costs associated with  
10 service-cut-offs, as well as the costs related to unprotected steel service replacements as  
11 required by the *N.J.A.C. 14:7-1.20*, and main and service relocations due to municipal  
12 requirements. Test year/post-test year expenditures also include work involving pipeline  
13 replacement and construction to support ongoing integrity assessments in conformance with  
14 PSE&G's Gas Transmission Integrity Management Plan (or "TIMP") required under 49 CFR Part  
15 192. Major projects within this category include multiple pipeline modifications to allow for  
16 integrity assessments utilizing robotic technology, to ensure compliance with 49 CFR Part 192.

17 **5. Facilities Support**

18 **Q. Please describe the Facilities Support gas expenditures reflected on Schedule**  
19 **PANEL-2(b) R-2 through the end of the test year and post-test year periods.**

20 A. Facilities Support expenditures are costs associated with support facilities such as  
21 buildings, vehicles, and similar miscellaneous expenditures. The projects included in the  
22 Facilities Support expenditures during this period include the relocation of the Oradell Gas  
23 District Headquarters due to ongoing flooding issues at the current location. This category also

1 includes necessary building improvements at the Company’s twelve (12) Gas District  
2 Headquarters, the replacement of gas distribution fleet and radio equipment and security  
3 upgrades associated with Transportation Security Administration (“TSA”) critical facility  
4 requirements. These security upgrades will take place, for example, at certain gas M&R  
5 stations and at transmission valve sites, where upgrades may include electronic access controls,  
6 security cameras, motion detectors, upgraded fencing and locking devices with patent keys.

## 7 **6. Energy Strong II (Gas)**

8 **Q. Please describe the Energy Strong II Gas Program.**

9 A. The Energy Strong II Order authorized the Company to make \$50.5 million in gas  
10 system investments as part of the M&R Station Upgrades sub-program to rebuild/modernize  
11 M&R stations on the Company’s gas system.

12 The Gas M&R Station Upgrade subprogram involved the modernization of the design  
13 of six (6) M&R stations to reduce the likelihood and consequence of equipment failure. The  
14 existing stations in the subprogram had an outdated design with upstream relief valves and  
15 single regulation runs. This arrangement can lead to a methane emission release through the  
16 relief valves in the event of a single regulator failure. The new design greatly reduces the  
17 likelihood of methane release. Additionally, the upgrades replaced aging facilities and  
18 hardened facilities located in the flood zones against severe flooding events. Two stations in  
19 the subprogram (Camden and East Rutherford) are in FEMA flood zones.

20 The project work under the Gas Metering & Regulating Upgrades subprogram  
21 commenced in the beginning of October 2019, with all the project works to be completed  
22 before the end of the test year. Under the Energy Strong II Accelerated Recovery Rate



1 Mechanism, up to \$50.5 million was invested by the Company to rebuild and modernize the  
2 following M&R stations:

- 3 • Camden
- 4 • Central
- 5 • East Rutherford
- 6 • Mount Laurel
- 7 • Paramus
- 8 • Westampton

9 Any prudently incurred costs for work on the six M&R stations that exceeded \$50.5  
10 million has been credited toward the Company's stipulated base requirement, as authorized by  
11 the Energy Strong II Order.

12 **Q. Please describe the Energy Strong II Program gas investments and projects**  
13 **placed in service through May 31, 2023, prior to the commencement of the test**  
14 **year.**

15 A The Camden, East Rutherford and Westampton M&R station upgrade projects were  
16 placed into service prior to the test year. The upgrade work associated with these M&R stations  
17 included removal of existing PSE&G regulation and Remote Terminal Unit (“RTU”) buildings  
18 and foundation, existing pipeline company regulators, and downstream piping. This work also  
19 included the installation of new buildings to house pressure regulation equipment, RTU  
20 functions, and, at Camden, a new boiler gas heating system. The Company also installed new  
21 yard piping from the point of ownership change to the new regulator and new RTU and  
22 associated equipment at the three sites. Series regulator runs designed as a working regulator

1 and a standby monitor regulator for on-site systems were installed at the three stations, along  
2 with downstream piping with new relief valves as a second line of overpressure protection.  
3 The scrubber, blowdown tank and associated piping connections, backup generator, and  
4 Monoethylene Glycol unit and associated piping connections at each facility were replaced,  
5 and the Company made upgrades to electrical and lighting systems and installed new security  
6 measures (*e.g.*, cameras, access control, door alarms). At the Camden and East Rutherford  
7 stations, PSE&G also elevated all buildings and sensitive equipment to a minimum of the  
8 FEMA 100-year flood elevation plus one foot (+ 1 ft) as part of the station upgrade. The  
9 Company also replaced existing water bath gas heaters at the Camden and East Rutherford  
10 stations.

11 **Q. Have any of these Energy Strong capital investments been rolled into rates?**

12 A. The Board has authorized two rate adjustments for Energy Strong II gas investments,  
13 which included capital investments of \$50.5 million, or \$51.9 million inclusive of allowance  
14 for funds used during construction, for Energy Strong II gas projects placed in service prior to  
15 the commencement of the test year. These investments were authorized by the Board to be  
16 included in base rates on a provisional basis subject to review and finalization in this rate case.

17 Like the Energy Strong electric distribution expenditures, the reasonableness and cost  
18 effectiveness of the gas distribution costs underlying the rates approved by the Rate  
19 Adjustment Orders, as well as the success of the Energy Strong Program, is supported by the  
20 findings in the Pegasus Reports attached as Schedule PANEL-4(a) R-2. As noted above, the  
21 Company also provides annual and quarterly reports to Board Staff and Rate Counsel pursuant  
22 to the Energy Strong Order that contains detailed information about Energy Strong program

1 costs, ongoing reliability performance, and satisfaction of program goals. A copy of the most  
2 recent Energy Strong quarterly report is attached as Schedule PANEL-4(b) R-1.

3 **Q. Turning to the test year, does Schedule PANEL-2(b) R-2 reflect Energy Strong**  
4 **expenditures for this period?**

5 A. Yes. The gas Energy Strong expenditures on Schedule PANEL-2(b) R-2 represent  
6 Energy Strong Program investments that the Company expects to undertake during the test  
7 year from June 1, 2023 to May 31, 2024.

## 8 7. GSMP I

9 **Q. Please describe the Gas System Modernization Program I (“GSMP I”).**

10 A. GSMP is an accelerated infrastructure replacement program that was approved by a  
11 Board Order dated November 16, 2015 (“GSMP I Order”). The GSMP I Order authorized the  
12 Company to invest up to \$905 million over three years to:

- 13 i. replace up to 510 miles of utilization pressure cast iron main (“UPCI”) and  
14 unprotected steel main and services;
- 15 ii. uprate the UPCI system to higher pressure;
- 16 iii. install excess flow valves;
- 17 iv. abandon district regulators;
- 18 v. replace high pressure cast iron mains (“HPCI”); and
- 19 vi. recover the incremental cost of relocating inside meter sets outside.

20 Of the \$905 million approved for GSMP, the Company was authorized to invest up to  
21 \$650 million to be recovered by the Alternative Rate Mechanism. The GSMP Order required  
22 that PSE&G make base capital investments, referred to in the GSMP Order as “Stipulated  
23 Base,” that are subject to two minimum investment criteria. The first criterion is that PSE&G

1 must spend a minimum of \$85 million per calendar year from 2016 through 2018 on the types  
2 of plant specified to be part of Stipulated Base. The second requirement is that during the three  
3 years 2016 – 2018, PSE&G must install and place in service no less than a total of 110 miles  
4 of main to replace cast iron and unprotected steel mains and associated services under the  
5 Stipulated Base (“Stipulated Base Mileage and Stipulated Base Services”).

6 **Q. Please describe the Gas System Modernization Program II (“GSMP II”).**

7 A. GSMP II is the second phase of the Company’s GSMP Program, which was approved  
8 by the Board in an order dated May 22, 2018 in BPU Docket No. GR17070776 (“GSMP II  
9 Order”). The GSMP II Order authorized the Company to invest up to \$1.575 billion million  
10 over five years to: (a) replace UPCI mains and associated services and Unprotected Steel mains  
11 and associated services; (b) uprate the UPCI systems (including the uprating of associated  
12 protected steel and plastic mains and associated services) to higher pressures; and (c) install  
13 excess flow valves and eliminate district regulators, where applicable.

14 Under GSMP II PSE&G is required to make base capital investments, also referred to  
15 as a Stipulated Base. The Company must spend \$300 million on certain capital projects during  
16 the five-year GSMP II, with no less than \$20 million expended in each calendar year from  
17 2019 through 2023, which shall be recovered through base rates.

18 **Q. Has the Company met its Stipulated Base requirements under the GSMP I and II**  
19 **Orders?**

20 A. Yes. In GSMP I the Company spent more than the stipulated requirement of \$85M per  
21 year in each year with a total expenditure of \$288.6 million. The Company has spent more  
22 than \$20 million on stipulated base investments in each year of the GSMP II program with a  
23 total expenditure of \$305.5 million.

1 **Q. Are any of the GSMP I and GSMP II investments currently reflected in rates?**

2 A. In the Company's previous base rate case, the Board found that PSE&G's GSMP I  
3 investments placed in service through September 30, 2017, were prudent and should be  
4 included in base rates. These investments were approved as prudent by the Board in the  
5 Company's 2018 rate case.

6 Since the last base rate case, the Board has approved two additional rate adjustment  
7 filings for GSMP I investments, consisting of \$311.5 million in capital investments, and eight  
8 rate adjustment filings for GSMP II investments, consisting of \$1.575 billion in capital  
9 investments. Pursuant to the Board's orders approving these filings, the revenue requirements  
10 associated with these investments have been included in the Company's rates on a provisional  
11 basis, subject to a prudency review in this proceeding.

12 **Q. Can you summarize the Company's total GSMP I and II investments and**  
13 **Stipulated Base since the inception of the GSMP Program but prior to the**  
14 **commencement of the test year in this case?**

15 A. The summary of the GSMP I&II Program and Stipulated Base investments are shown  
16 in the table below:

	2016	2017	2018	2019	2020	2021	2022	2023*
<b>GSMP Investment (\$M)</b>	\$159	\$245	\$201	\$336	\$407	\$495	\$354	\$40
<b>GSMP Miles Replaced</b>	118	104	86	212	318	281	112	23
<b>GSMP Services Replaced</b>	6,808	9,858	9,963	16,582**	18,222	27,324	20,462	1,331
<b>Stipulated Base Investment (\$M)</b>	\$95	\$100	\$94	\$60	\$46	\$42	\$128	\$30
<b>Stipulated Base Miles Replaced</b>	71	29	42	23	22	26	63	12
<b>Stipulated Base Services Replaced</b>	3,180	2,494	3,241	1,393	1,107	932	4,678	1,092

\* GSMP II was completed in Feb. 2023

\*\* Services from GSMP had been inadvertently omitted from original submission - correct number is shown

17

1 **Q. Turning to the test year expenditures, does Schedule PANEL-2(b) R-2 include**  
2 **Investments and Stipulated Base expenditures for the GSMP I and II?**

3 A. Schedule PANEL-2(b) R-2 includes Investments and Stipulated Base expenditures for  
4 GSMP I and II.

5 **Q. Are the costs underlying the rates approved by the Board, as well as all GSMP**  
6 **investments to date (including Stipulated Base spending), reasonable?**

7 A. Yes. The GSMP investments were subject to the same PSE&G capital practices and  
8 policies described above that were favorably reviewed by Pegasus for the Energy Strong II  
9 Program. As we explained earlier, while the requirement to retain the independent monitor  
10 derives from the Energy Strong Order, the capital practices and processes reviewed by Pegasus  
11 apply uniformly to all capital spending, including GSMP investments. As noted above, the  
12 Company also provides monthly and quarterly reports to Board Staff and Rate Counsel in  
13 connection with GSMP I and II. Those reports contain information about GSMP costs and  
14 satisfaction of program goals, *i.e.*, leak reduction data. A copy of the most recent GSMP  
15 monthly report is attached as Schedule PANEL-4(c) R-2.

16 **8. IAP (Gas)**

17 **Q. Please describe the Infrastructure Advancement Gas Program.**

18 A The IAP Order authorized the Company to invest \$69.8 million in gas system upgrades  
19 through the IAP, all of which are directed to the Gas M&R Station Modernization Subprogram.  
20 As noted above, the IAP Order requires the Company to invest a stipulated base of \$160 million  
21 over the term of the program, \$17.4 million of which must be used for specified gas  
22 investments.

1 **Q. Have any IAP gas expenditures been placed into rates?**

2 A. There are currently no IAP gas expenditures included in the Company's rates.

3 **Q. Are any gas expenditures related to the IAP included in the test year or post-test**  
4 **year, as shown on Schedule PANEL-2(b) R-2?**

5 A. No. The first IAP projects are scheduled to be placed into service in December 2024,  
6 after the conclusion of the post-test year period in this proceeding.

7 **IV. OPERATION AND MAINTENANCE EXPENSE**

8 **Q. Please provide an overview of your testimony regarding distribution-related**  
9 **O&M expense.**

10 A My testimony addresses the level of electric and gas distribution-related O&M expense  
11 that PSE&G expects to incur in the test year, major expenses associated with operating the  
12 Company's electric and gas distribution systems, and the efforts taken by the Company to  
13 control distribution-related O&M expenses.

14 **Q. What is the level of electric and gas distribution-related O&M expense that**  
15 **PSE&G expects to incur during the test year?**

16 A. Total test year electric and gas distribution-related O&M expense is approximately  
17 \$368 million. Of that amount, approximately \$212 million is related to electric distribution  
18 operating costs and approximately \$156 million is related to gas distribution operating costs.  
19 Electric and gas distribution O&M amounts are shown on Schedules PANEL-5(a) R-2 and  
20 PANEL-5(b) R-2, respectively.

1           **A.     Electric Distribution O&M**

2           **Q.     Please discuss the types of expenses that comprise electric distribution O&M.**

3           A.     Electric distribution O&M expenses include the day-to-day activities of running the  
4 electric system that are critical to meeting the needs of our customers and maintaining the  
5 overall safety and reliability of the Company's electric distribution system. Electric  
6 distribution O&M work encompasses all of the extensive inspection and maintenance  
7 programs that are described in detail in PSE&G's Annual System Performance Report  
8 provided to the BPU. Major O&M activities include vegetation management (tree trimming);  
9 load checks on all underground transformers; storm restoration (which is discussed in more  
10 detail below); routine repairs, troubleshooting, and mark-outs of underground facilities;  
11 various inspections, including inspections of overhead lines, network protectors, critical plant  
12 inside substations, and various others types of facilities and equipment; meter and streetlight  
13 repairs; connecting and disconnecting active and inactive customers, shut-offs and restorations  
14 of customers; responding to police/fire emergency calls and customer complaints; maintaining  
15 customer accounts, billing and metering; and accounting, employee benefit management, and  
16 information technology. Also included in O&M are the costs of training the Company's  
17 workforce, which is a very critical area today given the turnover being experienced due to the  
18 retirement of experienced skilled workers and the significant hiring of new employees, many  
19 of whom are in apprenticeship classifications. For many job assignments or categories, it takes



1 up to two years of training and work experience before an apprentice or new employee is ready  
2 to be a fully qualified contributor.

3 **Q. What are the key drivers of electric distribution O&M?**

4 A. The major drivers of the test year electric distribution O&M budget are expenditures  
5 associated with (i) vegetation management, (ii) corrective maintenance, (iii) buildings and  
6 grounds, (iv) inspections, and (v) measurement cost. Test year expenditures for these major  
7 categories are set forth on Schedule PANEL-5(a) R-2. I discuss these major cost categories  
8 further below.

9 **Q. Please discuss vegetation management costs.**

10 A. Vegetation management costs have increased since the last rate case driven by  
11 significant labor inflation for this service. Vegetation management is performed when  
12 circuits are inspected and require maintenance per regulations discussed further below.

13 **Q. What do the vegetation management regulations require?**

14 A. In general, the regulations require that all circuits be inspected and, if necessary, that  
15 trees be trimmed at least once every four years. Consistent with the Board's regulations, all  
16 vegetation clearing work is performed in compliance with American National Standards  
17 Institute (ANSI) Z133.1 standard, which addresses arboriculture safety requirements for  
18 pruning, repairing, maintaining and removing trees and for using equipment in such operations;  
19 and with the A-300 standard, which addresses pruning and trimming operations, as well as all  
20 applicable OSHA requirements. Work related to vegetation management is performed by  
21 outside contractors with a small number of internal crews.

1 **Q. Please discuss corrective maintenance costs.**

2 A. Corrective maintenance is performed when facilities and/or equipment malfunction or  
3 otherwise do not perform at an optimal level. Maintenance intervention is required to return  
4 facilities and equipment to an operational, safe and reliable state.

5 **Q. Please describe the costs associated with buildings and grounds.**

6 A. Buildings and grounds costs involve the different activities associated with various  
7 structures (*e.g.*, office buildings, substation control houses) and associated property operated  
8 and maintained by the Company. Some typical costs include snow removal, weed control,  
9 repairs, janitorial services, utility bills and fire and building inspections.

10 **Q. Please address inspections costs.**

11 A. Inspection costs include inspections and related activities associated with PSE&G  
12 utility poles, underground lines, inside plant such as transformers breakers and relays, and  
13 other utility facilities. These activities are critical to help maintain the safety and reliability  
14 of the electric energy delivery system by identifying and eliminating defective facilities before  
15 failures can cause injury, damage, or unscheduled outages.

16 **Q. Please address measurement costs.**

17 A. Measurement costs involve expenditures for the many meter-related functions  
18 associated with 2.3 million electric meters located in PSE&G's service territory. These  
19 functions include activating and deactivating meters; reading meters; disconnecting and  
20 reconnecting meters; repairing and maintaining meter sets; and flood investigations at the  
21 meter. Please see testimony of Company witness David Johnson for additional details  
22 regarding the Company's Advanced Meter Infrastructure ("AMI") deployment.

1           **B.     Gas Distribution O&M**

2     **Q.     Please discuss the types of activities within the gas distribution O&M budget.**

3     A.     PSE&G conducts extensive gas O&M activities, including finding and repairing gas  
4     leaks on mains, services and customer premises; responding to emergency leak situations;  
5     responding to gas pressure problems; conducting leak surveys; performing construction  
6     inspections and meter inspections; maintaining, monitoring and controlling gas pressures on  
7     the system; and maintaining customer accounts, billing, metering, and appliance safety for all  
8     customers. Most field operation activities are mandated by the U.S. Department of  
9     Transportation, including activities associated with pipeline integrity requirements for  
10    maintaining our gas transmission lines. Other activities, such as research and development  
11    participation, training and continuing education, accounting, employee benefit management,  
12    information technology, standards development, and participation in industry operations  
13    forums are in direct support of safe and effective gas distribution system operation.

14    **Q.     What are the key drivers of gas distribution O&M?**

15    A.     The biggest drivers of the gas distribution O&M budget are the costs associated with  
16    (i) safety, (ii) measurement, (iii) gas mark-outs, (iv) inspections and surveys, and (v) mains  
17    and services maintenance. Test year expenditures for these categories are shown on Schedule  
18    PANEL-5(b) R-2. I will address them in turn.

19    **Q.     Please address safety costs.**

20    A.     The safety category includes the costs associated with the first response to inside and  
21    outside gas leaks, meter and heater inspections, and initial appliance repair diagnostic work.

1 The costs associated with these activities are largely dependent on weather conditions and tend  
2 to be higher in periods where the temperature is colder than normal.

3 **Q. Please address measurement costs.**

4 A. Measurement costs involve expenditures for the many meter-related functions  
5 associated with almost 1.9 million gas meters located in PSE&G's service territory. These  
6 functions include activating and deactivating meters; reading meters; disconnecting and  
7 reconnecting meters; meter inspections, repairing and maintaining meter sets; and flood  
8 investigations at the meter.

9 **Q. Please address gas mark-outs.**

10 A. The State of New Jersey requires that the location of underground utility installations  
11 be identified and marked out prior to work that involves any digging operation. Activities  
12 covered by this requirement include excavations or trenching, blasting, installation of tents,  
13 sign posts, or fence posts, and removing or planting of trees. Expenditures in this category  
14 have been trending upward since PSE&G's last base rate case largely because of an increase  
15 in the number of mark-outs, as well as an increase in costs of 2.8% per year (2019 – 2022) due  
16 to wage increases. For example, in 2023 mark-out costs were approximately \$19.2 million  
17 compared to costs of approximately \$17 million in 2019 and projected test year expenditures  
18 of over \$12.2 million.

19 **Q. Please discuss inspections and surveys costs.**

20 A. Expenditures in this category relate to the wide variety of surveys and inspections  
21 conducted on over 35,600 miles of gas mains and services and almost 1.9 million gas meters  
22 in PSE&G's service territory. Expenditures here include the costs associated with patrols,

1 inspections, and surveys to check and maintain the safety, reliability, and operational  
2 soundness of the Company's facilities, including mains, services, and inside and outside  
3 meters.

4 **Q. Please address mains and services maintenance costs.**

5 A. These costs include all maintenance of and repairs to mains, services, regulators, and  
6 cathodic protection of protected steel mains. Ongoing maintenance and repairs are needed to  
7 maintain the safety and reliability of the gas distribution system.

8 **C. Electric and Gas Distribution O&M Cost Control Efforts**

9 **Q. Please describe some of the efforts taken by the Company to manage electric and**  
10 **gas distribution O&M costs.**

11 A. Since the Company's last electric and gas base rate cases, various steps have been taken  
12 to help manage the Company's electric and gas distribution operating costs. While these costs  
13 relate to essential functions that are required to operate and maintain the electric and gas  
14 distribution systems, the Company continues to look for ways to maximize efficiencies and  
15 control operating costs.

16 As mentioned previously, the Company is aggressively replacing cast iron and  
17 unprotected steel gas main and services through its GSMP program. One of the many benefits  
18 of the GSMP accelerated replacement is the reduction in the number of leaks associated with  
19 leak prone pipes, which supports the control of O&M costs associated with leak response and  
20 management. Since the last rate case, the Company has experienced a downward trend in open  
21 leaks, cast iron main breaks, leak repairs, and leak repairs per mile.

1           The Company continually focuses on identification and implementation of efficient  
2 processes and technological improvements to control O&M costs.

3           For example, the Company has replaced obsolete paper chart pressure recorders at  
4 natural gas district regulator stations with electronic pressure recording devices. Every low  
5 pressure distribution system that is supplied by more than one district regulator is required to  
6 have at least one pressure recording device. The use of electronic pressure recording devices  
7 eliminates the costs associated with paper chart retrieval and maintenance. Electronic pressure  
8 recorders also have the added benefit of providing real-time alarms that can be sent to a  
9 computer or phone, as well as access to the data by multiple users through a secure online  
10 portal.

11           The Company sought to increase efficiency when conducting required leak detection  
12 surveys through the use of new technology solutions. The implementation and use of remote  
13 methane leak detectors (“RMLD”) effectively reduces the time required for service leak  
14 detection surveys, and improves survey efficiency. The Company’s Gas Appliance Services  
15 also implemented a new software to manage Appliance Service work orders. The software has  
16 the capability to automatically dispatch work orders to Appliance Service Field Technicians,  
17 significantly improving efficiency by reducing travel time and costs to customers’ premises.

18           Additionally, in an effort to reduce costs associated with training entry level apprentices  
19 and employees, the Company effectively negotiated with the unions to modify time-in position  
20 lock-in periods. Various entry-level Bargaining Unit positions now have a five-year lock-in  
21 period, ensuring that personnel do not transfer to another position within the Company in the  
22 first five years of employment. This new lock-in requirement has reduced the amount of  
23 training required for these positions, thus reducing the associated training costs.

1 Other savings initiatives that the Company has implemented include:

- 2 • Increased supplier pool and multi-year contracts for vegetation  
3 management;
- 4 • Optimized vehicle maintenance schedules;
- 5 • Enhanced training opportunities including e-learning curriculum;
- 6 • Reevaluation and optimization of Administrative staff;
- 7 • Minimized travel expenses for only essential/critical business meetings;
- 8 • Reevaluated and adjusted shift timing to reduce overtime;
- 9 • Instituted our Tech talk program reducing travel time and costs associated  
10 with appliance repair; and
- 11 • Re-evaluated facilities' needs to reduce unnecessary maintenance costs.

12 **D. Storm Restoration Costs**

13 **Q. You mentioned earlier that costs associated with storm restoration are among the**  
14 **major O&M costs incurred by the Company; could you briefly explain what types**  
15 **of costs are included as “storm restoration costs”?**

16 A. Storm restoration costs are the incremental labor, material, outside contractor, and other  
17 costs incurred by the Company to safely and efficiently restore customer's electric and gas  
18 service as quickly as possible after an interruption due to a Major Event, including but not  
19 limited to costs associated with extraordinary internal labor deployment, mutual aid  
20 contractors, tree trimming contractors, staging areas, pole fixtures, meals and lodging for  
21 restoration personnel, and communications with customers, emergency personnel and local  
22 authorities.

1 **Q. How does the Company currently recover storm restoration costs in rates?**

2 A. The prior rate case included a new regulatory asset consisting of the deferred  
3 incremental O&M storm costs incurred prior to and during the test year. These prior incurred  
4 storm costs are currently being recovered in rates. The Company is not recovering any deferred  
5 incremental storm costs incurred since the prior base rate case. The capital storm costs are  
6 included in net plant from the prior rate case.

7 **Q. How does the Company ensure that its storm restoration costs are reasonable?**

8 A. During the storm preparation phase, an analysis of the storm severity level and required  
9 staffing requirements is completed, and the optimized restoration resources are procured.  
10 Additionally, the restoration effort is closely monitored by senior leadership through multiple  
11 daily conference calls and real time operations data. These calls, coupled with real time  
12 restoration data, enable the efficient deployment of both internal and external resources to  
13 ensure that customers are restored in the safest, quickest and most cost effective manner  
14 possible.

15 **Q. Do the Company's books and records contain a regulatory asset for storm**  
16 **restoration costs incurred since the Company's previous rate case?**

17 A. Yes, the Company's books and records contain \$106.7 million for electric and \$4.0  
18 million for gas in a regulatory asset for incremental O&M costs related to Major Storm Event  
19 restoration. From 2019 through February 2024, a total of six storms occurred, two of which  
20 were named storms known as Tropical Storm Isaias (\$72 million O&M cost for electric) and  
21 Hurricane Ida (\$8 million O&M cost for electric and gas). The other four storms were the  
22 January 2024 Major Storm, February 2021 Snow Storms, the June 2020 Derecho, and the July  
23 2019 Major Storm.



1 **Q. Please explain why you believe that those deferred storm restoration costs were**  
2 **reasonably incurred to provide safe and reliable service to customers.**

3 A. PSE&G has a robust and disciplined approach to storm restoration which enables the  
4 Company to restore customers in a safe, efficient and timely manner after unpredictable and  
5 widespread severe weather event damage. This storm restoration approach and the Company's  
6 spending in support thereof has been reviewed by the Board and found to be prudent in the  
7 Board's September 30, 2014 order in BPU Docket Nos. AX13030196 and EO13070607. The  
8 incremental O&M costs we are now seeking recovery for was spent in a similar disciplined  
9 and efficient manner with the sole purpose of restoring our electric and gas customer's service  
10 as safely and quickly as possible.

11 **Q. Is the Company proposing to modify the way it recovers storm restoration costs**  
12 **in the rates established in this proceeding?**

13 A. Yes. As discussed by Company witnesses Mr. McFadden and Mr. Swetz, the use of  
14 deferred accounting coupled with an annual surcharge mechanism is the most appropriate  
15 means of recovering Major Storm event costs by protecting the Company from significant  
16 financial harm from major weather events outside its control as well as ensuring that customers  
17 only pay for actual prudently incurred costs.

18 **Q. Why is the Company proposing to change the way it recovers storm restoration**  
19 **costs?**

20 A. Adoption of a Major Storm Events cost recovery mechanism as proposed by the  
21 Company would allow for a prudence review of the deferrals and cost recovery within a  
22 reasonable time after they are incurred instead of reviewing all Major Storm Events that occur  
23 between rate cases at the same time. These interim rate proceedings will help the Company  
24 maintain its credit ratings as noted above (which have benefited customers) as well as prevent

1 any rate shock to customers that could arise if the Company were permitted to recover the costs  
2 of all post-test year events at the same time. Finally, the use of a surcharge provides a  
3 mechanism to stop the amortization when recovery of the deferral is completed. As a result,  
4 the Company is proposing that a new clause, “the Storm Recovery Charge” be created to  
5 recover the \$111 million in deferred storm costs increased since the last rate case as well as  
6 any future prudently incurred storm costs. For more details concerning the new clause, please  
7 see the testimony of Company witness Stephen Swetz.

8 **Q. Are you proposing any other change to the manner in which costs associated with**  
9 **major storm events are recovered from customers?**

10 A. Yes. Based upon the severity of weather forecasts, the Company sometimes prepares  
11 in advance for a storm by procuring and/or mobilizing contractor crews prior to the onset of  
12 adverse weather with the intention of deploying those crews to shorten the duration of customer  
13 interruptions. If the actual weather does not end up meeting the definition of a “major storm”  
14 the Company should nonetheless be provided an opportunity to recover prudently incurred  
15 “pre-staging costs” incurred to respond to potential storms. The Company proposes that under  
16 the Major Storm Events cost recovery clause that it is proposing it should be permitted to  
17 include recovery of pre-staging costs that exceed, in any instance, \$250,000. Permitting the  
18 deferral and recovery of such pre-staging costs will encourage the Company to prudently  
19 prepare for future storms to the benefit of all its customers.

20 **Q. Why does the Company believe that it is reasonable for the Company to recover**  
21 **pre-staging costs through its proposed storm restoration clause?**

22 A. PSE&G’s first priority is providing safe, efficient and reliable service to its customers.  
23 This commitment is tested during severe weather events, where efforts to ensure timely

1 restoration of service begin well before the first signs of severe weather enter our territory. In  
2 an effort to minimize delays in restoration, the Company must secure staging areas, materials,  
3 and mutual aid/contractor resources early on in the process, many times prior to any reported  
4 outages, depending on the severity of the weather forecast. This preparation is a critical step  
5 in the restoration process, and is undertaken in good faith that the reasonable expenses incurred  
6 will be recovered in the future.

7 **V. APPLIANCE SERVICE BUSINESS**

8 **Q. Please describe PSE&G's Appliance Service Business ("ASB").**

9 A. PSE&G has been providing appliance service since the 1920s, when the Company sold  
10 and serviced its own appliances and certified other appliances as safe. These services are  
11 currently offered as competitive services for customers in PSE&G's service territory in  
12 accordance with a tariff filed with the Board of Public Utilities ("Board"). These services  
13 include (a) Appliance Repair Service, (b) Maintenance Services, (c) Replacement Parts Service  
14 Contracts, (d) Water Heater replacement Service, and Central Heater and Central Air  
15 Conditioning ("HVAC") Replacement. The majority of the existing program work is  
16 performed utilizing PSE&G's workforce with the exception of the water heating replacement  
17 work, which is performed by contractors retained by the Company.

18 **Q. Does PSE&G's ASB function only provide competitive services?**

19 A. No. The majority of the work performed by the ASB function unit is non-competitive  
20 work that is part of PSE&G's regulated gas utility business. The bulk of regulated work  
21 performed by the ASB group involves emergency response (*e.g.*, responding to calls from  
22 customers about gas leaks and pilot odors) and gas appliance adjustment services. Technicians

1 also perform meter services (e.g., meter installations and replacements and turn on and shutoff  
2 services). These non-competitive services are an intrinsic part of PSE&G’s traditional utility  
3 business of distributing natural gas. There are no charges for customer requested regulated  
4 services, except for heating “turn on” charges and off cycle inspections.

5 **Q. What competitive services does PSE&G offer to customers through its Appliance**  
6 **Repair Service and Maintenance Services businesses?**

7 A. The Appliance Repair Service and Maintenance Services, also known as PSE&G’s  
8 “APSO” product line, are core services for the Company and align with the Company’s  
9 reputation as a safe, trusted and reliable provider of gas service. The APSO product lines  
10 covers, repair and the replacement of defective parts on specified appliances for residential and  
11 small industrial and commercial customers. Appliances covered by the APSO line include  
12 furnaces and boilers, central air conditioning, ductless mini-split heating and cooling  
13 equipment, water heaters, refrigerators, stoves, wall ovens, electric freezers, dishwashers,  
14 washers, dryers, pool heaters, gas grills, and gas fireplaces. APSO service work is performed  
15 by highly skilled PSE&G service technicians. APSO services are billed separately for each  
16 repair to customers utilizing the service based on a predetermined pricing schedule.

17 **Q. Please describe the Replacement Parts Service Contracts product line offered by**  
18 **PSE&G.**

19 A. Appliance-parts contracts, commonly known as WorryFree® Replacement Parts  
20 Service Contracts, generally cover the cost of the repair and replacement of specified parts on  
21 the appliances, including central house heating equipment, water heaters, electric central air  
22 conditioners, kitchen and laundry equipment, gas piping, gas fireplaces, rooftop heating  
23 equipment, electric rooftop and central air conditioners. WorryFree® service also includes,

1 where appropriate, the cost of labor, materials, and diagnostic time. PSE&G offers repair  
2 contracts and parts replacement through the WorryFree® program but does not sell new  
3 appliances at this time.

4 As with all competitive services, participation in the WorryFree® Replacement Parts  
5 Service Contract program is optional. Customers who utilize the WorryFree® Replacement  
6 Parts Service Contract program are billed for the service on their PSE&G Utility monthly  
7 statements.

8 **Q. Please describe the Water Heater and HVAC Replacement Service product line.**

9 A. The Water Heater and HVAC Replacement Service product line provides customers  
10 with reliable, premium replacement services for water heaters, central house heating, electric  
11 central air conditioning, and heat pumps. Through this program, PSE&G customers are able  
12 to select equipment that matches their requirements and have that equipment installed.

13 **Q. How are the costs and revenues associated with the ASB reflected in the**  
14 **Company's electric and gas rates?**

15 A. ASB net margin revenues are accounted for and allocated in accordance with N.J.A.C.  
16 14:3-3.6(r). Under this regulation, total gas margin from ASB revenues is treated above-the-  
17 line for rate-making purposes and is credited to customers. For electric ASB revenues,  
18 however, the regulation dictates that 50 percent of the total margins be recorded in competitive  
19 service revenue accounts and included above-the-line for ratemaking purposes and credited to  
20 customers. The remaining 50 percent of electric ASB margins may be recorded below-the-  
21 line and retained by the Company.

22 The revenues and expenses associated with the appliance service business are included  
23 in the income statement for the utility, specifically in the gas business. As a result, the net

1 above-the-line margin (revenue less expenses) from operating the appliance service business  
2 is credited to customers in base rates. In this current base rate case proceeding, the Company  
3 proposes \$48 million in ASB margin to directly offset the Company's revenue requirement to  
4 the benefit of customers.

5 **Q. Do any other utility companies in New Jersey maintain ASBs?**

6 A. No. All other utility companies in New Jersey have ceased to provide competitive ASB  
7 products and services. As such, PSE&G's ASB, and the associated ASB revenues included in  
8 the Company's revenue requirement are a unique benefit that PSE&G provides to its  
9 customers.

10 **Q. Is ASB a growing business for the Company?**

11 A. No. Although the Company provides appliance services to a significant number of  
12 customers, since 2020, virtually all of the Company's ASB products and services have  
13 experienced negative growth in terms of number of customers. In other words, the ASB market  
14 is saturated. At the same time, the Company's costs of providing the service have consistently  
15 increased due to largely unavoidable increases in cost items such as employee wages, benefits,  
16 and increases in material costs.

17 **Q. Is the Company proposing to change the way ASB revenues are treated for**  
18 **ratemaking purposes?**

19 A. Yes. The Company proposes that the Board grant a waiver of *N.J.A.C. 14:4-3.6(r)(4)*  
20 such that PSE&G is permitted to retain 50% of the total net margins associated with both gas  
21 and electric ASB services.

1 **Q. Why does the Company believe that this change is appropriate?**

2 A. The Company believes this change is appropriate for several reasons. First, the ability  
3 to retain a portion of margin revenues related to gas ASB products will provide a strong  
4 incentive to continue to provide ASB services, to continue to seek and implement efficiencies  
5 in the ASB business, and to seek opportunities for growth of the ASB business in an  
6 increasingly challenging marketplace.

7 **Q. How will this change benefit customers?**

8 A. This change will benefit customers because it will allow the Company to continue to  
9 its ASB business and, as a result, customers will continue to benefit from ASB margin revenues  
10 being reflected in the Company's rates as well as from the Company's continued presence as  
11 an ASB provider. As noted above, the inclusion of ASB revenues in rates is a unique benefit  
12 in the State for PSE&G customers. PSE&G believes the proposed adjustment will allow the  
13 Company to justify remaining in the ASB in an increasingly challenging marketplace.

14 **Q. Please explain the challenges that the Company's ASB is facing.**

15 A. The Company is grappling with external factors that have reshaped the appliance  
16 industry, resulting in declining or stagnant performance for ASB program revenues.  
17 Manufacturers for many appliances have begun emphasizing replacement of old or  
18 underperforming appliances with new equipment, rather than maintenance and repairs of  
19 existing appliances. This, in turn, has shifted consumer habits, creating a surge in demand for  
20 new appliances from manufacturers while slowing or reducing demand for the Company's  
21 ASB services. Warranties for these new appliances, as well as service programs offered by  
22 manufacturers, have further impacted PSE&G's ASB revenues.

1           In addition, cost inflation has negatively impacted ASB contract margin. Cost for  
2 replacement parts has increased in recent years, resulting in PSE&G raising contract prices to  
3 mitigate negative margin impacts. A strategy of regular price increases can drive higher levels  
4 of contract cancellations, eventually leading to declining margins.

5           Other macroeconomic and regulatory forces have also impacted the Company's ASB  
6 revenues. Homeownership in New Jersey has decreased from 69% in 2006 to 63% in 2023,  
7 resulting in a reduction of approximately 38,500 homeowners in PSE&G's service territory.  
8 This has impacted the number of potential customers for the ASB programs as homeowners  
9 are more likely to purchase ASB services. Additionally, the Company has been focused on  
10 reducing uncollectible account receivables since 2010 and has determined that it will not  
11 provide ASB services to customers with outstanding uncollectable balances in an effort to  
12 encourage collections.

13           The shift in economic factors and consumer habits present significant challenges to  
14 PSE&G's ASB business. If unaddressed, these factors pose a notable threat to the continued  
15 economic viability of the ASB programs, and the ASB revenues used for the benefit of  
16 customers.

17 **Q,    Has PSE&G made any effort to address the challenges faced by the ASB**  
18 **programs?**

19 A.    Yes. In an effort to maintain the revenue margins for the ASB programs, PSE&G has  
20 increased prices for ASB programs. Although these increases have helped to maintain revenue  
21 margins from the ASB businesses, this approach is not sustainable because higher prices



1 incentivize customers to opt for new appliance replacements instead of repairs, exacerbating  
2 the decline in customer contracts.

3 **Q. Is the Company considering any other modifications to its ASB offerings?**

4 A. Yes. The Company is considering expanding its ASB offerings to include new  
5 technologies and services, including but not limited to internal and external home electric  
6 system protection plans, home energy audits, home weatherization services, and electric  
7 vehicle (“EV”) charger installation and servicing. In the event that the Company determines  
8 to move forward with any new ASB services, it will comply with all regulatory requirements  
9 applicable to such services including, if necessary, filing a petition with the BPU for authority  
10 to offer such services. These new products and services may provide the Company the  
11 opportunity to generate additional ASB revenues to justify the continued existence of the  
12 program.

13 **Q. What is the potential effect of continuing the status quo with respect to the**  
14 **Company’s ASB?**

15 A. The current economics of the ASB impose considerable risks on the Company with  
16 prospects for limited improvement. Although the Company would like to maintain its ASB  
17 services, the Company cannot continue to engage in a line of business that is not economic.  
18 The closure of the ASB business would hurt both the Company’s customers, through the loss  
19 of ASB margin revenues and the availability of ASB services, and the State’s economy,  
20 through the loss of jobs provided by the ASB business. The Company believes that the changes  
21 discussed here will provide the ASB with the additional needed support to continue the  
22 business.

1 **VI. TRAFFIC CONTROL REGULATION**

2 **Q. Are you aware of any recently adopted regulations that would impact PSE&G's**  
3 **cost of service?**

4 A. Yes. On August 7, 2023, the New Jersey Department of Community Affairs adopted  
5 new regulations titled “Managing and accounting for outside employment of off-duty law  
6 enforcement officers.” These regulations created new requirements related to any entity’s  
7 utilization of off-duty law enforcement officers for purposes that include security and traffic  
8 safety control.

9 **Q. What are the new requirements for an entity that utilizes off-duty law**  
10 **enforcement officers?**

11 A. The new regulations require that the entity utilizing off-duty officers pay for such  
12 services in advance of such utilization, based on an estimate provided by the  
13 municipality/county employing those officers, and then requires the municipality/county issue  
14 a written statement within 30 days of such utilization, based on which that entity must resolve  
15 any outstanding balance. The new regulations also provide authority for a municipality/county  
16 to require that any entity employing off-duty law enforcement officers on a regular basis  
17 “maintain a minimum balance in the trust fund equal to the average amount paid to assigned  
18 off-duty law enforcement officers within a specified time period.” That regulation permits a  
19 municipality/county to cease providing off-duty officers if an outside entity does not maintain  
20 a minimum balance in a trust fund.

21 **Q. Does PSE&G rely on off-duty officers for security and traffic control?**

22 A. Yes. PSE&G employs trained and qualified personnel in the form of flaggers and off  
23 duty police officers to mitigate safety risks for its crews performing construction activities on

1 or around a roadway. In certain municipalities, it has been stipulated by the town that PSE&G  
 2 must use off duty police officers for Traffic Control services. Currently, PSE&G has 305  
 3 municipalities that provide off duty police officers for Traffic Control Services for work  
 4 performed in our service territory. The traffic control regulation applies not only to  
 5 municipalities or counties, but also a third-party entity if they are using them to manage traffic  
 6 control for them. As shown in the table below, the traffic control spend is significant and  
 7 continues to increase each year.

**TOTAL ACTUALS YEARS 2021-2023**

<b>LOB</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
ELECTRIC DIST.	\$ 26,107,888	\$ 32,323,891	\$ 45,341,413
ELECTRIC TRANS.	\$ 14,436,227	\$ 15,607,584	\$ 12,875,582
GAS	\$ 64,613,792	\$ 71,946,068	\$ 86,901,828
<b>Grand Total</b>	<b>\$ 105,157,907</b>	<b>\$ 119,877,544</b>	<b>\$ 145,118,823</b>

8

9 **Q. How does this regulation impact the Company’s cost of service and this filing?**

10 A. The new regulation will require the Company to maintain “working capital” type  
 11 balances with municipalities in order for the municipalities to have sufficient pre-funded cash  
 12 on hand from PSE&G to pay for the costs of the off-duty officers. This will have both a  
 13 working capital requirement on the Company’s cash flow as it will need to create and maintain  
 14 the required pre-funded municipal trust balances as well as an incremental administrative and  
 15 managerial costs compared to the test year to monitor the balances with each municipality.  
 16 Given the annual traffic control spend and the number of municipalities in the Company’s  
 17 service territory, the time and cost to monitor the pre-funded trust balances are expected to be  
 18 significant.

1 **Q. Is the Company seeking recovery of these incremental costs as a result of the**  
2 **regulation?**

3 A. Not at this time. As discussed in the testimony of Mr. McFadden, the Company is  
4 seeking to defer the incremental costs associated with this regulation for recovery of all  
5 prudently incurred costs in a future base rate case.

6 **Q. Does this conclude your testimony?**

7 A. Yes, it does.

## Test Year / Post Test Year Electric Capital Expenditures

in \$000

### Schedule - PANEL-2(a)

	<b>Test Year Total June 2023 - May 2024</b>	<b>Post Test Year Total June 2024 - Nov 2024</b>
Facilities Replacements	\$ 305,206	\$ 107,242
System Reinforcements	\$ 283,866	\$ 142,738
New Business	\$ 171,889	\$ 87,590
Environmental/Regulatory	\$ 11,615	\$ 6,565
Facilities Support	\$ 131,207	\$ 38,955
Energy Strong	\$ 154,427	\$ 20,665
IAP	\$ 124,088	\$ 75,966
AMI	\$ 244,910	\$ 80,555

## Test Year / Post Test Year Gas Capital Expenditures

in \$000

### Schedule - PANEL-2(b)

	<b>Test Year Total June 2023 - May 2024</b>	<b>Post Test Year Total June 2024 - Nov 2024</b>
Facilities Replacements	\$ 694,703	\$ 137,118
System Reinforcements	\$ 134,006	\$ 38,530
New Business	\$ 105,490	\$ 53,049
Environmental/Regulatory	\$ 22,147	\$ 11,220
Facilities Support	\$ 136,777	\$ 52,870
Energy Strong II	\$ 33,859	\$ 9,608
IAP	\$ 15,083	\$ 32,227
GSMP II Extension	\$ 30,421	\$ 262,980
<b>Total</b>	<b>\$ 1,172,487</b>	<b>\$ 597,602</b>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
CORRECTED 2020 FIRST QUARTER REPORT



PREPARED AND SUBMITTED BY  
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11 MAY 2021

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## Appendices

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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Advanced Metering Infrastructure .....	AMI
Allowance for Funds Used During Construction .....	AFUDC
Architectural and Engineering .....	A/E
Board of Public Utilities .....	BPU
Construction Management Association of America .....	CMAA
Construction Work In Progress .....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System .....	DERMS
Energy Strong 2 .....	ES 2
Environmental Protection Agency .....	EPA
Federal Emergency Management Agency.....	FEMA
Federal Energy Regulatory Commission.....	FERC
Gas Metering & Regulating .....	Gas M&R
Generally Accepted Accounting Principles.....	GAAP
Geographic Information System .....	GIS
Hazardous Water Operations and Emergency Response .....	HAZWOPER
Independent Monitor.....	IM
New Jersey Department of Environmental Protection .....	NJDEP
Open Systems International Inc. ....	OSII
Operations & Maintenance .....	O&M
Outage Management System.....	OMS
Project Execution Plan.....	PEP
Project Management Body of Knowledge.....	PMBOK
Project Management Institute .....	PMI
Project Management Office .....	PMO
Projects & Construction.....	P&C
Public Service Electric & Gas .....	PSE&G

Request for Proposals .....RFP  
Record of Decision ..... ROD  
Risk and Contingency ..... R&C  
Supervisory Control and Data Acquisition..... SCADA  
System Average Interruption Duration Index ..... SAIDI  
Utility Review Board ..... URB

## I. Executive Summary

The Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station lifecycle upgrades) and a gas component (overlapping with the Gas M&R subprogram).

Upon approval of the Stipulation, various planning efforts were initiated on the ES 2 Program through the end of 2019 and the first part of 2020. The planning led to certain projects moving forward into execution (primarily the recloser installations within the Contingency Reconfiguration subprogram and outside plant construction on two of the Electric Station Flood Mitigation projects). **Table 1 – ES 2 Subprogram Status as of March 31, 2020** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

*Table 1 – ES 2 Subprogram Status as of March 31, 2020*

Subprogram	Q4 2019 Spend	Q1 2020 Spend	Total Spend*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**
Electric Station Flood Mitigation	\$1,977,398	\$5,118,886	\$7,096,284	\$309,160,283	2%	Dec 2023
Contingency Reconfiguration	\$9,600,174	\$14,933,431	\$24,533,604	\$119,496,564	21%	Aug 2023
Grid Modernization – Communications	\$83,766	\$2,214,312	\$2,298,078	\$65,079,990	4%	Dec 2023
Grid Modernization – ADMS	\$36,213	\$925,689	\$961,902	\$40,375,128	2%	Dec 2023
Electric Stipulated Base	\$0	\$0	\$0	Under Development	N/A	Under Development
Gas M&R Station Upgrades^	\$52,406	\$235,922	\$288,328	\$65,621,877	0%	Jul 2023
<b>Total*</b>	<b>\$11,749,957</b>	<b>\$23,428,239</b>	<b>\$35,178,195</b>	<b>\$599,733,842</b>	<b>6%</b>	<b>Dec 2023</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 9** and **Table 15** for the Electric Station Flood Mitigation and Gas M&R project estimates with base costs and R&C shown.

\*\*-Final in-service date.

^-Includes both the ES 2 projects and the Stipulated Base gas projects.

As shown in **Table 1**, the Electric Stipulated Base component remains in a planning stage as of the end of the first quarter of 2020, with approval on the initial projects expected to occur during the second quarter of 2020.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Program Electric Station Flood Mitigation Status as of March 31, 2020**.

**Table 2 – ES 2 Program Electric Station Flood Mitigation Status as of March 31, 2020**

Project	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service Date
1. Academy Street	\$17,000,000	\$250,291	1%	10/25/2021
2. Clay Street	\$42,000,000	\$336,116	1%	1/26/2023
3. Constable Hook	\$5,300,000	\$69,647	1%	TBD
4. Hasbrouck Heights	\$18,000,000	\$343,727	2%	11/18/2022
5. Kingsland	\$10,000,000	\$212,398	2%	10/4/2023
6. Lakeside Avenue	\$36,100,000	\$321,167	1%	9/20/2023
7. Leonia	\$32,200,000	\$289,114	1%	12/2/2022
8. Market Street	\$30,000,000	\$2,189,906	7%	9/22/2021
9. Meadow Road	\$9,000,000	\$206,074	2%	9/21/2023
10. Orange Valley	\$26,600,000	\$173,611	1%	TBD
11. Ridgefield 13kV	\$25,500,000	\$523,271	2%	9/27/2022
12. Ridgefield 4kV	\$21,100,000	\$836,542	4%	6/30/2021
13. State Street	\$28,600,000	\$205,878	1%	9/23/2022
14. Toney’s Brook	\$19,700,000	\$327,687	2%	4/11/2023
15. Waverly	\$35,400,000	\$459,454	1%	12/7/2023
16. Woodlynne	\$19,400,000	\$351,400	2%	9/25/2023

As indicated in **Table 2**, the Market Street and Ridgefield 4kV projects are the only two projects to have actual spend beyond 2% of the total project estimate, which is reflective of these two projects being the only projects that have entered into construction.

While early in the subprogram, the Independent Monitor (IM) has found nothing to date that would jeopardize the ES 2 Program being completed on time and/or on budget.

The IM has conducted its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). Those standards require that the IM plan and perform the assessment to obtain sufficient, appropriate evidence to provide a reasonable basis for the IM’s findings and observations based on the IM’s objectives. To date, the IM has been provided access to PSE&G personnel and document records as requested by the IM during the execution of the independent monitoring. The personnel interviewed responded fully to every issue raised and questions asked by the IM. The findings contained within this initial report are based upon the oral interviews and documents provided by PSE&G. The IM finds that the information obtained provides a reasonable basis for the IM’s findings and observations.

The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On July 15, 2020, a draft report was presented and submitted to PSE&G, BPU Staff, and Rate Counsel, and on August 13, 2020 the draft report was reviewed with the same parties over teleconference. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the

draft report and the IM's response is provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2020 First Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Background

On June 12, 2018, Public Service Electric & Gas (PSE&G) filed a petition in support of the ES 2 Program, which sought to continue the progress made under the original Energy Strong Program as to improving the reliability and resiliency of its electric and gas systems. After a period of discovery, filing of testimony, evidentiary hearings, and settlement conferences, a Stipulation was reached on August 23, 2019 that established the agreed upon parameters of the ES 2 Program, including:

- Established the Energy Strong 2 Accelerated Rate Recovery Mechanism;
- Set the Program to be conducted from October 1, 2019 through December 31, 2023, with PSE&G having the ability to request an extension of the Program beyond this term;
- Defined the five subprograms that comprise the ES 2 Program, including the investment amounts:
  - Electric Station Flood Mitigation – \$389 million (and further identified the specific stations included and the anticipated mitigation method for each);
  - Contingency Reconfiguration – \$145 million;
  - Grid Modernization, Communication System – \$72 million;
  - Grid Modernization, ADMS – \$35 million; and
  - Gas M&R Station Upgrades (and further identified the specific stations) – \$50.5 million.
- Provided the ability for PSE&G to reallocate funds between electric subprograms:
  - Reallocations of 5% or less of the overall electric investment to be made immediately, with written notice required within 30 days of the change; and
  - Any reallocations over 5% allowing Board Staff and Rate Counsel a 15-day period to object before the change is implemented.
- Provided the ability for PSE&G to change the electric substation mitigation method from what was originally anticipated if the proposed change would reduce costs while achieving the same benefits or if permitting or other circumstances make it impossible or inappropriate to use the originally anticipate mitigation method;
- If the Electric Station Flood Mitigation subprogram is completed under the budgeted \$389 million amount, PSE&G may reallocate any remaining funds to stations identified in the filing for life cycle station upgrades for accelerated recovery;
- If the Electric Station Flood Mitigation or Gas M&R subprograms cannot be completed within their respective approved amounts, PSE&G may seek recovery of additional amounts in its next base rate case and any prudently incurred costs beyond the approved amount will be credited towards the baseline capital expenditure requirement (electric) or the stipulated base requirement (gas);
- Established the Stipulated Base, with \$100 million to be spent at PSE&G's discretion toward electric outside plant higher design and construction standards and/or electric life cycle subprograms identified in the initial ES 2 filing and \$50.5 million to be spent in completing the Gas M&R Station Upgrades specified in the ES 2 Program (and additional stations if the initial six stations are completed within the approved amount);

- Specified the reporting requirements for PSE&G’s quarterly reports to Board Staff and Rate Counsel; and
- Required PSE&G retain an independent monitor to review and report on the impact of the ES 2 Program on overall system performance during severe weather events; cost effectiveness and efficiency; appropriate cost assignment; and other information deemed appropriate by PSE&G, Board Staff, and Rate Counsel.

The Stipulation was approved by a September 11, 2019 BPU Order with an effective date of September 21, 2019.

**1. Energy Strong 2 Program Accelerated Rate Recovery Mechanism**

The ES 2 accelerated recovery roll-in schedule contemplates six rate adjustment periods, beginning with an initial filing on November 1, 2020 and continuing with annual or semi-annual filings through November 1, 2023. PSE&G’s planning has structured the ES 2 Program deliverables around these roll-in filings as shown in **Table 3 – ES 2 Program Roll-in Filings**.

*Table 3 – ES 2 Program Roll-in Filings*

<b>Roll-In Filing (initial filing)</b>	<b>Electric Station Flood Mitigation</b>	<b>Contingency Reconfiguration</b>	<b>Grid Modernization – Communication</b>	<b>Grid Modernization - ADMS</b>	<b>Gas M&amp;R Station Upgrades</b>
(1) Nov 2020		X	X		
(2) Nov 2021	X	X	X		X
(3) May 2022	X	X	X	X	X
(4) Nov 2022	X	X	X	X	X
(5) May 2023	X	X	X		X
(6) Nov 2023	X		X		X

*Note: Office-Level Schedule*

**2. Stipulated Base**

The Stipulation included Stipulated Base investments totaling \$150.5 million that are to be recovered through PSE&G’s next base rate case, provided the investments are found to be prudent. The \$150.5 million is split between \$100 million for electric outside plant higher design and construction standards and/or electric life cycle subprograms and \$50.5 million towards the completion of the Gas M&R station upgrades defined in the Stipulation (effectively meaning half of this subprogram is eligible for recovery through the ES 2 accelerated rate recovery mechanism, and half through PSE&G’s next base rate case).

**3. The Independent Monitor**

As set forth by the Stipulation, PSE&G was mandated to retain an independent monitor to review and report on the progress of the ES 2 Program. The scope of work established by PSE&G for the IM services expanded on the tasks identified in the Stipulation as follows:

1. Review and report on the impact of the ES 2 Program on overall system performance during severe weather events, including:
  - a. Whether any station with flood mitigation work completed goes out of service due to water intrusion from flooding or storm surge within the applicable Federal Emergency Management Agency (FEMA) Advisory Base Flood Elevation that the station is designed to withstand;

- b. Storm circuit System Average Interruption Duration Index (SAIDI) savings – customer outages and customer minutes saved due to increased sectionalization; and
  - c. System SAIDI savings – customer outages and minutes saved. To the extent there are no observable events to provide data during this construction time period or insufficient construction or completion of investments when such an event occurs, the IM shall analyze and advise on the reasonable anticipated performance of such events of the type the PSE&G system has experienced in the five years preceding the BPU Order effective September 21, 2019. In addition, the IM shall make any recommendations it deems appropriate to improve ES 2 investment performance during severe weather events.
2. Review and report on cost effectiveness and efficiency – such review shall include the contracting, procurement, permitting, oversight, and management of the projects, whether the work is performed and resulting costs are incurred by PSE&G personnel or outside contractors. Such review shall also include consideration of whether any change in electric or gas flood mitigation method or approach was appropriate. In addition, the IM shall make any recommendations it deems appropriate to improve the cost effectiveness and efficiency of the design, implementation, or operation of the ES 2 investments.
  3. Review and report on appropriate cost assignment – the IM shall determine whether the costs charged to the ES 2 Program are in fact costs properly attributable to ES 2 distribution investments that are part of the Program as approved by the BPU Order effective September 21, 2019.

Pegasus-Global submitted a proposal to serve as the IM on the ES 2 Program and was awarded the work under a contract executed on January 15, 2020. The commencement of the IM work was slightly delayed due to Covid-19 related impacts that delayed completion of the PSE&G required background checks and other administrative steps. The IM work was officially initiated with a kickoff meeting held with PSE&G on April 13, 2020. Since that time, the IM has submitted and received responses to numerous document requests and has held multiple interviews with ES 2 Program individuals, including each of the subprogram leads.

## **B. Key Decisions**

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this initial IM 2020 First Quarter Report are presented below in **Table 4 – ES 2 Program Records of Decisions**.

*Table 4 – ES 2 Program Records of Decisions*

<b>Subprogram</b>	<b>Record of Decision</b>	<b>IM Comments</b>
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in this IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in this IM 2020 First Quarter Report</i> )

**1. Electric Station Flood Mitigation – Academy Street & State Street Change in Mitigation Method**

On April 16, 2020, PSE&G notified the BPU of a change of mitigation for the Academy Street and State Street substations. For Academy Street the mitigation change was based on lower costs to rate payers, lower construction risk by constructing on a new site and flood risk reduction by moving the station out of the flood zone. The original Academy Street scope required the acquisition of additional property adjacent to the existing substation. PSE&G proposed to eliminate the Academy Street substation, transferring the load to a new Fairmount substation on property acquired under a separate project. The outside plant work required to convert existing Academy Street customers from 4kV to a 13kV supply will be funded under a separately approved base capital project, which will also fund connection to the new Fairmount substation.

In the same notification to BPU, PSE&G also notified the BPU that it would be changing the mitigation method of the State Street substation from a raise and rebuild to a relocation to Cooper Street. The State Street Substation was originally planned to be a raise and rebuild due to its location within the City of Camden flood zone. Since its original application of ES 2, the City of Camden has targeted the existing station for purchase by the City. The City further opposes any expansion of the substation due to its Waterfront Redevelopment Plan. Based on this opposition, PSE&G met with the City of Camden to discuss alternatives to address the need to remove the substation from the flood hazard zone.

Alternatives were investigated within a one-mile radius of the current State Street substation. However, given the Waterfront Redevelopment Plan, no substation development was permitted. Locating further away also presented construction challenges, in particular the boundary crossings with Interstate 676, NJ Light Rail Transit, and Cooper River. These crossings would have necessitated horizontal directional drilling at a cost between \$5-10 million and the reality of 12 circuits being routed further away from the load pocket which would decrease reliability.

A site was identified just outside the FEMA Flood Zone and the Waterfront Development Plan with sufficient space for buildout of a new station. The undeveloped parcel will also facilitate customer supply reliability as existing capacity can remain in service without contingency required with new existing 4kV circuits cut over to the new station at Cooper Station.

The original estimate for the State Street project was \$28.6 million (\$21.2 million base cost plus \$7.4 million for R&C); the new estimate with the relocation is \$45.1 million (\$37.1 million plus \$8 million R&C). The reason for the increased cost is because the new location will require extensive underground installation that was not included in the original scope including manholes and associated duct banks. The original estimate for the Academy Street project was \$17.0 million (\$12.6 million base cost plus \$4.4 million R&C); the new estimate is \$12.8 million (\$9.9 million base cost plus \$2.9 million R&C), which includes the costs related to the new 13kV switchgear at the Fairmount site outside of the flood zone and retiring the existing Academy Street site. The reason for the decreased cost is largely due to no longer needing a contingency to support customer supply during construction as originally planned.

On April 22, 2020, Rate Counsel responded to PSE&G's notice indicating it objects to the changes to the Academy Street and State Street substations without additional information and clarification on the changes. On May 22, 2020, PSE&G responded to Rate Counsel's request with additional information concerning the proposed changes to the Academy Street and State Street projects.



Findings & Observations:

- The changes in mitigation will:
  - Reduce risks during severe events
  - Reduce risk of customer interruptions associated with construction of a temporary facility to maintain supply during the re-build
  - Allow cutoff without disruption
- The IM finds that PSE&G conducted the appropriate due diligence once it was determined that the original plan and scope for the State Street and Academy Street substations was not going to be a viable option.
- The IM finds that while the cost for the revised State Street mitigation is higher than initially planned, PSE&G appropriately selected a location that minimizes the cost and reliability concerns that would have otherwise occurred had the relocation been further away than the approximate one mile radius.

**2. Electric Station Flood Mitigation – Engineering Support for Energy Strong Program Projects**

On August 22, 2019, PSE&G documented its decision to solicit external Architectural and Engineering (A/E) firms for ES 2 based on firms previously selected during the competitive bid process for the 69kV transmission upgrade project and/or due to work being performed by a particular A/E on a particular substation that is planned in the ES 2 scope of work.

Similar to the decision made in the original Energy Strong Program, PSE&G engaged the A/E firms that had existing 69kV design contracts to bid on the projects that were aligned with the relevant 69kV projects. All stations, including those relevant 69kV stations, were competitively bid as part of the vetting and selection process utilized by PSE&G. PSE&G's decision-making process evaluated the design configuration. Design configuration refers to processes and methods that assure that the latest approved revision of drawings and other design documents are available to those who need them. In addition, and equally important, is that all changes to those design documents are controlled to include the appropriate reviews, references, justifications, and approvals to assure that changes do not result in a design that no longer fulfills the original design requirements. PSE&G believes that in order to achieve this design configuration control, design work for inside the plant (the substation) should be awarded by this single source process to the design firm who are providing or will provide design services previously for that substation and to not go out for competitive bid on substation design work. This approach will add assurance that the design firm will be working from the latest approved drawings, which will further assure the integrity of the design.

In assessing this decision, the IM asked PSE&G whether this single source contracting strategy results in additional costs than it otherwise might in a competitive bid strategy. During the original Energy Strong Program, PSE&G shared with the IM the documents that support its decision for its single source contracting strategy in this area originally dated May 30, 2014, titled "Engineering Support for Energy Strong Program Projects," and updated on January 12, 2015.<sup>1</sup> The documentation identified the electric stations in the original Energy Strong Program and the design firms that will be asked to bid or have already bid. The firms are only awarded the design work provided the pricing in their proposals is consistent with the work scope and their proposals are otherwise acceptable.

<sup>1</sup> As discussed in the IM 2014 Annual Report (original Energy Strong Program), pp. 91-92

In ES 2, PSE&G's reasoning for the single source selection added that in addition to A/E firms that had or are currently working on a particular substation, that in its decision to meet or exceed PJM requirements in upgrading and improving the overall capacity and rehabilitation of its transmission lines, PSE&G is embarking on an upgrade to a portion of its existing 26kV line to 69kV to provide greater system reliability. As part of the transmission upgrade project, PSE&G issued Request for Proposals (RFP) to various A/E firms and based on a competitively bid process, selected a pool of three A/E firms to award the work. Based on this selection, PSE&G made the determination through its decision-making process to allow the same A/E firms that were selected through this competitive bid process to be awarded work on a specific substation. In addition, PSE&G retained the first right of refusal to complete engineering for some projects in-house versus awarding to an outside A/E firm based on the capabilities and resources available internally. PSE&G made the decision to perform engineering in-house for the following substation projects:

- Ridgefield 4kV
- Ridgefield 13kV
- Market Street
- State Street
- Meadow Road
- Kingsland
- Leonia

For all other work where an A/E is not performing work on a substation for the 69kV transmission project, PSE&G will choose the A/E firm from the top-rated vendors based on the bids received.

Three reasons are cited as to why this contracting strategy is critical to the success of the ES 2 Program:

1. These design firms have worked previously with PSE&G at other electric substations, thus developing a strong relationship with and knowledge of the PSE&G personnel and processes. These firms have the technical experience to do this work that will result in less operational and execution risks. These firms know the PSE&G engineering and construction standards, the outage planning process, and are knowledgeable of the PSE&G system and outage sequencing processes.
2. PSE&G's project execution practice is that multiple design firms cannot be working on the same station drawings at the same time, to avoid coordination issues and decrease the likelihood of commissioning, testing, and energization errors. Using design firms that are currently or will work at specific substations decreases the number of drawing conflicts (design configuration).
3. The engineering/design work traditionally accounts for a very small portion of a project's total cost, approximately 5%. Construction Management work is typically 2-3%. The majority of the cost (>90%) for projects of this nature is in the procurement of materials and the actual construction costs, which will both be competitively bid.

The August 22, 2019 documentation includes additional information that clarifies points that are relevant to PSE&G's single source contracting strategy for design work. The first is that PSE&G already has the competitively bid time and material rates for the design firms in the original 69kV portfolio, in addition to lump sum pricing on certain station options. Those rates will be compared to the rates these same three design firms include in their bid responses to the work inside the plant under the ES 2 Program to ensure no significant variances in the competitively bid rates. The second point is that PSE&G will perform an analysis of the differences between the competitively bid rates and the lump sum rates submitted for the ES 2 Program. This second point is an important commitment in that for every bid to perform design

work inside a substation under the ES 2 Program there will be an evaluation to ensure the costs are reasonable and support the overall execution of the Program.

Findings and Observations:

- The justification to award the engineering/design on specific Electric Station Flood Mitigation subprogram projects on a single source basis is appropriate and supports the overall cost objectives of the subprogram. The cost effectiveness of this decision is supported by the pricing analysis undertaken by PSE&G on the proposals received, including comparing against bids received in the 69kV portfolio.

## C. Program Management

### 1. Program Governance & Oversight

PSE&G established an organizational structure for the ES 2 Program that is similar to the model utilized for the original Energy Strong Program. The ES 2 Program's overall direction and oversight is managed by several key personnel, including:

- Danny Nembhard – ES 2 Electric & Gas Program Manager;
- Ed Gray – Director Electric Transmission & Distribution Engineering (electric program sponsor);
- Wade Miller – Director Gas Transmission and Distribution Engineering (gas program sponsor);
- Damon LoBoi – Senior Director, PSE&G Smart Operations Technology; and,
- Gino Leonardis – Project Director.

The program organization includes functional support from contract administration/procurement, the project management office (PMO), and legal/regulatory. The subprograms within ES 2 have been assigned leads, who are the technical leads for that subprogram and responsible for all aspects of their assigned subprogram, including engineering/design, procurement, construction, commissioning, and turnover to operations. The Leads for the ES 2 subprograms are as follows:

- Electric Substation Flood Mitigation/Lifecycle Upgrades – Christina Ker;
- Contingency Reconfiguration – Donald Gordon;
- Grid Modernization – Communication and ADMS – Al Balletto; and,
- Gas M&R – Charlie Miracola.

Additional discussion on the individual subprograms' organizations is provided within **Section III** for each of the subprograms.

In addition to the above subprogram leads, Nicole Severt is the PMO Manager and provides support for the entire ES 2 Program Electric Program. Sonia Zacher-Martini provides similar PMO support for the ES 2 Gas. Ayo Fapohunda is the PMO Project Control Manager responsible for program reporting. The PMO provides support to the ES 2 Program in a variety of ways including:

- Managing, supporting, and compiling internal and external program status reports;
- Developing monthly cost and schedule project forecasts;
- Preparing interim reporting and variance explanations;
- Managing all schedule and financial tasks (e.g. schedule updates, purchase orders, invoices, accrual management, etc.); and,
- Monitoring and controlling installation completion records, work orders, in-service dates, etc.

Findings & Observations:

- PSE&G has established an effective organization to lead the implementation of the ES 2 Program that includes well-qualified and experienced individuals. The Program is also supported by a PMO and other functional groups (e.g. licensing and permitting, legal, procurement, etc.) to facilitate successful execution.

**2. Projects & Construction**

The Projects & Construction (P&C) group is responsible for executing large capital projects within PSE&G, which for the purposes of ES 2 includes the projects under the Electric Station Flood Mitigation and Gas M&R subprograms.

Two primary references manuals utilized by the P&C group are *RM-01 Project Controls Engineering* and *RM-02 Project Controls Scheduling*. These reference manuals provide the framework and methodology by which P&C projects are supported by Project Controls Engineers/Project Controls Schedulers, from project initiation through closeout. Each of these references manuals is exceptionally detailed, walking through the required project components for each of the project phases, establishing the applicable methodologies to be used, and providing instruction on how to apply such practices and methodologies within PSE&G's internal systems.

The P&C group also relies on a set of Project Management Procedures to provide the necessary guidance and requirements in elements of project management such as scope management, cost estimating, risk management, and status reporting, among others. The procedures are intended to be adaptable for projects of different sizes and complexity and as such, has different thresholds for projects; for example, the projects under \$5 million do not require a full Project Execution Plan (PEP), but instead utilizing a project execution strategy summary that contains information pertaining to scope, schedule, estimate, and other relevant information. A review of this set of procedures is provided as follows, with more detailed examples of the individual functional areas provided in the detailed project discussions under **Section III.A.**, the brackets next to the procedure name identify the specific project where the implementation of the procedure was reviewed and discussed.

PMP-01 – Project Execution Plan: Establishes the guidelines for developing a PEP for new projects and conducting periodic reviews of the Project Team's execution strategy. The PEPs developed for new projects consist of three primary parts: project charter; scope management and control plan; and project management plans. Each of those primary parts may contain several component sections, for example, the project management plans include a project estimating plan, project scheduling plan, project risk management plan, and other functional plans to support the execution of the project.

PMP-02 – Scope Management [Hasbrouck]: Establishes the guidelines for scope development, using a phased approach for electric projects, from feasibility, to turnover, to study, with each stage leading to a more refined scope. The gas projects scope development is initiated from the high-level requirements from a request for estimate, which leads to the development of a detailed scope. With agreement from the Project Team and key stakeholders, the scope document is locked as the final approved scope for the project. During execution of a project if scope changes are identified, a project scope change request (if no additional funding beyond the currently approved budget is required) or a capital project change request and capital funding change form (if additional funding is required) is completed and reviewed for approval by the Project Manager, Director – Projects, and other key stakeholders as warranted.

PMP-03 – Project Estimating [Market St.]: Establishes the process for developing and reviewing estimates, with specific applicability to capital projects in excess of \$5 million or any blanket project under \$5 million for which an estimate has been requested. The estimating process used a phased approach, beginning at the feasibility/turnover, or “office” stage (representing a confidence level of 15%-40%) and continuing through the study stage (50% confidence level), conceptual stage (70% confidence level), and ultimately the definitive stage (90% confidence level). In developing an estimate, estimate checklists are followed to ensure completeness and uniformity. When completed, the estimate is subject to review and challenge sessions and once specified criteria are met, a target budget is established that is utilized as a measure of the project’s success.

PMP-04 – Project Scheduling [Kingsland]: Establishes the methodologies for developing, reviewing, and approving project schedules for capital projects. It is applicable to capital projects over \$1 million in cost and blanket projects under \$1 million that may require schedules upon specific requests at designated levels. Industry standard schedule fundamentals such as ensuring the schedule is inclusive of all work and consistent with the work breakdown structure, that it is developed with consideration of available and required resources and internal or external constraints, and that it is maintained throughout the project to measure performance are listed for adherence in developing schedules. As with the other project management functions, project scheduling occurs in a phased approach that increases with detail as the project moves from initiation through approval.

PMP-05 – Project Authorization [Academy]: Establishes the process for obtaining project funding authorization, change requests, and financial project closeouts on capital and blanket projects managed by P&C. It walks through the different project development phases, from approval for preliminary engineering funding, through authorization and phased funding (if applicable), through managing change requests, and ultimately project closeout. The requirements at these different phases are largely dependent on the deliverables created through other project management procedures (e.g. cost estimate, schedule, etc.).

PMP-06 – Invoice Management [Ridgefield 13kV]: Establishes the process for reviewing and approving vendor or contractor invoices on capital and operations & maintenance (O&M) projects. It provides a review of typical invoice contents and notes the delegation of authority levels of approvals by dollar value, including the responsibilities tasked to those with approval authority. It also provides a responsibilities guideline that details by project function (e.g. contracting, licensing, and permitting, engineering, etc.) how invoices are typically received, where the accounting or services verification takes place, and who is responsible for processing the invoice. The invoice validation process is defined by a seven-step process that includes verification of: schedule, quantity, quality, pricing, sales and use tax, mathematical accuracy, and documentation.

PMP-07 – Quality Assurance and Control [State St.]: Establishes the standards that ensure P&C products and services comply with quality requirements, codes, and applicable specifications. It includes individual requirements for inside plant electric, outside plant electric, and gas projects, as well as by project phase (e.g. engineering, procurement, construction, etc.). The degree of applicability dependent on project-specific factors (e.g. cost, risk, contracting strategy, etc.) with the Project (or Program) Manager responsible to assess and define the project-specific requirements.

PMP-08 – Project and Contractor Safety [Market St.]: Provides assistance to the P&C Project Teams in carrying out health and safety management of construction projects and is applicable to all P&C projects. It details the purpose and functions of the P&C Project Safety Management Program, which is intended to ensure continuous and controlled safety management between P&C and project contractors. The

procedure also outlines the requirements for safety management plans and site-specific health and safety plans, evaluating and pre-qualifying contractors, oversight, training, and other aspects of ensuring effective safety practices.

PMP-09 – Contract Administration [Toney’s Brook]: Establishes the process for development, award, administration, and closeout for material, professional, and construction services contracts managed by P&C. It is structured around those four-phases of the contract lifecycle and provides key activities and responsibilities associated with each of these phases. It also details the change control process utilized on these types of contracts and the process for qualifying new vendors to ensure they meet PSE&G’s standards.

PMP-10 – Project Construction Oversight [Ridgefield 4kV]: Establishes the process for P&C to ensure that all project work is completed in full compliance with the scope, plan, budget, schedule, and any contractual obligations. It provides a framework that identifies the oversight requirements by functional area (e.g. schedule and cost, labor workmanship, quality, safety, etc.) noting the process and requirements under each area.

PMP-11 – Project Risk Management [Woodlynn]: This procedure establishes the process of identifying, assessing, monitoring, controlling, and reporting project risks. It provides direction and responsibilities to each of those risk management aspects and is scalable based on the size and complexity of the project, with full implementation required for projects over \$5 million. The procedure also explains the common risk management tools utilized in project management including the project risk register and risk management plan.

PMP-12 – Materials Management [Kingsland]: This procedure establishes the requirements for management of materials and equipment, including receiving, identification, handling, storage, maintenance, inspection, and management and control. Proper materials management supports improved productivity, reduces materials surplus, supports the project schedule, and can achieve cost savings. The procedure also includes the actions and responsibilities for treatment of removed equipment in demolition projects.

PMP-14 – Status Reporting [Academy]: This procedure establishes the requirements for producing, reviewing, and managing status reports for all P&C-managed projects. Actions and responsibilities are noted for the production of accurate and timely status reports. It also includes a description of the various types of status reports that may be generated depending on the project type and needs of stakeholders (e.g. portfolio status report, monthly variance explanation report, project closeout report, monthly cost reports, etc.).

PMP-15 – Inside Plant Commissioning [Ridgefield 13kV]: This procedure provides the requirements for inside plant commissioning, testing, and startup activities to ensure all project work is completed in full compliance with the required specifications. It is adaptable in scope to match the size and complexity of the individual project, with general concepts typically applied to all projects. The procedure covers all aspects of startup and commissioning, beginning with the planning phase, carrying through to scheduling requirements and actual project commissioning actions.

PMP-16 – Environmental Management Plan [Hasbrouck]: This procedure establishes the requirements for developing a project-specific environmental management plan to ensure compliance with applicable land use and environmental regulations. The requirements are aligned with the primary project phases (initiation, preliminary engineering/design, detailed engineering/design, construction/testing and

commissioning, and closeout/completion) and begins with development of a permitting matrix that defines all major regulatory permits required and the timeframes associated with obtaining them.

Findings & Observations:

- The P&C policies and procedures provide the project teams with the appropriate guidance to execute the projects under their responsibility. This set of policies and procedures is based on a foundation of project management practices that are aligned with industry standards.

**D. Cost Assignments**

In order to monitor PSE&G's compliance with cost accounting-related provisions of the Stipulation, the IM reviewed the Company's policies and procedures with respect to the relevant accounting practices. PSE&G's (the regulated utility) accounting practices are subject to Generally Accepted Accounting Principles (GAAP), as well as Federal Energy Regulatory Commission (FERC) practices and relevant instructions as contained in the Uniform Systems of Accounts. In addition, the company is subject to Financial Accounting Standards Board pronouncements as they relate to rate regulated entities, and practices accepted and/or mandated by the BPU. Finally, the Company is subject to the Sarbanes-Oxley Act of 2002, and specifically here, section 401, as it relates to accurate recording of fixed asset values. Collectively, this documentation provides the guidance needed to ensure proper accounting treatment.

Although interviews with the appropriate Accounting personnel are being scheduled, the IM, through its review to date of the Company's relevant accounting policies, has gained a general understanding of the Company's accounting practices that have bearing on the ES 2 Program. The IM began with a review of *Accounting Services Practice 630-4* regarding journal entries. This was done to ensure a procedure exists that supports the accuracy, timeliness and validity of the fundamental accounting information that is entered into the general ledger from which financial, cost, and other important business information is ultimately retrieved. Practice 630-4 covers proper accruals, required journal entry documentation, necessary review and approvals, and timely posting. The practice document is clear and comprehensive.

There are a number of general accounting areas the IM will be monitoring on a consistent basis arising from the provisions of the Stipulation. The IM has reviewed whether these areas are covered by specific policies beyond guidance promulgated by GAAP, FERC instructions, and BPU-approved accounting treatments. These general areas, along with subsets, are described below:

Proper Capitalization of ES 2 Program Project Costs: Proper capitalization of costs covers considerations ranging from when initial capitalization should begin as costs are recorded in Construction Work In Progress (CWIP) accounts, to the ultimate transfer of costs to plant-in-service for financial accounting and ratemaking purposes. The IM has reviewed the existence of documentation for each stage in this process, as noted below:

- Most projects begin with preliminary investigative work and feasibility studies before presentation to the relevant committees in the Company's capital approval process. When and under what circumstances these costs are capitalized or expensed is covered by *Accounting Practice 650-16, Practice for Use of Account E183*. To qualify as eligible for capitalization, project costs must, among other things, be approved as potentially part of the Company's long-term plan or mandated by regulators and proceed along a path in the capital approval process. If the project is denied at any point, costs are expensed. When the project is ultimately approved, costs incurred are journaled to a CWIP capital account. The account where pending costs are held is reviewed and approved quarterly for disposition. *Capitalization and Related Policies for*

*PSE&G, 650-3*, covers on-going criteria for capitalizing fixed asset costs, including differentiation of costs to be capitalized vs. expensed, as well as guidance on depreciable lives once costs are transferred to plant-in-service. Projects will be charged to or transferred into CWIP if they exceed \$5,000 and take in excess of 60 days to complete, among other parameters. This also begins the capitalization of allowance for funds used during construction (AFUDC).

- Additional on-going cost capitalization guidance is also covered by Company *Property Record Unit Manual Policies GI-6, GI-7 and GI-8*. These documents provide further guidance on capitalization vs. expensing of costs incurred. Additionally, in cases where these policies do not specifically address aspects of a proposed capital project, the Company's *Sarbanes-Oxley Control FA005* requires a written determination from the Utility Property Accounting area.
- Once a project is substantially complete and ready for its intended use, or otherwise energized and carrying load, and/or considered used and useful, it is transferred out of CWIP to plant-in-service. This procedure is covered by *Accounting Practice 650-10, In-Service Transfers*. The responsible operating department notifies the Property Accounting department of the in-service date, and actual costs plus trailing costs are added to plant-in-service. AFUDC also ceases. This is the normal progression for accumulation and disposition of project costs.
- Finally, *Retirements and Transfers of Property, Practice 650-11*, gives additional guidance and sample journal entries for transfers and retirements of utility plant. The appropriate costs will be credited to depreciation reserve and debited to depreciable plant. As a result, no gains or losses will be recorded in the retirement of utility plant.

The IM will be monitoring the proper capitalization of costs (capital vs. expense), recordation of costs as ES 2 Program distribution costs, and the Company's CWIP accounts and asset transfers to plant on an on-going basis for compliance with proper accounting treatment of ES 2 Program expenditures.

Allocations of Overheads and Surcharges: The IM is in the process of scheduling interviews with appropriate personnel to discuss the area of allocations; however, due to its work in Energy Strong I, the IM has some familiarity with many of the Company's cost allocation policies and methodology as they are contained in its *Cost Accounting Manual, 660-1*. The Company follows a philosophy of allocating costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit based on either fully loaded hourly rates multiplied by the number of hours spent, or through a transactional count multiplied by a predetermined unit cost. Where direct charging is not possible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order issued in July 2003.

Cost allocations are performed automatically at each monthly closing within the Company's SAP system. SAP is an enterprise planning, accounting, and reporting software system. It is module-based, and the Company uses it as its system tool for general ledger, finance, and accounting/control (but not fixed assets).

The Stipulation requires the Company to follow its current practices with regard to capitalized overheads and calls for separate disclosure of allocation amounts in each rate adjustment filing. Based on work to date, the IM believes that the ES 2 Program should not create any changes to the Company's allocation methodology. Further, the IM anticipates that most allocated costs for ES 2 projects will come from



utility, rather than Service Company, cost pools. These expectations will be verified in interviews with Company personnel and will be tested when formal audits of the ES 2 Program commence.

Costs of Removal (COR), Net of Salvage: The Stipulation calls for separate disclosure of COR in each rate adjustment filing. The IM will be reviewing and disclosing charges to COR arising from the ES 2 Program.

Proper accounting treatment for costs of removal is detailed in *Capitalization and Related Policies for PSE&G, 650-3*. While the Stipulation does not directly address the accounting treatment of COR, PSE&G's historical accounting for these costs reflects their potential inclusion as capitalized costs under certain prescribed circumstances, along with amortization of costs of removal to the extent they are reflected in depreciation rates (or, in the case of gas assets, through an annual fixed amortization amount). The IM notes that the Company proposed a different method for recovery through depreciation expense of COR, or net salvage, in its last base rate filing (ER18010029 and GR18010030). The Company proposed to change the method of recovery for net salvage from its then-current five-year amortization method to what is known as the traditional method. This change was not reflected in the rate case stipulation, although new depreciation rates were adopted. The IM will discuss the effects of this change, if any, on accounting for COR in its interviews with Company personnel.

The IM intends to disclose gross COR in its periodic reporting but will track salvage values as well for accounting and ratemaking reconciliation purposes.

Allowance for Funds Used During Construction: The Stipulation permits recovery of AFUDC on ES 2 Program projects without regard to the maximum \$691.5 million of costs eligible for recovery under the accelerated rate mechanism. In addition, the Stipulation states accrual of AFUDC should be calculated using the same methodology used for other distribution assets and consistent with Company policy. AFUDC should be calculated as permitted in FERC Order 561, which includes compounding on a semi-annual basis. The IM will be reviewing and disclosing both the amounts of AFUDC accrued and the Company's calculations of the AFUDC rate on an on-going basis. The IM will also monitor the initial recording and ultimate cessation of AFUDC with regard to projects within the ES 2 Program.

Guidelines for capitalization of AFUDC are provided by the Company's *Accounting Practice 650-9, Allowance for Funds Used During Construction and Rate Calculations*. The procedures therein define eligible projects, initial recording, the ultimate cessation of AFUDC, and the rate calculation formulas. Although the rate is determined annually, the Company historically has periodically recalculated and examined the AFUDC rate for material changes. An interim rate adjustment may occur if the recalculated rate deviates from the current rate by more than 25 basis points.

The Company's practices with respect to AFUDC are in accordance with Electric/Gas Plant Instruction 3(17) of the FERC's Uniform Systems of Accounts prescribed for public utilities (formerly FERC Order 561).

#### Findings & Observations:

- In review of PSE&G accounting practices, the IM has not discovered anything thus far in PSE&G's accounting for ES 2 Program projects that is in contravention of GAAP, FERC regulations, or any other known policy or practice.

**1. Costs of Removal (COR)**

COR generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 5 – ES 2 Program Costs of Removal as of March 31, 2020** below itemizes the charges to COR for the first quarter of 2020, the fourth quarter of 2019 and total ES 2 Program COR to date. These amounts do not reflect any salvage value reductions, which have been zero in the ES 2 Program through March 31, 2020.

*Table 5 – ES 2 Program Costs of Removal as of March 31, 2020*

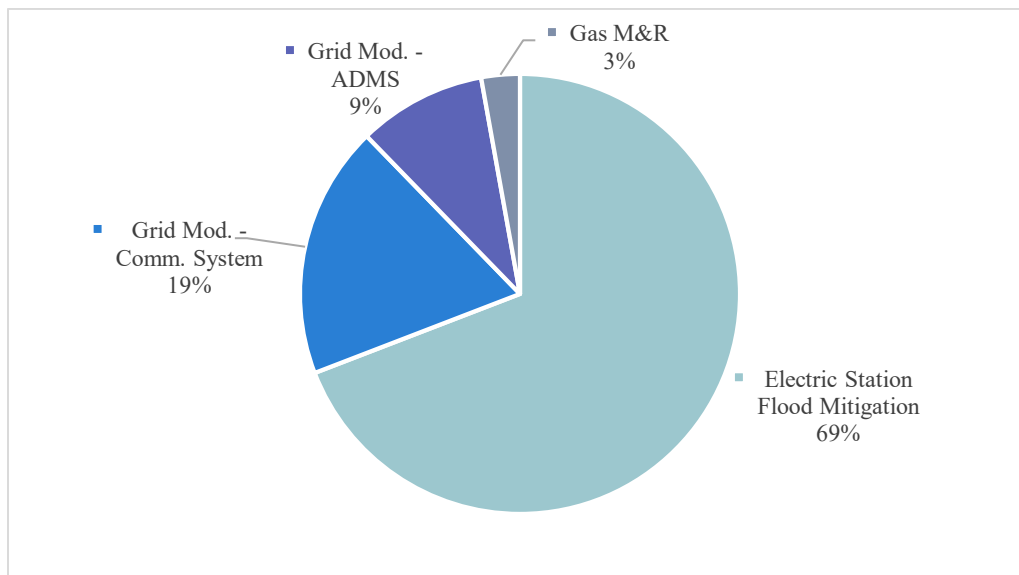
Subprogram	Q4 2019 COR	Q1 2020 COR	Total COR
Electric Station Flood Mitigation	\$0	\$67,332	\$67,332
Contingency Reconfiguration	\$431,030	\$616,752	\$1,047,782
Grid Modernization – Communications	\$0	\$0	\$0
Electric Stipulated Base	\$0	\$0	\$0
Gas M&R Station Upgrades	\$0	\$0	\$0
<i>Total</i>	<b>\$431,030</b>	<b>\$684,084</b>	<b>\$1,115,114</b>

For the first quarter of 2020, Electric Station Flood Mitigation subprogram COR charges are attributed to the conversion of 4kV circuits at Market Street substation. Contingency Reconfiguration COR charges reflect work on the recloser replacement efforts in all districts.

**2. Construction Work-in-Progress (CWIP) & In-Service Transfers**

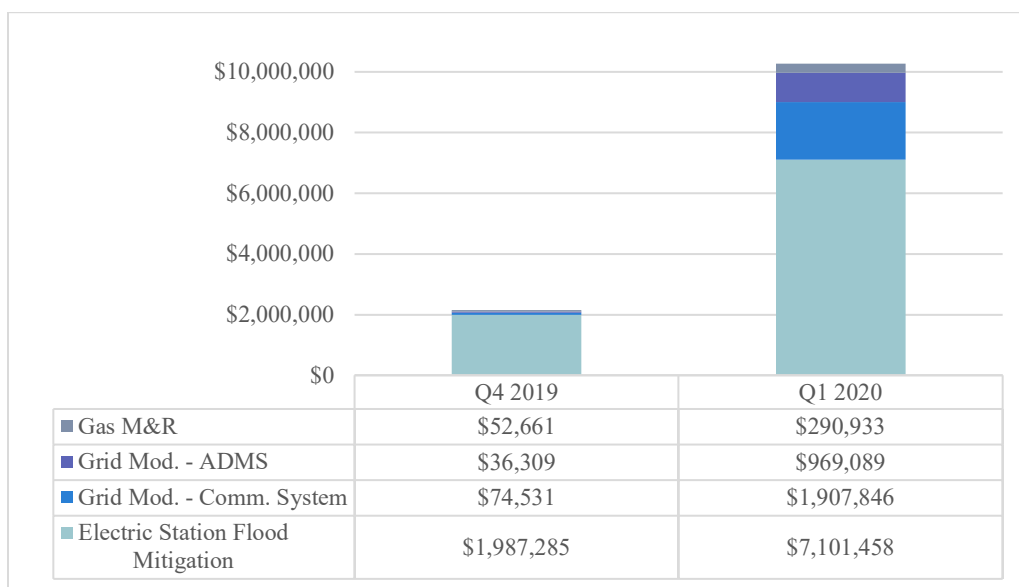
As of March 31, 2020, the ES 2 Program CWIP balance was \$10.3 million, compared to \$2.2 million as of December 31, 2019. The three largest components of March 31, 2020 CWIP were the conversion of circuits at Market Street and Ridgefield substations, and design and contract work at Waverly substation. The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 Program CWIP as of March 31, 2020** below.

**Figure 1 – ES 2 Program CWIP as of March 31, 2020**



In addition, **Figure 2 – ES 2 Program CWIP Balances by Subprogram** below depicts the composition of end-of-quarter CWIP balances by subprogram for both the fourth quarter of 2019 and the first quarter of 2020.

**Figure 2 – ES 2 Program CWIP Balances by Subprogram**



There have been no transfers to date from CWIP to plant in-service.

**3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each ES 2 Program subprogram during the first quarter of 2020, the fourth quarter of 2019, and total ES 2 Program AFUDC accrued to date, is shown below in **Table 6 – ES 2 Program AFUDC**.

*Table 6 – ES 2 Program AFUDC*

<b>Subprogram</b>	<b>Q4 2019 AFUDC</b>	<b>Q1 2020 AFUDC</b>	<b>Total AFUDC</b>
<b>Electric Station Flood Mitigation</b>	<b>\$9,887</b>	<b>\$62,618</b>	<b>\$72,505</b>
<b>Contingency Reconfiguration</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Grid Modernization – Communications</b>	<b>\$225</b>	<b>\$14,572</b>	<b>\$14,977</b>
<b>Grid Modernization - ADMS</b>	<b>\$96</b>	<b>\$7,092</b>	<b>\$7,188</b>
<b>Electric Stipulated Base</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Gas M&amp;R Station Upgrades</b>	<b>\$254</b>	<b>\$2,590</b>	<b>\$2,844</b>
<b>Total</b>	<b>\$10,462</b>	<b>\$87,052</b>	<b>\$97,514</b>

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2020, the new AFUDC rate was calculated to be 6.95%, using the capital structure and component costs as of January 31, 2020. This rate is higher than the 2019 rate of 6.34%, primarily due to a significantly lower average short-term debt balance during the first quarter of 2020, with its lower associated component cost relative to the cost of equity and embedded cost of long-term debt. In calculating the 2020 AFUDC rate, the Company used (i) a 4.02% embedded cost of long-term debt, (ii) a short-term debt rate of 1.86%, and (iii) a cost of equity of 9.60%.

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the first quarter of 2020, based on data as of March 31, 2020, the recalculated weighted average AFUDC accrual rate (6.95%) did not meet this criterion to warrant changing from the annual rate (6.95%) in effect. Therefore, AFUDC was accrued during the first quarter of 2020 at the calculated rate of 6.95%.

AFUDC accrued for ES 2 Program projects during the first quarter of 2020 increased significantly over AFUDC accrued during the fourth quarter of 2019 as the result of the large increase in total average CWIP balances.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to first quarter 2020 ES 2 Program project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these ES 2 Program projects. The IM will continue to review future ES 2 Program AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

## **E. System Performance**

From the commencement of the ES 2 Program through the end of the first quarter of 2020, there have been no Major Events. The IM has additionally requested and received baseline circuit performance metrics from the prior five-year period to help facilitate its analysis of PSE&G’s system performance.

### III. Project Status

#### A. Electric Station Flood Mitigation

The Stipulation established the 16 electric stations that comprise the Electric Station Flood Mitigation subprogram and included an identification of the anticipated mitigation method for each station, with 14 identified with raise and rebuild and two identified with elimination as the preferred mitigation method.

The Electric Station Flood Mitigation subprogram is led by Christina Ker, with the subprogram organization split between standalone stations (Market Street, Leonia, Ridgefield 4kV, Ridgefield 13kV, Waverly, and Constable Hook) and stations that are aligned with 69kV projects (Woodlynne, State Street, Academy Street, Clay Street, Hasbrouck Heights, Meadow Road, Lakeside Avenue, Toney's Brook, and Orange Valley). For the standalone stations, there are three project managers assigned to the six stations; and for the stations aligned with 69kV projects, there is a Division Lead overseeing projects within their respective Division to whom project managers report.

The projects aligned with 69kV projects are treated as separate projects but utilized a common project team. This benefits the ES 2 Program as it allows cost sharing rather than having entirely separate project teams, in addition to benefiting from a common team that has intimate familiarity with any interdependencies between the projects. Other benefits realized by these 69kV-aligned projects include: having a common site plan submitted to the municipalities for review (if the 69kV project has not already started); sharing leased laydown space; and, from having the 69kV construction start first (providing more information on below grade condition and water table levels).

Each of the projects within the subprogram is governed by a PEP and the IM has reviewed all the PEPs developed to date (some of the project PEPs are still in development), finding them to be robust documents that contain all the required information and will be an effective tool in managing and monitoring the projects' execution. Rather than repeat all the information contained in the PEP for each project, the IM has provided selected commentary on different functional areas for the individual projects as discussed in the specific project subsections that follow.

Licensing and permitting on the Electric Station Flood Mitigation projects is managed by a dedicated licensing and permitting manager assigned to each project, who interfaces with the project team, develops a permitting matrix for each project, and is responsible for obtaining the necessary permits. Public outreach on the projects is handled by PSE&G's public outreach group, who informs public stakeholders of relevant project information, answers questions from the public, and holds public workshops as needed.

The subprogram was initiated following approval of the ES 2 Program on September 11, 2019. PSE&G then held a kickoff meeting with its internal stakeholders on October 10, 2019. This internal kickoff meeting reviewed all 16 projects in the Electric Station Flood Mitigation subprogram. The planning process has been more integrated on the ES 2 Program than in the original Energy Strong Program, including centralized work planning and scheduling and a more robust front end planning effort that supported a more thorough stakeholder review, which should help limit scope changes, design layout issues, and similar challenges. Shortly after the subprogram kickoff meeting, the process to bid out major equipment and A/E support needed for the subprogram was initiated, and through the end of the first quarter of 2020, work continued to advance based on the anticipated schedules for each of the projects. Relative to Covid-19 impacts, to date there has been minimal disruption to the subprogram, with the primary change being in-person meetings transitioning to virtual settings. In addition, construction on the

Ridgefield 4kV project had a one-day stoppage from the local municipality stopping all work in response to Covid-19 (which was followed one day later by a directive from the Governor that allowed utility work to resume). A summary of the subprogram plan as of the end of 2019 and as of March 31, 2020 is provided below in **Table 7 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule**.

**Table 7 – ES 2 Electric Station Flood Mitigation Milestone Schedule**

Project	Plan Status Point	2019		2020				2021				2022				2023				2024		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS		CO							
	Mar. 2020		<u>KO</u>					C			IS			CO								
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																				
	Mar. 2020			<u>KO</u>															IS			CO (Q2)
3. Constable Hook	Dec. 2019	<i>Schedule Under Development</i>																				
	Mar. 2020	<i>Schedule Under Development</i>																				
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>						C						IS		CO					
	Mar. 2020		<u>KO</u>						C						IS		CO					
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO									
	Mar. 2020			<u>KO</u>										C							IS	CO (Q2)
6. Lakeside Avenue	Dec. 2019				<u>KO</u>				C												IS	CO (Q2)
	Mar. 2020						<u>KO</u>				C										IS	CO (Q3)
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																				
	Mar. 2020			<u>KO</u>		C													IS			CO
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO											
	Mar. 2020			<u>KO</u>						OS/C					CO							
9. Meadow Road	Dec. 2019	<i>Schedule Under Development</i>																				
	Mar. 2020			<u>KO</u>												C				IS		CO (Q2)
10. Orange Valley	Dec. 2019	<i>Schedule Under Development</i>																				
	Mar. 2020	<i>Schedule Under Development</i>																				
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C										IS		CO					
	Mar. 2020			<u>KO</u>		C									IS		CO					
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>					C	OS			CO									
	Mar. 2020			<u>KO</u>	C					OS			CO									
13. State Street	Dec. 2019		<u>KO</u>					C								IS						
	Mar. 2020		<u>KO</u>					C							IS							
14. Toney's Brook	Dec. 2019			<u>KO</u>					C												IS	CO (Q2)
	Mar. 2020			<u>KO</u>										C			IS					CO (Q2)
15. Waverly	Dec. 2019	<i>Schedule Under Development</i>																				
	Mar. 2020			<u>KO</u>			C														IS	CO (Q3)
16. Woodlynne	Dec. 2019		<u>KO</u>												C						IS	CO (Q2)
	Mar. 2020		<u>KO</u>												C						IS	CO (Q2)

December 31, 2023 - Energy Strong 2 Program End Date

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service; OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline

A summary of the subprogram status as of the end of the first quarter of 2020 is provided below **Table 8 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2020**. Additional information on the individual projects is discussed in the respective project's subsection.

**Table 8 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2020**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynne
Key Drawing Review	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynne
Scope Locked	7	Academy Street; Hasbrouck Heights; Kingsland; Market Street; State Street; Toney’s Brook; Woodlynne
Major Equipment POs	7	Academy Street; Hasbrouck Heights; Leonia; Ridgefield 13kV; State Street; Toney’s Brook; Woodlynne
A/E Contract Award (or selection of PSE&G internal engineering)	10	Academy Street; Clay Street; Kingsland*; Market Street*; Ridgefield 13kV*; Ridgefield 4kV*; State Street*; Toney’s Brook; Waverly; Woodlynne
Construction Start	2	Market Street; Ridgefield 4kV

*\*-Indicates PSE&G internal resources are serving as the A/E.*

The IM evaluated PSE&G’s vendor selection decision for the switchgear at multiple projects within the Electric Station Flood Mitigation subprogram, some of which were bid in project bundles as follows:

- 5kV-rated Switchgear: State Street, Toney’s Brooke, Woodlynne;
- 5kV-rated Switchgear: Hasbrouck
- 15kV-rated Switchgear: Kingsland, Leonia (2), Meadow Road, Ridgefield 13kV (2)
- 15kV-rated Switchgear: Fairmount
- 38kV-rated Switchgear: Waverly

In each project sampled, PSE&G followed the same comprehensive bid evaluation process used in the original Energy Strong Program that saw multiple bidders respond, with PSE&G reviewing the technical and commercial aspects of the bids before making a recommendation to award based on a weighted rating criteria.

The current project estimates, including base and R&C amounts, is shown below in **Table 9 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2020**. This table also shows the current estimate level based on PSE&G’s estimating processes, the actual spend and percentage of actuals to estimate as of the end of the first quarter of 2020, and the forecasted in-service date.

**Table 9 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2020**

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals	% of Actuals to Estimate
1. Academy Street	Office	\$12,600,000	\$4,400,000	\$17,000,000	\$250,291	1%
2. Clay Street	Study	\$34,800,000	\$7,200,000	\$42,000,000	\$336,116	1%
3. Constable Hook	Office	\$3,900,000	\$1,400,000	\$5,300,000	\$69,647	1%

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals	% of Actuals to Estimate
4. Hasbrouck Heights	Study	\$14,900,000	\$3,100,000	\$18,000,000	\$343,727	2%
5. Kingsland	Study	\$7,100,000	\$2,900,000	\$10,000,000	\$212,398	2%
6. Lakeside Avenue	Office	\$26,800,000	\$9,400,000	\$36,100,000	\$321,167	1%
7. Leonia	Study	\$27,700,000	\$4,500,000	\$32,200,000	\$289,114	1%
8. Market Street	Study	\$24,200,000	\$5,800,000	\$30,000,000	\$2,189,906	7%
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$206,074	2%
10. Orange Valley	Office	\$19,700,000	\$6,900,000	\$26,600,000	\$173,611	1%
11. Ridgefield 13kV	Study	\$19,600,000	\$5,900,000	\$25,500,000	\$523,271	2%
12. Ridgefield 4kV	Study	\$16,800,000	\$4,300,000	\$21,100,000	\$836,542	4%
13. State Street	Office	\$21,200,000	\$7,400,000	\$28,600,000	\$205,878	1%
14. Toney's Brook	Study	\$14,300,000	\$5,400,000	\$19,700,000	\$327,687	2%
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$459,454	1%
16. Woodlynne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$351,400	2%
<b>Subprogram Total</b>		<b>\$309,000,000</b>	<b>\$80,000,000</b>	<b>\$389,000,000</b>	<b>\$7,096,284</b>	<b>2%</b>

### Findings & Observations

- The IM finds the organization of the subprogram, and specifically the split between 69kV-aligned projects and standalone projects, to be an appropriate arrangement that should benefit each of the projects by recognizing the varying complexities involved in these alignments, as well as provide potential cost benefits for the 69kV-aligned projects.
- The majority of projects within the subprogram have had both a kickoff meeting and a review of the key drawings, with the exception being the Constable Hook, Lakeside, and Orange Valley projects that are tied to 69kV projects that are in the planning and development stages.
- While early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

### 1. Academy Street

The original Academy Street substation scope called for replacing the substation's existing 4kV feeder rows with 13kV sheltered aisle switchgear that is elevated one foot above the flood elevation. After further evaluation, PSE&G determined that the preferred mitigation method for this substation was to demolish the existing station and convert the outside plant circuits from 4kV to 13kV, transferring the



load to the nearby Fairmount station, as documented in a notice to the BPU on April 16, 2020. The final scope achieves the same primary objective, which is to eliminate flood related impacts, while doing so at a lower estimated cost (original scope was estimated at \$17.0 million vs. the final scope at \$12.8 million<sup>2</sup>). The Fairmount station is located less than 0.5 miles from the existing Academy Street substation and has multiple Academy Street circuits in close proximity, so minimal new circuit mileage is required, and it will not increase distribution circuit exposure. On April 22, 2020, Rate Counsel responded to PSE&G's notice indicating it objects to the change (as well as the change to the State Street substation) without additional information and clarification on the changes.

The Academy Street PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on the project charter/project authorization and status reporting.

- **Project Charter/Project Authorization:** The Project Management Institute's (PMI's) Project Management Body of Knowledge (PMBOK) provides that the project charter is the "document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities. It documents the high-level information on the project..."<sup>3</sup> Within the Academy Street PEP, it notes the project investment request serves as the charter document for the project, which is provided as an attachment to the PEP. The Academy Street investment request form provides the annual estimated expenditures on the project, a summary of the project scope, the assumptions utilized, major timing commitments (e.g. long-lead equipment, permitting, etc.), and other similar summary information that defines the project. The IM finds the Academy Street project charter and project authorization, as established by the investment request form, aligns with industry standards.
- **Status Reporting:** The PMBOK provides that "During project execution, the work performance data is collected and communicated to the applicable controlling processes for analysis. Work performance data analysis provides information about the completion status of deliverables and other relevant details about project performance."<sup>4</sup> Within the Academy Street PEP, it notes that status reports will include status and forecast information, referencing the PMP-14 procedure on status reporting and providing a sample monthly progress report as an attachment. The monthly progress report reviews the summary activities on the project, provides functional performance indicators, and cost, schedule, and risk information. The IM finds the Academy Street project status reporting, and specifically the sample monthly progress report, aligns with industry standards.

Through the end of the first quarter of 2020, approximately \$250,000 was spent on the Academy Street project, primarily on project management and engineering costs. Notable activities completed to date include:

- Project kickoff meeting held;
- Issuance of key drawing packages;
- Permitting matrix completed;

<sup>2</sup> Note: the Academy Street project Study level estimate, which features the updated estimate based on the change in mitigation method, is expected to go for approval before the Utility Review Board (URB) in May 2020. The \$17.0 estimate shown in this report is the last approved estimate for the project.

<sup>3</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 81, 2017

<sup>4</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 92, 2017

- A/E contract was awarded, and detailed design has commenced;
- Licensing and permitting package for the project issued; and,
- Switchgear purchase order was awarded, and delivery is scheduled for November 2020.

Upcoming activities in the second quarter of 2020 include commencement of detailed design and civil, demolition, and electrical drawings issued for review. The actual spend by quarter for the Academy Street project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$150,398	\$99,893	\$250,291	\$17,000,000	1%

## 2. Clay Street

The Clay Street substation scope calls for building new manholes, feeder rows, switchgear, buildings, and associated equipment to allow relocation of existing 4kV transformer connections, circuits, and capacitor bank to the new 4kV switchgear. The existing 4kV switchgear at the substation is housed in the ground floor of the station building, which is below the flood elevation level and the site has a history of flooding from the adjacent sanitary/storm water pumping station. By raising and rebuilding the equipment, the Clay Street substation will have increased reliability and resiliency against flooding impacts and will increase the lifespan of the station.

Through the end of the first quarter of 2020, \$336,116 was spent on the Clay Street project. Notable activities completed to date include:

- Project kickoff meeting held;
- Issuance of key drawing packages;
- Permitting matrix completed; and,
- A/E contract was awarded.

Upcoming activities in the second quarter of 2020 include locking the scope and commencing design on the licensing and permitting package. The actual spend by quarter for the Clay Street project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$116,409	\$219,707	\$336,116	\$42,000,000	1%

## 3. Constable Hook

The Constable Hook substation scope calls for modifying the existing unit substation 8002 foundation to raise it one foot above the flood elevation level (as it currently sits two and a half feet below it), removing the existing unit substation 8001 and its structures and foundations to install a new unit substation 8001 (this will involve temporary installation of the unit sub to provide service during construction of the new foundation and oil containment). By implementing this scope, the Constable Hook substation will increase its reliability and resiliency against flooding impacts and benefit from an increased station lifespan.

Through the end of the first quarter of 2020, the Constable Hook project largely remained in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the

same area still being reviewed. The actual spend by quarter for the Constable Hook project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$17,889	\$51,758	\$69,647	\$5,300,000	1%

#### 4. Hasbrouck Heights

The Hasbrouck Heights substation scope calls for replacing the existing 4kV feeder rows with 4kV sheltered aisle switchgear and related equipment. The existing equipment is below the flood elevation level, and the new equipment will be installed one foot above the flood elevation level in order to increase the reliability and resiliency of the substation, while also extending the lifespan of the station.

The Hasbrouck Heights PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on the scope management plan and the environmental management plan.

- Scope Management Plan: The PMBOK provides that the project scope statement is “the description of the project scope, major deliverables, assumptions, and constraints.”<sup>5</sup> Within the Hasbrouck Heights PEP, the project scope document is provided as an attachment to the PEP. The Hasbrouck Heights project scope document provides an overview of the project, its goals and objectives, the projected in-service and completion dates, the project deliverables, assumptions, risks, constraints, operating contingency, an environmental land use checklist, lists responsibilities for design, construction, and support, and similar information related to defining the project scope. The IM finds the Hasbrouck Heights project scope document aligns with industry standards for a project scope statement and can be effectively used to monitor and validate the scope.
- Environmental Management Plan: The Construction Management extension to the PMBOK notes that “The project environmental management plan essentially defines the strategy or methodology to be adopted by the performing organization to undertake environmental management and to fulfill the requirements of the project...”<sup>6</sup> Within the Hasbrouck Heights PEP, environmental compliance/remediation and soil, groundwater, and waste management are included as distinct PEP sections. For this site, the PEP notes a Licensed Site Remediation Professional will be used until monitoring wells are reinstalled (expected to be installed during 2020), with the New Jersey Department of Environmental Protection (NJDEP) still reviewing the soil remedial action report. It also provides project-specific strategies for soil and groundwater management to ensure compliance with regulations and requirements. The permit matrix for the project is also provided as an attachment to the PEP and lists the permits by agency with the expected permit approval duration and additional notes as appropriate (i.e. explaining the applicability or non-applicability of specific permits as well as any assumptions).

<sup>5</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 135, 2017

<sup>6</sup> Project Management Institute, *Construction Extension to The PMBOK Guide Third Edition*, Second Edition, p. 147, 2007

Through the end of the first quarter of 2020, \$343,727 was spent on the Hasbrouck Heights project. The major activities completed to date on the Hasbrouck Heights project include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Scope locked; and,
- Major equipment (4kV sheltered aisle switchgear) purchase order issued.

Upcoming activities in the second quarter of 2020 include preparing and issuing the licensing and permitting package and commencing detailed engineering design. The actual spend by quarter for the Hasbrouck Heights project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$149,848	\$193,879	\$343,727	\$18,000,000	2%

## 5. Kingsland

The Kingsland substation scope calls for rebuilding and replacing the existing 13kV feeder row switchgear that sits below the flood elevation level with new 13kV sheltered aisle switchgear that will be installed above the flood elevation level. This will increase the reliability and resiliency of the substation against flooding impacts and increase the lifespan of the station.

The Kingsland PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on the schedule management plan and materials management.

- **Schedule Management Plan:** The PMBOK provides that the schedule management plan “is a component of the project management plan that establishes the criteria and the activities for developing, monitoring, and controlling the schedule.”<sup>7</sup> Within the Kingsland PEP, the schedule management plan is included as a section of the main PEP. The Kingsland schedule management plan notes the schedule will be managed based on project objectives and resource constraints, including identification of all interconnections, interfaces, and interdependent deliverables. On a monthly basis, the schedule will be reviewed and updated accordingly to reflect actual progress and planned activities. The IM finds the Kingsland schedule management plan aligns with industry standards for a schedule management and can be effectively used to monitor and control the schedule.
- **Materials Management:** The topic of materials management can be considered part of the larger procurement process, and as such, is often not a focal point of industry standards on project management. However, the Construction Management Association of America (CMAA) notes that “Prior to construction, the [construction manager] identifies long lead materials and equipment for pre-purchasing...”<sup>8</sup> Within the PEP, the major equipment required for the project is identified (13kV sheltered aisle switchgear) and included in the risk register, schedule, and other key project documents. Also, the Kingsland PEP references to the PEP-12 procedure on materials management for the requirements regarding material and equipment receiving,

<sup>7</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 135, 2017

<sup>8</sup> Construction Management Association of America, *Standards of Practice*, p. 21, 2015

identification, handling, storage, and control of these processes. The IM finds the Kingsland materials management plan appropriately utilizes existing PSE&G processes and also has identified the major and long-lead equipment that aligns with industry standards.

Through the end of the first quarter of 2020, \$212,398 was spent on the Kingsland project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Scope locked;
- Major equipment (13kV sheltered aisle switchgear) purchase order issued; and,
- Commencement of the licensing and permitting design package.

Upcoming activities in the second quarter of 2020 include vendor drawings (mechanical and wiring) submitted to PSE&G. The actual spend by quarter for the Kingsland project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
<i>Actuals</i>				
\$104,112	\$108,286	\$212,398	\$10,000,000	2%

## 6. Lakeside Avenue

The Lakeside Avenue substation scope calls for replacing the existing 4kV building that sits below the flood elevation level with 4kV sheltered aisle switchgear, including reactors and regulators, that will be installed one foot above the flood elevation level. The scope also includes expanding the station fence to encompass additional property acquired and installing (and later demolishing) a temporary 26kV control house to maintain service. This will increase the reliability and resiliency of the Lakeside Avenue substation against flooding impacts and increase the lifespan of the substation.

Through the end of the first quarter of 2020, \$321,167 was spent on the Lakeside Avenue project. The project largely remained in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the same sites still being reviewed. The actual spend by quarter for the Lakeside Avenue project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
<i>Actuals</i>				
\$148,943	\$172,224	\$321,167	\$36,100,000	1%

## 7. Leonia

The Leonia substation scope calls for expanding the existing fence to the property line, installing new 13kV sheltered aisle switchgear above the flood elevation level, demolishing existing 13kV structures that are below the flood elevation level, and installing new manhole, ducts and feeders to support the 13kV system. This will increase the reliability and resiliency of the Leonia substation against flooding impacts and increase the lifespan of the substation.

Through the end of the first quarter of 2020, \$289,114 was spent on the Leonia project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed; and,
- Major equipment (13kV sheltered aisle switchgear) purchase order issued.

Upcoming activities in the second quarter of 2020 include completion of the permitting matrix, constructability reviews, and locking the scope. The actual spend by quarter for the Leonia project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$44,792	\$244,323	\$289,114	\$32,200,000	1%

## 8. Market Street

The Market Street substation scope calls for converting the 4kV outside plant circuits to 13kV, feeding the 13kV circuits from the Locust Street and Deptford substations, and eliminating the Market Street substation. The substation’s existing 4kV feeder rows are below the flood elevation level and PSE&G identified that open capacity at the neighboring substations was available to increase the reliability of the Market Street 4kV network.

The Market Street PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on the project estimating/cost management plan and the health and safety management plan.

- Project Estimating/Cost Management Plan: The PMBOK provides that cost management “includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs...”<sup>9</sup> Within the Market Street PEP, the cost management plan is included as a section of the main PEP. The Market Street cost management plan reviews the estimating process used on the project, noting the Study level estimate will serve as the project baseline estimate until the future estimates at the Conceptual and Definitive levels are completed, at which point they will become the new project targets for monitoring and reporting costs. The cost management plan goes on to explain the budgeting process consists of two primary elements – the plan and the forecast, with updates to the budgeted plan being managed through the change control process and with the actuals and annual to-go cash flow updated on a monthly basis. The IM finds the Market Street cost management plan aligns with industry standards for project cost management and can be effectively used to monitor and control costs.
- Health and Safety Management Plan: The Construction Management extension to the PMBOK notes that project safety management processes “include all activities of the project sponsor/owner and the performing organization which determine safety policies, objectives, and responsibilities so the project is planned and executed in a manner that prevents accidents... The performing organization implements the safety management system through the policy, procedures, and processes of safety planning, safety assurance, and safety control, and undertaking continuous improvement activities throughout the project, as appropriate.”<sup>10</sup> Within the Market Street PEP, it notes that the PMP-08 procedure on project and contractor safety will

<sup>9</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 231, 2017

<sup>10</sup> Project Management Institute, *Construction Extension to The PMBOK Guide Third Edition*, Second Edition, p. 119, 2007

be implemented. It also provides that the contractor will submit a project health and safety plan for approval prior to construction. The Market Street site is a designated Superfund study area and the PEP notes that the project team has engaged Environmental Protection Agency (EPA) representatives and will follow appropriate guidance on health and safety measures, including utilizing trained hazardous water operations and emergency response (HAZWOPER) personnel as appropriate.

Through the end of the first quarter of 2020, \$2,189,906 was spent on the Market Street project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Scope locked;
- Commencement of detailed design; and,
- Start of outside plant construction.

Upcoming activities in the second quarter of 2020 include civil and electrical drawings being issued for construction. The outside plant area of the Market Street site (along the road) was identified as having radioactive soil, which had the potential to affect the project completion; however, PSE&G engaged qualified contractors to handle the required soil removal in alignment with the project schedule. The total estimated costs for the environmental contaminated soil issue is \$2.3 million and is included in the current \$30 million estimate. This \$2.3 million includes the cost of excavation for installation of poles on the outside plant scope and certified contractor testing, sampling, soil removal, and Sonotube installations.

The actual spend by quarter for the Market Street project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
<i>Actuals</i>				
\$251,193	\$1,938,713	\$2,189,906	\$30,000,000	7%

## 9. Meadow Road

The Meadow Road substation scope calls for replacing the existing five 13kV individual feeder rows that sit below the flood elevation level with new 13kV sheltered aisle switchgear on elevated platforms one foot above the flood elevation level. This will increase the reliability and resiliency of the Meadow Road substation against flooding impacts and increase the lifespan of the station.

Through the end of the first quarter of 2020, \$206,074 was spent on the Meadow Road project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Scope locked; and,
- Major equipment (13kV sheltered aisle switchgear) purchase order issued.

Upcoming activities in the second quarter of 2020 include locking the scope and issuing the licensing and permitting package. The actual spend by quarter for the Meadow Road project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$63,128	\$142,946	\$206,074	\$9,000,000	2%

### 10. Orange Valley

The Orange Valley substation scope calls for replacing the existing 4kV feeder rows that sit below the flood elevation level with 4kV sheltered aisle switchgear to be installed on elevated platforms one foot above the flood elevation level. This will increase the reliability and resiliency of the substation against flooding impacts and increase the lifespan of the station.

Through the end of the first quarter of 2020, \$173,611 was spent on the Orange Valley project, which largely remained in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the same sites still being reviewed. The actual spend by quarter for the Orange Valley project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$77,029	\$96,582	\$173,611	\$26,600,000	1%

### 11. Ridgefield 13kV

The Ridgefield 13kV substation scope calls for replacing existing 13kV feeder rows that are currently below the flood elevation level with two 13kV shelter aisle switchgears on an elevated structure one foot above the flood elevation level. This will increase the reliability and resilience of the substation against flooding impacts and increase the lifespan of the station.

The Ridgefield 13kV PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on invoice management and inside plant commissioning.

- Invoice Management: The PMBOK provides that “Control Procurements has a financial management component that involves monitoring payments to the seller.”<sup>11</sup> Within the Ridgefield 13kV PEP, invoice management is included as a section of the main PEP. The Ridgefield 13kV invoice management plan notes that the Project Team, interfacing with construction supervision, inside plant leads, and engineering, will ensure that all invoices are submitted based on monthly cycle time to help prevent re-accruals and support forecast accuracy. The PMBOK also notes that invoices are one type of work performance data, adding that “...work performance data on cost may include funds that have been expended. However, to be useful, that data has to be compared to the budget, the work that was performed, the resources used to accomplish the work, and the funding schedule. This additional information provides the context to determine if the project is on budget or if there is a variance... Interpreting work performance data and the additional information as a whole provides a context that provides a sound foundation for project

<sup>11</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 494, 2017



decisions.”<sup>12</sup> To fully appreciate how this is detailed in the Ridgefield 13kV PEP, the cost management plan must also be taken into consideration. In this section of the PEP, it details the cash flow forecasting efforts to be undertaken by the project team and supporting functional resources. The IM finds the invoice management processes support the industry standards for effective cost forecasting and can be effectively used to monitor and control project costs.

- **Inside Plant Commissioning:** The CMAA notes in its *Construction Management Standards of Practice* that “...the commissioning plan must be in concert with the project sustainability plan and the sustainability requirements of the owner...The project goals and objectives and the commissioning plan should be coordinated and focus on achieving the same project outcome.”<sup>13</sup> The commissioning plan within the Ridgefield 13kV PEP notes that it is based off the requirements established by the inside plant commissioning procedure (PMP-15). It also establishes the roles and responsibilities of the key personnel involved in commissioning, with the PSE&G Project Construction Supervisor responsible for directing the testing, commissioning, and energization of the project in order to provide for seamless turnover of the project systems and equipment to the Division Operations Team. The Commissioning Engineer, while responsible for development of equipment-specific commissioning plans, also is involved in the development of the project scope and design review process in order to ensure constructability, identification of outage requirements, and avoidance of conflicts during startup activities. The IM finds the commissioning plan as described in the PEP and supported by the PMP-15 procedure aligns with industry standards for project commissioning and can be effectively used to ensure the project’s commissioning supports the overall project goals and objectives.

Through the end of the first quarter of 2020, \$523,271 was spent on the Ridgefield 13kV project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Scope locked; and,
- Major equipment (13kV sheltered aisle switchgear) purchase order issued.

Upcoming activities in the second quarter of 2020 include issuing the licensing and permitting package and release of civil and electrical construction design packages for construction. The actual spend by quarter for the Ridgefield 13kV project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$205,982	\$317,289	\$523,271	\$25,500,000	2%

## **12. Ridgefield 4kV**

The Ridgefield 4kV substation scope calls for eliminating the 4kV feeder rows that currently sit below the flood elevation level and transferring the load to the 13kV system. This will increase the reliability and resilience of the substation against flooding impacts and increase the lifespan of the station.

<sup>12</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 109, 2017

<sup>13</sup> Construction Management Association of America, *Standards of Practice*, p. 121, 2015

The Ridgefield 4kV PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on project construction oversight.

- The PMBOK includes only limited discussion on oversight, essentially just that the project manager has oversight responsibility.<sup>14</sup> Other industry standard publications, such as those from the CMAA take similar stances, noting that the construction manager provides oversight for the entire project to deliver the project on time, at or under budget, and to the expected standard of quality, scope, and function.<sup>15</sup> In essence, oversight takes place within the different project functions (e.g. schedule, cost, scope, etc.). Within the Ridgefield 4kV PEP, it provides that the Project Construction Oversight procedure establishes the requirements for construction oversight and specifically details the unique responsibilities concerning outside plant conversion work on the project. Within the different project functions, additional structure is provided as to the expected oversight and reviews of the project schedule, costs, and other project functions. The IM finds the project construction oversight processes are established to effectively monitor that project goals and objectives are fulfilled.

Through the end of the first quarter of 2020, \$836,542 was spent on the Ridgefield 4kV project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Detailed engineering commenced; and,
- Outside plant construction started.

Upcoming activities in the second quarter of 2020 include locking the scope, issuing the civil works contract, and commencing civil construction. The actual spend by quarter for the Ridgefield 4kV project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$143,414	\$693,128	\$836,542	\$21,100,000	4%

### **13. State Street**

The original State Street substation scope called for replacing the existing 4kV switchgear, feeder rows, and transformers that currently sit below the flood elevation level with new equipment that will be installed one foot above the flood elevation level. This will increase the reliability and resilience of the substation against flooding impacts and increase the lifespan of the station. On April 16, 2020, PSE&G issued to the BPU a notice of change in mitigation method on this substation (and the Academy Street substation). The State Street substation is located within the City of Camden and is both within a flood hazard area and within the City’s redevelopment zone. The City and Camden County have informed PSE&G they are strongly opposed to the substation expansion required for flood mitigation work at the current site. PSE&G researched alternatives and with recommendation from the City identified property at Cooper Street that would be suitable for rebuilding the State Street substation. The new property is an

<sup>14</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 29, 2017

<sup>15</sup> <https://www.cmaanet.org/about-us/what-construction-management>

undeveloped parcel located outside the flood hazard area and the redevelopment zone, however, it will require extensive underground installation (duct banks, manholes) that was not part of the original project scope and will result in a significant increase to the project’s estimate (from \$28.6 million to \$45.1 million). On April 22, 2020, Rate Counsel responded to PSE&G’s notice indicating it objects to the change (as well as the change to the Academy Street substation) without additional information and clarification on the changes.

The State Street PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on quality assurance and quality control.

- The PMBOK provides that “Plan Quality Management is the process of identifying quality requirements and/or standards for the project and its deliverables, and documentation how the project will demonstrate compliance with quality requirements and/or standards.”<sup>16</sup> Within the State Street PEP, quality assurance and quality control steps are included as a section of the main PEP and establishes the strategies to be implemented on the project for effective quality assurance and quality control, including responsibilities for the project team, project manager, contractor, and vendor/supplier. The general quality assurance and quality control plan is provided as an attachment to the PEP and provides additional detail into the quality management actions and responsibilities, including establishing the strategy and requirements for the different project functional areas (e.g. engineering, procurement, construction, etc.). The IM finds the quality management processes support the industry standards for effective quality assurance and quality control and can be effectively used to ensure project-specific requirements are fulfilled.

Through the end of the first quarter, \$205,878 was spent on the State Street project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Scope locked;
- Licensing and permitting package submitted; and,
- Major equipment (4kV sheltered aisle switchgear) purchase order issued.

Upcoming activities in the second quarter of 2020 include commencing detailed engineering design. The actual spend by quarter for the State Street project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$77,590	\$128,288	\$205,878	\$28,600,000	1%

#### **14. Toney’s Brook**

The Toney’s Brook substation scope calls for replacing the existing 4kV switchgear, feeder rows, transformers, and 26kV equipment that sits below the flood elevation level with new equipment to be

<sup>16</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 494, 2017

installed one foot above the flood elevation level. This will increase the reliability and resilience of the substation against flooding impacts and increase the lifespan of the station.

The Toney’s Brook PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on contract administration.

- Within the Toney’s Brook PEP, the contracting strategy and contract administration responsibilities are included as an attachment to the PEP. The contract administration responsibilities detail the specific responsibilities of the PSE&G personnel, covering the contracting process through the development of bid packages, review and awarding of bids, and managing contracts including change control processes. The PMBOK provides that “Defining roles and responsibilities related to procurement should be done early in the Plant Procurement process” and notes typical steps such as preparing scopes of work, preparing bid documents, evaluating proposals, etc.<sup>17</sup> that are included in the Toney’s Brook contract administration responsibilities. The IM finds the contract administration processes align with industry standards and can be used to ensure effective contract management practices are utilized.

Through the end of the first quarter of 2020, \$327,687 was spent on the Toney’s Brook project. The major activities completed to date include:

- Completion of the contingency plan (part of the companion 69kV project);
- Review of key drawings;
- Submittal of the licensing and permitting packages;
- Issuance of the major equipment purchase order (4kV sheltered aisle switchgear);
- Award of the A/E contract; and,
- Locking of the scope.

Upcoming activities in the second quarter of 2020 include design freeze on the switchgear arrangement, mechanical, and controls, and preparation of the civil design package (issued for review). The actual spend by quarter for the Toney’s Brook project compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$211,940	\$115,747	\$327,687	\$19,700,000	2%

### **15. Waverly**

The Waverly substation scope calls for rebuilding the 26kV switchgear and transformers and building new 4kV feeder rows, which will be one foot above the flood elevation level, in addition to the demolishing of the existing 26kV yard, the over 80-year old Class A building and associated old 4kV equipment. This will increase the reliability and resilience of the substation against flooding impacts and increase the lifespan of the station.

Through the end of the first quarter, \$459,454 was spent on the Waverly project. The major activities completed to date include:

- Kickoff meeting held;

<sup>17</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 468, 2017

- Key drawings reviewed; and,
- Geotech services contract awarded.

Upcoming activities in the second quarter of 2020 include issuing the purchase order for major equipment (26kV and 4kV sheltered aisle switchgear), awarding the A/E contract, and locking the scope. The actual spend by quarter for the Waverly project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$103,748	\$355,706	\$459,454	\$35,400,000	1%

## 16. Woodlynne

The Woodlynne substation scope calls for replacing the existing 4kV feeder rows/sheltered aisle switchgear that currently sits below the flood elevation level with new equipment to be installed one foot above the flood elevation level. This will increase the reliability and resilience of the substation against flooding impacts and increase the lifespan of the station.

The Woodlynne PEP follows the P&C PMP set of procedures discussed above in **Section C.2**. On this PEP, the IM is providing comments on risk management.

- The PMBOK provides that risk management “includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project. The objectives of project risk management are to increase the probability and or/impact of positive risks and to decrease the probability and/or impact of negative risks, in order to optimize the chances of project success.”<sup>18</sup> Within the Woodlynne PEP, it notes that project risks were identified and assessed with corresponding strategies to control the risks identified. The project’s risk register is attached as an attachment to the PEP and will be reviewed on a monthly basis during execution. The IM finds the risk register developed for the Woodlynne project aligns with industry standards for risk management, including quantifying the risk impacts and identifying mitigation plans, and can be effectively used to ensure project risks are identified, managed, and controlled.

Through the end of the first quarter of 2020, \$351,400 was spent on the Woodlynne project. The major activities completed to date include:

- Kickoff meeting held;
- Key drawings reviewed;
- Permit compliance matrix completed;
- Scope locked;
- Major equipment (4kV sheltered aisle switchgear) purchase order issued; and,
- A/E contract awarded.

Upcoming activities in the second quarter of 2020 include preparing and issuing the licensing and permitting package and commencing detailed engineering design. The actual spend by quarter for the Woodlynne project as compared to the last approved estimate is provided below.

<sup>18</sup> Project Management Institute, *A Guide to the Project Management Body of Knowledge – PMBOK Guide*, Sixth Edition, p. 395, 2017

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$110,982	\$240,418	\$351,400	\$19,400,000	2%

## **B. Contingency Reconfiguration**

The Stipulation identified the Contingency Reconfiguration subprogram to include up to \$145 million invested in increasing system resiliency through implementation of contingency reconfiguration strategies that include: increasing sections in present loop designs by utilizing reclosers; converting all existing two-section overhead 13kV circuits to three-section circuits by installing additional three-phase reclosers, and installing single-phase recloser devices on branch lines that operate with only fuses.

The Contingency Reconfiguration organization is led by Donald Gordon, supported by Bob Kirk (Senior Project Manager), Nicole Severt (PMO Manager), and with subprogram leads at each of the Divisions. Under this arrangement, the subprogram is centrally managed, with execution carried out at the Division-level following their own execution processes. As part of the management of the subprogram, monthly unit targets are established for the Divisions, with status calls held weekly with all Divisions. Additionally, direction was given to the Divisions to push engineering out ahead of execution to support maximum flexibility in carrying out the work. This flexibility has assisted in minimizing Covid-19 impacts, as the permitting process has often been extended due to the process now requiring exchange of permitting documents to take place over the mail, rather than in-person.

The selection criteria for projects under the Contingency Reconfiguration subprogram began with a pool of all overhead 13kV circuits (excluding existing three-section circuits) and the worst performing overhead 4kV circuits (excluding existing two-section circuits). The priority is based on highest customer impact and begins with 13kV circuits, then 4kV feeder reclosers, and followed by 4kV tie reclosers. Additional detail on the specific selection criteria is provided as follows:

- **13kV Circuits**: each of the two sections are evaluated based on historical customer outage data, if one of the two sections has a much greater customer interruption rate, then a recloser is added to split that section; if the two sections are relatively close in their performance, the circuit is split into thirds. As a result, all 13kV circuits with overhead mileage will be upgraded from 2 to 3 section reclosers.
- **4kV Circuits**: these circuits were not originally designed with sectionalizing reclosers, so a customer interruption analysis was performed and concluded there is value to sectionalizing the worst performing 4kV circuits based on the value of lost load improvement expected. This resulted in approximately 500 of the 1,200 circuits on PSE&G's network being selected for sectionalizing through adding a recloser to split the circuit into two sections. Additionally, where it is feasible, PSE&G will add a tie recloser to the tail end of the circuit to provide an additional source to the circuit in the event of a long-term outage on the first circuit section or at the originating source station.
- **Branch Reclosers**: three-phase branch lines were evaluated to determine the value in installing branch reclosers on the worst performing branches from a customer interruption standpoint. These branch lines are protected with fuses that when blown require a service crew to be sent out to execute the repairs and return the line to service. PSE&G's criteria included that the branch lines serve at least 1,000 customers and that there was a value of lost load improvement expected. As a result, approximately 100 branches were put into the subprogram scope.
- **Fuse Savers**: all one- and two-phase branch lines fed from 4kV and 13kV circuits were analyzed to determine if adding a Fuse Saver (essentially a single-phase automatic recloser) was warranted.

PSE&G’s criteria included that the branch serve at least 80 customers. The result of the evaluation determined that approximately 3,282 one and two-phase branches were included in the subprogram based on the value of lost load improvement expected.

In addition, PSE&G will continue to evaluate the selected circuits through the detailed design process to ensure that they continue to be appropriate for additional reclosers.

The work performed to date includes:

- Divisions performing detailed reviews of the proposed recloser locations;
- Divisions creating work packages;
- Relay Techs testing breakers and programming recloser controls;
- Divisions overhead crews installing poles, framing poles, and completing wire work in preparation of recloser installations; and
- All four Divisions have begun installing reclosers.

**Table 10 – ES 2 Program Recloser Status as of March 31, 2020** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the 2020 year end targets and current status of engineering, installation, and commissioning.

*Table 10 – ES 2 Program Recloser Status as of March 31, 2020*

Type	2020 Year End Total Target	Engineering Packages Complete (1 recloser ea.)	Reclosers Installed	Reclosers Commissioned
13kV	800	549	333	0
4kV	179	163	24	0
<b>Total</b>	979	712	357	0

As shown in **Table 10**, with engineering comfortably ahead of construction, it allows PSE&G flexibility in selecting which projects to initiate construction and allows the subprogram progress to continue.

The IM evaluated PSE&G’s equipment selection decision for the single and two-phase recloser devices that are being installed as part of the Contingency Reconfiguration subprogram. Initially, PSE&G identified two potential options for this equipment, the TripSaver-II manufactured by the S&C Electric Company and the Fusesaver manufactured by Siemens. After several meetings and conference calls to review and discuss PSE&G’s requirements against the capabilities of this equipment, it was identified that the TripSaver-II lacked the capability to remotely communicate via supervisory control and data acquisition (SCADA), and thus did not meet PSE&G’s requirement to have the equipment able to document and capture the momentary outages on the electric distribution system. Therefore, the Siemens Fusesaver device was selected as it was capable of meeting PSE&G’s operating requirements.

The single-phase recloser device installation plan contemplates 2,307 single-phase and 980 two-phase devices over the course of the ES 2 Program. Pole locations and circuits have been verified for the installation of these devices, with individual maps of all fuse saver pole locations provided to the Divisions. Initially, PSE&G anticipated 112 single-phase and 40 two-phase devices as of the end of the first quarter of 2020, however installation of the fuse savers has been delayed due to the lack of radio availability and is now expected to commence in August 2020. The cause of the delay to radio availability was related to component supply delays and certification delays related to Covid-19. In the interim, PSE&G has adjusted its commissioning strategy and is installing additional reclosers to continue to

advance the subprogram. PSE&G expects the gap between installation and commissioning will be closed by the end of the year with no overall impact to the subprogram.

The Contingency Reconfiguration subprogram costs through the end of the first quarter of 2020 are presented in **Table 11 – ES 2 Program Contingency Reconfiguration Costs as of March 31, 2020**.

**Table 11 – ES 2 Program Contingency Reconfiguration Costs as of March 31, 2020**

Scope & Division		Q4 2019	Q1 2020	Total	Forecast	% of Actuals to Forecast
		Actuals				
Reclosers	Central	\$2,737,167	\$3,918,150	\$6,655,317	\$27,309,897	24%
	Metro	\$2,231,431	\$3,576,616	\$5,808,047	\$23,547,928	25%
	Palisades	\$2,515,569	\$3,353,246	\$5,868,815	\$27,460,493	21%
	Southern	\$2,081,220	\$4,003,537	\$6,084,758	\$29,657,985	21%
Fuse Savers	Central	\$9,970	\$29,667	\$39,637	\$969,760	4%
	Metro	\$7,557	\$15,498	\$23,055	\$675,723	3%
	Palisades	\$7,468	\$15,259	\$22,727	\$9,245,276	0%
	Southern	\$9,792	\$21,458	\$31,250	\$629,503	5%
<b>Total</b>		<b>\$9,609,966</b>	<b>\$14,933,431</b>	<b>\$24,533,604</b>	<b>\$119,496,564</b>	<b>21%</b>

**Findings & Observations:**

- PSE&G has planned and reviewed resource and installation schedules with the Divisions to ensure they are appropriately prepared to execute the work required for this subprogram.
- Recloser installations advanced ahead of target through the end of the first quarter of 2020, and while radio delays affected the installation of fuse savers and commissioning of reclosers, PSE&G expects to close this gap by the end of 2020. Additionally, by having recloser engineering consistently ahead of the installation plan, it allows PSE&G flexibility in its schedule.
- While early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system.

The Grid Modernization – Communication System organization is led by Al Balletto (who also leads the other Grid Modernization subprogram) and is supported by communication system leads Jim Yorke (wireless network), Lukasz Kubas (SCADA commissioning), Bob Kirk (fiber – outside plant), and Ayoola Odeyemi (fiber – inside plant), with the latter two leads also a part of the Contingency Reconfiguration subprogram due to the interconnectedness of these subprograms.

The wireless network scope specifically calls for building a robust wireless network across PSE&G’s service territory that will support real-time wireless connectivity to all operational asset and redundant communication paths to network devices. Additionally, the network will have robust monitoring and multilayered security, as well as being independent of commercial carriers. PSE&G received bids from multiple vendors for the wireless network, ultimately awarding to FirstNet based on its lower overall cost and better alignment with PSE&G’s objectives than other bidders offered. The FirstNet broadband



network is built through a private-public partnership between AT&T and the U.S. Federal Government and provides wireless broadband to first responders on dedicated spectrum bands. The PSE&G devices communicating on this network will benefit from overlapping coverage from multiple tower sites and multiple layers of redundancy providing increased reliability.

It is expected that approximately 2,704 routers will be installed in existing reclosers to support the broadened wireless connectivity. Through the end of the first quarter of 2020, there were no retrofitted reclosers installed with activities primarily focused on planning (reviewing resource and installation schedules with the Divisions, completing installation and commissioning procedures, etc.). The recloser retrofitting installation plan is reflected in **Table 12 – ES 2 Program Retrofitting Reclosers Schedule** and contemplates most of the 2020 work occurring during the fourth quarter.

**Table 12 – ES 2 Program Retrofitting Reclosers Schedule**

Division	2020	2021	2022	2023	Total
Central	33	240	236	265	774
Metro	29	175	163	129	496
Palisades	26	180	182	198	586
Southern	44	284	267	253	848
<b>Total</b>	<b>132</b>	<b>879</b>	<b>848</b>	<b>845</b>	<b>2,704</b>

The IM evaluated PSE&G’s vendor selection decision for the wireless equipment, specifically the routers, antennas, and related accessories and mounting equipment to establish SCADA communication, in addition to the supply, configuration, and implementation a network management system capable of managing the initial deployment of 7,900 routers (with the ability to scale up to over 500,000 end points in the future). Hardware from Sierra Wireless and Nokia represented the two options for the required equipment (from different vendors), with AT&T/Nokia being selected based on the technical solutions, and specifically the IT security requirements, better suiting the needs of PSE&G.

The fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. Execution of this scope is based on a full review of all proposed projects and routes with proposed route maps created and released to engineering to design and build work packages. Asset Strategy performed the first pass in prioritizing the fiber projects, assessing the communication status and the long-term status of the facilities to ensure they are a good fit for the subprogram. The Divisions then performed preliminary review of the fiber routes to identify any potential permitting requirements.

The Grid Modernization – Communication System subprogram costs through the end of the first quarter of 2020 are presented in **Table 13 – ES 2 Program Grid Modernization – Communication System Costs as of March 31, 2020**.

**Table 13 – ES 2 Program Grid Modernization – Communication System Costs as of March 31, 2020**

Scope & Division		Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
		Actuals				
Retrofit Reclosers	Central	\$0	\$50,613	\$50,613	\$7,819,860	1%
	Metro	\$0	\$44,164	\$44,164	\$6,629,143	1%
	Palisades	\$0	\$44,164	\$44,164	\$6,854,198	1%
	Southern	\$0	\$46,901	\$46,901	\$8,313,084	1%
Fiber	Central	\$1,691	\$133,115	\$134,806	\$4,545,000	3%
	Metro	\$1,457	\$109,382	\$110,839	\$6,330,000	2%

	Palisades	\$1,582	\$194,451	\$196,033	\$3,300,000	6%
	Southern	\$4,731	\$65,721	\$70,452	\$2,490,000	3%
	Cutovers	\$0	\$0	\$0	\$6,735,000	0%
	<b>Wireless Network</b>	\$74,306	\$1,525,801	\$1,600,107	\$12,063,705	13%
	<b>Total</b>	<b>\$83,767</b>	<b>\$2,214,312</b>	<b>\$2,298,078</b>	<b>\$65,079,990</b>	<b>4%</b>

Findings & Observations:

- The IM finds that selection of FirstNet for the wireless broadband network services was an appropriate selection that will achieve PSE&G’s intended objectives, including superior coverage and reliability, at a competitive cost.
- Primary activities to date relate to planning and procurement, including developing detailed schedules and installation and commissioning procedures with the Divisions.
- New reclosers (as Contingency Reconfiguration subprogram) have installation priority of retrofits due to new reclosers providing segregation to the sections they are installed that improves reliability (while retrofits improve communications on the devices).
- While early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**D. Grid Modernization – ADMS**

The Stipulation identified the Grid Modernization – ADMS subprogram to include up to \$35 million invested to develop an ADMS that will replace the existing Outage Management System (OMS). The ADMS will incorporate data from Geographic Information System (GIS) and SCADA, intelligent fault indicators, smart meters, and other advanced metering infrastructure (AMI). This will provide enhanced storm damage management including advanced estimated time of restoration calculations and provide AMI capabilities including automated restoration verification, smart detection of nested outages, and visualization of ping results.

The Grid Modernization – ADMS organization is led by Al Balletto (as mentioned above, Mr. Balletto also leads the other Grid Modernization subprogram) and is supported by ADMS leads Steve Zinser (OMS), Francis Frank (Distributed Management System (DMS)/ Distributed Energy Resource Management System (DERMS)), and Ryan Wilson (ADMS platform), as well as Dan Thomsen (Senior Principal Technology Product Consultant) and Mary Jane Jacobson (Performance Measurement Analyst).

The Grid Modernization – ADMS scope is split between three primary sections: DMS/DERMS, the OMS, and ADMS platform upgrades. The primary activities in 2020 are centered on planning activities, with scopes of work developed in the first quarter of 2020. The ADMS is currently forecasted to go live during the second quarter of 2022. The high-level schedule was based on hardware milestones and a goal of getting the equipment in place prior to the summer outage period in 2023. Currently, working with the vendors to incorporate more detail into the subprogram schedule.

The IM evaluated PSE&G’s vendor selection decision for the ADMS, which was a sole source award to Open Systems International Inc. (OSII). The sole source decision was based on OSII being the vendor for the SCADA component of the ADMS, utilizing proprietary software of OSII, in addition to the supporting vendor for the operations technology platform. Because there is no other vendor capable of performing these services, it was reasonable and appropriate to award this scope of work to OSII.

The Grid Modernization – ADMS subprogram costs through the end of the first quarter of 2020 are presented in **Table 14 – ES 2 Program Grid Modernization – ADMS Costs as of March 31, 2020**.

**Table 14 – ES 2 Program Grid Modernization – ADMS Costs as of March 31, 2020**

Q4 2019	Q1 2020	Total	Forecast	% of Actuals to Estimate
Actuals				
\$36,213	\$925,689	\$961,902	\$40,375,128	2%

Findings & Observations:

- The primary activities to date on the subprogram are primarily planning activities, including having workshops with the software vendor and operations and finalizing the scope of work.
- Selection of OSII as a vendor through a sole source award was reasonable and appropriate given OSII’s unique capabilities in providing the required services.
- While early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric outside plant higher design and construction standards and/or electric life cycle subprograms described in the original ES 2 Program filing. The preliminary planning by PSE&G estimates that approximately one-third of the Stipulated Base funds will be used towards the electric life cycle investments and the remaining two-thirds towards outside plant higher design and construction standards.

The outside plan higher design and construction standards scope of work contemplates replacing the traditional open wire and cross-arm type construction on distribution overhead circuits with spacer cable in targeted locations. PSE&G determined that spacer cable provides significant improvement in customer reliability during storm events and other tree-related events as compared to the traditional methods. At present, approximately 45% of PSE&G’s 4kV and 13kV overhead distribution system uses spacer cable. The final circuit selection for this effort is still being developed but will be selected from PSE&G’s original proposal using historical value of lost load from reportable and major event history.

Through the first quarter of 2020, there was no spend in the electric stipulated base projects as the projects are still being identified, planned, and going through the approval process. Four stations have been identified for life cycle station upgrades and are expected to go before the URB in June 2020 for approval.

Findings & Observations:

- The electric stipulated base projects remain in the planning and approval phases, as such the IM has no additional comments on this component of the ES 2 Program at this time.

**F. Gas M&R Station Upgrades**

The Stipulation identified that the Gas M&R subprogram will consist of up to \$50.5 million in investments through the ES 2 Program Accelerated Rate Recovery Mechanism to rebuild/modernize six gas M&R stations. An additional \$50.5 million will be invested through Stipulated Base to be recovered

in PSE&G’s next base rate case, bringing the total subprogram investment to \$101 million. While the current estimates forecast the six identified M&R stations will utilize the full \$101 million investment, an additional stipulated base project (Hillsborough M&R) was identified if the total cost of the subprogram comes in under the stipulated amount.

The Gas M&R subprogram is led by Charlie Miracola, with two senior project managers splitting five of the projects (Camden, Mt. Laurel, Westampton, East Rutherford, and Paramus) and a project manager overseeing the other project (Central). The subprogram is also supported by Sonia Zacher-Martini (PMO Manager), Tony Fuhrman (Manager Gas Asset Strategy), and John Fillman (Manager M&R).

The common scope of work at all stations in the Gas M&R subprogram is for installation of new underground piping that is rated for the full pipeline company maximum allowable operating pressure, thus eliminating the need for high pressure relief valves and enhancing safety and environmental performance. Overpressure protection will be provided through series regulators with a working regulator and monitor regulator. Downstream distribution system relief valves will also be installed as a third line of overpressure protection, also enhancing safety and environmental performance. As part of the planning efforts, PSE&G’s Asset Management group evaluated the equipment at each station, including performing inspections, examining O&M records, and receiving feedback from the operations personnel to determine the possibility for re-using equipment rather than replacing it. Additional scope elements for each of the specific stations is described in the following subsections on the individual stations.

The IM evaluated PSE&G’s selection of the design work for the Mt. Laurel and Westampton projects, which were the first to be awarded in the Gas M&R subprogram. The evaluation included both technical and commercial components, with both projects ultimately awarded to the highest evaluated contractor with the requisite experience and capabilities, which in these cases was also the lowest price bidder. The Camden design work was also initially awarded in this period, but due to the selected contractor not agreeing to the procurement terms and conditions, the work was re-bid, with the Camden design work and the other remaining projects having design contracts awarded in May-June 2020.

Through the end of the first quarter, preliminary design had been initiated on each of the Gas M&R stations. Additionally, the contract design RFP for each station was issued, with recommendations to award completed for the Westampton, Camden, and Mt. Laurel stations. The remaining stations are expected to have recommendations to award for the design services early in the second quarter of 2020. As with other subprograms in the ES 2 Program, the primary Covid-19 related impact has been shifting in-person meetings to a virtual setting. The detailed project schedules are currently under development.

**Table 15 – ES 2 Program Gas M&R Summary Status as of March 31, 2020** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates. As indicated in **Table 15**, there has been minimal spend to date on the subprogram, primarily related to initial planning efforts.

*Table 15 – ES 2 Program Gas M&R Summary Status as of March 31, 2020*

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Office	\$10,000,000	\$5,400,000	\$15,400,000	\$60,017	0%	Jan 2023
2. Central*	Office	\$12,800,000	\$6,900,000	\$19,700,000	\$51,917	0%	Jan 2023
3. East Rutherford	Office	\$10,300,000	\$5,600,000	\$15,900,000	\$46,757	0%	Jan 2023

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals	% of Actuals to Estimate	Forecasted In-Service
4. Mount Laurel	Office	\$11,300,000	\$6,100,000	\$17,400,000	\$33,769	0%	Jan 2022
5. Paramus*	Office	\$12,900,000	\$7,000,000	\$19,900,000	\$46,634	0%	Jul 2023
6. Westampton	Office	\$8,300,000	\$4,400,000	\$12,700,000	\$49,234	0%	Jul 2021
<b>Subprogram Total</b>		<b>\$65,600,000</b>	<b>\$35,400,000</b>	<b>\$101,000,000</b>	<b>\$288,328</b>	<b>0%</b>	<b>Jul 2023</b>

\*-Included in the Stipulated Base.

Findings & Observations:

- The primary efforts to date on the subprogram are initial planning efforts, including the preparation of bid material and awarding of bids for the design services on the projects (with two awarded in the first quarter of 2020 and the remaining awarded in the second quarter of 2020).
- While early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

1. Camden

The Camden M&R station scope includes construction of a new station to support buildings and critical equipment being installed one foot above the flood elevation level. The major equipment at this station that is not near the end of life condition and operationally can be relocated will be re-installed to the appropriate elevation at the new station.

As noted above, the primary work to date on the Gas M&R subprogram has been commencing preliminary engineering, awarding of the A/E contract (in June 2020), and other planning activities. The actual spend by quarter for the Camden project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$13,326	\$46,691	\$60,017	\$15,400,000	0%

2. Central

The Central M&R station scope includes consolidating the three existing stations at this site into a new building. The major equipment at this station that is not near the end of life condition and operationally can be relocated will be re-installed to the appropriate elevation at the new station.

As noted above, the primary work to date on the Gas M&R subprogram has been commencing preliminary engineering, awarding of the A/E contract, and other planning activities. The actual spend by quarter for the Central project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$6,869	\$45,048	\$51,917	\$19,700,000	0%

### 3. East Rutherford

The East Rutherford M&R station scope includes construction of a new station to support buildings and critical equipment being installed one foot above the flood elevation level. The major equipment at this station that is not near the end of life condition and operationally can be relocated will be re-installed to the appropriate elevation at the new station.

As noted above, the primary work to date on the Gas M&R subprogram has been commencing preliminary engineering, awarding of the A/E contract, and other planning activities. The actual spend by quarter for the East Rutherford project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$9,010	\$37,747	\$46,757	\$15,900,000	0%

### 4. Mount Laurel

The Mount Laurel M&R station scope includes installation of new underground piping that is rated for the full pipeline company maximum allowable operating pressure, thus eliminating the need for high pressure relief valves and enhancing safety and environmental performance. Overpressure protection will be provided through series regulators with a working regulator and monitor regulator. Downstream distribution system relief valves will also be installed as a third line of overpressure protection, also enhancing safety and environmental performance. The major equipment at this station that is not near the end of life condition and operationally can remain in service will not be replaced.

As noted above, the primary work to date on the Gas M&R subprogram has been commencing preliminary engineering, awarding of the A/E contract, and other planning activities. The actual spend by quarter for the Mount Laurel project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$5,965	\$27,804	\$33,769	\$17,400,000	0%

### 5. Paramus

The Paramus M&R station scope includes installation of new underground piping that is rated for the full pipeline company maximum allowable operating pressure, thus eliminating the need for high pressure relief valves and enhancing safety and environmental performance. Overpressure protection will be provided through series regulators with a working regulator and monitor regulator. Downstream distribution system relief valves will also be installed as a third line of overpressure protection, also enhancing safety and environmental performance. The major equipment at this station that is not near the end of life condition and operationally can remain in service will not be replaced.

As noted above, the primary work to date on the Gas M&R subprogram has been commencing preliminary engineering, awarding of the A/E contract, and other planning activities. The actual spend by quarter for the Paramus project as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Total	Estimate	% of Actuals to Estimate
Actuals				
\$8,842	\$37,793	\$46,634	\$19,900,000	0%

**6. Westampton**

The Westampton M&R station scope includes installation of new underground piping that is rated for the full pipeline company maximum allowable operating pressure, thus eliminating the need for high pressure relief valves and enhancing safety and environmental performance. Overpressure protection will be provided through series regulators with a working regulator and monitor regulator. Downstream distribution system relief valves will also be installed as a third line of overpressure protection, also enhancing safety and environmental performance. The major equipment at this station that is not near the end of life condition and operationally can remain in service will not be replaced.

As noted above, the primary work to date on the Gas M&R subprogram has been commencing preliminary engineering, awarding of the A/E contract, and other planning activities. The actual spend by quarter for the Westampton project as compared to the last approved estimate is provided below.

<b>Q4 2019</b>	<b>Q1 2020</b>	<b>Total</b>	<b>Estimate</b>	<b>% of Actuals to Estimate</b>
<i>Actuals</i>				
\$8,395	\$40,839	\$49,234	\$12,700,000	0%

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2020 FIRST QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND RESPONSES**

18 SEPTEMBER 2020

PEGASUS GLOBAL HOLDINGS, INC. ®



## Appendix A – Draft Report Comments and Responses

ID #	Question/Comment	IM Response	Report Changes
RCR-INF-1	Has the Company identified comparable projects base spend projects for both electric and gas?	The IM scope includes the Energy Strong 2 Program Accelerated Rate Recovery investments (the core ES 2 Program) and the Stipulated Base expenditures. The Baseline capital expenditures are outside the IM scope.	No change
RCR-INF-2	Comment: Table 2 Total Estimate should be labeled to either reflect current estimate or Stipulated amount just to clarify distinction. For example, new Academy and State Street substation estimates are not incorporated in Table 9 as well.	Both Table 2 and Table 9 reflect the current approved estimates as of the end of the first quarter of 2020. At that time, the new Academy and State Street estimates had not gone through the formal estimate approval process as the approval of the mitigation change was still pending.	No change
RCR-INF-3	Page 6, are there updates to the two projects (Academy and State)?	The IM will continue to provide updates on the Academy and State Street projects in future reports as new information is received.	No change
RCR-INF-4	Page 7, for the following substations (Woodlynne, State Street, Academy Street, Clay Street, Hasbrouck Heights, Meadow Road, Lakeside Avenue, Toney's Brook, and Orange Valley), is the A/E firm conducting the Transmission component (upgrade from 26 to 69 kV) also conducting the Energy Strong 2 A/E work?	Yes, those projects have the same A/E for the ES 2 Program and Transmission components, with the exception of State Street where PSE&G is performing the ES 2 Program A/E work.	No change
RCR-INF-5	What are the three firms selected to do the A/E work?	Black & Veatch and Burns & McDonnell have currently been assigned to Electric Station Flood Mitigation projects (based on their associated 69kV work); additionally Black & Veatch, Sargent & Lundy, and Mesa Associates were approved through the competitive bid process and may be awarded work on other projects as it is released.	Future reports will call out the A/E on each project
RCR-INF-6	Page 7, do any of the remaining seven substations have any transmission upgrade work associated? If so, which ones?	No	No change
RCR-INF-7	Page 8, please identify which stations that are not in-house and not associated with the 69kV transmission upgrade would be competitively bid for A/E services.	The 69kV-associated projects and those that were not assigned to PSE&G internal resources were all competitively bid.	No change
RCR-INF-8	With reference to Page 9, how much experience with ES 1 is there with the listed PSEG personnel and Pegasus personnel.	During the ES 1 Program, the IM interfaced with each of the individuals listed as providing overall	No change

ID #	Question/Comment	IM Response	Report Changes
		direction and oversight on the ES 2 Program except for Danny Nembhard.	
RCR-INF-9	Comment on pages 10 through 12, what is the significance of bracketed substation associated with each heading?	As indicated on page 10, the brackets next to the procedure name identify the specific project where the implementation of the procedure was reviewed and discussed by the IM.	No change
RCR-INF-10	Page 10, is the feasibility/turnover stage the same as the office level estimate presented in Table 9?	Yes.	Clarified in <b>Section II.C.2.</b>
RCR-INF-11	Page 13, are there current plans to perform a project audit similar to what was conducted in ES 1?	Yes, initial conversations with PSEG's Internal Audit group have indicated an audit on the Program is expected to commence early in 2021. The IM will continue to provide updates on the audit status as new information is confirmed.	No change
RCR-INF-12	Page 18, the five-year baseline level estimate would exclude Superstorm Sandy. Presumably, this should not be an issue since these stations and feeders were not damaged in Superstorm Sandy.	The five-year baseline circuit performance was intended to help establish how the current/future circuit performance can be evaluated.	No change
RCR-INF-13	Page 19, please describe how the ES 2 planning is more integrated than ES 1 and what role planning plays in the process.	On the ES 2 Program there was centralized work planning and scheduling, including a more thorough stakeholder review process (based on more robust front-end planning and design). Enhanced planning typically results in the ability to better plan and forecast work, including reducing the likelihood of unexpected issues being identified later in the process.	Added information to <b>Section III.A.</b>
RCR-INF-14	Table 8, with the scope locked, have the Company's estimates changed for the five substations, excluding Academy and State.	Each would be expected to change as the projects continue to work through detailed engineering at the different estimate phases. The locking of the scope is part of the design process that is an input to the estimating process.	No change
RCR-INF-15	Page 21, is the switchgear vendor selection process different for ES 2 than ES 1?	Same switchgear vendor selection process for the ES 1 and the ES 2 Programs– full bid event with a commercial and technical review, followed by award.	Added information to <b>Section III.A.</b>
RCR-INF-16	Page 28, do the current estimate of \$30 million for the Market Street substation include cost of environmental liabilities? Was most of the \$2.1 million spent for environmental cleanup?	The estimated costs for the environmental contaminated soil issue is \$2.3 million and is included in the \$30 million estimate. The \$2.3	Added information to

ID #	Question/Comment	IM Response	Report Changes															
		million includes the cost of excavation for installation of poles on the outside plant scope and certified contractor testing, sampling, soil removal, and Sonotube installations.	<b>Section III.A.8.</b>															
RCR- INF- 17	<p>Pages 22 thru 35 provides a station-by-station summary of upcoming activities at each station. A table showing a list of all upcoming station activities listed by station rather than activity along with a note of any activities that were carried over from the prior quarter would help identify potential bottle necks in the project schedule. An example table is shown below.</p> <table border="1"> <thead> <tr> <th>Station</th> <th>Upcoming Activity</th> <th>Carry Over from Prior Q</th> </tr> </thead> <tbody> <tr> <td>Academy St.</td> <td>Commencement of detailed design and civil, demolition, and electrical drawings issued for review.</td> <td>None</td> </tr> <tr> <td>Clay St.</td> <td>Lock the scope and commence design on the licensing and permitting package</td> <td>Lock scope</td> </tr> <tr> <td>Hasbrouck Heights</td> <td>Prepare and issue the licensing and permitting package and commence detailed engineering design</td> <td>None</td> </tr> <tr> <td>Constable Hook</td> <td>In the initial planning and origination stages</td> <td>In initial stages</td> </tr> </tbody> </table>	Station	Upcoming Activity	Carry Over from Prior Q	Academy St.	Commencement of detailed design and civil, demolition, and electrical drawings issued for review.	None	Clay St.	Lock the scope and commence design on the licensing and permitting package	Lock scope	Hasbrouck Heights	Prepare and issue the licensing and permitting package and commence detailed engineering design	None	Constable Hook	In the initial planning and origination stages	In initial stages	The IM will incorporate this concept into the 2020 Q2 report.	Will incorporate into future reports
Station	Upcoming Activity	Carry Over from Prior Q																
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RCR- INF- 18	Page 36, what is the selection criteria for the contingency reconfiguration projects? Is there a copy available? What is the Company's definition of customer impacts and how are they being prioritized?	Specific criteria was developed for the 13kV circuits, 4kV circuits, branch reclosers, and fuse savers. Additionally, the selected circuits go through continued evaluation as detailed design efforts proceed to ensure they remain an appropriate selection.	Additional detail in <b>Section III.B.</b>															
RCR- INF- 19	Were TripSaver-II installed as part of ES 1? Is there a cost differential between the TripSaver II and Fusesaver devices?	TripSaver II did not meet technical requirements so cost was not a factor in the decision. These devices are relatively new devices and were not installed as part of the ES 1 Program.	No change															

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RCR- INF- 20	Page 36, please elaborate on the lack of radio availability.	The radio availability was impacted by certification and component supply delays related to Covid-19. This has now been resolved.	Added additional detail in <b>Section III.B.</b>
RCR- INF- 21	Page 37, is the installed communication system compatible with current and future systems? Would the system be compatible with an AMI system if the BPU were to approve AMI?	The wireless network will provide real-time wireless connectivity to all operational assets and redundant communication paths to network devices.	No change
RCR- INF- 22	Page 38, is the 500,000 endpoint the current limit to the installed communications system?	As noted, the initial deployment is for 7,900 routers with the ability to scale up to <u>over</u> 500,000 end points in the future.	No change
RCR- INF- 23	Page 39, was the ADMS vendor selection competitively bid? Is OSII a current vendor for PSEG?	As noted, the ADMS vendor selection was a sole source award to OSII base on OSII being the existing vendor for the SCADA component of AMDS, which utilizes a proprietary software of OSII, in addition to being the supporting vendor for the operations technology platform.	No change
S- INF-1	As noted in the report, the Grid Modernization – ADMS subprogram is now forecasted to cost approximately \$40 million (See Page 1, Table 1) – over its original budget of \$35 million. What does the Company attribute to this cost increase, and is it related to the Company’s decision to select a sole-source vendor for the ADMS? (See Page 39).	The primary variances between the initial forecast (done at the time of the ES 2 Program filing) and the current forecast (at the 70% estimate level) is related to increased levels of vendor support needed to address additional complexities identified in the application landscape (primarily related to integration of new and/or upgraded PSE&G operational technology platforms) and additional hardware (e.g. servers) required after a review of the system identified the significant growth in the number of distribution assets on the network since the time of the filing.	Added additional detail in <b>Section III.D.</b>
S- INF-2	<p><b><u>Contingency Reconfiguration Subprogram - COR Charges</u></b></p> <p>a. Please provide additional details about the work comprising the cost of removal charges (See Page 16, Table 5) within the Contingency Reconfiguration subprogram.</p> <p>b. In regard to the statement “Contingency Reconfiguration COR charges reflect work on the recloser replacement efforts in all districts”, is the Company replacing existing reclosers in order to facilitate the subprogram?</p>	<p>(a) COR charges reflect removal of existing infrastructure to install new reclosers in all districts.</p> <p>(b) No existing reclosers are being replaced; in some case existing reclosers are being reprogrammed as a SCADA Switch Inline in</p>	No change

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		instances where two reclosers are installed to balance a circuit into three sections.	
S- INF-3	Please describe any other factors (besides SCADA) considered by the Company when choosing between TripSaver-II reclosers and Fusesaver reclosers. Please indicate if the TripSaver-II reclosers have any capabilities that are not possessed by the Fusesaver reclosers selected by the Company.	Remote communications via SCADA is an operational requirement for PSE&G, this was the primary driver.	No change
S- INF-4	<p>In regard to the Grid Modernization – Communications System subprogram, the report states that AT&amp;T/Nokia hardware was selected over Sierra Wireless based on the technical solutions better suiting the needs of PSE&amp;G. (See Page 38).</p> <p>a. Please provide additional details about these technical solutions that better suit the needs of PSE&amp;G.</p> <p>b. Please describe any other factors considered by the Company, including costs, when selecting a vendor.</p>	<p>(a) PSE&amp;G completed a detailed IT security architecture requirements review of both vendors and found the responses from Sierra Wireless were not in compliance with the IT security requirements of PSE&amp;G.</p> <p>(b) Non-technical factors feature cost as a primary factor, typically broken out into key components for evaluation purposes; other factors include related work a vendor may have (simplifies coordination efforts compared to multiple vendors, lowers execution risk and cost).</p>	Added additional detail in <b>Section III.C.</b>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
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18 SEPTEMBER 2020

PEGASUS GLOBAL HOLDINGS, INC. ®

## Appendix A – Draft Report Comments and Responses

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RCR- INF- 19	Were TripSaver-II installed as part of ES 1? Is there a cost differential between the TripSaver II and Fusesaver devices?	TripSaver II did not meet technical requirements so cost was not a factor in the decision. These devices are relatively new devices and were not installed as part of the ES 1 Program.	No change															

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S- INF-2	<p><b><u>Contingency Reconfiguration Subprogram - COR Charges</u></b></p> <p>a. Please provide additional details about the work comprising the cost of removal charges (See Page 16, Table 5) within the Contingency Reconfiguration subprogram.</p> <p>b. In regard to the statement “Contingency Reconfiguration COR charges reflect work on the recloser replacement efforts in all districts”, is the Company replacing existing reclosers in order to facilitate the subprogram?</p>	<p>(a) COR charges reflect removal of existing infrastructure to install new reclosers in all districts.</p> <p>(b) No existing reclosers are being replaced; in some case existing reclosers are being reprogrammed as a SCADA Switch Inline in</p>	No change

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		instances where two reclosers are installed to balance a circuit into three sections.	
S- INF-3	Please describe any other factors (besides SCADA) considered by the Company when choosing between TripSaver-II reclosers and Fusesaver reclosers. Please indicate if the TripSaver-II reclosers have any capabilities that are not possessed by the Fusesaver reclosers selected by the Company.	Remote communications via SCADA is an operational requirement for PSE&G, this was the primary driver.	No change
S- INF-4	<p>In regard to the Grid Modernization – Communications System subprogram, the report states that AT&amp;T/Nokia hardware was selected over Sierra Wireless based on the technical solutions better suiting the needs of PSE&amp;G. (See Page 38).</p> <p>a. Please provide additional details about these technical solutions that better suit the needs of PSE&amp;G.</p> <p>b. Please describe any other factors considered by the Company, including costs, when selecting a vendor.</p>	<p>(a) PSE&amp;G completed a detailed IT security architecture requirements review of both vendors and found the responses from Sierra Wireless were not in compliance with the IT security requirements of PSE&amp;G.</p> <p>(b) Non-technical factors feature cost as a primary factor, typically broken out into key components for evaluation purposes; other factors include related work a vendor may have (simplifies coordination efforts compared to multiple vendors, lowers execution risk and cost).</p>	Added additional detail in <b>Section III.C.</b>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
CORRECTED 2020 SECOND QUARTER  
REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC. ®

**CONFIDENTIAL**

11 MAY 2021

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Allowance for Funds Used During Construction .....	AFUDC
Architectural and Engineering .....	A/E
Board of Public Utilities .....	BPU
Chief Financial Officer .....	CFO
Construction Work In Progress .....	CWIP
Costs of Removal .....	COR
Distribution Management System .....	DMS
Distributed Energy Resource Management System .....	DERMS
Energy Strong 2 .....	ES 2
Gas Metering & Regulating .....	Gas M&R
Independent Monitor .....	IM
Issued for Construction .....	IFC
Issued for Review .....	IFR
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Potential Transformer .....	PT
Projects & Construction .....	P&C
Public Service Electric & Gas .....	PSE&G
Public Service Enterprise Group .....	PSEG
PSEG Internal Audit .....	PSEGIA
Record of Decision .....	ROD
Risk and Contingency .....	R&C
Utility Review Board .....	URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019 with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station lifecycle upgrades) and a gas component (overlapping with the Gas M&R subprogram).

During the second quarter of 2020, the bulk of the work within the ES 2 Program continued to be in the two largest subprograms, Electric Station Flood Mitigation with three projects now in construction and Contingency Reconfiguration that continues to advance the installation and commissioning of reclosers. Within the other subprograms, the two Grid Modernization subprograms continued to advance with the Communications piece primarily focusing on readying the new network and preparing for the selected fiber projects and the ADMS piece continuing to plan and scope the platform and necessary hardware equipment, while the Gas M&R subprogram largely remains in preliminary planning and early engineering activities. **Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2020** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2020**

Subprogram	2019 Spend	Q1 2020 Spend	Q2 2020 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount
Electric Station Flood Mitigation	\$1,977,398	\$5,118,886	\$10,325,107	\$17,421,391	\$332,662,596	5%	Dec 2023	\$389M
Contingency Reconfiguration	\$9,600,174	\$14,933,431	\$8,662,536	\$33,196,141	\$150,876,803	22%	Jul 2023	\$145M
Grid Modernization – Communications	\$83,766	\$2,214,312	\$4,159,420	\$6,457,497	\$64,863,452	10%	Dec 2023	\$72M
Grid Modernization – ADMS	\$36,213	\$925,689	\$4,430,542	\$5,392,444	\$39,707,462	14%	Oct 2022	\$35M
Electric Stipulated Base	\$0	\$0	\$0	\$0	\$100,000,000	N/A	Under Development	\$100M
Gas M&R Station Upgrades <sup>^</sup>	\$52,406	\$235,922	\$651,513	\$939,841	\$65,600,000	1%	Jul 2023	\$110M
<b>Total*</b>	<b>\$11,749,957</b>	<b>\$23,428,239</b>	<b>\$28,229,119</b>	<b>\$63,407,315</b>	<b>\$746,975,315</b>	<b>8%</b>	<b>Dec 2023</b>	<b>\$851M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 11** and **Table 17** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\* -Final in-service date.

<sup>^</sup>-Includes both the ES 2 projects and the Stipulated Base gas projects.

As shown in **Table 1**, the Electric Stipulated Base component remained largely in the planning stage as of the end of the second quarter of 2020. However, the four stations comprising the lifecycle upgrades

portion of the Electric Stipulated Base were approved at a Study level estimate in a Utility Review Board (URB) meeting in June 2020 with a total current estimate of \$79.7 million.<sup>1</sup> Additionally, the Contingency Reconfiguration subprogram saw its forecast increase from \$119.5 million at the end of the first quarter of 2020 to \$150.9 million at the end of the second quarter of 2020 as the Fuse Saver scope was fully forecasted during this quarter. It is expected that the forecast will continue to fluctuate as the scope is refined. Similarly, the forecasted completion date for the Grid Modernization – ADMS subprogram advanced from December 2023 as of the end of the first quarter of 2020 to October 2022 as of the end of the second quarter. This advancement was driven by additional schedule detail and development from what the high-level milestone schedule in place during the first quarter.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of June 30, 2020.**

*Table 2 – ES 2 Electric Station Flood Mitigation Status as of June 30, 2020*

Project	Total Estimate	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$17,000,000	\$650,226	4%	10/25/2021
2. Clay Street	\$42,000,000	\$619,335	1%	12/27/2022
3. Constable Hook	\$5,300,000	\$101,960	2%	TBD
4. Hasbrouck Heights	\$18,000,000	\$531,773	3%	11/18/2022
5. Kingsland	\$10,000,000	\$255,665	3%	10/4/2023
6. Lakeside Avenue	\$36,100,000	\$442,176	1%	TBD
7. Leonia	\$32,200,000	\$713,897	2%	11/30/2022
8. Market Street	\$30,000,000	\$7,334,176	24%	9/22/2021
9. Meadow Road	\$9,000,000	\$310,637	3%	9/21/2023
10. Orange Valley	\$26,600,000	\$294,300	1%	TBD
11. Ridgefield 13kV	\$25,500,000	\$1,023,746	4%	10/19/2022
12. Ridgefield 4kV	\$21,100,000	\$2,971,169	14%	6/30/2021
13. State Street	\$28,600,000	\$378,656	1%	9/23/2023
14. Toney’s Brook	\$19,700,000	\$414,002	2%	4/21/2023
15. Waverly	\$35,400,000	\$814,790	2%	12/4/2023
16. Woodlynne	\$19,400,000	\$564,882	3%	9/26/2023
*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).				

<sup>1</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.



As indicated in **Table 2**, the Market Street and Ridgefield 4kV projects continue to have the highest percentage of spend, which is reflective of these two projects advancing further into construction. Additionally, three of the stations (Academy Street, Kingsland, and State Street) had internally approved new estimates at the end of June 2020 that went to approval before the URB in July 2020 and as such will be reported in the 2020 third quarter Independent Monitor (IM) report.

While early in the subprogram, the IM has found nothing to date that would jeopardize the ES 2 Program being completed on time and/or on budget.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On November 16, 2020, a draft report was presented and submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2020 Second Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and, rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2020 Second Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )

There were no formal RODs issued during the second quarter of 2020, however, PSE&G has proposed mitigation method changes driven by transmission project upgrade needs at three additional substations in the Electric Station Flood Mitigation subprogram, these are the Lakeside Avenue, Orange Valley, and Constable Hook substations. The IM is still in discussion with PSE&G with respect to these proposed mitigation methods and has not yet completed its evaluation, which will be discussed in the IM’s next quarterly report.

The IM will continue to monitor the status of these proposed changes and include additional discussions on these projects as new information is available.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with ES 1, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates.

## **C. Cost Assignments**

### **1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Costs of Removal as of June 30, 2020** below itemizes the charges to COR for the second and first quarters of 2020, the fourth quarter of 2019 and total ES 2 COR to date. These amounts do not reflect any salvage value reductions, which have been de minimis in the ES 2 Program through June 30, 2020.

*Table 4 – ES 2 Costs of Removal as of June 30, 2020*

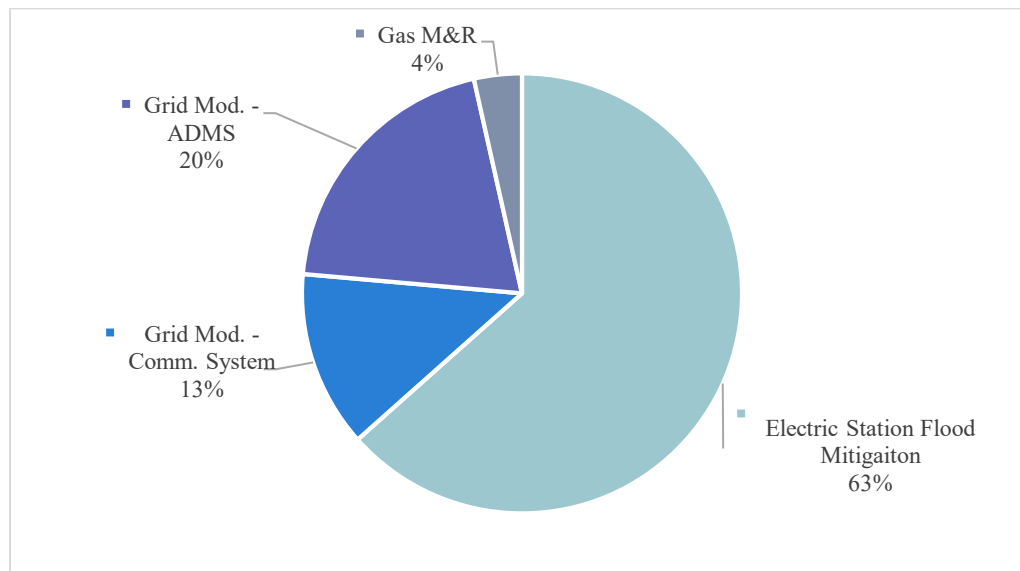
<b>Subprogram</b>	<b>Q4 2019 COR</b>	<b>Q1 2020 COR</b>	<b>Q2 2020 COR</b>	<b>Total COR</b>
<b>Electric Station Flood Mitigation</b>	\$0	\$67,332	\$468,989	\$536,321
<b>Contingency Reconfiguration</b>	\$431,030	\$616,752	\$624,595	\$1,672,377
<b>Grid Modernization – Communications</b>	\$0	\$0	\$1,495	\$1,495
<b>Grid Modernization - ADMS</b>	\$0	\$0	\$0	\$0
<b>Electric Stipulated Base</b>	\$0	\$0	\$0	\$0
<b>Gas M&amp;R Station Upgrades</b>	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$431,030</b>	<b>\$684,084</b>	<b>\$1,095,079</b>	<b>\$2,210,193</b>

For the second quarter of 2020, the increase in COR charges is attributed to the removal of poles, insulators and transformers at Ridgefield and Market Street for the conversion of the 4kV circuits to 13kV. Contingency Reconfiguration COR charges reflect continued work involving removal of pole fixtures and conductors for the installation of new reclosers.

## 2. Construction Work-in-Progress (CWIP) & In-Service Transfers

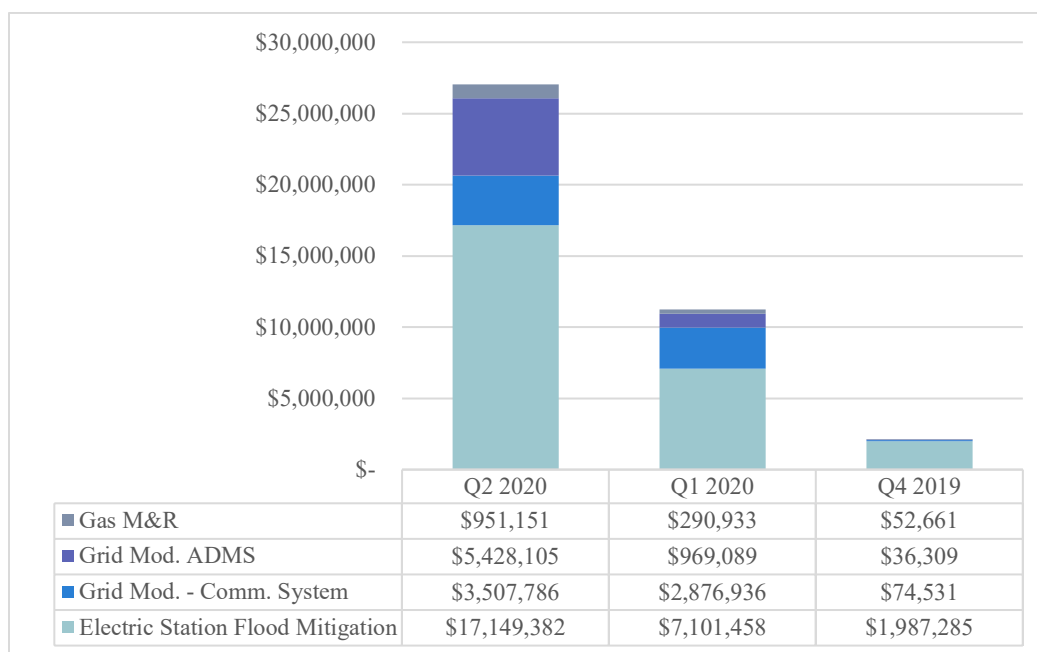
As of June 30, 2020, the Energy Strong CWIP balance was \$27.0 million, compared to \$10.3 million as of March 30, 2020. The largest components of June 30, 2020 CWIP were the elimination and conversion of the 4kV circuits at Market Street and Ridgefield substations, and work associated with the Advanced Distribution and Management System. The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of June 30, 2020** below.

*Figure 1 – ES 2 CWIP as of June 30, 2020*



In addition, **Figure 2 – ES 2 CWIP Balances by Subprogram as of June 30, 2020** below depicts the composition of end-of-quarter CWIP balances by subprogram for the second and first quarters of 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of June 30, 2020**



Transfers from CWIP to plant in service have totaled \$1.8 million as of June 30, 2020, which was comprised of Grid Modernization computer hardware. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. The changes to CWIP from the first quarter to the second quarter of 2020 are shown in **Table 5 – ES 2 CWIP Q1 to Q2 2020**.

**Table 5 – ES 2 CWIP Q1 to Q2 2020**

	Electric Station Flood Mitigation	Grid Modernization – Communication System	Grid Modernization – ADMS	Gas M&R
<b>CWIP Balance as of Q1 2020</b>	\$7,101,458	\$1,907,846	\$969,089	\$290,933
<b>CWIP Additions during Q2 2020</b>	\$10,047,924	\$3,427,230	\$4,459,016	\$660,218
<b>CWIP Transfers to Plant In-Service during Q2 2020</b>	\$0	\$1,827,290	\$0	\$0
<b>CWIP Balance as of Q2 2020</b>	\$17,149,382	\$3,507,786	\$5,428,105	\$951,151

**3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each ES 2 subprogram during the second and first quarters of 2020, the fourth quarter of 2019, and total ES 2 AFUDC accrued to date, is shown below in **Table 6 – ES 2 AFUDC as of June 30, 2020**.

*Table 6 – ES 2 AFUDC as of June 30, 2020*

<b>Subprogram</b>	<b>Q4 2019</b>	<b>Q1 2020</b>	<b>Q2 2020</b>	<b>Total AFUDC</b>
<b>Electric Station Flood Mitigation</b>	\$9,887	\$62,618	\$191,807	\$264,312
<b>Contingency Reconfiguration</b>	\$0	\$0	\$0	\$0
<b>Grid Modernization – Communications</b>	\$225	\$14,752	\$60,073	\$75,050
<b>Grid Modernization - ADMS</b>	\$96	\$7,092	\$28,474	\$35,662
<b>Electric Stipulated Base</b>	\$0	\$0	\$0	\$0
<b>Gas M&amp;R Station Upgrades</b>	\$254	\$2,590	\$8,465	\$11,309
<b>Total</b>	<b>\$10,462</b>	<b>\$87,052</b>	<b>\$288,819</b>	<b>\$386,333</b>

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies the current year based on updated capital structure and component cost data. For the year 2020, the new AFUDC rate was calculated to be 6.95%, using the capital structure and component costs as of January 31, 2020. This rate is higher than the 2019 rate of 6.34%, primarily due to a significantly lower average short-term debt balance during the first quarter of 2020, with its lower associated component cost relative to cost of equity and embedded cost of long-term debt. In calculating the 2020 AFUDC rate, the Company used (i) a 4.02% embedded cost of long-term debt, (ii) a short-term debt rate of 1.86%, and (iii) a cost of equity of 9.60%.

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the second quarter of 2020, based on data as of June 30, 2020, the recalculated weighted average AFUDC accrual rate (6.93%) did not meet this criterion to warrant changing from the annual rate (6.95%) in effect. Therefore, AFUDC was accrued during the first quarter of 2020 at the calculated rate of 6.95%.

AFUDC accrued for ES 2 projects during the second quarter of 2020 increased significantly over AFUDC accrued during the first quarter of 2020 as the result of the increases in total average CWIP balances across all subprograms.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Energy Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to second quarter 2020 ES 2 project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these ES 2 projects. The IM will continue to review future ES 2 AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### **4. Allocated Overheads**

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity

receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed pursuant to the methodology, as revised in the Company's December 15, 2008 notice to the Board, which included one multi-factor formula that equally weights the PSEG Operating Company values of Net Fixed Assets, Headcount, and Operations & Maintenance.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 7 – ES 2 Overhead Allocations as of June 30, 2020** are the allocated overhead costs charged to ES 2 projects for the second and first quarters of 2020, the fourth quarter of 2019, and total allocated overheads to date.

*Table 7 – ES 2 Overhead Allocations as of June 30, 2020*

Subprogram	Q4 2019	Q1 2020	Q2 2020	Total Overhead Allocations
Electric Station Flood Mitigation	\$286,953	\$1,648,117	\$3,560,216	\$5,495,286
Contingency Reconfiguration	\$3,415,460	\$4,692,085	\$3,055,700	\$11,163,245
Grid Modernization – Communications	\$12,074	\$345,720	\$548,017	\$905,811
Grid Modernization – ADMS	\$10,603	\$116,442	\$91,786	\$218,831
Electric Stipulated Base	\$0	\$0	\$0	\$0
Gas M&R Station Upgrades	\$15,287	\$52,836	\$68,257	\$136,380
<b>Total</b>	<b>\$3,740,376</b>	<b>\$6,855,199</b>	<b>\$7,323,975</b>	<b>\$17,919,550</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the second quarter of 2020 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most of the second quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs.

The IM believes these allocations represent no change in the Company's normal methodology of allocating overhead costs.

### **5. ES 2 Program Internal Audit**

In large companies such as Public Service Enterprise Group (PESG), parent company of PSE&G, the Internal Audit department's objective is to systematically evaluate the firm's management control and governing processes, specifically as they relate to the integrity of financial reporting and compliance with applicable regulations.

PSEG's Internal Audit (PSEGIA) department reports functionally to the Audit Committee of the Board of Directors and administratively to the Chief Financial Officer (CFO), which is to ensure both an atmosphere of independence and a degree of objectivity and prominence, such that its findings and recommendations can be fully vetted with the appropriate corporate audience.

Shortly after its engagement as monitor for the ES 2 Program, the IM held preliminary discussions with PSEGIA personnel regarding a potential audit of the ES 2 Program, similar to the audits it conducted during the first Energy Strong Program. Following these discussions, PSEGIA has indicated that it intends to: (i) conduct a full-scope audit, likely of the Electric Station Flood Mitigation and Contingency Reconfiguration subprograms, beginning in the second quarter of 2021, (ii) in 2022, conduct a full-scope audit of the ES 2 subprograms not covered in the first audit, and (iii) conduct a review of the ES 2 Program in 2023, the scope and depth of which will depend on the results of the previous audits. The IM and PSEGIA will have continued discussions prior to and during the audits to ensure the audits cover those areas specific to cost accumulation as required by the Stipulation. The IM will report on the progress and conclusions of the audits as information is available, and in similar fashion as it did with the audits conducted in the first Energy Strong Program.

**D. System Performance**

During the second quarter of 2020, PSE&G experienced a Major Event on June 3-7, 2020 stemming from a derecho and severe thunderstorms that primarily affected its Southern Division. This series of storms first entered PSE&G’s service territory in the afternoon of June 3, 2020, bringing wind gusts of over 70 miles per hour. By the June 3, 2020 1:00pm operations conference call, the Southern Division reported that it experienced multiple sub-transmission and distribution circuit lockouts and crews were dispatched from the other PSE&G Divisions and from its Projects & Construction (P&C) group to aid in recovery efforts. During this afternoon call, PSE&G’s weather service indicated that a second line of storms with similar wind speeds and possible tornadoes was expected that evening. Conference calls later in the day continued to analyze the outages experienced thus far and prepared for upcoming weather impacts. On the June 4, 2020 8:00am operations conference call, the Southern Division reported the evening storms on June 3, 2020 caused additional plant damage and more tree damage, while PSE&G’s weather service predicted yet another round of severe thunderstorms was expected later that day and did cause additional damage.

These series of storms led to 257,209 PSE&G customers experiencing service interruptions, with 246,075 of those customers located in the Southern Division. 45% of the customers interrupted were restored within one day, 81% within two days, 97% within three days, and full restoration in just over four days. The IM calls attention specifically to the Woodlyne substation that was shut down during these storms due to both 26kV supply lines being interrupted due to tree/vegetation issues, affecting service to 11,319 customers. An emergency tie line installed under the original Energy Strong Program allowed the substation to return to service in less than three hours.

The IM received PSE&G’s report on the performance of its Energy Strong 2 Program investments from this Major Event and has reproduced the results as follows:

Circuit	5 Year Baseline SAIDI	Report Quarter SAIDI
ALD 8015	0.12276	
ALD 8026	0.07735	
BAO 8003	0.00096	
BAO 8006		
BEN 8012	0.15243	
BEN 8015	0.00623	
BEN 8021	0.00143	

Circuit	5 Year Baseline SAIDI	Report Quarter SAIDI
BRU 8011	0.04127	0.00363
BRU 8012	0.01236	
BUS 8011	0.13129	0.04924
CED 8011	0.05594	
CED 8021	0.03575	
CED 8022	0.05071	
CIN 8032	0.32648	1.13907

Circuit	5 Year Baseline SAIDI	Report Quarter SAIDI
CIN 8043	0.18459	0.16269
CLF 8012	0.00401	
CLF 8013	0.00064	
CLF 8023	0.00895	
CLK 8022	0.06677	0.21086
CLK 8024	0.01526	
CON 8001		
COR 8042	0.02723	
CRX 8003	0.07703	0.00467
DAY 8002	0.03617	
DVB 8013	0.00455	
EAT 8011	0.09890	0.01689
FAW 8014	0.21021	
FAW 8022	0.03342	
FAW 8026	0.00902	
FRA 8021		
GBK 8021	0.06208	
GBK 8023	0.02487	
GBK 8025	0.31504	
HAT 8023	0.01869	
HAT 8035	0.04291	
HAW 8032	0.07658	0.00000
HID 8043	0.06432	
HID 8044	0.08229	
HNC 8015	0.10285	
HNC 8021	0.02280	
HNC 8024	0.21727	
HOE 8047	0.05561	
HOM 8001	0.06027	
HOM 8012	0.00000	
HOM 8014	0.00115	
HOM 8041	0.00000	
JAC 8021	0.00318	
JAC 8023	0.05394	
JAC 8043	0.04897	
KIL 8023		
KIL 8024	0.01504	
KIL 8041	0.02511	
KIL 8044	0.03622	
KIN 8015	0.00194	
KUL 8012	0.02022	
KUL 8022	0.00186	0.00206
KUL 8023	0.00582	
KUS 8004	0.00500	0.03236
KUS 8042	0.07830	0.02334

Circuit	5 Year Baseline SAIDI	Report Quarter SAIDI
KUS 8045	0.02505	
LAF 8013	0.00125	0.00126
LAF 8015	0.00354	
LAU 8021	0.22050	
LAU 8023	0.82844	
LAU 8034	0.40130	
LAU 8035	0.29567	
LAW 8014	0.03705	1.01225
LCE 8003	0.15926	0.01544
LCE 8032	0.30801	0.03039
LCE 8043	0.10606	
LCE 8046	0.01692	
LEO 8042		
LEV 8006	0.23842	
LOC 8012		0.04313
LOC 8033		
MAD 8015	0.15514	0.95230
MAD 8031	0.45221	0.01856
MAI 8013	0.05318	
MAR 8004	0.02404	
MAR 8017	0.45014	
MAY 8014	0.03470	0.00505
MAY 8024	0.00558	
MDF 8012	0.58371	0.18948
MDF 8023	0.26488	0.54601
MEA 8013	0.04040	0.00365
MIN 8024		
MON 8003	0.27132	
NBS 8011	0.01516	
NBS 8013	0.00000	
NBS 8023	0.00057	
NED 8022	0.02419	0.00773
NEW 8014	0.01839	
NIT 8007	0.00000	
NRB 8014	0.03116	
PIE 8011		
PIE 8023	0.04636	
PLI 8003	0.00215	
PLI 8005	0.16440	0.01832
POH 8024	0.12643	
RFL 8034	0.02787	
RVR 8031	0.02752	
SAD 8045	0.00284	
SDH 8034	0.00000	
SMV 8013	0.00000	



Circuit	5 Year Baseline SAIDI	Report Quarter SAIDI
SMV 8021		
SMV 8022	0.01681	
SMV 8023	0.01943	
SPF 8012	0.52501	
SUN 8021		
SWT 8001		

Circuit	5 Year Baseline SAIDI	Report Quarter SAIDI
SWT 8002		
WEW 8011	0.18034	
WEW 8033	0.03506	
WEW 8041		
WFL 8041	0.07197	
WOR 8021		

Following receipt of this data, the IM has followed-up with requests for additional information on this data to establish additional context for these results. This additional information has yet to be received as of the date of this final IM 2020 Second Quarter Report and will be discussed in the next IM report following receipt of that information.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of June 30, 2020 is provided below in **Table 8 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of June 30, 2020.**

*Table 8 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of June 30, 2020*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. Academy Street	Dec. 2019		KO					C					IS		CO					
	Jun. 2020		KO		C					IS			CO							
2. Clay Street	Dec. 2019	Schedule Under Development																		
	Jun. 2020			KO						C					IS					CO (Q2)
3. Constable Hook	Dec. 2019	Schedule Under Development																		
	Jun. 2020	Schedule Under Development																		
4. Hasbrouck Heights	Dec. 2019		KO					C						IS		CO				
	Jun. 2020		KO					C						IS		CO				
5. Kingsland	Dec. 2019			KO				C			IS		CO							
	Jun. 2020			KO									C						IS	CO (Q2)
6. Lakeside Avenue	Dec. 2019				KO			C											IS	CO (Q2)
	Jun. 2020	Schedule Under Development*																		
7. Leonia	Dec. 2019	Schedule Under Development																		
	Jun. 2020			KO		C									IS					CO
8. Market Street	Dec. 2019			KO				C	OS		CO									
	Jun. 2020			KO						OS/C		CO								
9. Meadow Road	Dec. 2019	Schedule Under Development																		
	Jun. 2020			KO											C				IS	CO (Q2)
10. Orange Valley	Dec. 2019	Schedule Under Development																		
	Jun. 2020	Schedule Under Development																		

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C										IS	CO			Dec. 31, 2023 - ES 2 Program End Date	
	Jun. 2020			<u>KO</u>	<u>C</u>										IS	CO				
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>					C	OS			CO							
	Jun. 2020			<u>KO</u>	<u>C</u>					OS			CO							
13. State Street	Dec. 2019			<u>KO</u>					C						IS					
	Jun. 2020			<u>KO</u>						C				IS						
14. Toney's Brook	Dec. 2019			<u>KO</u>						C								IS		
	Jun. 2020			<u>KO</u>										C		IS				
15. Waverly	Dec. 2019	<i>Schedule Under Development</i>																		
	Jun. 2020			<u>KO</u>				C										IS		
16. Woodlyne	Dec. 2019			<u>KO</u>										C				IS		
	Jun. 2020			<u>KO</u>										C			IS			

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Lakeside Avenue project had a schedule previously developed, but due to the proposed mitigation method change that contemplates relocating the substation, the schedule is now being revised and updated.

A summary of the subprogram status as of the end of the second quarter of 2020 is provided below **Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of June 30, 2020.**

**Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of June 30, 2020**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlyne
Key Drawing Review	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlyne
Scope Locked	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlyne
Major Equipment POs	14*	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia*; Meadow Road; Ridgefield 13kV*; State Street; Toney's Brook; Waverly*; Woodlyne
A/E Contract Award (or selection of PSE&G internal engineering)	14	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Hasbrouck Heights <sup>1</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Kingsland <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney's Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlyne <sup>1</sup>
Construction Start	3	Academy Street; Market Street; Ridgefield 4kV

\*-Three of the listed projects (Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 14 switchgears at 11 substations.  
<sup>1</sup>-Indicates Burns & McDonnell is serving as the A/E.  
<sup>2</sup>-Indicates PSE&G internal resources are serving as the A/E.  
<sup>3</sup>-Indicates Black & Veatch is serving as the A/E.

Beyond the key activities summarized in **Table 9** above, **Table 10 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q3 2020** summarizes the planned activities for each project during the third quarter of 2020, including any carryover of activities from earlier periods.

**Table 10 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q3 2020**

<b>Station</b>	<b>Upcoming Activities for Q3 2020</b>	<b>Carryover Activities from Q2 2020</b>
1. Academy Street	<ul style="list-style-type: none"> <li>70% estimate completion</li> <li>Electrical contractor purchase order issued</li> <li>Major license and permit issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>License and permit package submitted</li> <li>Design freeze on switchgear arrangement and controls</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
3. Constable Hook	<ul style="list-style-type: none"> <li>Remains in planning/origination stages</li> </ul>	<ul style="list-style-type: none"> <li>Planning/origination stages with property acquisition still being reviewed for 69kV project at same site</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Design freeze on switchgear arrangement and controls</li> <li>Civil and electrical drawings Issued For Review (IFR)</li> </ul>	<ul style="list-style-type: none"> <li>License and permit package submitted</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>50% estimate submittal (revised)</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Remains in planning/origination stages</li> </ul>	<ul style="list-style-type: none"> <li>Planning/origination stages with property acquisition still being reviewed for 69kV project at same site</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Major licenses and permits issued</li> <li>Civil construction start</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
8. Market Street	<ul style="list-style-type: none"> <li>70% estimate completion</li> <li>License and permit package submitted</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>License and permit package submitted</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Remains in planning/origination stages</li> </ul>	<ul style="list-style-type: none"> <li>Planning/origination stages with property acquisition still being reviewed for 69kV project at same site</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Civil contingency construction completion</li> <li>Major equipment (13kV contingency switchgear) delivered</li> <li>Start electrical construction (temporary switchgear)</li> </ul>	<ul style="list-style-type: none"> <li>Civil mechanical and duct bank construction</li> </ul>
12. Ridgefield 4kV	<ul style="list-style-type: none"> <li>70% estimate completed</li> </ul>	<ul style="list-style-type: none"> <li>Civil underground construction</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>Major license and permit received (site plan)</li> <li>Civil and electrical drawings Issued For Construction (IFC)</li> </ul>	<ul style="list-style-type: none"> <li>License and permit package submitted</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Civil and electrical drawings IFR</li> <li>Vendor submittal of final arrangement mechanical drawings to PSE&amp;G for controls IFR</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>

Station	Upcoming Activities for Q3 2020	Carryover Activities from Q2 2020
15. Waverly	<ul style="list-style-type: none"> <li>Phase 1 civil and layout drawings IFC</li> <li>Phase 2 civil and electrical drawings IFR</li> <li>Major permits submitted</li> <li>Phase 2 constructability review</li> </ul>	<ul style="list-style-type: none"> <li>License and permit package submitted</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>Major regional licenses and permits received</li> <li>Contingency drawings IFR and IFC</li> <li>Civil and electrical drawings IFC</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>License and permit package submitted</li> </ul>

The current project estimates, including base and R&C amounts, is shown below in **Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of June 30, 2020**. **Table 11** also shows the current estimate level based on PSE&G’s estimating processes and as approved by the URB, the actual spend and percentage of actuals to estimate as of the end of the second quarter of 2020, and the forecasted in-service date.

**Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of June 30, 2020**

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Office	\$12,600,000	\$4,400,000	\$17,000,000	\$650,226	4%
2. Clay Street	Study	\$34,800,000	\$7,200,000	\$42,000,000	\$619,335	1%
3. Constable Hook	Office	\$3,900,000	\$1,400,000	\$5,300,000	\$101,960	2%
4. Hasbrouck Heights	Study	\$14,900,000	\$3,100,000	\$18,000,000	\$531,773	3%
5. Kingsland	Study	\$7,100,000	\$2,900,000	\$10,000,000	\$255,665	3%
6. Lakeside Avenue	Office	\$26,800,000	\$9,400,000	\$36,100,000	442,176	1%
7. Leonia	Study	\$27,700,000	\$4,500,000	\$32,200,000	\$713,897	2%
8. Market Street	Study	\$24,200,000	\$5,800,000	\$30,000,000	\$7,334,176	24%
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$310,637	3%
10. Orange Valley	Office	\$19,700,000	\$6,900,000	\$26,600,000	\$294,300	1%
11. Ridgefield 13kV	Study	\$19,600,000	\$5,900,000	\$25,500,000	\$1,023,746	4%
12. Ridgefield 4kV	Study	\$16,800,000	\$4,300,000	\$21,100,000	\$2,971,169	14%
13. State Street	Office	\$21,200,000	\$7,400,000	\$28,600,000	\$378,656	1%
14. Toney’s Brook	Study	\$14,300,000	\$5,400,000	\$19,700,000	\$414,002	2%

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$814,790	2%
16. Woodlynne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$564,882	3%
<b>Subprogram Total</b>		<b>\$309,000,000</b>	<b>\$80,000,000</b>	<b>\$389,000,000</b>	<b>\$17,421,931</b>	<b>4%</b>

### Findings & Observations

- The projects that comprise the Electric Station Flood Mitigation subprogram continue at various phases of execution, with three projects in construction as of the end of the second quarter of 2020, three projects remaining in the planning/origination phases (the three with proposed mitigation changes discussed in **Section II.A.**), and the remaining projects continuing to advance in design and pre-construction activities.
- While early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

### 1. Academy Street

During the second quarter of 2020, approximately \$400,000 was spent on the Academy Street project towards its revised mitigation method compared to a forecast of approximately \$435,000, which brought the total spend to approximately \$650,000. Notable activities completed during the second quarter of 2020 include:

- Civil and electrical drawings IFR and IFC;
- Inside plant constructability review;
- Civil construction purchase order issued;
- Study level estimate internally approved and prepared for URB approval.

The actual spend by quarter for Academy Street as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$150,398	\$99,893	\$399,935	\$650,226	\$17,000,000	4%

As mentioned in the Executive Summary, Academy Street had its Study level estimate internally approved at the end of June 2020, which went to the URB for approval in July 2020. The new estimate, which will be detailed in the IM 2020 Third Quarter Report, is \$12,800,000, or \$4.2 million lower than the prior estimate and driven by the change in mitigation method from raise and rebuild to relocate.

### 2. Clay Street

During the second quarter of 2020, approximately \$283,000 was spent on the Clay Street project compared to a forecast of approximately \$344,000, which brought the total spend to approximately \$619,000. Notable activities completed during the second quarter of 2020 include:

- Preliminary engineering design freeze;
- License and permit package design commencement;
- Scope document signed off; and

- 4kV sheltered aisle switchgear purchase order issued.

The actual spend by quarter for Clay Street as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$116,409	\$219,707	\$283,219	\$619,335	\$42,000,000	1%

### 3. Constable Hook

Through the end of the second quarter of 2020, the Constable Hook project continued to remain in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the same area still being reviewed. The actual spend by quarter for Constable Hook as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$17,889	\$51,758	\$32,313	\$101,690	\$5,300,000	2%

### 4. Hasbrouck Heights

During the second quarter of 2020, approximately \$188,000 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$179,000, which brought the total spend to approximately \$532,000. Notable activities completed during the second quarter of 2020 include:

- Detailed design started; and,
- License and permit package submitted.

The actual spend by quarter for Hasbrouck Heights as compared to the URB last approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$149,848	\$193,879	\$188,045	\$531,773	\$18,000,000	3%

### 5. Kingsland

During the second quarter of 2020, approximately \$43,000 was spent on the Kingsland project compared to a forecast of approximately \$23,000, which brought the total spend to approximately \$256,000. Notable activities completed during the second quarter of 2020 include:

- Final vendor switchgear arrangement, mechanical, and control drawings were submitted to PSE&G.

The actual spend by quarter for Kingsland as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$104,112	\$108,286	\$43,268	\$255,665	\$10,000,000	3%

As mentioned in the Executive Summary, Kingsland had a revised Study level estimate internally approved at the end of June 2020, which went to the URB for approval in July 2020. The new estimate, which will be detailed in the IM 2020 Third Quarter Report, is \$8,300,000, or \$1.7 million lower than the prior estimate and driven by a reduction in the switchgear procurement commitment.

### **6. Lakeside Avenue**

Through the end of the second quarter of 2020, the Lakeside Avenue project continued to remain in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the same area still being reviewed. The actual spend by quarter for Lakeside Avenue as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$148,943	\$172,224	\$121,009	\$442,176	\$36,100,000	1%

### **7. Leonia**

During the second quarter of 2020, approximately \$425,000 was spent on the Leonia project compared to a forecast of approximately \$405,000, which brought the total spend to approximately \$714,000. Notable activities completed during the second quarter of 2020 include:

- Preliminary design frozen and commencement of detail design;
- Scope document signed off;
- License and permit package submitted; and,
- Contingency plan civil and temporary switchgear drawings IFC.

The actual spend by quarter for Leonia as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$44,792	\$244,323	\$424,783	\$713,897	\$32,200,000	2%

### **8. Market Street**

During the second quarter of 2020, approximately \$5,144,000 was spent on the Market Street project compared to a forecast of approximately \$5 million, which brought the total spend to approximately \$7.3 million. Notable activities completed during the second quarter of 2020 include:

- Outside plant construction on overhead poles and 4kV associated pole top equipment to upgrade to 13kV.
- Civil demolition/yard work drawings, control drawings, and electrical demolition drawings IFC.

The actual spend by quarter for Market Street as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$251,193	\$1,938,713	\$5,144,270	\$7,334,176	\$30,000,000	24%

### 9. Meadow Road

During the second quarter of 2020, approximately \$105,000 was spent on the Meadow Road project compared to a forecast of approximately \$108,000, which brought the total spend to approximately \$311,000. Notable activities completed during the second quarter of 2020 include:

- Design freeze on switchgear arrangement, mechanical, and controls;
- Scope document signed off; and,
- License and permit package design commencement.

The actual spend by quarter for Meadow Road as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$63,128	\$142,946	\$104,563	\$310,637	\$9,000,000	3%

### 10. Orange Valley

Through the end of the second quarter of 2020, the Orange Valley project continued to remain in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the same area still being reviewed. The actual spend by quarter for Orange Valley as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$77,029	\$96,582	\$120,690	\$294,300	\$26,600,000	1%

### 11. Ridgefield 13kV

During the second quarter of 2020, approximately \$500,000 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$483,000, which brought the total spend to approximately \$1.02 million. Notable activities completed during the second quarter of 2020 include:

- Civil and electrical drawings for contingency switchgear IFC;
- License and permit package submitted;
- Major county licenses and permits received;
- Pre-work performed (138kV monopole relocated and foundation removed);
- Civil mechanical and duct bank construction start.

The actual spend by quarter for Ridgefield 13kV as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$205,982	\$317,289	\$500,475	\$1,023,476	\$25,500,000	4%



### 12. Ridgefield 4kV

During the second quarter of 2020, approximately \$2.1 million was spent on the Ridgefield 4kV project compared to a forecast of approximately \$2.9 million. The variance in actual versus forecasted spend for the second quarter was predominantly the result of less test pit work required (originally expected to have to dig 12 feet to verify conditions for manhole expansions, however in some place only had to dig three feet deep). This brought the total spend to approximately \$3.0 million. Notable activities completed during the second quarter of 2020 include:

- Scope document signed off;
- Railroad agreement received; and,
- Outside plant underground manholes/duct bank civil construction start.

The actual spend by quarter for Ridgefield 4kV as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$143,414	\$693,128	\$2,134,627	\$2,971,169	\$21,100,000	14%

### 13. State Street

During the second quarter of 2020, approximately \$173,000 was spent on the State Street project towards its revised mitigation method compared to a forecast of approximately \$245,000, which brought the total spend to approximately \$379,000. Notable activities completed during the second quarter of 2020 include:

- License and permit package submitted; and,
- Detailed engineering commenced.

Additionally, the property purchase for this project was completed (which is funded and executed under the associated 69kv project). The actual spend by quarter for State Street as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$77,950	\$128,288	\$172,777	\$378,656	\$28,600,000	1%

As mentioned in the Executive Summary, State Street had its Study level estimate internally approved at the end of June 2020, which went to the URB for approval in July 2020. The new estimate, which will be detailed in the IM 2020 Third Quarter Report, is \$45,100,000, or \$16.5 million higher than the prior estimate and driven by the change in mitigation strategy from raise and rebuild to relocate.

### 14. Toney's Brook

During the second quarter of 2020, approximately \$86,000 was spent on the Toney's Brook project compared to a forecast of approximately \$128,000, which brought the total spend to approximately \$414,000. Notable activities completed during the second quarter of 2020 include:

- Design freeze on switchgear arrangement, mechanical, and controls; and,

Additionally, two of the three property parcels for this project closed during the second quarter of 2020 (which is funded and executed under the associated 69kv project), with the third parcel closing in the third quarter of 2020. The actual spend by quarter for Toney's Brook as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$211,940	\$115,747	\$86,315	\$414,002	\$19,700,000	2%

### 15. Waverly

During the second quarter of 2020, approximately \$355,000 was spent on the Waverly project compared to a forecast of approximately \$270,000, which brought the total spend to approximately \$815,000. Notable activities completed during the second quarter of 2020 include:

- Major equipment (switchgear) purchase order issued;
- Detailed engineering commenced;
- Scope document signed off; and,
- Phase 1 constructability review.

The actual spend by quarter for Waverly as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$103,748	\$355,706	\$355,335	\$814,790	\$35,400,000	2%

### 16. Woodlynne

During the second quarter of 2020, approximately \$213,000 was spent on the Woodlynne project compared to a forecast of approximately \$284,000, which brought the total spend to approximately \$565,000. Notable activities completed during the second quarter of 2020 include:

- License and permit package submitted;
- Site plan approved (county); and,
- Detailed engineering commenced.

The actual spend by quarter for Woodlynne as compared to the last URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$110,982	\$240,418	\$213,482	\$564,882	\$19,400,000	3%

### B. Contingency Reconfiguration

During the second quarter of 2020, work continued to advance in the Contingency Reconfiguration subprogram with all four Divisions installing reclosers. However, due to failure of a B-phase potential transformer (PT) on a recloser being energized, all recloser installations were temporarily suspended on May 7, 2020 to allow PSE&G to conduct a root cause analysis of the issue. The root cause analysis, conducted by a third party, determined a pinched wire in the PT junction box caused a secondary fault

that led to the PT failure. The short was grounded before the fuse, which meant the fuse was not blown and could not provide protection to the PT. PSE&G revised its testing procedures to limit the number of times required to be in the PT junction box and to test for ground faults before going to the field. Recloser installations resumed the week of June 22, 2020. While the recloser installation suspension caused the second quarter target of 204 installed reclosers to be missed, during this suspension pole installations continued, and PSE&G also shifted resources to install Hm radios and commission reclosers that were already installed without radios to allow other work in the subprogram to continue to advance. **Table 12 – ES 2 Recloser Status as of June 30, 2020** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the 2020 yearend targets and current status of engineering, installation, and commissioning.

**Table 12 – ES 2 Recloser Status as of June 30, 2020**

Type	2020 Year End Total Target	Engineering Packages Complete (1 recloser ea.)		Reclosers Installed		Reclosers Commissioned	
		Q2 Qty.	Total	Q2 Qty.	Total	Q2 Qty.	Total
13kV	800	45	594	84	417	130	130
4kV	179	100	263	14	38	11	11
<b>Total</b>	979	145	857	98	455	141	141

As shown in **Table 12**, engineering continues to stay comfortably ahead of construction, allowing PSE&G flexibility in selecting which projects to initiate construction on and allows the subprogram progress to continue.

The Fuse Saver installations is planned to begin later in 2020 with a pilot program that installs Hmc radios in the Fuse Savers to support communication on the device when there is an event. PSE&G’s Asset Management group determined a pilot program would be initiated prior to the full scope to ensure the devices work as intended, with the pilot program contemplating installation of 57 single-phase units and 18 two-phase units. The pilot program is expected to be completed by the end of 2020.

The Contingency Reconfiguration subprogram costs through the end of the second quarter of 2020 are presented in **Table 13 – ES 2 Contingency Reconfiguration Costs as of June 30, 2020**.

**Table 13 – Contingency Reconfiguration Costs as of June 30, 2020**

Scope & Division		Q4 2019	Q1 2020	Q2 2020	Total to Date	Forecast	% of Actuals to Forecast
		<i>Actuals</i>					
Reclosers	Central	\$2,737,167	\$3,918,150	\$2,238,132	\$8,893,449	\$25,257,404	35%
	Metro	\$2,231,431	\$3,576,616	\$1,946,751	\$7,754,798	\$21,745,230	36%
	Palisades	\$2,515,569	\$3,353,246	\$2,263,303	\$8,132,118	\$29,244,631	28%
	Southern	\$2,081,220	\$4,003,537	\$2,098,258	\$8,183,015	\$27,398,087	30%
Fuse Savers	Central	\$9,970	\$29,667	\$48,444	\$88,081	\$13,694,230	1%
	Metro	\$7,557	\$15,498	\$28,339	\$51,394	\$10,537,153	0%
	Palisades	\$7,468	\$15,259	\$16,336	\$39,063	\$10,834,460	0%
	Southern	\$9,792	\$21,458	22,973	\$54,223	\$12,165,607	0%
<b>Total</b>		<b>\$9,600,174</b>	<b>\$14,933,431</b>	<b>\$8,662,536</b>	<b>\$33,196,141</b>	<b>\$150,876,803</b>	<b>22%</b>

Findings & Observations:

- Recloser installations fell behind the second quarter target due to the suspension of installations following the PT failure and corresponding root cause analysis. However, PSE&G continued to advance work particularly through pole installations and commissioning of recloser installed earlier with Hm radios.
- It was appropriate for PSE&G to suspend installations in order to determine the cause of the PT failure so it could determine the cause of the failure and protect the safety of the workers.
- It was reasonable for PSE&G to introduce a pilot program on the Fuse Saver/Hmc radio installations to ensure the devices work as intended prior to commencement of the full scope.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**C. Grid Modernization – Communication System**

In June 2020, the permanent PSE&G Wireless Network infrastructure solution for connecting to the First Net LTE Network was officially placed in-service and is being utilized to manage all traffic from the field routers. Also during the second quarter of 2020, the first shipment of field routers and accessory hardware and Hm radios were delivered to the Divisions and installation commenced. By the end of the second quarter, six retrofit reclosers had been installed, in line with the target quantity for the quarter. PSE&G has made the strategic decision to focus on new recloser installations and has delayed the ramp-up in retrofit installations from August 2020 to January 2021 due to resource constraints. No overall impacts are expected from this decision and PSE&G plans to regain the planned retrofit installations by the middle of 2021 as it shifts focus from new recloser installations to the retrofit reclosers.

On the fiber scope, which includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network, 41 installation projects and 12 cutover have been identified, with the first batch of installations expected to be placed in-service during the fourth quarter of 2020 and the cutovers to be completed early in 2021.

The Grid Modernization – Communication System subprogram costs through the end of the second quarter of 2020 are presented in **Table 14 – ES 2 Grid Modernization – Communication System Costs as of June 30, 2020**.

*Table 14 – ES 2 Grid Modernization – Communication System Costs as of June 30, 2020*

Scope & Division		Q1 2019	Q1 2020	Q2 2020	Total to Date	Forecast	% of Actuals to Forecast
		<i>Actuals</i>					
Retrofit Reclosers	Central	\$0	\$50,613	\$150,958	\$201,571	\$7,389,617	3%
	Metro	\$0	\$44,164	\$139,069	\$183,233	\$6,357,784	3%
	Palisades	\$0	\$44,164	\$138,485	\$182,649	\$6,445,616	3%
	Southern	\$0	\$46,901	\$145,479	\$192,380	\$7,953,623	2%
Fiber	Central	\$1,691	\$133,115	\$272,307	\$407,113	\$6,990,081	6%
	Metro	\$1,457	\$109,382	\$299,876	\$410,715	\$4,544,079	8%
	Palisades	\$1,582	\$194,451	\$520,068	\$716,101	\$3,148,835	23%
	Southern	\$4,731	\$65,721	\$139,575	\$210,027	\$3,233,586	6%
	Cutovers	\$0	\$0	\$0	\$0	\$6,735,000	0%
<b>Wireless Network</b>		\$74,306	\$1,525,801	\$2,353,604	\$3,953,710	\$12,065,231	33%
<b>Total</b>		<b>\$83,767</b>	<b>\$2,214,312</b>	<b>\$4,159,421</b>	<b>\$6,457,500</b>	<b>\$64,863,452</b>	<b>10%</b>

Findings & Observations:

- Retrofit recloser installations began in the second quarter of 2020, but PSE&G made a strategic decision for new reclosers (as part of the Contingency Reconfiguration subprogram) continue to have installation priority of retrofits due to new reclosers providing segregation to the sections they are installed that improves reliability (while retrofits improve communications on the devices, but no segregation).
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS), the Outage Management System (OMS), and ADMS platform upgrades. The primary activities in 2020 are centered on planning activities, with the notable milestone completed in the second quarter of 2020 being the signing of the Open Systems International Inc. (OSII) contract (with the vendor selection discussed in the IM 2020 First Quarter Report). The ADMS team continues to use remote meetings with the vendor in response to the ongoing Covid-19 issues and continues to conduct design workshops to further develop the application. The final ADMS release is currently forecasted to go live during the fourth quarter of 2022.

The Grid Modernization – ADMS subprogram costs through the end of the second quarter of 2020 are presented in **Table 15 – ES 2 Grid Modernization – ADMS Costs as of June 30, 2020**.

*Table 15 – ES 2 Grid Modernization – ADMS Costs as of June 30, 2020*

Q4 2019	Q1 2020	Q2 2020	Total to Date	Forecast	% of Actuals to Forecast
<i>Actuals</i>					
\$36,213	\$925,689	\$4,430,542	\$5,392,444	\$39,707,462	14%

Findings & Observations:

- The activities to date on the subprogram continue to be primarily planning activities, including continuing to have workshops with the software vendor and operations.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric outside plant higher design and construction standards and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>2</sup> As reported in the IM 2020 First Quarter Report, the preliminary planning by PSE&G estimated that approximately one-third of the Stipulated Base funds will be used towards the electric stations life cycle investments and

<sup>2</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

the remaining two-thirds towards outside plant higher design and construction standards. Based on the current study level estimate for the life cycle upgrades (detailed below), the current view shows that approximately 80% of these funds will be applied towards life cycle upgrades, with the remainder going towards the electric outside plant higher design and construction standards. This current ratio is driven by the approval of the four life cycle stations, including risk and contingency funds, to allow their completion within the ES 2 Program window. PSE&G has confirmed with the IM that it intends to maintain the ratio at approximately one-third of funding to life cycle upgrades and two-thirds to outside plant higher design and construction schedules. In accordance with what the Stipulation provides, PSE&G plans to fund some of the lifecycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

The outside plan higher design and construction standards scope of work contemplates replacing the traditional open wire and cross-arm type construction on distribution overhead circuits with spacer cable in targeted locations. PSE&G determined that spacer cable provides significant improvement in customer reliability during storm events and other tree-related events as compared to the traditional methods. At present, approximately 45% of PSE&G's 4kV and 13kV overhead distribution system uses spacer cable. As reported in the IM 2020 First Quarter Report, the final circuit selection for this effort was still being developed but has now been completed and was selected from PSE&G's original proposal using historical value of lost load from reportable and major event history. The value of lost load was based on tree-related outages for reportable results and all outages for storm events. The rationale for using all outages in storms was that tree-related damage represents the large majority of outages during storms and the stronger poles, metal hardware and steel messenger cable all provide higher strength to resist high winds. This work is currently anticipated to commence in January 2022.

The projects identified from the pool of eligible substations are generally located in congested urban/suburban areas with a small property footprint that makes replacing the equipment while maintaining service a challenge. PSE&G has developed a standardized approach for these life cycle upgrades that should result in efficiencies in design, equipment standardization, and construction, as well as eliminating the need for additional property. Essentially, the approach calls for setting concrete footings and columns between and next to existing feeder rows to support new breaker buildings and switchgear being installed on elevated platforms above the existing feeder rows. Following installation of the new equipment, the service is transferred from the old equipment and the old equipment is demolished.

To prioritize and select the stations receiving investments through the life cycle upgrades efforts, PSE&G performed a study of asset demographics, failure curves, and risk scoring for all its Distribution Assets. PSE&G's ES 2 filing indicated it proposed to replace or retire substations with 4kV assets that are either at or close to end-of-life, with 96 stations identified with these assets. PSE&G evaluated each identified station to determine if the station is still required or if its circuits can be cost effectively converted to 13kV operation (generally those with low customer counts and/or peak loads are best candidates to eliminate with a 13kV circuit upgrade). For remaining stations, Class C stations are prioritized due to the significantly higher risk scores present compared with Class A/B stations, in part due to the fact that the 4kV equipment is in outdoor switchgear and exposed to the elements. The prioritization noted in the ES 2 filing was:

1. Class C stations located where 69kV upgrades are completed or in progress. (15 stations)
2. Class C stations identified for elimination. (13 stations)
3. Class C stations where a full station upgrade is required. (10 stations)

4. Class A & B stations where 69kV upgrades are completed or are in progress or 26kV upgrades are planned. (26 stations)
5. Remaining Class A, B, & C stations not candidates to be completed within the proposed 5-year subprogram. (21 stations)

Of those 15 stations in the top priority, Plainfield, Hamilton, Paramus, and Woodbury were initially selected. These four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. These four stations and their current estimate are provided in **Table 16 – ES 2 Life Cycle Station Upgrade Projects**.

**Table 16 – ES 2 Life Cycle Station Upgrade Projects**

Project	Estimate Level	Base	Risk & Contingency	Total
1. Hamilton	Study	\$14,500,000	\$3,700,000	\$18,200,000
2. Paramus	Study	\$14,800,000	\$5,400,000	\$20,200,000
3. Plainfield	Study	\$18,400,000	\$4,200,000	\$22,600,000
4. Woodbury	Study	\$15,400,000	\$3,300,000	\$18,700,000

Additional information on each of these life cycle stations is provided as follows:

1. Hamilton: The Hamilton substation was originally constructed in 1953 with a significant portion of its current 4kV equipment being the original equipment at the substation. The station currently consists of three 69kV lines, two 69/4kV transformers, and eight 4kV feeders. From 2008-2017, the 4kV supply circuits at Hamilton have experienced 67 extended outages and seven momentary outages, for a total duration of nearly 308 hours. The life cycle upgrades contemplate upgrading equipment and protection schemes including replacing the old electromechanical relays with modern digital relays to increase the reliability, resiliency, and life span of the substation.
2. Paramus: The Paramus substation was originally constructed in 1958 with a significant portion of its current 4kV equipment being the original equipment at the substation. The station currently consists of three 69kV lines supplying a six-breaker ring bus, with three 69/4kV transformers, and 12 4kV feeder rows. From 2008-2017, the 4kV supply circuits at Paramus have experienced 116 extended outages and 20 momentary outages, for a total duration of nearly 1,044 hours. Black & Veatch was awarded the A/E scope for this project. The life cycle upgrades contemplate upgrading equipment and protection schemes including replacing the old electromechanical relays with modern digital relays to increase the reliability, resiliency, and life span of the substation.
3. Plainfield: The 4-kV Switchgear at the Plainfield substation is in poor condition. A significant portion of the 4-kV equipment at the station is still original and the metal clad switchgear has rusted and must be addressed. In addition, all of the 4-kV distribution feeders and Tie Feeder currently run through the same manhole and conduit system, which presents the possibility of extended outages to the customers supplied from Plainfield Substation in the event of a cable or splice failure that results in collateral damage to adjacent feeders. This station currently consists of three (3) 69-kV lines supplying a Six (6) - Breaker GIS Ring Bus, with three (3) 69 / 4-kV transformers, twelve (12) 4-kV feeders, one (1) 4-kV Tie Feeder, and two (2) 2.7MVA. Black & Veatch was awarded the A/E scope for this project.

4. Woodbury: The Woodbury substation was originally constructed in 1954 with a significant portion of its current 4kV equipment being the original equipment at the substation. The station currently consists of four 26kV lines, three 26kV bus section breakers, three 26/4kV transformers, three transformer 4kV breakers, and 12 4kV feeders with voltage regulators and reactors. From 2008-2017, the 4kV supply circuits at Woodbury have experienced 153 extended outages and eight momentary outages, for a total duration of nearly 883 hours. Burns & McDonnell was awarded the A/E scope for this project. The life cycle upgrades contemplate replacing the old electromechanical relays with modern digital relays to increase the reliability, resiliency, and life span of the substation.

The four life cycle stations identified above also completed their key drawing review and initiated the major equipment procurement bid events in June 2020.

Findings & Observations:

- The four selected life cycle stations appears to be following a process consistent with how PSE&G has planned and managed the projects within the Electric Stations Flood Mitigation subprogram.
- The standardized approach PSE&G developed for these life cycle stations is an appropriate approach based on the common aspects of these substations (e.g. small footprint, common scope, etc.) and should provide an effective method for updating these substations while also benefiting from efficiencies through using a standardized approach across the projects.
- The IM agrees with the rationale applied by PSE&G for its circuit prioritization for the outside plant higher design standards, including the value of lost load for tree-related outages on reportable events and all outages for storm events, particularly given that tree/vegetation damage accounts for a majority of the outages during storm events and that the criteria also included tree-related outages for reportable results, further emphasizing this prioritization.
- The electric stipulated base projects remain largely in the planning phase, as such the IM has no additional comments on this component of the ES 2 Program at this time.

**F. Gas M&R Station Upgrades**

Through the end of the second quarter of 2020, preliminary design continued on each of the Gas M&R stations. **Table 17 – ES 2 Gas M&R Summary Status as of June 30, 2020** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates. As indicated in **Table 16**, there continues to have been minimal spend to date on the subprogram, with the actual spend primarily related to initial planning efforts.

*Table 17 – ES 2 Gas M&R Summary Status as of June 30, 2020*

Project	Estimate Level	Base	Risk & Contingency	Total to Date	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Office	\$10,000,000	\$5,400,000	\$15,400,000	\$143,516	1%	Jan 2023
2. Central*	Office	\$12,800,000	\$6,900,000	\$19,700,000	\$161,474	1%	Jan 2023
3. East Rutherford	Office	\$10,300,000	\$5,600,000	\$15,900,000	\$158,283	1%	Jan 2023
4. Mount Laurel	Office	\$11,300,000	\$6,100,000	\$17,400,000	\$108,507	1%	Jan 2022
5. Paramus*	Office	\$12,900,000	\$7,000,000	\$19,900,000	\$137,881	1%	Jul 2023



Project	Estimate Level	Base	Risk & Contingency	Total to Date	Actuals	% of Actuals to Estimate	Forecasted In-Service
6. Westampton	Office	\$8,300,000	\$4,400,000	\$12,700,000	\$230,181	2%	Jul 2021
<b>Subprogram Total</b>		<b>\$65,600,000</b>	<b>\$35,400,000</b>	<b>\$101,000,000</b>	<b>\$939,841</b>	<b>1%</b>	<b>Jul 2023</b>
*-Included in the Stipulated Base.							

Findings & Observations:

- The primary efforts to date on the subprogram continue to be initial planning efforts, including the preparation of bid material and awarding of bids for the design services on the projects (with all now awarded).
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**1. Camden**

As noted above, the primary work to date on the Gas M&R subprogram has been continuing with preliminary engineering and other planning activities. For the remainder of 2020, planned activities include continued engineering development, with all drawings (civil, electrical, instrumentation, and mechanical) expected to be IFR in November 2020, and the issuance of purchase orders for the major equipment (building, heaters, pipes, scrubber, valves and regulators) in December 2020. Construction is currently anticipated to begin in September 2021 and be completed in July 2022 (with demolition work continuing through October 2022).

The actual spend by quarter for Camden as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$13,326	\$46,691	\$83,499	\$143,516	\$15,400,000	1%

**2. Central**

As noted above, the primary work to date on the Gas M&R subprogram has been continuing with preliminary engineering, including the prior award of the A/E contract to Odin EPC, LLC, and other planning activities. For the remainder of 2020, engineering efforts are planned to continue with electrical and instrumentation drawings being IFR in November 2020 (and civil and mechanical in January 2021). Construction is currently anticipated to begin in February 2022 and be completed in September 2022 (with demolition work continuing through January 2023).

The actual spend by quarter for Central as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$6,869	\$45,048	\$109,557	\$161,474	\$19,700,000	1%

**3. East Rutherford**

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to EN Engineering, LLC, and other planning

activities. For the remainder of 2020, engineering efforts are planned to continue with all drawings (civil, electrical, instrumentation, and mechanical) expected to be IFR in January 2021. Construction is currently anticipated to begin in February 2022 and be completed in December 2022 (with demolition activities planned for completion in June 2022).

The actual spend by quarter for East Rutherford as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$9,010	\$37,747	\$111,526	\$158,283	\$15,900,000	1%

#### 4. Mount Laurel

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to J.F. Kiely Service Co., LLC, and other planning activities. For the remainder of 2020, engineering efforts are planned to continue with all drawings (civil, electrical, instrumentation, and mechanical) expected to be IFR in September 2020, followed by the issuance of purchase orders for major equipment (building, instrumentation, pipes, scrubber, valves and regulators) in October 2020. Construction is currently anticipated to begin in May 2021 and be completed in October 2021 (with demolition activities continuing through January 2022).

The actual spend by quarter for Mount Laurel as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$5,965	\$27,804	\$74,737	\$108,507	\$17,400,000	1%

#### 5. Paramus

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to EN Engineering, LLC, and other planning activities. For the remainder of 2020, engineering efforts are planned to continue with electrical and instrumentation drawings being IFR in November 2020 (followed by civil and mechanical in January 2021). Construction is currently anticipated to begin in August 2022 and be completed in June 2023 (with demolition activities continuing through September 2023).

The actual spend by quarter for Paramus as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$8,842	\$37,793	\$91,247	\$137,881	\$19,900,000	1%

#### 6. Westampton

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to NVS, Inc., and other planning activities. For the remainder of 2020, engineering efforts are planned to continue with all drawings (civil, electrical, instrumentation, and mechanical) expected to be IFR in August 2020, followed by the issuance of purchase orders for major equipment (building, instrumentation, pipes, pipe fittings, scrubber, valves and

regulators) in September 2020. Construction is currently anticipated to begin in December 2020 and be completed in March 2021 (with demolition activities continuing through May 2021).

The actual spend by quarter for Westampton as compared to the last approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>					
\$8,395	\$40,839	\$180,947	\$230,181	\$12,700,000	1%

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2020 SECOND QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

30 DECEMBER 2020

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2020 Second Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
RCR-INF-1	With reference to page 9 of the ES2 Q2 2020 Report, please provide any additional details regarding the outage at the Woodlynne substation.	The Woodlynne substation experienced 26kV supply line interruptions, similar to other 26kV outages during this Major Event. Each of these interruptions stemmed from tree/vegetation issues.	<b>Section D.</b>
RCR-INF-2	With reference to page 9 of the ES2 Q2 2020 Report, did the Company experience any outages with respect to the other ES 1 or ES 2 substations?	As noted in PSE&G's Major Event report, Bordentown, Collingswood, Ewing, and Woodlynne substations were each shut down during the June 2020 Major Event. Each shutdown stemmed from interruptions to the 26kV or 69kV supply lines to the substations. The Ewing substation was part of Energy Strong 1 and Woodlynne is part of Energy Strong 2, however, the nature of these outages was not a water intrusion event, but tree/vegetation interruptions to the supply lines.	No change
RCR-INF-3	With reference to page 9 of the ES2 Q2 2020 Report, when does the Company plan to have preliminary results of the performance of ES 2 circuits relative to unimproved circuits impacted by the June 3-7, 2020 thunderstorms?	The initial information was provided to the IM in early December, which is reflected through the new material added to <b>Section D</b> of this IM 2020 Second Quarter Report. The IM has also requested additional information from PSE&G based on its review of the initial data provided, which is expected to be discussed in the next IM report.	<b>Section D.</b>
RCR-INF-4	With reference to page 9 of the ES2 Q2 2020 Report, does the Company have results of the performance of ES 1 circuits relative to unimproved circuits impacted by the June 3-7, 2020 thunderstorms?	The initial information was provided to the IM in early December, which is reflected through the new material added to <b>Section D</b> of this IM 2020 Second Quarter Report. The IM has also requested additional information from PSE&G based on its review of the initial data provided, which is expected to be discussed in the next IM report.	<b>Section D.</b>
RCR-INF-5	With reference to Table 9 of the ES2 Q2 2020 Report, is the Company getting pricing discounts or preferential deliveries with suppliers for equipment given the scope of the substation work?	PSE&G has indicated to the IM that it has not received discounts or preferential deliveries relating to the substation work. All pricing and delivery dates originated from the competitive bid process.	No change
RCR-INF-6	With reference to page 13 of the ES2 Q2 2020 Report, please confirm that the \$399,935 spent on the Academy Street substation was associated with the change in design strategy discussed during the 2 <sup>nd</sup> quarter.	These funds were spent entirely on the new/current mitigation method.	<b>Section III.A.1.</b>

ID #	Question/Comment	IM Response	Report Changes
RCR-INF-7	With reference to page 17 of the ES2 Q2 2020 Report, please confirm that the \$172,777 spent on the State Street substation was associated with the change in design strategy discussed during the 2 <sup>nd</sup> quarter.	These funds were spent entirely on the new/current mitigation method.	<b>Section III.A.13.</b>
RCR-INF-8	With reference to page 18 of the ES2 Q2 2020 Report, please provide an update on the status of the root cause analysis. Has the Company experienced equipment failures associated with earlier recloser installations?	The root cause analysis from the May 2020 PT failure was provided to the IM in December 2020. Based on the IM's review of this analysis, additional information has been provided on this event in <b>Section III.B.</b> of this IM 2020 Second Quarter Report. PSE&G has informed the IM there has been one other recloser PT failure that occurred in October 2019.	<b>Section III.B.</b>
RCR-INF-9	With reference to page 21 of the ES2 Q2 2020 Report, has the ongoing remote working sessions impacted the schedule of ADMS implementation?	The Covid-19 protocols including the remote working sessions with the ADMS vendor, while not the original plan, this approach has not impacted the ADMS implementation schedule.	No change
RCR-INF-10	With reference to page 22 of the ES2 Q2 2020 Report, has the Company developed evaluation criteria to identify spacer cable installations?	Circuit selection has been completed. The value of lost load was based on tree related outages for reportable results and all outages for storm events. The rationale for using all outages in storms was that tree related damage represents the large majority of outages during storms and the stronger poles, metal hardware and steel messenger cable all provide higher strength to resist high winds.	<b>Section III.E.</b>
RCR-INF-11	With reference to page 22 of the ES2 Q2 2020 Report, please provide details of the four lifecycle upgrade projects for the Electric Stipulated Base component.	Additional information on these four lifecycle upgrade projects has been incorporated into this report.	<b>Section III.E.</b>
S-INF-1	Reference Page 1, Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2020 What can be attributed to the significant increase in the forecasted cost of the Contingency Reconfiguration subprogram from the Q1 2020 Update (\$119,496,564) to the Q2 2020 Update (\$150,876,803)?	Driven in part by the full forecasting of the Fuse Saver scope of the subprogram, which as of Q1 2020 had only been partially forecasted. The IM further notes that while this report covers the second quarter, as of the third quarter of 2020 the Contingency Reconfiguration subprogram forecast decreased to \$131.9 million.	<b>Section I.</b>
S-INF-2	Reference Page 1, Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2020 What can be attributed to the change in the forecasted completion date of the Grid Modernization – ADMS subprogram from the Q1 2020 Update (Dec. 2023) to the Q2 2020 Update (Oct. 2022)?	Primarily attributed to additional schedule development from the initial high-level schedule that was in place as of Q1 2020 to a more detailed schedule in place as of Q2 2020.	<b>Section I.</b>
S-INF-3	Reference Page 10, Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of June 30, 2020 a. Regarding the Electric Station Flood Mitigation projects, please confirm that all A/E contracts were awarded based on bid price.	a. All A/E contracts were awarded through a competitive bid process. b. Driven by the capabilities and availability of in-house resources.	No change

ID #	Question/Comment	IM Response	Report Changes
	<p>b. Please describe the circumstances under which PSE&amp;G internal resources would serve as the A/E.</p>		
S-INF-4	<p>Reference Page 13 (Academy Street)  Regarding the statement “Academy Street had its Study level estimate internally approved at the end of June 2020, which went to the [Utility Review Board] for approval in July 2020”, please confirm that construction began on Academy Street in Q2 2020 (See Page 9, Table 8), before approval was received from the Utility Review Board.</p>	<p>The civil construction PO was issued in June 2020, along with the release of civil IFC drawings and a constructability review. Actual construction commenced in July 2020.  The Office level estimate for Academy Street (and all other Electric Station Flood Mitigation projects) was approved before the URB in September 2019. The July 2020 URB approval for Academy Street related to the project transitioning from an Office level to a Study level estimate.</p>	No change
S-INF-5	<p>Reference Page 19 (Contingency Reconfiguration)  Regarding the statement “The Fuse Saver installations is planned to begin later in 2020 with a pilot program that installs Hmc radios in the Fuse Savers to support communication on the device when there is an event. PSE&amp;G’s Asset Management group determined a pilot program would be initiated prior to the full scope to ensure the devices work as intended, with the pilot program contemplating installation of 57 single-phase units and 18 two-phase units.”</p> <p>a. What is the approximate timeline of the pilot program?  b. Will the pilot program delay the anticipated completion date of the Contingency Reconfiguration subprogram?</p>	<p>a. November-December  b. No expected impact to the overall completion of the subprogram; in fact, intent of pilot program is to identify potential equipment/installations issues to avoid impacts during full implementation of the Fuse Saver devices.</p>	<b>Section III.B.</b>
S-INF-6	<p>Reference Page 21 (Electric Stipulated Base)  Please provide additional details describing the Company’s decision to now spend approximately 80% of the Electric Stipulated Base on life cycle upgrades, rather than approximately 33% as previously estimated in the IM 2020 Q1 Report.</p>	<p>While the Stipulation provided that the \$100M in electric stipulated base “will be spent at the Company’s discretion toward electric outside plant higher design and construction standards (‘outside plant’) and/or electric life cycle subprograms identified in the June 8, 2018 ES II filing.” PSE&amp;G’s intent remains to allocate approximately 1/3 of the Electric Stipulated Based funding to lifecycle station upgrades. The current ratio roughly allocates 4/5 of this funding to the lifecycle station upgrades is reflective of the funding approval for the initial four substations (Hamilton, Plainfield, Paramus, and Woodbury) including the risk and contingency allowance for each substation. The funding approval allows these projects to be initiated in alignment with the ES 2 Program duration. In accordance with what the Stipulation provides, PSE&amp;G plans to fund some of the lifecycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.</p>	<b>Section III.E.</b>

ID #	Question/Comment	IM Response	Report Changes
S-INF-7	<p>Reference Page 22 (Electric Stipulated Base)  Regarding the statement “At present, approximately 45% of PSE&amp;G’s 4kV and 13kV overhead distribution system uses spacer cable. As reported in the IM 2020 First Quarter Report, the final circuit selection for this effort is still being developed but will be selected from PSE&amp;G’s original proposal using historical value of lost load from reportable and major event history.”</p> <ol style="list-style-type: none"> <li>a. Please confirm that the historical value of lost load reflects all outages, rather than only tree-related outages.</li> <li>b. If so, please discuss if the IM believes it is appropriate to select circuits for spacer cable installation based on the historical value of lost load, rather than the circuit’s tree-related outage history.</li> </ol>	<p>The value of lost load utilized by PSE&amp;G was based on tree related outages for reportable results and all outages for storm events. PSE&amp;G’s rationale for using all outages in storms was that tree related damage represents the large majority of outages during storms and the stronger poles, metal hardware and steel messenger cable all provide higher strength to resist high winds. The IM agrees with this rationale, particularly given that tree/vegetation damage accounts for a majority of the outages during storm events and that the criteria also included tree-related outages for reportable results, further emphasizing this prioritization.</p>	Section III.E
S-INF-8	<p>Reference Page 22, Table 16 – ES 2 Life Cycle Station Upgrade Projects  Please describe the factors considered by the Company in selecting the four (4) life cycle station projects in Table 16 for inclusion within the Program.</p>	<p>PSE&amp;G performed a study of asset demographics, failure curves, and risk scoring for all its Distribution Assets. PSE&amp;G’s filing indicated it proposed to replace or retire substations with 4kV assets that are either at or close to end-of-life, with 96 stations identified with these assets. PSE&amp;G evaluated each identified station to determine if the station is still required or if its circuits can be cost effectively converted to 13kV operation (generally those with low customer counts and/or peak loads are best candidates to eliminate with a 13kV circuit upgrade). For remaining stations, Class C stations are prioritized due to the significantly higher risk scores present compared with Class A/B stations, in part due to the fact that the 4kV equipment is in outdoor switchgear and exposed to the elements. The prioritization noted in the ES 2 filing was:</p> <ol style="list-style-type: none"> <li>1. Class C stations located where 69kV upgrades are completed or in progress. (15 stations)</li> <li>2. Class C stations identified for elimination. (13 stations)</li> <li>3. Class C stations where a full station upgrade is required. (10 stations)</li> <li>4. Class A &amp; B stations where 69kV upgrades are completed or are in progress or 26kV upgrades are planned. (26 stations)</li> </ol>	Section III.E



ID #	Question/Comment	IM Response	Report Changes
		<p>5. Remaining Class A, B, &amp; C stations not candidates to be completed within the proposed 5-year subprogram. (21 stations)</p> <p>Of those 15 stations in the top priority, Plainfield, Hamilton, Paramus, and Woodbury were initially selected.</p>	
S-INF-9	<p>Reference Page 23 (Gas M&amp;R Station Upgrades) Regarding the Gas M&amp;R Station Upgrades:</p> <p>a. Please confirm that all A/E contracts were awarded based on bid price.</p> <p>b. Please identify the entity that was awarded the A/E contract for the Camden M&amp;R project.</p>	<p>a. All awarded on bid pricing.</p> <p>b. Burns &amp; McDonnell was awarded the contract in July 2020 after the work was re-bid following the initially selected firm not agreeing to PSE&amp;G's terms and conditions regarding material procurement.</p>	No change
PSE&G-1	Table 6, Grid Modification – Communications Total AFUDC should be \$38,148.	The correct total has been added to <b>Table 6</b> .	<b>Table 6</b>
PSE&G-2	Table 6, Grid Modification – ADMS Total AFUDC should be \$22,926.	The correct total has been added to <b>Table 6</b> .	<b>Table 6</b>
PSE&G-3	<p>Academy and State were at Study estimates though URB approval was pending. The estimate phase and numbers should be updated to Study data.</p> <p>Academy Base - \$9,900,000 R&amp;C - \$2,900,000  State Street Base - \$39,000,000 R&amp;C - \$6,100,000  Kingsland – Phase shows Study phase which is right but the number is office data. Number should be updated to Study numbers  Kingsland Base - \$5,400,000 R&amp;C - \$2,900,000</p>	As noted in the discussion on the estimates for these projects, the values displayed are reflective of the current estimate approved by the URB. While Academy Street, State Street, and Kingsland had updated estimates approved internally in June, these estimates were not approved by the URB until July, as such, the IM reported the previously approved URB estimates for these projects (while also noting the URB approval was pending).	No change
Rate Counsel 12/7/2020 Letter to IM	Rate Counsel also notes that the budget for Electric stipulated base has been set to \$100 million, but that Pegasus states that the subprogram's projects "remained largely in the planning stage."	The \$100 million budget for the electric component of the Stipulated Based was established by the Stipulation. This component of the ES 2 Program has largely remained in the planning stage, as evidenced by the selection of the initial life cycle stations reported in this report and the establishment of criteria for higher design standards.	No change
Rate Counsel 12/7/2020 Letter to IM	The Electric Flood mitigation program increased from \$309,160,283 in the First Quarter Report to \$332,662,596 in the Second Quarter Report, not including risk and contingency estimates. However, Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of June 30, 2020, states that the base spending amount for the subprogram is \$309,000,000 in budgeted base project costs and \$80,000,000 allocated to risk and contingency.	The \$309,160,283 figure reported in the IM 2020 First Quarter Report and the \$332,662,596 figure reported in this IM 2020 Second Quarter Report reflect PSE&G's <u>current forecasted</u> spend for the Electric Station Flood Mitigation subprogram. The figures presented in Table 11 depict the <u>latest estimate</u> for each of the substations within this subprogram, including designation of the current estimate level.	No change

ID #	Question/Comment	IM Response	Report Changes
		It is common for the current forecast to differ from the latest estimate based on the forecast including trends and other more current metrics (which would be captured by the next revision to the project estimate).	
Rate Counsel 12/7/2020 Letter to IM	The Independent Monitor notes that no formal RODs were issued during the second quarter of 2020, however, PSE&G has proposed additional mitigation method changes at three substations in the Electric Station Flood Mitigation subprogram: the Lakeside Avenue, Orange Valley, and Constable Hook substations.	The IM concurs that no formal RODs were issued during the second quarter of 2020. The IM also notes that while these mitigation changes were raised during the second quarter, as noted in this IM 2020 Second Quarter Report, the formal notification was not submitted by PSE&G until the third quarter of 2020 and will be discussed in more detail in the IM 2020 Third Quarter Report.	No change
Rate Counsel 12/7/2020 Letter to IM	Similarly, the Contingency Reconfiguration subprogram total forecast increased to \$150,876,803 from \$119,496,564 in the First Quarter Report. The stipulated budget for the subprogram is \$145 million. Nonetheless, Pegasus concludes that “[w]hile still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.”	The IM notes that it is still early in the subprogram and as the planning and forecasting becomes more solidified based on the initial efforts it is expected the forecast will be less volatile. This second quarter forecast increase to the Contingency Reconfiguration subprogram was driven in part by the full forecasting of the Fuse Saver scope of the subprogram, which as of Q1 2020 had only been partially forecasted. The IM further notes that while this is report covers the second quarter, as of the third quarter of 2020 the contingency reconfiguration subprogram forecast decreased to \$131.9 million.	<b>Section I.</b>
Rate Counsel 12/7/2020 Letter to IM	The amounts set forth in the Second Quarter Report Tables should be amended so that the stipulated amounts for the ESII program are clearly stated.	This information has been added to <b>Table 1.</b>	<b>Table 1</b>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2020 THIRD QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

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11 MAY 2021

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Air Insulated Substation.....	AIS
Allowance for Funds Used During Construction .....	AFUDC
Architectural and Engineering .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System .....	DERMS
Energy Strong 2 .....	ES 2
Gas Insulated Substation.....	GIS
Gas Metering & Regulating .....	Gas M&R
Independent Monitor.....	IM
Infrastructure Investment Program.....	IIP
Issued for Construction .....	IFC
Issued for Review .....	IFR
Open Systems International Inc. ....	OSII
Operations & Maintenance .....	O&M
Outage Management System.....	OMS
Plain Old Telephone Service.....	POTS
Public Service Electric & Gas .....	PSE&G
Record of Decision .....	ROD
Risk and Contingency .....	R&C
State of New Jersey Division of Rate Counsel.....	Rate Counsel
Supervisory Control And Data Acquisition.....	SCADA
System Average Interruption Duration Index .....	SAIDI
Underground Storage Tanks .....	USTs
Utility Review Board .....	URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019 with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram).

During the third quarter of 2020, the bulk of the spend within the ES 2 Program continued to be in the two largest subprograms: Electric Station Flood Mitigation with six projects now in construction, up from three in the prior quarter; and Contingency Reconfiguration that continues to advance the installation and commissioning of reclosers, despite encountering weather-related impacts and minor inventory issues. Within the other subprograms, the two Grid Modernization subprograms continued to advance with the Communications piece primarily focusing on readying the new network and preparing for the selected 2020 fiber projects that were initiated in the fourth quarter of 2020 and the ADMS piece continuing to plan and scope the platform and necessary hardware equipment, while the Gas M&R subprogram largely remains in preliminary planning and early engineering activities. As noted in the Independent Monitor's (IM's) 2020 Second Quarter Report, four stations within the life cycle upgrades portion of the Electric Stipulated Base were approved by the Utility Review Board (URB) in July 2020, which initiated the initial spend on these projects during the third quarter of 2020 as design and permitting efforts began.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of September 30, 2020** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of September 30, 2020**

Subprogram	Q3 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount
Electric Station Flood Mitigation	\$16,058,679	\$33,480,071	\$327,092,250	10%	Jan 2024	\$389M
Contingency Reconfiguration	\$10,289,616	\$43,485,758	\$131,898,033	33%	Jul 2023	\$145M
Grid Modernization – Communications	\$5,106,396	\$11,563,893	\$59,120,939	20%	Dec 2023	\$72M
Grid Modernization – ADMS	\$6,970,572	\$12,363,016	\$40,374,822	31%	Oct 2022	\$35M
Electric Stipulated Base	\$1,473,779	\$1,473,779	\$100,103,160	1%	Under Development	\$100M
Gas M&R Station Upgrades^	\$1,178,542	\$2,118,383	\$76,200,001	3%	Jul 2023	\$101M
<b>Total*</b>	<b>\$41,077,584</b>	<b>\$104,484,899</b>	<b>\$734,789,205</b>	<b>14%</b>	<b>Dec 2023</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 20** and **Table 19** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\*-Final in-service date.

^-Includes both the ES 2 projects and the Stipulated Base gas projects.

From the second quarter of 2020, the overall ES 2 Program forecast decreased from approximately \$747 million to \$734.8 million. This was largely driven by an approximate \$18 million decrease in the Contingency Reconfiguration subprogram forecast, which was slightly offset by an approximate \$10.6 million increase in the Gas M&R subprogram forecast. The change in the Contingency Reconfiguration subprogram forecast from the second to third quarter of 2020 was predominantly driven by the removal of 117 13kV reclosers and 109 4kV reclosers. This was the result of a detailed assessment of each circuit to determine the current status reflecting updated system plans and changes or other work done subsequent to the ES 2 filing. The change in the Gas M&R forecast was predominantly driven by an increase to the forecast for the Central M&R project from \$12.8 million as of the second quarter of 2020 to \$23.9 million as of the third quarter of 2020. This forecast was validated and incorporated into the project’s Study level estimate that was approved at \$30.0 million (including R&C) in December 2020. The increase was driven by higher construction costs based on the engineer’s 50% estimate, additional buildings and equipment required for the refined design, and additional project management, engineering, and licensing and permitting support not included in the prior estimate.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2020.**

**Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2020**

Project	Total Estimate	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$11,800,000	\$1,962,997	17%	10/25/2021
2. Clay Street	\$42,000,000	\$853,506	2%	1/12/2023 (↓)
3. Constable Hook	\$5,300,000	\$110,380	2%	TBD
4. Hasbrouck Heights	\$18,000,000	\$857,466	5%	12/2/2022 (↓)
5. Kingsland	\$8,300,000	\$283,143	3%	10/4/2023
6. Lakeside Avenue	\$36,100,000	\$529,588	1%	12/29/2023 (↓)
7. Leonia	\$32,200,000	\$1,785,365	6%	12/2/2022 (↓)
8. Market Street	\$30,000,000	\$12,273,747	41%	9/22/2021
9. Meadow Road	\$9,000,000	\$483,601	5%	9/21/2023
10. Orange Valley	\$26,600,000	\$358,732	1%	1/22/2024
11. Ridgefield 13kV	\$25,500,000	\$3,997,876	16%	10/7/2022 (↑)
12. Ridgefield 4kV	\$20,200,000	\$6,745,564	33%	6/30/2021
13. State Street	\$45,100,000	\$596,495	1%	9/23/2022
14. Toney’s Brook	\$19,700,000	\$510,253	3%	4/21/2023
15. Waverly	\$35,400,000	\$1,465,452	4%	11/16/2023 (↑)
16. Woodlynne	\$19,400,000	\$665,906	3%	9/26/2023

\*-Reflects the in-service date of the last major asset (e.g., switchgear), certain activities may take place after this date to support the final in-service date (i.e., when all customers are cutover).  
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As indicated in **Table 2**, the Market Street and Ridgefield 4kV projects continue to have the highest percentage of spend, which is reflective of these two projects advancing further into construction. Additionally, three of the stations (Academy Street, Kingsland, and State Street) had new estimates approved by the URB in July 2020. **Table 2** also shows that six of the sixteen projects in this subprogram had movement in the forecasted in-service date, with two advancing and four slipping. Of these six projects, only one (Lakeside Avenue) had movement more than 60 days, which is the threshold the IM applied during the original Energy Strong Program for evaluating the project schedules. Lakeside Avenue’s delay is driven by the original property purchase location for the corresponding 69kV project falling through while a new potential property purchase is underway.

While early in the subprogram, the IM has found nothing to date that would jeopardize the ES 2 Program being completed on time and/or on budget.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On March 11, 2021, a draft report was presented and submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2020 Third Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their rationale and any impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2020 Third Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section II.B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section II.B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. below</i> )
Grid Modernization – Communication System	Substation Communication Cutover	Reasonable and appropriate ( <i>See Section II.A.2. below</i> )



Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Pending review of additional information ( <i>See Section II.A.3. below and Section IV.B.</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. below</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-2 Units	Under initial review

### 1. Grid Modernization – Wireless Communication Network

The initial proposal for a wireless network solution included a self-contained network not reliant on any third-party carriers. On July 6, 2020, PSE&G recorded a ROD to detail why this was not a component of the selected FirstNet solution (this selection was initially discussed in the IM 2020 First Quarter Report).

One of the major components of the Grid Modernization subprogram is to create a high-speed wireless network across the PSE&G service territory. The network will be leveraged to communicate with a broad range of electric distribution field assets. PSE&G considers reliability, redundancy, and resilience to be key characteristics required for the communication platform. In order to achieve these objectives, required capabilities of the network include high-bandwidth transmission, minimal latency, industry standard encryption and authentication, and the ability to prioritize traffic based on hierarchical classification. In addition, PSE&G has determined that the communication network must communicate wirelessly with PSE&G’s underground electric distribution network through manholes and vaults. PSE&G has further noted to the IM that full coverage in underground residential developments where there is no overhead electric construction is also required.

Alternatives considered include:

1. ABB Mesh Network – operating in unlicensed public spectrum;
2. Nokia LTE Network – operating based on a 2.5 GHz spectrum band;
3. AT&T LTE Network – operating based on a 2.3 GHz spectrum band;
4. Hybrid Solution: Multiple Vendors – proposing operating on proposed re-banding of 900 MHz spectrum; and
5. FirstNet: Public/Private Partnership with the Federal Government – operating on a 700 MHz spectrum band.

The initial proposal for how to create a high-speed wireless network across the PSE&G territory stated that the network would be completely self-contained and not reliant on any third-party public commercial communication carriers. The decision as discussed herein, determined this not to be a component of the selected alternative.

The total vendor costs including the network construct and the cost to purchase the spectrum (and not including the annual operating and maintenance costs) ranged from \$28.7 million to \$238 million, with the FirstNet being the lowest cost.

FirstNet is a nationwide wireless broadband network for first responders being built and deployed through a public-private partnership between the federal government and AT&T. FirstNet offers first responders a dedicated communications network built and customized to meet their needs. As a corporation in the utility industry that works with public safety and first responders during emergency responses, PSE&G qualifies as an Extended Primary FirstNet User.

As the Federal Government's choice to be the exclusive FirstNet network provider, AT&T is uniquely positioned to provide these services. AT&T is the only vendor that can properly configure, provision, and optimize the routers for use on their FirstNet network. Utilizing another vendor for these services was not considered due to AT&T's exclusive agreement with the Federal Government for management and oversight of the FirstNet network.

In its decision-making process, PSE&G, after an evaluation and analysis, determined that building a solely owned and operated communication network would not be prudent. The evaluation and analysis concluded that the cost to construct a privately owned network and the purchase of the required spectrum for LTE solutions was much higher than anticipated (with an estimated cost of \$87 million to purchase spectrum up front or an estimated cost of \$156 million to lease spectrum over 20 years). In addition, PSE&G's evaluation found that the time to obtain the proper permitting and network construction would add risk to the project timelines. While the ABB mesh solution operated on unlicensed frequencies the total number of network devices (30k), the cost to construct and maintain were determined by PSE&G not to be practical or easily maintainable.

### Findings and Observations

- The IM finds that PSE&G conducted the appropriate due diligence, evaluation, and analysis in determining its solution to create a high-speed wireless network across the PSE&G electric service territory.
- While the FirstNet is the lowest cost solution, the solution also provides a network that is already being used by First Responders nationwide and was already vetted and chosen by the Federal Government.
- The decision will provide the required reliability, redundancy, and resiliency for the communication platform.

## 2. *Grid Modernization – Substation Communication Cutover*

On October 29, 2020, PSE&G recorded a ROD to cutover primary SCADA communications at substations where PSE&G's fiber backbone is installed but not yet connected and to install Nokia Hmc radios and cutover backup Substation communications to the new FirstNet Wireless Network (see related discussion in **Section II.A.1**).

Alternatives were considered which included:

1. Do nothing and maintain 3<sup>rd</sup> party fiber, "plain old telephone service" (POTS) lines and/or Verizon 4G as the primary and backup communication for SCADA at PSE&G's substations, and
2. Cutover primary SCADA communications to existing PSE&G fiber and backup communications to the new FirstNet Wireless Network.

The PSE&G 2018 filing included provisions to effectively eliminate PSE&G's reliance on POTS or Verizon 4G for critical operational communications. POTS lines were predominately provided by copper wire, which is unreliable during major weather events. In addition, Verizon no longer maintains POTS lines and is in the process of upgrading its network to fiber. PSE&G has noted that while the Verizon upgrade is expected to improve reliability, PSE&G would incur costs to connect the communication equipment and would still be reliant on a third-party provider.

The primary communication for the SCADA system at substations will be PSE&G's Fiber Backbone. Twelve substations that currently have the fiber backbone but have not yet been connected to the network will be cutover. The backup communication inside approximately 218 substations will have Nokia Hmc

radios installed and will be cutover to the FirstNet solution, a public safety network dedicated, built, and customized for First Responders.

12 substations are currently included in the Fiber Cutover initiative including: Delair, East Riverton 2, Elizabeth Sub, Fairview, Henry Street, Mount Holly, Polk Street, Riverside-13kV, Spring Valley Rd, Tonnelle Avenue, Union City and West Orange Sub. The substation division where FirstNet wireless communication will be leveraged include: Central (61), Metro (61), Palisades (21) and Southern (75).

The IM inquired with PSE&G as to whether there is an estimate of the anticipated operational cost savings from the elimination of POTS lines and 4G. PSE&G responded that the estimated savings from the Substation Cutover program from disconnecting third party POTS lines and 4G are as follows:

- Annual O&M Communication Plan savings (218 substations): \$17,668/year.
- One-time avoided O&M costs from eliminating the requirement of transitioning existing POTS lines over to Verizon Fiber (205 Substations): \$773,670.

#### Findings and Observations

- By leveraging the existing PSE&G Fiber Backbone for primary communication to substations with SCADA will effectively eliminate PSE&G's reliance on POTS lines or Verizon 4G for any critical operational communications inside substations that contain SCADA.
- Transitioning all backup SCADA communications for 218 substation RTUs to the new FirstNet Wireless Network will ensure ruggedized communication redundancy to PSE&G substations in the event of a hardware or infrastructure failure.
- By making the changes, PSE&G will incur lower operational costs achieved by the elimination of the POTS lines and 4G and improved reliability of communication during storm events.
- The IM finds that PSE&G appropriately investigated the alternatives and making its decision focusing on the long-term reliability for customers while at the same time evaluating the operational cost for that long-term reliability.
- The IM further finds that PSE&G's decision will have both a one-time cost benefit as well as an annual savings benefit to customers.

### **3. Electric Station Flood Mitigation – Lakeside Avenue, Orange Valley, and Constable Hook Change in Mitigation Method**

Following the previous change in mitigation method to the Academy Street and State Street substations (discussed in the IM 2020 First Quarter Report), PSE&G indicated that it continuously assesses and reassess its transmission and distribution projects to consider overall systems needs and scheduled improvements. From these reviews, PSE&G determined that the Lakeside Avenue, Orange Valley, and Constable Hook projects in the Electric Station Flood Mitigation subprogram presented opportunities to combine transmission and distribution work to gain project and cost efficiencies. On September 24, 2020, PSE&G formally notified the BPU and other parties of the proposed change in mitigation method for certain the Lakeside Avenue, Orange Valley and Constable Hook projects. The information presented within this **Section II.A.3.** is intended to convey the status of this decision as of the end of the third quarter of 2020, additional information reviewed by the IM as of the date of this report, but outside of the third quarter of 2020, is provided in **Section IV** and will also be discussed as appropriate in the next IM report.

In regard to the proposed mitigation changes at Lakeside and Orange Valley, from an overall perspective, PSE&G is upgrading network supply to Lakeside, Orange Valley, Toney's Brook, and South Orange

(future) by establishing a 69kV transmission path in Essex County. PSE&G identified that it could combine transmission and distribution work at Lakeside and Orange Valley to gain project efficiencies and reduce the costs of these projects compared to if they were performed separately. The proposed change at Constable Hook is similar in regard to combining the project with other work, but instead of combining the flood mitigation distribution work with a transmission project, the distribution work is being combined with new capacity needs in the area and life cycle replacement needs at the neighboring Bergen Point substation.

### **Lakeside Avenue**

For Lakeside Avenue, PSE&G originally contemplated constructing the distribution and transmission projects at the Lakeside Avenue location noted in the ES 2 filing, which included a rebuild at the existing location. Since the ES 2 filing, PSE&G determined that moving sites to a new property is a better option for several reasons as discussed below including that it would be more costly to perform the ES 2 project and the 69kV transmission project separately.

PSE&G learned in March 2018 that the adjacent property planned for purchase was not available, thus requiring a more complicated construction sequence and the need to temporarily relocate the 4kV switchgear. Further, due to the size of the Lakeside site, a customized design to accommodate both the distribution and transmission facilities on the property would be required as well as the use of contingencies and cutovers to increase safety, environmental and reliability risks.

Prior to the 101 N. Park alternative, PSE&G first considered a property at 338 Washington Street. However, in October 2019, PSE&G deemed that the Washington Street site was not viable due to environmental conditions. PSE&G continued to also consider the existing Lakeside Substation and at this time began to consider 101 N. Park as an option. PSE&G has noted that it expects to acquire the property at 101 N. Park Street in December 2021.

PSE&G has determined that since there is no existing utility operation on the new property located at 101 N. Park Street, the use of contingencies is not required and would allow the substation to be build based on a standard PSE&G design, which PSE&G notes would be better from an operational and maintenance standpoint.

The initial cost estimate of ES 2 project and the 69kV project were \$36.1 million and \$106 million, respectively. The current estimate, based on the refined study level estimates at the 101 N. Park Street location are \$47.9 million and \$93.6 million respectively, or an estimated combined savings on the projects of approximately \$0.6 million.

PSE&G, in its response to RCR-INF-0001, provided the estimates for the ES 2 and 69kV Lakeside Avenue projects, including the estimate at filing, the Office Level estimate, and the current Study Level estimate, which has been reproduced below in **Table 4 – Lakeside Avenue Project Estimates**.

***Table 4 – Lakeside Avenue Project Estimates***

<b>Estimate</b>	<b>69kV Project</b>	<b>ES 2 Project</b>	<b>Total</b>
Initial Filing Estimate	\$106.0 million	\$36.1 million	\$142.1 million
Office Level (existing site)	\$120.4 million	\$47.9 million	\$168.3 million
Study Level (101 N. Park Street site)	\$93.6 million	\$47.9 million	\$141.5 million

As shown in **Table 4**, while the combined total is a slight decrease of \$0.6 million from the total authorized, the Lakeside Avenue Office Level estimate at the existing site showed an estimate of \$47.9 million versus a Stipulation Filing estimate of \$36.1 million. The updated Study Level estimate does not change the prior Office Level estimate for the Lakeside Avenue, thus resulting in an \$11.8 million increase from the initial estimate for the ES 2 project regardless of site location.

PSE&G described the existing location design noting that the 4kV in the building is a unique design resulting in higher construction and operating costs. The proposed location at 101 N. Park would result in a 4kV standard switchgear arrangements that would have lower construction and operating costs. PSE&G in its response to RCR-INF-0001 described the design of the 101 N. Park Street substation and noted that it would not incorporate loads from other PSE&G substations.

While there is an approximate \$11 million increase in the ES 2 Lakeside project estimate from the filing estimate, this increase is not directly tied to the change in mitigation method as it also was realized in the Office Level estimate for the original site. The bulk of the anticipated cost savings are in the 69kV transmission project, which shows a cost reduction of approximately \$26 million to perform the work at 101 N. Park versus the original site.

#### Findings and Observations

- The IM finds that the proposed mitigation mitigates the impacts stemming from the unavailability of the adjacent property as originally planned (complexities to design and construction sequencing due to small site.)
- Construction risk (i.e., no buildings to remove or abatement necessary at new site) is reduced.
- The need for service contingencies is eliminated.
- The new substation at 101 N. Park Street would be a traditional design, thus improving operations and maintenance aspects of the station.
- While there is only marginal cost savings of approximately \$0.6 million from the filing estimate by the joint execution of distribution and transmission projects, the mitigation measure avoids costlier option of performing these projects at the existing site-\$168.3 million combined estimate at existing site versus \$141.5 million combined estimate at the new site.

#### Orange Valley

With respect to Orange Valley, as with Lakeside Avenue, PSE&G identified transmission upgrades in the same area and determined that it would be less costly to perform both the ES 2 project and the transmission project jointly.

In the ES 2 filing, PSE&G contemplated rebuilding the substation on the existing location. PSE&G proposes to move from the existing Orange Valley site to a larger property approximately 120 feet from the existing station. The adjacent property is a larger property, close to the 230kV and will result in less operational risks as no service contingencies are required. By combining the work, PSE&G has determined that it will be able to avoid the need for a 7-Breaker 69 kV Ring Bus Switchgear that would be required if PSE&G proceeded with the construction at two separate stations. The proposed change thus consolidates the 230kV/69/4kV on a single property.

PSE&G, in its response to S-INF-0002, provided the estimates at filing and the current Office Level estimate for the ES 2 and 69kV Orange Valley projects, which has been reproduced below in **Table 5 – Orange Valley Project Estimates**.

**Table 5 – Orange Valley Project Estimates**

<b>Estimate</b>	<b>69kV Project</b>	<b>ES 2 Project</b>	<b>Total</b>
Initial Filing Estimate (original site)	\$328.0 million	\$26.6 million	\$354.6 million
Office Level (new site)	\$205.3 million	\$21.0 million	\$226.3 million

Due to the close proximity of the new Orange Valley Substation site and a simpler construction concept, PSE&G expects to complete the ES 2 project work with an expected savings of approximately \$5 million from the original estimate. The original concept was based on an over/under design, where the new equipment needed to be constructed at the existing Orange Valley substation site, around and over the old equipment, while the old equipment remained in service. PSE&G noted that this required an intricate design of the foundations, additional steel, and also a detailed, possibly daily, outage schedule for the existing circuits during construction that greatly added to the cost and timing of the construction. The contemplated project and involves construction of the standard sheltered aisle switchgear on a previously cleared property. The cost of the switchgear is purported by PSE&G to be more accurate because it is based on recent switchgear purchases. Further, that recent information reduces the R&C estimate as the only outages will be for the cutover of the circuits, reducing the time spent coordinating construction. PSE&G noted that the common site costs (drainage, security, grading, fencing, etc.) are being shared, with 15% going towards the ES 2 project and 85% towards the larger transmission project. This ratio of common site costs between the ES 2 and 69kV Orange Valley projects was determined by PSE&G based on the ratio of each project’s Study level estimated cost of station equipment and structures to the total estimate cost of station equipment and structures for both projects, which was then rounded to the nearest 5%.

PSE&G explained that in order to construct the 69kV network, PSE&G needs a 230/69kV switching station as a source station for the 69kV system. PSE&G discussed the alternatives considered including building Orange Valley on the existing property at 69/4kV and a separate 230/69kV switching station to supply the 69kV network. However, that alternative would require the construction of two separate stations as well as 69kV ring bus at Orange Valley. Building the two stations independently was noted to also require the construction of three new transmission circuits from the 230/69kV switching station to the 69/4kV station at Orange Valley. The elimination of the 69kV ring bus and the extension of three 69kV lines was further noted to be conservatively estimated at savings of \$15-\$20 million by consolidating the Orange Valley site.

PSE&G responded to RCR-INF-0002 providing a description of the design proposed for the new Orange Valley substation. Further, the Company noted in response to S-INF-0002 that it expected to acquire the nearby property in April 2021, and as of the date of this report PSE&G is still in purchase negotiations regarding the new property. PSE&G confirmed that the Orange Valley substation will not incorporate loads from other PSE&G substations and that the ES 2 distribution work is included in the \$26.6 million estimate for the substation. Further, the land costs are also included in the Company’s estimate of the combined cost savings of these transmission and distribution projects.

In response to RCR-INF-5 asking for an explanation as to whether the preliminary and/or phase 1 environmental assessment(s) have identified the presence of Underground Storage Tanks (USTs) associated with the current property owners, PSE&G responded that the Phase 1 assessment did identify USTs and that the seller will be responsible to remove all USTs present at the property.

### Findings and Observations

- The IM finds that PSE&G conducted its due diligence in its evaluation of whether there would be benefits to customers in combining both the transmission and distribution projects with both consolidation of 230kV/69/4kV on a single property and less operational risk.
- The proposed mitigation also eliminates the need for service contingencies.
- PSE&G has identified savings of approximately \$5 million to the Orange Valley ES 2 project resulting from this mitigation change from what was originally contemplated in the ES 2 filing.

### Constable Hook

The original ES 2 filing contemplated rebuilding the substation on the existing location. The original project did not have associated transmission costs. Existing units were to be raised above the flood zone under the original project. PSE&G identified an opportunity to combine the flood mitigation work at Constable Hook with new capacity needed in the area based on ongoing development. The proposed change further would eliminate the existing station and construct a new station in the area of Constable Hook and supply the new load at the former Military Ocean Terminal. The new station would serve the existing Constable Hook customers with a storm-hardened facility. By consolidating into a single location, PSE&G determined there would be a better source of 69kV vs. 26kV for storms as well as lower long term operating costs. The existing circuits are very close to the new site and rearrangements can improve reliability at low cost.

The need for additional capacity in the area served by Constable Hook was determined in the spring of 2020 when new residential and electric vehicle growth was identified. The estimated load growth on the Bayonne Peninsula in the areas served by Constable Hook is 25-30MW.

In response to RCR-INF-0003, PSE&G described the design of the new Bergen Point substation noting that Bergen Point is an existing 26/4kV station and that there is no plan for a new station at that location. PSE&G discussed the alternative which was to upgrade the station to 69/13kV but that after evaluation, the alternative had higher costs versus the option of constructing a new Constable Hook station and retiring Bergen Point (approximately \$203 million to upgrade the existing Bergen Point station versus approximately \$187 million under the new Constable Hook option). The new Constable Hook proposed station to be located on Route 440 was noted to be a 69/13kV station including a 69kV ring bus, two 69/13kV transformers and 13kV sheltered isle switchgear and will eventually allow for the retirement of the Bergen Point substation at some point in the future. However, PSE&G noted that the new Route 440 property has not yet been acquired. Once acquired and upon completion of the new Constable Hook Station, the load will be gradually transferred over by approximately 2028.

PSE&G's Life Cycle subprogram in the ES 2 filing identified Class C stations as a priority over Class A/B stations due to Class C stations being outdoor facilities with metal-clad switchgear, which results in a higher associated risk and poorer performance. The Bergen Point substation is a Class A station where the 4kV equipment is enclosed in a masonry building and thus is a lower risk station per the Company's risk model assessment. However, the station was constructed in 1929 and thus is considered a lifecycle station as PSE&G noted in its ES 2 filing that the majority of the 4kV equipment at these facilities is the original equipment.

The Bergen Point substation and the new Constable Hook substation proposed to be built at the Route 440 property have the same electrical configuration. However, the primary cost difference in the projects is the requirement for a Gas Insulated Substation (GIS) at Bergen Point compared to an Air Insulated Substation (AIS) at the Route 440 property. The GIS station has a much smaller footprint required at the

Bergen Point location but is more expensive while the Route 440 property has the land needed to support an AIS configuration. This proposed change results in approximately \$16 million in cost savings compared to upgrading the existing Bergen Point substation to a 69/13kV station (\$202.9 million at original site versus \$186.9 million at the new Route 440 site, including land and retirement at Bergen Point).

The IM sent a document request to PSE&G requesting 1) the detail of the new identified growth as compared to the prior capacity assumptions, 2) what prompted the review of the area capacity in the spring of 2020 and 3) were the PJM presentations planned for December 2020 and January 2021 conducted. While outside this IM 2020 Third Quarter Report, PSE&G's response to the IM's request confirmed that the new load growth is for the ongoing development on the Bayonne Military Ocean Terminal peninsula. PSE&G further stated that the new load expected to be served on the new substation is estimated at 20-30MW. The review of the area capacity and the new load identified was based on published information regarding development in the area. Regarding PJM, PSE&G noted that the December 2020 Needs Presentation was actually presented in November 2020 although the PJM Solutions presentation planned for January 2021 had not yet been presented as of the date of the response to the IM's questions.

PSE&G has also indicated that the proposed change also offers a planning system for future needs. The proposed change will also support the life cycle replacement needs at the neighboring Bergen Point. As discussed above, PSE&G found in its evaluation that the future elimination of Bergen Point would provide significant cost savings for both transmission and distribution upgrades.

PSE&G, in its response to S-INF-0002, provided the estimates at filing and the new estimate for the proposed new Constable Hook project, which has been reproduced below in **Table 6 – Constable Hook Project Estimates**.

*Table 6 – Constable Hook Project Estimates*

Estimate	Transmission Cost	Distribution Cost	Total
Initial Filing Estimate (original site)	N/A	\$5.3 million	\$5.3 million
Proposed Mitigation Change (new site)	\$110.77 million	\$11.1 million*	\$121.87 million*
*-Includes \$5.3 million related to the ES 2 flood mitigation project and \$5.8 million associated with new substation load growth that is outside the ES 2 Program.			

Findings and Observations

- The proposed relocation has several benefits including:
  - No change to the planned ES 2 costs in the original filing.
  - Reduction in long term costs of approximately \$16 million.
  - Building for the future.
  - Reduced project risk as there is no need for service contingencies.
  - Flood risk is mitigated for Constable Hook Customers.
- The new station addresses identified new load growth, station age/condition at Bergen Point, and flood risk.
- As the existing Constable Hook circuits are very close to the new site, rearrangements can improve reliability at low cost.



- The IM Finds that PSE&G conducted the appropriate due diligence once it determined that by combing both the transmission and distribution projects that there would be multiple benefits to customers in addition to no change in the ES 2 proposed cost for Constable Hook and a reduction in the transmission project cost along with long term operating cost reductions.

**Overall Initial Findings and Observations for the Mitigation Changes at Lakeside, Orange Valley, and Constable Hook**

While additional information on these mitigation changes has been requested by the IM, based on the current available information the IM identified the pros and cons for each of these three substation mitigation changes in **Table 7 – Evaluation of Substation Mitigation Methods for Lakeside, Orange Valley, and Constable Hook ES 2 Projects** below.

*Table 7 – Evaluation of Substation Mitigation Methods for Lakeside, Orange Valley, and Constable Hook ES 2 Projects*

Substation & Mitigation Method	Pros	Cons
<p><b>Lakeside</b>  <u>Original Proposal</u>: Raise &amp; rebuild at existing location</p> <p><u>New Proposal</u>: Relocate to new site</p>	<ul style="list-style-type: none"> <li>• Mitigates impacts stemming from unavailability of adjacent property as originally planned (complexities to design and construction sequencing due to small site).</li> <li>• Reduces construction risk (no buildings to remove or abatement necessary at new site).</li> <li>• Eliminates need for service contingencies.</li> <li>• New substation at 101 N. Park Street would be a traditional design, improving operations and maintenance aspects of the station.</li> <li>• Marginal cost savings from filing estimate with joint execution of distribution and transmission projects (approx. \$0.6M), however avoids costlier option of performing these projects at existing site (\$168.3M combined estimate at existing site vs. \$141.5M combined estimate at new site).</li> </ul>	<ul style="list-style-type: none"> <li>• Adds some complexity due to integration of distribution and transmission projects.</li> </ul>
<p><b>Orange Valley</b>  <u>Original Proposal</u>: Raise &amp; rebuild at existing location</p> <p><u>New Proposal</u>: Relocate and consolidate 69kV/4kV on a single property</p>	<ul style="list-style-type: none"> <li>• ES 2 Project cost decreased from initial estimate of \$26.6M to \$21M.</li> <li>• Eliminates need for 69kV ring bus and 69kV transmission lines by consolidating to single site, resulting in savings of \$15M-\$20M.</li> <li>• Eliminates need for service contingencies.</li> </ul>	<ul style="list-style-type: none"> <li>• Adds some complexity due to integration of distribution and transmission projects.</li> </ul>

Substation & Mitigation Method	Pros	Cons
	<ul style="list-style-type: none"> <li>• Sharing of common site costs (fencing, grading, etc.) split between ES 2 Project (15%) and 69kV Project (85%) results in cost efficiencies.</li> </ul>	
<p><b>Constable Hook</b>  <u>Original Proposal</u>: Raise &amp; rebuild at existing location</p> <p><u>New Proposal</u>: Eliminate existing station and construct new station that supports new capacity needs in area and allows future elimination of Bergen Point substation</p>	<ul style="list-style-type: none"> <li>• New station addresses identified new load growth, station age/condition at Bergen Point, and flood risk at Constable Hook.</li> <li>• Existing Constable Hook circuits are very close to the new site, rearrangements can improve reliability at low cost.</li> <li>• No service contingencies required.</li> <li>• For Bergen Point, saves an estimated \$16.2M compared with alternative of rebuilding and converting the existing Bergen Point substation from 26/4kV to 69/13kV.</li> </ul>	<ul style="list-style-type: none"> <li>• Adds some complexity due to integration of distribution and transmission projects.</li> </ul>

As indicated in **Table 7**, there are multiple benefits identified for each of the mitigation changes proposed at Lakeside, Orange Valley, and Constable Hook, including offering cost efficiencies by combining work and reducing the risk of execution for each project by eliminating the requirement for service contingencies. The common downside to the mitigation changes across these projects was the marginal increase of complexity encountered with projects that have both distribution and transmission components. While having jointly executed transmission and distribution projects can gain cost efficiencies (e.g., having a common project management team for both projects, cost sharing among common site costs, etc.), it naturally adds a layer of complexity from the interdependencies on the separate projects (e.g., if work on the transmission project must be completed prior to certain distribution project work, or vice-versa, it presents the risk to the latter activities that the predecessor activities are not completed in time to support the overall project schedule). A well-planned project with a capable project management team can avoid or mitigate these risks associated with executing two interrelated projects, while also realizing the cost efficiency opportunities available.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g., installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

## C. Cost Assignments

### 1. Costs of Removal (COR)

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 8 – ES 2 Costs of Removal as of September 30, 2020** below itemizes the charges to COR for the third, second and first quarters of 2020, the fourth quarter of 2019 and total Energy Strong COR to date. These amounts do not reflect any salvage value reductions, which have been de minimis in the Energy Strong program through September 30, 2020.

*Table 8 – ES 2 Costs of Removal as of September 30, 2020*

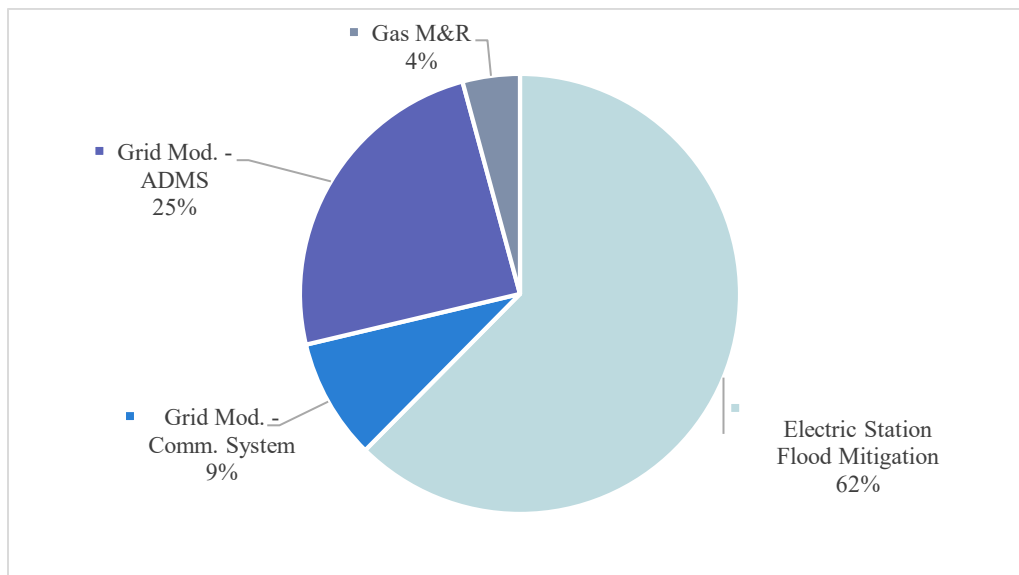
Subprogram	Q4 2019 COR	Q1 2020 COR	Q2 2020 COR	Q3 2020 COR	Total COR
Electric Station Flood Mitigation	\$0	\$67,332	\$468,989	\$294,089	\$830,410
Contingency Reconfiguration	\$431,030	\$616,752	\$624,595	\$250,228	\$1,922,605
Grid Modernization – Communications	\$0	\$0	\$1,495	\$3,384	\$4,879
Grid Modernization - ADMS	\$0	\$0	\$0	\$0	\$0
Electric Stipulated Base	\$0	\$0	\$0	\$0	\$0
Gas M&R Station Upgrades	\$0	\$0	\$0	\$0	\$0
<i>Total</i>	\$431,030	\$684,084	\$1,095,079	\$547,701	\$2,757,894

COR charges during the third quarter of 2020 decreased from the second quarter by 50%. Electric Station Flood Mitigation COR decreased by 37% due to the removal of a significant portion of the wiring for the Market Street project during the second quarter. Contingency Reconfiguration COR for the third quarter decreased 60% from the second quarter as a result of correspondingly more preparation work (removing poles, conductors, etc.) done in the second quarter than in the third quarter in support of recloser installation and commissioning.

### 2. Construction Work-in-Progress (CWIP) & In-Service Transfers

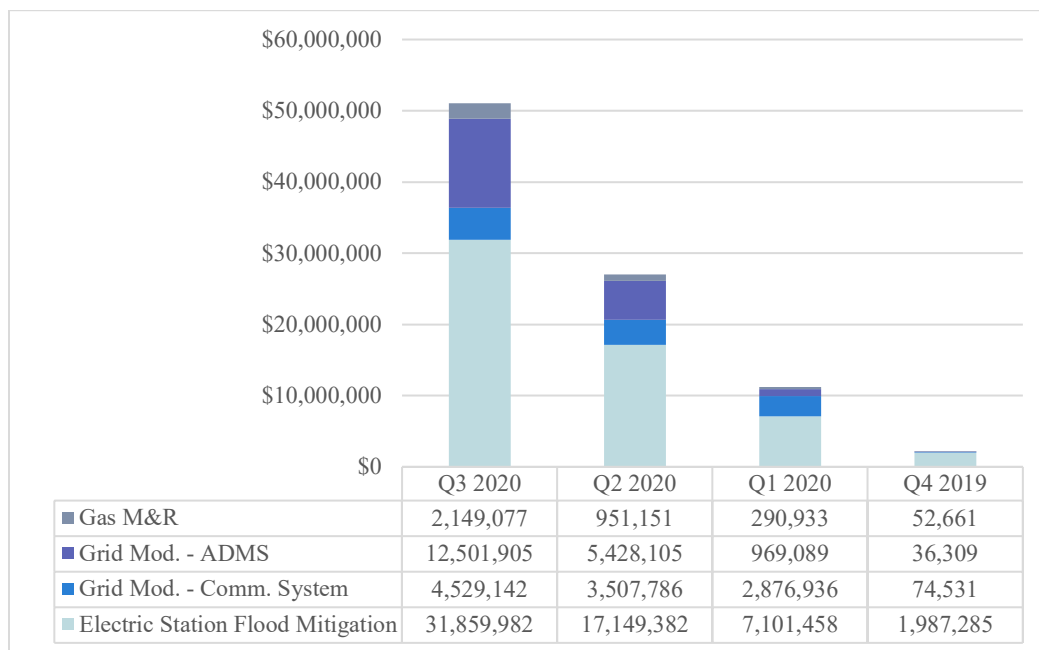
As of September 30, 2020, the Energy Strong CWIP balance was \$51.0 million, compared to \$27.0 million as of June 30, 2020. The largest components of September 30, 2020 CWIP were the elimination and conversion of the 4kV circuits at Market Street (\$10.7 million) and Ridgefield substations (\$6.5 million), and work associated with the ADMS (\$12.5 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of September 30, 2020** below.

**Figure 1 – ES 2 CWIP as of September 30, 2020**



In addition, **Figure 2 – ES 2 CWIP Balances by Subprogram as of September 30, 2020** below depicts the composition of end-of-quarter CWIP balances by subprogram for the third, second and first quarters of 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of September 30, 2020**



Transfers from CWIP to plant in service have totaled \$3.6 million as of September 30, 2020, which came from Grid Modernization projects. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP.

### 3. Allowance for Funds Used During Construction (AFUDC)

The amount of quarterly AFUDC recorded by the Company for each Energy Strong subprogram during the third, second and first quarters of 2020, the fourth quarter of 2019, and total Energy Strong AFUDC accrued to date, is shown below in **Table 9 – ES 2 AFUDC as of September 30, 2020**.

*Table 9 – ES 2 AFUDC as of September 30, 2020*

Subprogram	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total AFUDC
Electric Station Flood Mitigation	\$9,887	\$62,618	\$191,807	\$377,009	\$641,321
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0
Grid Modernization – Communications	\$225	\$14,752	\$60,073	\$43,496	\$118,546
Grid Modernization - ADMS	\$96	\$7,092	\$28,474	\$103,228	\$138,890
Electric Stipulated Base	\$0	\$0	\$0	\$11,413	\$11,413
Gas M&R Station Upgrades	\$254	\$2,590	\$8,465	\$19,385	\$30,694
<i>Total</i>	<b>\$10,462</b>	<b>\$87,052</b>	<b>\$288,819</b>	<b>\$554,531</b>	<b>\$940,864</b>

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies the current year based on updated capital structure and component cost data. For the year 2020, the new AFUDC rate was calculated to be 6.95%, using the capital structure and component costs as of January 31, 2020. In calculating the 2020 AFUDC rate, the Company used (i) a 4.02% embedded cost of long-term debt, (ii) a short-term debt rate of 1.86%, and (iii) a cost of equity of 9.60%.

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the third quarter of 2020, based on data as of September 30, 2020, the recalculated weighted average AFUDC accrual rate (6.96%) did not meet this criterion to warrant changing from the annual rate (6.95%) in effect. Therefore, AFUDC was accrued during the third quarter of 2020 at the calculated rate of 6.95%.

AFUDC accrued for Energy Strong projects during the third quarter of 2020 increased significantly over AFUDC accrued during the second quarter of 2020 as the result of the increases in total average CWIP balances across all subprograms.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to third quarter 2020 Energy Strong project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these Energy Strong projects. The IM will continue to review future Energy Strong AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### 4. Allocated Overheads

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 10 – ES 2 Overhead Allocations as of September 30, 2020** are the allocated overhead costs charged to ES 2 projects for the third, second and first quarters of 2020, the fourth quarter of 2019, and total allocated overheads to date.

*Table 10 – ES 2 Overhead Allocations as of September 30, 2020*

Subprogram	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total Overhead Allocations
Electric Station Flood Mitigation	\$286,953	\$1,648,117	\$3,560,216	\$3,890,087	\$9,385,373
Contingency Reconfiguration	\$3,415,460	\$4,692,085	\$3,055,700	\$3,350,239	\$14,513,484
Grid Modernization – Communications	\$12,074	\$345,720	\$548,017	\$561,011	\$1,466,822
Grid Modernization – ADMS	\$10,603	\$116,442	\$91,786	\$105,563	\$324,394
Electric Stipulated Base	\$0	\$0	\$0	\$155,112	\$155,112
Gas M&R Station Upgrades	\$15,287	\$52,836	\$68,257	\$78,452	\$214,832
<b>Total*</b>	<b>\$3,740,376</b>	<b>\$6,855,199</b>	<b>\$7,323,975</b>	<b>\$8,140,465</b>	<b>\$26,060,015</b>

*\*-Note: total figures may not fully align due to rounding.*

The overwhelming majority of overhead costs allocated to ES 2 projects during the third quarter of 2020 were costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most of the third quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs.

The IM believes these allocations represent no change in the Company’s normal methodology of allocating overhead costs.

#### D. System Performance

##### 1. Current Reporting Quarter Major Events

During the third quarter of 2020, PSE&G experienced a Major Event on August 4-13, 2020 stemming from a State of Emergency that was declared immediately ahead of Tropical Storm Isaias crossing the

region and bringing heavy winds and rain to the area. Tropical Storm Isaias resulted in significant impacts to PSE&G’s service territory, including over 800,000 customers experiencing extended service interruptions. **Table 11 – August 4-13, 2020 Major Event** indicates the restoration progress made on these service interruptions during the recovery efforts.

*Table 11 – August 4-13, 2020 Major Event*

<b>Date (status as of 9AM)</b>	<b>Cumulative Customers Restored</b>	<b>Percentage of Customers Restored</b>
August 5, 2020	377,709	49%
August 6, 2020	576,615	72%
August 7, 2020	666,990	83%
August 8, 2020	727,780	91%
August 9, 2020	751,464	94%
August 10, 2020	757,633	94%
August 11, 2020	766,748	96%
August 12, 2020	778,584	97%
August 13, 2020	797,077	99%
Total	803,026	100%

The outside plant damage resulting from Tropical Storm Isaias included over 12,000 locations comprised of tree damage, pole damage, transformer damage, line damage, and related impacts. This Major Event also resulted in 10 substations being shut down (one of which was shut down a second time during restoration efforts), none of these substations is part of the Electric Station Flood Mitigation subprogram of either the original Energy Strong Program or the current ES 2 Program, additionally none of these substations experienced damage or flood intrusions as a result of Tropical Storm Isaias. The IM received PSE&G’s report on the performance of its Energy Strong and ES 2 Program investments from this Major Event, which shows the System Average Interruption Duration Index (SAIDI) for the affected circuits. This information is reproduced as follows in **Table 12 – Q3 2020 Major Event Performance of Energy Strong/ES 2 Investments**.

*Table 12 – Q3 2020 Major Event Performance of Energy Strong/ES 2 Investments*

<b>Circuit</b>	<b>5 Year Baseline SAIDI*</b>	<b>Report Quarter SAIDI*</b>	<b>Circuit</b>	<b>5 Year Baseline SAIDI*</b>	<b>Report Quarter SAIDI*</b>
ALD 8015	0.12276	<b>0.53760</b>	CED 8016	0.07119	<b>2.65822</b>
ALD 8026	0.07735	0.05740	CED 8021	0.10724	<b>0.25793</b>
BAO 8003	0.00193	<b>0.24119</b>	CIN 8005	0.04256	<b>0.15680</b>
BEF 8013	0.02065	<b>0.75490</b>	CIN 8032	0.32648	<b>1.21326</b>
BEF 8015	0.00433	<b>0.10078</b>	CIN 8033	0.14578	0.06644
BEF 8016	0.01430	<b>0.79704</b>	CIN 8043	0.18459	0.00432
BEM 8001	0.00675	<b>0.01779</b>	CLF 8012	0.00401	<b>0.29500</b>
BEN 8012	0.22864	0.15087	CLF 8013	0.00064	<b>0.18687</b>
BEN 8015	0.01246	<b>0.09879</b>	CLF 8023	0.00895	<b>0.10659</b>
BEN 8016	0.01934	0.00153	CLK 8022	0.06677	<b>0.20949</b>
BRU 8011	0.04127	<b>0.17136</b>	CLK 8024	0.01526	<b>0.26509</b>
BRU 8012	0.01648	<b>0.29860</b>	CON 8001		0.00000
CAS 8001	0.02438	<b>0.83779</b>	CRX 8003	0.07703	0.02497
CED 8011	0.05594	<b>2.00873</b>	CUT 8006	0.59550	0.06186

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
CUT 8010	0.49117	0.00000
DAY 8002	0.03617	<b>0.24408</b>
DFD 8041	0.20440	<b>0.28663</b>
DVB 8013	0.00455	0.00016
EAT 8011	0.09890	<b>2.20796</b>
EAT 8022	0.08703	<b>0.14950</b>
FAW 8022	0.03342	0.02998
FAW 8026	0.00902	<b>0.83953</b>
FED 4004		<b>0.00577</b>
GBK 8021	0.06208	0.02153
GBK 8022	0.01054	<b>0.27631</b>
GET 4009	0.08973	<b>0.09359</b>
HAT 8012		<b>0.10390</b>
HAT 8023	0.01869	<b>0.09183</b>
HAT 8035	0.04291	<b>0.11367</b>
HAW 8032	0.22973	<b>0.33843</b>
HID 8043	0.06432	<b>0.11773</b>
HID 8044	0.08229	<b>1.21633</b>
HNC 8015	0.15427	<b>0.09234</b>
HNC 8021	0.02280	0.00358
HNC 8024	0.43454	0.01301
HOM 8001	0.06027	0.01298
JAC 8021	0.00477	<b>0.08572</b>
JAC 8023	0.05394	<b>0.65765</b>
JAC 8043	0.09794	<b>0.15996</b>
KIL 8023		0.00000
KIL 8024	0.01504	0.00244
KIL 8031		<b>0.11829</b>
KIL 8034	0.44870	0.03134
KIL 8041	0.02511	0.00000
KIL 8044	0.03622	<b>0.04250</b>
KIN 8015	0.00194	<b>1.39884</b>
KIN 8022	0.01206	<b>0.56080</b>
KUL 8022	0.00371	<b>1.84145</b>
KUL 8023	0.00582	<b>0.23170</b>
KUS 8004	0.00500	<b>0.32039</b>
KUS 8042	0.07830	<b>0.15411</b>
KUS 8045	0.02505	<b>0.06255</b>
LAF 8013	0.00125	<b>0.07663</b>
LAU 8021	0.44101	0.13512
LAU 8023	0.82844	0.01479
LAU 8025	0.02009	0.01410
LAU 8034	0.60195	0.04268
LAU 8035	0.29567	0.14706
LAW 8014	0.03705	<b>0.48862</b>

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
LAW 8016	0.14895	0.01929
LCE 8003	0.15926	0.05434
LCE 8032	0.30801	0.13079
LCE 8043	0.10606	<b>0.45190</b>
LCE 8046	0.01692	0.00753
LEO 8006	0.07368	<b>0.14976</b>
LEO 8032	0.00287	<b>0.72771</b>
LEO 8043	0.07891	<b>2.20942</b>
LEV 8002	0.06064	0.05044
LEV 8006	0.23842	<b>0.57946</b>
LEV 8012	0.25318	<b>0.32241</b>
MAD 8015	0.15514	0.00167
MAD 8031	0.45221	0.08238
MAI 8013	0.05318	<b>0.84551</b>
MAR 8006	0.06359	0.00000
MAR 8017	0.45014	<b>0.68220</b>
MAY 8024	0.00558	<b>0.09533</b>
MDF 8012	0.58371	<b>0.88377</b>
MDF 8023	0.26488	0.09510
MEA 8012		<b>0.04784</b>
MON 8003	0.27132	0.10203
MTL 8013	0.02134	<b>0.24147</b>
NBS 8011	0.01516	0.08749
NED 8015	0.09467	<b>0.13141</b>
NED 8024		0.00000
NEW 8014	0.01839	<b>0.05537</b>
OAK 4004	0.05636	<b>0.20790</b>
OAK 4008		<b>0.24635</b>
PLI 8003	0.00215	<b>1.26948</b>
POH 8021	0.07655	0.00619
RFL 8032	0.12446	<b>0.15639</b>
RFL 8034	0.04180	<b>0.97069</b>
SDH 8023	0.00860	<b>0.03903</b>
SDH 8026	0.01685	<b>0.15920</b>
SDH 8031	0.01726	0.01387
SDH 8034		<b>0.07454</b>
SMV 8013		<b>0.00592</b>
SMV 8021		0.00000
SMV 8023	0.01943	0.00120
SPF 8012	0.78752	<b>1.81747</b>
SUN 8022		<b>0.02479</b>
TNY 4001	0.02964	0.00638
TUR 8015	0.00704	<b>0.33184</b>
WAV 4018	0.02277	<b>0.79233</b>
WEW 8011	0.18034	<b>3.48139</b>



Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
WEW 8025	0.00255	<b>0.00665</b>
WEW 8033	0.03506	<b>0.08274</b>
WFL 8041	0.14394	<b>0.76889</b>

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
WOR 8021		0.00000

\*-SAIDI calculations are in minutes.

In the circuit data above, the bolded figures designate the circuits where performance during this Major Event was worse than the 5-year Major Event average SAIDI for the circuit; in addition, blank cells indicate no outage in the 5-year window, while “0.00000” indicates an outage, but the value is beyond five decimal points. As indicated above, a substantial amount of the affected circuits experienced outages beyond the 5-year Major Event average. This performance is reflective of the severity of the storm, which in terms of the 803,026 customers impacted was the third largest storm in PSE&G’s history (behind only Hurricane Sandy, with 2,012,612 customers impacted, and Hurricane Irene with 872,942 customers impacted).

In response to comments received on the IM’s draft 2020 Third Quarter Report, a comparison of the average CAIDI and SAIFI of circuits impacted by Tropical Storm Isaias is provided in **Table 13 – Tropical Storm Isaias Average Circuit Performance**. This **Table 13** compares the affected circuits from this Major Event by circuits improved during the original Energy Strong Program, circuits improved during ES 2 prior to this Major Event, and circuits not improved by either the original Energy Strong Program or ES 2.

**Table 13 – Tropical Storm Isaias Average Circuit Performance**

	Average SAIFI during Tropical Storm Isaias	Average CAIDI during Tropical Storm Isaias
<b>Circuits Improved as part of the original Energy Strong Program</b>	0.0005	1,231.47
<b>Circuits Improved as part of the ES 2 Program*</b>	0.0004	1,633.75
<b>Other Circuits not part of either Energy Strong Program</b>	0.0004	1,550.23

\*-Circuits improved prior to the start of this Major Event on August 4, 2020

This Tropical Storm Isaias Major Event is compared to prior Major Events with similar numbers of customers impacted in **Table 14 – Tropical Storm Isaias Comparable Major Events**.

**Table 14 – Tropical Storm Isaias Comparable Major Events**

Storm End Date	Major Event Description	Customers Impacted	SAIDI*
9/3/2011	Hurricane Irene	872,492	454.51
8/13/2020	Tropical Storm Isaias	803,026	313.01
11/6/2011	Wet Snowstorm	636,898	380.52
3/19/2010	Nor’easter Storm	607,403	300.01

\*-SAIDI calculations are in minutes.

As shown in **Table 14**, the SAIDI results from Tropical Storm Isaias compared to similar pre-Energy Strong Major Events demonstrate improved restoration times. This is particularly evident in the relatively close SAIDI results from Tropical Storm Isaias and the March 2010 Nor’easter Storm, despite Tropical Storm Isaias affecting nearly 200,000, or 32%, more customers.

In response to comments received on the IM’s draft 2020 Third Quarter Report, additional information on the circuit-level performance of Energy Strong/ES 2 investments in the Major Events compared in **Table 14** has been included in **Table 15 – Tropical Storm Isaias Comparable Major Events Circuit-Level Performance**. Note that many of the circuits listed in **Table 15** were not impacted by each of these four Major Events, with the blanks in the table reflect no outage for a given circuit in the corresponding Major Event.

**Table 15 – Tropical Storm Isaias Comparable Major Events Circuit-Level Performance**

Circuit	Mar. 2020 Nor’Easter	Sep. 2011 Hurricane Irene	Nov. 2011 Wet Snow Storm	Aug. 2020 Tropical Storm Isaias
	<i>Major Event SAIDI*</i>			
ALD 8015	0.0004	0.1056	0.0963	0.53760
ALD 8026	-	0.8265	0.9628	0.05740
BEM 8001	-	0.0555	-	0.01779
BEN 8012	0.0344	1.7619	0.0252	0.15087
BEN 8015	0.0326	0.9115	-	0.09879
BRU 8011	-	-	0.012	0.17136
BRU 8012	0.4574	0.2228	0.2629	0.29860
CAS 8001	-	1.4604	-	0.83779
CED 8011	0.8668	0.0379	1.754	2.00873
CED 8016	0.8873	0.029	0.4095	2.65822
CED 8021	0.3964	-	-	0.25793
CIN 8032	0.0007	-	-	1.21326
CIN 8043	0.1052	0.0618	-	0.00432
CLF 8012	-	0.0838	0.3021	0.29500
CLF 8013	0.048	0.0198	0.0482	0.18687
CLF 8023	-	0.048	-	0.10659
CLK 8022	-	0.2108	-	0.20949
CON 8001	0.0052	-	-	0.00000
CRX 8003	0.0041	-	-	0.02497
CUT 8006	0.0069	-	-	0.06186
DAY 8002	0.0753	0.2237	-	0.24408
DFD 8041	-	0.5275	-	0.28663
EAO 4023	-	0.0585	0.2581	0.81003
EAT 8011	0.2677	0.1536	0.5189	2.20796
EAT 8022	0.0859	-	0.1279	0.14950
FAR 4006	-	-	0.8247	0.12767
FAW 8022	-	0.0459	0.4234	0.02998
GBK 8021	-	1.4263	-	0.02153
GBK 8022	-	0.0252	0.0432	0.27631
HAT 8012	0.4581	0.1317	0.1638	0.10390
HAT 8023	0.0733	-	0.0219	0.09183

Circuit	Mar. 2020 Nor'Easter	Sep. 2011 Hurricane Irene	Nov. 2011 Wet Snow Storm	Aug. 2020 Tropical Storm Isaias
	<i>Major Event SAIDI*</i>			
HAT 8035	0.255	1.7015	0.0885	0.11367
HAW 8032	0.0171	0.1088	0.245	0.33843
HNC 8015	-	0.0174	-	0.09234
HNC 8021	-	-	0.0172	0.00358
HNC 8024	-	0.21	0.8303	0.01301
HOM 8032	-	0.2088	0.3644	0.01298
JAC 8021	0.0357	-	-	0.08572
JAC 8023	0.0288	0.0072	0.1368	0.65765
JAC 8043	-	-	0.4851	0.15996
KIL 8023	-	0.0872	-	0.00000
KIL 8024	0.0538	0.0618	-	0.00244
KIL 8034	-	0.0799	-	0.03134
KIL 8041	-	0.0676	-	0.00000
KIL 8044	-	0.1195	-	0.04250
KIN 8015	-	1.3535	0.178	1.39884
KIN 8022	2.0138	0.1997	1.2249	0.56080
KUL 8023	0.0014	-	0.0884	0.23170
KUS 8004	-	0.1003	0.0199	0.32039
KUS 8042	0.0002	0.8528	-	0.15411
KUS 8045	1.6032	0.3397	0.1158	0.06255
LAU 8021	0.0046	0.0114	4.3783	0.13512
LAU 8023	-	-	0.7065	0.01479
LAU 8025	0.0257	1.2566	0.1612	0.01410
LAU 8034	-	0.1055	0.9157	0.04268
LAU 8035	-	-	0.2887	0.14706
LAW 8016	0.0998	1.266	0.0014	0.01929
LCE 8003	0.0213	0.0657	-	0.05434
LCE 8032	0.1052	0.1621	0.0438	0.13079
LCE 8043	-	0.0231	0.0206	0.45190
LCE 8046	-	0.9558	-	0.00753
LEO 8006	0.0848	0.1848	0.2159	0.14976
LEO 8032	0.6277	0.6999	2.0718	0.72771
LEO 8043	0.1952	0.6377	2.5768	2.20942
LEV 8002	0.0811	-	-	0.05044
LEV 8006	0.2888	0.2704	0.0043	0.57946
LEV 8012	0.0929	0.1373	-	0.32241
MAD 8015	0.0864	-	-	0.00167
MAD 8031	0.0014	-	-	0.08238
MAI 8013	0.9225	0.1033	0.4569	0.84551

Circuit	Mar. 2020 Nor'Easter	Sep. 2011 Hurricane Irene	Nov. 2011 Wet Snow Storm	Aug. 2020 Tropical Storm Isaias
	<i>Major Event SAIDI*</i>			
MAR 8017	-	1.6707	-	0.68220
MAY 8024	0.2847	-	0.15	0.09533
MDF 8012	-	0.125	-	0.88377
MDF 8023	-	0.3549	-	0.09510
MEA 8012	0.0045	0.0672	-	0.04784
MNT 4010	0.0232	0.7827	1.0713	0.06828
MON 8003	-	0.364	-	0.10203
MTL 8013	-	0.0339	0.0073	0.24147
NBS 8011	-	0.5399	0.1007	0.08749
NED 8015	0.0822	0.7023	0.5621	0.13141
NED 8024	-	1.1162	0.3146	0.00000
NEW 8014	0.2358	0.8618	2.0776	0.05537
OAK 4004	0.0052	-	0.4166	0.20790
OAK 4008	-	-	0.5203	0.24635
PLI 8003	-	-	0.0094	1.26948
RFL 8032	0.0134	0.0158	0.7329	0.15639
RFL 8034	-	-	0.0482	0.97069
SDH 8023	-	0.3303	-	0.03903
SDH 8026	1.8938	1.8557	0.0426	0.15920
SDH 8031	0.0135	0.4626	-	0.01387
SDH 8034	0.0008	0.3125	-	0.07454
SMV 8013	-	1.7671	0.0198	0.00592
SMV 8021	-	0.4698	-	0.00000
SMV 8024	-	2.0881	-	0.00120
SPF 8012	-	1.527	0.1048	1.81747
SPF 8022	0.0522	0.0842	2.4832	0.02479
TNY 4001	-	-	0.0968	0.00638
TUR 8015	-	0.0522	2.606	0.33184
WAV 4018	-	0.3968	-	0.79233
WEW 8011	-	2.5084	2.4866	3.48139
WEW 8025	0.0264	0.1207	-	0.00665
WEW 8033	1.6317	-	2.5859	0.08274
WFL 8041	-	-	0.1619	0.76889
WOR 8021	0.0163	-	-	0.00000

\*-SAIDI calculations are in minutes.

## 2. Prior Major Events

As noted in the IM's 2020 Second Quarter Report, PSE&G experienced a Major Event on June 3-7, 2020 stemming from a derecho and severe thunderstorms that primarily affected its Southern Division. These

series of storms led to 257,209 PSE&G customers experiencing service interruptions, with 246,075 of those customers located in the Southern Division. The IM 2020 Second Quarter Report provided the detailed circuit-level performance during this Major Event and in response to questions raised by the IM, PSE&G has provided the IM with additional information on the performance of Energy Strong/ES 2 investments. **Table 16 – Performance of Energy Strong/ES 2 Investments in Q2 2020 Major Event** below reproduces parts of the information originally provided in the IM 2020 Second Quarter Report, specifically identifying those circuits involved in the Major Event that were improved through investments made in either the original Energy Strong Program or the current ES 2 Program.

**Table 16 – Performance of Energy Strong/ES 2 Investments in Q2 2020 Major Event**

Circuit	5-Year Major Event Average SAIDI*	Q2 2020 Major Event SAIDI*	Q2 2020 Major Event SAIDI Explanation
CIN 8032	0.32648	1.13907	The history for CIN 8032 is spread over eight different events with an average storm SAIDI (34) approximately one-third of the June 2020 event (90). As such, response to these individual events on average would be shorter. In addition to the significantly larger scale of the June 2020 event, the outage was caused by a whole tree failure, which takes longer to restore due to the tree clearing required before service can be restored.
CLK 8022	0.06677	0.21086	The history for CLF 8022 is three low customer count fuse jobs (<70 customers) along with one tree related outage. The June 2020 event SAIDI was driven by a tree related outage on the mainline (578 customers) which required a tree crew to remove the tree before restoration.
KUS 8004	0.00500	0.03236	KUS 8004 experienced three fuse events (average customers of 60) over the course of three smaller storm events. The June 2020 outage was a fuse event (110 customers) caused by a tree failure. Given the scale of the event, this 110-customer job would have been lower priority as compared to jobs with higher customer counts, and thus the outage would have a longer duration. Tree removal would have increased restoration time as well.
LAW 8014	0.03705	1.01225	The history for LAW 8014 is based primarily on a tree limb on the mainline during a much smaller storm event. June 2020 event had five different tree damage locations including one with a broken pole. Scale of the damage significantly higher when compared to history.
MAD 8015	0.15514	0.95230	The history for MAD 8015 includes eight events, five lower count fuse jobs and three mainline jobs of various causes. The June 2020 event SAIDI was primarily due to a section three outage. The scale of the storm event would have delayed this restoration as jobs with higher customer counts (i.e., full circuit lockouts) would have gone first.
MDF 8023	0.26488	0.54601	The history for MDF 8023 is comprised of seven events over three different storms with tree issues being the primary outage driver. The June 2020 events was two whole tree failures. The five-year average history lowers the SAIDI result compared to the single event.

\*-SAIDI calculations are in minutes.

As indicated in **Table 16**, the circuits with Major Event performance worse than the five-year average from the June 2020 Major Event were primarily the result of lengthier outages during this Major Event resulting from downed trees along with a couple of the circuits having low customer counts and thus had lower priority in the restoration efforts over higher customer circuits that were impacted.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of September 30, 2020 is provided below in **Table 17 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of September 30, 2020.**

*Table 17 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of September 30, 2020*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1. Academy Street	Dec. 2019		KO					C					IS	CO							
	Sep. 2020		KO		C					IS	CO										
2. Clay Street	Dec. 2019	Schedule Under Development																			
	Sep. 2020			KO							C						IS				CO (Q2)
3. Constable Hook	Dec. 2019	Schedule Under Development																			
	Sep. 2020	Schedule Under Development																			
4. Hasbrouck Heights	Dec. 2019		KO					C						IS	CO						
	Sep. 2020		KO						C					IS	CO						
5. Kingsland	Dec. 2019			KO				C		IS	CO										
	Sep. 2020			KO									C							IS	CO (Q2)
6. Lakeside Avenue	Dec. 2019				KO			C												IS	CO (Q2)
	Sep. 2020	Schedule Under Development*																			
7. Leonia	Dec. 2019	Schedule Under Development																			
	Sep. 2020			KO		C									IS					CO	
8. Market Street	Dec. 2019			KO				C	OS	CO											
	Sep. 2020			KO					C	OS	CO										
9. Meadow Road	Dec. 2019	Schedule Under Development																			
	Sep. 2020			KO											C				IS		CO (Q2)
10. Orange Valley	Dec. 2019	Schedule Under Development																			
	Sep. 2020					KO										C					IS (Q1); CO (Q3)
11. Ridgefield 13kV	Dec. 2019			KO	C									IS	CO						
	Sep. 2020			KO	C									IS	CO						
12. Ridgefield 4kV	Dec. 2019			KO					C	OS			CO								
	Sep. 2020			KO	C					OS	CO										
13. State Street	Dec. 2019		KO					C							IS						CO (Q1)
	Sep. 2020		KO						C					IS							CO (Q1)
14. Toney's Brook	Dec. 2019			KO					C											IS	CO (Q2)
	Sep. 2020			KO										C			IS				CO (Q2)
15. Waverly	Dec. 2019	Schedule Under Development																			
	Sep. 2020			KO			C													IS	CO (Q2)
16. Woodlynne	Dec. 2019		KO											C						IS	CO (Q2)
	Sep. 2020		KO											C					IS		CO (Q2)

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
<b>Legend:</b> KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction). *-The Lakeside Avenue project had a schedule previously developed, but due to the proposed mitigation method change that contemplates relocating the substation, the schedule is now being revised and updated.																				

A summary of the subprogram status as of the end of the third quarter of 2020 is provided below **Table 18 – ES 2 Electric Station Flood Mitigation Summary Status as of September 30, 2020.**

**Table 18 – ES 2 Electric Station Flood Mitigation Summary Status as of September 30, 2020**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Key Drawing Review	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Scope Locked	13	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia; Market Street; Meadow Road; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney’s Brook; Waverly; Woodlynn
Major Equipment POs	14*	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia*; Meadow Road; Ridgefield 13kV*; State Street; Toney’s Brook; Waverly*; Woodlynn
A/E Contract Award (or selection of PSE&G internal engineering)	14	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney’s Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynn <sup>1</sup>
Construction Start <sup>^</sup>	6	Academy Street; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; Waverly
*-Three of the listed projects (Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 14 switchgears at 11 substations. <sup>1</sup> -Indicates Burns & McDonnell is serving as the A/E. <sup>2</sup> -Indicates PSE&G internal resources are serving as the A/E. <sup>3</sup> -Indicates Black & Veatch is serving as the A/E. <sup>^</sup> -Includes inside plant and/or outside plant construction.		

Beyond the key activities summarized in **Table 18** above, **Table 19 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q4 2020** summarizes the planned activities for each project during the fourth quarter of 2020, including any carryover of activities from earlier periods.

**Table 19 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q4 2020**

Station	Upcoming Activities for Q4 2020	Carryover Activities from Q3 2020
1. Academy Street	<ul style="list-style-type: none"> <li>Electrical construction start</li> <li>Switchgear delivery to site</li> <li>90% estimate completion</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Vendor drawings received for final switchgear arrangement</li> <li>Detailed engineering start</li> </ul>	<ul style="list-style-type: none"> <li>License and permit package submitted</li> </ul>

Station	Upcoming Activities for Q4 2020	Carryover Activities from Q3 2020
3. Constable Hook	<ul style="list-style-type: none"> <li>Remains in planning/origination stages</li> </ul>	<ul style="list-style-type: none"> <li>Remains in planning/origination stages</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Constructability review</li> <li>Civil and electrical drawings issued for construction (IFC)</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Switchgear delivery to Ridgefield 13kV site (as contingency switchgear, planned to be used for Kingsland following Ridgefield 13kV completion)</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Project kickoff</li> <li>A/E purchase order issued</li> <li>License and permit design start</li> </ul>	<ul style="list-style-type: none"> <li>Transitioning from planning/origination stages</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Switchgear delivery to site</li> <li>Phase 1/contingency electrical purchase order issued</li> <li>Phase 3 civil and electrical drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
8. Market Street	<ul style="list-style-type: none"> <li>Civil demolition construction purchase order issued</li> <li>90% estimate completion</li> </ul>	<ul style="list-style-type: none"> <li>License and permit package submitted</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>No major activities</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Release key drawings for detailed engineering design</li> </ul>	<ul style="list-style-type: none"> <li>Transitioning from planning/origination stages</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Phase 1 civil, controls, and electrical drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>Civil contingency construction completion</li> </ul>
12. Ridgefield 4kV	<ul style="list-style-type: none"> <li>Railroad permission to proceed received</li> <li>Complete outside plant underground civil construction</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>Civil construction purchase order issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>70% estimate completion</li> <li>Civil construction purchase order issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Civil and electrical drawings IFC</li> <li>Vendor drawings received for final switchgear controls</li> <li>Civil construction out for bid</li> <li>Major licenses and permits issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>Constructability review</li> <li>Civil and electrical construction purchase orders issued</li> </ul>	<ul style="list-style-type: none"> <li>Civil and electrical drawings IFC</li> </ul>

The current project estimates, including base and R&C amounts, is shown below in **Table 20 – ES 2 Electric Station Flood Mitigation Project Cost Status as of September 30, 2020**. **Table 20** also shows the current estimate level based on PSE&G's estimating processes and as approved by the URB, the actual spend and percentage of actuals to estimate as of the end of the third quarter of 2020, and the forecasted in-service date.



**Table 20 – ES 2 Electric Station Flood Mitigation Project Cost Status as of September 30, 2020**

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Conceptual	\$9,900,000	\$1,900,000	\$11,800,000	\$9,972,315	\$1,962,997	17%
2. Clay Street	Study	\$34,800,000	\$7,200,000	\$42,000,000	\$36,589,865	\$853,505	2%
3. Constable Hook	Office	\$3,900,000	\$1,400,000	\$5,300,000	\$3,894,313	\$110,379	2%
4. Hasbrouck Heights	Study	\$14,900,000	\$3,100,000	\$18,000,000	\$17,894,211	\$857,466	5%
5. Kingsland	Study	\$5,400,000	\$2,900,000	\$8,300,000	\$6,418,540	\$283,143	3%
6. Lakeside Avenue	Office	\$26,800,000	\$9,400,000	\$36,100,000	\$26,800,000	\$529,587	2%
7. Leonia	Study	\$27,700,000	\$4,500,000	\$32,200,000	\$30,442,204	\$1,785,366	6%
8. Market Street	Conceptual	\$26,700,000	\$3,300,000	\$30,000,000	\$26,658,817	\$12,273,747	41%
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$7,298,686	\$483,601	5%
10. Orange Valley	Office	\$19,700,000	\$6,900,000	\$26,600,000	\$15,967,714	\$358,732	1%
11. Ridgefield 13kV	Study	\$19,600,000	\$5,900,000	\$25,500,000	\$23,086,520	\$3,997,875	16%
12. Ridgefield 4kV	Study	\$17,600,000	\$2,600,000	\$20,200,000	\$17,320,551	\$6,745,565	33%
13. State Street	Study	\$39,000,000	\$6,100,000	\$45,100,000	\$38,928,940	\$596,494	1%
14. Toney's Brook	Study	\$14,300,000	\$5,400,000	\$19,700,000	\$15,256,600	\$510,253	3%
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$32,274,121	\$1,465,452	4%
16. Woodlyne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$18,308,852	\$665,906	3%
<b>Subprogram Total</b>		<b>\$311,900,000</b>	<b>\$73,700,000</b>	<b>\$385,500,000</b>	<b>\$327,092,250</b>	<b>\$33,480,069</b>	<b>9%</b>

Findings & Observations

- The projects that comprise the Electric Station Flood Mitigation subprogram continue at various phases of execution, with six projects now in construction as of the end of the third quarter of 2020 (up from three at the end of the second quarter of 2020), and the remaining projects

continuing to advance in design and pre-construction activities with the exception of Constable Hook which largely remains in the planning/origination stage.

- While early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on budget. The status of the later projects in this subprogram, and in particular Orange Valley and Constable Hook, will have to closely be followed to ensure the projects are completed within the ES 2 Program window. At this time, the Orange Valley project shows an in-service date of January 2024, however subsequent to the third quarter of 2020, PSE&G has informed the IM that the project team will be examining the potential to shorten durations and/or work activities concurrently to pull the in-service date back into 2023.

### 1. Academy Street

During the third quarter of 2020, approximately \$1.3 million was spent on the Academy Street project compared to a forecast of approximately \$860,000, which brought the total spend to approximately \$2 million. The variance in third quarter spend was largely driven by earlier permit approval and land clearing that supported construction starting earlier than forecasted. Notable activities completed during the third quarter of 2020 include:

- State permits received;
- Controls drawings IFC; and,
- Electrical construction purchase order issued.

As noted in the IM 2020 Second Quarter Report, the Study level estimate was approved internally at the end of June 2020 with \$9.9 million in base, \$2.9 million in R&C, for a total estimate of \$12.8 million. The prior Office level estimate for Academy Street was \$17.0 million in total, with the majority of the \$4.2 million reduction to the current estimate attributed to the change in mitigation method from raise and rebuild to relocate. In July 2020, this Study level estimate was approved before the URB.

In September 2020, the Conceptual level estimate was submitted and approved before the URB. This Conceptual level estimate lowered the total Academy Street project estimate from the previously approved \$12.8 million to \$11.8 million, with the reduction driven by a \$1.0 million reduction to R&C based on the current risk register for the project.

Construction at Academy Street, which started in July 2020 for non-permit work, has advanced to 25% complete inside plant (100% complete outside plant) as of the end of the third quarter of 2020. The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$150,398	\$99,893	\$399,935	\$1,312,771	\$1,962,997	\$11,800,000	17%

### 2. Clay Street

During the third quarter of 2020, approximately \$234,000 was spent on the Clay Street project compared to a forecast of approximately \$248,000, which brought the total spend to approximately \$854,000. Notable activities completed during the third quarter of 2020 include:

- License and permit package issued;
- Project execution plan completed; and,
- Civil and electrical inside plant construction POs issued.

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$116,409	\$219,707	\$283,219	\$234,171	\$853,505	\$42,000,000	2%

### 3. Constable Hook

Through the end of the third quarter of 2020, the Constable Hook project continued to remain in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the same area still being reviewed (see related discussion in **Section II.A.3.** and **Section IV.B.**). The actual spend by quarter for Constable Hook as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$17,889	\$51,758	\$32,313	\$8,419	\$110,379	\$5,300,000	2%

### 4. Hasbrouck Heights

During the third quarter of 2020, approximately \$326,000 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$346,000, which brought the total spend to approximately \$532,000. Notable activities completed during the third quarter of 2020 include:

- Site plan administrative approval received;
- NJDEP approval received; and,
- Vendor drawings received (final switchgear arrangement).

A Covid-19 related delay on the associated Hasbrouck Heights 69kV project has resulted in a delay to the Hasbrouck Heights ES 2 project. This delay shifts the planned start of construction from June to August 2021 and the forecasted in-service date from November to December 2022. The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$149,848	\$193,879	\$188,045	\$325,694	\$857,466	\$18,000,000	5%

### 5. Kingsland

During the third quarter of 2020, approximately \$27,000 was spent on the Kingsland project compared to a forecast of approximately \$42,000, which brought the total spend to approximately \$283,000. There were minimal activities performed on this project during the third quarter of 2020.

As noted in the IM 2020 Second Quarter Report, a revised Study level estimate was approved internally at the end of June 2020 with \$5.4 million in base, \$2.9 million in R&C, for a total estimate of \$8.3 million. The prior Study level estimate for Kingsland was \$10.0 million in total, with the \$1.7 million reduction to the current estimate attributed to a reduction in the switchgear commitment on the project. The current plan and estimate are based on Kingsland utilizing a contingency switchgear from another project that will be available once construction is completed. In July 2020, this revised Study level estimate was

approved before the URB. The actual spend by quarter for Kingsland as compared to the current approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$104,112	\$108,286	\$43,268	\$27,477	\$283,143	\$8,300,000	3%

### 6. Lakeside Avenue

The Lakeside Avenue project continued to advance the planning efforts, with the key plans and conceptual drawings progressing during the third quarter of 2020. The forecasted in-service date for this project slipped from May 2023, as of the end of the second quarter of 2020, to December 2023, as of the end of the third quarter. This delay was driven by the original property location for the 69kV and ES 2 projects having contamination risks that resulted in a new potential property location, for which the purchase process is underway (see related discussion in **Section II.A.3.** and **Section IV.B.**). The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$148,943	\$172,224	\$121,009	\$87,411	\$529,587	\$36,100,000	2%

### 7. Leonia

During the third quarter of 2020, approximately \$1.07 million was spent on the Leonia project compared to a forecast of approximately \$1.02 million, which brought the total spend to approximately \$1.8 million. Notable activities completed during the third quarter of 2020 include:

- Vendor drawings received (final switchgear controls for switchgear 1 and 2);
- Civil construction commenced; and,
- Electrical construction (contingency) out for bid.

Construction at Leonia, which started in August 2020, has advanced to 15% complete inside plant as of the end of the third quarter of 2020. The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$44,792	\$244,323	\$424,783	\$1,071,468	\$1,785,366	\$32,200,000	6%

### 8. Market Street

During the third quarter of 2020, approximately \$4.9 million was spent on the Market Street project compared to a forecast of approximately \$5 million, which brought the total spend to approximately \$12.2 million. Notable activities completed during the third quarter of 2020 include:

- County road crossing permit received;
- Outside plant construction advanced to 45% complete.

In September 2020, the Conceptual level estimate was submitted and approved before the URB. This Conceptual level estimate did not change the total Market Street project estimate from the previously approved \$30.0 million, however, it did result in an increase to the base estimate (from \$24.2 million to \$26.7 million) with the primary changes to the base estimate being attributed to:

- Change in T&D surcharge methodology, approved by PSE&G Accounting, +\$2.5 million;
- Outside plant soil remediation, +\$1.2 million; and,
- Estimate refinement, (\$1.2 million).

This net \$2.5 million increase in the base estimate was offset by a \$2.5 million reduction to R&C based on the current risk register for the project.

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$251,193	\$1,938,713	\$5,144,270	\$4,939,571	\$12,273,747	\$30,000,000	41%

### 9. Meadow Road

During the third quarter of 2020, approximately \$173,000 was spent on the Meadow Road project compared to a forecast of approximately \$141,000, which brought the total spend to approximately \$484,000. Notable activities completed during the third quarter of 2020 included the issuance of the license and permit package.

The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$63,128	\$142,946	\$104,563	\$172,964	\$483,601	\$9,000,000	5%

### 10. Orange Valley

Through the end of the third quarter of 2020, the Orange Valley project advanced past the initial planning and origination stages (see related discussion in **Section II.A.3.** and **Section IV.B.**), with the kickoff meeting taking place in September 2020 and Burns & McDonnell being awarded the A/E scope. The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$77,029	\$96,582	\$120,690	\$64,432	\$358,732	\$26,600,000	1%

### 11. Ridgefield 13kV

During the third quarter of 2020, approximately \$3.0 million was spent on the Ridgefield 13kV project compared to a forecast of approximately \$2.9 million, which brought the total spend to approximately \$4.0 million. Notable activities completed during the third quarter of 2020 include:

- Vendor drawings received (final switchgear controls for switchgear 1 and 2);
- Electrical construction purchase order issued (temporary switchgear);
- The temporary 13kV sheltered aisle switchgear was delivered to the site; and,
- The temporary switchgear was set.

Construction at Ridgefield 13kV, which started in June 2020, has advanced to 23% complete inside plant as of the end of the third quarter of 2020. The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$205,982	\$317,289	\$500,475	\$2,974,130	\$3,997,875	\$25,500,000	16%

### **12. Ridgefield 4kV**

During the third quarter of 2020, approximately \$3.8 million was spent on the Ridgefield 4kV project compared to a forecast of approximately \$6.6 million. The variance in actual versus forecasted spend for the third quarter was predominantly the result of Division accruals not captured by the Division's accrual system in July, the postponement of jack and bore installation under the railway tracks due to not receiving CSX approval and needed permits in time (this work was performed in October 2020). This brought the total spend to approximately \$6.7 million.

In September 2020, the Conceptual level estimate was submitted and approved before the URB. This Conceptual level estimate lowered the total Ridgefield 4kV project estimate from the previously approved \$21.1 million to \$20.2 million. The base estimate increased from \$16.8 million to \$17.6 million, largely driven by the underground work costs being higher than previously estimated, while the R&C decreased from \$4.3 million to \$2.6 million based on the current risk register for the project.

Construction at Ridgefield 4kV, which started in June 2020, has advanced to 47% complete. The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$143,414	\$693,128	\$2,134,627	\$3,774,395	\$6,745,565	\$20,200,000	33%

### **13. State Street**

During the third quarter of 2020, approximately \$218,000 was spent on the State Street project compared to a forecast of approximately \$190,000, which brought the total spend to approximately \$596,000.

Notable activities completed during the third quarter of 2020 include:

- Site plan submitted and approved by the planning board;
- Civil and electrical drawings IFC;
- State Conservation District permit approved;
- Vendor drawings received (final switchgear controls); and,
- Civil and electrical construction out for bid.

As noted in the IM 2020 Second Quarter Report, the Study level estimate was approved internally at the end of June 2020 with \$39.0 million in base, \$6.1 million in R&C, for a total estimate of \$45.1 million.

The prior Office level estimate for Academy Street was \$28.6 million in total, with the majority of the \$16.5 million increase to the current estimate attributed to the change in mitigation method from raise and rebuild to relocate. In July 2020, this Study level estimate was approved before the URB. The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$77,950	\$128,288	\$172,777	\$217,839	\$596,494	\$45,100,000	1%

#### **14. Toney's Brook**

During the third quarter of 2020, approximately \$96,000 was spent on the Toney's Brook project compared to a forecast of approximately \$151,000, which brought the total spend to approximately \$510,000. Notable activities completed during the third quarter of 2020 include:

- Vendor drawings received (final switchgear arrangement); and,
- Received planning board approval for site plan.

The actual spend by quarter for Toney's Brook as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$211,940	\$115,747	\$86,315	\$96,251	\$510,253	\$19,700,000	3%

#### **15. Waverly**

During the third quarter of 2020, approximately \$651,000 was spent on the Waverly project compared to a forecast of approximately \$429,000, which brought the total spend to approximately \$1.5 million. The third quarter forecast to actual variance was driven largely by Pre-Phase 1 construction work (place-install cast in place hand holes) starting in September to support Phase 1 construction in October 2020. Notable activities completed during the third quarter of 2020 include:

- Civil and electrical drawings IFC;
- License and permitting package submitted; and,
- Start of Pre-Phase 1 construction.

The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$103,748	\$355,706	\$355,335	\$650,662	\$1,465,452	\$35,400,000	4%

#### **16. Woodlynne**

During the third quarter of 2020, approximately \$101,000 was spent on the Woodlynne project compared to a forecast of approximately \$153,000, which brought the total spend to approximately \$666,000. Notable activities completed during the third quarter of 2020 include:

- Received planning board approval for the site plan;
- Contingency plan completed; and,
- Vendor drawings received (final switchgear arrangement).

The actual spend by quarter for Woodlynne as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$110,982	\$240,418	\$213,482	\$101,024	\$665,906	\$19,400,000	3%

## **B. Contingency Reconfiguration**

During the third quarter of 2020, work continued to advance in the Contingency Reconfiguration subprogram with all four Divisions continuing to install reclosers. However, severe weather in July and August (including Tropical Storm Isaias) resulted in approximately half a month of work being missed. PSE&G has worked with the Divisions to identify resources to recover these delays and was able to resume work quickly after the restoration efforts were completed with the current expectation that installation and commissioning of reclosers will regain the planned progress in 2021. The third quarter of 2020 also saw minor inventory issues, with the receipt of 4kV reclosers delayed due to Covid-19 impacts to the manufacturer. To mitigate any potential impacts from that delay, PSE&G reallocated its recloser inventory such that the Metro Division (with the largest 4kV population and smallest 13kV population of the Divisions) received all the 4kV reclosers in PSE&G’s inventory until additional equipment was received in September. There is no overall impact anticipated from this temporary inventory shortage as PSE&G was able to adjust its plan to continue to advance the work in the subprogram. **Table 21 – ES 2 Recloser Status as of September 30, 2020** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the 2020 year-end targets and current status of engineering, installation, and commissioning.

*Table 21 – ES 2 Recloser Status as of September 30, 2020*

Type	2020 Year End Total Target	Engineering Packages Complete (1 recloser ea.)		Reclosers Installed		Reclosers Commissioned	
		Q3 Qty.	Total	Q3 Qty.	Total	Q3 Qty.	Total
13kV	800	44	638	129	546	283	413
4kV	179	37	300	27	65	44	55
<b>Total</b>	979	81	938	156	611	327	468

As shown in **Table 21**, engineering continues to stay comfortably ahead of construction, allowing PSE&G flexibility in selecting which projects to initiate construction on and allows the subprogram progress to continue, while the commissioned units more than doubled during the third quarter as previously installed units were completed. Compared to the 2020 year-end targets, as of the end of the third quarter of 2020, the engineering was near the year-end target, approximately two-thirds of the targeted reclosers have been installed and approximately half have been commissioned.

The Fuse Saver installations are planned to begin later in 2020 with a pilot program that installs Hmc radios in the Fuse Savers to support communication on the device when there is an event. PSE&G’s Asset Management group determined a pilot program would be initiated prior to the full scope to ensure the



devices work as intended, with the pilot program contemplating installation of 57 single-phase units and 18 two-phase units by the end of 2020. PSE&G's initial plan was to commence the pilot program in September 2020, however it encountered firmware issues from the vendor that delayed the start of this pilot program until the fourth quarter of 2020.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 22 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of September 30, 2020**.

**Table 22 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of September 30, 2020**

Scope & Division		Forecasted Completion Date
Reclosers	Central	11/30/2021
	Metro	11/30/2021
	Palisades	12/31/2021
	Southern	12/31/2021
Fuse Savers	Central	7/31/2023
	Metro	7/31/2023
	Palisades	7/31/2023
	Southern	7/31/2023

The Contingency Reconfiguration subprogram costs through the end of the third quarter of 2020 are presented in **Table 23 – ES 2 Contingency Reconfiguration Costs as of September 30, 2020**.

**Table 23 – Contingency Reconfiguration Costs as of September 30, 2020**

Scope & Division		Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Forecast	% of Actuals to Forecast
		<i>Actuals</i>						
Reclosers	Central	\$2,737,167	\$3,918,150	\$2,238,132	\$2,801,328	\$11,694,777	\$21,497,603	54%
	Metro	\$2,231,431	\$3,576,616	\$1,946,751	\$1,950,122	\$9,704,920	\$21,087,215	46%
	Palisades	\$2,515,569	\$3,353,246	\$2,263,303	\$2,602,224	\$10,734,341	\$20,250,897	53%
	Southern	\$2,081,220	\$4,003,537	\$2,098,258	\$2,764,372	\$10,947,387	\$23,561,179	46%
Fuse Savers	Central	\$9,970	\$29,667	\$48,444	\$73,176	\$161,258	\$13,118,198	1%
	Metro	\$7,557	\$15,498	\$28,339	\$41,921	\$93,315	\$10,863,516	1%
	Palisades	\$7,468	\$15,259	\$16,336	\$20,878	\$59,941	\$9,243,291	1%
	Southern	\$9,792	\$21,458	\$22,973	\$35,596	\$89,818	\$12,276,134	1%
<b>Total</b>		<b>\$9,600,174</b>	<b>\$14,933,431</b>	<b>\$8,662,536</b>	<b>\$10,289,616</b>	<b>\$43,485,758</b>	<b>\$131,898,033</b>	<b>33%</b>

The current forecast of approximately \$131.9 million shown in **Table 23** for the Contingency Reconfiguration subprogram represents an approximate \$18 million reduction from the forecast as of the end of the second quarter of 2020. The change in the Contingency Reconfiguration subprogram forecast was predominantly driven by the removal of 117 13kV reclosers and 109 4kV reclosers. This was the result of a detailed assessment of each circuit to determine the current status reflecting updated system plans and changes or other work done subsequent to the ES 2 filing.

Findings & Observations:

- Recloser installations fell behind the third quarter target primarily due to weather-related impacts. However, PSE&G continued to advance work particularly through pole installations and commissioning of recloser installed earlier with Hm radios.

- PSE&G was able to mitigate the impacts from the delayed reclosers shipment through adjusting near-term plans to reallocate the available inventory in a way that allowed the Divisions to continue to progress the installations.
- While the Fuse Saver pilot program had its start delayed due to vendor firmware issues, this is an example of why the pilot program was developed as it allows minor issues like these firmware issues to be resolved prior to commencing the full effort.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

### **C. Grid Modernization – Communication System**

As reported in the IM 2020 Second Quarter Report, in June 2020, the permanent PSE&G Wireless Network infrastructure solution for connecting to the First Net LTE Network was officially placed in-service and is being utilized to manage all traffic from the field routers. During the third quarter of 2020, PSE&G conducted a service territory coverage assessment of the network, which found less than 1/10 of 1% of the service territory to have service below the coverage threshold. This assessment also identified four of 30 in-building partitions were below the service threshold, as a result PSE&G boosted the in-building signal at these locations, which had no cost impact to the subprogram.

As also reported in the IM 2020 Second Quarter Report, PSE&G made the strategic decision to focus on new recloser installations and has delayed the ramp-up in retrofit installations from August 2020 to January 2021 due to resource constraints. No overall impacts are expected from this decision and PSE&G plans to regain the planned retrofit installations by the middle of 2021 as it shifts focus from new recloser installations to the retrofit reclosers. During the third quarter of 2020, 34 retrofit installations took place against a forecast of 35 installations. The installations were specifically targeted by PSE&G and the Divisions based on a prioritization of the devices that have the most communication problems, once the majority of these identified devices are retrofitted, the prioritization will switch to by circuit. The initial retrofit reclosers prioritized also includes those that PSE&G’s IT department was working with Verizon to replace existing copper lines with fiber. By prioritizing these devices, it allows PSE&G to gain cost efficiencies by retrofitting these devices in conjunction with the other work and avoids the need to return to these devices at a later time.

On the fiber scope, which includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network, 41 installation projects and 12 cutovers have been identified, with the first batch of installations expected to be placed in-service during the fourth quarter of 2020 and the cutovers to be completed early in 2021. During the third quarter of 2020, the initial six fiber projects commenced construction while an additional five had design packages issued. These 11 fiber projects represent the projects selected by PSE&G for 2020, an additional 14 projects have been preliminarily identified for the 2021 efforts.

The Grid Modernization – Communication System subprogram costs through the end of the third quarter of 2020 are presented in **Table 24 – ES 2 Grid Modernization – Communication System Costs as of September 30, 2020**.

*Table 24 – ES 2 Grid Modernization – Communication System Costs as of September 30, 2020*

Scope & Division	2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Forecast	% of Actuals to Forecast
	Actuals						
☞ Central	\$0	\$50,613	\$150,958	\$201,053	\$402,264	\$7,959,730	5%

Scope & Division		2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Forecast	% of Actuals to Forecast
		Actuals						
	Metro	\$0	\$44,164	\$139,069	\$214,848	\$398,081	\$6,795,675	6%
	Palisades	\$0	\$44,164	\$138,485	\$216,524	\$399,173	\$6,943,433	6%
	Southern	\$0	\$46,901	\$145,479	\$198,307	\$390,687	\$8,475,961	5%
Fiber	Central	\$1,691	\$133,115	\$272,307	\$660,034	\$1,067,147	\$7,479,617	14%
	Metro	\$1,457	\$109,382	\$299,876	\$419,162	\$829,877	\$5,792,227	14%
	Palisades	\$1,582	\$194,451	\$520,068	\$403,443	\$1,119,544	\$4,087,557	27%
	Southern	\$4,731	\$65,721	\$139,575	\$120,011	\$330,038	\$3,266,163	10%
	Cutovers	\$0	\$0	\$0	\$40,869	\$40,869	\$930,560	4%
Wireless Network		\$74,306	\$1,525,801	\$2,353,604	\$1,508,075	\$5,461,786	\$7,390,016	74%
<b>Total</b>		<b>\$83,767</b>	<b>\$2,214,312</b>	<b>\$4,159,421</b>	<b>\$5,106,396</b>	<b>\$11,563,896</b>	<b>\$59,120,939</b>	<b>20%</b>

Findings & Observations:

- Retrofit recloser installations continued in the third quarter of 2020, but as previously noted PSE&G made a strategic decision for prioritizing radio installations on new reclosers (being installed as part of the Contingency Reconfiguration subprogram). PSE&G is also prioritizing the retrofit installations for locations where cost efficiencies can be gained by scheduling the radio retrofit work to be performed with related non-ES 2 work.
- The first six fiber projects commenced during the third quarter of 2020, with the other five fiber projects that comprise the 2020 scope having design underway in advance of construction starting in the fourth quarter of 2020.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

**D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS), the Outage Management System (OMS), and ADMS platform upgrades. The primary activities in 2020 are centered on planning activities, including as previously reported in the second quarter of 2020, the signing of the Open Systems International Inc. (OSII) contract. The ADMS team continues to use remote meetings with the vendor in response to the ongoing Covid-19 issues and continues to conduct design workshops to further develop the application. During the third quarter of 2020, kickoff meetings were held on the OMS scope and six business process workshops, 10 initial interface design workshops, and 24 requirements review workshops were conducted. Other activities during the third quarter of 2020 included the delivery of the first phase of hardware to OSII and the purchase of additional platform hardware (Dell servers and storage devices for Newark and Edison). This additional hardware has an overall cost impact of approximately \$1.2 million, however, PSE&G has reviewed the current ADMS estimate and the forecast remains at \$40.4 million. The final ADMS release is currently forecasted to go live during the fourth quarter of 2022.

The Grid Modernization – ADMS subprogram costs through the end of the third quarter of 2020 are presented in **Table 25 – ES 2 Grid Modernization – ADMS Costs as of September 30, 2020**.

**Table 25 – ES 2 Grid Modernization – ADMS Costs as of September 30, 2020**

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Forecast	% of Actuals to Forecast
<i>Actuals</i>						
\$36,213	\$925,689	\$4,430,542	\$6,970,572	\$12,363,016	\$40,374,822	31%

Findings & Observations:

- The activities to date on the subprogram continue to be primarily planning activities, including continuing to have workshops with the software vendor and operations.
- Several workshops occurred during the third quarter, which despite the challenges posed by Covid-19 restrictions, were completed without issue.
- Despite the Covid-19 related challenges, the IM has found nothing to date that would jeopardize the subprogram being completed on time. The current forecast, including the \$1.2 million in additional hardware purchased during the third quarter of 2020, exceeds the Stipulation amount allocated for this subprogram by approximately \$5.4 million. While this subprogram on its own would likely exceed the Stipulation budget, per the Stipulation, PSE&G has the ability to reallocate funds amongst the electric subprograms of the ES 2 Program in part to address the *“many variables associated with this type of work that make it difficult to precisely budget each subprogram project initiative.”*<sup>1</sup> With the overall electric portion of the ES 2 Program under budget, this mechanism may be implemented by PSE&G in the future to address the currently forecasted overrun in this Grid Modernization – ADMS subprogram. The IM will continue to closely monitor the costs in this regard.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric outside plant higher design and construction standards and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>2</sup> As reported in the IM 2020 First Quarter Report, the preliminary planning by PSE&G estimated that approximately one-third of the Stipulated Base funds will be used towards the electric stations life cycle investments and the remaining two-thirds towards outside plant higher design and construction standards. Based on the current study level estimate for the life cycle upgrades (detailed below), the current view shows that approximately 80% of these funds will be applied towards life cycle upgrades, with the remainder going towards the electric outside plant higher design and construction standards. As noted in the IM 2020 Second Quarter Report, this current ratio is driven by the approval of the four life cycle stations, including risk and contingency funds, to allow their completion within the ES 2 Program window. PSE&G has confirmed with the IM that it intends to maintain the ratio at approximately one-third of funding to life cycle upgrades and two-thirds to outside plant higher design and construction standards. The outside plant higher design and construction standards work is planned to commence in January 2022. In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the

<sup>1</sup> Energy Strong 2 Stipulation, paragraph 22, September 11, 2019

<sup>2</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. These four stations and their current estimate compared to the actuals to date are provided in **Table 26 – ES 2 Life Cycle Station Upgrade Project Status as of September 30, 2020**.

**Table 26 – ES 2 Life Cycle Station Upgrade Project Status as of September 30, 2020**

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Hamilton	Study	\$14,500,000	\$3,700,000	\$18,200,000	\$177,808	1%	11/2/2022
2. Paramus	Study	\$14,800,000	\$5,400,000	\$20,200,000	\$408,931	2%	9/28/2022
3. Plainfield	Study	\$18,400,000	\$4,200,000	\$22,600,000	\$503,189	2%	10/6/2022
4. Woodbury	Study	\$15,400,000	\$3,300,000	\$18,700,000	\$383,581	2%	12/16/2022

*\*-Reflects the in-service date of the last major asset (e.g., switchgear), certain activities may take place after this date to support the final in-service date (i.e., when all customers are cutover).*

Details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

**1. Hamilton**

The Hamilton substation was originally constructed in 1953 with a significant portion of its current 4kV equipment being the original equipment at the substation. The station currently consists of three 69kV lines, two 69/4kV transformers, and eight 4kV feeders. From 2008-2017, the 4kV supply circuits at Hamilton have experienced 67 extended outages and seven momentary outages, for a total duration of nearly 308 hours. The life cycle upgrades contemplate upgrading equipment and protection schemes including replacing the old electromechanical relays with modern digital relays to increase the reliability, resiliency, and life span of the substation. Notable activities conducted during the third quarter of 2020 included:

- Project kickoff meeting held.
- License and permitting design commenced.
- Detailed engineering commenced.
- Major equipment purchase order issued.

The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$0	\$0	\$0	\$177,808	\$177,808	\$18,200,000	1%

**2. Paramus**

The Paramus substation was originally constructed in 1958 with a significant portion of its current 4kV equipment being the original equipment at the substation. The station currently consists of three 69kV lines supplying a six-breaker ring bus, with three 69/4kV transformers, and 12 4kV feeder rows. From

2008-2017, the 4kV supply circuits at Paramus have experienced 116 extended outages and 20 momentary outages, for a total duration of nearly 1,044 hours. Black & Veatch was awarded the A/E scope for this project. The life cycle upgrades contemplate upgrading equipment and protection schemes including replacing the old electromechanical relays with modern digital relays to increase the reliability, resiliency, and life span of the substation. Notable activities conducted during the third quarter of 2020 included:

- Project kickoff meeting held.
- Major equipment purchase order issued.
- License and permitting design commenced.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$0	\$0	\$0	\$408,931	\$408,931	\$20,200,000	2%

### 3. Plainfield

The 4-kV Switchgear at the Plainfield substation is in poor condition. A significant portion of the 4-kV equipment at the station is still original from when the substation constructed in 1958 and the metal clad switchgear has rusted and must be addressed. In addition, all of the 4-kV distribution feeders and Tie Feeder currently run through the same manhole and conduit system, which presents the possibility of extended outages to the customers supplied from Plainfield Substation in the event of a cable or splice failure that results in collateral damage to adjacent feeders. This station currently consists of three (3) 69-kV lines supplying a Six (6) - Breaker GIS Ring Bus, with three (3) 69 / 4-kV transformers, twelve (12) 4-kV feeders, one (1) 4-kV Tie Feeder, and two (2) 2.7MVA. Black & Veatch was awarded the A/E scope for this project. Notable activities conducted during the third quarter of 2020 included:

- Project kickoff meeting held.
- License and permitting design commenced.
- Detailed engineering commenced.
- Major equipment purchase order issued.

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$0	\$0	\$0	\$503,189	\$503,189	\$22,600,000	2%

### 4. Woodbury

The Woodbury substation was originally constructed in 1954 with a significant portion of its current 4kV equipment being the original equipment at the substation. The station currently consists of four 26kV lines, three 26kV bus section breakers, three 26/4kV transformers, three transformer 4kV breakers, and 12 4kV feeders with voltage regulators and reactors. From 2008-2017, the 4kV supply circuits at Woodbury have experienced 153 extended outages and eight momentary outages, for a total duration of nearly 883 hours. Burns & McDonnell was awarded the A/E scope for this project. The life cycle upgrades contemplate replacing the old electromechanical relays with modern digital relays to increase the

reliability, resiliency, and life span of the substation. Notable activities conducted during the third quarter of 2020 included:

- Major equipment purchase order issued.
- License and permitting design commenced.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$0	\$0	\$0	\$383,851	\$383,851	\$18,700,000	2%

Findings & Observations:

- The four electric stipulated base substation life cycle projects progressed in planning and preparation efforts during the third quarter of 2020 with activities such as permitting preparation and issuance of purchase orders for major equipment.
- While the current four electric substation life cycle projects comprise approximately 80% of the electric stipulated base funding, PSE&G anticipates that the final ratio will be closer to one-third of funding to the electric substation life cycle projects and two-thirds to the outside plant higher design and construction standards. Funding these four projects fully allows them to be completed within the ES 2 Program window, in addition PSE&G expects excess funds from the Electric Station Flood Mitigation subprogram (currently forecasted approximately \$60 million under its Stipulation amount) to be reallocated to the life cycle station upgrades as provided in the Stipulation.

**F. Gas M&R Station Upgrades**

Through the end of the third quarter of 2020, preliminary design continued on each of the Gas M&R stations. **Table 27 – ES 2 Gas M&R Summary Status as of September 30, 2020** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates. As indicated in **Table 16**, there continues to have been minimal spend to date on the subprogram, with the actual spend primarily related to initial planning and preliminary design efforts.

*Table 27 – ES 2 Gas M&R Summary Status as of September 30, 2020*

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Office	\$10,000,000	\$5,400,000	\$15,400,000	\$351,353	2%	Jan 2023
2. Central*	Office	\$12,800,000	\$6,900,000	\$19,700,000	\$356,592	2%	Jan 2023
3. East Rutherford	Office	\$10,300,000	\$5,600,000	\$15,900,000	\$317,447	2%	Jan 2023
4. Mount Laurel	Study	\$9,400,000	\$2,400,000	\$11,800,000	\$241,187	2%	Dec 2022
5. Paramus*	Office	\$12,900,000	\$7,000,000	\$19,900,000	\$307,130	2%	Jan 2022
6. Westampton	Study	\$8,300,000	\$2,100,000	\$10,400,000	\$544,675	5%	Dec 2021
<b>Subprogram Total</b>		<b>\$65,600,000</b>	<b>\$35,400,000</b>	<b>\$101,000,000</b>	<b>\$2,118,383</b>	<b>2%</b>	<b>Jan 2023</b>

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
*-Included in the Stipulated Base.							

Findings & Observations:

- The primary efforts to date on the subprogram continue to be initial planning efforts, including the prior awarding of bids for the design services on the projects and current activities such as preparing for issuing the major equipment POs, site surveys, and preparation of permitting packages.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

1. Camden

As noted above, the primary work to date on the Gas M&R subprogram has been continuing with preliminary engineering and other planning activities, including the award of the A/E contract to Burns & McDonnell in July 2020 following the re-bid of this scope after the original selected firm did not agree with PSE&G's terms and conditions for material procurement. For the remainder of 2020, planned activities include continued engineering development, including a 3D model review in October 2020 and preparation and issuance of the licensing and permitting package in November 2020, and the issuance of purchase orders for the major equipment (building, heaters, pipes, scrubber, valves, and regulators) in December 2020. The Study level estimate for the Camden project is planned to be submitted to the URB in December 2020.

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$13,326	\$46,691	\$83,499	\$207,837	\$351,353	\$15,400,000	2%

2. Central

As noted above, the primary work to date on the Gas M&R subprogram has been continuing with preliminary engineering, including the prior award of the A/E contract to Odin EPC, LLC, and other planning activities. During the third quarter of 2020, a site survey was completed, and a coordination meeting conducted with IT and Security. For the remainder of 2020, engineering efforts are planned to continue with detailed design commencing in October 2020 to support the licensing and permitting packages being submitted in January 2021. The Study level estimate for the Central project is planned to be submitted to the URB in December 2020.

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$6,869	\$45,048	\$109,557	\$195,119	\$356,592	\$19,700,000	2%



### 3. East Rutherford

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to EN Engineering, LLC, and other planning activities. During the third quarter of 2020, the conceptual design for the project was approved and a coordination meeting was held with IT and Security. For the remainder of 2020, engineering efforts are planned to continue with detailed design commencing in October 2020 to prepare issued for bid drawings to be issued in January 2021. The Study level estimate for the East Rutherford project is planned to be submitted to the URB in December 2020.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$9,010	\$37,747	\$111,526	\$159,165	\$317,447	\$15,900,000	2%

### 4. Mount Laurel

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to J.F. Kiely Service Co., LLC, and other planning activities. During the third quarter of 2020, detailed schedule development resulted in the initially planned in-service date on the milestone schedule changing from January 2022 to October 2022. In September 2020, the Study level estimate for Mount Laurel was approved by the URB. This updated estimate decreased the total project estimate from \$17.4 million to \$11.8 million (including a \$1.9 million reduction in the base estimate and a \$3.7 million reduction in risk and contingency) and was based upon a further refined plan and scope and updated risk evaluation. For the remainder of 2020, engineering efforts are planned to continue with detailed design commencing in October 2020 and all drawings (civil, electrical, instrumentation, and mechanical) expected to be issued for review (IFR) in November 2020. Construction is currently anticipated to begin in March 2022.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$5,965	\$27,804	\$74,737	\$132,680	\$241,187	\$11,800,000	2%

### 5. Paramus

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to EN Engineering, LLC, and other planning activities. During the third quarter of 2020, the conceptual design was approved for the project and a 3D drawing review was held in September 2020. A coordination meeting with IT and Security was also conducted during the third quarter of 2020. For the remainder of 2020, engineering efforts are planned to continue with the preparation of issued for review drawings in December 2020 to support their release in January 2021. The Study level estimate for the Paramus project is planned to be submitted to the URB in December 2020.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$8,842	\$37,793	\$91,247	\$169,249	\$307,130	\$19,900,000	2%

**6. Westampton**

As noted above, the primary work to date on the Gas M&R subprogram has been continuing preliminary engineering, including the prior award of the A/E contract to NVS, Inc., and other planning activities. During the third quarter of 2020, detailed schedule development resulted in the initially planned in-service date on the milestone schedule changing from July 2021 to October 2021. In September 2020, geotechnical borings were completed at the site and the Study level estimate for Westampton was approved by the URB. This updated estimate reduced the total project estimate from \$12.7 million to \$10.4 million (including a \$2.3 million reduction of risk and contingency) and was based on a further refinement of the scope and an updated risk evaluation. For the remainder of 2020, engineering efforts are planned to continue in support of the issuance of the major equipment POs in November 2020 and the submittal of the licensing and permitting package. Construction is currently anticipated to begin in January 2021 and be completed in October 2021.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Total to Date	Estimate	% of Actuals to Estimate
<i>Actuals</i>						
\$8,395	\$40,839	\$180,947	\$314,493	\$544,675	\$10,400,000	5%

## **IV. Additional Information Following the End of the Third Quarter of 2020**

While the vast majority of this IM report is focused on the activities and status of the ES 2 Program during the third quarter of 2020, the timing of certain Program elements and information provided by PSE&G naturally carried over beyond the end of the calendar quarter. Such information will generally be covered in the next IM quarterly report but given the importance of some of this information as it pertains to the key decisions made on the ES 2 Program, including the related discussion in **Section II.A.**, the IM has provided additional remarks to provide a more complete view of these mitigation changes based on the available information as of the date of this IM 2020 Third Quarter Report.

### **A. Decisions Recorded After the Third Quarter of 2020**

#### **Grid Modernization – Communication System Subprogram: Fiber Scope**

On October 29, 2020, PSE&G recorded a Record of Decision to perform a full review of the fiber requirements and the status of all PSE&G substations and operations centers to verify communication needs.

The ES 2 filing included the installation of fiber to approximately 31 distribution substations not currently on the PSE&G transmission fiber system, seven operations centers, and the connection of approximately 133 substations with existing fiber at the substation. PSE&G noted to the IM that as PSE&G has continued to modernize the Distribution system outside of the ES Program, the fiber needs at substations and operations centers have also changed. PSE&G has advised that some locations no longer require fiber due to being scheduled for an upgrade, rebuild, or elimination, others now require fiber, and some have been transitioned to fiber communications.

Alternatives Considered:

1. Install fiber communication to all locations identified in the filing.
2. Perform a full review of the fiber requirements and status of all PSE&G substations and operational centers to verify fiber communication needs.

As PSE&G began to undertake the ES 2 Program, PSE&G noted to the IM that as PSE&G's Distribution grid evolved so did the list of locations that require a high-speed reliable, redundant, and resilient communication network, all a major component of the Grid Modernization subprogram. The overall network will use wireless and fiber technology that will enable communications with a broad range of electric distribution field assets and customer equipment. This ROD is noted to only be for the substation fiber and operations fiber install.

The full review contemplated under this ROD is as follows:

1. Remove Substations and Operation Centers where fiber installation is no longer required or are currently communicating via PSE&G fiber backbone.
2. Place on hold any Substation or Operation Center where the future status of the station is not clearly defined. Once a final determination is made the status will be revised.
3. Identify potential candidates for inclusion in the fiber install program. To be considered, the location needs to meet the following criteria:
  - a. Known future status-not subject to being eliminated/upgraded in the near-term
  - b. Location is operationally enabled to expand and utilize PSE&G's Fiber Backbone
  - c. Operationally Critical (key communication hub during Storm & Emergency Events)

- d. Has existing or will support future SCADA [supervisory control and data acquisition] communications.

As of the date of the ROD, eight locations were removed from the scope, six were approved and added to the scope and five proposed locations were under review. Since that time, three additional locations were removed from scope, which PSE&G noted will be reported in a subsequent amendment to the first ROD document.

The IM inquired to PSE&G if the cost of the full review of all PSE&G substation fiber requirements were captured within the subprogram costs. PSE&G responded that the cost of the PSE&G substation fiber requirement review was not directly captured in the subprogram costs. PSE&G noted that these types of scope review activities are part of the standard job function of PSE&G's Asset Management Group. These employees were noted to primarily charge Surcharge or operations & maintenance (O&M) orders depending on the specific activity being performed.

The IM also inquired as to the criteria in which the stations were added or removed from the list provided within the ROD (e.g., which element listed under "Decision Made" contributed to the changes in the table). PSE&G provided the IM with a table of the approved locations, locations removed from the scope, and the reasons for inclusion or elimination.

Five of the approved proposed locations were noted as a station not subject to elimination or upgrade in the near term and is operationally driven to utilize PSE&G's fiber backbone and is SCADA-enabled. The other location was noted to also be operationally critical as a key communication hub during storm and emergency events. For the locations eliminated, nine were noted to be scheduled for upgrade in the near future and the other two noted to have an existing connection to the PSE&G fiber backbone and was moved to the cutover program.

#### Findings and Observations

- The review and vetting process is being put in place to maximize the value of the ES 2 Program budget allocated to fiber initiatives and to ensure the Program aligns with the current communication needs.
- The IM finds that PSE&G's decision to undertake the review is appropriate and will enable that the projects included in the fiber scope will maximize the efficiency of the network to meet the filing scope of the Grid Modernization subprogram.
- The IM finds the process for determining whether to add or eliminate the location from the scope is reasonable.
- The proposed budget for the scope of work contemplated within the 2018 filing was \$24 million (fiber portion of Grid Modernization). The fiber scope to be performed at the approved selected locations is currently forecasted at approximately \$21.5 million, suggesting an opportunity to potentially include additional projects.

#### B. Additional Information on the Constable Hook, Lakeside Avenue, and Orange Valley Mitigation Changes

On October 5, 2020, the State of New Jersey Division of Rate Counsel (Rate Counsel) responded to PSE&G's notice of change in mitigation method by objecting to PSE&G implementing the changes without further clarification, citing to the Stipulation at paragraph 24. Rate Counsel noted that there were remaining questions regarding these PSE&G proposed changes including whether they will likely deliver the same benefits to customers or are appropriate under the circumstances. Rate Counsel requested that all

activities cease related to these changes in mitigation until such time as additional information and clarification is provided by PSE&G.

The IM received and reviewed the discovery requests and responses relating to this issue (including BPU Staff requests S-INF-0001 through S-INF-0003 and Rate Counsel requests RCR-INF-0001 through RCR-INF-0006). The responses provide requested information concerning the original and revised transmission and distribution project costs (including whether land and demolition costs are captured in the estimates), timing of when specific factors leading to the decision to change the mitigation method at these substations were identified by PSE&G, and other related information such as the environmental status of the proposed new Orange Valley site and if the new Lakeside/101 N. Park Street substation will incorporate loads from other substations.

The IM also received a presentation on the proposed mitigation method changes at Constable Hook, Lakeside Avenue, and Orange Valley from PSE&G dated October 22, 2020. This presentation provided additional information on the proposed changes including maps of the current and newly proposed sites and the drivers and benefits offered by the proposed changes.

On January 6, 2021, PSE&G wrote to both the BPU and Rate Counsel stating that the plans and estimates provided in the Company's initial ES 2 filing were based on the "best information available at the time" noting that as projects shift into the implementation phase, changes in project estimates and "as-filed" mitigation methods may be necessary as contemplated in the Stipulation. Relative to the prior change in mitigation method at State Street, PSE&G stated that in this limited circumstance, the Company will seek recovery of additional cost over the filing estimate in its next rate case as opposed to through the ES 2 accelerated recovery mechanism. With respect to Lakeside Avenue, Orange Valley, and Constable Hook, PSE&G stated that all requested information regarding the changes have been identified and provided to both the BPU Staff and Rate Counsel. PSE&G also stated that it is moving forward with the changes as discussed in part to benefit from the identified efficiencies, which will result in savings and increased reliability for customers.

On January 19, 2021, Rate Counsel responded to PSE&G's January 6, 2021 letter indicating Rate Counsel did not oppose PSE&G's decision to seek recovery of the increased cost for State Street in its next rate case as opposed to ES 2. Rate Counsel also stated that it cautioned PSE&G that the Company would be proceeding on the changes to Constable Hook, Lakeside, and Orange Valley at its own risk in accordance with paragraph 39 of the Stipulation noting that prudence of projects undertaken in ES 2 Program "would not take place prior to or in connection with the rate adjustments established herein."

In its January 19, 2021 letter to PSE&G, Rate Counsel noted it had specific concerns regarding the changes in mitigation method to the Constable Hook substation. Rate Counsel believes that the changes to the Constable Hook project should be excluded from the ES 2 Program since based on the information provided by PSE&G, the Company's justification for the change in mitigation method at Constable Hook to accommodate the new load at the former Military Ocean Terminal appears inconsistent with the Board's requirements for an Infrastructure Investment Program (IIP) under N.J.A.C. 14:3-2A.1. Rate Counsel stated that the BPU's regulations limit the use of the IIP to "non-revenue producing utility plant and facilities that enhance safety, reliability, and/or resiliency." Rate Counsel noted that although PSE&G identified Bergen Point as a life cycle station due to its age, that it is not part of the ES2 Program since Class A Stations with indoor 4kV equipment have been classified as lower risk than the Class C outdoor stations. Although combining the substation projects to accommodate the anticipated load growth and addressing life cycle issues will result in lower costs for the Company overall, Rate Counsel believes that it should be undertaken through traditional base recovery and not the ES 2 Program.

On February 19, 2021, PSE&G, Rate Counsel, and BPU Staff participated in a conference call to discuss Rate Counsel's objections. During this call, PSE&G explained the proposed change for the Constable Hook substation as consistent with its response to discovery request S-PSEG-ENG-002, including that any costs associated with addressing load growth would be tracked separately under a base capital project and not recovered through the ES 2 accelerated recovery mechanism. However, due to the complexities associated with this project, it became apparent that PSE&G would not be able to complete the Constable Hook project within the ES 2 Program window. Accordingly, PSE&G informed the parties of its intent to remove the Constable Hook substation from the ES 2 Program and instead perform this flood mitigation work as a base capital project. PSE&G also noted its intent to use the funds allocated for Constable Hook to perform additional life cycle station work in accordance with the terms of the Stipulation.

The IM will report on the status of this change as it becomes formalized through PSE&G's processes and as the additional life cycle station work is identified and selected.

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2020 THIRD QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

11 MAY 2021

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2020 Third Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
S-INF-1	<p>Reference Page 1, Table 1 – ES 2 Subprogram &amp; Stipulated Base Status as of September 30, 2020</p> <p>a. What is attributed to the forecasted cost of the Contingency Reconfiguration subprogram decreasing from \$150.8 million in the Independent Monitor’s (“IM’s”) Q2 2020 Report to \$131.9 million in the IM’s Q3 2020 Report?</p> <p>b. What is attributed to the forecasted cost of the Gas Metering and Regulation (“M&amp;R”) Station Upgrades subprogram increasing from \$65.6 million in the IM’s Q2 2020 Report to \$76.2 million in the IM’s Q3 2020 Report?</p>	<p>a. The change in the Contingency Reconfiguration subprogram forecast from the second to third quarter of 2020 was predominantly driven by the removal the removal of 117 13kV reclosers and 109 4kV reclosers. This was the result of a detailed assessment of each circuit to determine the current status reflecting updated system plans and changes or other work done subsequent to the ES 2 filing. While outside of the third quarter of 2020, the IM also points out that the Contingency Reconfiguration subprogram forecast increased to approximately \$162.8 million as of the end of 2020 based on a placeholder for additional reclosers currently being reviewed and an increase in the cost per unit of the fuse savers based on the actual cost trend of the pilot program.</p> <p>b. The change in the Gas M&amp;R forecast was predominantly driven by an increase to the forecast for the Central M&amp;R project from \$12.8 million as of the second quarter of 2020 to \$23.9 million as of the third quarter of 2020. This forecast was validated and incorporated into the project’s Study level estimate that was approved at \$30.0 million (including R&amp;C) in December 2020. The increase was driven by higher construction costs based on the engineer’s 50% estimate, additional buildings and equipment required for the refined design, and additional project management, engineering, and licensing and permitting support not included in the prior estimate.</p>	<p><b>Sections I. and II.B.</b></p>
S-INF-2	<p>Reference Page 2, Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2020</p> <p>Please provide the total forecasted costs of each Electric Station Flood Mitigation project.</p>	<p>The total forecasted costs for each Electric Station Flood Mitigation project (as of the end of the third quarter of 2020) has been incorporated into <b>Table 2</b>.</p>	<p><b>Table 2</b></p>
S-INF-3	<p>Reference Page 8</p> <p>Regarding the Orange Valley project scope change, please describe how the allocation of common site costs was</p>	<p>The common site costs allocation between the ES 2 and 69kV Orange Valley projects was determined by PSE&amp;G based on the ratio of each project’s Study level estimated cost of station equipment and structures</p>	<p><b>Section II A.3.</b></p>



ID #	Question/Comment	IM Response	Report Changes
	determined (15% going towards the Energy Strong II project and 85% going towards the transmission project).	to the total estimate cost of station equipment and structures for both projects, which was then rounded to the nearest 5%.	
S-INF-4	Reference Page 15, Table 9 – ES 2 AFUDC as of September 30, 2020 Please reconcile the Allowance for Funds Used During Construction recorded within the Electric Station Flood Mitigation subprogram during Q2 2020 (\$191,807) with the same value as reported in the IM’s Q2 2020 Report (\$83,234).	The IM 2020 Second Quarter Report incorrectly reported the AFUDC for the Electric Station Flood Mitigation subprogram as \$83,234 (the June 2020 AFUDC amount) rather than the \$191,807 figure shown in this report (which represents the total AFUDC for Q2 2020 on that subprogram). In the IM’s review of this item, it was determined other Q2 2020 AFUDC figures had similar issues where the June 2020 amount rather than the full second quarter amount was depicted and the Q1 2020 AFUDC figures were correct for each subprogram, but did not distinguish between the two Grid Modernization subprograms and totaled slightly off the correct amount. A corrected IM 2020 First and Second Quarter Reports are being issued to address these errors in the prior reports.	<b>Table 9</b>
S-INF-5	Reference Page 18, Table 12 – Q3 2020 Major Event Performance of Energy Strong/ES 2 Investments Please provide the average System Average Interruption Frequency Index (“SAIFI”) and Customer Average Interruption Duration Index (“CAIDI”) of circuits improved by Energy Strong and Energy Strong II projects during Tropical Storm Isaias and compare to the average SAIFI and CAIDI of unimproved circuits.	The requested comparison has been incorporated into the discussion on this Major Event in the new <b>Table 13</b> .	<b>Section II.D.1. / Table 13</b>
S-INF-6	Reference Page 19, Table 13 – Tropical Storm Isaias Comparable Major Events Please compare the System Average Interruption Duration Index (“SAIDI”) of circuits improved by Energy Strong and Energy Strong II projects during Tropical Storm Isaias to the SAIDI of these same circuits during Hurricane Irene, Wet Snowstorm (11/6/2011), and the March 2020 Nor’Easter Storm.	The requested comparison has been incorporated into the discussion on this Major Event in the new <b>Table 14</b> .	<b>Section II.D.1. / Table 14</b>
S-INF-7	Reference Pages 24-25, Table 18 – ES 2 Electric Station Flood Mitigation Project Cost Status as of September 30, 2020 Please confirm that the Electrical Station Flood Mitigation subprogram base spending estimate should total \$311.9 million (rather than \$309.4 million) and risk and contingency should total \$73.7 million (rather than \$77.2 million).	Table 18 in the draft report (now <b>Table 20</b> in this final draft) had incorrect total amounts for the base and R&C figures, the correct amounts (\$311.9 million base, \$73.7 million R&C, and \$385.5 million total) have been updated in this final report.	<b>Table 20</b>
S-INF-8	Reference Page 26, Electric Station Flood Mitigation Projects – Hasbrouck Heights	The associated Hasbrouck Heights 69kV project encountered Covid-19 related delays stemming from an equipment vendor not being able to	No change

ID #	Question/Comment	IM Response	Report Changes
	Regarding the Hasbrouck Heights substation project, please provide additional details about the COVID-19 related delay which shifted construction from June 2021 to August 2021.	travel to the site, which delayed installation of equipment on the 69kV project. The Hasbrouck Heights ES 2 project requires installation of the 69kV project first, which resulted in the construction shifting on the ES 2 project from June 2021 to August 2021.	
S-INF-9	Reference Page 28, Electric Station Flood Mitigation Projects – Market Street With respect to the Market Street substation project, what is attributed to the base estimate increasing from \$24.2 million in Q2 2020 to \$26.7 million in Q3 2020?	As the Market Street substation project advanced from a Study level to Conceptual level estimate, the primary changes to the base estimate were: <ul style="list-style-type: none"> <li>• Change in T&amp;D surcharge methodology, approved by PSE&amp;G Accounting, +\$2.5 million</li> <li>• Outside plant soil remediation, +\$1.2 million</li> <li>• Estimate refinement, (\$1.2 million)</li> </ul> The net \$2.5 million increase to the base estimate was offset by a reduction in R&C, resulting in no overall change to the project’s estimate.	<b>Section III.A.8</b>
S-INF-10	Reference Page 34, Table 22- ES 2 Grid Modernization – Communication System Costs as of September 30, 2020 Regarding the Grid Modernization – Communications subprogram, what is attributed to the forecasted cost of fiber cutovers decreasing from \$6,735,000 in the IM’s Q2 2020 Report to \$930,560 in the IM’s Q3 2020 Report?	The difference between the fiber cutover forecast from Q2 2020 to Q3 2020 is attributed to the Q2 2020 forecast (\$6,735,000) representing the full cutover funding as approved at the onset of the ES 2 Program. As the subprogram has developed, PSE&G has identified that fiber estimates have come in higher than initially planned and with more projects available than there is funding for, PSE&G is maintaining flexibility in allocating funds within this subprogram and will continue to update its forecast based on the current cutover projects selected by the subprogram.	No change
RCR-IM-1	With reference to pages 1 and 31, please explain the “minor inventory issues” for the Contingency Reconfiguration subprogram.	The lead-time on recloser orders is typically approximately four months. The recloser manufacturer experienced Covid-19 impacts and shipping issues that delayed a shipment of additional 4kV reclosers by approximately one month. To mitigate potential impacts, PSE&G reallocated its existing recloser inventory such that Metro Division with the largest population of 4kV circuits and smallest population of 13kV circuits received all 4kV reclosers in the inventory. During this time, the subprogram was also impacted by weather that limited installations. No overall lasting impacts to the subprogram have resulted from this issue.	No change
RCR-IM-2	With reference to page 2, Table 2, please explain the anticipated slip in schedule for the Clay Street substation and whether the Company experienced permitting delays or project execution plan development delays that contributed to the slip in schedule.	The forecasted in-service date for the Clay Street project changed from December 27, 2022 as of the end of the second quarter of 2020 to January 12, 2023 as of the end of the third quarter of 2020, or a 16-day slip. While this is within the 60-day threshold the IM has used since the original Energy Strong Program to evaluate schedule changes, the IM understands the delay is driven by the development and approval of the	No change

ID #	Question/Comment	IM Response	Report Changes
		licensing and permitting package, including related delays in early 2021 in scheduling a meeting with the Newark planning board due to Covid-19 restrictions.	
RCR-IM-3	With reference to page 2, Table 2, please explain the anticipated slip in schedule for the Kingsland substation and whether this slip is attributable to the change in scope or related to the reduction in switchgear commitment described later on page 27.	The IM draft report incorrectly identified the Kingsland substation has having a Q2 to Q3 schedule slippage, there was no change in the forecasted in-service date for the Kingsland substation during this period. However, the Hasbrouck Heights substation listed above Kingsland in <b>Table 2</b> did have a change in the forecasted in-service date from November 18, 2022 as of the end of the second quarter of 2020 to December 2, 2022 as of the end of the third quarter of 2020. While this is within the 60-day threshold the IM has used since the original Energy Strong Program to evaluate schedule changes, the schedule change was the result of Covid-19 related delays to the associated Hasbrouck Heights 69kV project (see <b>Section III.A.4.</b> ).	<b>Table 2</b>
RCR-IM-4	With reference to page 2, Table 2, please explain the anticipated slip in schedule for the Leonia substation and whether this slip is due to delays in construction.	The forecasted in-service date for the Leonia project changed from November 30, 2022 as of the end of the second quarter of 2020 to December 2, 2022 as of the end of the third quarter of 2020, or a 2-day slip. Because of this extremely small variance, the IM considers this to be normal schedule movement and has not performed additional analysis on the schedule.	No change
RCR-IM-5	With reference to page 2, Table 2, please explain the anticipated acceleration in schedule for Ridgefield 13kV.	The forecasted in-service date for the Ridgefield 13kV project changed from October 19, 2022 as of the end of the second quarter of 2020 to October 7, 2022 as of the end of the third quarter of 2020, or a 12-day advancement to the schedule. While this is within the 60-day threshold the IM has used since the original Energy Strong Program to evaluate schedule changes, the IM understands this schedule advancement is the result of PSE&G reviewing the schedule activities and durations, which resulted in a slight improvement to the overall project schedule.	No change
RCR-IM-6	With reference to page 2, Table 2, please explain the anticipated acceleration in schedule for the Waverly substation.	The forecasted in-service date for the Waverly project changed from December 4, 2023 as of the end of the second quarter of 2020 to November 16, 2023 as of the end of the third quarter of 2020, or a 18-day advancement to the schedule. While this is within the 60-day threshold the IM has used since the original Energy Strong Program to evaluate schedule changes, the IM understands this schedule advancement is primarily the result of the Phase 2 and Phase 3 construction activities advancing approximately two weeks, which also pulled the in-service date forward.	No change

ID #	Question/Comment	IM Response	Report Changes
RCR-IM-7	<p>With reference to page 2 and 6 through 8, please provide an explanation to the described property owner issue for the 101 N. Park Location.</p> <p>a. Will this issue cause a change in mitigation strategy for the substation?</p> <p>b. Does the company have another site if the current site location cannot be used?</p>	<p>The 101 N. Park location represents the proposed mitigation change from the original Lakeside Avenue location. There is no present property owner issue at the 101 N. Park site and PSE&amp;G anticipates closing its acquisition of the property in December 2021.</p>	No change
RCR-IM-8	<p>With reference to page 4, please explain why the range in bids is so large for creating a wireless network across the PSE&amp;G service territory.</p>	<p>The primary factor in the range of pricing is based on the spectrum requirements, with the FirstNet option not requiring the purchase of additional spectrum and other vendors having a spectrum cost of up to \$156 million. The 5-year estimated O&amp;M costs were also lower with FirstNet.</p>	No change
RCR-IM-9	<p>With reference to page 4, is FirstNet architecture completely separate from the AT&amp;T LTE network also contemplated by the Company?</p>	<p>The FirstNet network is the result of a public-private partnership with AT&amp;T. Essentially, AT&amp;T is responsible for building the network using spectrum dedicated to public safety by the Federal government, which is distinct from AT&amp;T's commercial LTE network.</p>	No change
RCR-IM-10	<p>With reference to page 4, is the \$28.7 million the cost for the life of the project? Are there fees to be paid that are not included?</p>	<p>The \$28.7 million figure represents the cost to construct the network and does not include operating and maintenance costs.</p>	No change
RCR-IM-11	<p>With reference to page 9, is the transaction still expected to close in April 2021 for the new Orange Valley substation location?</p>	<p>As of the date of this report, the property has not yet closed, but is expected to in April-May 2021.</p>	No change
RCR-IM-12	<p>With reference to page 18, which substations were impacted as a result of Tropical Storm Isaias? What was the damage to those substations?</p>	<p>The substations shut down during this Major Event were: Avenel, Clark, Harts Lane, Hudson Terrace (shut down a second time during restoration efforts), Bordentown, Medford, Montgomery, Mount Holly, Princeton, and, Southampton.</p> <p>None of these substations experienced damage or flood intrusion as a result of Tropical Storm Isaias.</p>	<b>Section II.D.1.</b>
RCR-IM-13	<p>With reference to pages 18 and 19, Table 12, please identify the units. Are they minutes or hours?</p>	<p>The SAIDI calculations presented are based on minutes.</p>	<b>Table 12</b>
RCR-IM-14	<p>With reference to pages 20 and 21, Table 14, please identify the units. Are they minutes or hours?</p>	<p>The SAIDI calculations presented are based on minutes.</p>	<b>Tables 14 &amp; 16</b>
RCR-IM-15	<p>With reference to page 25, will the Orange Valley substation work be completed outside the ES2 timeframe?</p>	<p>As of the end of the third quarter of 2020, the Orange Valley project was forecasted to be completed in January 2024. However, as noted in the report, PSE&amp;G is examining the potential to shorten durations and/or work activities concurrently to pull the in-service date into 2023 (as of</p>	No change

ID #	Question/Comment	IM Response	Report Changes
		the January 2021 schedule, the most recent currently available to the IM, the forecasted in-service date has advanced to December 29, 2023).	
RCR-IM-16	With reference to page 29, please describe the underground work scope increase for Ridgefield 4kV.	There was no scope increase for the underground work; however, following the solicitation of bids from PSE&G's approved list of underground contractors and award going to the lowest bidder after analyzing the technical and commercial bid components, the award of this work was higher than PSE&G initially estimated by approximately \$1.0 million.	No change
RCR-IM-17	With reference to page 36, Table 24, are these the worst performing Class A substations? Please confirm that they are all Class A substations.	As discussed in the IM 2020 Second Quarter Report, the four current life cycle station upgrade projects are all Class C substations. In addition, each is one of the 15 stations identified in PSE&G's ES 2 filing as having the highest priority for this scope of work. As part of the planning for the 15 highest priority stations, PSE&G evaluated the project complexity for each location. Given that only a limited number of projects can be completed as part of the Program, PSE&G selected three stations where standard equipment and processes could be utilized to upgrade the stations. The fourth project initially selected (Plainfield) will require special equipment to offload the station due to the property constraints. This equipment and construction process can be utilized for future life cycle projects and this project was selected to develop and refine these procedures.	No change
PSE&G-1	Stipulated Base AFUDC figures are missing from Table 9.	The Electric Stipulated Base AFUDC figures were incorporated into <b>Table 9</b> .	<b>Table 9</b>
PSE&G-2	The Ridgefield 4kV estimate in Table 18 reflects the Study Level estimate rather than the current Conceptual Level estimate.	The current Conceptual Level estimate for Ridgefield 4kV was incorporated into Table 18 (now <b>Table 20</b> in this final draft). The IM also notes that the Ridgefield 4kV discussion in <b>Section III.A.12</b> showed the correct and current \$20.2 million estimate.	<b>Table 20</b>
PSE&G-3	The Kingsland estimate on page 27 shows the prior Study level estimate rather than the revised Study level estimate.	The revised Study level estimate for Kingsland was incorporated into <b>Section III.A.5</b> . The IM also notes that the Kingsland estimate in <b>Table 20</b> showed the correct and current \$8.3 million estimate.	<b>Section III.A.5</b>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2020 FOURTH QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

SEPTEMBER 24, 2021

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Allowance for Funds Used During Construction.....	AFUDC
Architectural and Engineering .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System.....	DERMS
Energy Strong 2 .....	ES 2
Environmental Protection Agency .....	EPA
Gas-Insulated Switchgear .....	GIS
Gas Metering & Regulating.....	Gas M&R
Hazardous Waste Operations and Emergency Response.....	HAZWOPER
Henkels & McCoy .....	H&M
Independent Monitor.....	IM
Issued for Construction .....	IFC
Issued for Review .....	IFR
Liquid Propane Air .....	LPA
Mobile Construction Workforce .....	MCW
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Passaic Valley Sewerage Commission .....	PVSC
Per- and Polyfluoroalkyl Substances .....	PFAS
Plain Old Telephone Service .....	POTS
Public Service Electric & Gas .....	PSE&G
Purchase Orders .....	POs
Record of Decision .....	ROD
Risk and Contingency.....	R&C
System Average Interruption Duration Index.....	SAIDI



Transmission & Distribution..... T&D  
Utility Review Board..... URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram).

During the fourth quarter of 2020, the bulk of the spend within the ES 2 Program continued to be in the two largest subprograms: Electric Station Flood Mitigation with six projects continuing in construction; and, Contingency Reconfiguration that continues to advance the installation and commissioning of reclosers. Within the other subprograms, the Grid Modernization – Communication System subprogram continued to advance with the initiation of the 2020 fiber projects during the fourth quarter and placing three of the fiber installation projects and five of the fiber cutover projects in-service before the end of the year. The Grid Modernization – ADMS subprogram continued to plan and develop the platform and necessary hardware equipment, while the Gas M&R subprogram continued engineering design and other early project activities such as developing licensing and permitting packages and identification of major equipment/long-lead items. The four stations approved within the life cycle upgrades portion of the Electric Stipulated Base initiated detailed design and continued other planning activities. **Table 1 – ES 2 Subprogram & Stipulated Base Status as of December 31, 2020** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of December 31, 2020**

Subprogram	Q4 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount
Electric Station Flood Mitigation	\$21,896,101	\$53,945,172	\$339,403,267	16%	Jan 2024	\$389M
Contingency Reconfiguration	\$16,150,287	\$59,636,044	\$162,806,273	37%	Jun 2023	\$145M
Grid Modernization – Communications	\$7,656,612	\$19,220,506	\$59,306,886	32%	Dec 2023	\$72M
Grid Modernization – ADMS	\$4,120,822	\$16,483,837	\$40,374,139	41%	Oct 2022	\$35M
Electric Stipulated Base	\$962,284	\$2,436,062	\$100,000,000	2%	Dec 2023	\$100M
Gas M&R Station Upgrades <sup>^</sup>	\$1,843,109	\$3,961,492	\$76,815,837	5%	Dec 2023	\$101M
<b>Total*</b>	<b>\$52,629,214</b>	<b>\$155,683,114</b>	<b>\$778,706,402</b>	<b>20%</b>	<b>Jan 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects or placeholders for potential additional projects in these subprograms. See **Table 12** and **Table 20** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\* -Final in-service date.

<sup>^</sup>-Includes both the ES 2 projects and the Stipulated Base gas projects.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of December 31, 2020**.

*Table 2 – ES 2 Electric Station Flood Mitigation Status as of December 31, 2020*

Project	Total Estimate	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$10,500,000	\$4,374,948	42%	10/25/2021
2. Clay Street	\$42,000,000	\$995,748	2%	2/6/2023 (↓)
3. Constable Hook	\$5,300,000	\$115,640	2%	TBD
4. Hasbrouck Heights	\$18,000,000	\$1,279,782	7%	4/12/2023 (↓)
5. Kingsland	\$8,300,000	\$313,779	4%	10/4/2023
6. Lakeside Avenue	\$47,900,000	\$602,937	1%	12/13/2023 (↑)
7. Leonia	\$32,200,000	\$6,078,171	19%	9/30/2022 (↑)
8. Market Street	\$26,900,000	\$16,330,794	61%	9/22/2021
9. Meadow Road	\$9,000,000	\$598,209	7%	9/21/2023
10. Orange Valley	\$20,200,000	\$439,924	2%	1/24/2024 (↓)
11. Ridgefield 13kV	\$25,500,000	\$6,438,674	25%	10/13/2022 (↓)
12. Ridgefield 4kV	\$20,200,000	\$11,382,948	56%	5/28/2021 (↑)
13. State Street	\$45,100,000	\$739,738	2%	9/23/2022
14. Toney’s Brook	\$19,700,000	\$585,036	3%	4/21/2023
15. Waverly	\$35,400,000	\$2,564,563	7%	11/8/2023 (↑)
16. Woodlynne	\$19,400,000	\$1,104,280	6%	10/11/2023 (↓)

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).  
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As indicated in **Table 2**, the projects that have advanced into construction (Academy Street, Leonia, Market Street, Ridgefield 13kV, Ridgefield 4kV, and Waverly) projects continue to have the highest spend. Additionally, five of the stations (Academy Street, Constable Hook, Lakeside Avenue, Market Street, and Orange Valley) had new estimates approved by the URB in during the fourth quarter of 2020. **Table 2** also shows that nine of the sixteen projects in this subprogram had movement in the forecasted in-service date, with four advancing and five slipping. Of these nine projects, only two (Hasbrouck Heights and Leonia) had movement more than 60 days, which is the threshold the IM applied during the original Energy Strong Program for evaluating changes to the project schedules. The Hasbrouck Heights forecasted in-service date moved from early December 2022 to mid-April 2023 due to Covid-19 related delays on the Siemens Gas-Insulated Switchgear (GIS) installation on the associated Hasbrouck Heights 69kV project, which has resulted in the Hasbrouck Heights ES 2 project delaying the start of construction from July 2021 to January 2022. The Leonia forecasted in-service date moved from early December 2022 to late September 2022 based on review of the durations for circuit cutovers and a resulting improvement in durations that allowed the in-service date to advance approximately two months.

The IM has found nothing to date that would jeopardize the ES 2 Program being completed on budget, while schedule challenges, particularly on the Orange Valley substation, will warrant further monitoring to ensure the Program is completed within the defined timeline.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On July 15, 2021, a draft report was presented and submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2020 Fourth Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and, rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2020 Fourth Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network – ESII-GM-3	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center – ESII-GM-4	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope – ESII-GM-1	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. below</i> )

Subprogram	Record of Decision	IM Comments
Grid Modernization – Communication System	Communication Retrofit of Replacement and non ES-II Units – ESII-GM-2	Reasonable and appropriate ( <i>See Section II.A.2. below</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section II.A.3. below</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling – ESII-FM-1	Reasonable and appropriate ( <i>See Section IV.A below</i> )

**1. Electric Station Flood Mitigation – Lakeside Avenue, Orange Valley, and Constable Hook Change in Mitigation Method**

As discussed within the IM 2020 Third Quarter Report (Sections II.A.3. and IV.B.), in September 2020, PSE&G formally proposed a change to the mitigation method at Lakeside Avenue, Orange Valley, and Constable Hook from raise and rebuild to relocate. Following an objection from Rate Counsel on the implementation of such mitigation methods changes without further clarification, PSE&G responded to requests from Rate Counsel and BPU Staff for additional information on these proposed changes, which continued to be discussed through the end of 2020. Additional information relative to this decision following the end of 2020 is provided in **Section IV.B.**

**2. Communication Retrofit of Replacement and non ES-II Units**

The Grid Modernization – Communication System subprogram features the implementation of a new wireless communication network to eliminate PSE&G’s reliance on dedicated phone lines (“plain old telephone service”, or “POTS”) for remote communications. To address the existing reclosers that communicate via POTS lines, PSE&G is retrofitting these devices to allow communication on the new wireless network as part of this subprogram. During the normal course of operations, some of the existing reclosers fail and require replacement, the capital replacement units are budgeted and accounted for each year under Distribution Base Capital blankets and moving forward, and recloser will be commissioned via the new wireless network instead of reconnected to POTS lines. Additionally, several of the new reclosers being installed by PSE&G outside the ES 2 Program either were in stock or purchased during the period shortly after Program approval, these devices will be fitted with new wireless network radios to facilitate communication on the new wireless network.

Before reaching this decision, PSE&G considered the following alternatives:

For replacement of failed units:

1. Install replacement recloser with communication equipment required to operate on the new wireless network.
2. Install replacement recloser on POTS lines and retrofit communication to the wireless network at a later date.

For the cost application of new non-ES 2 recloser units:

1. Remove commissioning and radio costs from the ES 2 Program for any non-ES 2 reclosers installed after the filing was approved.
2. Create a cutoff point for the transitional period as year-end 2020 as to when commissioning costs can be attributed to the ES 2 retrofit initiative.
3. Apply commissioning costs for non-ES 2 reclosers to retrofit accounting for the duration of the ES 2 Program.

For both components of this decision, PSE&G’s Grid Modernization – Communication System subprogram team in coordination with PSE&G’s Asset Management group determined the appropriate course of action. This saves time and resources by eliminating the additional work of installing the new asset on POTS lines and later retrofitting it. It also establishes more reliable communications than existed on these units. For replacement of failed units, the decision was made to install the replacement reclosers with communication equipment required to operate on the new wireless network. For the cost application of new non-ES 2 recloser units, the decision was made to implement a cutoff deadline of year-end 2020 for when commissioning costs of these units can be applied to ES 2. This decision was based on a recognition that while some of these units were already part of an existing installation roadmap and would meet the intent of the ES 2 filing, however there was a need to establish a hard deadline rather than continue this approach indefinitely.

Both of these aspects of the Grid Modernization – Communication subprogram will be tracked as completed “existing retrofit” units and from a cost accounting standpoint, the guidance shown in **Table 4 – Retrofit Recloser Cost Treatment** will be applied to both scenarios:

**Table 4 – Retrofit Recloser Cost Treatment**

Scope Category	Scope Description	Accountable Project
Material	New Recloser	Distribution Base Capital Blanket
	Radio & Accessories	ES 2 Grid Modernization – Communication System
Labor	Removal of Defective Recloser	Distribution Base Capital Blanket
	Installation of New Recloser	Distribution Base Capital Blanket
	Commissioning of New Recloser	ES 2 Grid Modernization – Communication System

This cost allocation is intended to isolate the ES 2 labor and material costs that are only related to the preparation and commissioning of the asset for the new wireless network, which is consistent with the activities performed on a typical recloser retrofit in the Grid Modernization – Communication System subprogram. All other costs for these reclosers will be attributed to the appropriate Distribution Base Capital blanket or specific project.

Findings and Observations

- The IM finds that this decision reached by PSE&G appropriately addresses aspects of the Grid Modernization – Communication System subprogram that overlap with routine, non-ES 2 Program work.
- By allowing replacement reclosers not planned as part of the ES 2 Program to be connected to the new wireless network, it allows the benefits of the Program investments to be realized on these devices earlier than it otherwise would be.
- PSE&G’s decision to segregate the costs elements of this type of work between ES 2 and base capital provides alignment with the standard recloser retrofits that are part of the subprogram.

**3. Market Street Radioactive Soil Testing and Handling**

On August 20, 2020, PSE&G recorded a ROD to utilize outside contractors/consultants Henkels & McCoy (H&M) as its OSHA Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) contractor along with Kleinfelder for all spoils testing and monitoring of work areas in the Market Street Project area as part of the scope of work on the Market Street ES 2 Project.

During detailed engineering of the Outside Plant area of the Project, PSE&G discovered that the Market Street substation and a large portion of the Outside Plant area to be replaced (poles) are located within the Environmental Protection Agency (EPA) designated "Study Areas" within Gloucester City to address the potential presence of radioactive soil.

OSHA's HAZWOPER is established to protect workers at hazardous sites. To comply with the OSHA standard, PSE&G does not have appropriately trained internal resources to self-perform these tasks.

Alternatives were considered which included:

1. Provide necessary HAZWOPER training and certification to PSE&G personnel as well as provide the necessary tools, equipment, and procedures to be able to execute the work within the Study Areas with internal resources.
2. Hire suitably qualified contractors who are experienced and equipped to perform excavation and testing in the Study Areas within the required project schedule.

The PSE&G Mobile Construction Workforce (MCW) determined that the internal PSE&G resources were not available to handle excavation of radioactive material. The PSE&G Environmental Projects team also indicated that internal PSE&G resources were not available to perform testing of this type and scale. As a result, PSE&G Procurement recommended utilizing H&M to perform HAZWOPER excavations since they were already under contract for this type of work, under a previously competitive bid Master Service Agreement. PSE&G noted that conducting a new bid event for these services would likely result in higher rates than contained in the Master Agreement holding favorable rates to PSE&G and would likely delay the substation project by two to three months.

PSE&G indicated that Kleinfelder was chosen for testing and monitoring due to their experience with radioactive contamination, familiarity with associated EPA and U.S. Army Corp of Engineers projects in the Gloucester City area, along with their reliable service on recent PSE&G contamination projects.

The EPA reviewed and approved PSE&G's project plan for the work in the Study Areas and agreed to dispose of any radioactive material that is removed. PSE&G estimates the incremental cost for soil excavation, testing, and monitoring activities is approximately \$1.8 million.

#### Findings and Observations

- The IM finds that PSE&G appropriately investigated the alternatives and making its decision to retain outside contractor/consultants did so based on obtaining the best pricing for the work to be performed and to reduce the risk of schedule delay.
- By hiring a certified HAZWOPER contractor to perform the excavations for the poles and place sonotubes within the Study Areas, PSE&G MCW crews were able to subsequently install new poles within the sonotubes, avoiding direct exposure to potentially contaminated soils.
- The EPA has already approved PSE&G's plan for the work allowing work to proceed without schedule delay.
- The IM further finds that PSE&G's decision will provide for safety of its own crews and avoid schedule delay that may have resulted if PSE&G had chosen to train its internal personnel for this specific location.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with ES 1, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

## **C. Cost Assignments**

### **I. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 5 – ES 2 Costs of Removal as of December 31, 2020**, below itemizes the charges to COR for each quarter of 2020, total 2020, the fourth quarter of 2019 and total Energy Strong COR to date. These amounts do not reflect any salvage value reductions, which have been de minimis in the ES 2 Program through December 31, 2020.

*Table 5 – ES 2 Costs of Removal as of December 31, 2020*

<b>Subprogram</b>	<b>Q4 2020</b>	<b>Q3 2020</b>	<b>Q2 2020</b>	<b>Q1 2020</b>	<b>Total 2020</b>	<b>Q4 2019</b>	<b>Total COR</b>
<b>Electric Station Flood Mitigation</b>	\$190,735	\$294,089	\$468,989	\$67,332	\$1,021,145	\$0	\$1,021,145
<b>Contingency Reconfiguration</b>	\$707,300	\$250,228	\$624,595	\$616,752	\$2,198,875	\$431,030	\$2,629,905
<b>Grid Modernization – Communications</b>	\$19,564	\$3,384	\$1,495	\$0	\$24,443	\$0	\$24,443
<b>Grid Modernization - ADMS</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Electric Stipulated Base</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Gas M&amp;R Station Upgrades</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$917,599</b>	<b>\$547,701</b>	<b>\$1,095,079</b>	<b>\$684,084</b>	<b>\$3,244,463</b>	<b>\$431,030</b>	<b>\$3,675,493</b>

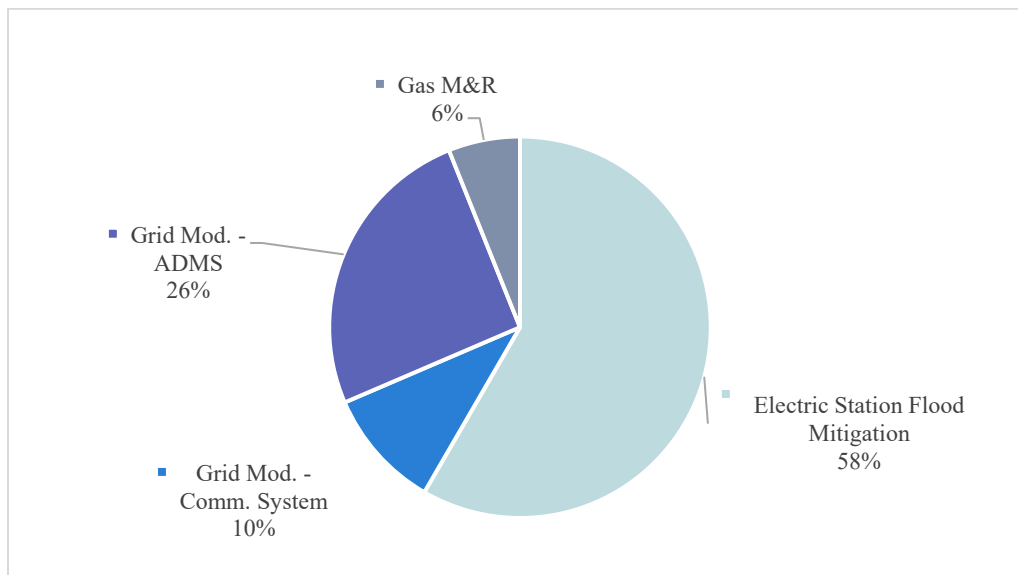
COR charges during the fourth quarter of 2020 increased from the third quarter by 68%, primarily due to a higher level of reclosers installations, with the associated pole and conductor removals, in the fourth quarter from the third. The increase in Grid Modernization COR in the fourth quarter of 2020 from the third quarter reflects the removal of existing communications equipment related to the recloser installations, and to removal of equipment in support of the fiber projects.



## 2. Construction Work-in-Progress (CWIP) & In-Service Transfers

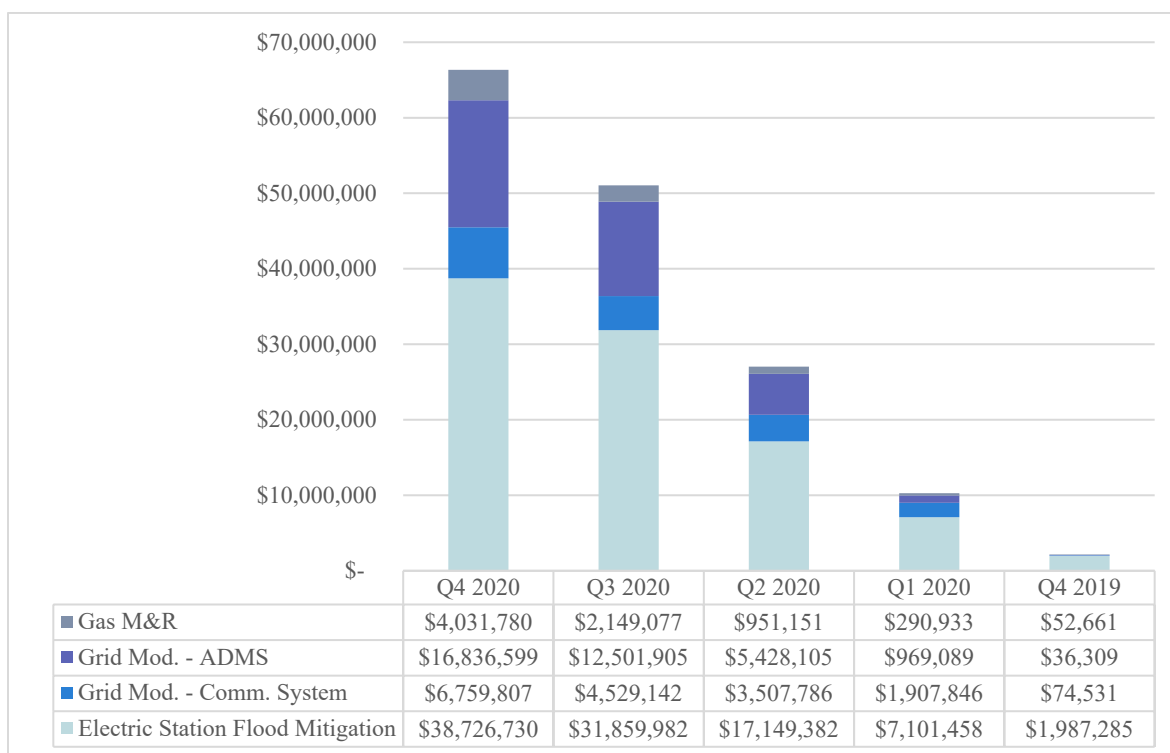
As of December 31, 2020, the ES 2 CWIP balance was \$66.4 million, compared to \$51.0 million as of September 30, 2020. The largest components of December 31, 2020 CWIP were the work associated with the elimination and conversion of the 4kV circuits at Ridgefield substation (\$13.8 million in total), work at Leonia substation (\$6.1 million), and work associated with the Advanced Distribution and Management System (\$16.8 million). The Electric Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in the **Figure 1 – ES 2 CWIP as of December 31, 2020** below.

*Figure 1 – ES 2 CWIP as of December 31, 2020*



In addition, the **Figure 2 – ES 2 CWIP Balances by Subprogram as of December 31, 2020** below depicts the composition of end-of-quarter CWIP balances by subprogram for each quarter of the year 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of December 31, 2020**



Transfers from CWIP to plant in-service have totaled \$5.2 million as of December 31, 2020, all of which was comprised of Grid Modernization projects. It should be noted that work related to certain assets, such as blanket projects and the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP, and thus, are not recorded as transfers from CWIP. During the fourth quarter of 2020, the company made an adjustment to CWIP to reflect a reversal of about \$9.2 million from CWIP to direct in-service. This adjustment was to the Market Street 4kV substation elimination (\$7.0 million) and Ridgefield 4kV substation elimination (\$2.2 million) to recognize that certain work orders meet the definition of blanket projects and should not have been recorded as CWIP. This adjustment also affected previously recorded amounts for AFUDC (see **Section II.C.3.**).

**3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each ES 2 subprogram during each quarter of 2020, total year 2020, the fourth quarter of 2019, and total ES 2 AFUDC accrued to date, is shown below in **Table 6 – ES 2 AFUDC as of December 31, 2020.**

**Table 6 – ES 2 AFUDC as of December 31, 2020**

Subprogram	Q4 2020	Q3 2020	Q2 2020	Q1 2020	Total 2020	Q4 2019	Total AFUDC
Electric Station Flood Mitigation	\$305,014	\$377,009	\$191,807	\$62,618	\$936,448	\$9,887	\$946,335
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Subprogram	Q4 2020	Q3 2020	Q2 2020	Q1 2020	Total 2020	Q4 2019	Total AFUDC
Grid Modernization – Communications	\$66,204	\$43,496	\$60,073	\$14,572	\$184,345	\$225	\$184,570
Grid Modernization - ADMS	\$213,873	\$103,228	\$28,474	\$7,092	\$352,667	\$96	\$352,763
Electric Stipulated Base	\$32,603	\$11,413	\$0	\$0	\$44,016	\$0	\$44,016
Gas M&R Station Upgrades	\$39,594	\$19,385	\$8,465	\$2,590	\$70,034	\$254	\$70,288
<i>Total</i>	<i>\$657,288</i>	<i>\$554,531</i>	<i>\$288,819</i>	<i>\$86,872</i>	<i>\$1,587,510</i>	<i>\$10,462</i>	<i>\$1,597,973</i>

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies the current year based on updated capital structure and component cost data. For the year 2020, the new AFUDC rate was calculated to be 6.95%, using the capital structure and component costs as of January 31, 2020. In calculating the 2020 AFUDC rate, the Company used (i) a 4.02% embedded cost of long-term debt, (ii) a short-term debt rate of 1.86%, and (iii) a cost of equity of 9.60%.

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the fourth quarter of 2020, based on data as of November 30, 2020, the recalculated weighted average AFUDC accrual rate (6.96%) did not meet this criterion to warrant changing from the annual rate (6.95%) in effect. Therefore, AFUDC was accrued during the fourth quarter of 2020 at the calculated rate of 6.95%.

AFUDC accrued for ES 2 projects during the fourth quarter of 2020, taking into consideration the reclassification referred to above, increased significantly over AFUDC accrued during the third quarter of 2020 as the result of the increases in total average CWIP balances across all subprograms. The reclassification adjustment related to certain work orders for the Market Street and Ridgefield 4kV substations, referred to in **Section II.C.2.**, resulted in a reduction in fourth quarter AFUDC of \$186,260.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to fourth quarter 2020 ES 2 project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these ES 2 projects. The IM will continue to review future ES 2 AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### **4. Allocated Overheads**

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU

order in July 2003. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 7 – ES 2 Overhead Allocations as of December 31, 2020** are the allocated overhead costs charged to ES 2 projects for all four quarters of 2020, total 2020, the fourth quarter of 2019, and total allocated overheads to date.

*Table 7 – ES 2 Overhead Allocations as of December 31, 2020*

Subprogram	Q4 2020	Q3 2020	Q2 2020	Q1 2020	Total 2020	Q4 2019	Total Overhead Allocations
Electric Station Flood Mitigation	\$4,924,531	\$3,890,087	\$3,560,216	\$1,648,117	\$14,022,951	\$286,953	\$14,309,904
Contingency Reconfiguration	\$6,010,891	\$3,350,239	\$3,055,700	\$4,692,085	\$17,108,915	\$3,415,460	\$20,524,375
Grid Modernization – Communications	\$2,170,097	\$561,011	\$548,017	\$345,720	\$3,624,845	\$12,074	\$3,636,919
Grid Modernization – ADMS	\$111,743	\$105,563	\$91,786	\$116,442	\$425,534	\$10,603	\$436,137
Electric Stipulated Base	\$104,386	\$155,112	\$0	\$0	\$259,498	\$0	\$259,498
Gas M&R Station Upgrades	\$91,988	\$78,452	\$68,257	\$52,836	\$291,533	\$15,287	\$306,820
<b>Total*</b>	<b>\$13,413,636</b>	<b>\$8,140,465</b>	<b>\$7,323,975</b>	<b>\$6,855,199</b>	<b>\$35,733,275</b>	<b>\$3,740,376</b>	<b>\$39,473,651</b>

\*-Note: total figures may not fully align due to rounding.

The overwhelming majority of overhead costs allocated to ES 2 projects during the fourth quarter of 2020 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most of the fourth quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The increase in overheads for the fourth quarter 2020 over the third quarter largely reflects higher ES 2 project activity, and a return to a more normal overhead surcharge pattern from the Isaias storm restoration efforts in August, during which significant bargaining unit labor costs were charged to non-ES 2 projects in connection with service restoration activity.

The IM believes these allocations represent no change in the Company’s normal methodology of allocating overhead costs.

## D. System Performance

### 1. Current Reporting Quarter Major Events

During the fourth quarter of 2020, there was one Major Event reported in PSE&G’s service territory concerning a State of Emergency declared due to a snowstorm. The State of Emergency was declared by Governor Murphy on December 16, 2020 and was lifted on December 18, 2020. During this Major Event

period, 5,108 PSE&G customers experienced extended service interruptions with all returned to service within 29 hours.

The IM has received PSE&G’s report on the performance of its investments from this Major Event and has reproduced the results in **Table 8 – Q4 2020 Major Event Performance** below.

**Table 8 – Q4 2020 Major Event Performance**

<b>Circuit</b>	<b>5 Year Baseline SAIDI*</b>	<b>Report Quarter SAIDI*</b>
ALD 8015	0.12276	0.00000
ALD 8016	0.00654	0.00000
LAU 8014	0.25642	0.00000
LAU 8035	0.29567	0.00400
LAW 8025	0.16759	0.00269
LUM 8014	0.29932	0.00310
MAY 8013		0.00000
MAY 8014	0.03470	0.00000
NEW 8033	0.00571	0.00000
NOT 8013		0.00000
TNY 4001	0.02964	0.00081
<i>*-SAIDI calculations are in minutes.</i>		

In the circuit data above, the “0.00000” values in the Report Quarter SAIDI data indicates an outage occurred during this Major Event, but the value is beyond five decimal points captured by PSE&G. As indicated above, there were relatively few circuits impacted by this Major Event with the majority of the affected circuits having experienced outages less the 5-year Major Event average (with the only exceptions being two circuits that had extremely minor outages during this Major Event and no other Major Event outage within the 5-year window that forms the reported Major Event average SAIDI).

### **III. Project Status**

#### **A. Electric Station Flood Mitigation**

A summary of the subprogram plan as of the end of 2020 is provided below in **Table 9 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of December 31, 2020.**

**Table 9 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of December 31, 2020**

Project	Plan Status Point	2019		2020				2021				2022				2023				2024	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS		CO						
	Dec. 2020		<u>KO</u>		<u>C</u>								IS		CO						
2. Clay Street	Dec. 2019	Schedule Under Development																			
	Dec. 2020			<u>KO</u>								C								IS	CO (Q2)
3. Constable Hook	Dec. 2019	Schedule Under Development																			
	Dec. 2020	Schedule Under Development																			
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>						C						IS		CO				
	Dec. 2020		<u>KO</u>									C					IS		CO		
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO								
	Dec. 2020			<u>KO</u>										C						IS	CO (Q2)
6. Lakeside Avenue	Dec. 2019*				<u>KO</u>			C												IS	CO (Q2)
	Dec. 2020						<u>KO</u>							C						IS	CO (Q2)
7. Leonia	Dec. 2019	Schedule Under Development																			
	Dec. 2020			<u>KO</u>		C									IS		CO				
8. Market Street	Dec. 2019		<u>KO</u>					C	OS		CO										
	Dec. 2020		<u>KO</u>						C	OS		CO									
9. Meadow Road	Dec. 2019	Schedule Under Development																			
	Dec. 2020			<u>KO</u>											C					IS	CO (Q2)
10. Orange Valley	Dec. 2019	Schedule Under Development																			
	Dec. 2020					<u>KO</u>										C					IS (Q1); CO (Q3)
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C										IS		CO				
	Dec. 2020			<u>KO</u>	<u>C</u>										IS		CO				
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>					C	OS			CO								
	Dec. 2020			<u>KO</u>	<u>C</u>					OS		CO									
13. State Street	Dec. 2019		<u>KO</u>					C								IS					CO (Q1)
	Dec. 2020		<u>KO</u>						C				IS								CO (Q1)
14. Toney's Brook	Dec. 2019			<u>KO</u>					C											IS	CO (Q2)
	Dec. 2020			<u>KO</u>										C			IS				CO (Q2)
15. Waverly	Dec. 2019	Schedule Under Development																			
	Dec. 2020			<u>KO</u>			<u>C</u>														IS
16. Woodlyne	Dec. 2019		<u>KO</u>												C					IS	CO (Q2)
	Dec. 2020		<u>KO</u>												C					IS	CO (Q2)

December 31, 2023 - ES 2 Program End Date

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.

A summary of the subprogram status as of the end of 2020 is provided below **Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of December 31, 2020.**

**Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of December 31, 2020**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynne
Key Drawing Review	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynne
Scope Locked	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney’s Brook; Waverly; Woodlynne
Major Equipment Purchase Orders (POs)	14*	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Leonia*; Meadow Road; Ridgefield 13kV*; State Street; Toney’s Brook; Waverly*; Woodlynne
A/E Contract Award (or selection of PSE&G internal engineering)	15	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney’s Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynne <sup>1</sup>
Construction Start <sup>^</sup>	6	Academy Street; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; Waverly
<p>*-Three of the listed projects (Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 14 switchgears at 11 substations.  <sup>1</sup>-Indicates Burns &amp; McDonnell is serving as the A/E.  <sup>2</sup>-Indicates PSE&amp;G internal resources are serving as the A/E.  <sup>3</sup>-Indicates Black &amp; Veatch is serving as the A/E.  <sup>^</sup>-Includes inside plant and/or outside plant construction.</p>		

Beyond the key activities summarized in **Table 10** above, **Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q1 2021** summarizes the planned activities for each project during the first quarter of 2021, including any carryover of activities from earlier periods.

**Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q1 2021**

Station	Upcoming Activities for Q1 2021	Carryover Activities from Q4 2020
1. Academy Street	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Vendor drawings received (final switchgear arrangement)</li> <li>Planning Board hearing for site plan</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
3. Constable Hook	<ul style="list-style-type: none"> <li>Being removed from the ES 2 Program and replaced with additional Life Cycle projects</li> </ul>	<ul style="list-style-type: none"> <li>Remains in planning/origination stages</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Contingency plan – electrical layout complete</li> <li>Submittal of major state licenses and permits</li> <li>Control drawings issued for construction (IFC)</li> <li>Civil construction purchase order issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>

Station	Upcoming Activities for Q1 2021	Carryover Activities from Q4 2020
5. Kingsland	<ul style="list-style-type: none"> <li>Continued design and engineering</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Major equipment (switchgear) purchase order issued</li> <li>50% estimate completion</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Phase 1 civil construction completed</li> <li>70% estimate completion</li> <li>Phase 2-3 civil and electrical purchase orders issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
8. Market Street	<ul style="list-style-type: none"> <li>Major regional and county licenses and permits issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>Continued engineering and design</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>License and permitting package issued</li> <li>50% estimate completion</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Phase 1 control drawings IFC</li> <li>Phase 2 civil and electrical drawings IFC</li> <li>Phase 1 electrical purchase order issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
12. Ridgefield 4kV	<ul style="list-style-type: none"> <li>Civil and electrical demolition design packages IFC</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>Electrical construction purchase order issued</li> </ul>	<ul style="list-style-type: none"> <li>Civil construction purchase order issued</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Continued engineering and design</li> </ul>	<ul style="list-style-type: none"> <li>70% estimate completion</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Phase 1 civil construction completed</li> <li>Planning Board hearing for site plan</li> </ul>	<ul style="list-style-type: none"> <li>Major licenses and permits issued (Soil Conservation District, others were issued in Q4 2020)</li> </ul>
16. Woodlyne	<ul style="list-style-type: none"> <li>Release control drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>Civil and electrical construction purchase orders issued</li> </ul>

The current project estimates, including base and R&C amounts, is shown below in **Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2020**. Table 12 also shows the current estimate level based on PSE&G's estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of 2020.

**Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2020**

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,800,000	\$700,000	\$10,500,000	\$9,704,217	\$4,374,948	42%
2. Clay Street	Study	\$34,800,000	\$7,200,000	\$42,000,000	\$36,589,553	\$995,748	2%
3. Constable Hook	Office	\$3,900,000	\$1,400,000	\$5,300,000	\$3,900,000	\$115,640	2%
4. Hasbrouck Heights	Study	\$14,900,000	\$3,100,000	\$18,000,000	\$17,870,384	\$1,279,782	7%
5. Kingsland	Study	\$5,400,000	\$2,900,000	\$8,300,000	\$6,418,540	\$313,779	4%



Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
6. Lakeside Avenue	Study	\$39,400,000	\$8,500,000	\$47,900,000	\$39,364,023	\$602,937	1%
7. Leonia	Study	\$27,700,000	\$4,500,000	\$32,200,000	\$30,396,846	\$6,078,171	19%
8. Market Street	Definitive	\$25,200,000	\$1,700,000	\$26,900,000	\$25,674,480	\$16,330,794	61%
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$7,310,208	\$598,209	7%
10. Orange Valley	Study	\$16,000,000	\$4,200,000	\$20,200,000	\$15,854,669	\$439,924	2%
11. Ridgefield 13kV	Study	\$19,600,000	\$5,900,000	\$25,500,000	\$23,341,969	\$6,438,674	25%
12. Ridgefield 4kV	Conceptual	\$17,600,000	\$2,600,000	\$20,200,000	\$17,009,752	\$11,382,948	56%
13. State Street	Study	\$39,000,000	\$6,100,000	\$45,100,000	\$38,928,940	\$739,738	3%
14. Toney's Brook	Study	\$14,300,000	\$5,400,000	\$19,700,000	\$16,205,042	\$585,036	3%
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$32,525,793	\$2,564,563	6%
16. Woodlynne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$18,308,852	\$1,104,280	6%
<b>Subprogram Total</b>		<b>\$320,000,000</b>	<b>\$65,500,000</b>	<b>\$386,500,000</b>	<b>\$339,403,267</b>	<b>\$53,945,171</b>	<b>14%</b>

### Findings & Observations

- The projects that comprise the Electric Station Flood Mitigation subprogram continue at various phases of execution, with six projects now in construction as of the end of 2020, and the remaining projects continuing to advance in design and pre-construction activities with the exception of Constable Hook which at the end of the fourth quarter largely remained in the planning/origination stage but has since been removed from the ES 2 Program.
- The IM has found nothing to date that would jeopardize the subprogram being completed on budget. The status of the later projects in this subprogram, and in particular Orange Valley, will have to closely be followed to ensure the projects are completed within the ES 2 Program window. As of the end of 2020, the initial project schedule for the Orange Valley project shows an in-service date of January 2024, however PSE&G has informed the IM that the project team will be examining the potential to shorten durations and/or work activities concurrently to pull the in-service date back into 2023.

#### 1. Academy Street

During the fourth quarter of 2020, \$2,411,951 was spent on the Academy Street project compared to a forecast of approximately \$2.6 million, which brought the total spend to approximately \$4.4 million. The variance in fourth quarter spend was largely driven by weather delays and an inability to recover time on

weekends that pushed inside plant civil work into early 2021. As noted in the IM 2020 Third Quarter Report, Academy Street had an earlier than anticipated permit approval and land clearing that supported construction starting earlier than forecasted. The earlier start to construction along with adequate float in the schedule resulted in change to the forecasted in-service date, despite some civil construction work slipping into 2021. Notable activities completed during the fourth quarter of 2020 included:

- Major equipment (switchgear) delivered to site;
- Start of electrical construction; and,
- Civil demolition drawings IFC.

Construction at Academy Street, which started in July 2020 for non-permit work, has advanced to 65% complete inside plant as of the end of 2020, up from 25% at the end of the third quarter of 2020.

In December 2020, the Definitive level estimate was submitted and approved before the URB. This Definitive level estimate reduced the total Academy street project estimate to \$10.5 million from the previously approved \$11.8 million, including a reduction to both the base estimate (-\$0.1 million) and R&C (-\$1.2 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by:

- Electrical construction award lower than estimated (-\$0.1 million);
- Inside plant civil time and material cost reduction (-\$0.1 million); and slightly offset by,
- Increase in laydown area lease (\$0.1 million).

The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$150,398	\$99,893	\$399,935	\$1,312,771	\$2,411,951

Actuals to Date	Estimate	% of Actuals to Estimate
\$4,374,948	\$10,500,000	42%

## 2. Clay Street

During the fourth quarter of 2020, \$142,242 was spent on the Clay Street project compared to a forecast of approximately \$145,000, which brought the total spend to approximately \$1 million. Notable activities completed during the fourth quarter of 2020 included:

- Vendor drawings received for final switchgear arrangement; and,
- Detailed engineering commenced.

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$116,409	\$219,707	\$283,219	\$234,171	\$142,242

Actuals to Date	Estimate	% of Actuals to Estimate
\$995,748	\$42,000,000	2%

### 3. Constable Hook

Through the end of 2020, the Constable Hook project remained largely in the initial planning and origination stages, with the property acquisition for associated 69kV projects planned at the same area still being reviewed (see discussion in the IM 2020 Third Quarter Report and in **Section II.A.1** in this report).

The actual spend by quarter for Constable Hook as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$17,889	\$51,758	\$32,313	\$8,419	\$5,261

Actuals to Date	Estimate	% of Actuals to Estimate
\$115,640	\$5,300,000	2%

As this project is being removed from the ES 2 Program and replaced with additional life cycle stations under the Electric Stipulated Base, this will be the last IM report that includes Constable Hook.

### 4. Hasbrouck Heights

During the fourth quarter of 2020, \$422,316 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$439,000, which brought the total spend to approximately \$1.3 million. Notable activities completed during the fourth quarter of 2020 included:

- Civil and electrical drawings IFC; and,
- Major state license and permit package submitted.

As reported in the IM 2020 Third Quarter Report, a Covid-19 related delay on the associated Hasbrouck Heights 69kV project resulted in a delay to the Hasbrouck Heights ES 2 project. This delay has been extended as of the fourth quarter of 2020, with the planned start of construction shifting to January 2022 (was previously June-August 2021) and the forecasted in-service date to April 2023 (was previously November-December 2022). The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$149,848	\$193,879	\$188,045	\$325,694	\$422,316

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,279,782	\$18,000,000	7%

## 5. Kingsland

During the fourth quarter of 2020, \$30,636 was spent on the Kingsland project compared to a forecast of \$42,000, which brought the total spend to approximately \$314,000. There were minimal activities performed on this project during the fourth quarter of 2020.

The actual spend by quarter for Kingsland as compared to the current approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$104,112	\$108,286	\$43,268	\$27,477	\$30,636

Actuals to Date	Estimate	% of Actuals to Estimate
\$313,779	\$8,300,000	4%

## 6. Lakeside Avenue

During the fourth quarter of 2020, \$73,350 was spent on the Lakeside Avenue project compared to a forecast of approximately \$82,000. Notable activities completed during the fourth quarter of 2020 included:

- Key drawing review completed;
- Kickoff meeting held;
- Scope document signed off;
- A&E purchase order issued to Black & Veatch; and,
- Commencement of license and permitting design.

As noted in the IM 2020 Third Quarter Report, the Lakeside Avenue forecasted in-service date for this project slipped from May 2023, as of the end of the second quarter of 2020, to December 2023, as of the end of the third quarter. This delay was driven by the initial property relocation identified for the 69kV and ES 2 projects at 338 Washington Street having contamination risks that resulted in a new potential property location at 101 N. Park Street, for which the purchase process is underway. The contamination risks at the 338 Washington Street site related to per- and polyfluoroalkyl substances (PFAS) that are subject to developing federal and state regulations and under increased scrutiny by regulators, increasing the risk exposure at this site. As of the end of 2020, the forecasted in-service date has improved slightly from December 20, 2023 to December 13, 2023 as PSE&G continues to look for opportunities to advance the schedule.

The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$148,943	\$172,224	\$121,009	\$87,411	\$73,350

Actuals to Date	Estimate	% of Actuals to Estimate
\$602,937	\$47,900,000	1%

## 7. *Leonia*

During the fourth quarter of 2020, approximately \$4.3 million was spent on the Leonia project compared to a forecast of approximately \$4.2 million, which brought the total spend to approximately \$6.1 million. Notable activities completed during the fourth quarter of 2020 included:

- Contingency switchgear delivered to site;
- Phase 3 civil and electrical drawings and phase 2 control drawings IFC;
- Leonia town council approved the developer agreement (granting permission to proceed with electrical construction of the temporary switchgear).

Construction at Leonia, which started in August 2020, has advanced to 35% complete inside plant as of the end of 2020, up from 15% complete as of the end of the third quarter of 2020. The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$44,792	\$244,323	\$424,783	\$1,071,468	\$4,292,805

Actuals to Date	Estimate	% of Actuals to Estimate
\$6,078,171	\$32,200,000	19%

## 8. *Market Street*

During the fourth quarter of 2020, \$5,488,046 was spent on the Market Street project compared to a forecast of approximately \$4 million, which brought the total spend to approximately \$16.3 million. The forecast to actual variance in the fourth quarter was predominantly the result of an accounting transfer of \$1.4 million from September to October. Notable activities completed during the fourth quarter of 2020 included the issuance of the civil construction (demolition) bid and award of the associated purchase order for the work. Construction at Market Street, which started in August 2020, has advanced to 60% complete outside plant as of the end of 2020, up from 45% complete as of the end of the third quarter of 2020. Inside plant construction is anticipated to begin in May 2021.

In December 2020, the Definitive level estimate was submitted and approved before the URB. This Definitive level estimate reduced the total Market Street project estimate to \$26.9 million from the previously approved \$30.0 million, including a reduction to both the base estimate (-\$1.5 million) and R&C (-\$1.6 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by:

- Reduced milling, paving, and dewatering (-\$0.5 million);
- Civil demolition bids lower than estimated (-\$1.1 million); and slightly offset by,
- Higher revised environmental abatement estimate (\$0.1 million).

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$251,193	\$1,938,713	\$5,144,270	\$3,508,572	\$5,488,046

Actuals to Date	Estimate	% of Actuals to Estimate
\$16,330,794	\$26,900,000	61%

### 9. Meadow Road

During the fourth quarter of 2020, \$114,608 was spent on the Meadow Road project compared to a forecast of approximately \$108,000, which brought the total spend to approximately \$598,000. There were minimal activities on the Meadow Road project during the fourth quarter of 2020, with the bulk of this project's activities planned for 2022-2023.

The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$63,128	\$142,946	\$104,563	\$172,964	\$114,608

Actuals to Date	Estimate	% of Actuals to Estimate
\$598,209	\$9,000,000	7%

### 10. Orange Valley

During the fourth quarter of 2020, \$81,191 was spent on the Orange Valley project compared to a forecast of approximately \$194,000, which brought the total spend to approximately \$440,000. The variance in fourth quarter forecasted to actual spend was driven by lower labor efforts required versus what was forecasted. There were minimal activities on the Orange Valley project during the fourth quarter of 2020, but a couple notable milestones occurred during the quarter, including the sign off on the approved scope document for the project and the transition from Office level to Study level estimate. The first of six parcel purchases associated with this project closed in December 2020, with four more property closures expected in 2021 and the final parcel expected to close in April 2022.

In December 2020, the Study level estimate was submitted and approved before the URB. This Study level estimate reduced the total Orange Valley project estimate to \$20.2 million from the previously approved \$26.6 million, including a reduction to both the base estimate (-\$3.7 million) and R&C (-\$2.7 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by the previously discussed change in mitigation method from raise and rebuild to relocate (see IM 2020 Third Quarter Report).

The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$77,029	\$96,582	\$120,690	\$64,432	\$81,191

Actuals to Date	Estimate	% of Actuals to Estimate
\$439,924	\$20,200,000	2%

### 11. Ridgefield 13kV

During the fourth quarter of 2020, \$2,440,799 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$2.0 million, which brought the total spend to approximately \$6.4 million.

Notable activities completed during the fourth quarter of 2020 included:

- Phase 1 civil and electrical drawings IFC;
- Phase 1 controls drawings IFC; and,
- Phase 1 civil construction bid issued.

Construction at Ridgefield 13kV, which started in June 2020, has advanced to 33% complete inside plant as of the end of 2020, up from 23% at the end of the third quarter of 2020. The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$205,982	\$317,289	\$500,475	\$2,974,130	\$2,440,799

Actuals to Date	Estimate	% of Actuals to Estimate
\$6,438,674	\$25,500,000	25%

### 12. Ridgefield 4kV

During the fourth quarter of 2020, \$4,637,383 was spent on the Ridgefield 4kV project compared to a forecast of approximately \$5.5 million. This brought the total spend to approximately \$11.4 million. The variance in actual versus forecasted spend for the fourth quarter was predominantly the result of the contractor losing a week due to Covid-19 quarantine and cable pulling postponed due to Division resources working on another emergent project.

Construction at Ridgefield 4kV, which started in June 2020, has advanced to 72% complete, up from 47% at the end of the third quarter of 2020. The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$143,414	\$693,128	\$2,134,627	\$3,774,395	\$4,637,383

Actuals to Date	Estimate	% of Actuals to Estimate
\$11,382,948	\$20,200,000	56%

### 13. State Street

During the fourth quarter of 2020, \$143,244 was spent on the State Street project compared to a forecast of approximately \$154,000, which brought the total spend to approximately \$740,000. Notable activities completed during the fourth quarter of 2020 included permit approval from the State Department of Community Affairs.

The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$77,950	\$128,288	\$172,777	\$217,839	\$143,244

Actuals to Date	Estimate	% of Actuals to Estimate
\$739,738	\$45,100,000	2%

#### **14. Toney's Brook**

During the fourth quarter of 2020, \$74,783 was spent on the Toney's Brook project compared to a forecast of approximately \$90,000, which brought the total spend to approximately \$585,000. Notable activities completed during the fourth quarter of 2020 included the release of the civil construction work for bid early the quarter and the award of the civil construction work late in the quarter.

The actual spend by quarter for Toney's Brook as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$211,940	\$115,747	\$86,315	\$96,251	\$74,783

Actuals to Date	Estimate	% of Actuals to Estimate
\$585,036	\$19,700,000	3%

#### **15. Waverly**

During the fourth quarter of 2020, \$1,099,112 was spent on the Waverly project compared to a forecast of approximately \$1.09 million, which brought the total spend to approximately \$2.6 million. Notable activities completed during the fourth quarter of 2020 included:

- Commencement of inside plant civil construction;
- Phase 2 civil and electrical drawings IFC; and
- Major county and federal license and permit packages issued.

Construction at Waverly, which started in October 2020, has advanced to 4% complete as of the end of 2020. The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$103,748	\$355,706	\$355,335	\$650,662	\$1,099,112

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,564,563	\$35,400,000	7%



## 16. Woodlynne

During the fourth quarter of 2020, \$438,374 was spent on the Woodlynne project compared to a forecast of approximately \$468,000, which brought the total spend to approximately \$1.1 million. Notable activities completed during the fourth quarter of 2020 included the release of civil and electrical drawings IFC.

The actual spend by quarter for Woodlynne as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$110,982	\$240,418	\$213,482	\$101,024	\$438,374

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,104,208	\$19,400,000	6%

## B. Contingency Reconfiguration

During the fourth quarter of 2020, work continued to advance in the Contingency Reconfiguration subprogram with all four Divisions continuing to install reclosers with a total of 207 installed during the quarter and 333 commissioned. **Table 13 – ES 2 Recloser Status as of December 31, 2020** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the 2020 year-end targets and current status of engineering, installation, and commissioning.

*Table 13 – ES 2 Recloser Status as of December 31, 2020*

Type	Subprogram Forecast	2020 Year End Total Target	Engineering Packages Complete (1 recloser ea.)		Reclosers Installed		Reclosers Commissioned	
			Q4 Qty.	Total	Q4 Qty.	Total	Q4 Qty.	Total
13kV	916	800	61	699	115	661	231	644
4kV	567	179	-46*	254	92	157	102	157
<b>Total</b>	<b>1,483</b>	<b>979</b>	<b>15</b>	<b>953</b>	<b>207</b>	<b>818</b>	<b>333</b>	<b>801</b>

\*-During the fourth quarter of 2020, PSE&G's Asset Management team evaluated the reclosers planned for the subprogram and removed 102 4kV reclosers. Of these 102 reclosers, 63 were engineered prior to the decision to remove them from the subprogram, which resulted in an overall fourth quarter reduction of the number of engineering packages completed.

As shown in **Table 13**, PSE&G ended 2020 slightly below its targets for the year largely the result of weather-related impacts experienced over the course of the year that temporarily delayed installation and commissioning activities. There is no overall subprogram impact from not hitting these targets as PSE&G maintains flexibility within the subprogram, including keeping engineering comfortably ahead of construction, to allow flexibility in selecting which projects to initiate construction on based on resource or inventory availability. Additionally, as noted within **Table 13**, PSE&G revised the quantity of reclosers for the subprogram as part of a routine review of the planned investments to ensure they are still warranted. The types of criteria involved in removing a recloser from the subprogram include: the circuit may be an underground circuit or a short (one-to-two block circuit) where it is not practical to install a recloser device; the circuit may now be planned for elimination or upgrade in the next five years; or other subsequent investments established three section loops on the circuit. All of these factors contributed to

the reduction in both 4kV and 13kV reclosers. There is no expected change to the subprogram forecast at this time, as PSE&G subsequently made the decision to identify cost-effective opportunities to include additional circuits in the subprogram to improve reliability to a greater number of customers utilizing the same cost-benefit process performed for the initial selection of reclosers in the ES 2 Program filing.

The Fuse Saver pilot program commenced in November 2020 and was completed in January 2021. In total, this Fuse Saver pilot program included the installation and commissioning of 80 Fuse Saver devices. As noted in the IM 2020 Second Quarter Report, PSE&G’s Asset Management group determined a pilot program would be initiated prior to the full scope to ensure these new devices work as intended. During execution of the pilot program, PSE&G observed factors that will help it prepare for execution of the full Fuse Saver scope, including installation specifications (the remote control unit must be placed directly below the Fuse Saver to avoid communications issues), and cost elements for some of the locations (new poles, traffic control, etc.). A comparison of the Fuse Saver costs estimated at the time of the ES 2 filing compared to the actual costs experienced in the pilot program is provided below in **Table 14 – Fuse Saver Cost Per Unit**.

*Table 14 – Fuse Saver Pilot Cost Per Unit*

Device Type	ES 2 Filing Estimate	Pilot Program Actual Cost	Variance
Single-Phase	\$11,721	\$35,316	+\$23,595
Two-Phase	\$18,262	\$48,031	+\$29,768

While the cost per unit estimated at the ES 2 filing was based on a few prior installations, certain elements experienced in the pilot program drove the actual costs well above the initial estimate. The key drivers to the higher costs in the pilot program included:

- “Other” costs not included in the filing estimate, such as management costs, traffic control, tree trimming, and storage;
- Higher material costs from what was estimated, which was largely driven by 40% of the locations requiring a pole installation (whereas the filing estimate assumed no pole replacements); and,
- Actual average labor hours per unit approximately four times higher than the filing estimate, which was driven by the learning curve with the new technology, initial issues with the installations, shop testing, and increased labor rates since the time of the filing.

Fuse Saver installations are anticipated to resume in September 2021 pending approval by PSE&G’s Asset Management group to proceed with the full scope.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 15 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of December 31, 2020**. This table also shows the forecasted dates as of the end of the third quarter of 2020 to show movement to the forecast as of the end of the fourth quarter of 2020.

*Table 15 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of December 31, 2020*

Scope & Division		Q3 2020 Forecasted Completion Date	Q4 2020 Forecasted Completion Date
Reclosers	Central	11/30/2021	9/30/2021
	Metro	11/30/2021	12/31/2021
	Palisades	12/31/2021	12/31/2021
	Southern	12/31/2021	12/31/2021

Scope & Division		Q3 2020 Forecasted Completion Date	Q4 2020 Forecasted Completion Date
Fuse Savers	Central	7/31/2023	6/30/2023
	Metro	7/31/2023	6/30/2023
	Palisades	7/31/2023	5/31/2023
	Southern	7/31/2023	6/30/2023

As shown in **Table 15**, the forecasted completion for each Division’s Fuse Saver program advanced one to two months, which was driven by pulling the planned installations forward in the schedule. The two-month advancement of the Central Division recloser scope was driven by accelerating the 4kV installations during a lull in the 13kV recloser inventory. The one-month slip to the Metro Division recloser was driven by the identification of additional units, which have yet to be finalized and approved by PSE&G, but are assumed within the schedule forecast.

The Contingency Reconfiguration subprogram costs through the end of 2020 are presented in **Table 16 – ES 2 Contingency Reconfiguration Costs as of December 31, 2020**.

*Table 16 – Contingency Reconfiguration Costs as of December 31, 2020*

Scope & Division		Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Total to Date	Forecast	% of Actuals to Forecast	
		<i>Actuals</i>								
Reclosers	Central	\$2,737,167	\$3,918,150	\$2,238,132	\$2,801,328	\$3,093,210	\$14,787,987	\$22,767,184	65%	
	Metro	\$2,231,431	\$3,576,616	\$1,946,751	\$1,950,122	\$3,253,121	\$12,958,041	\$23,255,612	56%	
	Palisades	\$2,515,569	\$3,353,246	\$2,263,303	\$2,602,224	\$3,900,664	\$14,635,005	\$25,083,532	58%	
	Southern	\$2,081,220	\$4,003,537	\$2,098,258	\$2,764,372	\$3,539,516	\$14,486,904	\$29,406,939	49%	
Fuse Savers	Central	\$9,970	\$29,667	\$48,444	\$73,176	\$638,650	\$799,907	\$15,944,726	5%	
	Metro	\$7,557	\$15,498	\$28,339	\$41,921	\$476,157	\$569,472	\$14,156,700	4%	
	Palisades	\$7,468	\$15,259	\$16,336	\$20,878	\$469,981	\$529,922	\$11,190,352	5%	
	Southern	\$9,792	\$21,458	\$22,973	\$35,596	\$778,987	\$868,805	\$21,001,227	4%	
<b>Total</b>		<b>\$9,600,174</b>	<b>\$14,933,431</b>	<b>\$8,662,536</b>	<b>\$10,289,616</b>	<b>\$16,150,287</b>	<b>\$59,636,044</b>	<b>\$162,806,273</b>	<b>37%</b>	

Findings & Observations:

- Recloser installations did not meet PSE&G’s 2020 target, largely due to weather-related impacts experienced earlier in the year, but PSE&G has sufficient flexibility in its plan that there is no resulting impact to the subprogram from not achieving this target.
- The Fuse Saver pilot program commenced in November 2020 and was completed in January 2021. While Asset Management has not reached a decision on proceeding with the full scope, PSE&G has already identified elements from the pilot program such as improved installation instruction and cost elements to be aware of that will better prepare PSE&G for executing the full scope should it decide to proceed.
- With over half of the forecasted recloser units installed as of the end of 2020 (54%), PSE&G has spent approximately 56% of both its estimated and currently forecasted recloser costs, suggesting actual costs coming in close to the estimate, but will warrant continued monitoring to ensure the subprogram objectives are completed within the estimated costs.
- The current forecast for the subprogram increased approximately \$31 million during the fourth quarter of 2020, driven by an increased in the number of 13kV recloser units (approximately

\$12.7 million) and an increase in the forecasted cost per unit for Fuse Savers based on the actual cost trend during the pilot program (approximately \$34.4 million).

### **C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system.

As reported in the IM 2020 Second Quarter Report, in June 2020, the permanent PSE&G Wireless Network infrastructure solution for connecting to the First Net LTE Network was officially placed in-service and is being utilized to manage all traffic from the field routers. Since being placed in-service, PSE&G performed a service territory coverage assessment, which found less than 1/10 of 1% of the service territory had service below the coverage threshold, and initiated actions to boost the signal at these locations at no cost impact to the subprogram.

As also reported in the IM 2020 Second Quarter Report, PSE&G made the strategic decision to focus on new recloser installations and has delayed the ramp-up in retrofit installations from August 2020 to January 2021 due to resource constraints. No overall impacts are expected from this decision and PSE&G plans to regain the planned retrofit installations by the middle of 2021 as it shifts focus from new recloser installations to the retrofit reclosers. During the fourth quarter of 2020, 147 retrofit installations took place against a forecast of 69 installations. Actual installations were well above the fourth quarter forecast due to the planned ramp-up for 2021 immediately seeing results, leading to more resource availability than initially planned for the quarter, in addition to a conservative unit forecast for the quarter. The total forecast for the subprogram contemplates retrofitting 2,601 reclosers, of which 189 have been completed as of the end of 2020.

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with two of 41 installation projects since removed due to the scheduled elimination of the targeted substations. The list of identified fiber installation and cutover projects is presented in **Table 17 – Fiber Projects by Division**.

*Table 17 – Fiber Projects by Division*

<b>Division</b>	<b>Fiber Installation</b>	<b>Fiber Cutover</b>
<b>Central</b>	Cranford; Elizabeth Sub HQ; Rahway; Hadley Road HQ; Roselle; Central HQ; Carteret; Edison; Keasby; Mechanic Street; First Street; Lehigh Avenue	Elizabeth; Henry Street
<b>Metro</b>	East Orange; Metro HQ; Bloomfield; Central Avenue; Haldeon; Irvington; Irvington Sub HQ; Montclair; South Orange; Norfolk Street; Waverly	-
<b>Palisades</b>	Bergen Point; Hackensack Sub HQ; Fort Lee; Harrison; Ridgewood; West New York; Palisades HQ; Culver Avenue; Morgan Street; Howell Street	Tonnelle Avenue; Spring Valley Road; Union City; Fairview; Polk Street; West Orange
<b>Southern</b>	Southern HQ; Princeton; Chauncey Street; Bordentown; Haddon Heights; Thirty Second Street	Delair; East Riverton; Riverside; Mount Holly
<b>Total</b>	<b>39 projects</b>	<b>12 projects</b>

During the fourth quarter of 2020, three of the fiber installation projects (Cranford, Hackensack Sub HQ, and, Southern HQ) and five of the fiber cutover projects (Delair, East Riverton, Mount Holly, Riverside, and Tonnelle) were placed in-service. Eight other projects were in construction as of the end of 2020. Three of the projects that commenced construction in 2020 (Fort Lee, Hadley, and Bloomfield) have had their completion slip to later in 2021 due to Transmission Fiber Infrastructure standards that require fiber communication installations have two active fiber links at all times before putting racks in-service. These stations were designed with a minimum of two links, so there is no expected cost impact from this delay and may actually result in minor cost savings due to not having to return to these sites a second time to place the projects fully in-service.

The Grid Modernization – Communication System subprogram costs through the end of 2020 are presented in **Table 18 – ES 2 Grid Modernization – Communication System Costs as of December 31, 2020**.

**Table 18 – ES 2 Grid Modernization – Communication System Costs as of December 31, 2020**

Scope & Division		2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Total to Date	Forecast	% of Actuals to Forecast
		<i>Actuals</i>							
Retrofit Reclosers	Central	\$0	\$50,613	\$150,958	\$201,053	\$481,655	\$884,278	\$7,782,220	11%
	Metro	\$0	\$44,164	\$139,069	\$214,848	\$420,359	\$818,620	\$6,726,635	12%
	Palisades	\$0	\$44,164	\$138,485	\$216,524	\$426,001	\$825,174	\$6,972,356	12%
	Southern	\$0	\$46,901	\$145,479	\$198,307	\$538,372	\$929,058	\$8,429,951	11%
Fiber	Central	\$1,691	\$133,115	\$272,307	\$660,034	\$1,353,395	\$2,420,542	\$7,479,720	32%
	Metro	\$1,457	\$109,382	\$299,876	\$419,162	\$1,038,278	\$1,868,154	\$5,857,646	32%
	Palisades	\$1,582	\$194,451	\$520,068	\$403,443	\$928,800	\$2,048,344	\$4,166,762	49%
	Southern	\$4,731	\$65,721	\$139,575	\$120,011	\$585,176	\$915,214	\$3,258,924	28%
	Cutovers	\$0	\$0	\$0	\$40,869	\$835,633	\$876,502	\$1,085,671	81%
Wireless Network	\$74,306	\$1,525,801	\$2,353,604	\$1,508,075	\$647,961	\$6,109,747	\$7,547,000	81%	
Bulk Purchase*	-	-	-	\$1,124,072	\$400,802	\$1,524,874	\$0	-	
<b>Total</b>	<b>\$83,767</b>	<b>\$2,214,312</b>	<b>\$4,159,421</b>	<b>\$5,106,396</b>	<b>\$7,656,612</b>	<b>\$19,220,505</b>	<b>\$59,306,886</b>	<b>30%</b>	

*\*-The Bulk Purchase account contains expenditures for the bulk purchase of materials in the subprogram. As these materials are used and installed in the field, the Bulk Purchase account is credited with the actual spend then assigned to the appropriate Division, thus at the end of the Program, the balance of this Bulk Purchase account is expected to be \$0.*

**Findings & Observations:**

- Retrofit recloser installations continued to advance in the fourth quarter of 2020, with installations well above the forecast for the quarter. As previously noted PSE&G made a strategic decision for new reclosers (as part of the Contingency Reconfiguration subprogram) continue to have installation priority. PSE&G’s prioritization also has taken advantage of other work performed on the line (replacement of copper telephone wires with fiber) to gain cost efficiencies.
- PSE&G identified 41 potential fiber installation projects for the subprogram, with two stations removed from consideration due to the future elimination of those substations.
- The 11 fiber installation projects that were initiated in 2020 all advanced to at least the construction phase, with three of the projects being placed in-service by the end of the year. Additionally, five of the twelve fiber cutover were placed in-service by the end of the year.

- The IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget.

## **D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS), the Outage Management System (OMS), and ADMS platform upgrades. The primary activities in 2020 are centered on planning activities, including as previously reported in the second quarter of 2020, the signing of the Open Systems International Inc. (OSII) contract. The ADMS team continues to use remote meetings with the vendor in response to the ongoing Covid-19 issues and continues to conduct design workshops to further develop the application.

The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the fourth quarter of 2020 are presented as follows:

### **DMS/DERMS**

- **Scope:** Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- **Q4 2020 Activities:**
  - Scheduled workshops with OSII for control and estimation design;
  - Scheduled DERMS network optimization design workshop;
  - Developed user stories;
  - Reviewed design documents delivered by OSII;
  - Completed Architecture Design & Epic/Story/Spring Planning (milestone);
  - Inserted review session results in new iterations of OSII design documents;
  - Delivery and installation of software licensing; and,
  - Completed DERMS AMI integration workshop and SCADA linking workshop.
- **Forecasted Completion as of the end of 2020:** 10/28/2022.

### **OMS**

- **Scope:** Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G’s network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years’ worth of existing OMS data will be migrated into the new system as well.
- **Q4 2020 Activities:**
  - Conducted internal meetings for work/crew management requirements;
  - Shipped laptops to OSI team;
  - Conducted onboarding meetings with Divisions;
  - Conducted configuration and functional training with core team;
  - Conducted data conversion kickoff meeting with OSII, OMS leads, and reporting team;
  - Completed additional user story review sessions, reporting/dashboard workshops, and interfaces sessions;

- Project toolsets approved by Cyber, Security, Risk, and Compliance Team;
- Drafted GIS interface for customers and premises;
- Completed user story review;
- Conducted kickoff meeting with Automated Testing team;
- Completed workshops for four interface designs; and,
- Completed Sprint One with OSII.
- Forecasted Completion as of the end of 2020: 5/20/2022.

**ADMS Platform**

- Scope: Replace, enhance, and expand the existing DSCADA platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q4 2020 Activities:
  - Received delivery of servers;
  - Completed Dell Unity configuration;
  - Completed Windows OS build in production environment; and,
  - Connected workstations to Newark PDS server.
- Forecasted Completion as of the end of 2020: 12/10/2021.

The Grid Modernization – ADMS subprogram costs through the end of 2020 are presented in **Table 19 – ES 2 Grid Modernization – ADMS Costs as of December 31, 2020.**

*Table 19 – ES 2 Grid Modernization – ADMS Costs as of December 31, 2020*

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$36,213	\$925,689	\$4,430,542	\$6,970,572	\$4,210,822

Actuals to Date	Forecast	% of Actuals to Forecast
\$16,483,837	\$40,374,139	41%

**Findings & Observations:**

- Additional workshops were held during the fourth quarter, which despite the challenges posed by Covid-19 restrictions, continued to be conducted without issue.
- The IM has found no indications to date that would jeopardize the subprogram being completed on time. The current forecast, including the \$1.2 million in additional hardware purchased during the third quarter of 2020, exceeds the Stipulation amount allocated for this subprogram by approximately \$5.4 million.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric outside plant higher design and construction standards and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>1</sup> As reported

<sup>1</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under

in the IM 2020 First Quarter Report, the preliminary planning by PSE&G estimated that approximately one-third of the Stipulated Base funds will be used towards the electric stations life cycle investments and the remaining two-thirds towards outside plant higher design and construction standards. PSE&G has confirmed with the IM that it intends to maintain the ratio at approximately one-third of funding to life cycle upgrades and two-thirds to outside plant higher design and construction standards. The outside plant higher design and construction standards work is planned to commence in later in 2021 on the State Street project and ramp-up more fully in 2022. In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. These four stations and their current estimate compared to the actuals to date are provided in **Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of December 31, 2020**.

**Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of December 31, 2020**

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Hamilton	Study	\$14,500,000	\$3,700,000	\$18,200,000	\$362,372	2%	10/24/2022 (↑)
2. Paramus	Study	\$14,800,000	\$5,400,000	\$20,200,000	\$840,200	4%	9/28/2022
3. Plainfield	Study	\$18,400,000	\$4,200,000	\$22,600,000	\$682,325	3%	10/6/2022
4. Woodbury	Study	\$15,400,000	\$3,300,000	\$18,700,000	\$551,165	3%	12/28/2022 (↓)

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).  
 (↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
 (↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 20**, of the four current life cycle station upgrade projects, two had no change in the forecasted in-service date from the third to fourth quarters of 2020 (Paramus and Plainfield), while Hamilton’s forecasted in-service date advanced eight days and Woodbury’s forecasted in-service date slipped twelve days in this period. Given the small magnitude of these changes, the IM has not performed additional schedule analyses on these projects, but will continue to monitor for potential trends. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

**1. Hamilton**

During the fourth quarter of 2020, \$185,564 was spent on the Hamilton project against a forecast of approximately \$166,000. This brought total spend through the end of 2020 on the project to \$362,372. Notable activities conducted during the fourth quarter of 2020 included:

- Project execution plan completed; and,
- License and permitting package issued.

the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.



The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$0	\$0	\$0	\$177,808	\$184,564

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$362,372	\$18,200,000	\$14,513,934	2%

## 2. Paramus

During the fourth quarter of 2020, \$431,270 was spent on the Paramus project against a forecast of approximately \$481,000. This brought total spend through the end of 2020 on the project to \$840,200. Notable activities conducted during the fourth quarter of 2020 included:

- License and permitting package issued and submitted;
- Detailed engineering commenced; and,
- Vendor drawings received (final switchgear arrangement).

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$0	\$0	\$0	\$408,931	\$431,270

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$840,200	\$20,200,000	\$16,801,337	4%

## 3. Plainfield

During the fourth quarter of 2020, \$179,136 was spent on the Plainfield project against a forecast of approximately \$282,000. This brought total spend through the end of 2020 on the project to \$682,325. Notable activities conducted during the fourth quarter of 2020 included:

- License and permitting package issued.

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$0	\$0	\$0	\$503,189	\$179,136

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$682,325	\$22,600,000	\$18,801,708	3%

#### 4. Woodbury

During the fourth quarter of 2020, \$167,341 was spent on the Woodbury project against a forecast of approximately \$156,000. This brought the total spend on the project to \$551,165. Notable activities conducted during the fourth quarter of 2020 included:

- Project kickoff meeting held;
- A/E purchase order issued;
- Detailed engineering commenced;
- Approval of the project execution plan.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$0	\$0	\$0	\$383,851	\$167,314

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$551,165	\$18,700,000	\$14,934,202	3%

#### Findings & Observations:

- The four electric stipulated base substation life cycle projects continued to progress in planning and preparation efforts during the fourth quarter of 2020 while also advancing engineering in support of the planned release of civil and electrical IFC drawings in the first and second quarters of 2021.
- The electric stipulated base substation life cycle projects are progressing in line with their respective cost and schedule estimates.
- While the current four electric substation life cycle projects comprise approximately 80% of the electric stipulated base funding, PSE&G anticipates that the final ratio will be closer to one-third of funding to the electric substation life cycle projects and two-thirds to the outside plant higher design and construction standards. Funding these four projects fully allows them to be completed within the ES 2 Program window, in addition PSE&G expects excess funds from the Electric Station Flood Mitigation subprogram (currently forecasted approximately \$60 million under its Stipulation amount) to be reallocated to the life cycle station upgrades as provided in the Stipulation.

#### F. Gas M&R Station Upgrades

Through the end of 2020, primary activities in the Gas M&R subprogram continued to focus on pre-construction activities such as preparing licensing and permitting packages and the continued advancement of engineering on each of the Gas M&R stations. **Table 21 – ES 2 Gas M&R Summary Status as of December 31, 2020** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

**Table 21 – ES 2 Gas M&R Summary Status as of December 31, 2020**

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Office	\$10,000,000	\$5,400,000	\$15,400,000	\$872,676	6%	Jan 2023
2. Central*	Study	\$23,900,000	\$6,100,000	\$30,000,000	\$677,451	2%	Jan 2023
3. East Rutherford	Study	\$13,800,000	\$3,200,000	\$17,000,000	\$530,875	3%	Dec 2022 (↑)
4. Mount Laurel	Study	\$9,400,000	\$2,400,000	\$11,800,000	\$368,132	3%	Dec 2022
5. Paramus*	Study	\$11,500,000	\$2,700,000	\$14,200,000	\$471,294	3%	Dec 2023 (↓)
6. Westampton	Study	\$8,300,000	\$2,100,000	\$10,400,000	\$1,041,065	10%	Dec 2021
Placeholder**	-	\$0	\$2,200,000	\$2,200,000	\$0	-	-
<b>Subprogram Total</b>		<b>\$76,900,000</b>	<b>\$24,100,000</b>	<b>\$101,000,000</b>	<b>\$3,961,492</b>	<b>4%</b>	<b>Dec 2023</b>
*-Included in the Stipulated Base. **-Represents additional funds between the current project estimates and the Stipulation amount for the subprogram. (↑)-Indicates the forecasted in-service date advanced from the prior quarter. (↓)-Indicates the forecasted in-service date slipped from the prior quarter.							

The changes to the East Rutherford (advancing one month) and Paramus (slipping 11 months) project schedules was due to a realignment of the project schedules to avoid the constraint of not being able to have these two stations in construction at the same time (a similar situation exists at the Mt. Laurel and Westampton projects).

**Findings & Observations:**

- The primary efforts to date on the subprogram continue to be initial planning efforts, including the prior awarding of bids for the design services on the projects, preparing for issuing the major equipment POs, site surveys, and preparation of permitting packages. Continued engineering and design efforts were a main focus of 2020 fourth quarter activities.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget. Three of the Gas M&R projects had updated estimates approved by the URB during the fourth quarter of 2020, which resulted in two of the projects (Central and East Rutherford) having an increased base estimate, somewhat offset by a reduced R&C, while the other project (Paramus) had a reduction to both the base and R&C estimates, with no change to the overall subprogram estimate.

**1. Camden**

While the primary work through the end of 2020 on the Gas M&R subprogram has focused largely on preliminary engineering and other planning activities, during the fourth quarter of 2020 notable activities completed on the Camden project included:

- Coordination meeting held with the Audubon District and Remediation;
- 3D preliminary drawings completed;
- Preliminary permitting meeting held with the City; and,
- Permitting package prepared.

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$13,326	\$46,691	\$83,499	\$207,837	\$521,323

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$872,676	\$15,400,000	\$10,000,000	6%

## 2. Central

While the primary work through the end of 2020 on the Gas M&R subprogram has focused largely on preliminary engineering and other planning activities, during the fourth quarter of 2020 notable activities completed on the Central project included:

- Completed initial geotechnical review;
- Identified major equipment list and long lead items;
- Completed soft digs to verify tie-in locations and clearances for liquid propane air (LPA) rack foundations; and,
- Permitting package received.

In December 2020, the Study level estimate was submitted and approved before the URB. This Study level estimate increased the total Central project estimate to \$30.0 million from the previously approved \$19.7 million, which also included a slight reduction to R&C (-\$0.8 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by:

- Higher construction costs based on the engineer's 50% estimate (\$6.9 million);
- Procurement of an additional two buildings and four heaters required for the refined design (\$3.0 million); and,
- Additional Project Management, Licensing and Permitting, and Engineering support not included in the Office level estimate (\$1.2 million).

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$6,869	\$45,048	\$109,557	\$195,119	\$320,858

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$677,451	\$30,000,000	\$23,900,000	2%

### 3. East Rutherford

While the primary work through the end of 2020 on the Gas M&R subprogram has focused largely on preliminary engineering and other planning activities, during the fourth quarter of 2020 notable activities completed on the East Rutherford project included:

- Reviewed 3D preliminary drawings;
- Identified major equipment and long lead items; and,
- Issued large equipment specs for internal review.

In December 2020, the Study level estimate was submitted and approved before the URB. This Study level estimate increased the total East Rutherford project estimate to \$17.0 million from the previously approved \$15.9 million, including a reduction R&C (-\$2.4 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by:

- Higher construction costs based on the engineer's 50% estimate (\$2.7 million); and,
- Additional Project Management support not included in the Office level estimate (\$0.8 million).

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$9,010	\$37,747	\$111,526	\$159,165	\$213,428

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$530,875	\$17,000,000	\$13,739,809	3%

### 4. Mount Laurel

While the primary work through the end of 2020 on the Gas M&R subprogram has focused largely on preliminary engineering and other planning activities, during the fourth quarter of 2020 notable activities completed on the Mount Laurel project included:

- Received draft site plan package; and,
- Received 70% design drawings for review.

Also during the fourth quarter of 2020, the A/E (J.F. Kiely Service Co.) project manager was replaced following discussions PSE&G had with the A/E on project progress.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$5,965	\$27,804	\$74,737	\$132,680	\$126,945

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$368,132	\$11,800,000	\$9,400,000	3%

## 5. Paramus

While the primary work through the end of 2020 on the Gas M&R subprogram has focused largely on preliminary engineering and other planning activities, during the fourth quarter of 2020 notable activities completed on the Paramus project included:

- Reviewed 3D preliminary drawings;
- Identified major equipment and long lead items; and,
- Issued large equipment specs for internal review.

In December 2020, the Study level estimate was submitted and approved before the URB. This Study level estimate reduced the total Paramus project estimate to \$14.2 million from the previously approved \$19.9 million, including a reduction to both the base estimate (-\$1.4 million) and R&C (-\$4.4 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by the cost of using existing building structures rather than building new.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$8,842	\$37,793	\$91,247	\$169,249	\$164,163

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$471,294	\$14,200,000	\$11,476,028	3%

## 6. Westampton

While the primary work through the end of 2020 on the Gas M&R subprogram has focused largely on preliminary engineering and other planning activities, during the fourth quarter of 2020 notable activities completed on the Westampton project included:

- Completed soft digs to confirm tie-ins;
- Final site plan reviewed;
- Ordered data building (houses equipment for SCADA and other communication/data systems) and regulator buildings;
- Identified major equipment and long lead items; and,
- Submitted municipal/county permit package.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below.

Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
<i>Actuals</i>				
\$8,395	\$40,389	\$180,947	\$314,493	\$496,390

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,041,065	\$10,400,000	\$8,300,000	10%

## **IV. Additional Information Following the End of the Fourth Quarter of 2020**

While the vast majority of this IM report is focused on the activities and status of the ES 2 Program during the fourth quarter of 2020, the timing of certain Program elements and information provided by PSE&G naturally carried over beyond the end of the calendar quarter. Such information will generally be covered in the next IM quarterly report but given the importance of some of this information as it pertains to the key decisions made on the ES 2 Program, including the related discussion in **Section II.A.**, the IM has provided additional remarks to provide a more complete view of these mitigation changes based on the available information as of the date of this IM 2020 Fourth Quarter Report.

### **A. Decisions Recorded After the Fourth Quarter of 2020**

#### **Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project**

The Clay Street ES 2 project and the Clay Street 69kV transmission project are being executed contemporaneously. PSE&G's capital accounting determination established that the wall to be constructed around the Clay Street Substation to prevent wastewater intrusion is a Transmission and Distribution (T&D) asset. PSE&G has determined the primary purpose of the wastewater wall is health and safety and reliability and is not required for flood mitigation, however, the site is located within a flood zone and thus still requires the flood mitigation scope. Thus, PSE&G made the decision on February 2, 2021 to remove the scope of work of the wastewater wall, raising of grade, and pumping system from this ES 2 project and add it instead to the ongoing 69kV project.

Alternatives considered include:

1. Include the wastewater wall as part of ES 2 Program;
2. Do not construct the wastewater wall;
3. Resolve the issue with the City of Newark and the Passaic Valley Sewerage Commission (PVSC) to prevent overflows from combined sewer/storm water events.

In evaluating the alternatives, PSE&G determined constructing the wastewater wall was the only technical solution identified by Stakeholders to effectively keep the site free from combined sewage and storm water inundation. The frequency of incidents of overflowing storm water across the substation site has increased in the past several years, with each occurrence requiring costly remediation and clean-up and delays access to the site and increased risk to reliability.

PSE&G also determined that attempting to resolve the issue with the City of Newark and PVSC to be ineffective based on numerous meetings over the years with minimal improvement to the overflow and storm conditions.

PSE&G further determined that including the wastewater wall as part of the ES 2 Program was not a preferred alternative since the scope of the work was not required to meet the flood mitigation objectives of the Program. As a result of the decision to remove this scope from the Clay Street ES 2 project, the estimate for the project was reduced by approximately \$6.8 million.

#### **Findings and Observations**

- The IM finds that PSE&G conducted the appropriate due diligence, evaluation and analysis in determining to remove the wastewater wall scope from the ES 2 Program.

- The need for the wastewater wall was approved during 2019 Project Council meetings and in both the Feasibility Assessment Report and the project scope document for the Clay Street ES 2 project were approved to include the wastewater wall and necessary for health, safety, and reliable operation.
- The IM finds PSE&G's decision to include the wastewater wall under the 69kV project consistent with the capital accounting determination.

## **B. Additional Information on the Constable Hook, Lakeside Avenue, and Orange Valley Mitigation Changes**

Relating to the discussion in **Section II.A.1.** in this IM 2020 Fourth Quarter Report and prior discussions within the IM 2020 Third Quarter Report (Sections II.A.3. and IV.B.), in September 2020, PSE&G formally proposed a change to the mitigation method at Lakeside Avenue, Orange Valley, and Constable Hook from raise and rebuild to relocate, which continued to be discussed between PSE&G, Rate Counsel and BPU Staff through the end of 2020. On January 6, 2021, PSE&G informed the parties that all requested information regarding the changes have been identified and provided to both the BPU Staff and Rate Counsel. PSE&G also stated that it is moving forward with the changes as discussed in part to benefit from the identified efficiencies, which will result in savings and increased reliability for customers. Rate Counsel responded to PSE&G on January 19, 2021, noting specific concerns regarding the proposed changes to the Constable Hook substation and opining that the proposed changes to the Constable Hook project should be excluded from the ES 2 Program.

On February 19, 2021, PSE&G, Rate Counsel, and BPU Staff participated in a conference call to discuss Rate Counsel's objections. During this call, PSE&G explained the proposed change for the Constable Hook substation as consistent with its response to discovery request S-PSEG-ENG-002, including that any costs associated with addressing load growth would be tracked separately under a base capital project and not recovered through the ES 2 accelerated recovery mechanism. However, due to the complexities associated with this project, it became apparent that PSE&G would not be able to complete the Constable Hook project within the ES 2 Program window. Accordingly, PSE&G informed the parties of its intent to remove the Constable Hook substation from the ES 2 Program and instead perform this flood mitigation work as a base capital project. PSE&G also noted its intent to use the funds allocated for Constable Hook to perform additional life cycle station work in accordance with the terms of the Stipulation.

Early in the second quarter of 2021, PSE&G proposed the Front Street substation as a candidate for an additional life cycle station project that can utilize funds intended for the Constable Hook under the ES 2 Program. The IM will continue report on the status of this change as it becomes formalized through PSE&G's processes and as the additional life cycle station work is formally selected.



ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2020 FOURTH QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

SEPTEMBER 24, 2021

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2020 Fourth Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
S-INF-1	<p><b>Reference Page 2</b>            Regarding the Electric Station Flood Mitigation project “Hasbrouck Heights”, please provide additional details about the COVID-related delays on the Siemens GIS installation, which caused the forecasted in-service date of the project to be delayed from December 2022 to April 2023.</p>	<p>This delay stemmed from the GIS equipment manufacturer (Siemens) being delayed from travelling to the U.S. to assist with the installation of the GIS equipment on the Hasbrouck Heights 69kV project. This delay rippled to the ES 2 Hasbrouck Heights project, which requires the 69kV project to be installed first.            Additionally, the April 2023 in-service date reported at the end of 2020 was identified by PSE&amp;G as the date the Capacitor bank is scheduled to be placed in-service; as of the end of the first quarter of 2021, PSE&amp;G updated the in-service date on the ES 2 Hasbrouck Heights to reflect the major asset/switchgear in-service date of February 2023.</p>	No change
S-INF-2	<p><b>Reference Page 5, Market Street Radioactive Soil Testing and Handling</b>            With respect to radioactive soil testing and handling associated with the Electric Station Flood Mitigation project “Market Street”:</p> <ol style="list-style-type: none"> <li>a. Please clarify if the costs associated with the excavation, testing, and monitoring of hazardous waste are included within the costs of the Energy Strong II program.</li> <li>b. If so, please provide an estimate of these costs.</li> </ol>	<p>The scope of work on the Market Street project includes excavation of soil in areas designated by the EPA as potentially hazardous due to radioactivity in order to replace existing poles and related infrastructure. In order to safeguard workers and the general public, the work plan as approved by the EPA includes testing and monitoring of hazardous soil excavations. The estimated incremental cost for soil excavation, testing, and monitoring activities is approximately \$1.8 million.</p>	<b>Section II.A.3.</b>
S-INF-3	<p><b>Reference Page 20, Orange Valley</b>            Regarding the Electric Station Flood Mitigation project “Orange Valley”, what is attributed to the variance in actual spending (\$81,191) and forecasted spending (\$194,000) during the quarter?</p>	<p>The variance in fourth quarter forecasted to actual spend was driven by less than estimated A/E efforts as the project finalized the license and permitting matrix and drawings for site plan approval. PSE&amp;G labor efforts for major equipment procurement were also lower than estimated for the quarter.</p>	<b>Section III.A.10.</b>
S-INF-4	<p><b>Reference Page 23, Table 13 – “ES 2 Recloser Status as of December 31, 2020”</b>            Regarding the statement “During the fourth quarter of 2020, PSE&amp;G’s Asset Management team evaluated the reclosers planned for the subprogram and removed 102 4kV recloser.”</p>	<p>PSE&amp;G routinely reviews the reclosers and other investments in the ES 2 Program to ensure the initially planned investments are still warranted. For the reclosers, each circuit was assessed to determine the current status reflective of updated system plans and changes, as well as other work done subsequent to the ES 2 filing, such as poorest performing circuit improvements. The types of criteria involved in</p>	<b>Section III.B.</b>

ID #	Question/Comment	IM Response	Report Changes
	<p>a. What is the Company’s rationale for removing 102 4kV reclosers from the Contingency Reconfiguration subprogram during the fourth quarter of 2020?</p> <p>b. What is the estimated subprogram budget savings resulting from this decision?</p>	<p>removing a recloser from the subprogram include: the circuit may be an underground circuit or a short (one-to-two block circuit) where it is not practical to install a recloser device; the circuit may now be planned for elimination or upgrade in the next five years; or other subsequent investments established three section loops on the circuit. All of which contributed to a reduction in both 4kV and 13kV reclosers.</p> <p>There is no estimated subprogram budget savings at this time, because subsequent to this review of the initially identified circuits, PSE&amp;G made the decision to conduct a detailed review of 4kV and 13kV circuits to identify cost effective opportunities to include additional circuits in the subprogram in order to improve reliability to a greater number of customers utilizing the same cost-benefit process performed for the initial selection.</p>	
S-INF-5	<p><b>Reference Page 25, Contingency Reconfiguration Subprogram</b>          Regarding the statement “The current forecast for the subprogram increased approximately \$31 million during the fourth quarter of 2020, driven by an increase in the number of 13kV recloser units (approximately \$12.7 million) and an increase in the forecasted cost per unit for Fuse Savers based on the actual cost trend during the pilot program (approximately \$34.4 million).”</p> <p>a. Please provide the total number of additional 13kV recloser units included within the subprogram.</p> <p>b. Please provide the Company’s rationale for increasing the number of 13kV recloser units within the subprogram.</p> <p>c. Please compare the actual unit cost of Fuse Savers to the originally forecasted cost per unit.</p> <p>d. Does the Company expect to gain any cost savings on Fuse Savers after transitioning from a pilot program to bulk purchasing?</p>	<p>a. The total number of additional 13kV recloser units continues to be under evaluation with 253 13kV opportunities identified by PSE&amp;G as of June 2021 (in addition to 89 additional 4kV opportunities identified). The increase in the fourth quarter forecast reflected additional placeholder units that PSE&amp;G expects to be included in the subprogram based on this evaluation.</p> <p>b. PSE&amp;G decided to identify additional reclosers for the subprogram in order to maximize customer reliability benefits in a cost effective manner. Adding additional reclosers supports faster storm restoration, improved reliability, and reducing the number of customers impacted by a particular outage event. The proposed recloser additions to the subprogram are following the same cost-benefit framework used in the original filing, including having a minimum benefit to cost ratio that is greater than one.</p> <p>c. PSE&amp;G’s Fuse Saver unit cost at the time of the ES 2 filing was \$11,721 for a single-phase unit and \$18,262 for a two-phase unit. The actual average cost per unit experienced in the Fuse Saver pilot program were \$35,216 for the single-phase units and \$48,031 for the two-phase units. The variance was largely driven by components required that were not part of the initial assumptions (management costs,</p>	Section III.B.

ID #	Question/Comment	IM Response	Report Changes
		<p>traffic control, tree trimming, etc.) and higher material and labor costs than what was estimated.</p> <p>d. Yes, PSE&amp;G anticipates that when the Fuse Saver installations fully commence that it will see meaningful improvements in the cost per unit. Specifically, PSE&amp;G expects cost savings due to: 1) higher quantity of units installed, while management costs remain relatively flat; 2) reduction in hours per unit driven by efficiencies gained with the installation of a higher quantity of units; 3) avoidance of extended installation hours seen in the pilot program due to communication issues (modular external antenna assembly being incorporated for trouble locations as needed); and, 4) assumption there will be no additional technical issues that require multiple days/visits to complete an installation.</p>	
S-INF-6	<p><b>Reference Page 25, Grid Modernization – Communication System Subprogram</b>          Regarding the statement “During the fourth quarter of 2020, 147 retrofit installation took place against a forecast of 69 installations”, what does the Company attribute to the variance in recloser retrofit installations during the fourth quarter of 2020?</p>	<p>The actual installations in the fourth quarter of 2020 were well above the forecast due to the planned ramp-up for 2021 immediately seeing results, leading to more resource availability than planned and coupled with a conservative forecast for the fourth quarter.</p>	<b>Section III.C.</b>
S-INF-7	<p><b>Reference Page 31, Findings &amp; Observations</b>          Refer the statement “While the current four electric substation life cycle projects comprise approximately 80% of the electric stipulated base funding, PSE&amp;G anticipates that the final ratio will be closer to one-third of funding to the electric substation life cycle projects and two-thirds to the outside plant higher design and construction standards.” Has PSE&amp;G incurred any costs for outside plant higher design work to date? If so, please quantify these costs.</p>	<p>No, the outside plant higher design work is anticipated to commence in 2021 (on the State Street project) and ramp-up in 2022.</p>	<b>Section III.E.</b>
S-INF-8	<p><b>Reference Page 35, Paramus M&amp;R Station</b>          Refer to the statement “the changes to the base estimate were driven by the cost of using existing building structures rather than building new”:</p> <ol style="list-style-type: none"> <li>a. What is the age of the existing building structures that will be used for the Paramus M&amp;R Station project?</li> <li>b. With respect to the Gas M&amp;R Station Upgrade projects, please indicate if PSE&amp;G identified any other existing</li> </ol>	<p>Regarding these questions on the Gas M&amp;R subprogram and the Paramus project specifically:</p> <ol style="list-style-type: none"> <li>a. PSE&amp;G does not have a record of the exact year the Paramus M&amp;R building was originally built as it was built by Transco under an agreement signed on June 6, 1961. PSE&amp;G assumes the station was built within a couple years of that agreement.</li> </ol>	No change

ID #	Question/Comment	IM Response	Report Changes
	<p>major equipment that is not near end of life and can be reused within the new M&amp;R stations.</p>	<p>b. PSE&amp;G has identified the following existing equipment to be reused at each site:</p> <ul style="list-style-type: none"> <li>• Camden: two propane vaporizers.</li> <li>• Central: two Mono Ethylene Glycol units.</li> <li>• East Rutherford: two line heaters.</li> <li>• Mt. Laurel: four line heaters.</li> <li>• Paramus: one scrubber.</li> <li>• Westampton: three line heaters.</li> </ul>	
S-INF-9	<p><b>Reference Page 36, Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project</b>  Refer to the statement “PSE&amp;G’s capital accounting determination established that the wall to be constructed around the Clay Street Substation to prevent wastewater intrusion is a Transmission and Distribution (T&amp;D) asset. PSE&amp;G has determined its primary purpose is health and safety and reliability is not required for flood mitigation. Thus, PSE&amp;G made the decision on February 2, 2021 to remove the scope of work of the wastewater wall, raising of grade, and pumping system from this ES 2 project and add it instead to the ongoing 69kV project.”</p> <ol style="list-style-type: none"> <li>a. Please discuss the cost impact that this adjustments is expected to have on the Clay Street substation project within the Energy Strong II program.</li> <li>b. Please clarify if the shifting of this work scope from the Energy Strong II program to the 69kV project will result in PSE&amp;G reclassifying distribution-related costs as transmission-related costs.</li> <li>c. Please confirm that PSE&amp;G still believes that the raising of the Clay Street substation is required for flood mitigation purposes.</li> </ol>	<ol style="list-style-type: none"> <li>a. The wastewater wall scope change reduces the estimate of the ES 2 Clay Street project by approximately \$6.8 million.</li> <li>b. Yes, the costs associated with this scope of work will be transferred to the Clay Street 69kV Project and classified as transmission-related costs.</li> <li>c. Yes, the Clay Street substation is located within a flood zone and the existing regulators/reactors are located on the ground level. Raising and rebuilding the station at least one foot above the flood elevation level will increase the reliability and resiliency of the substation and bring it in compliance with current International Building Code and PSE&amp;G standards.</li> </ol>	<b>Section IV.A.</b>
S-INF-10	<p><b>Reference Page 37, Additional Information on the Constable Hook, Lakeside Avenue, and Orange Valley Mitigation Changes</b>  Refer to the statement “Early in the second quarter of 2021, PSE&amp;G proposed the Front Street substation as a candidate for an additional life cycle station project that can utilize the funds intended for the Constable Hook under the ES 2 Program.”</p>	<p>As of the most recent data received by the IM to date, the Front Street life cycle station project has initiated preliminary planning with approximately \$190,000 incurred during the second quarter of 2021.</p>	No change

ID #	Question/Comment	IM Response	Report Changes
	Please describe the status and any costs incurred for the Front Street life cycle station project.		
RCR-INF-1	With reference to Table 2- ES-2 Electric Station Flood Mitigation Status as of December 31, 2020 and Table 2- ES-2 Electric Station Flood Mitigation Status as of September 30, 2020, please explain if the proposed change of mitigation strategy estimate of \$47.9 million (including risk and contingency) has been updated since December 31, 2020.	As of the most recent data received by the IM to date, there has been no update to the Lakeside Avenue \$47.9 million estimate since December 2020. The next estimate (transitioning to the Conceptual level) is expected to be completed in the first quarter of 2022.	No change
RCR-INF-2	With reference to Table 2- ES-2 Electric Station Flood Mitigation Status as of December 31, 2020, please indicate if the Company anticipates that the extended timeline for the Clay Street, Hasbrouck Heights, Orange Valley, Ridgefield 13 kV, and Woodlynne substations will extend beyond current forecasts.	PSE&G updates the Electric Station Flood Mitigation project schedules on a monthly basis based on the actual status and trends observed. The forecasted completion dates commonly change due to a wide variety of factors (weather, productivity, impacts from dependent projects, changing Covid-19 requirements, material/procurement status, permitting status, etc.), with varying impacts to the project schedules as demonstrated by the fourth quarter of 2020 status showing four projects advancing and five projects slipping in their forecasted in-service dates from the prior quarter. In evaluating the actual status and trends, PSE&G regularly looks for opportunities to improve the project schedule, such as by re-sequencing work or identifying activities that can be performed concurrently. Regarding the five projects identified in this comment that saw the forecasted in-service date slip from the third to fourth quarter of 2020, as of the most recent data received by the IM (second quarter 2021) only one project, the Ridgefield 13kV project, has seen the forecasted in-service date slip beyond what the fourth quarter 2020 forecast was, with a second quarter of 2021 forecast of 11/8/2022 vs. the fourth quarter 2020 forecast of 10/13/2022.	No change
RCR-INF-3	With reference to page 4 of the Draft 2020- Fourth Quarter Report, please indicate the number of reclosers, not part of ES II, that were fitted with the ES II wireless communications devices in 2020.	No wireless communication devices (radios) were installed on non-ES 2 reclosers in 2020.	No change
RCR-INF-4	With reference to page 4 of the Draft 2020- Fourth Quarter Report, please indicate the annual number of reclosers, not part of ES II, that are estimated to be fitted with the ES II wireless communications devices through the completion of the Grid Modernization program in December 2023.	During 2021, as of late August 2021, wireless communication devices have been installed on 10 non-ES 2 reclosers with the possibility of three more by the end of the year. For years 2022-2023, there is not an estimate of planned number of radios to be installed in non-ES 2 reclosers. However, PSE&G anticipates that non-ES 2 installations	No change

ID #	Question/Comment	IM Response	Report Changes
		and replacements will continue to be required as part of normal operations and systems build.	
RCR-INF-5	With reference to page 5 of the Draft 2020- Fourth Quarter Report, please provide an update on the status of the Market Street substation and the estimated completion date of September 2021.	During the second quarter of 2021, outside plant 4kV circuits were converted to 13kV. During the summer of 2021, electrical and civil demolition will commence, which will continue after the outside plant 26kV reconfiguration is completed in September 2021 that marks the final asset being placed in-service on this project.	No change
RCR-INF-6	With reference to Table 12- ES-2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2020, please provide an update on the status of the Lakeside property sale and purchase.	PSE&G closed on the Lakeside property (151-155 N. Park Street) on July 14, 2021.	No change
RCR-INF-7	With reference to Table 12-ES-2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2020, please provide an update on the status of the Orange Valley property sale and purchase.	The Orange Valley project contemplates the acquisition of six properties. Three of these properties closed in December 2020, March 2021, and June 2021, respectively. The remaining three property acquisitions are expected to close in September 2021, October 2021, and April 2022.	<b>Section III.A.10.</b>
RCR-INF-8	With reference to page 16 of the Draft 2020- Fourth Quarter Report, please explain if weekend work scheduling is currently factored into the cost estimates for the Energy Strong II program. If not please explain the impact of weekend and off-hours work on project costs.	<p>Regarding the specific comment on page 16 of the Draft Report (“The variance in fourth quarter spend was largely driven by weather delays and an inability to recover time on weekends that pushed inside plant civil work into early 2021”), Jersey City, where the project is located, has a moratorium on weekend work.</p> <p>Generally speaking, overtime or weekend work performed by PSE&amp;G crews does not have a cost impact, while contractor performed work may or may not depending on the situation.</p> <p>On the PSE&amp;G performed work, the labor rates do not change with overtime/weekend work. Project management and oversight costs are included in overhead costs that are scheduled in advance to install the planned number of units within the planned timeframe. Thus, project management/oversight costs would have no change from overtime/weekend work provided all units planned for the month are completed. For Outside Plant – Underground/Overhead line work done by the Divisions, resources are planned to meet the project schedule. Outage requirements and other system/operational considerations are primary drivers of the time-of-day and/or day-of week planned for the work. In the event that “schedule recovery”</p>	No change

ID #	Question/Comment	IM Response	Report Changes
		<p>efforts are required to make up for weather or other disruption, the resource cost does not change with overtime/weekend work.</p> <p>On the contractor performed work, each project will make decisions on if and how to execute schedule recovery using overtime/weekend work. Generally, the cause of disruption, contract terms, and critical schedule among other things forms the parameters of such decisions. The project risk registers include schedule impacts and make R&amp;C provisions in project budget to cover estimated schedule impact/recovery cost. If the schedule is constrained by system reliability, safety, environmental, or other operational requirements that would be the determinant of the recovery actions, rather than cost impact. If the impact of the delay can be accommodated, that is, the impacted activity will not extend the critical path nor incur additional cost, weekend/overtime work would not be utilized at additional cost. If the schedule impact extends the critical path (project duration), or there is a cost associated with the delay such as impact time payment to contractor, equipment stand by cost, demobilization and re-mobilization cost, demurrage cost, extended storage cost, etc., then the decision on whether to implement weekend/overtime work is based on a minimum cost.</p>	
RCR-INF-9	With reference to page 18 of the Draft 2020- Fourth Quarter Report, please describe the contamination risks associated with the original property.	The environmental conditions found via investigation at the Washington Street property were Per- and polyfluoroalkyl substances (PFAS). PFAS chemicals are EPA contaminants of emerging concerns currently subject to developing federal and state regulations and standards and increasing scrutiny by regulators. The presence of PFAS represented a significant environmental risk leading to PSE&G no longer considering this site for the Lakeside Avenue project.	<b>Section III.A.6.</b>
RCR-INF-10	With reference to Table 15 Contingency Reconfiguration Costs as of December 31, 2020 and Table 11 Contingency Reconfiguration Costs as of March 31, 2020, please explain the increase in the subprograms' estimated cost from \$119.5 million to \$162.8 million.	<p>The fluctuations from quarter to quarter in the Contingency Reconfiguration subprogram forecast have been discussed in prior IM reports, in summary:</p> <ul style="list-style-type: none"> <li>• In the IM Q2 2020 Report, the forecast as of June 30, 2020 increased approximately \$31 million from the prior quarter, which was driven by the full forecasting of the Fuse Saver scope of the subprogram that had previously only been partially forecasted.</li> <li>• In the IM Q3 2020 Report, the forecast as of September 30, 2020 decreased approximately \$18 million from the prior</li> </ul>	No change



ID #	Question/Comment	IM Response	Report Changes
		<p>quarter, which was driven by the removal of over 200 4kV and 13kV reclosers from the scope of the subprogram.</p> <ul style="list-style-type: none"> <li>In this IM Q4 2020 Report, the forecast as of December 31, 2020 increased approximately \$31 million from the prior quarter, which was driven by an increase in the planned recloser units (placeholders while PSE&amp;G continued to evaluate the circuits) and an increase to the Fuse Saver scope of the subprogram based on the actual cost trend realized in the pilot program.</li> </ul> <p>As demonstrated above, the overall change in the Contingency Reconfiguration subprogram forecast from the first to fourth quarter of 2020 was driven predominantly by changes in the scope of the subprogram (i.e. number of reclosers planned) and an evolving forecast of the Fuse Saver scope (initially only partially forecasted, then full forecasted, and more recently updated based on the experience of the pilot program).</p>	
RCR-INF-11	With reference to Table 17 ES 2 Grid Modernization-Communication System Costs as of December 31, 2020 and Table 13 ES 2 Grid Modernization-Communication System Costs as of March 31, 2020, please explain the decrease in the subprograms' estimated cost from \$65 million to \$59.3 million.	The reduction in the Grid Modernization – Communication System subprogram forecast of approximately \$6 million from March 31, 2020 to December 31, 2020 is nearly entirely attributed to lower costs in the wireless network scope of work. These lower costs are driven by the selection of FirstNet, which provided the wireless network at a cost well under what was initially estimated for this scope of work (see the IM Q1 2020 Report and IM Q3 2020 Report for more discussion on the selection of FirstNet).	No change
RCR-INF-12	With reference to page 36 of the Draft 2020- Fourth Quarter Report, please explain if the allocation of the wastewater wall to the ongoing 69 kV project was the primary factor in seeing the estimated project cost drop from \$42 million to the current forecast of \$36.6 million. If not, please explain.	Yes, the scope change for the wastewater wall resulted in a decrease to the forecast of approximately \$6.8 million (which was slightly offset by marginally higher estimates for other scopes of work on the project). The project also transitioned to the Conceptual level estimate in May 2021, which resulted in a new estimate of \$33.8 million for the project, reflecting this scope change and other updated cost estimates for the project.	<b>Section IV.A.</b>
Rate Counsel 8/4/2020 Letter to IM	As expected, the quarterly spending trends have been accelerating as more projects enter into construction for the ESII program. Also, we note that the trend in Risk and Contingency are moving downward as projects enter the construction phase.	The spend is expected to continue to accelerate as more activity on the ES 2 Program continues to advance. For the projects carrying an R&C balance, those balances naturally are reduced as the projects advance through engineering and into construction in conjunction with advancing through PSE&G's estimating phases. In effect, either the individual risks are realized,	No change

ID #	Question/Comment	IM Response	Report Changes
		shifting the funds from R&C to the base estimate, or the risks are avoided/mitigated and the overall estimate amount is reduced.	
Rate Counsel 8/4/2020 Letter to IM	At the end of the fourth quarter 2020, the Energy Strong II (“ESII”) program remains in the early stages. The Independent Monitor reports that spending for the quarter ending December 31, 2020 has been \$52,629,214 or 6.7 percent of the forecasted \$778,706,402 program (including the \$100 million for Electric Stipulated Base and excluding \$89.6 million of risk and contingency). Rate Counsel notes that the parties stipulated to \$842 million to complete the ES II Program with \$641 million for electric, \$50.5 million for gas, and \$150.5 million within Stipulated Base for electric and gas spending.	The IM adds a point of clarification to this comment that the forecast of \$778,706,402 for the ES 2 Program includes the Stipulated Base for both electric and gas spending (with the Stipulated Base gas spend included within the Gas M&R subprogram figures).	No change
Rate Counsel 8/4/2020 Letter to IM	The current forecast for the Electric Flood mitigation program increased from \$332,662,596 in the Second Quarter Report to \$339,403,267 in the Fourth Quarter Report, not including risk and contingency estimates. However, Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2020, states that the base spending amount for the subprogram is \$320,000,000 in budgeted base project costs and \$65,500,000 allocated to risk and contingency.	This is correct, the end of fourth quarter 2020 forecast for the Electric Station Flood Mitigation subprogram is also shown in <b>Table 12</b> in addition to the current project estimates (as split between base estimate and R&C) shown in the same table.	No change
Rate Counsel 8/4/2020 Letter to IM	The Independent Monitor notes three formal RODs were issued during the fourth quarter of 2020. These three RODs included Communications Retrofit and non-ES-II Units, Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project, and Market Street Radioactive Soil Testing and Handling- ESII-FM-1.	The RODs issued during the fourth quarter included: Grid Modernization – Communication System Subprogram: Fiber Scope (discussed in the IM 2020 Third Quarter Report), Communication Retrofit of Replacement and non ES-II Units, and Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project. This IM 2020 Fourth Quarter Report also discussed the Market Street Radioactive Soil Testing and Handling-ESII-FM-1 decision, which was made early in the first quarter of 2021.	No change
Rate Counsel 8/4/2020 Letter to IM	The Fourth Quarter Report notes: “As noted in the IM 2020 Third Quarter Report, the Lakeside Avenue forecasted in-service date for this project slipped from May 2023, as of the end of the second quarter of 2020, to December 2023, as of the end of the third quarter. This delay was driven by the original property location for the 69kV and ES 2 projects having contamination risks that resulted in a new potential property location, for which the purchase process is underway. As of the end of 2020, the forecasted in-service date has improved slightly from December	The contamination risks were not associated with the original Lakeside Avenue location. This original location had a small site footprint that, due to the unavailability of adjacent property, would require a customized design and complicated construction sequence including the need to temporarily relocate the 4kV switchgear.  PSE&G ultimately identified the new property for the Lakeside Avenue substation at the 101 N. Park Street site, as detailed in its September 24, 2020 Change in Mitigation Method letter. This new	<b>Section III.A.6.</b>

ID #	Question/Comment	IM Response	Report Changes
	<p>20, 2023 to December 13, 2023 as PSE&amp;G continues to look for opportunities to advance the schedule.” Fourth Quarter Report at page 18. The reference to contamination risks at the original property was not mentioned in PSE&amp;G’s original Change of Mitigation Strategy letter dated September 24, 2020. Specifically, the September 24th letter stated “[t]he ES II flood mitigation filing assumed acquisition of adjacent property to install the raised switchgear. However, the property was not available, and a more complicated construction sequence requiring temporary relocation of the 4kV switchgear would be necessary. The initial Lakeside site is very small and would require a customized design to accommodate both the distribution and transmission facilities on the property. It would also require use of contingencies and cutovers that will increase safety, environmental and reliability risks, and pose a challenge to mitigate.” PSE&amp;G Change In Mitigation Method Letter, page 2.</p> <p>Rate Counsel has concerns that environmental contamination risk on the original property was not disclosed as the reason for the Company’s decision to seek to acquire the 101 N. Park Street location.</p>	<p>site offered lower overall costs vs. the existing location, lower construction risk and outage contingencies, and the benefit of allowing a standard PSE&amp;G design.</p> <p>Prior to selecting the 101 N. Park Street site, PSE&amp;G considered property at 338 Washington Street. This site was determined not viable due to environmental concerns with the site (see also the response to RCR-INF-9 above), which drove the delay in the in-service date initially reported in the IM 2020 Third Quarter Report.</p>	
<p>Rate Counsel 8/4/2020 Letter to IM</p>	<p>Additionally, the Fourth Quarter Report noted that the Contingency Reconfiguration subprogram total forecast increased from \$131,898,033 in the Third Quarter Report to \$162,806,273. The stipulated budget for the subprogram is \$145 million. Nonetheless, Pegasus concludes that “PSE&amp;G has spent approximately 56% of both its estimated and currently forecasted recloser costs, suggesting actual costs coming in close to the estimate, but will warrant continued monitoring to ensure the subprogram objectives are completed within the estimated costs.”</p>	<p>The overall change in the Contingency Reconfiguration subprogram forecast from the first to fourth quarter of 2020 was driven predominantly by changes in the scope of the subprogram (i.e. number of reclosers planned) and an evolving forecast of the Fuse Saver scope (initially only partially forecasted, then full forecasted, and more recently updated based on the experience of the pilot program). See also the response to RCR-INF-10 above.</p>	<p>No change</p>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2021 FIRST QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

~~NOVEMBER 30, 2021~~

JANUARY 20, 2022

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## [Appendices](#)

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**List of Acronyms and Abbreviations**

Advanced Distribution Management Systems .....	ADMS
Advanced Metering Infrastructure .....	AMI
Allowance for Funds Used During Construction.....	AFUDC
Architecture/Engineer .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Department of Community Affairs.....	DCA
Distributed Energy Resource Management System.....	DERMS
Distribution Management System.....	DMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Gas Metering & Regulating .....	Gas M&R
Geographic Information System .....	GIS
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Construction .....	IFC
<u>Liquid Propane Air .....</u>	<u>LPA</u>
New Jersey Department of Environmental Protection.....	NJDEP
New Jersey Sports & Exposition Authority.....	NJSEA
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Outside Plant.....	OP
Public Service Electric & Gas .....	PSE&G
Purchase Orders .....	POs
Record of Decision .....	ROD
Remote Control Unit.....	RCU
Remote Terminal Unit .....	RTU
Risk and Contingency .....	R&C

Soil Conservation District..... SCD

System Average Interruption Duration Index..... SAIDI

Supervisory Control and Data Acquisition .....SCADA

Transmission & Distribution.....T&D

Utility Review Board.....URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram).

During the first quarter of 2021, the bulk of the spend within the ES 2 Program continued to be in the two largest subprograms: Electric Station Flood Mitigation with six projects continuing in construction; and Contingency Reconfiguration that continues to advance the installation and commissioning of reclosers largely in alignment with PSE&G's plan. Within the other subprograms, the Grid Modernization – Communication System subprogram placed five additional fiber installation projects and three additional fiber cutover projects in-service and continued the ramp-up of the retrofit recloser installations, with 749 units completed through the end of the first quarter of 2021 out of a current forecast of 2,449 units. The Grid Modernization – ADMS subprogram continued to plan and develop the platform and necessary hardware equipment, while the Gas M&R subprogram continued advancing the engineering at each station and other pre-construction activities such as reviewing scope and permit documents and performing noise and geotechnical studies. The four stations approved within the life cycle upgrades portion of the Electric Stipulated Base continued design activities, including receipt of vendor drawings and advancing licensing and permitting packages. **Table 1 – ES 2 Subprogram & Stipulated Base Status as of March 31, 2021** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

*Table 1 – ES 2 Subprogram & Stipulated Base Status as of March 31, 2021*

Subprogram	Q1 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount
Electric Station Flood Mitigation	\$15,984,038	\$69,929,211	\$331,509,117	21%	Sep 2024	\$389M
Contingency Reconfiguration	\$12,503,156	\$72,139,201	\$148,927,422	48%	Dec 2023	\$145M
Grid Modernization – Communications	\$6,306,330	\$25,526,835	\$58,602,845	44%	Dec 2023	\$72M
Grid Modernization – ADMS	\$2,488,981	\$18,972,817	\$40,375,507	47%	Oct 2022	\$35M
Electric Stipulated Base	\$1,350,398	\$3,786,460	\$100,000,000	4%	Dec 2023	\$100M
Gas M&R Station Upgrades <sup>^</sup>	\$2,019,800	\$5,981,294	\$91,199,999	7%	Dec 2023	\$101M
<b>Total*</b>	<b>\$40,652,703</b>	<b>\$196,335,818</b>	<b>\$770,614,891</b>	<b>22%</b>	<b>Sep 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 12** and **Table 21** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\* -Final in-service date.

<sup>^</sup>-Includes both the ES 2 projects and the Stipulated Base gas projects.



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Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of March 31, 2020.**

*Table 2 – ES 2 Electric Station Flood Mitigation Status as of March 31, 2020*

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$10,500,000	\$4,753,887	45%	10/25/2021
2. Clay Street	\$42,000,000	\$1,560,778	4%	2/7/2023 (↓)
3. Constable Hook	<i>Identified for Removal from the ES 2 Program</i>			
4. Hasbrouck Heights	\$18,000,000	\$1,830,577	10%	2/7/2023 (↑)
5. Kingsland	\$8,300,000	\$344,400	4%	10/4/2023
6. Lakeside Avenue	\$47,900,000	\$781,910	2%	12/13/2023
7. Leonia	\$32,200,000	\$8,887,799	28%	9/30/2022
8. Market Street	\$26,900,000	\$20,366,674	76%	9/23/2021 (↓)
9. Meadow Road	\$9,000,000	\$715,881	8%	9/21/2023
10. Orange Valley	\$20,200,000	\$447,215	2%	12/12/2023 (↑)
11. Ridgefield 13kV	\$25,500,000	\$9,654,641	38%	10/28/2022 (↓)
12. Ridgefield 4kV	\$19,500,000	\$14,191,713	73%	5/28/2021
13. State Street	\$45,100,000	\$977,153	2%	9/23/2022
14. Toney’s Brook	\$18,800,000	\$673,983	4%	4/21/2023
15. Waverly	\$35,400,000	\$3,224,135	9%	9/17/2024 (↓)
16. Woodlynnne	\$19,400,000	\$1,386,467	7%	10/10/2023 (↑)
*Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).				
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.				
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.				

As indicated in **Table 2**, the projects that have previously started construction (Academy Street, Leonia, Market Street, Ridgefield 13kV, Ridgefield 4kV, and Waverly) continue to have the highest spend. Additionally, two of the stations (Toney’s Brook and Ridgefield 4kV) had new estimates approved by the Utility Review Board (URB) in during the first quarter of 2021. **Table 2** also shows that seven of the fifteen remaining projects in this subprogram (following the removal of Constable Hook) had movement in the forecasted in-service date, with three advancing and four slipping. Of these seven projects, three of the projects (Market Street, Clay Street, and Woodlynnne) had forecasted in-service dates change by one day. Only two (Hasbrouck Heights and Waverly) had movement more than 60 days, which is the threshold the Independent Monitor (IM) applied during the original Energy Strong Program for evaluating changes to the project schedules. The Hasbrouck Heights forecasted in-service date previously moved in the fourth quarter of 2020 from early December 2022 to mid-April 2023 due to Covid-19 related delays on the Siemens GIS installation on the associated Hasbrouck Heights 69kV project, which has resulted in the Hasbrouck Heights ES 2 project delaying the start of construction from July 2021 to January 2022, [with no expected cost impacts from this schedule shift](#). The fourth quarter in-service date was based on the capacitor bank in-service date (April 2023), which has now been updated by PSE&G to reflect the switchgear in-service date currently forecasted for February 2023. The Waverly in-service date slipped

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314 days from the forecasted in-service date at the end of the prior quarter. This was due to PSE&G being denied approval of the site plan by the Newark Planning Board, which requires PSE&G to address the comments received, coordinate community meetings on the new site plan application, and re-submit to the Newark Planning Board.

The IM has found nothing to date that would jeopardize the ES 2 Program being completed on budget. With schedule challenges, particularly on the Waverly substation and other projects with forecasted in-service dates near the Program end date as discussed in **Section III**, the ES 2 Program Schedule will warrant further monitoring by the IM to ensure the Program is completed within the defined timeline.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On November 30, 2021, a draft report was presented and submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2021 First Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2021 First Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network – ESII-GM-3	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center– ESII-GM-4	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )

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<b>Subprogram</b>	<b>Record of Decision</b>	<b>IM Comments</b>
Grid Modernization – Communication System	Fiber Scope – ESII-GM-1	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units – ESII-GM-2	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling – ESII-FM-1	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project – ESII-FM-Clay01	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report</i> )
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers– ESII-CR-1	Reasonable and appropriate ( <i>See Section IV.A. in this IM 2021 First Quarter Report</i> )
Grid Modernization – ADMS	Outage Management System (OMS) Implementation – ESII-GM-5	Under review ( <i>See Section IV.A. in this IM 2021 First Quarter Report</i> )

**B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with ES 1, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

**C. Cost Assignments****1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Costs of Removal as of March 31, 2021**, below itemizes the charges to COR for the first quarter of 2021, the fourth quarter of 2020, and for comparative purposes, total 2020, total 2019 (which was only the fourth quarter) and total ES 2 COR to date. These amounts do not reflect any salvage value reductions, which have been de minimis in the ES 2 Program through March 31, 2021.

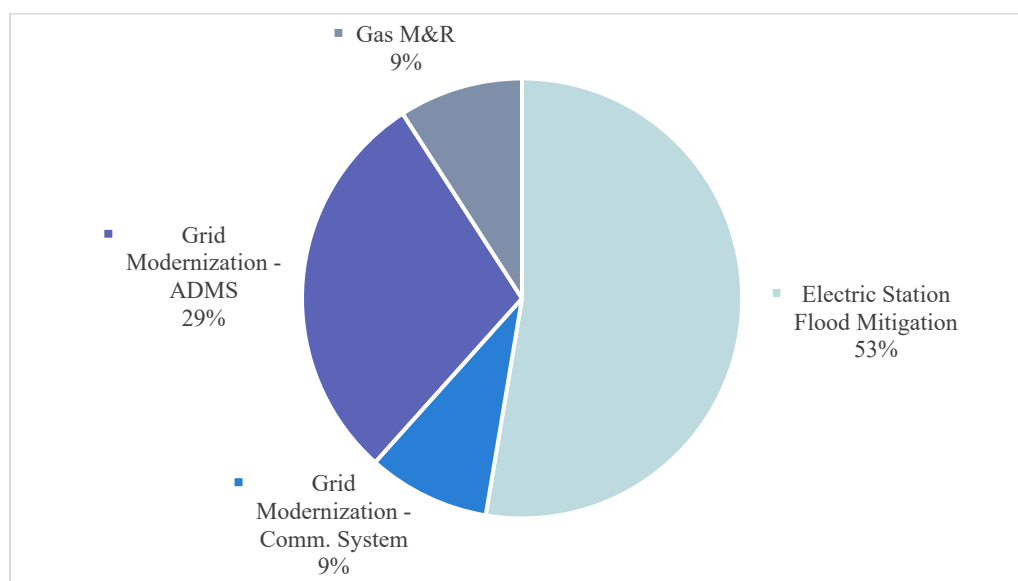
**CONFIDENTIAL****Table 4 – ES 2 Costs of Removal as of March 31, 2021**

Subprogram	Q1 2021	Q4 2020	Total 2020	Total 2019 (Q4)	Total COR
	<i>(in \$ thousands)</i>				
Electric Station Flood Mitigation	\$1,129.5	\$190.7	\$1,021.1	\$0	\$2,150.6
Contingency Reconfiguration	\$622.9	\$707.3	\$2,198.9	\$431.0	\$3,252.8
Grid Modernization – Communications	\$37.8	\$19.6	\$24.4	\$0	\$62.2
Grid Modernization - ADMS	\$0	\$0	\$0	\$0	\$0
Electric Stipulated Base	\$0	\$0	\$0	\$0	\$0
Gas M&R Station Upgrades	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$1,790.2</b>	<b>\$917.6</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$5,465.6</b>

COR charges during the first quarter of 2021 increased substantially from the fourth quarter of 2020 primarily due to the removal of the 4kV overhead circuits and associated equipment at the Market Street substation project (about \$1.0 million).

## **2. Construction Work-in-Progress (CWIP) & In-Service Transfers**

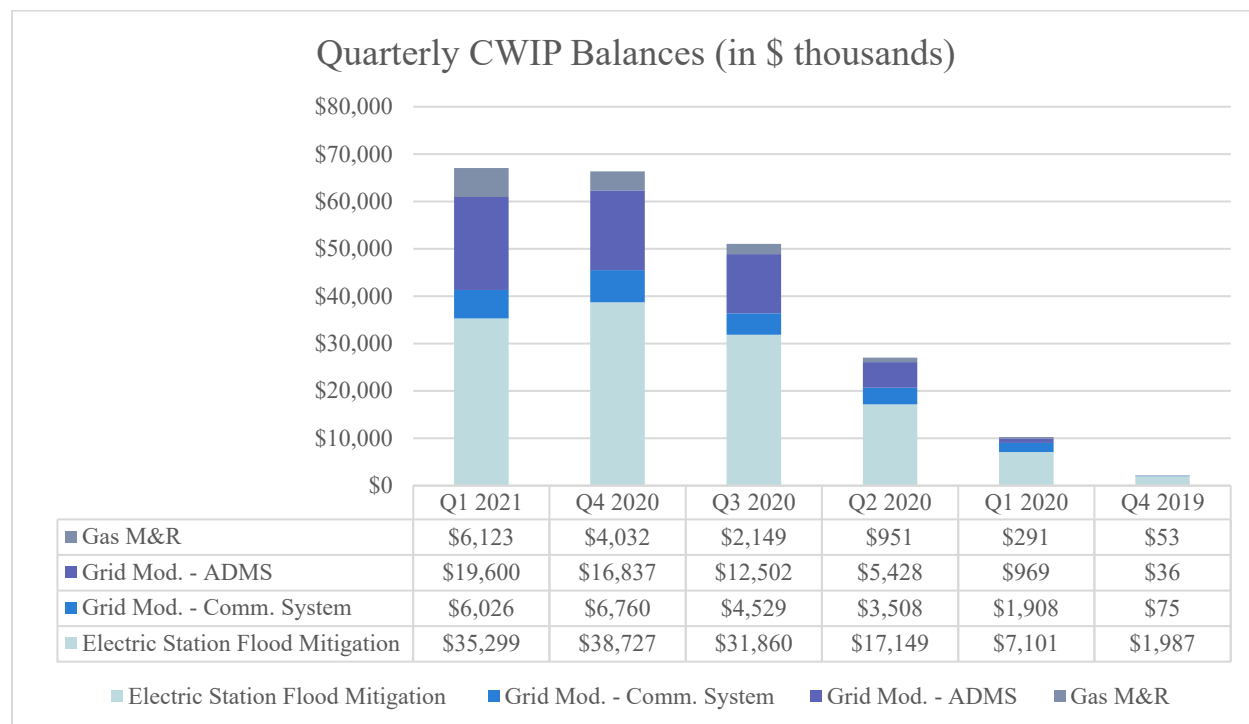
As of March 31, 2021, the ES 2 CWIP balance was \$67.0 million, compared to \$66.4 million as of December 31, 2020. The largest components of March 31, 2021 CWIP were the elimination and conversion of the 4kV circuits at the Ridgefield (\$9.1 million) and Market Street substations (\$5.1 million), activity at Academy Street substation (\$5.0 million) and work associated with the Grid Modernization – ADMS subprogram (\$19.6 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of March 31, 2021** below.

**Figure 1 – ES 2 CWIP as of March 31, 2021**

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In addition, the **Figure 2 – ES 2 CWIP Balances by Subprogram as of March 31, 2021** below depicts the composition of end-of-quarter CWIP balances by subprogram for the first quarter of 2021, each quarter of 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of March 31, 2021**



Transfers from CWIP to plant in-service totaled \$12.2 million during the first quarter of 2021, mainly comprised of \$9.5 million of switchgear assets at the Leonia and Ridgefield 13kV substations. Total ES 2 transfers from CWIP have been \$17.4 million through March 31, 2021. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no AFUDC is recorded on these expenditures. This accounting treatment is fully in accord with generally accepted accounting principles and the Company's accounting policies.

### **3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each ES 2 subprogram during the first quarter of 2021, the fourth quarter of 2020 (for comparative purposes), total AFUDC for the years 2020 and 2019 and total ES 2 AFUDC accrued to date, is shown below in **Table 5 – ES 2 AFUDC as of March 31, 2021**.

**Table 5 – ES 2 AFUDC as of March 31, 2021**

Subprogram	Q1 2021	Q4 2020	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>				
Electric Station Flood Mitigation	\$558.6	\$305.0	\$936.5	\$9.9	\$1,505.0
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0

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Subprogram	Q1 2021	Q4 2020	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>				
Grid Modernization – Communications	\$59.0	\$66.2	\$184.3	\$0.2	\$243.5
Grid Modernization - ADMS	\$274.2	\$213.9	\$352.7	\$0.1	\$627.0
Electric Stipulated Base	\$49.6	\$32.6	\$44.0	\$0	\$93.6
Gas M&R Station Upgrades	\$72.2	\$39.6	\$70.0	\$0.2	\$142.4
<i>Total</i>	\$1,013.6	\$657.3	\$1,587.5	\$10.4	\$2,611.5

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2021, the new AFUDC rate was calculated to be 6.81%, using the capital structure and component costs as of January 31, 2021. This rate is lower than the 2020 rate of 6.95%, primarily due to a significantly lower interest rate used for short-term debt in the AFUDC calculation, and also to a reduction in the Company's embedded cost of long-term debt. In calculating the 2021 AFUDC rate, the Company used (i) a 3.85% embedded cost of long-term debt (vs. 4.02% in 2020), (ii) a short-term debt rate of 0.32% (vs. 1.86% in 2020), and (iii) a cost of equity of 9.60% (unchanged from 2020).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the first quarter of 2021, based on data as of March 31, 2021, the recalculated weighted average AFUDC accrual rate (6.79%) did not meet this criterion to warrant changing from the annual rate (6.81%) in effect. Therefore, AFUDC was accrued during the first quarter of 2021 at the calculated rate of 6.81%.

AFUDC accrued for ES 2 projects during the first quarter of 2021 increased over AFUDC accrued during the fourth quarter of 2020 as the result of the reclassification made to CWIP and AFUDC during the fourth quarter of 2020 to reflect the reversal of certain costs from CWIP to plant in-service, with the associated effect on fourth quarter 2020 AFUDC (as discussed in the IM's Fourth Quarter 2020 Report), the semiannual AFUDC compounding roll-in to the AFUDC base calculation that occurs in January of each year, and increases in total average CWIP balances for the Grid Modernization – ADMS and Gas M&R subprograms.

The IM observes that the Company's calculation of the AFUDC rate and its application is in accordance with both PSE&G's accounting policy and Plant Instruction 3(17) of the Federal Energy Regulatory Commission's Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to first quarter 2021 ES 2 project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these ES 2 projects. The IM will continue to review future Energy Strong AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### **4. Allocated Overheads**

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity

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receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Overhead Allocations as of March 31, 2021** are the allocated overhead costs charged to ES 2 projects for the first quarter of 2021, the fourth quarter of 2020 (for comparative purposes), total 2020, total 2019 and total Energy Strong allocated overheads to date.

*Table 6 – ES 2 Overhead Allocations as of March 31, 2021*

Subprogram	Q1 2021	Q4 2020	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
<i>(in \$ thousands)</i>					
Electric Station Flood Mitigation	\$5,588	\$4,925	\$14,023	\$287	\$19,898
Contingency Reconfiguration	\$4,215	\$6,011	\$17,109	\$3,415	\$24,739
Grid Modernization – Communications	\$1,743	\$2,170	\$3,625	\$12	\$5,380
Grid Modernization – ADMS	\$119	\$112	\$426	\$11	\$556
Electric Stipulated Base	\$126	\$104	\$259	\$0	\$385
Gas M&R Station Upgrades	\$131	\$92	\$291	\$15	\$437
<b>Total*</b>	<b>\$11,922</b>	<b>\$13,414</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$51,395</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the first quarter of 2021 are costs allocated from areas that support all utility distribution and transmission projects, including ES2 projects. More specifically, most of the first quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The decrease in overheads for the first quarter 2021 from the fourth quarter of 2020 largely reflects lower overall ES 2 project spend, notably in the Contingency Reconfiguration subprogram.

## **D. System Performance**

### **1. Current Reporting Quarter Major Events**

During the first quarter of 2021, there was one Major Event reported in PSE&G's service territory concerning a State of Emergency declared due to a series of snowstorms. The State of Emergency was declared by Governor Murphy on January 31, 2021 and was lifted on February 23, 2021. During this Major Event period, 104,932 PSE&G customers experienced extended service.

The IM has received PSE&G's report on the performance of its investments from this Major Event and has reproduced the results in **Table 7 – Q1 2021 Major Event Performance** below.

**CONFIDENTIAL****Table 7 – Q1 2021 Major Event Performance**

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*	Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
ADA 8026		0.00000	IRO 4014		0.00000
BAO 8006		0.00000	<b>IRV 4013</b>	<b>0.02207</b>	<b>0.03411</b>
<b>BAO 8008</b>	<b>0.00005</b>	<b>0.00036</b>	JAC 8021	0.00477	0.00090
<b>BEF 8015</b>	<b>0.00433</b>	<b>0.01158</b>	JAC 8022	0.04453	0.00030
BEN 8012	0.22864	0.00548	JAC 8024	0.25423	0.00000
<b>BLO 4016</b>	<b>0.01635</b>	<b>0.12393</b>	<b>JAC 8033</b>	<b>0.00350</b>	<b>0.00819</b>
BRU 8012	0.01648	0.00000	<b>KIL 8014</b>		<b>0.00821</b>
BRU 8022	0.02954	0.00313	KIL 8016	0.01491	0.00000
<b>BRU 8023</b>		<b>0.01247</b>	<b>KIL 8023</b>		<b>0.02076</b>
BUS 8023	0.03965	0.00000	KIL 8024	0.01504	0.00212
CAS 8001	0.02438	0.00391	KIL 8033	0.01648	0.01115
CED 8022	0.05071	0.00646	KIL 8042	0.06155	0.00000
CIN 8002	0.01418	0.00000	<b>KUS 8009</b>	<b>0.04178</b>	<b>0.05447</b>
CIN 8043	0.18459	0.00946	LAW 8016	0.14895	0.00804
CLF 8024	0.01800	0.00000	LAW 8025	0.16759	0.00894
CLK 8023	0.00019	0.00000	LAW 8033	0.04306	0.00000
CLK 8024	0.01526	0.00000	LCU 8051	0.19366	0.01809
COR 8034	0.03335	0.00000	LEO 8005	0.61152	0.01045
COR 8041	0.05596	0.00000	LEO 8006	0.07368	0.00000
CRX 8003	0.07703	0.00247	LEV 8002	0.06064	0.05175
CUT 8006	0.59550	0.00052	LEV 8011	0.25139	0.00457
CUT 8007	0.67234	0.01577	LEV 8012	0.25318	0.00449
CUT 8010	0.49117	0.02914	LIB 4007**	0.10880	0.01004
CUT 8031	0.00845	0.00000	LIT 8001	0.02586	0.00000
DFD 8007	0.06056	0.01571	<b>LOC 8012</b>		<b>0.00993</b>
<b>EAT 8023</b>		<b>0.00363</b>	LUM 8024	0.23063	0.00164
FAW 8023	0.02811	0.00117	MAD 8018	0.20763	0.00118
<b>FED 4021</b>		<b>0.02426</b>	MAD 8022	0.41375	0.00156
FIT 8003	0.01301	0.00538	MAD 8024	0.11054	0.00000
<b>FOU 8014</b>	<b>0.00123</b>	<b>0.00690</b>	MAI 8013	0.05318	0.01301
<b>FOU 8022</b>	<b>0.00091</b>	<b>0.00180</b>	MAR 8017	0.45014	0.00683
<b>FOU 8024</b>		<b>0.00402</b>	<b>MAY 8013</b>		<b>0.00155</b>
GBK 8014	0.30784	0.00027	MDF 8012	0.58371	0.00080
GBK 8025	0.31504	0.00145	MDF 8023	0.26488	0.00110
HAC 4007		0.00000	MEA 8024	0.09438	0.03566
HAT 8015	0.02090	0.00181	MIN 8024		0.00000
HAT 8035	0.04291	0.00026	<b>MIN 8025</b>	<b>0.00515</b>	<b>0.01043</b>
HNC 8015	0.15427	0.00340	MTL 8015	0.04117	0.00308
HNC 8024	0.43454	0.00282	NBS 8023	0.00085	0.00000
HOE 8047	0.05561	0.04167	NED 8013	0.03270	0.00000
IRO 4003		0.00000	NED 8025	0.01640	0.01087
IRO 4005		0.00000	NEW 8014	0.01839	0.00098
IRO 4011		0.00000	NIN 4004	0.03196	0.00131
IRO 4012		0.00000	<b>NOT 8011</b>		<b>0.00307</b>



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Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*	Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
NOT 8013		0.00000	<b>SMV 8012</b>		<b>0.01636</b>
NOT 8014	0.00232	0.00000	SPF 8025	0.09408	0.00000
<b>NOT 8021</b>		<b>0.00017</b>	<b>SUN 8045</b>	<b>0.00066</b>	<b>0.00073</b>
<b>NOT 8022</b>	<b>0.00091</b>	<b>0.02397</b>	<b>TUR 8001</b>	<b>0.00248</b>	<b>0.00976</b>
<b>NRB 8012</b>		<b>0.00574</b>	<b>TUR 8015</b>	<b>0.00704</b>	<b>0.04733</b>
ORA 4001	0.02674	0.02302	VIL 8001**	0.24055	0.00000
PEK 8026	0.04523	0.00101	WAD 8011	0.08512	0.02907
PIE 8023	0.04636	0.01156	<b>WAN 8015</b>		<b>0.00201</b>
PIN 4002**	0.08187	0.00000	<b>WAN 8022</b>		<b>0.00214</b>
PLI 8005	0.16440	0.00000	<b>WEW 8014</b>		<b>0.00093</b>
<b>POH 8012</b>		<b>0.00016</b>	WEW 8042	0.01304	0.00249
POR 8021**		0.00000	WOR 8021		0.00000
RAV 8003	0.00674	0.00008	WOR 8034	0.01023	0.00207
RFL 8025		0.00000	* -SAIDI calculations are in minutes.		
<b>RGW 4007</b>		<b>0.00800</b>	** -These circuits have <u>not</u> received investments under the Original Energy Strong Program or under the ES 2 Program, all other circuits listed have received investments.		
<b>RUN 8001</b>		<b>0.01054</b>			
<b>SAD 8002</b>		<b>0.00115</b>			
<b>SAD 8045</b>	<b>0.00284</b>	<b>0.02276</b>			

In the circuit data above, the “0.00000” indicates an outage, but the value is beyond five decimal points captured by PSE&G; in addition, blank cells indicate no outage in the 5-year window. As indicated above, there were 119 circuits impacted by this Major Event with the majority of the affected circuits having experienced outages less the 5-year Major Event average.

For those circuits with a higher Major Event SAIDI than the 5-year Major Event SAIDI average (shown in bold in **Table 7**), 19 had no outages in the past five years while 14 had a higher report quarter SAIDI average than the 5-year baseline SAIDI. For those 14, additional information on the circuits and the outage experienced is provided below in **Table 8 – Q1 2021 Major Event Additional Information on Selected Circuits** (note that some of these circuits had more than one incident during the Major Event, resulting in a total of 24 incidents from these 14 circuits).

**Table 8 – Q1 2021 Major Event Additional Information on Selected Circuits**

Circuit	5-Year Baseline SAIDI*	Report Quarter SAIDI*	Customers Impacted	Outage Duration*
BAO 8008	0.00005	0.00036	47	19
BEF 8015	0.00433	0.01158	569	50
BLO 4016	0.01635	0.12393	473	171
BLO 4016	0.01635	0.12393	1,254	171
BLO 4016	0.01635	0.12393	0	356
BLO 4016	0.01635	0.12393	17	171
BLO 4016	0.01635	0.12393	18	171
BLO 4016	0.01635	0.12393	0	171
BLO 4016	0.01635	0.12393	19	171
FOU 8014	0.00123	0.00690	0	168

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Circuit	5-Year Baseline SAIDI*	Report Quarter SAIDI*	Customers Impacted	Outage Duration*
FOU 8014	0.00123	0.00690	47	47
FOU 8014	0.00123	0.00690	117	126
FOU 8022	0.00091	0.00180	85	52
IRV 4013	0.02207	0.03411	1,035	81
JAC 8033	0.00350	0.00819	117	172
KUS 8009	0.04178	0.05447	631	154
KUS 8009	0.04178	0.05447	1,930	19
MIN 8025	0.00515	0.01043	39	657
NOT 8022	0.00091	0.02397	1,636	36
SAD 8045	0.00284	0.02276	948	59
SUN 8045	0.00284	0.02276	948	59
TUR 8001	0.00248	0.00976	101	129
TUR 8001	0.00248	0.00976	85	129
TUR 8015	0.00704	0.04733	1,077	108

\*-Calculated in minutes.

As indicated in **Table 8**, in addition to the original Energy Strong Program and ES 2 investments that increased sectionalizing of circuits to reduce the number of customers impacted by outages, the customer impact from a Major Event is also a function of the nature of the outages (extent of damage) and the location of damage relative to the various interrupting devices on the circuit, that is, reclosers or fuses. For some circuits, the 5-year baseline outage(s) were smaller or affected fewer customers, whether it be different device operations (fuse with 10 customers vs. fuse with 150 customers) than the Major Event being reported. Some circuits had more non-reclosing device operations in this Major Event (more fuse jobs) or more customers served by the circuit due to circuit rearrangements.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of the first quarter of 2021 is provided below in **Table 9** – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of March 31, 2021.

*Table 9 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of March 31, 2021*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. Academy Street	Dec. 2019		KO					C					IS		CO					
	Dec. 2020		KO		C							IS		CO						
	Mar. 2021		KO		C							IS		CO						
2. Clay Street	Dec. 2019	Schedule Under Development																		
	Dec. 2020			KO							C									IS
	Mar. 2021			KO							C						IS			
3. Constable Hook	Dec. 2019	Schedule Under Development																		
	Dec. 2020	Schedule Under Development																		
	Mar. 2021	Identified for Removal from the ES 2 Program																		

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Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>						C					IS		CO				
	Dec. 2020		<u>KO</u>								C					IS		CO		
	Mar. 2021		<u>KO</u>								C				IS					CO (Q1)
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO							
	Dec. 2020			<u>KO</u>								C							IS	CO (Q2)
	Mar. 2021			<u>KO</u>										C					IS	CO (Q2)
6. Lakeside Avenue	Dec. 2019*				KO				C										IS	CO (Q2)
	Dec. 2020						<u>KO</u>						C						IS	CO (Q2)
	Mar. 2021						<u>KO</u>							C					IS	CO (Q4)
7. Leonia	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>		<u>C</u>									IS		CO			
	Mar. 2021			<u>KO</u>		<u>C</u>									IS		CO			
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO									
	Dec. 2020			<u>KO</u>					C	OS		CO								
	Mar. 2021			<u>KO</u>						C/OS				CO						
9. Meadow Road	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>										C					IS	CO (Q2)
	Mar. 2021			<u>KO</u>										C					IS	CO (Q2)
10. Orange Valley	Dec. 2019	Schedule Under Development																		
	Dec. 2020					<u>KO</u>										C				IS (Q1); CO (Q3)
	Mar. 2021					<u>KO</u>								C					IS	CO (Q3)
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C										IS		CO			
	Dec. 2020			<u>KO</u>	<u>C</u>										IS		CO			
	Mar. 2021			<u>KO</u>	<u>C</u>										IS		CO			
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>						C	OS		CO							
	Dec. 2020			<u>KO</u>	<u>C</u>				OS		CO									
	Mar. 2021			<u>KO</u>	<u>C</u>				OS		CO									
13. State Street	Dec. 2019		<u>KO</u>					C							IS					CO (Q1)
	Dec. 2020		<u>KO</u>						C				IS							CO (Q1)
	Mar. 2021		<u>KO</u>						C					IS						CO (Q1)
14. Toney's Brook	Dec. 2019			<u>KO</u>						C										CO (Q2)
	Dec. 2020			<u>KO</u>									C			IS				CO (Q2)
	Mar. 2021			<u>KO</u>										C		IS				CO (Q2)
15. Waverly	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>			<u>C</u>													IS
	Mar. 2021			<u>KO</u>			<u>C</u>													
16. Woodlynne	Dec. 2019		<u>KO</u>											C					IS	CO (Q2)
	Dec. 2020		<u>KO</u>											C					IS	CO (Q2)
	Mar. 2021		<u>KO</u>											C					IS	CO (Q2)

Dec. 31, 2023 - ES 2 Program End Date

Legend: KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout

-Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).

\*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.

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A summary of the subprogram status as of the end of the first quarter of 2021 is provided below **Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2021.**

**Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2021**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynne
Key Drawing Review	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynne
Scope Locked	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlynne
Major Equipment Purchase Orders (POs)	15*	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Ridgefield 13kV*; State Street; Toney's Brook; Waverly*; Woodlynne
Architecture/Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	15	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney's Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynne <sup>1</sup>
Construction Start <sup>^</sup>	6	Academy Street; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; Waverly
* - Three of the listed projects (Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 15 switchgears at 12 substations.		
<sup>1</sup> - Indicates Burns & McDonnell is serving as the A/E.		
<sup>2</sup> - Indicates PSE&G internal resources are serving as the A/E.		
<sup>3</sup> - Indicates Black & Veatch is serving as the A/E.		
<sup>^</sup> - Includes inside plant and/or outside plant construction.		

Beyond the key activities summarized in **Table 10** above, **Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q2 2021** summarizes the planned activities for each project during the second quarter of 2021, including any carryover of activities from earlier periods.

**Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q2 2021**

Station	Upcoming Activities for Q2 2021	Carryover Activities from Q1 2021
1. Academy Street	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>70% estimate completed</li> <li>Civil, controls, and electrical drawings issued for construction (IFC)</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
3. Constable Hook	<ul style="list-style-type: none"> <li>Identified for Removal from the ES 2 Program</li> </ul>	
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Electrical construction PO issued</li> <li>Major municipal licenses and permits issued</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Continued design and engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued design and engineering</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>License and permitting packages issued (site plan application)</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>

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Station	Upcoming Activities for Q2 2021	Carryover Activities from Q1 2021
7. Leonia	<ul style="list-style-type: none"> <li>Phase 3 municipal licenses and permits issued (site plan, construction)</li> <li>Switchgear delivered</li> <li>Phase 2 civil construction complete</li> <li>Phase 2 electrical construction start</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
8. Market Street	<ul style="list-style-type: none"> <li>In-service achieved for 4kV to 13kV circuit conversions and outside plant Deptford street and Locust street extensions</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>Continued engineering and design</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering and design</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Switchgear PO issued</li> </ul>	<ul style="list-style-type: none"> <li>License and permitting package issued</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Switchgear delivered</li> <li>Major state and municipal licenses and permits issued (piles/foundation)</li> <li>Phase 1 civil construction start</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
12. Ridgefield 4kV	<ul style="list-style-type: none"> <li>Civil demolition PO issued</li> <li>Electrical construction completed</li> <li>In-service achieved for 4kV to 13kV circuit conversions</li> <li>Start electrical demolition</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>70% estimate completed</li> <li>Civil PO issued</li> <li>Controls drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>Electrical construction purchase order issued</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Electrical construction PO issued</li> <li>Civil and electrical drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Switchgear delivered</li> <li>Phase 2 controls drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>70% estimate completed</li> <li>Civil and electrical POs issued</li> <li>Major municipal licenses and permits issued (construction)</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>

The current project estimates, including base and R&C amounts, is shown below in **Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2021**. Table 12 also shows the current estimate level based on PSE&G's estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of the first quarter of 2021.

**Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2021**

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,800,000	\$700,000	\$10,500,000	\$9,704,217	\$4,753,887	45%
2. Clay Street	Study	\$34,800,000	\$7,200,000	\$42,000,000	\$29,796,949	\$1,560,778	4%
3. Constable Hook	<i>Identified for Removal from the ES 2 Program</i>						

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Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
4. Hasbrouck Heights	Study	\$14,900,000	\$3,100,000	\$18,000,000	\$20,474,628	\$1,830,577	10%
5. Kingsland	Study	\$5,400,000	\$2,900,000	\$8,300,000	\$6,418,541	\$344,400	4%
6. Lakeside Avenue	Study	\$39,400,000	\$8,500,000	\$47,900,000	\$39,356,278	\$781,910	2%
7. Leonia	Study	\$27,700,000	\$4,500,000	\$32,200,000	\$25,082,905	\$8,887,799	27%
8. Market Street	Definitive	\$25,200,000	\$1,700,000	\$26,900,000	\$26,174,479	\$20,366,674	76%
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$7,325,880	\$715,881	8%
10. Orange Valley	Study	\$16,000,000	\$4,200,000	\$20,200,000	\$15,703,933	\$447,215	2%
11. Ridgefield 13kV	Study	\$19,600,000	\$5,900,000	\$25,500,000	\$25,256,853	\$9,654,641	38%
12. Ridgefield 4kV	Definitive	\$18,500,000	\$1,000,000	\$19,500,000	\$18,829,711	\$14,191,713	73%
13. State Street	Study	\$39,000,000	\$6,100,000	\$45,100,000	\$38,928,940	\$977,153	4%
14. Toney's Brook	Conceptual	\$16,200,000	\$2,600,000	\$18,800,000	\$16,205,945	\$673,983	4%
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$33,806,170	\$3,224,135	9%
16. Woodlynne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$18,308,852	\$1,386,467	7%
<b>Subprogram Total</b>		<b>\$318,900,000</b>	<b>\$59,800,000</b>	<b>\$378,700,000</b>	<b>\$331,374,281</b>	<b>\$69,797,213</b>	<b>14%</b>

Findings & Observations

- Seven Electric Station Flood Mitigation projects had changes to the forecasted in-service date from the end of 2020 to the end of the first quarter of 2021. Of these projects: Market Street, Clay Street, and Woodlynne had a one-day move in the forecasted in-service date; Ridgefield 13kV slipped 15 days; and Orange Valley improved 43 days. Two other projects had forecasted in-service movements greater than 60 days, including Hasbrouck Heights, which improved 64 days based on PSE&G identifying the in-service date as the final major asset ([which is consistent with PSE&G's treatment of other Electric Station Flood Mitigation in-service dates across Energy Strong and ES 2](#)) instead of the previously identified date of when the capacitor banks were completed, and Waverly, which slipped 314 days stemming from delays in approval of the site plan application that pushed out construction to 2022 and the last major asset in-service to September 2024, substantially beyond the ES 2 Program completion date of December 31, 2023.

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- The Ridgefield 4kV and Toney’s Brook projects had new estimates approved during the first quarter of 2021, each resulting in a minor decrease to the overall estimate for the project. The Ridgefield 4kV project advanced from the Conceptual to Definitive estimate phase, with an overall decrease of \$0.7 million from the prior estimate for a total estimate of \$19.5 million. The Toney’s Brook project advanced from the Study to Conceptual estimate phase, with an overall decrease of \$0.9 million from the prior estimate for a total estimate of \$18.8 million.
- The IM has found nothing to date that would jeopardize the subprogram being completed on budget. However, the IM finds that the Waverly project is currently scheduled beyond the ES 2 Program completion date. The status of the later projects in this subprogram, and in particular Waverly, will have to closely be followed to monitor if the projects can be completed within the ES 2 Program window. As of the end of the first quarter of 2021, the Waverly project shows a final in-service date of September 2024. The Waverly project has multiple major asset in-service dates for the 26kV switchgear, 4kV switchgear, and three transformers. At this time Transformer #3 is the outlier from completing the full scope within the ES 2 Program window. PSE&G has informed the IM that the project team has every intention of improving the in-service dates and will be examining the potential to shorten durations and/or work activities concurrently to pull the final in-service date back into 2023. The IM has increased its monitoring on the projects that are currently forecasted to be completed in the fourth quarter of 2023 and the Waverly project and will continue to discuss with PSE&G actions undertaken to improve schedule, for which updated information will continue to be provided in future IM reports.

### 1. Academy Street

During the first quarter of 2021, \$378,939 was spent on the Academy Street project compared to a forecast of approximately \$470,000, which brought the total spend to approximately \$4.7 million. The variance in first quarter spend was largely driven by completion of the 69kV underground duct bank pushing out remaining ES 2 work and delivery of substation steel slipping from March to April. The forecasted in-service date for the Academy Street project remains at October 25, 2021, which is unchanged from the previous quarter.

The primary activity conducted during the first quarter of 2021 on the Academy Street project included the commencement of 4kV to 13kV conversion pre-work. Construction, which started in July 2020 for non-permit work on Academy Street, remains at 65% complete inside plant, while the total project is reported at 77% complete as of the end of the first quarter of 2021.

The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$150,398	\$4,224,550	\$378,939	\$443,324	\$738,947	\$1,687,021	\$2,081,037

Actuals to Date	Estimate	% of Actuals to Estimate
\$4,753,887	\$10,500,000	45%

**2. Clay Street**

During the first quarter of 2021, \$565,030 was spent on the Clay Street project compared to a forecast of approximately \$570,000, which brought the total spend to approximately \$1.6 million. At the beginning of the quarter, there was the potential for delay on the site plan approval stemming from the planning board's Covid-19 protocols. However, the project team requested a special meeting to maintain the project's schedule, which was held in March 2021 and resulted in the approval of the site plan.

Also in the first quarter of 2021, PSE&G's accounting group made the determination that the sanitation wall on the Clay Street project is both a transmission and distribution asset. This is resulting in a scope change that will remove this scope of work from the ES 2 project and add it to the 69kV project. The final details have yet to be reported to the IM, but no schedule impacts are expected from this change, while the costs to the ES 2 project will be slightly reduced.

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>			<i>Forecast</i>			
\$116,409	\$879,339	\$565,030	\$1,103,119	\$205,080	\$8,590,291	\$18,337,680

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,560,778	\$42,000,000	4%

**3. Constable Hook**

As discussed in the IM 2020 Fourth Quarter Report, this project has been identified to be removed from the ES 2 Program and replaced with the Front Street project. Should the Front Street project be approved for inclusion in the ES 2 Program, it will be covered in this section, otherwise a placeholder will remain here to maintain consistency in the project/section numbering throughout future IM reports.

The actual spend for Constable Hook as compared to the URB approved estimate is provided below. PSE&G has informed the IM it will be removing the actual costs associated with the Constable Hook project from ES 2.

Actuals to Date	Estimate	% of Actuals to Estimate
\$115,640	\$5,300,000	2%

**4. Hasbrouck Heights**

During the first quarter of 2021, \$550,796 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$612,000, which brought the total spend to approximately \$1.8 million. Notable activities completed during the fourth quarter of 2020 included:

- Civil and electrical construction packages out for bid;
- Contingency plan electrical layout completed; and,
- State Department of Community Affairs (DCA) permit received.



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As reported in the IM 2020 Third Quarter Report, a Covid-19 related delay on the associated Hasbrouck Heights 69kV project resulted in a delay to the Hasbrouck Heights ES 2 project. In the IM 2020 Fourth Quarter Report it was reported that this delay shifted the forecasted in-service date to April 2023 (was previously November-December 2022). PSE&G since identified that the April 2023 forecasted in-service date reflected the capacitor bank in-service date, with the project in-service date now updated to February 2023 as that is reflective of the switchgear in-service date.

The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. [The total project forecast increased from approximately \\$17.9 million as of the end of 2020 to \\$20.5 million as of the end of the first quarter of 2021, which was primarily driven by civil construction bids coming in higher than estimated \(\\$1.2 million\) and higher dewatering estimates based on site conditions \(\\$1.3 million\).](#)

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$149,848	\$1,129,934	\$550,795	\$1,146,217	\$254,070	\$4,584,100	\$12,659,663

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,830,577	\$18,000,000	10%

**5. Kingsland**

During the first quarter of 2021, \$30,621 was spent on the Kingsland project compared to a forecast of \$42,000, which brought the total spend to \$344,400. There continued to be minimal activities performed on this project during the first quarter of 2021.

The actual spend by quarter for Kingsland as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$104,112	\$209,667	\$30,621	\$42,000	\$83,542	\$307,674	\$5,640,925

Actuals to Date	Estimate	% of Actuals to Estimate
\$344,400	\$8,300,000	4%

**6. Lakeside Avenue**

During the first quarter of 2021, \$178,973 was spent on the Lakeside Avenue project compared to a forecast of approximately \$73,000. The variance in first quarter spend was largely driven by the early completion of the key drawing package milestone that was previously forecasted for May 2021. Other notable activities completed during the first quarter of 2021 included the issuance of the switchgear PO.

The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>			<i>Forecast</i>			
\$148,943	\$453,994	\$178,973	\$190,952	\$111,167	\$241,028	\$38,031,221

Actuals to Date	Estimate	% of Actuals to Estimate
\$781,910	\$47,900,000	2%

### 7. Leonia

During the first quarter of 2021, approximately \$2.8 million was spent on the Leonia project compared to a forecast of approximately \$2.2 million, which brought the total spend to approximately \$8.9 million. The variance in first quarter spend was primarily the result of the in-service date of the temporary switchgear advancing and cable and conduit relocation work not forecasted but needed to be completed to prepare the switchgear foundation in advance of the switchgear delivery. Other notable activities completed during the first quarter of 2021 included:

- Civil and electrical construction phases 2/3 out for bid and PO issued;
- State DCA permit (phase 2) received; and,
- Conceptual level estimate completed.

Construction at Leonia, which started in August 2020, has advanced to 38% complete inside plant as of the end of the first quarter of 2021, up from 35% complete as of the end of 2020, with the total project reported at 46% complete.

The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. [The total project forecast decreased from approximately \\$30.4 million as of the end of 2020 to approximately \\$25.1 million as of the end of the first quarter of 2021, which was driven by civil and electrical construction awards coming in lower than estimated.](#)

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$44,792	\$6,033,379	\$2,809,628	\$4,243,320	\$1,475,002	\$1,478,341	\$8,998,442

Actuals to Date	Estimate	% of Actuals to Estimate
\$8,887,799	\$32,200,000	27%

### 8. Market Street

During the first quarter of 2021, \$4,035,880 was spent on the Market Street project compared to a forecast of approximately \$3.8 million, which brought the total spend to approximately \$20.3 million. Notable activities completed during the first quarter of 2021 included the receipt of the Soil Conservation District (SCD) permit.

Construction at Market Street, which started in August 2020, advanced to 75% complete outside plant as of the end of the first quarter of 2021, up from 60% as of the end of 2020. Inside plant construction is anticipated to begin in September 2021 and the overall project is reported at 64% complete as of the end of the first quarter of 2021.

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

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Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>			<i>Forecast</i>			
\$251,193	\$16,079,601	\$4,035,880	\$3,064,249	\$1,452,036	\$1,138,089	\$153,432

Actuals to Date	Estimate	% of Actuals to Estimate
\$20,366,674	\$26,900,000	76%

**9. Meadow Road**

During the first quarter of 2021, \$117,672 was spent on the Meadow Road project compared to a forecast of \$94,000, which brought the total spend to approximately \$716,000. The New Jersey Department of Environmental Protection (NJDEP) Flood Hazard Area permit was submitted during the first quarter of 2021 and there were minimal other activities on the Meadow Road project during the first quarter of 2020, with the bulk of this project's activities planned for 2022-2023.

The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>			<i>Forecast</i>			
\$63,128	\$535,081	\$117,672	\$84,000	\$69,000	\$79,000	\$6,377,998

Actuals to Date	Estimate	% of Actuals to Estimate
\$715,881	\$9,000,000	8%

**10. Orange Valley**

During the first quarter of 2021, \$7,291 was spent on the Orange Valley project compared to a forecast of approximately \$152,000, which brought the total spend to approximately \$447,000. The variance in first quarter spend was largely the result of the project re-allocating an engineering invoice between this ES 2 project and the 69kV project [that had incorrectly been included in the ES 2 project forecast](#), along with less project management, engineering, and permitting spend compared to the forecast. There were minimal activities on the Orange Valley project during the first quarter of 2020, with the bulk of this project's activities planned for 2022-2023.

The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>			<i>Forecast</i>			
\$77,029	\$362,895	\$7,291	\$125,588	\$333,622	\$271,428	\$14,526,081

Actuals to Date	Estimate	% of Actuals to Estimate
\$447,215	\$20,200,000	2%

**11. Ridgefield 13kV**

During the first quarter of 2021, \$3,215,967 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$2.6 million, which brought the total spend to approximately \$9.7 million. The variance in first quarter spend was largely the result of additional work required to support the temporary switchgear going in-service and the Division pulling more cable than anticipated to keep progress on the project and to meet the demolition timeframe requirements. Notable activities completed during the first quarter of 2021 included:

- Temporary switchgear placed in-service;
- Phase 2 civil and electrical drawings IFC; and,
- New Jersey Sports & Exposition Authority (NJSEA) piles/foundation permits received.

Construction at Ridgefield 13kV remained at a reported 33% complete inside plant as of the end of the first quarter of 2021, with the total project at a reported 40% completion.

The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$205,982	\$6,232,692	\$3,215,967	\$3,366,788	\$2,326,500	\$1,697,213	\$8,211,711

Actuals to Date	Estimate	% of Actuals to Estimate
\$9,654,641	\$25,500,000	38%

**12. Ridgefield 4kV**

During the first quarter of 2021, \$2,808,765 was spent on the Ridgefield 4kV project compared to a forecast of approximately \$4.8 million, which brought the total spend to approximately \$14.2 million. The variance in first quarter spend was driven by the outside plan manhole rebuilding being delayed due to bids received later than expected and Division cable pulling postponed due to weather and more urgent work performed on the Ridgefield 13kV project that shifted [the available resources](#). [With the resources for both the Ridgefield 4kV and Ridgefield 13kV projects limited due to weather impacts, allocating the available resources to the Ridgefield 13kV project maintained that project's critical path with no impact to the Ridgefield 4kV critical path.](#) Activities completed during the first quarter of 2021 on the Ridgefield 4kV project included the civil and electrical demolition drawings IFC.

Construction at Ridgefield 4kV, which started in June 2020, has advanced to 88% complete, up from 72% at the end of 2020. The total project is reported at 81% complete as of the end of the first quarter of 2021.

In March 2021, the Definitive level estimate was submitted and approved before the URB. This Definitive level estimate reduced the total Ridgefield 4kV project estimate to \$19.5 million from the previously approved \$20.2 million, which included an increase to the base estimate (\$0.9 million) that was offset by a reduction to R&C (-\$1.6 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by:

- Additional manhole rebuild work (\$0.8 million);
- Additional underground cable and overhead switching procedures (\$0.5 million);

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- Higher costs for paving and cable pulling (\$0.4 million); and,
- Less Division contractor surcharges (-\$0.8 million).

The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>			<i>Forecast</i>			
\$143,414	\$11,239,534	\$2,808,765	\$3,036,469	\$1,460,530	\$81,000	\$60,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$14,191,713	\$19,500,000	73%

### 13. State Street

During the first quarter of 2021, \$237,415 was spent on the State Street project compared to a forecast of approximately \$210,000, which brought the total spend to approximately \$977,000. The activities performed on State Street during the first quarter of 2021 primarily related to advancing the engineering work in preparation of the start of civil construction in the second quarter.

The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$77,590	\$662,148	\$237,415	\$767,376	\$6,240,801	\$1,119,853	\$29,823,756

Actuals to Date	Estimate	% of Actuals to Estimate
\$977,153	\$45,100,000	2%

### 14. Toney's Brook

During the first quarter of 2021, \$88,947 was spent on the Toney's Brook project compared to a forecast of approximately \$89,000, which brought the total spend to approximately \$674,000. Notable activities completed during the first quarter of 2021 included the electrical construction work going out for bid.

In February 2021, the Conceptual level estimate was submitted and approved before the URB. This Conceptual level estimate reduced the total Toney's Brook project estimate to \$18.8 million from the previously approved \$19.7 million, which included an increase to the base estimate (\$1.9 million) that was offset by a reduction to R&C (-\$2.8 million). The reduction to R&C was driven by the current view of the risk profile on the project while the changes to the base estimate were driven by:

- Higher concrete quantities (\$0.9 million);
- Changing in T&D surcharge methodology (\$0.6 million); and,
- Switchgear award higher than estimated (\$0.4 million).

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The change in T&D surcharge methodology caused an increase in Outside Service Electrical construction planned surcharge rate which increased by over 45% from 2019 to 2020. As a result, approximately \$587,000 of the \$0.6 million increase on Toney’s Brook Conceptual level estimate was attributed to increase in electrical construction. The remainder of the \$0.6 million increase is associated with Project Management labor.

The actual spend by quarter for Toney’s Brook as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>			<i>Forecast</i>			
\$211,940	\$373,096	\$88,947	\$330,962	\$200,548	\$207,809	\$14,792,644

Actuals to Date	Estimate	% of Actuals to Estimate
\$673,983	\$18,800,000	4%

### 15. Waverly

During the first quarter of 2021, \$659,572 was spent on the Waverly project compared to a forecast of approximately \$490,000, which brought the total spend to approximately \$3.2 million. The variance in first quarter spend was largely driven by phase 1 civil construction and environmental progress advancing more than forecasted due to favorable weather conditions. Notable activities completed during the first quarter of 2021 included:

- Vendor drawings received (final switchgear arrangement and controls); and,
- Phase 2 electrical construction out for bid;

As with the Clay Street project, at the beginning of the quarter, there was the potential for delay on the site plan approval stemming from the planning board’s Covid-19 protocols. However, the project team requested a special meeting to maintain the project’s schedule, which was held in March 2021. The Newark Planning Board denied the site plan application at this meeting, which requires the project team to prepare a new site plan application. The comments received from the Newark Planning Board were generally aesthetic in nature (e.g. comments on why a green roof was not considered, art on exterior fence, height of lightning mast, etc.) and PSE&G is preparing to follow-up with a public workshop and meetings with the City to resolve the comments and prepare a revised site plan. The revised site plan is expected to be submitted in the coming months. Due to the site plan not being approved in the March 2021 meeting, the remaining aspects of the entire project have shifted out, including the commencement of phase 2 construction from May 2021 to a forecasted January 2022, commencement of phase 3 construction from February 2022 to October 2022, and pushing the final in-service date for Transformer #3 from the fourth quarter of 2023 to the third quarter of 2024 (the other in-service dates for the Waverly substation, including the other transformers, the 4kV switchgear, and the 26kV switchgear shifted from December 2022 to November 2023). PSE&G’s preliminary estimate on the changes stemming from the revised site plan indicate a resulting cost increase of approximately \$2.6 million to the project, which is driven by additional engineering, revised fencing and external façade improvements, and the extended project duration.

Construction at Waverly, with phase 1 having started in October 2020, advanced to 6% complete as of the end of the first quarter of 2021.

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The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2025
<i>Actuals</i>			<i>Forecast</i>			
\$103,748	\$2,460,815	\$659,572	\$2,832,258	\$562,468	\$489,899	\$26,697,409

Actuals to Date	Estimate	% of Actuals to Estimate
\$3,224,135	\$35,400,000	9%

## 16. Woodlynn

During the first quarter of 2021, \$282,187 was spent on the Woodlynn project compared to a forecast of approximately \$276,000, which brought the total spend to approximately \$1.1 million. Notable activities completed during the fourth quarter of 2020 included the site plan resolution compliance achieved and State DCA permit received.

The actual spend by quarter for Woodlynn as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>			<i>Forecast</i>			
\$110,982	\$993,298	\$282,187	\$157,336	\$1,429,454	\$923,989	\$14,411,606

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,386,467	\$19,400,000	6%

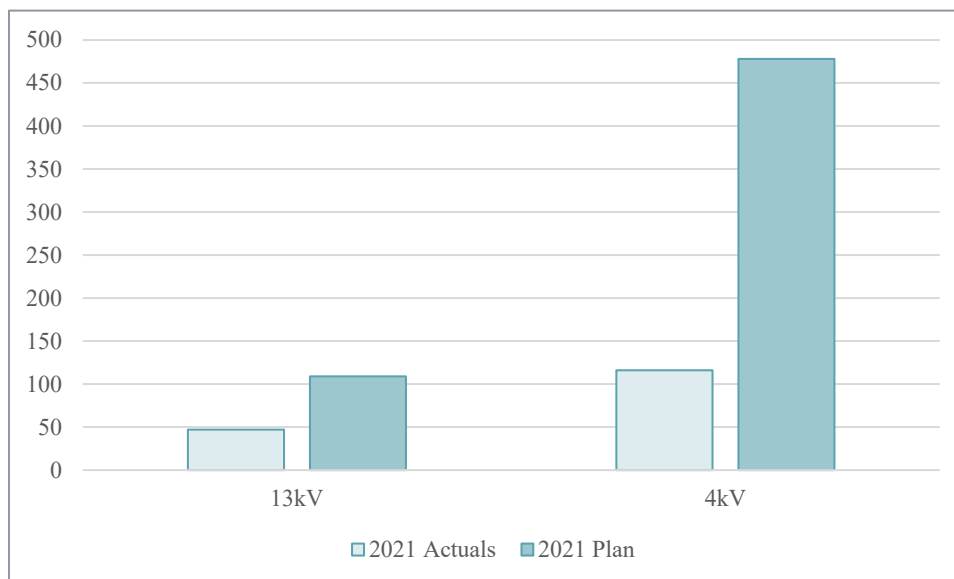
## B. Contingency Reconfiguration

During the first quarter of 2021, work continued to progress in the Contingency Reconfiguration subprogram with all four Divisions continuing to install reclosers with a total of 163 installed during the quarter and 167 commissioned. **Table 13 – ES 2 Recloser Status as of March 31, 2021** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the current status of engineering, installation, and commissioning; while **Figure 3 – 2021 Recloser Installations as of March 31, 2021** compares the installed reclosers as of the end of the first quarter of 2021 against PSE&G's 2021 installation plan.

*Table 13 – ES 2 Recloser Status as of March 31, 2021*

Type	Engineering Packages Completed (1 recloser ea.)			Reclosers Installed			Reclosers Commissioned		
	Q1 Qty.	2021 Total	Program Total	Q1 Qty.	2021 Total	Program Total	Q1 Qty.	2021 Total	Program Total
13kV	52	52	751	47	47	708	51	51	695
4kV	77	77	331	116	116	273	116	116	273
<b>Total</b>	129	129	1,082	163	163	981	167	167	968

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**Figure 3 – 2021 Recloser Installations as of March 31, 2021**

As also shown in **Figure 3**, the 2021 installation plan shifts the focus primarily to the 4kV reclosers from the 13kV reclosers that were prioritized in 2020. As also shown in **Table 13** and **Figure 3**, PSE&G maintained progress during the first quarter of 2021 and stayed on track for the 2021 plan despite some weather impacts and resource constraints in the Metro Division. The weather impacts were primarily 10 snow days during February and piles of snow at pole locations, which was recovered through the use of overtime and weekend work.<sup>1</sup> The resource constraints in the Metro Division stemmed from attrition at the end of the year and two larger projects in the Division with firm in-service dates, leading to a shortage of approximately 30 full-time equivalents compared to normal. While new hires have been brought on board, they will not be able to work on crews until their training is completed. To mitigate impacts, PSE&G engaged a contractor to perform the pole settings from the recloser scope, which commenced early in the second quarter of 2021 and will continue until the internal resources are available. PSE&G estimates that the cost of outsourcing the pole setting and preparation work in the Metro Division will result in a less than 1% increase to the cost per unit of the reclosers, or a total cost of approximately \$784,000. By outsourcing this scope, PSE&G will allow the Metro Division recloser scope to complete earlier than it otherwise would, which avoids an estimated \$100,000 in additional carrying costs and avoids additional resource constraints from the Fuse Saver work commencing in 2022 overlapping with the recloser work. As also shown in **Figure 3**, the 2021 installation plan shifts the focus primarily to the 4kV reclosers from the 13kV reclosers that were prioritized in 2020.

The Fuse Saver pilot program commenced in November 2020 and was primarily completed in January 2021.<sup>2</sup> In total, this phase of the Fuse Saver pilot program included the installation and commissioning of

<sup>1</sup> As discussed in Appendix A to the IM 2020 Fourth Quarter Report (in response to RCR-INF-8), unitized work such as reclosers do not have a labor rate premium associated with weekend/overtime work. The schedule is made in advance and resources are planned accordingly in order to achieve the installation rate necessary to install the planned number of units within the scheduled timeframe, thus the cost per unit does not change provided all units planned for the period are completed.

<sup>2</sup> In the second quarter of 2021, PSE&G decided to install the remaining 34 Fuse Savers in its inventory to capture additional cost and performance data to better inform the planning and execution of the full scope of work. These installations were completed across the second and third quarters of 2021.



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80 Fuse Saver devices. As noted in the IM 2020 Second Quarter Report, PSE&G's Asset Management group determined a pilot program would be initiated prior to the full scope to ensure these new devices work as intended. During execution of the pilot program, PSE&G observed factors that will help it prepare for execution of the full Fuse Saver scope, including installation specifications (the remote-control unit must be placed directly below the Fuse Saver to avoid communications issues), and cost elements for some of the locations (new poles, traffic control, etc.). While monitoring performance of the installed Fuse Savers, PSE&G experienced other communication issues between the Fuse Savers and the remote control unit (RCU), wherein the supervisory control and data acquisition (SCADA) communication indicated a false open/close alarm on some of the devices. Siemens has provided a prototype Fuse Saver to address the communication issues, which [have affected approximately 10% of the installed devices. The solution to resolve these communication issues includes modifying the external antenna \(and modifying the RCU enclosure to accommodate the antenna\).](#) PSE&G will monitor [the devices](#) to ensure [the identified solution](#) addresses the issues prior to placing additional [Fuse Saver](#) orders. Because of this, the full Fuse Saver scope is no longer anticipated to commence in 2021, as it awaits approval by PSE&G's Asset Management group to proceed with the full scope, aside from the installation of additional units from existing stock.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of March 31, 2021**. This table also shows the forecasted dates as of the end of 2020 to show movement to the forecast as of the end of the first quarter of 2021.

**Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of March 31, 2021**

Scope & Division		Q4 2020 Forecasted Completion Date	Q1 2021 Forecasted Completion Date
Reclosers	Central	9/30/2021	12/31/2021
	Metro	12/31/2021	12/31/2021
	Palisades	12/31/2021	11/30/2021
	Southern	12/31/2021	12/31/2021
Fuse Savers	Central	6/30/2023	12/30/2023
	Metro	6/30/2023	12/30/2023
	Palisades	5/31/2023	12/30/2023
	Southern	6/30/2023	12/30/2023

As shown in **Table 14**, the forecasted completion for each Division's Fuse Saver program slipped approximately six months, which was driven by a delay to the start of this scope while PSE&G evaluates the performance of the devices installed in the Fuse Saver pilot program. The three-month slippage of the Central Division recloser scope was driven by additional units added to the scope. The one-month advancement in the Palisades Division recloser scope was driven by schedule adjustments that reflected increased monthly installations.

The Contingency Reconfiguration subprogram costs through the end of the first quarter of 2021 are presented in **Table 15 – ES 2 Contingency Reconfiguration Costs as of March 31, 2021**.

**Table 15 – Contingency Reconfiguration Costs as of March 31, 2021**

Scope & Division	2019	2020	Q1 2021	Total to Date	Forecast	% of Actuals to Forecast
	Actuals					
Central	\$2,737,167	\$12,050,820	\$3,007,686	\$17,795,674	\$24,596,856	72%

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Scope & Division		2019	2020	Q1 2021	Total to Date	Forecast	% of Actuals to Forecast
		Actuals					
	Metro	\$2,231,431	\$10,726,610	\$587,396	\$13,545,438	\$22,390,145	60%
	Palisades	\$2,515,569	\$12,119,436	\$3,109,037	\$17,744,042	\$24,889,624	71%
	Southern	\$2,081,220	\$12,405,684	\$5,008,143	\$19,495,047	\$28,712,956	68%
Fuse Savers	Central	\$9,970	\$789,937	\$375,811	\$1,175,719	\$12,848,369	9%
	Metro	\$7,557	\$561,915	\$216,511	\$785,983	\$11,800,845	7%
	Palisades	\$7,468	\$522,454	\$133,552	\$663,475	\$9,164,257	7%
	Southern	\$9,792	\$859,014	\$65,018	\$933,824	\$14,524,371	6%
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$12,503,156</b>	<b>\$72,139,200</b>	<b>\$148,927,422</b>	<b>48%</b>

Findings & Observations:

- PSE&G maintained progress during the first quarter of 2021 and stayed on track for the 2021 plan despite some weather impacts and resource constraints experienced in the Metro Division.
- 80 Fuse Saver devices have been installed as part of the pilot program for these devices. PSE&G is monitoring the performance of these initial devices and has already gleaned information that will better inform the planning and execution of the full scope, including specific installation requirements and cost elements, such as additional traffic control required, from the actual installations to date.
- The forecasted completion of the recloser and Fuse Saver scopes of this subprogram saw some adjustment during the first quarter of 2021. For the reclosers, the Central Division recloser scope moving three months out to December 2021 based on additional units added to the scope, while the Palisades Division saw a one-month advancement to November 2021 based on schedule adjustment that reflected increased monthly installations. For the Fuse Savers, each Division saw a slip of six to seven months reflective of the delay to the start of the full scope of this work.
- The Contingency Reconfiguration subprogram forecast decreased from \$162.8 million at the end of 2020 to \$148.9 million as of the end of the first quarter of 2021. This was largely driven by an approximate \$14 million reduction to the Fuse Saver scope due to the number of units planned for the Program decreasing from 2,572 to 1,967 due to the higher cost per unit observed in the pilot program.

**C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system.

As reported in the IM 2020 Second Quarter Report, PSE&G made the strategic decision to focus on new recloser installations and has delayed the ramp-up in retrofit installations from August 2020 to January 2021 due to resource constraints. No overall impacts are expected from this decision and PSE&G plans to regain the planned retrofit installations by the middle of 2021 as it shifts focus from new recloser installations to the retrofit reclosers. During the first quarter of 2021, retrofit installations ramped up with 557 installations completed during the quarter against a target of 565. The first quarter installations were also impacted by weather, particularly during the month of February where only 71 installations took place. However, the performance in January and March allowed PSE&G to nearly reach its first quarter

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target. In total, 749 retrofit reclosers have been installed on the Program through the end of the first quarter out of a total program forecast of 2,449 (which is periodically reviewed and updated).

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with two of 41 installation projects since removed due to the scheduled elimination of the targeted substations. The list of identified fiber installation and cutover projects is presented in **Table 16 – Fiber Projects by Division**.

**Table 16 – Fiber Projects by Division**

<b>Division</b>	<b>Fiber Installation</b>	<b>Fiber Cutover</b>
<b>Central</b>	Cranford; Elizabeth Sub HQ; Rahway; Hadley Road HQ; Roselle; Central HQ; Carteret; Edison; Keasby; Mechanic Street; First Street; Lehigh Avenue	Elizabeth; Henry Street
<b>Metro</b>	East Orange; Metro HQ; Bloomfield; Central Avenue; Haldeon; Irvington; Irvington Sub HQ; Montclair; South Orange; Norfolk Street; Waverly	-
<b>Palisades</b>	Bergen Point; Hackensack Sub HQ; Fort Lee; Harrison; Ridgewood; West New York; Palisades HQ; Culver Avenue; Morgan Street; Howell Street	Tonnelle Avenue; Spring Valley Road; Union City; Fairview; Polk Street; West Orange
<b>Southern</b>	Southern HQ; Princeton; Chauncey Street; Bordentown; Haddon Heights; Thirty Second Street	Delair; East Riverton; Riverside; Mount Holly
<b>Total</b>	<b>39 projects</b>	<b>12 projects</b>

During the first quarter of 2021, five additional fiber installation projects (Bergen Point, East Orange, Elizabeth Sub HQ, Metro HQ, and Rahway) and three additional fiber cutover projects (Elizabeth, Spring Valley Road, and Union City) were placed in-service. This brought the total projects in-service as of the end of the first quarter of 2021 to eight for the fiber installation projects and eight for the fiber cutover projects. **Table 17 – Fiber Projects Status as of March 31, 2021** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of the first quarter of 2021.

**Table 17 – Fiber Projects Status as of March 31, 2021**

<b>Project Name</b>	<b>Q1 2021 Status</b>
<b>Fiber Installation Projects</b>	
Bergen Point	In-Service (Q1 2021)
Bloomfield	Outside Plant (OP) IFC issued; Construction commenced
Bordentown	Preliminary engineering
Carteret	Preliminary engineering
Central Ave	Preliminary engineering
Central HQ	Preliminary engineering
Chauncey Street	OP construction commenced; First OP fiber run completed; TFI rack delivered
Cranford	In-Service (Q4 2020)
Culver Ave	Preliminary engineering
East Orange	In-Service (Q1 2021)
Edison	Preliminary engineering
Elizabeth Sub HQ	In-Service (Q1 2021)
First Street	OP IFC issued
Fort Lee	OP IFC issued; Construction commenced
Hackensack Sub HQ	In-Service (Q4 2020)
Haddon Heights	Preliminary engineering

Project Name	Q1 2021 Status
Hadley Rd HQ	OP IFC issued; Construction commenced
Haledon	Preliminary engineering
Harrison	OP construction commenced; Commenced battery upgrade installation
Howell Street	Preliminary engineering
Irvington	Preliminary engineering
Irvington Sub HQ	Preliminary engineering
Keasbey	Preliminary engineering
Lehigh Avenue	Preliminary engineering
Mechanic Street	Preliminary engineering
Metro HQ	In-Service (Q1 2021)
Montclair	Preliminary engineering
Morgan Street	Preliminary engineering
Norfolk St	Preliminary engineering
Palisades HQ	Inside Plant (IP)/OP IFC; Construction commenced
Princeton	OP construction commenced
Rahway	In-Service (Q1 2021)
Ridgewood	Preliminary engineering
Roselle	OP construction commenced; Completed both OP fiber runs; completed IP IFC; completed battery upgrade installation
So Orange	Preliminary engineering
Southern HQ	In-Service (Q4 2020)
Thirty Second Street	Preliminary engineering
Waverly	Preliminary engineering
West New York	Preliminary engineering
<b>Fiber Cutover Projects</b>	
Delair	In-Service (Q4 2020)
East Riverton	In-Service (Q4 2020)
Elizabeth	In-Service (Q1 2021)
Fairview	Completion dependent upon Fort Lee fiber installation project (tentative start of construction in September 2021)
Henry St	Battery rack installation pending; site visit with Central Division scheduled
Mount Holly	In-Service (Q4 2020)
Polk Street	Completion dependent upon West New York fiber installation project (engineering in progress)
Riverside	In-Service (Q4 2020)
Spring Valley Rd	In-Service (Q1 2021)
Tonnelle Ave	In-Service (Q4 2020)
Union City	In-Service (Q1 2021)
West Orange	Completion dependent upon redundant link to Montclair substation being ready (two redundant fiber links required for each router to support reliability guidelines)

The Grid Modernization – Communication System subprogram costs through the end of the first quarter of 2021 are presented in **Table 18 – ES 2 Grid Modernization – Communication System Costs as of March 31, 2021**.

**Table 18 – ES 2 Grid Modernization – Communication System Costs as of March 31, 2021**

Scope & Division		2019	2020	Q1 2021	Total to Date	Forecast	% of Actuals to Forecast
		<i>Actuals</i>					
Retrofit	Central	\$0	\$884,278	\$1,067,295	\$1,951,572	\$7,046,140	28%
	Metro	\$0	\$818,620	\$436,089	\$1,254,709	\$5,958,867	21%
	Palisades	\$0	\$825,174	\$754,869	\$1,580,043	\$6,507,561	24%

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Scope & Division		2019	2020	Q1 2021	Total to Date	Forecast	% of Actuals to Forecast
<i>Actuals</i>							
	Southern	\$0	\$929,058	\$956,444	\$1,885,502	\$7,821,332	24%
<b>Fiber</b>	Central	\$1,691	\$2,418,851	\$796,586	\$3,217,128	\$7,479,716	43%
	Metro	\$1,457	\$1,866,697	\$340,713	\$2,208,867	\$5,857,647	38%
	Palisades	\$1,582	\$2,046,762	\$248,558	\$2,296,902	\$4,166,762	55%
	Southern	\$4,731	\$910,483	\$645,219	\$1,560,434	\$3,258,924	48%
	Cutovers*	\$0	\$876,502	\$323,458	\$1,199,960	\$2,768,762	43%
<b>Wireless Network</b>		\$74,306	\$6,035,441	\$296,946	\$6,396,832	\$7,737,133	83%
<b>Bulk Purchase**</b>		\$0	\$1,524,874	\$450,013	\$1,974,887	\$0	-
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$6,306,330</b>	<b>\$25,526,835</b>	<b>\$58,602,845</b>	<b>44%</b>

\*-Includes fiber communication cutovers and substation remote terminal unit (RTU) cutovers (the latter of which began having spent in Q1 2021).

\*\*-.The Bulk Purchase account contains expenditures for the bulk purchase of materials in the subprogram. As these materials are used and installed in the field, the Bulk Purchase account is credited with the actual spend then assigned to the appropriate Division, thus at the end of the Program, the balance of this Bulk Purchase account is expected to be \$0.

Findings & Observations:

- During the first quarter of 2021, retrofit installations ramped up as planned with 557 installations completed during the quarter against a target of 565. The first quarter installations were also impacted by weather, particularly during the month of February where only 71 installations took place. However, the performance in January and March allowed PSE&G to nearly reach its first quarter target. In total, 749 retrofit reclosers have been installed on the Program through the end of the first quarter of 2021 out of a total program forecast of 2,449 (which is periodically reviewed and updated).
- Five fiber installation and three fiber cutover projects were placed in-service during the first quarter of 2021, bringing the total number of projects in-service to eight fiber installation projects and eight fiber cutover projects.
- The Grid Modernization – Communication System subprogram forecast remained fairly constant from the end of 2020 to the end of the first quarter of 2021, with an approximate \$700,000 decrease to the forecast (or -1%). The cutover forecast increased approximately \$1.7 million, which was driven by the substation RTU cutover scope being split off from the retrofit work breakdown structure (which resulted in the retrofit forecast decreasing by a like amount).

**D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS), the Outage Management System (OMS), and ADMS platform upgrades. The primary activities in 2021 are focused on the continued development of the systems and platforms that comprise this subprogram.

The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the first quarter of 2021 are presented as follows:

**DMS/DERMS**

- Scope: Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- Q1 2021 Activities:
  - Conducted Monarch demonstration session.
  - Conducted Advanced Metering Infrastructure (AMI) use case follow-up meeting.

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- Completed PSEG application design use case draft document review.
- Completed out feeder and substation device ID in SCADA document.
- Populated DERMS workbook items.
- Discussed DMS data tables in geographic information system (GIS) and their maintenance.
- Forecasted Completion as of the end of the first quarter of 2021: 10/28/2022.

**OMS**

- Scope: Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G's network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years' worth of existing OMS data will be migrated into the new system as well.
- Q1 2021 Activities:
  - Finalized outage data warehouse architecture.
  - Interviewed SAP architect for SAP design.
  - Conducted design workshops.
  - Conducted Jira training.
  - Attended product showcases for DMS, OMS, and DERMS.
  - Attended AMI planning meetings.
  - Finalized GIS interface design for customer and premises.
  - Conducted Manager OMS overview workshop.
  - Conducted performance testing meetings with Long Island and Quality Assurance teams.
  - Conducted workshops for data conversion and reporting.
  - Conducted initial AMI/OMS interface meetings.
- Forecasted Completion as of the end of the first quarter of 2021: 5/20/2022.

**ADMS Platform**

- Scope: Replace, enhance, and expand the existing distribution supervisory control and data acquisition (DSCADA) platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q1 2021 Activities:
  - Prepared for testing alignment with Quality Assurance team.
- Forecasted Completion as of the end of the first quarter of 2021: 12/10/2021.

The Grid Modernization – ADMS subprogram costs through the end of the first quarter of 2021 are presented in **Table 19 – ES 2 Grid Modernization – ADMS Costs as of March 31, 2021.**

**Table 19 – ES 2 Grid Modernization – ADMS Costs as of March 31, 2021**

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$36,213	\$16,447,624	\$2,488,980	\$2,518,103	\$2,800,945	\$3,428,855	\$12,654,786

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Actuals to Date	Forecast	% of Actuals to Forecast
\$18,972,817	\$40,375,507	47%

Findings & Observations:

- Resource constraints remain an area of focus on the subprogram due to the limited number and availability of the specific resources needed to support the subprogram. This has caused some activities to shift, but with no overall impact to the subprogram completion.
- The ADMS forecast remained essentially unchanged at the end of the first quarter of 2021 from the end of 2020 (an increase of \$1,368). Likewise, the forecasted completion dates for the primary scopes of DMS/DERMS, OMS, and ADMS Platform remained unchanged from the end of 2020.
- As initially reported in the IM 2020 Third Quarter Report, additional hardware needed for the subprogram resulted in the cost forecast exceeding the Stipulation amount by approximately \$5.4 million. While the forecast has remained steady since then, in July 2021, PSE&G made the decision to transfer \$7.7 million in funds from the Grid Modernization – Communication System subprogram, which has been consistently under its Stipulation budget by approximately \$12 million, driven largely by the savings realized in the wireless communication network scope (also discussed in the IM 2020 Third Quarter Report).

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric outside plant higher design and construction standards and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>3</sup> The outside plant higher design and construction standards work is planned to commence in January 2022. In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. These four stations and their current estimate compared to the actuals to date are provided in **Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of March 31, 2021**.

**Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of March 31, 2021**

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Hamilton	Study	\$14,500,000	\$3,700,000	\$18,200,000	\$599,155	3%	10/12/2022 (↑)
2. Paramus	Study	\$14,800,000	\$5,400,000	\$20,200,000	\$1,199,046	6%	11/7/2022 (↓)
3. Plainfield	Study	\$18,400,000	\$4,200,000	\$22,600,000	\$896,956	4%	10/6/2022
4. Woodbury	Study	\$15,400,000	\$3,300,000	\$18,700,000	\$1,091,303	6%	12/27/2022 (↑)

<sup>3</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

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Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
<p>*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).            (↑)-Indicates the forecasted in-service date advanced from the prior quarter.            (↓)-Indicates the forecasted in-service date slipped from the prior quarter.</p>							

As shown in **Table 20**, of the four current life cycle station upgrade projects, one had no change in the forecasted in-service date from the end of 2020 to the first quarter of 2021 (Plainfield), while Hamilton's forecasted in-service date advanced twelve days, Woodbury's forecasted in-service date advanced one day, and Paramus's forecasted in-service date slipped 40 days in this period. Given the relatively small magnitude of these changes, the IM has not delved further into the schedule slippage on these projects, but will continue to monitor for potential trends. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

### 1. Hamilton

During the first quarter of 2021, \$236,783 was spent on the Hamilton project against a forecast of approximately \$196,000. This brought total spend through the end of the first quarter of 2021 on the project to approximately \$600,000. Notable activities conducted during the first quarter of 2021 included:

- Site plan hearing held/site plan approved;
- SCD permit issued; and,
- Vendor drawings received (final switchgear arrangement).

The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$0	\$362,372	\$236,783	\$364,637	\$1,541,603	\$1,787,646	\$10,215,337

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$599,155	\$18,200,000	\$14,508,379	3%

### 2. Paramus

During the first quarter of 2021, \$358,846 was spent on the Paramus project against a forecast of approximately \$371,000. This brought total spend through the end of the first quarter of 2021 on the project to approximately \$1.2 million. Notable activities conducted during the first quarter of 2021 included:

- Site plan application submitted;
- Soil Conservation District (SCD) permit issued;
- Civil and electrical contingency switchgear drawings IFC; and,
- Vendor drawings received (final switchgear controls).



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The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>			<i>Forecast</i>			
\$0	\$840,200	\$358,846	\$3,896,282	\$1,125,400	\$976,500	\$ 10,914,117

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,199,046	\$20,200,000	\$18,111,345	6%

**3. Plainfield**

During the first quarter of 2021, \$214,632 was spent on the Plainfield project against a forecast of approximately \$273,000. This brought total spend through the end of the first quarter of 2021 on the project to approximately \$900,000. Notable activities conducted during the first quarter of 2021 included:

- Site plan hearing held/site plan approved; and,
- SCD permit issued.

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$0	\$682,325	\$214,632	\$1,058,053	\$1,023,860	\$1,260,555	\$14,562,283

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$896,657	\$22,600,000	\$18,801,707	4%

**4. Woodbury**

During the first quarter of 2021, \$540,138 was spent on the Woodbury project against a forecast of approximately \$595,000. This brought the total spend on the project to approximately \$1.09 million. Notable activities conducted during the first quarter of 2021 included:

- License and permitting package issued;
- Civil and electrical drawings IFC; and,
- Site plan hearing held/site plan approved.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$0	\$551,165	\$540,138	\$310,000	\$127,913	\$725,036	\$12,191,648

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,091,303	\$18,700,000	\$14,445,900	6%

Findings & Observations:

- The primary activities during the first quarter of 2021 continued to center around the life cycle station upgrade projects with the receipt of vendor drawings (switchgear controls/switchgear arrangement) and the advancement of the licensing and permitting design packages. The Hamilton, Plainfield, and Woodbury projects had site plan hearings held, resulting in approval of the site plans, while the Paramus project submitted its site plan application in March 2021.
- With the exception of the Paramus project, there was only minor variations in the life cycle station upgrade project forecasts from the end of 2020 to the end of the first quarter of 2021. On the Paramus project, the forecast increased \$1.3 million (or 8%) in this period to \$18.1 million, which was primarily the result of the POs switchgear and other miscellaneous equipment coming in higher than initially estimated. Despite this forecast increase, the Paramus project remains forecasted under its current estimate of \$20.2 million.
- There was minor movement to the forecasted in-service dates of the four life cycle station upgrade projects, with each forecasted for completion in the fourth quarter of 2022.

F. Gas M&R Station Upgrades

Through the end of the first quarter of 2021, primary activities in the Gas M&R subprogram continued to focus on advancing the engineering at each station and other pre-construction activities such as reviewing scope and permit documents and performing noise and geotechnical studies. **Table 21 – ES 2 Gas M&R Summary Status as of March 31, 2021** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

*Table 21 – ES 2 Gas M&R Summary Status as of March 31, 2021*

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Study	\$24,300,000	\$5,000,000	\$29,300,000	\$1,378,369	5%	Dec 2022 (↑)
2. Central*	Study	\$23,900,000	\$5,100,000	\$29,000,000	\$992,709	3%	Dec 2022 (↑)
3. East Rutherford	Study	\$13,800,000	\$2,700,000	\$16,500,000	\$868,448	5%	Dec 2022
4. Mount Laurel	Study	\$9,400,000	\$2,000,000	\$11,400,000	\$523,484	5%	Dec 2022
5. Paramus*	Study	\$11,500,000	\$2,200,000	\$13,700,000	\$699,147	5%	Dec 2023
6. Westampton	Study	\$8,300,000	\$1,700,000	\$10,000,000	\$1,519,136	15%	Dec 2021
<b>Subprogram Total</b>		<b>\$91,200,000</b>	<b>\$18,700,000</b>	<b>\$109,900,000</b>	<b>\$5,981,294</b>	<b>5%</b>	<b>Dec 2023</b>

\*-Included in the Stipulated Base.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

During the first quarter of 2021, the Camden Study level estimate was approved by the URB at a total estimate of \$29.3 million, while the other projects in the subprogram had their previously approved Study level estimates adjusted with slight reductions in the R&C amounts based on a review of the project risks and the overall subprogram risk profile. The only changes to the forecasted in-service date from the end of 2020 to the end of the first quarter of 2021 were the Camden and Central projects advanced one month from January 2023 to December 2022.

Findings & Observations:

- The primary efforts to date on the subprogram continue to be initial planning efforts, including the prior awarding of bids for the design services on the projects, preparing for issuing the major equipment POs, site surveys, and preparation of permitting packages. Continued engineering and design efforts continue to be a main focus of 2021 first quarter activities.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget. The Camden project had its Study level estimate approved by the URB during the first quarter of 2021, which resulted in the estimate increasing by \$13.9 million. Also during the first quarter of 2021, the R&C funds on each of the Gas M&R projects were evaluated based on the current risk profiles of the projects and the subprogram, which led to a slight reduction in R&C. The overall subprogram remains in line with the Stipulation budget of \$101 million.

1. Camden

Continuing with the preliminary engineering and planning efforts that advanced through 2020, during the first quarter of 2021 notable activities completed on the Camden project included:

- Received permit package for review;
- Submitted permit package to permitting agencies; and,
- Circulated scope documents for internal review.

In February 2021, the Camden project had its Study level estimate approved by the URB. This updated estimate increased the base estimate by \$14.3 million, while reducing the R&C by \$0.4 million, resulting in the total project estimate increasing from \$15.4 million to \$29.3 million. This increase is the result of higher construction costs stemming from the engineer's 50% estimate (\$6.3 million), procurement of material based on received quotes (\$6.1 million), and additional project management, licensing and permitting, and engineering support not included in the Office level estimate (\$1.9 million). [The estimate increase was driven largely by the initial assumption that much of the existing equipment and structures could be reused, which upon further investigation was determined not to be possible and resulted in additional costs for construction and equipment.](#)

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$13,326	\$859,350	\$505,693	\$427,753	\$3,063,471	\$4,145,406	\$15,285,001

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,378,369	\$29,300,000	\$24,300,000	5%

2. Central

Continuing the preliminary engineering and planning efforts that advanced through 2020, during the first quarter of 2021, notable activities completed on the Central project included:

- Received drawing package for review;

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- Submitted permit package to permitting agencies;
- Circulated scope documents for internal review; and,
- Received internal comments for tie-in sequence.

As indicated above, the risk profile to the project and subprogram was reviewed during the first quarter of 2021, which resulted in a slight reduction to the R&C amount of the current estimate for the Central project from \$6.1 million to \$5.1 million, reducing the overall estimate from \$30.0 million to \$29.0 million.

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$6,869	\$670,582	\$315,258	\$158,739	\$2,686,668	\$7,772,398	\$12,289,486

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$992,709	\$29,000,000	\$23,900,000	3%

### 3. East Rutherford

Continuing the preliminary engineering and planning efforts that advanced through 2020, during the first quarter of 2021 notable activities completed on the East Rutherford project included:

- Received preliminary drawing package for review;
- Circulated scope documents for internal review;
- Performed geotechnical fieldwork;
- Received control valve specs for review; and,
- Conducted onsite meeting with Transco to discuss design.

As indicated above, the risk profile to the project and subprogram was reviewed during the first quarter of 2021, which resulted in a slight reduction to the R&C amount of the current estimate for the East Rutherford project from \$3.2 million to \$2.7 million, reducing the overall estimate from \$17.0 million to \$16.5 million.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$9,010	\$521,865	\$337,573	\$254,280	\$179,734	\$1,046,666	\$11,450,871

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$868,448	\$16,500,000	\$13,800,000	5%

**4. Mount Laurel**

Continuing the preliminary engineering and planning efforts that advanced through 2020, during the first quarter of 2021 notable activities completed on the Mount Laurel project included:

- Received permit package for review;
- Circulated scope documents for internal review.

As indicated above, the risk profile to the project and subprogram was reviewed during the first quarter of 2021, which resulted in a slight reduction to the R&C amount of the current estimate for the Mount Laurel project from \$2.4 million to \$2.0 million, reducing the overall estimate from \$11.8 million to \$11.4 million.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>			<i>Forecast</i>			
\$5,965	\$362,167	\$155,351	\$247,872	\$718,520	\$593,333	\$7,316,791

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$523,484	\$11,400,000	\$9,400,000	5%

**5. Paramus**

Continuing the preliminary engineering and planning efforts that advanced through 2020, during the first quarter of 2021 notable activities completed on the Paramus project included:

- Circulated scope documents for internal review;
- Received noise study results;
- Received control valve specs for review; and,
- Performed geotechnical fieldwork.

As indicated above, the risk profile to the project and subprogram was reviewed during the first quarter of 2021, which resulted in a slight reduction to the R&C amount of the current estimate for the Paramus project from \$2.7 million to \$2.2 million, reducing the overall estimate from \$14.2 million to \$13.7 million.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>			<i>Forecast</i>			
\$8,842	\$462,452	\$227,854	\$164,703	\$82,327	\$89,346	\$10,464,477

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$699,147	\$13,700,000	\$11,500,000	5%

**6. Westampton**

Continuing the preliminary engineering and planning efforts that advanced through 2020, during the first quarter of 2021 notable activities completed on the Westampton project included:

- Circulated scope documents for internal review;
- Burlington soil conservation district approval granted;
- Held virtual pre-bid meeting and onsite review with contractors;
- Received construction bids; and,
- Site plan approval granted by township land development board.

As indicated above, the risk profile to the project and subprogram was reviewed during the first quarter of 2021, which resulted in a slight reduction to the R&C amount of the current estimate for the Westampton project from \$2.1 million to \$1.7 million, reducing the overall estimate from \$10.4 million to \$10.0 million.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>			<i>Forecast</i>			
\$8,395	\$1,032,670	\$478,072	\$2,150,111	\$2,974,228	\$1,606,645	\$49,880

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,519,136	\$10,000,000	\$8,300,000	15%

**IV. Additional Information Following the End of the First Quarter of 2021**

While the vast majority of this IM report is focused on the activities and status of the ES 2 Program during the first quarter of 2021, the timing of certain Program elements and information provided by PSE&G naturally carried over beyond the end of the calendar quarter. Such information will generally be covered in the next IM quarterly report but given the importance of some of this information as it pertains to the key decisions made on the ES 2 Program, including the related discussion in **Section II.A.**, the IM has provided additional remarks to provide a more complete view of these mitigation changes based on the available information as of the date of this IM 2021 First Quarter Report.

**A. Decisions Recorded After the First Quarter of 2021****1. Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers**

The Stipulation provided the framework for this subprogram, noting: “PSE&G will invest up to \$145 million to harden its electric distribution system and increase system resiliency by implementing contingency reconfiguration strategies, which were also part of the Energy Strong program. These strategies will increase the sections in present loop designs by utilizing reclosers, convert all existing two (2)-section overhead 13kV circuits to three (3)-section circuits by installing additional three (3)-phase reclosers, and install single phase recloser devices on branch lines that operate with only fuses.”

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This ROD was issued by PSE&G to document changes in circuits, number of recloser units, and functional recloser types to be included in the Contingency Reconfiguration subprogram.

At the time of the ES 2 filing, PSE&G identified 690 13kV circuits and 500 4kV circuits for inclusion in the ES 2 Contingency Reconfiguration subprogram. As the subprogram progressed through detailed assessment and engineering, each circuit was assessed by PSE&G to determine its current status reflective of updated system plans and changes as well as other work done subsequent to the ES 2 filing, such as Poorest Performing Circuit (PPC) improvements. The results of this review included:

- The identification of 136 initially planned 13kV circuits that were already in three-section loops, which resulted in the removal of 177 13kV reclosers from the subprogram.
- The determination that 102 of the initially planned 4kV circuits were now planned to be upgraded to 13kV within five years based on the need for additional capacity in different areas of the system. This resulted in these circuits, and the related 153 4kV reclosers, being removed from the subprogram as the 4kV reclosers cannot be reused on 13kV circuits and would not be required as system spares.
- The finding that there were additional locations where 13kv branch, feeder, and tie reclosers, and 4kV feeder and tie reclosers could be installed to further isolate the impact of an outage on customers thus improving reliability.

Based on this removal of a set of circuits and reclosers and the identification of opportunities to install devices at other locations, PSE&G considered two alternatives:

1. Sectionalize only the circuits remaining on the filing list after the removal of the 136 13kV circuits and 102 4kV circuits.
2. Conduct a detailed review of 4kV and 13kV circuits to identify cost effective opportunities to include additional circuits in the subprogram utilizing the same cost/benefit process performed for the ES 2 filing in order to improve reliability by reducing the number of customers impacted by an outage.

PSE&G decided to pursue adding additional recloser units to the subprogram utilizing a process consistent with the framework established for the identification and selection of the initial list of circuits included in the subprogram. This will result a cost-effective approach to providing more customers with faster storm restoration and improved reliability.

In reviewing the additional circuits considered for the subprogram, PSE&G's Asset Management reviewed the additional 4kv circuits to determine if they meet the criteria to install reclosers. PSE&G's Engineering group identified three section loop circuits that have a large quantity of customers in a section that could benefit from a feeder recloser. By installing a feeder recloser into a section with a large customer count, PSE&G Operations would be able to restore the customers on one side of the recloser. This will reduce the number of customers impacted by an extended outage. PSE&G's Engineering also identified sections along a circuit that are currently considered part of a mainline section (no sectionalizing device installed) but which can be reconfigured as a branch. By installing a branch recloser to such section, customers on the remainder of the mainline would not be impacted by a fault on the sectionalized length.

As a result of this additional review, PSE&G identified a total of 36542 reclosers on 342 circuits to add to the subprogram, comprised of 8990 4kV reclosers and 275253 13kV reclosers. These additional recloser are all currently identified as three-phase recloser, which includes 13 devices that will be part of a pilot program to be installed as a branch (single-phase operable) recloser and 37 that are proposed as tie

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[reclosers](#). As noted in the IM 2020 Fourth Quarter Report, there is currently no expected change to the subprogram forecast as a result of these additional reclosers, as they essentially replace the planned reclosers identified for removal from the subprogram.

### Findings & Observations

- The IM finds that PSE&G appropriately reviewed the circuits identified at the time of the ES 2 filing to ensure that their current status still warranted the planned upgrades, including removal of circuits that already were sectionalized since the ES 2 filing or are now planned for 13kV upgrades in the next five years.
- The IM finds that the identification of additional circuits for the subprogram, utilizing the same processes used for the ES 2 filing, will benefit PSE&G customers by improving reliability in alignment with the intent of the subprogram.

## 2. *Outage Management System (OMS) Implementation*

A major component of the Grid Modernization – Communication System subprogram is the OMS, being planned and developed between PSE&G and the ADMS Vendor, Open Systems International Inc. (OSII). The OMS project operational planning completed in June 2020 confirmed a 24-month implementation schedule that was assumed during contract negotiations. Based on a June 2020 start date, this would lead to the OMS deployment in May 2022. Immediately following the completion of the operational planning, Hurricane Isaias impacted the eastern seaboard, resulting in widespread power outages and exposing system reliability and availability inefficiencies. [The impacts from Hurricane Isaias resulted in the failure of multiple infrastructure and systems during the PSEG-LI storm response that uncovered gaps in performance testing on the integrated systems. The OMS experienced multiple issues with the high volume of data transmitted during the storm, which impacted all communication channels and field management activities. The suspected root cause of the OMS performance issues included: SCADA alarms and customer reports not processed at a rate fast enough to keep up with incoming reports; and stale and repeated outage reports were being submitted erroneously to the OMS when initial submission attempts timed out. The OMS unresponsiveness caused delays to work processes and led to a lower quality of estimated time of recovery information.](#) Among the lessons learned from this storm were two that specifically impact the OMS implementation:

1. Do not introduce any major system changes immediately before storm season.
2. Ensure enhanced performance testing is conducted for each system and its ecosystem. These tests should be repeated annually, with the proper infrastructure, to ensure reliability and availability of critical systems when they are needed most.

The above lessons learned dictated the following changes to the OMS implementation:

- Shift the deployment date from May 2022 until after the June-September major storm season.
- Increase the services scope for the additional enhanced performance testing expectations.
- Enhance the OMS architecture to ensure separate development/testing environments for the long-term.
- Including contingency to mitigate performance issues in OMS and its ecosystem.

With the above changes identified, PSE&G considered two alternatives:

1. Continue with the original project plan for a May 2022 go-live date with minimal impact to the current OMS cost and schedule.



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2. Reschedule the go-live date until after the storm season and use the additional schedule to address revised enhanced system testing requirements and other lessons learned from Hurricane Isaias. This would result in approximately \$2.3 million in additional capital costs to support the added scope and extended critical resources.

PSE&G decided to incorporate the recommended lessons learned into the OMS scope as ignoring those lessons learned and accepting the risks associated without complete ecosystem testing requirements coupled with a deployment immediately ahead of the major storm season was not viewed as a viable option for PSE&G. PSE&G has established December 2022 as the new OMS deployment date, which is the first available date after the annual SAP maintenance window closure (typically October-November) and provides PSE&G time to complete enhanced performance testing on the existing systems, which is a critical path dependency for the OMS testing.

The IM has requested additional information on this decisions, which when received and reviewed will provide the IM a basis from which to offer completed findings and observations on this decision.

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2021 FIRST QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

JANUARY 20, 2022

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2021 First Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
RCR-IM-1	With reference to page 2 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain if the described delay for the Siemens GIS installation for the Hasbrouck Heights 69kV substation due to Covid-19 related delays has been resolved. If not, please explain.	The Siemens GIS installation at the Hasbrouck Heights 69kV project was completed in May 2021.	No change
RCR-IM-2	Please explain if PSE&G has experienced or anticipates any equipment delivery delays for any of the Energy Strong II subprograms. If so, please explain.	Through the execution of the ES 2 Program (beyond the first quarter of 2021), there have been some instances of material or equipment delays experienced in the Program. During the fourth quarter of 2021, the Contingency Reconfiguration subprogram encountered some delays receiving additional 13kV reclosers, however, between the existing inventory and expediting deliveries, there was no resulting impact to the subprogram. Similarly, in the fourth quarter of 2021, PSE&G was informed by its switchgear vendor that material availability (steel, aluminum, insulation, etc.) caused the upcoming shipment of some of the switchgears to be delayed. Of the affected projects, only the Hamilton substation (a life cycle station upgrade project) had a realized impact of 20 days, which was absorbed by float in the schedule	No change
RCR-IM-3	With reference to pages 2, 3, and 23 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain why the Newark Planning Board rejected the Company’s proposed site plan for the Waverly substation due to “aesthetic” reasons.	The IM cannot speak specifically to why the site plan was rejected, but the comments received from the Newark Planning Board included items such as the height of the lightening mast, lack of vegetation, lack of art on fencing/walls, why a green roof was not considered, etc.	No change
RCR-IM-4	Please explain if the revised site plan for the Waverly substation will increase projected costs for the project.	PSE&G’s preliminary office level estimate on the changes resulting from the revised site plan indicate an estimated cost increase of \$2.6 million. This is comprised of: additional engineering (\$0.8 million), revised fencing and external façade improvements (\$1.0 million), and additional charges for extended project duration (\$0.8 million).	<b>Section III.A.15.</b>
RCR-IM-5	With reference to Table 8 of the Independent Monitor’s Draft First Quarter 2021 Report, please confirm that the SAIDI values	SAIDI values by definition are a system-level metric. The SAIDI figures provided in <b>Section II.D.1.</b> of this IM report reflect the individual circuit’s contribution to the system SAIDI.	No change

ID #	Question/Comment	IM Response	Report Changes
	presented are system-level, not circuit level SAIDI. If not, please explain.		
RCR-IM-6	With reference to Table 12 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain if the current forecast for Hasbrouck Heights reflects schedule delays for the transmission component of the project.	The current forecast for the Hasbrouck Heights project reflects the current status of the project based on the information known by PSE&G. There was no resulting cost impact due to the delays resulting from the delays experienced on the Hasbrouck Heights 69kV project as it only shifted the start time of construction.	No change
RCR-IM-7	With reference to Table 12 of the Independent Monitor’s Draft First Quarter 2021 Report, please indicate if the current forecast for the Market Street substation will remain below the projected costs.	The current forecasts shown in <b>Table 12</b> represent PSE&G’s forecasts for the Electric Station Flood Mitigation projects as of the end of the current reporting quarter, in other words what PSE&G expects the final costs to be based on what it currently knows. These forecasts are updated monthly by PSE&G reflecting the current information, status, and progress of the projects at the time. For the Market Street project, as of the end of the first quarter of 2021, PSE&G’s forecast for the project was approximately \$26.2 million. As of the end of the third quarter of 2021, the forecast increased to approximately \$29.0 million, which was driven by additional OP overhead and restoration work required based on the complexity of the work and field conditions and higher than estimated traffic control requirements.	No change
RCR-IM-8	With reference to Table 12 of the Independent Monitor’s Draft First Quarter 2021 Report, please indicate if the current forecast for the Ridgefield 13kV substation will remain below the projected costs.	For the Ridgefield 13kV project, as of the end of the first quarter of 2021, PSE&G’s forecast for the project was approximately \$25.3 million. As of the end of the third quarter of 2021, the forecast increased to approximately \$26.0 million, which was driven by materials costs and construction/supervision costs. See also the note on the current forecasts provided in response to RCR-IM-7 above.	No change
RCR-IM-9	With reference to page 15 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain the difference in function and definition between “major asset” and “capacitor bank” for in-service date.	For the Electric Station Flood Mitigation projects, the final “major asset” is typically the final switchgear or transformer being placed in-service that allows the station to provide electricity to the customers it serves. Other equipment, such as capacitor banks, may be installed after customers are already being served by the new or rebuilt substation.	<b>Section III.A.</b>
RCR-IM-10	With reference to page 16 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain the root causes for the anticipated delay in the installation of Transformer #3 with regards to the project schedule.	The delay to the Waverly project is not specific to the installation of Transformer #3, it stems from the site plan rejection by the Newark Planning Board during the first quarter of 2021, which required a revised site plan be developed and submitted for approval prior to the project proceeding. The Transformer #3 is	No change

ID #	Question/Comment	IM Response	Report Changes
		the final major asset to be installed on the Waverly project, which is currently forecasted beyond the end date of the ES 2 Program, while other components of the project are expected to still be completed within the Program window.	
RCR-IM-11	With reference to page 17 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain how the Clay Street sanitation wall has been determined to be allocated to transmission project.	The rationale for this decision was discussed in the IM 2020 Fourth Quarter Report (Section IV.A.). In summary, PSE&G is executing both a Clay Street ES 2 project and a Clay Street 69kV transmission project. After reviewing the project scopes and intent and purpose of the wastewater wall, PSE&G’s capital accounting determination was that the wastewater wall was not required for flood mitigation and instead serves to improve the health, safety, and reliability of the station. As such, this scope of work was transferred to the 69kV project.	No change
RCR-IM-12	With reference to page 20 of the Independent Monitor’s Draft First Quarter 2021 Report, please provide an update regarding the change of location for the Orange Valley project.	Three of four properties being acquired under the Orange Heights 69kV Project have been acquired by PSE&G. The fourth property is under contract with a forecasted closing date of March 31, 2022.	No change
RCR-IM-13	With reference to page 21 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain why the Company slowed progress on Ridgefield 4kV for more pressing work on Ridgefield 13kV.	Early in 2021, there were significant weather impacts utilizing the operational resources needed on both the Ridgefield 13kV and Ridgefield 4kV projects. The resources were allocated to the Ridgefield 13kV project to maintain the critical path. The shifting of resources had no impact on the critical path of the Ridgefield 4kV project schedule.	<b>Section III.A.12.</b>
RCR-IM-14	With reference to page 22 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain why the Toney’s Brook project baseline estimate increased by \$1.9 million.	The drivers to the \$1.9 million increase in the Toney’s Brook base estimate include: <ul style="list-style-type: none"> <li>• Higher concrete quantities (\$0.9 million);</li> <li>• Change in T&amp;D surcharge methodology (\$0.6 million); and,</li> <li>• Switchgear award higher than estimated (\$0.4 million).</li> </ul>	No change
RCR-IM-15	With reference to page 25 of the Independent Monitor’s Draft First Quarter 2021 Report, please explain if the Company anticipates increased costs as a result of hiring outside contractors due to staffing shortages for recloser installation. If so, please explain. If not, please explain why not.	PSE&G anticipates that the outsourcing of the pole setting for some reclosers in the Metro Division will result in an estimated cost increase of approximately \$784,000, which covers the pole setting and preparation work for 197 poles and 136 reclosers. This represents a less than 1% increase in cost per unit for the recloser work. It also benefits the Program by allowing the Metro Division recloser scope to be completed earlier than it otherwise would (avoiding an estimate \$100,000 in extended carrying costs and avoiding resource constraints with the overlapping Fuse Saver installations that are commencing in 2022).	<b>Section III.B.</b>

ID #	Question/Comment	IM Response	Report Changes
RCR-IM-16	With reference to page 25 of the Independent Monitor’s Draft First Quarter 2021 Report, please provide an update on the communications issues associated with the Fuse Savers.	PSE&G has continued bi-weekly meetings with Siemens to resolve the communication issues, which have affected approximately 10% of the devices. The solution to resolve the communication issues involves modifying the external antenna (and modifying the RCU enclosure to accommodate the antenna). PSE&G anticipates the recurring meetings with Siemens will continue early into the full scope Fuse Saver installations to ensure no issues are encountered.	<b>Section III.B.</b>
S-INF-1	Please confirm that year-to-year variations in the Program’s approved annual budget have not exceeded 10 percent (10%), pursuant to N.J.A.C. 14:3-2A.4(f).	The Stipulation established the ES 2 Program term of October 1, 2019-December 31, 2023. It also established investment levels for the ES 2 Program by subprogram, totaling \$691.5 million, and an additional \$150.5 million designated for certain capital projects during the ES 2 Program term but to be recovered outside the ES 2 rate mechanism. However, it did not specify an approved annual budget for these investments and as such there is no basis for assessing year-to-year variations.	No change
S-INF-2	<b><u>Reference Page 9, Table 7 – Q1 2021 Major Event Performance</u></b> Please provide the cumulative SAIFI, CAIDI, and SAIDI of the circuits listed in Table 7 for Q1 2021.	The cumulative SAIDI, CAIDI, and SAIDI from the 2021 Q1 Major Event are as follows, note that like <b>Table 7</b> this includes all circuits impacted by the Major Event, including circuits that have not received Energy Strong/ES 2 investments. <ul style="list-style-type: none"> <li>• CAIDI: 66.63</li> <li>• SAIFI: 0.04</li> <li>• SAIDI: 2.85</li> </ul>	No change
S-INF-3	<b><u>Reference Page 10, Table 8 – Q1 2021 Major Event Additional Information on Selected Circuits</u></b> Please reconcile why two (2) circuits (BLO 4016 and FOU 8014) experienced Major Events were no customers were impacted yet an Outage Duration is provided.	The sections of these circuits that are listed in <b>Table 8</b> with zero customers reflect the way the circuit is modeled in PSE&G’s connectivity model and the restoration/isolation steps used to restore service (e.g. isolating a section of cable for repair). In addition, for the FOU 8014 circuit, the interrupted transformer had no customers assigned to it.	No change
S-INF-4	<b><u>Reference Pages 14-15, Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2021</u></b> <ol style="list-style-type: none"> <li>a. What is attributed to the forecasted cost of the Hasbrouck Heights substation project increasing from \$17,870,384 in the Independent Monitor’s Q4 2020 Report to \$20,474,628?</li> <li>b. What is attributed to the forecasted cost of the Leonia substation project decreasing from \$30,396,846 in the</li> </ol>	Regarding the forecast change from the fourth quarter of 2020 to the first quarter of 2021 on these electric substations: <ol style="list-style-type: none"> <li>a. The Hasbrouck Heights forecast increased approximately \$2.6 million, which was primarily driven by the civil construction bid coming in higher than estimated (\$1.2 million) and a higher dewatering estimate reflective of site conditions (\$1.3 million).</li> </ol>	<b>Section III.A.4. &amp; Section III.A.7.</b>

ID #	Question/Comment	IM Response	Report Changes
	Independent Monitor's Q4 2020 Report to \$25,082,905?	b. The Leonia forecast decreased by approximately \$5.3 million, which was driven by civil and electrical construction awards coming in lower than estimated.	
S-INF-5	<p><b><u>Reference Page 15, Electric Station Flood Mitigation Subprogram</u></b>            Refer to the statement "Two other projects had forecasted in-service movements greater than 60 days, including Hasbrouck Heights, which improved 64 days based on <u>PS&amp;EG identifying the in-service date as the final major asset instead of the previously identified date of when the capacitor banks were completed...</u>" Please discuss if this treatment is consistent with the in-service dates of the other Electric Station Flood Mitigation projects.</p>	For the Electric Station Flood Mitigation projects, the final "major asset" is typically the final switchgear or transformer being placed in-service that allows the station to provide electricity to the customers it serves. Other equipment, such as capacitor banks, may be installed after customers are already being served by the new or rebuilt substation.	<b>Section III.A.</b>
S-INF-6	<p><b><u>Reference Page 20, Orange Valley Substation Project</u></b>            Regarding the statement "The variance in first quarter spend was largely the result of the project re-allocating an engineering invoice between this ES 2 project and the 69kV project..." Please provide additional details about the Company's decision to re-allocate an engineering invoice to the 69kV project, including the re-allocated costs.</p>	The engineering invoice reallocation was forecasted in error to the Orange Valley ES 2 project, rather than the Orange Valley 69kV project. This reallocation reflects the cost of this engineering work (\$35K) being removed from the Orange Valley ES 2 forecast and incorporated into the Orange Valley 69kV forecast.	<b>Section III.A.10.</b>
S-INF-7	<p><b><u>Reference Page 22, Toney's Brook Substation Project</u></b>            Regarding the increase to the base estimate of the Toney's Brook substation project, please provide additional details about the modification titled "Changing in T&amp;D surcharge methodology (\$0.6 million)."</p>	The change in T&D surcharge methodology caused an increase in Outside Service Electrical construction planned surcharge rate which increased by over 45% from 2019 to 2020. As a result, approximately \$587,000 of the \$0.6 million increase on Toney's Brook Conceptual level estimate was attributed to increase in electrical construction. The remainder of the \$0.6 million increase is associated with Project Management labor.	<b>Section III.A.14.</b>
S-INF-8	<p><b><u>Reference Page 25, Contingency Reconfiguration Subprogram</u></b>            Refer to the statement "While monitoring performance of the installed Fuse Savers, PSE&amp;G experienced other communication issues between the Fuse Savers and the remote control unit (RCU), where in the supervisory control and data acquisition (SCADA) communication indicated a false open/close alarm on some of the devices. Siemens has provided a prototype Fuse Saver to address the communication issues, which PSE&amp;G will monitor to ensure it addresses the issues prior to placing additional orders." Please indicate if the Company has any plans</p>	The communication issues experienced on the Fuse Savers have only affected approximately 10% of the installed devices. Any device that demonstrates communication issues will be addressed via the solution developed by PSE&G and Siemens. See also the related discussion in response to RCR-IM-16.	<b>Section III.B.</b>

ID #	Question/Comment	IM Response	Report Changes
	to address the communications issues on the 80 Fuse Saver devices that were already installed.		
S-INF-9	<p><b><u>Reference Page 26, Contingency Reconfiguration Subprogram</u></b>  Regarding the “approximate \$14 million reduction to the Fuse Saver scope due to the number of units planned for the Program decreasing from 2,572 to 1,967”, please discuss the factors considered by the Company in selecting the Fuse Savers that were removed from the Program.</p>	PSE&G has informed the IM that at this time, a decision has not been made on which specific Fuse Savers are to be removed from the program. The increased average cost per unit has resulted in a reduction of the quantity of Fuse Savers that can fit within the program budget. The primary factor that will be used to determine which Fuse Savers to remove from the Program is the cost benefit ratio, consistent with the original prioritization approach.	No change
S-INF-10	<p><b><u>Reference Page 35-36, Camden M&amp;R Station Project</u></b>  Regarding the statement “This updated estimate increased the base estimate by \$14.3 million, while reducing the R&amp;C by \$0.4 million, resulting in the total project estimate increasing from \$15.4 million to \$29.3 million. This increase is the result of higher construction costs stemming from the engineer’s 50% estimate (\$6.3 million), procurement of material based on received quotes (\$6.1 million), and additional project management, licensing and permitting, and engineering support not included in the Office level estimate (\$1.9 million).”</p> <ol style="list-style-type: none"> <li>a. Please provide the originally budgeted costs for construction (from the engineer’s 50% estimate) and for procurement of material based on received quotes.</li> <li>b. Please describe any specific factors that led to the higher costs for construction and material procurement.</li> </ol>	<p>Regarding the Camden M&amp;R project:</p> <ol style="list-style-type: none"> <li>a. The originally budgeted costs were \$4.7 million for construction and \$4.3 million for procurement of material.</li> <li>b. The original estimate was based on reusing much of the existing Liquid Propane Air (LPA) equipment and raising the existing LPA building. Due to a remediation project at the site, the existing building will need to be demolished and relocated. This change resulted in additional construction costs for foundations that will be needed to achieve the FEMA +1’ elevation and additional demolition costs. Similarly, two existing 1200 HP air compressors, switchgear, and auxiliary equipment were determined to not be suitable for reuse. Additionally, new LPA mixing control capabilities requires additional control valves and automation.</li> </ol>	Section III.F.1.
S-INF-11	<p><b><u>Reference Pages 39-40, Decisions Recorded After the First Quarter of 2021, Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers</u></b>  Refer to the statement “As a result of this additional review, PSE&amp;G identified a total of 342 reclosers to add to the subprogram, comprised of 89 4kV reclosers and 253 13kV reclosers.”</p> <ol style="list-style-type: none"> <li>a. Please provide the total number of 4kV and 13kV circuits associated with this work, including a breakdown of the total number of sections currently within these circuits.</li> </ol>	<p>Regarding the additional reclosers identified for the Contingency Reconfiguration subprogram:</p> <ol style="list-style-type: none"> <li>a. Of the additional recloser identified, now updated to 365 units, there are 961 sections. This includes 90 4kV reclosers on 57 circuits and 275 13kV recloser on 206 circuits.</li> <li>b. Of the 365 additional reclosers, all are currently identified as three-phase reclosers. This includes 13 reclosers that will be part of a pilot program to be installed as a branch (single-phase operable) recloser.</li> <li>c. Of the 365 additional recloser, 37 are proposed as tie reclosers.</li> </ol>	Section IV.A.1.



ID #	Question/Comment	IM Response	Report Changes
	<ul style="list-style-type: none"> <li>b. Of the 342 additional reclosers, please provide a breakdown of three-phase reclosers versus single-phase reclosers.</li> <li>c. Please indicate how many of the additional reclosers will be used to create new tie points between circuits.</li> <li>d. Please indicate if the Company considered historical reliability when selecting the circuits that would received these additional reclosers.</li> </ul>	<ul style="list-style-type: none"> <li>d. PSE&amp;G’s selection of these additional circuits was consistent with the cost-benefit process utilized for the selection of the initial circuits for the subprogram, which included an assessment of historical performance and number of customers served.</li> </ul>	
S-INF-12	<p><b><u>Reference Pages 40-41, Decisions Recorded After the First Quarter of 2021, Energy Strong II Electric Program – Outage Management System (OMS) Implementation</u></b></p> <p>Refer to the statement “Immediately following the completion of the operational planning, Hurricane Isaias impacted the eastern seaboard, resulting in widespread power outages and exposing system reliability and availability inefficiencies. Among the lessons learned from this storm were two that specifically impact the OMS implementation.” Please provide additional details about the OMS issues experienced during Hurricane Isaias.</p>	<p>The impacts from Hurricane Isaias resulted in the failure of multiple infrastructure and systems during the PSEG-LI storm response that uncovered gaps in performance testing on the integrated systems. The OMS experienced multiple issues with the high volume of data transmitted during the storm, which impacted all communication channels and field management activities. The suspected root cause of the OMS performance issues included: SCADA alarms and customer reports not processed at a rate fast enough to keep up with incoming reports; and stale and repeated outage reports were being submitted erroneously to the OMS when initial submission attempts timed out. The OMS unresponsiveness caused delays to work processes and led to a lower quality of estimated time of recovery information.</p>	<b>Section IV.A.2.</b>
Rate Counsel 12/20/2021 Letter to the IM	<p>At the end of the first quarter 2021, the Energy Strong II (“ESII”) program remains in the early stages. The Independent Monitor reports that spending for the quarter ending March 31, 2021 has been \$40,652,703 or 5.2 percent of the current forecast of \$770,614,891 program (including the \$100 million for Electric Stipulated Base and excluding \$78.5 million of risk and contingency). Rate Counsel notes that the parties stipulated to \$842 million to complete the ES II Program with \$641 million for electric, \$50.5 million for gas, and \$150.5 million within Stipulated Base for electric and gas spending.</p>	<p>The IM provides additional clarification that the \$770,614,891 ES 2 Program forecast as of the end of the first quarter of 2021 includes both the \$100 million in Electric Stipulated Base and the \$50.5 million in Gas Stipulated Base.</p>	No change
Rate Counsel 12/20/2021 Letter to the IM	<p>Rate Counsel also notes that the budget for Electric stipulated base has been set to \$100 million for the life cycle subprogram. In the report for this quarter, Pegasus continued to provide Study level estimates for the four substations (Hamilton, Paramus, Plainfield, and Woodbury). The current Study level estimates for the program are \$79,700,000 including \$16,600,000 for risk and contingency.</p>	<p>The IM provides additional clarification that the Electric Stipulated Base budget of \$100 million established by the Stipulation includes investments in electric station life cycle projects and electric outside plant higher design and construction standards projects. The estimates detailed in this IM report for the noted substations reflect the currently approved projects in this subprogram.</p>	No change

ID #	Question/Comment	IM Response	Report Changes
Rate Counsel 12/20/2021 Letter to the IM	The current forecast for the Electric Flood mitigation program decreased from \$339,403,267 in the Fourth Quarter Report to \$331,374,281 in the First Quarter Report, not including risk and contingency estimates. Table 12 – <u>ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2021</u> , states that the spending amount for the subprogram is \$318,900,000 in budgeted base project costs and \$59,800,000 allocated to risk and contingency. The Independent Monitor notes two formal Records of Decision (“ROD”) were issued during the first quarter of 2021. These two RODs included 13kV and 4kV reclosers related to the Contingency Reconfiguration program (ESII-CR-1); and outage management system (“OMS”) implementation (ESII-GM-5).	The IM provides additional clarification that the \$318.9 million base estimate total and \$59.8 million R&C total are reflective of the current project estimates, which are at different estimate phases depending on how advanced the individual project is. The current forecast as of the end of the first quarter of 2021 for the Electric Station Flood Mitigation subprogram is \$331.4 million.  Additionally, the two RODs discussed in this IM report were issued during the second quarter of 2021, not the first quarter.	No change
Rate Counsel 12/20/2021 Letter to the IM	The First Quarter Report notes that two substations have forecasted in-service dates that have moved more than 60 days. These two substations are Hasbrouck Heights and Waverly. According to Pegasus, “the Hasbrouck Heights forecasted in-service date previously moved in the fourth quarter of 2020 from early December 2022 to mid-April 2023 due to Covid-19 related delays on the Siemens GIS installation on the associated Hasbrouck Heights 69kV project, which has resulted in the Hasbrouck Heights ES 2 project delaying the start of construction from July 2021 to January 2022. The fourth quarter in-service date was based on the capacitor bank in-service date (April 2023), which has now been updated by PSE&G to reflect the switchgear in-service date currently forecasted for February 2023.” For Waverly, Pegasus notes, “the Waverly in-service date slipped 314 days from the forecasted in-service date at the end of the prior quarter. This was due to PSE&G being denied approval of the site plan by the Newark Planning Board, which requires PSE&G to address the comments received, coordinate community meetings on the new site plan application, and re-submit to the Newark Planning Board.”	The IM confirms this information as accurate.	No change
Rate Counsel 12/20/2021 Letter to the IM	The First Quarter Report noted that the Contingency Reconfiguration subprogram total forecast decreased from \$162,806,273 in the Fourth Quarter report to \$148,927,422. The stipulated budget for the subprogram is \$145 million. Pegasus observed that the decrease in the program costs was attributed to	The IM confirms this information as accurate.	No change

ID #	Question/Comment	IM Response	Report Changes
	the "reduction to the Fuse Saver scope due to the number of units planned for the Program decreasing from 2,572 to 1,967 due to the higher cost per unit observed in the pilot program."		

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2021 SECOND QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

MAY 5, 2022

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Allowance for Funds Used During Construction.....	AFUDC
Architectural and Engineering .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System.....	DERMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Flood Hazard Area.....	FHA
Gas Metering & Regulating.....	Gas M&R
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Bidders .....	IFB
Issued for Construction .....	IFC
Issued for Review .....	IFR
New Jersey Department of Environmental Protection.....	NJDEP
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Outside Plant.....	OP
Poorest Performing Circuit .....	PPC
Public Service Electric & Gas .....	PSE&G
Purchase Orders .....	POs
Record of Decision .....	ROD
Remote Control Unit.....	RCU
Remote Terminal Unit .....	RTU

Risk and Contingency .....	R&C
Transmission & Distribution.....	T&D
Transmission Fiber Infrastructure.....	TFI
Utility Review Board .....	URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant (OP) design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram).

During the second quarter of 2021, the bulk of the spend within the ES 2 Program continued to be in the two largest subprograms: Electric Station Flood Mitigation with six projects continuing in construction; and Contingency Reconfiguration that continues to advance the installation and commissioning of reclosers largely in alignment with PSE&G's plan. Within the other subprograms, the Grid Modernization – Communication System subprogram placed one additional fiber installation project in-service, and continued the retrofit recloser installations, with 685 units installed during the second quarter of 2021, bringing the total number of retrofit reclosers installed to 1,432 units out of a current forecast of 2,449 units. The Grid Modernization – ADMS subprogram continued to formalize system requirements and prepared for factory acceptance testing on the platform. While the Gas M&R subprogram kicked off the Westampton project, while other stations continued to advance design, prepared construction bids, and continued other preliminary activities. An additional project (State Street – OP) was added to the life cycle upgrades portion of the Electric Stipulated Base, while the four previously approved projects continued to advance their design efforts, with the Paramus project having its site plan approved in June 2021 and commencing construction for the contingency switchgear. **Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2021** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2021**

Subprogram	Q2 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount
Electric Station Flood Mitigation	\$20,807,542	\$90,603,138	\$346,463,155	26%	Dec 2024	\$389M
Contingency Reconfiguration	\$13,419,784	\$85,558,983	\$147,070,235	58%	Dec 2023	\$145M
Grid Modernization – Communications	\$7,862,176	\$33,389,013	\$60,377,806	55%	Dec 2023	\$72M
Grid Modernization – ADMS	\$2,168,187	\$21,141,005	\$42,712,616	49%	Dec 2022	\$35M
Electric Stipulated Base	\$5,319,246	\$9,105,707	\$100,000,000	9%	Dec 2023	\$100M
Gas M&R Station Upgrades <sup>^</sup>	\$4,237,932	\$10,219,223	\$92,000,002	11%	Dec 2023	\$101M
<b>Total*</b>	<b>\$53,814,867</b>	<b>\$250,150,685</b>	<b>\$788,758,650</b>	<b>32%</b>	<b>Dec 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 11** and **Table 20** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown. The Electric Station Flood Mitigation total spend and total forecast also does not include \$133,616 previously spent on the Constable Hook project that is being removed from the ES 2 Program.



\*\* - Final in-service date.

^ - Includes both the ES 2 projects and the Stipulated Base gas projects.

During the second quarter of 2021, PSE&G submitted updated estimates to its Utility Review Board (URB) for the two Grid Modernization subprograms (including separate estimates for the wireless network/retrofits scope and fiber installation/cutover scope of the Grid Modernization – Communication Network subprogram). The original and current estimates for these Grid Modernization components are provided in **Table 2 – Grid Modernization Subprograms Updated Estimates as of June 30, 2021**. As shown in **Table 2**, while the ADMS and fiber installation/cutover scopes saw increases to their estimates, there was no net change to the Grid Modernization initiatives as the wireless network/retrofits scope saw a corresponding reduction. These updated estimates are discussed in more detail within **Section III.C** and **Section III.D** of this report.

**Table 2 – Grid Modernization Subprograms Updated Estimates as of June 30, 2021**

Subprogram/Scope	Current Estimate Level	Filing Estimate	Current Estimate	Variance
ADMS	Conceptual	\$35,000,000	\$42,700,000	+\$7,700,000
<b>Grid Modernization – ADMS Subtotal</b>	<b>Conceptual</b>	<b>\$35,000,000</b>	<b>\$42,700,000</b>	<b>+\$7,700,000</b>
Wireless Network & Retrofits	Conceptual	\$48,600,000	\$35,100,000	(\$13,500,000)
Fiber	Study	\$23,400,000	\$27,500,000	+\$4,100,000
<b>Grid Modernization – Communication System Subtotal</b>	<b>Conceptual / Study</b>	<b>\$72,000,000</b>	<b>\$62,600,000</b>	<b>(\$9,500,000)</b>
<b>Grid Modernization Placeholder</b>	-	-	<b>\$1,700,000</b>	<b>+\$1,700,000</b>
<b>Total</b>		<b>\$107,000,000</b>	<b>\$107,000,000</b>	<b>\$0</b>

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 3 – ES 2 Electric Station Flood Mitigation Status as of June 30, 2021**.

**Table 3 – ES 2 Electric Station Flood Mitigation Status as of June 30, 2021**

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$10,500,000	\$5,159,731	49%	10/25/2021
2. Clay Street	\$33,800,000	\$2,156,501	6%	12/19/2022 (↑)
3. Front Street^	\$27,400,000	\$190,915	1%	11/2/2023
4. Hasbrouck Heights	\$22,700,000	\$2,020,326	9%	2/7/2023
5. Kingsland	\$8,300,000	\$381,286	5%	10/4/2023
6. Lakeside Avenue	\$47,900,000	\$956,178	2%	12/13/2023
7. Leonia	\$27,500,000	\$13,034,343	47%	9/30/2022
8. Market Street	\$26,900,000	\$23,514,129	87%	9/23/2021^^
9. Meadow Road	\$9,000,000	\$786,103	9%	9/22/2023 (↓)
10. Orange Valley	\$20,200,000	\$594,041	3%	12/29/2023 (↓)
11. Ridgefield 13kV	\$27,600,000	\$13,319,925	48%	11/8/2022 (↓)
12. Ridgefield 4kV	\$19,500,000	\$18,777,287	96%	<b>5/16/2021 (↑)</b>
13. State Street	\$22,400,000	\$1,193,633	5%	9/23/2022
14. Toney's Brook	\$18,800,000	\$963,752	5%	4/21/2023

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
15. Waverly	\$35,400,000	\$6,062,028	17%	12/18/2024 (↓)
16. Woodlynne	\$19,400,000	\$1,519,097	8%	10/10/2023

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). **Bold** dates indicate the actual in-service date.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

^- The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

^^-See **Section IV.A.** for additional information on the Market Street in-service date following the end of the second quarter of 2021.

As indicated in **Table 2**, the projects that have previously started construction (Academy Street, Leonia, Market Street, Ridgefield 13kV, Ridgefield 4kV, and Waverly) continue to have the highest spend. Additionally, five of the stations (Clay Street, Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street) had new estimates approved by the URB in during the second quarter of 2021, while the Front Street project was also approved by the URB to replace the cancelled Constable Hook project. **Table 2** also shows that six of the sixteen projects had movement during the second quarter of 2021 in the forecasted in-service date, with two advancing and four slipping. Of these six projects, four of the projects (Market Street, Ridgefield 4kV, Ridgefield 13kV, and Orange Valley) had forecasted in-service dates change by less than two weeks, with the Ridgefield 4kV project achieving its in-service status on May 16, 2021. The Clay Street forecasted in-service date advanced 50 days from the status as of the end of the first quarter of 2021. Only one project (Waverly) had movement more than 60 days, which is the threshold the Independent Monitor (IM) applied during the original Energy Strong Program for evaluating changes to the project schedules. The Waverly in-service date slipped an additional 92 days from the forecasted in-service date at the end of the prior quarter, which continues to reflect the impacts of the project’s site plan denial in March 2021. The project team continues to work on a new site plan application, which once approved will provide PSE&G with a clearer view of the Waverly schedule, including potential opportunities to advance the in-service date.

The IM has found nothing to date that would jeopardize the ES 2 Program being completed on budget. However, schedule challenges, particularly on the Waverly substation and other projects with forecasted in-service dates near the Program end date will continue to warrant further monitoring by the IM to ensure the ES 2 Program is completed within the defined timeline.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On March 18, 2022, a draft report was presented and submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this

IM 2021 Second Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2021 Second Quarter Report are presented below in **Table 4 – ES 2 Records of Decisions**.

*Table 4 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non ES-II Units	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report</i> )
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1. in this report</i> )

Subprogram	Record of Decision	IM Comments
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2. in this report</i> )

During the second quarter of 2021, two key decisions were issued by PSE&G, each of which was initially discussed in the IM 2021 First Quarter Report and summarized below.

**1. Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers**

This ROD was issued by PSE&G to document changes in circuits, number of recloser units, and functional recloser types to be included in the Contingency Reconfiguration subprogram.

At the time of the ES 2 filing, PSE&G identified 690 13kV circuits and 500 4kV circuits for inclusion in the ES 2 Contingency Reconfiguration subprogram. As the subprogram progressed through detailed assessment and engineering, each circuit was assessed by PSE&G to determine its current status reflective of updated system plans and changes as well as other work done subsequent to the ES 2 filing, such as Poorest Performing Circuit (PPC) improvements and other reliability enhancements outside of the ES 2 Program. Based on the results of this review, 238 circuits were identified for removal from the subprogram, comprising of 177 of the initially planned 13kV reclosers and 153 of the initially planned 4kV reclosers, which included 54 circuits that were part of the PPC improvements and 78 other circuits that received reliability enhancements. The removal of these circuits presented PSE&G with the opportunity to conduct a detailed review of its 4kV and 13kV circuits to identify cost effective opportunities to include additional circuits in the subprogram following the same cost/benefit process utilized for the ES 2 filing.

As a result of this additional review, PSE&G identified a total of 342 reclosers to add to the subprogram, comprised of 89 4kV reclosers and 253 13kV reclosers. As noted in the IM 2020 Fourth Quarter Report, there is currently no expected change to the subprogram forecast as a result of these additional reclosers, as they essentially replace the planned reclosers identified for removal from the subprogram.

**Findings & Observations**

- The IM finds that PSE&G appropriately reviewed the circuits identified at the time of the ES 2 filing to ensure that their current status still warranted the planned upgrades, including removal of circuits that already were sectionalized since the ES 2 filing or are now planned for 13kV upgrades in the next five years.
- The IM finds that the identification of additional circuits for the subprogram, utilizing the same processes used for the ES 2 filing, will benefit PSE&G customers by improving reliability in alignment with the intent of the subprogram.

**2. Outage Management System (OMS) Implementation**

A major component of the Grid Modernization – Communication System subprogram is the OMS, being planned and developed between PSE&G and the ADMS Vendor, Open Systems International Inc. (OSII). The OMS project operational planning completed in June 2020 confirmed a 24-month implementation schedule that was assumed during contract negotiations. Based on a June 2020 start date, this would lead to the OMS deployment in May 2022.

Immediately following the completion of the operational planning, Hurricane Isaias impacted the eastern seaboard, resulting in widespread power outages and exposing system reliability and availability inefficiencies. These impacts were unique from prior Major Events in that the failure of multiple infrastructure and systems during the Hurricane Isaias response uncovered gaps in performance testing on the integrated systems. Lessons learned from this storm included avoiding introducing any major system changes immediately before storm season and ensuring enhanced performance testing is conducted for each system and its ecosystem.

PSE&G opted to incorporate the recommended lessons learned into the OMS scope as ignoring those lessons learned and accepting the risks associated without complete ecosystem testing requirements coupled with a deployment immediately ahead of the major storm season was not viewed as a viable option for PSE&G. PSE&G has established December 2022 as the new OMS deployment date, which is the first available date after the annual SAP maintenance window closure (typically October-November) and provides PSE&G time to complete enhanced performance testing on the existing systems, which is a critical path dependency for the OMS testing. PSE&G anticipates that the additional scope and extension of critical resources based on the revised deployment date will result in approximately \$2.3 million in additional costs to the subprogram. These additional costs are comprised of the following components:

- Extend OSI services contract: \$1.5 million
- Extend Cognizant services contract: \$0.2 million
- Extend Pontoon services contract: \$0.2 million
- Extend internal subject matter experts: \$0.2 million
- Development Environment: \$0.2 million
- Development Contingency: \$0.3 million
- Reduced travel and expenses: (\$0.3 million)

***Total: \$2.3 million***

#### Findings & Observations

- While this decision results in a higher cost for the subprogram, the alternative of maintaining the original scope and planned May 2022 go-live date exposes PSE&G to risks associated with introducing a new system immediately before storm season and having less robust performance testing.
- The IM finds it appropriate for PSE&G to incorporate the lessons learned from Hurricane Isaias into the scope and planning for the OMS implementation.

#### B. Program Management

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with ES 1, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

## C. Cost Assignments

### 1. Costs of Removal (COR)

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 5 – ES 2 Program Costs of Removal as of June 30, 2021**, below itemizes the charges to COR for the second and first quarters of 2021, total 2020, total 2019 (which was only the fourth quarter) and total ES 2 Program COR to date. These amounts do not reflect any salvage value reductions, which have been *de minimis* in the ES 2 Program through June 30, 2021.

*Table 5 – ES 2 Program Costs of Removal as of June 30, 2021*

Subprogram	Q2 2021	Q1 2021	Year-to-Date 2021	Total 2020	Total 2019 (Q4)	Total COR
	<i>(in \$ thousands)</i>					
Electric Station Flood Mitigation	\$1,141.0	\$1,129.5	\$2,270.5	\$1,021.1	\$0	\$3,291.6
Contingency Reconfiguration	\$485.2	\$622.9	\$1,108.1	\$2,198.9	\$431.0	\$3,738.0
Grid Modernization – Communications	\$37.9	\$37.8	\$75.7	\$24.4	\$0	\$100.1
Grid Modernization – ADMS	\$0	\$0	\$0	\$0	\$0	\$0
Electric Stipulated Base	\$0	\$0	\$0	\$0	\$0	\$0
Gas M&R Station Upgrades	\$87.6	\$0	\$87.6	\$0	\$0	\$87.6
Gas Stipulated Base	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$1,751.7</b>	<b>\$1,790.2</b>	<b>\$3,541.9</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$7,217.3</b>

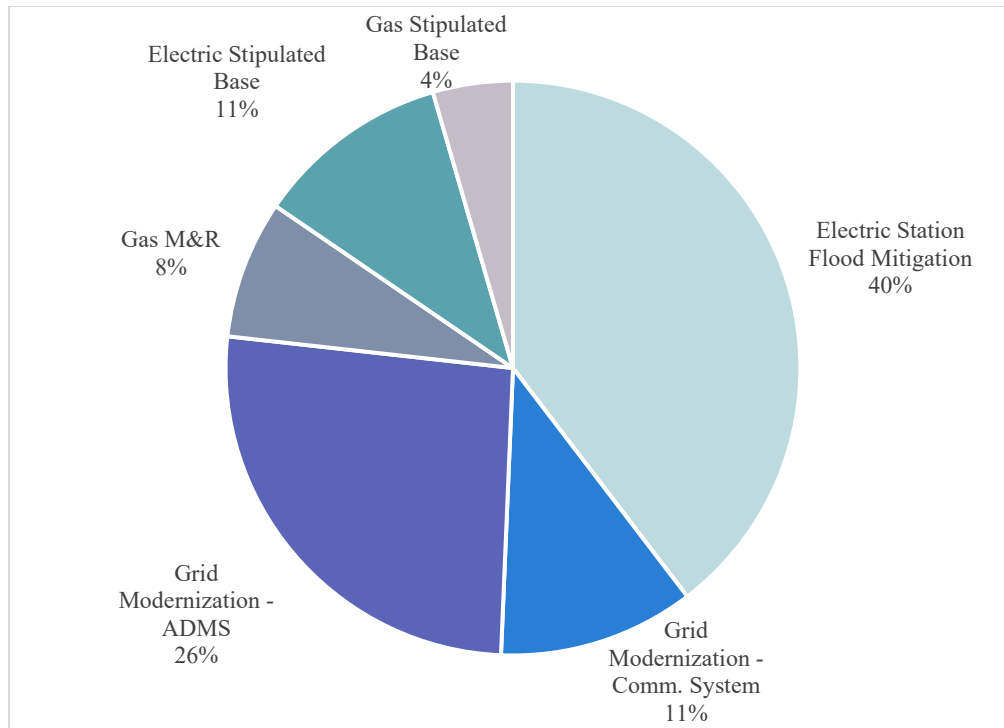
The reduction in Contingency Reconfiguration COR for the second quarter of 2021 from the first quarter is primarily attributable to fewer recloser removal jobs during the second quarter. COR charges for the Gas M&R subprogram during the second quarter of 2021 reflect the demolition of existing on-site buildings at the Westhampton project.

### 2. Construction Work-in-Progress (CWIP) & In-Service Transfers

As of June 30, 2021, the ES 2 Program CWIP balance was \$84.6 million, compared to \$67.0 million as of March 31, 2021. The largest components of as of the end of the second quarter of 2021 were the Waverly (\$6.2 million), Leonia (\$5.6 million), and Academy Street (\$5.4 million) substations, as well as the Paramus substation Electric Stipulated Base lifecycle project (\$5.4 million), and work associated with ADMS (\$22.1 million). The Electric Station Flood Mitigation subprogram comprises the largest

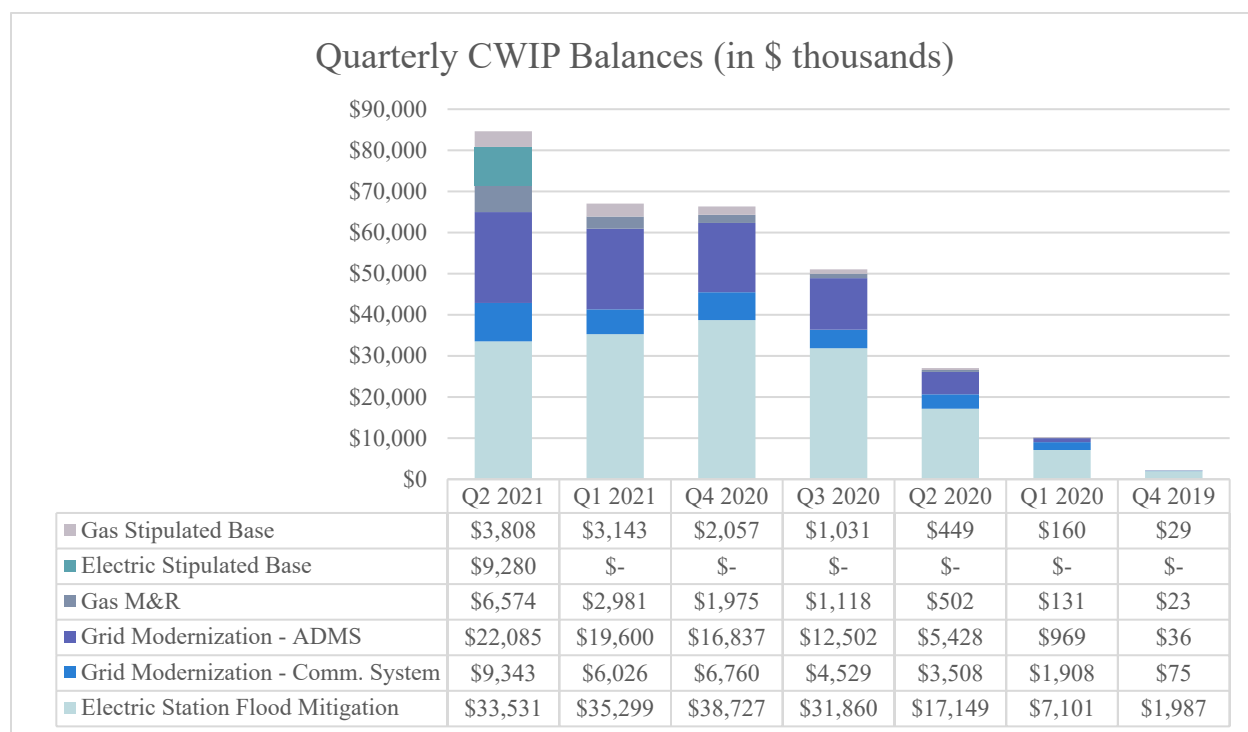
component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of June 30, 2021** below.

**Figure 1 – ES 2 CWIP as of June 30, 2021**



In addition, the **Figure 2 – ES 2 CWIP Balances by Subprogram as of June 30, 2021** below depicts the composition of end-of-quarter CWIP balances by subprogram for the second and first quarters of 2021, each quarter of 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of June 30, 2021**



Transfers from CWIP to plant in-service totaled \$17.2 million during the second quarter of 2021, mainly comprised of \$11.1 million of assets at the Ridgefield substation. Total ES 2 Program transfers from CWIP have been \$34.6 million through June 30, 2021. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no Allowance for Funds Used During Construction (AFUDC) is recorded on these expenditures. This accounting treatment is fully in accord with generally accepted accounting principles and the Company’s accounting policies.

**3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each Energy Strong subprogram during the second and first quarters of 2021, total AFUDC for the years 2020 and 2019, and total ES 2 Program AFUDC accrued to date, is shown below in **Table 6 – ES 2 Program AFUDC as of June 30, 2021**.

**Table 6 – ES 2 Program AFUDC as of June 30, 2021**

Subprogram	Q2 2021	Q1 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>				
Electric Station Flood Mitigation	\$576.7	\$558.6	\$936.5	\$9.9	\$2,081.7
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0
Grid Modernization – Communications	\$95.5	\$59.0	\$184.3	\$0.2	\$339.0
Grid Modernization – ADMS	\$316.9	\$274.2	\$352.7	\$0.1	\$943.9
Electric Stipulated Base	\$80.5	\$49.6	\$44.0	\$0	\$174.1



Subprogram	Q2 2021	Q1 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
<i>(in \$ thousands)</i>					
Gas M&R Station Upgrades (incl. Stip. Base)	\$107.6	\$72.2	\$70.0	\$0.2	\$250.0
<b>Total</b>	<b>\$1,177.2</b>	<b>\$1,013.6</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$3,788.7</b>

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2021, the new AFUDC rate was calculated to be 6.81%, using the capital structure and component costs as of January 31, 2021. This rate is lower than the 2020 rate of 6.95%, primarily due to a significantly lower interest rate used for short-term debt in the AFUDC calculation, and also to a reduction in the Company's embedded cost of long-term debt. In calculating the 2021 AFUDC rate, the Company used (i) a 3.85% embedded cost of long-term debt (vs. 4.02% in 2020), (ii) a short-term debt rate of 0.32% (vs. 1.86% in 2020), and (iii) a cost of equity of 9.60% (unchanged from 2020).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the second quarter of 2021, based on data as of June 30, 2021, the recalculated weighted average AFUDC accrual rate (6.83%) did not meet this criterion to warrant changing from the annual rate (6.81%) in effect. Therefore, AFUDC was accrued during the second quarter of 2021 at the calculated rate of 6.81%.

AFUDC accrued for ES 2 projects during the second quarter of 2021 increased over AFUDC accrued during the first quarter of 2021 as the result of increases in total average CWIP balances for almost all subprograms.

The IM observes that the Company's calculation of the AFUDC rate and its application is in accordance with both PSE&G's accounting policy and Plant Instruction 3(17) of the Federal Energy Regulatory Commission's Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to second quarter 2021 ES 2 project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these ES 2 projects. The IM will continue to review future ES 2 Program AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### **4. Allocated Overheads**

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For the ES 2 Program electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and

other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 7 – ES 2 Program Overhead Allocations as of June 30, 2021** are the allocated overhead costs charged to ES 2 projects for the first and second quarters of 2021, the total 2021 year-to-date, total 2020, total 2019 (the fourth quarter of 2019), and total ES 2 Program allocated overheads to date.

**Table 7 – ES 2 Program Overhead Allocations as of June 30, 2021**

Subprogram	Q2 2021	Q1 2021	2021 Year-to-Date	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
	<i>(in \$ thousands)</i>					
Electric Station Flood Mitigation	\$4,352	\$5,588	\$9,940	\$14,023	\$287	\$24,250
Contingency Reconfiguration	\$4,006	\$4,215	\$8,221	\$17,109	\$3,415	\$28,745
Grid Modernization – Communications	\$2,506	\$1,743	\$4,249	\$3,625	\$12	\$7,886
Grid Modernization – ADMS	\$124	\$119	\$243	\$426	\$11	\$680
Electric Stipulated Base	\$287	\$126	\$413	\$259	\$0	\$672
Gas M&R Station Upgrades (incl. Stip. Base)	\$119	\$131	\$250	\$291	\$15	\$556
<b>Total*</b>	<b>\$11,393</b>	<b>\$11,922</b>	<b>\$23,316</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$62,788</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the second quarter of 2021 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most of the second quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The changes in overhead costs for the second quarter 2021 from the first quarter of 2021 largely reflect more bargaining unit grid modernization labor in the second quarter, and the periodic fluctuations in certain costs, such as outside services, which receive no overhead surcharges.

As noted in the IM’s Report for the First Quarter of 2021, the Company revised its overhead surcharging methodology in the first quarter of 2020 by, among other things, consolidating the number of overhead surcharge cost pools from 38 cost pools based on geographic/organizational bases to three statewide/functional cost pools and one materials handling pool. This change resulted in one-time charges to several ES 2 projects recorded only for that quarter, and which were included in the figures provided in the IM’s report. The IM believes the amounts allocated to ES 2 projects reflect application of the same surcharge methodology as amounts charged for non-ES 2 projects.

## **D. System Performance**

### **1. Current Reporting Quarter Major Events**

During the second quarter of 2021, there was one Major Event reported in PSE&G’s service territory concerning a load shedding event at the Montclair Substation. As this Major Event was non-weather

related and did not involve ES 2 investments there is no additional information for the IM to report on this Major Event.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of the second quarter of 2021 is provided below in **Table 8 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of June 30, 2021.**

*Table 8 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of June 30, 2021*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS		CO					
	Dec. 2020		<u>KO</u>		<u>C</u>								IS		CO					
	Jun. 2021		<u>KO</u>		<u>C</u>							IS			CO					
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>								C								IS
	Jun. 2021			<u>KO</u>								C				IS				
3. Front Street^	Dec. 2019	<i>Not in ES 2 Program</i>																		
	Dec. 2020	<i>Not in ES 2 Program</i>																		
	Jun. 2021									<u>KO</u>				C						IS
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>							C					IS		CO			
	Dec. 2020		<u>KO</u>									C					IS		CO	
	Jun. 2021		<u>KO</u>									C				IS				
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO							
	Dec. 2020			<u>KO</u>									C						IS	
	Jun. 2021			<u>KO</u>										C					IS	
6. Lakeside Avenue	Dec. 2019*				KO				C										IS	
	Dec. 2020					<u>KO</u>								C					IS	
	Jun. 2021					<u>KO</u>								C					IS	
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>		<u>C</u>									IS		CO			
	Jun. 2021			<u>KO</u>		<u>C</u>									IS		CO			
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO									
	Dec. 2020			<u>KO</u>					C	OS		CO								
	Jun. 2021			<u>KO</u>						C/OS			CO							

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024				
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
9. Meadow Road	Dec. 2019	Schedule Under Development																		Dec. 31, 2023 - ES 2 Program End Date				
	Dec. 2020			<u>KO</u>															C					IS
	Jun. 2021			<u>KO</u>															C					IS
10. Orange Valley	Dec. 2019	Schedule Under Development																		Dec. 31, 2023 - ES 2 Program End Date				
	Dec. 2020					<u>KO</u>													C					IS (Q1); CO (Q3)
	Jun. 2021					<u>KO</u>													C					IS CO (Q3)
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C														IS	CO				
	Dec. 2020			<u>KO</u>	<u>C</u>														IS	CO				
	Jun. 2021			<u>KO</u>	<u>C</u>														IS			CO		
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>							C	OS							CO					
	Dec. 2020			<u>KO</u>	<u>C</u>						OS	CO												
	Jun. 2021			<u>KO</u>	<u>C</u>						OS	CO												
13. State Street	Dec. 2019		<u>KO</u>							C									IS				CO (Q1)	
	Dec. 2020		<u>KO</u>							C								IS					CO (Q1)	
	Jun. 2021		<u>KO</u>							C								IS					CO (Q1)	
14. Toney's Brook	Dec. 2019			<u>KO</u>							C												IS	
	Dec. 2020			<u>KO</u>														C		IS			CO (Q2)	
	Jun. 2021			<u>KO</u>														C		IS			CO (Q2)	
15. Waverly	Dec. 2019	Schedule Under Development																		Dec. 31, 2023 - ES 2 Program End Date				
	Dec. 2020			<u>KO</u>			<u>C</u>																	IS
	Jun. 2021			<u>KO</u>			<u>C</u>																	IS (Q4); CO (Q2 2025)
16. Woodlynne	Dec. 2019		<u>KO</u>																C				IS	
	Dec. 2020		<u>KO</u>																C				IS	
	Jun. 2021		<u>KO</u>																C				IS	

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.  
 ^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of the second quarter of 2021 is provided below **Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of June 30, 2021.**

**Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of June 30, 2021**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynne

Activity	Total # of Projects	Specific Projects
Key Drawing Review	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynne
Scope Locked	15	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlynne
Major Equipment Purchase Orders (POs)	16*	Academy Street; Clay Street; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley; Ridgefield 13kV*; State Street; Toney's Brook; Waverly*; Woodlynne
A/E Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney's Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynne <sup>1</sup>
Construction Start**	6	Academy Street; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; Waverly
In-Service	2 <sup>^</sup>	Market Street; Ridgefield 4kV

\*-Three of the listed projects (Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 16 switchgears at 13 substations.  
<sup>1</sup>-Indicates Burns & McDonnell is serving as the A/E.  
<sup>2</sup>-Indicates PSE&G internal resources are serving as the A/E.  
<sup>3</sup>-Indicates Black & Veatch is serving as the A/E.  
 \*\*-Includes inside plant and/or OP construction.  
<sup>^</sup>-The Ridgefield 4kV and Market Street projects completed their 4kV to 13kV conversions, while the Market Street project has a final in-service activity associated with the 26kV reconfiguration that is forecasted for September 2021.

Beyond the key activities summarized in **Table 9** above, **Table 10 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q3 2021** summarizes the planned activities for each project during the third quarter of 2021, including any carryover of activities from earlier periods.

**Table 10 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q3 2021**

Station	Upcoming Activities for Q3 2021	Carryover Activities from Q2 2021
1. Academy Street	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
3. Constable Hook	<i>Removed from the ES 2 Program</i>	
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Contingency plan control drawings issued for construction (IFC)</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Commence license and permitting design</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Submit site plan application</li> <li>Vendor drawings received (final switchgear arrangement)</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> <li>Start commissioning of 13kV switchgear #1</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>
8. Market Street	<ul style="list-style-type: none"> <li>Final in-service date (26kV reconfiguration)</li> <li>Start civil and electrical demolition</li> </ul>	<ul style="list-style-type: none"> <li>Continued construction</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>

Station	Upcoming Activities for Q3 2021	Carryover Activities from Q2 2021
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Phase 1 electrical construction start</li> <li>Phase 1 civil construction complete</li> <li>Phase 2 electrical construction PO issued</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>
12. Ridgefield 4kV	<ul style="list-style-type: none"> <li>Completed electrical construction (OP)</li> <li>Start civil and electrical demolition</li> </ul>	<ul style="list-style-type: none"> <li>Start electrical demolition</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>70% estimate completed</li> <li>Switchgear delivered</li> </ul>	<ul style="list-style-type: none"> <li>70% estimate completed</li> <li>Continued engineering and construction</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Major licenses and permits issued</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Updated license and permitting package for site plan; special hearing requested</li> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>70% estimated completed</li> </ul>	<ul style="list-style-type: none"> <li>70% estimate completed</li> <li>Continued engineering</li> </ul>
17. Front Street	<ul style="list-style-type: none"> <li>Switchgear PO issued</li> <li>Permit compliance matrix completed</li> <li>Scope document approved</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>

The current project estimates, including base and R&C amounts, is shown below in **Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of June 30, 2021**. **Table 11** also shows the current estimate level based on PSE&G's estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of the second quarter of 2021.

*Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of June 30, 2021*

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,800,000	\$700,000	\$10,500,000	\$9,704,216	\$5,159,731	49%
2. Clay Street	Conceptual	\$30,300,000	\$3,500,000	\$33,800,000	\$30,822,360	\$2,156,501	6%
3. Constable Hook	<i>Removed from ES 2 Program*</i>						
3. Front Street	Study	\$23,000,000	\$4,400,000	\$27,400,000	\$24,472,716	\$190,915	1%
4. Hasbrouck Heights	Conceptual	\$20,500,000	\$2,200,000	\$22,700,000	\$20,307,880	\$2,020,326	9%
5. Kingsland	Study	\$5,400,000	\$2,900,000	\$8,300,000	\$6,418,540	\$381,286	5%
6. Lakeside Avenue	Study	\$39,400,000	\$8,500,000	\$47,900,000	\$39,356,279	\$956,178	2%
7. Leonia	Conceptual	\$25,000,000	\$2,500,000	\$27,500,000	\$25,007,945	\$13,034,343	47%
8. Market Street	Definitive	\$25,200,000	\$1,700,000	\$26,900,000	\$29,385,009	\$23,514,129	87%
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$7,397,100	\$786,103	9%

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
10. Orange Valley	Study	\$16,000,000	\$4,200,000	\$20,200,000	\$15,240,393	\$594,041	3%
11. Ridgefield 13kV	Conceptual	\$25,300,000	\$2,300,000	\$27,600,000	\$25,515,519	\$13,319,925	48%
12. Ridgefield 4kV	Definitive	\$18,500,000	\$1,000,000	\$19,500,000	\$21,202,217	\$18,751,152	96%
13. State Street	Study	\$19,300,000	\$3,100,000	\$22,400,000	\$19,053,000	\$1,193,633	5%
14. Toney's Brook	Conceptual	\$16,200,000	\$2,600,000	\$18,800,000	\$16,254,329	\$963,752	5%
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$35,070,653	\$6,062,028	17%
16. Woodlynne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$21,255,000	\$1,519,097	8%
<b>Subprogram Total</b>		<b>\$326,300,000</b>	<b>\$51,000,000</b>	<b>\$377,300,000</b>	<b>\$346,463,155</b>	<b>\$90,603,138</b>	<b>24%</b>
<i>*-As of the end of the second quarter of 2021, the cancelled Constable Hook project had an estimate of \$5.3 million and had incurred \$133,616 in spend that will be removed from the ES 2 Program, the estimated costs and actual spend for Constable Hook is not included in <b>Table 11</b>.</i>							

### Findings & Observations

- Six of the sixteen Electric Station Flood Mitigation projects had movement in the forecasted in-service date during the second quarter of 2021, with two advancing and four slipping. Of these six projects, four of the projects (Market Street, Ridgefield 4kV, Ridgefield 13kV, and Orange Valley) had forecasted in-service dates change by less than two weeks. The Clay Street forecasted in-service date advanced 50 days from the status as of the end of the first quarter of 2021. Only one project (Waverly) had movement more than 60 days, which saw the in-service date slip an additional 92 days from the forecasted in-service date at the end of the prior quarter, which continues to reflect the impacts of the project's site plan denial in March 2021.
- The Ridgefield 4kV project became the first in the subprogram to be placed fully in-service, with the in-service date achieved on May 16, 2021.
- Five projects had new estimates approved by the URB during the second quarter of 2021, including: the Clay Street project advancing to the Conceptual level with a new estimate of \$33.8 million (decreasing \$8.2 million from the prior estimate); the Hasbrouck Heights project advancing to the Conceptual level with a new estimate of \$22.7 million (increasing \$4.7 million from the prior estimate); the Leonia project advancing to the Conceptual level with a new estimate of \$27.5 million (decreasing \$4.7 million from the prior estimate); the Ridgefield 13kV project advancing to the Conceptual level with a new estimate of \$25.5 million (increasing \$2.1 million from the prior estimate); and the State Street project with a new Study level estimate that reflects the scope change that removed the OP portion of the project (added as a life cycle station upgrade project) and resulted in a new estimate of \$22.4 million (decreasing \$22.7 million from the prior estimate).

- The IM has found nothing to date that would jeopardize the subprogram being completed on budget. However, the status of the later projects in this subprogram, and in particular Waverly, will have to continue to be closely followed to monitor if the projects can be completed within the ES 2 Program window. As of the end of the second quarter of 2021, the Waverly project shows a final in-service date in December 2024. The Waverly project has multiple major asset in-service dates for the 26kV switchgear, 4kV switchgear, and three transformers, which are currently forecasted from December 2022 (26kV switchgear) to December 2024 (Transformer #3). PSE&G has informed the IM that the project team has every intention of improving the in-service dates and will be examining the potential to shorten durations and/or work activities concurrently to pull the final in-service date back into 2023.

**1. Academy Street**

During the second quarter of 2021, \$405,843 was spent on the Academy Street project compared to a forecast of approximately \$373,000, which brought the total spend to approximately \$5.2 million. The forecasted in-service date for the Academy Street project continues to remain October 25, 2021, which is unchanged from the previous quarter.

The primary activity conducted during the first quarter of 2021 on the Academy Street project was the continued advancement of construction activities. Construction, which started in July 2020 for non-permit work on Academy Street, advanced 10% during the second quarter to reach 75% complete inside plant (100% complete OP), while the total project is reported at 84% complete as of the end of the second quarter of 2021.

The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>				<i>Forecast</i>		
\$150,398	\$4,224,550	\$378,939	\$405,843	\$912,107	\$1,531,237	\$2,101,141

Actuals to Date	Estimate	% of Actuals to Estimate
\$5,159,731	\$10,500,000	49%

**2. Clay Street**

During the second quarter of 2021, \$595,723 was spent on the Clay Street project compared to a forecast of approximately \$639,000, which brought the total spend to approximately \$2.2 million. The forecasted in-service date for the Clay Street project advanced from February 7, 2023, as of the end of the first quarter of 2021 to December 19, 2022, as of the end of the second quarter of 2021.

The primary activities on the Clay Street project during the second quarter of 2021 included the IFC release of civil drawings (foundation) and electrical and control drawings. The project team also submitted an updated estimate that transitioned to the 70%/Conceptual level with a total estimate of \$33.8 million that represented a \$8.2 million decrease from the prior estimate. The \$8.2 million reduction was driven by a \$3.7 million reduction to R&C based on the current risk profile for the project and a \$4.5 million reduction to the base estimate, which was the result of:



- Scope change for wastewater wall: -\$6.8 million<sup>1</sup>
- Engineering contract lower than previously estimated: -\$0.5 million
- Environmental costs higher than previously estimated: \$0.3 million
- Revised commissioning estimate: \$0.4 million
- Revised Division cutover estimate: \$0.5 million
- Switchgear equipment award higher than estimated: \$1.6 million

While the updated estimate resulted in a \$8.2 million decrease from the prior estimate, the total forecast for the project increased from \$29.8 million as of the end of the first quarter of 2021 to \$30.8 million as of the end of the second quarter of 2021. This \$1.0 million forecast increase was driven by higher than previously estimated cutover costs based on an updated estimate from the Division (\$0.5 million) and an increase in surcharge rates based on the 2020 surcharge methodology (\$0.5 million).

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$116,409	\$879,339	\$565,030	\$595,723	\$1,387,173	\$8,023,416	\$19,255,270

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,156,501	\$33,800,000	6%

### 3. Front Street

As discussed in the IM 2020 Fourth Quarter Report, the Constable Hook project was removed from the ES 2 Program. During the second quarter of 2021, PSE&G presented the Front Street project as a replacement for the cancelled Constable Hook project within the Electric Station Flood Mitigation subprogram. The Front Street substation was originally constructed in 1957 and much of its equipment is the originally installed equipment, which contributed to the substation ranking in the worst 33% of all distribution substations (as of April 2019). While the scope of this proposed project involves life cycle upgrades, it also has a flood mitigation component as the new equipment will be installed in accordance with flood hazard rules (where the existing equipment is situated two feet below the New Jersey Department of Environmental Protection (NJDEP) flood hazard area level). The Front Street project saw its Study level estimate approved by the URB in April 2021, with a total estimate of \$27.4 million, comprised of a base estimate of \$23.0 million and R&C set at \$4.4 million. The IM understands that as of the fourth quarter of 2021 the formal regulatory process of adding this substation to the ES 2 Program continues.

The actual spend by quarter for Front Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$0	\$0	\$0	\$190,915	\$360,764	\$322,538	\$23,598,499

<sup>1</sup> The ROD on this change was discussed in the IM 2020 Fourth Quarter Report, Section IV.A.

Actuals to Date	Estimate	% of Actuals to Estimate
\$190,915	\$27,400,000	1%

#### **4. Hasbrouck Heights**

During the second quarter of 2021, \$189,748 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$193,000, which brought the total spend to approximately \$2.0 million. The forecasted in-service date for the Hasbrouck Heights project continues to remain February 7, 2023, which is unchanged from the previous quarter. Notable activities completed during the second quarter of 2021 included:

- Electrical construction PO issued;
- Control drawings IFC; and,
- Construction permits issued.

During the second quarter of 2021, the project team also submitted an updated estimate that transitioned to the Conceptual estimate level with a total estimate of \$22.7 million that represented a \$4.7 million increase from the prior estimate. The \$4.7 million increase was the result of a \$0.9 million reduction to R&C based on the current risk profile for the project and a \$5.6 million increase to the base estimate, which was the result of:

- 4kV switchgear awards higher than estimated: \$1.6 million;
- Civil construction bids higher than estimated: \$1.2 million;
- Higher dewatering estimate: \$1.2 million;
- Relay Tech estimate increased based on revised breakers quantity: \$1.0 million; and,
- Change in T&D surcharge methodology: \$0.6 million (comprised of \$0.1 million in outside services electrical construction and \$0.5 million in internal labor).

The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$149,848	\$1,129,934	\$550,795	\$189,748	\$896,791	\$4,584,100	\$12,806,663

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,020,326	\$22,700,000	9%

#### **5. Kingsland**

During the second quarter of 2021, \$36,886 was spent on the Kingsland project compared to a forecast of \$56,000, which brought the total spend to \$381,285. The forecasted in-service date for the Kingsland project continues to remain October 4, 2023, which is unchanged from the previous quarter. There continued to be minimal activities performed on this project during the second quarter of 2021.

The actual spend by quarter for Kingsland as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$104,112	\$209,667	\$30,621	\$36,886	\$253,489	\$196,262	\$5,587,504

Actuals to Date	Estimate	% of Actuals to Estimate
\$381,285	\$8,300,000	5%

## 6. Lakeside Avenue

During the second quarter of 2021, \$174,268 was spent on the Lakeside Avenue project compared to a forecast of approximately \$125,000. Notable activities completed during the second quarter of 2021 included the issuance of the licensing and permitting package.

The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$148,943	\$453,994	\$178,973	\$174,268	\$102,867	\$212,444	\$38,084,790

Actuals to Date	Estimate	% of Actuals to Estimate
\$956,177	\$47,900,000	2%

## 7. Leonia

During the second quarter of 2021, approximately \$4.1 million was spent on the Leonia project compared to a forecast of approximately \$4.2 million, which brought the total spend to approximately \$13.0 million. Notable activities completed during the second quarter of 2021 included:

- Control drawings IFC;
- Construction permits issued;
- Civil construction (phase 2) started;
- Demolition of first existing 13kV switchgear started;
- Installation of pipe piles started;
- Switchgear delivered to site and set; and,
- Electrical construction (phase 2) started.

Construction at Leonia, which started in August 2020, has advanced to 57% complete inside plant as of the end of the second quarter of 2021, up from 38% complete as of the end of the prior quarter, with the total project reported at 64% complete.

At the end of the first quarter of 2021 the Conceptual level estimate was developed by the project team, this estimate was approved by the URB in April 2021 and resulted in the total estimate for the project being reduced to \$27.5 million from \$32.2 million. The reduction in the current estimate was the result of:

- Construction awards lower than estimated: -\$4.4 million;
- Change in T&D surcharge methodology: \$1.2 million (comprised of \$0.6 million in outside services electrical construction and \$0.6 million in internal labor); and,

- Higher design and engineering hours than estimated: \$0.5 million.

In addition, the R&C amount was reduced by \$2.0 million based on the current risk profile for the project.

The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$44,792	\$6,033,379	\$2,809,628	\$4,146,544	\$1,188,203	\$1,827,066	\$8,958,332

Actuals to Date	Estimate	% of Actuals to Estimate
\$13,034,343	\$27,500,000	47%

## 8. Market Street

During the second quarter of 2021, \$3,147,454 was spent on the Market Street project compared to a forecast of approximately \$3.4 million, which brought the total spend to approximately \$23.5 million. Notable activities completed during the second quarter of 2021 included the commencement and completion of OP 4kV to 13kV conversion work, which puts the Market Street project partially in-service with the final in-service forecasted for September 2021 when the 26kV reconfiguration work is completed (see additional discussion on the Market Street in-service date within **Section IV.A.**).

Construction at Market Street, which started in August 2020, advanced to 90% complete OP as of the end of the second quarter of 2021, up from 75% as of the end of the prior quarter. Inside plant construction is anticipated to being in September 2021 and the overall project is reported at 77% complete as of the end of the second quarter of 2021.

The total forecast for the Market Street project increased from \$26.1 million as of the end of the first quarter of 2021 to \$29.3 million as of the end of the second quarter of 2021. This forecast increase was driven by additional OP overhead and restoration work along with the associated material and surcharges based on the complexity of the work and the field conditions, including higher than estimated traffic control costs as per city/county requirements.

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>				<i>Forecast</i>		
\$251,193	\$16,079,601	\$4,035,880	\$3,147,454	\$3,764,648	\$1,076,627	\$1,029,606

Actuals to Date	Estimate	% of Actuals to Estimate
\$23,514,128	\$26,900,000	87%

## 9. Meadow Road

During the second quarter of 2021, \$70,220 was spent on the Meadow Road project compared to a forecast of \$84,000, which brought the total spend to approximately \$786,000. While preliminary design work progressed during the second quarter of 2021, there continued to be minimal other activities on the

Meadow Road project during the second quarter of 2021, with the bulk of this project’s activities planned for 2022-2023.

The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$63,128	\$535,081	\$117,672	\$70,220	\$69,000	\$76,000	\$6,465,998

Actuals to Date	Estimate	% of Actuals to Estimate
\$786,102	\$9,000,000	9%

### 10. Orange Valley

During the second quarter of 2021, \$146,827 was spent on the Orange Valley project compared to a forecast of approximately \$69,000, which brought the total spend to approximately \$594,000. The variance in first quarter spend was primarily the result of the key drawing package being completed early (anticipated for July and completed in June). Other activities completed during the second quarter of 2021 included the issuance of license and permitting packages and the award of the switchgear PO, with the bulk of this project’s activities planned for 2022-2023.

The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$77,029	\$362,895	\$7,291	\$146,827	\$103,425	\$115,980	\$14,426,947

Actuals to Date	Estimate	% of Actuals to Estimate
\$594,041	\$20,200,000	3%

### 11. Ridgefield 13kV

During the second quarter of 2021, \$3,665,283 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$3.6 million, which brought the total spend to approximately \$13.3 million. Notable activities completed during the second quarter of 2021 included:

- Civil construction (phase 2) bid and PO issued;
- Demolition of first existing 13kV switchgear;
- Phase 1/2 electrical permits issued;
- Switchgear delivered to site;
- Controls drawings IFC; and,
- Piles installation commenced.

Construction at Ridgefield 13kV advanced to 58% complete inside plant as of the end of the second quarter of 2021, compared to 33% complete at the end of the prior quarter, with the total project at a reported 62% completion.

During the second quarter of 2021, the project team also submitted an updated estimate that transitioned to the Conceptual estimate level with a total estimate of \$27.6 million that represented a \$2.1 million increase from the prior estimate. The \$2.1 million increase was the result of a \$3.6 million reduction to R&C based on the current risk profile for the project and a \$5.7 million increase to the base estimate, which was the result of:

- Procuring contingency switchgear and associated miscellaneous material and cutover work: \$2.4 million;
- Change in T&D surcharge methodology: \$1.7 million (comprised of \$0.6 million in outside services electrical construction and \$1.1 million in internal labor);
- Construction supervision and support based on scope and duration: \$0.8 million;
- Phase 1 civil construction award higher than estimated: \$0.4 million; and,
- Permanent switchgear awards higher than estimated: \$0.4 million.

The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$205,982	\$6,232,692	\$3,215,967	\$3,665,283	\$2,435,520	\$1,548,363	\$8,211,711

Actuals to Date	Estimate	% of Actuals to Estimate
\$13,319,925	\$27,600,000	48%

## **12. Ridgefield 4kV**

During the second quarter of 2021, \$4,559,439 was spent on the Ridgefield 4kV project compared to a forecast of approximately \$4.1 million, which brought the total spend to approximately \$18.8 million. The variance in spend this quarter was driven by additional cable, splicing and labor required as a result of rerouting two underground circuits around an existing gas main and the need to rebuild secondary buses in order to complete four 13kV conversions, which was partially offset by part of the Division's paving work postponed until July due to township work-hour restrictions. Activities completed during the second quarter of 2021 on the Ridgefield 4kV project included the commencement and completion of 4kV to 13kV conversion work, with the project being placed in-service as of May 16, 2021. The total project is reported at 85% complete as of the end of the second quarter of 2021, up from 81% complete as of the end of the prior quarter.

The total forecast for the Ridgefield 4kV increased from \$18.8 million as of the end of the first quarter of 2021 to \$21.2 million as of the end of the second quarter of 2021. This forecast increase was driven by additional engineering and overhead labor required to remove primary wires and complete the 4-13kV conversions; the contract for manhole rebuild work was awarded higher than estimated; and additional labor and material required to rebuild several secondary buses and reroute two underground circuits around an existing gas main that was not known at the time of the prior estimate.

The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>				<i>Forecast</i>		
\$143,414	\$11,239,534	\$2,808,765	\$4,559,439	\$1,931,069	\$459,997	\$60,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$18,751,152	\$19,500,000	96%

### 13. State Street

During the second quarter of 2021, \$216,479 was spent on the State Street project compared to a forecast of approximately \$178,000, which brought the total spend to approximately \$1.2 million. The activities performed on State Street during the second quarter of 2021 included the issuance of construction permits and civil and electrical construction POs awarded.

A new Study level estimate was submitted and approved by the URB during the second quarter of 2021. This updated estimate reduced the total project estimate from \$45.1 million to \$22.4 million, driven by the release of \$19.7 million in base and \$3.0 million of R&C following the OP scope change that will see that scope of work funded under a new project. The OP work associated with the State Street project, estimated at \$22.7 million, is now part of the Electric Stipulated Base (see **Section II.E.5.**).

The State Street scope within the Electric Station Flood Mitigation subprogram involves the relocation of the State Street substation from its current site to the new location identified at Cooper Street. The State Street OP scope being executed under the Electric Stipulated Base involves the extensive underground installation required to connect the new 4kV circuits back to the existing 4kV circuits and to maintain the current capacity of these circuits. PSE&G informed the IM that discussions it had with BPU Staff and Rate Counsel regarding the mitigation change on the State Street project resulted in the decision to recover the increased cost for the State Street project stemming from the change in mitigation method (then estimated at \$16.5 million) in the Company's next rate case as opposed to the ES 2 accelerated recovery. PSE&G's view is that while these increased costs on State Street are prudent and can and should be recovered by way of the accelerated recovery mechanism, it will in this one circumstance defer its request for recovery and credit the additional cost associated with the State Street OP scope toward the Company's stipulated base requirements for the ES 2 Program.

The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$77,590	\$662,148	\$237,415	\$216,479	\$6,071,171	\$1,473,376	\$10,314,820

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,193,633	\$22,400,000	5%

### 14. Toney's Brook

During the second quarter of 2021, \$289,769 was spent on the Toney's Brook project compared to a forecast of approximately \$400,000, which brought the total spend to approximately \$1.0 million. The variance in spend this quarter was driven by the civil/layout issued for review (IFR) milestone not

completed in June as assumed, however there was no resulting change to the forecasted in-service date. Notable activities completed during the second quarter of 2021 included the release of civil and electrical IFC drawings.

The actual spend by quarter for Toney’s Brook as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$211,940	\$373,096	\$88,947	\$289,769	\$195,119	\$211,127	\$14,884,332

Actuals to Date	Estimate	% of Actuals to Estimate
\$963,751	\$18,800,000	5%

### 15. Waverly

During the second quarter of 2021, \$2,837,893 was spent on the Waverly project compared to a forecast of approximately \$3.1 million, which brought the total spend to approximately \$6.1 million. The majority of the actual spend during the second quarter of 2021 was associated with the delivery of the 26kV switchgear in April 2021 (\$2.3 million), with the remaining spend in the quarter related to project support costs (Project Management, licensing and permitting) of \$0.2 million, engineering costs of \$0.2 million, and A/E procured equipment of \$0.15 million. The variance in second quarter forecasted to actual spend was largely driven by material shortages (conduit) that pushed the start of Metro Division activities into the third quarter.

As reported in the IM 2021 First Quarter Report, the project team requested a special meeting to maintain the project’s schedule, which was held in March 2021. The Newark Planning Board denied the site plan application at this meeting, which requires the project team to prepare a new site plan application. The revised site plan continued to be developed through the second quarter of 2021, including receiving feedback from the community at outreach meetings held this quarter. Due to the site plan not being approved in the March 2021 meeting, the entire project has shifted out, including pushing the in-service date from the fourth quarter of 2023 to the fourth quarter of 2024 (for transformer #3, which is the final asset). PSE&G is continuing to look at opportunities to reduce the activity durations and pull the schedule back.

Construction at Waverly, which started in October 2020, was paused with the site plan denial and remains at 6% complete as of the end of the second quarter of 2021.

The total forecast for the Ridgfield 4kV increased from \$33.8 million as of the end of the first quarter of 2021 to \$35.0 million as of the end of the second quarter of 2021. This forecast increase was driven by higher carrying costs based on the extended project duration stemming from the initial site plan denial, along with additional engineering and licensing and permitting costs related to performing the required site plan revisions.

The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2025
<i>Actuals</i>				<i>Forecast</i>		
\$103,748	\$2,460,815	\$659,572	\$2,837,893	\$498,727	\$573,923	\$27,935,974



Actuals to Date	Estimate	% of Actuals to Estimate
\$6,062,028	\$35,400,000	17%

## 16. Woodlynne

During the second quarter of 2021, \$132,630 was spent on the Woodlynne project compared to a forecast of approximately \$122,000, which brought the total spend to approximately \$1.5 million. Notable activities completed during the second quarter of 2021 included the issuance of construction permits and civil and electrical POs issued.

The total forecast for the Woodlynne increased from \$18.3 million as of the end of the first quarter of 2021 to \$21.2 million as of the end of the second quarter of 2021. This forecast increase was driven by higher than previously estimated civil construction work, which was slightly offset by lower in-house engineering costs and lower than estimated costs of piles procurement.

The actual spend by quarter for Woodlynne as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$110,982	\$993,298	\$282,187	\$132,630	\$1,215,299	\$1,247,199	\$17,273,405

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,519,097	\$19,400,000	8%

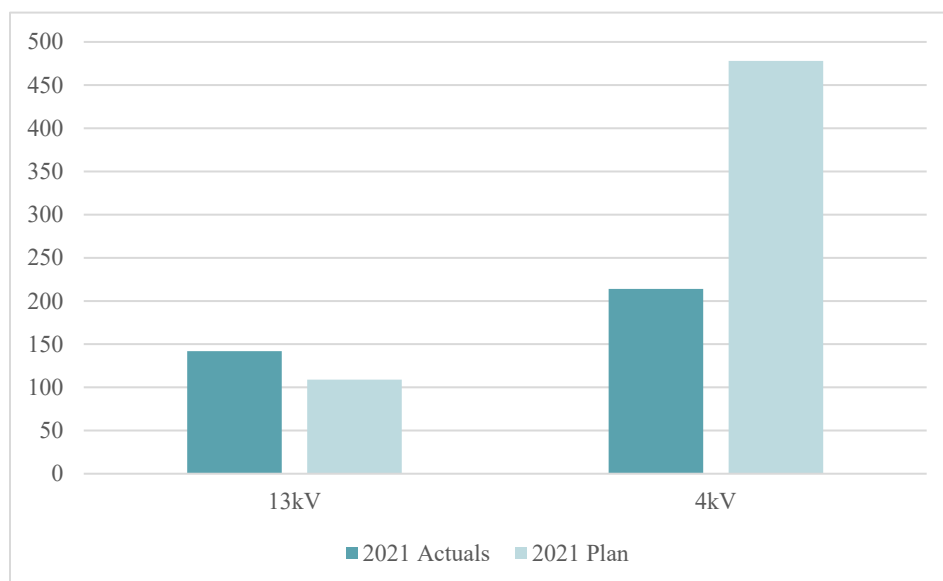
## B. Contingency Reconfiguration

During the second quarter of 2021, work continued to progress in the Contingency Reconfiguration subprogram with all four Divisions continuing to install reclosers with a total of 193 installed during the quarter and 179 commissioned. **Table 12 – ES 2 Program Recloser Status as of June 30, 2021** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the current status of engineering, installation, and commissioning; while **Figure 3 – 2021 Recloser Installations as of June 30, 2021** compares the installed reclosers as of the end of the second quarter of 2021 against PSE&G’s 2021 installation plan.

*Table 12 – ES 2 Program Recloser Status as of June 30, 2021*

Type	Engineering Packages Completed (1 recloser ea.)			Reclosers Installed			Reclosers Commissioned		
	Q2 Qty.	2021 Total	Program Total	Q2 Qty.	2021 Total	Program Total	Q2 Qty.	2021 Total	Program Total
13kV	94	146	845	95	142	803	85	136	780
4kV	111	188	442	98	214	371	94	210	367
<b>Total</b>	205	334	1,287	193	356	1,174	179	346	1,147

**Figure 3 – 2021 Recloser Installations as of June 30, 2021**



As shown in **Table 13** and **Figure 3**, PSE&G continued to maintain progress during the second quarter of 2021 and stayed on track for the 2021. As discussed in the IM 2021 First Quarter Report, there was an identified resource constraints within the Metro Division that stemmed from attrition at the end of the year and two larger projects in the Division with firm in-service dates, leading to a shortage of approximately 30 full-time equivalents compared to normal. While new hires have been brought on board, they will not be able to work on crews until their training is completed. To mitigate impacts, PSE&G engaged a contractor to perform the pole settings from the recloser scope, which commenced early in the second quarter of 2021. As also shown in **Figure 3**, the 2021 installation plan shifts the focus primarily to the 4kV reclosers from the 13kV reclosers that were prioritized in 2020. However, actual installations of 13kV reclosers will continue above the initial 2021 plan due to the change in reclosers planned for the subprogram following PSE&G’s review, which resulted in an additional 275 13kV reclosers and 90 4kV reclosers (also discussed in Section IV.A.1. of the IM 2021 First Quarter Report and **Section II.A.1.** of this IM 2021 Second Quarter Report).

The Fuse Saver pilot program commenced in November 2020 and was primarily completed in January 2021.<sup>2</sup> In total, this phase of the Fuse Saver pilot program included the installation and commissioning of 80 Fuse Saver devices. As noted in the IM 2020 Second Quarter Report, PSE&G’s Asset Management group determined a pilot program would be initiated prior to the full scope to ensure these new devices work as intended. During execution of the pilot program, PSE&G observed factors that will help it prepare for execution of the full Fuse Saver scope, including installation specifications (the remote control unit (RCU) must be placed directly below the Fuse Saver to avoid communications issues), and cost elements for some of the locations (new poles, traffic control, etc.). While monitoring performance of the installed Fuse Savers, PSE&G experienced other communication issues between the Fuse Savers and the RCU, wherein the SCADA communication indicated a false open/close alarm on some of the devices. Siemens has provided a prototype Fuse Saver to address the communication issues, which PSE&G will

<sup>2</sup> In the second quarter of 2021, PSE&G decided to install the remaining 34 Fuse Savers in its inventory to capture additional cost and performance data to better inform the planning and execution of the full scope of work. These installations were completed across the second and third quarters of 2021.

monitor to ensure it addresses the issues prior to placing additional orders. Because of this, the full Fuse Saver scope is no longer anticipated to commence in 2021, as it awaits approval by PSE&G's Asset Management group to proceed with the full scope, aside from the installation of additional units from existing stock. A final decision on the Fuse Saver scope is expected to be made before the end of 2021.

The current forecasted final in-service dates for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 13 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of June 30, 2021**. This table also shows the forecasted dates as of the end of the first quarter of 2021 to show movement to the forecast as of the end of the second quarter of 2021.

**Table 13 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of June 30, 2021**

Scope & Division		Q1 2021 Forecasted Completion Date	Q2 2021 Forecasted Completion Date
Reclosers	Central	12/31/2021	1/31/2022
	Metro	12/31/2021	1/31/2022
	Palisades	11/30/2021	10/31/2021
	Southern	12/31/2021	1/31/2022
Fuse Savers	Central	12/30/2023	12/30/2023
	Metro	12/30/2023	12/30/2023
	Palisades	12/30/2023	12/30/2023
	Southern	12/30/2023	12/30/2023

As shown in **Table 13**, the forecasted final in-service date for each Division's Fuse Saver program remained constant as PSE&G continues its evaluation of the Fuse Saver pilot program before making a final scope decision. While the recloser scope of work saw minor movement across each Division (three slipping one month, one advancing one month from the prior quarter), which was driven by the current scope and status in each Division.

The Contingency Reconfiguration subprogram costs through the end of the second quarter of 2021 are presented in **Table 14 – ES 2 Contingency Reconfiguration Costs as of June 30, 2021**.

**Table 14 – Contingency Reconfiguration Costs as of June 30, 2021**

Scope & Division		2019	2020	Q1 2021	Q2 2021	Total to Date	Forecast	% of Actuals to Forecast
		Actuals						
Reclosers	Central	\$2,737,167	\$12,050,820	\$3,007,686	\$2,392,608	\$20,188,282	\$25,054,781	81%
	Metro	\$2,231,431	\$10,726,610	\$587,396	\$4,051,716	\$17,597,154	\$23,888,564	74%
	Palisades	\$2,515,569	\$12,119,436	\$3,109,037	\$2,591,672	\$20,335,714	\$23,161,122	88%
	Southern	\$2,081,220	\$12,405,684	\$5,008,143	\$4,065,891	\$23,560,938	\$28,952,061	81%
Fuse Savers	Central	\$9,970	\$789,937	\$375,811	\$107,384	\$1,283,102	\$12,463,404	10%
	Metro	\$7,557	\$561,915	\$216,511	\$89,860	\$875,843	\$11,526,731	8%
	Palisades	\$7,468	\$522,454	\$133,552	\$63,808	\$727,282	\$8,833,380	8%
	Southern	\$9,792	\$859,014	\$65,018	\$56,845	\$990,669	\$13,190,192	8%
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$12,503,156</b>	<b>\$13,419,784</b>	<b>\$85,558,985</b>	<b>\$147,070,235</b>	<b>58%</b>

### Findings & Observations:

- PSE&G continued to maintain progress during the second quarter of 2021 and stayed on track for the 2021, assisted by the engagement of a pole setting contractor to alleviate resource constraints in the Metro Division.
- As previously reported, 80 Fuse Saver devices were installed as part of the pilot program for these devices. PSE&G is monitoring the performance of these initial devices after encountering communication issues on approximately 10% of the installed units. The solution developed with Siemens utilizes an external antenna to improve communications.
- The forecasted completion of the recloser scope of this subprogram saw some adjustment during the second quarter of 2021 with most Divisions seeing an approximate one month slip to the completion of the recloser scope, other than the Palisades Division that saw the 13kV recloser completion date improve by 30 days and no change to the 4kV recloser completion date, and the 4kV completion date for the Southern Division, which slipped 92 days based on the engineering package readiness (specifically for tie reclosers). For the Fuse Savers, there was no change to the forecasted completion dates during the second quarter of 2021 while PSE&G continues to assess its final decision on the scope of this work.
- The Contingency Reconfiguration subprogram forecast remained fairly constant as of the end of the second quarter, with a slight decrease of approximately \$1.9 million from the first quarter of 2021. This was largely driven by a net 14-unit reduction in the number of 13kV reclosers planned based on the current status of the network.

### C. Grid Modernization – Communication System

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system.

As reported in the IM 2020 Second Quarter Report, PSE&G made the strategic decision to focus on new recloser installations and has delayed the ramp-up in retrofit installations from August 2020 to January 2021 due to resource constraints. No overall impacts are expected from this decision and PSE&G plans to regain the planned retrofit installations by the middle of 2021 as it shifts focus from new recloser installations to the retrofit reclosers. During the second quarter of 2021, retrofit installations continued to ramp up with 684 installations completed during the quarter against a target of 680. In total, 1,432 retrofit reclosers have been installed on the Program through the end of the second quarter out of a total program forecast of 2,364 (which is periodically reviewed and updated).

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with two of 41 installation projects since removed due to the scheduled elimination of the targeted substations (see additional post-second quarter of 2021 information on the approved fiber projects in **Section IV.B.**). The list of identified fiber installation and cutover projects is presented in **Table 15 – Fiber Projects by Division.**

**Table 15 – Fiber Projects by Division**

<b>Division</b>	<b>Fiber Installation</b>	<b>Fiber Cutover</b>
<b>Central</b>	Cranford; Elizabeth Sub HQ; Rahway; Hadley Road HQ; Roselle; Central HQ; Carteret; Edison; Keasby; Mechanic Street; First Street; Lehigh Avenue	Elizabeth; Henry Street
<b>Metro</b>	East Orange; Metro HQ; Bloomfield; Central Avenue; Haldeon; Irvington; Irvington Sub HQ; Montclair; South Orange; Norfolk Street; Waverly	-
<b>Palisades</b>	Bergen Point; Hackensack Sub HQ; Fort Lee; Harrison; Ridgewood; West New York; Palisades HQ; Culver Avenue; Morgan Street; Howell Street	Tonnelle Avenue; Spring Valley Road; Union City; Fairview; Polk Street; West Orange
<b>Southern</b>	Southern HQ; Princeton; Chauncey Street; Bordentown; Haddon Heights; Thirty Second Street	Delair; East Riverton; Riverside; Mount Holly
<b>Total</b>	<b><i>39 projects</i></b>	<b><i>12 projects</i></b>

During the second quarter of 2021, one additional fiber installation projects (Roselle) was placed in-service. This brought the total projects in-service as of the end of the second quarter of 2021 to nine for the fiber installation projects and eight for the fiber cutover projects. **Table 16 – ES 2 Program Fiber Projects Status as of June 30, 2021** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of the second quarter of 2021 and the projects in italics represent those placed in-service.

**Table 16 – ES 2 Program Fiber Projects Status as of June 30, 2021**

<b>Project Name</b>	<b>Q2 2021 Status</b>	<b>Budget*</b>	<b>Forecast**</b>
<b><i>Fiber Installation Projects</i></b>			
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>	\$750,000	\$701,459
Bloomfield	Continued construction	\$300,000	\$1,482,687
Bordentown	Inside plant (IP) civil construction completed	\$0	\$682,285
Carteret	OP construction mobilized; IP civil construction completed	\$0	\$753,816
Central Ave	IP IFC issued	\$480,000	\$112,759
Central HQ	IP IFC issued; OP IFC issued	\$570,000	\$1,800,274
Chauncey Street	OP IFC issued	\$840,000	\$875,395
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>	\$300,000	\$357,876
Culver Ave	Preliminary engineering	\$0	\$832,145
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>	\$480,000	\$1,143,568
Edison	Preliminary engineering	\$0	\$1,070,066
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>	\$555,000	\$749,712
First Street	OP construction completed; IP IFC issued	\$300,000	\$618,118
Fort Lee	Continued construction	\$480,000	\$1,263,941
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>	\$825,000	\$595,412
Haddon Heights	Preliminary engineering	\$0	\$738,942
Hadley Rd HQ	IP civil construction completed	\$0	\$1,460,786
Haledon	IP IFC issued; OP construction mobilized	\$300,000	\$567,567
Harrison	IP construction mobilized	\$300,000	\$576,805
Howell Street	Preliminary engineering [see also updated status in <b>Section IV.B.</b> ]	\$0	\$0
Irvington	OP construction mobilized	\$300,000	\$174,633
Irvington Sub HQ	OP IFC issued; OP Construction mobilized	\$300,000	\$601,657
Keasbey	Preliminary engineering	\$840,000	\$784,856

Project Name	Q2 2021 Status	Budget*	Forecast**
Lehigh Avenue	Preliminary engineering	\$0	\$818,014
Mechanic Street	Preliminary engineering	\$1,200,000	\$925,256
<i>Metro HQ</i>	<i>In-Service (Q1 2021)</i>	\$300,000	\$582,568
Montclair	OP IFC issued	\$840,000	\$2,147,782
Morgan Street	IP IFC issued; IP construction mobilized; OP IFC issued	\$0	\$518,181
Norfolk St	IP IFC issued	\$300,000	\$186,265
Palisades HQ	Continued construction	\$255,000	\$409,690
Princeton	OP construction completed	\$300,000	\$1,132,137
<i>Rahway</i>	<i>In-Service (Q1 2021)</i>	\$390,000	\$1,026,601
Ridgewood	OP IFC issued	\$390,000	\$483,367
<i>Roselle</i>	<i>In-Service (Q2 2021)</i>	\$390,000	\$428,183
So Orange	OP IFC issued; OP construction mobilized; OP construction completed	\$390,000	\$312,099
<i>Southern HQ</i>	<i>In-Service (Q4 2020)</i>	\$570,000	\$708,350
Thirty Second Street	Preliminary engineering	\$0	\$0
Waverly	Preliminary engineering; project being rescheduled to align with the completion of the new control house as part of the Waverly substation project under the Electric Station Flood Mitigation subprogram.	\$300,000	\$439,640
West New York	IP IFC issued	\$300,000	\$997,565
<b><i>Fiber Cutover Projects***</i></b>			
<i>Delair</i>	<i>In-Service (Q4 2020)</i>	\$50,000	\$117,340
<i>East Riverton</i>	<i>In-Service (Q4 2020)</i>	\$50,000	\$117,340
<i>Elizabeth</i>	<i>In-Service (Q1 2021)</i>	\$50,000	\$215,592
Fairview	Completion dependent upon Fort Lee fiber installation project (tentative start of construction in September 2021)	\$50,000	\$89,786
Henry St	Battery rack installation pending; site visit with Central Division scheduled	\$50,000	\$215,592
<i>Mount Holly</i>	<i>In-Service (Q4 2020)</i>	\$50,000	\$117,340
Polk Street	Completion dependent upon West New York fiber installation project (engineering in progress)	\$50,000	\$89,786
<i>Riverside</i>	<i>In-Service (Q4 2020)</i>	\$50,000	\$117,340
<i>Spring Valley Rd</i>	<i>In-Service (Q1 2021)</i>	\$50,000	\$89,786
<i>Tonnelle Ave</i>	<i>In-Service (Q4 2020)</i>	\$50,000	\$89,786
<i>Union City</i>	<i>In-Service (Q1 2021)</i>	\$50,000	\$89,786
West Orange	Completion dependent upon redundant link to Montclair substation being ready (two redundant fiber links required for each router to support reliability guidelines)	\$50,000	\$56,866
<b><i>Substation Remote Terminal Unit (RTU) Cutovers</i></b>			
Scope: 204 units	5 cutovers completed	\$1,540,000	\$1,929,597
<p>*-The fiber projects with \$0 budgets were not part of the original project list and were added to the subprogram following PSE&amp;G's review of the fiber requirements and status of all its substations and operation centers (see Section IV.A. of the IM 2020 Third Quarter Report), subject to the availability of funds.</p> <p>** -The forecast data is the current forecast information received as of the date of this report (i.e. it reflects the forecast as of early 2022). For the projects with a \$0 forecast, these have been either identified for removal (Howell Street) or were projects identified as potential additions to the subprogram that are unlikely to advance due to lack of additional funds (Thirty Second Street).</p> <p>***-The cutover projects have budgets authorized and tracked by Division. Thus, costs for each station are calculated by taking the budget/forecast for a Division and dividing by the number of stations in the scope for that Division.</p>			

During the second quarter of 2021, updated estimates for the wireless network and retrofits scope (Conceptual level estimate) and for the fiber installation and substation cutover scope (Study level estimate) were approved by the URB. The wireless network and retrofits scope saw its total estimate decrease from \$48.6 million as originally approved to \$35.1 million. This \$13.5 million reduction was driven by the selection of FirstNet as the wireless network vendor in lieu of the original plan to build a solely owned and operated private network.<sup>3</sup> The fiber installation and substation cutover scope saw its total estimate increase from \$23.4 million to \$27.5 million. This \$4.1 million increase was the result of a comprehensive review of the fiber requirements and status of all PSE&G substations and Operations Centers that refined the scope based on current communication needs from what was identified in the original ES 2 filing.

The Grid Modernization – Communication System subprogram costs through the end of the second quarter of 2021 are presented in **Table 17 – ES 2 Grid Modernization – Communication System Costs as of June 30, 2021**.

**Table 17 – ES 2 Grid Modernization – Communication System Costs as of June 30, 2021**

Scope & Division		2019	2020	Q1 2021	Q2 2021	Total to Date	Forecast	% of Actuals to Forecast
		Actuals						
Retrofit Reclosers	Central	\$0	\$884,278	\$1,067,295	\$1,027,602	\$2,979,175	\$6,872,724	43%
	Metro	\$0	\$818,620	\$436,089	\$683,893	\$1,938,602	\$5,762,666	34%
	Palisades	\$0	\$825,174	\$754,869	\$965,416	\$2,545,459	\$6,349,520	40%
	Southern	\$0	\$929,058	\$956,444	\$1,005,852	\$2,891,354	\$7,124,742	41%
Fiber	Central	\$1,691	\$2,418,851	\$796,586	\$1,349,407	\$4,566,535	\$7,790,984	59%
	Metro	\$1,457	\$1,866,697	\$340,713	\$831,337	\$3,040,204	\$7,230,419	42%
	Palisades	\$1,582	\$2,046,762	\$248,558	\$725,030	\$3,021,932	\$4,822,458	63%
	Southern	\$4,731	\$910,483	\$645,219	\$1,029,156	\$2,589,590	\$3,569,301	73%
	Cutovers*	\$0	\$876,502	\$323,458	\$86,115	\$1,286,075	\$2,945,462	44%
<b>Wireless Network</b>		\$74,306	\$6,035,441	\$287,086	\$312,404	\$6,709,236	\$7,909,532	85%
<b>Bulk Purchase**</b>		\$0	\$1,524,874	\$450,013	(\$154,037)	\$1,820,850	\$0	-
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$6,306,330</b>	<b>\$7,862,176</b>	<b>\$33,389,011</b>	<b>\$60,377,806</b>	<b>78%</b>

\*-Includes fiber communication cutovers and substation RTU cutovers (the latter of which began having spend in Q1 2021).  
 \*\*-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.

**Findings & Observations:**

- During the second quarter of 2021, retrofit installations continued to advance following the ramp-up earlier in 2021 with 685 installations completed during the quarter against a target of 680. In total, 1,432 retrofit reclosers have been installed on the Program through the end of the second quarter of 2021 out of a total program forecast of 2,364 (which continues to be periodically reviewed and updated).
- One additional fiber installation project was placed in-service during the second quarter of 2021, bringing the total number of projects in-service to nine fiber installation projects and eight fiber cutover projects.
- An updated Grid Modernization – Communication System subprogram estimate was approved by the URB during the second quarter of 2021, which resulted in the wireless network & retrofits

<sup>3</sup> See related discussion in Section II.A.1. of the IM 2020 Third Quarter Report.

estimate decreasing by \$13.5 million to \$35.1 million, driven by the savings realized in the wireless network vendor selection. The fiber scope estimate increased \$4.1 million to \$27.5 million, which was driven by an updated review of the fiber and communication requirements and current status of all PSE&G substations and Operations Centers. Collectively with the updated estimate to the Grid Modernization – ADMS subprogram, there was no net change to the total estimate of the two Grid Modernization subprograms (after the addition of \$1.7 million as a placeholder for future subprogram needs).

#### **D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS), the Outage Management System (OMS), and ADMS platform upgrades. The primary activities in 2021 are focused on the continued development of the systems and platforms that comprise this subprogram.

The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the second quarter of 2021 are presented as follows:

##### **DMS/DERMS**

- Scope: Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- Q2 2021 Activities:
  - Reviewed program development system configuration.
  - Conducted 3<sup>rd</sup> party interface requirement meetings.
  - Received AMI and weather interface software and license pricing.
  - Conducted factory acceptance testing activities.
- Forecasted Completion as of the end of the second quarter of 2021: 12/9/2022.

##### **OMS**

- Scope: Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G’s network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years’ worth of existing OMS data will be migrated into the new system as well.
- Q2 2021 Activities:
  - Completed legacy data for conversion requirements.
  - Completed Power BI training session.
  - Conducted feedback sessions with Divisions.
  - Conducted design review workshops.
  - Reviewed list of reports to finalize reporting requirements.
  - Drafted damage assessment process and design.
- Forecasted Completion as of the end of the second quarter of 2021: 12/2/2022.



**ADMS Platform**

- Scope: Replace, enhance, and expand the existing Distribution Supervisory Control and Data acquisition (DSCADA) platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q2 2021 Activities:
  - Approved test lead candidate for cognizant.
- Forecasted In-Service as of the end of the second quarter of 2021: 12/10/2021.

During the second quarter of 2021, the Grid Modernization – ADMS subprogram transitioned to a Conceptual level estimate that was approved by the URB at \$42.7 million, an increase of \$7.7 million from the prior \$35.0 million estimate. The increase was primarily the result of a more refined scope, including:

- Increased interface and hardware architecture requirements identified since the original ES 2 filing (\$5.4 million); and,
- Increased performance testing scope requirements as a result of lessons learned from Tropical Storm Isaias (\$2.3 million).<sup>4</sup>

The Grid Modernization – ADMS subprogram costs through the end of the second quarter of 2021 are presented in **Table 18 – ES 2 Grid Modernization – ADMS Costs as of June 30, 2021**.

*Table 18 – ES 2 Grid Modernization – ADMS Costs as of June 30, 2021*

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>				<i>Forecast</i>		
\$36,213	\$16,447,624	\$2,488,980	\$2,168,187	\$2,916,157	\$3,477,015	\$15,178,439

Actuals to Date	Forecast	% of Actuals to Forecast
\$21,141,005	\$42,712,616	49%

**Findings & Observations:**

- The resource constraints continue to be monitored by PSE&G but have not led to additional issues. During the second quarter of 2021 a new ADMS test lead was also brought on board.
- The Grid Modernization – ADMS forecast increased approximately \$2.3 million during the second quarter of 2021 from the end of the first quarter of 2021. This was also reflected in an updated estimate for the subprogram, with this increase driven by additional performance testing scope requirements and an extended schedule as a result of lessons learned from Hurricane Isaias. Likewise, the forecasted completion date for the OMS scope shifted from May 2022 to December 2022 based on the lessons learned.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric OP higher design and construction standards and/or

<sup>4</sup> See related discussion in Section IV.A.2. of the IM 2021 First Quarter Report and in **Section II.A.2.** of this IM 2021 Second Quarter Report.

electric stations life cycle subprograms described in the original ES 2 filing.<sup>5</sup> The bulk of OP higher design and construction standards work is planned to commence in January 2022, which will involve the hardening of selected 13kV circuits with poor storm performance by changing the construction standard from cross-arm open wire to spacer cable construction. In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. In the second quarter of 2021 a fifth station, State Street, was approved by the URB for its OP scope to be transferred from the related Electric Station Flood Mitigation project to the life cycle scope. These five stations and their current estimate compared to the actuals to date are provided in **Table 19 – ES 2 Life Cycle Station Upgrade Project Status as of June 30, 2021**.

*Table 19 – ES 2 Life Cycle Station Upgrade Project Status as of June 30, 2021*

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Hamilton	Study	\$14,500,000	\$3,700,000	\$18,200,000	\$1,000,011	6%	10/12/2022
2. Paramus	Study	\$14,800,000	\$5,400,000	\$20,200,000	\$5,376,035	27%	11/15/2022 (↓)
3. Plainfield	Study	\$18,400,000	\$4,200,000	\$22,600,000	\$1,264,500	6%	10/20/2022 (↓)
4. Woodbury	Study	\$15,400,000	\$3,300,000	\$18,700,000	\$1,447,528	8%	12/27/2022
5. State Street (OP)	Study	\$19,700,000	\$3,000,000	\$22,700,000	\$17,633	0%	3/15/2023

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).  
 (↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
 (↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 19**, of the four prior life cycle station upgrade projects, both the Paramus and Plainfield projects saw a slight slip of 8 and 14 days, respectively, to the forecasted in-service date. Given the relatively small magnitude of these changes, the IM has not performed additional schedule analyses on these projects but will continue to monitor for potential trends. The State Street OP project has its initial forecasted in-service date set for March 15, 2023. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

Findings & Observations:

- The primary activities during the second quarter of 2021 continued to center around advancing the engineering and procurement for the life cycle station upgrade projects. The Paramus project also became the first of these stations to commence construction.

<sup>5</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

- The Hamilton and Woodbury projects saw their forecasts increase by 11% and 19%, respectively, from the end of the first quarter of 2021. On Hamilton, the increase was driven by a higher than previously estimated civil construction costs; while on Woodbury, the increase was driven by updated estimates for electrical construction, testing and commissioning, wire checkers costs, Division support, and a correction to the total switchgear PO value. Despite these increases, the current forecasts for both projects remain below their respective estimates.
- There was minor movement to the forecasted in-service dates for the Paramus and Plainfield projects during the second quarter of 2021, with Paramus slipping 8 days and Plainfield slipping 14 days from the forecasted in-service date as of the end of the first quarter. Each of the original four life cycle station upgrade projects remains forecasted for completion in the fourth quarter of 2022.
- One new life cycle station upgrade project, State Street (OP), was added to the Electric Stipulated Base set of projects. This OP scope was originally part of the State Street project within the Electric Station Flood Mitigation subprogram but was split out in accordance with PSE&G's notice of mitigation change on the original State Street project.

### 1. Hamilton

During the second quarter of 2021, \$400,855 was spent on the Hamilton project against a forecast of approximately \$388,000. This brought total spend through the end of the second quarter of 2021 on the project to approximately \$1.0 million. Notable activities conducted during the second quarter of 2021 included:

- Civil and electrical drawings IFC; and,
- Civil construction out for bid.

The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$0	\$362,372	\$236,783	\$400,855	\$1,044,531	\$1,703,282	\$12,455,452

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,000,011	\$18,200,000	\$16,203,276	6%

### 2. Paramus

During the second quarter of 2021, \$4,176,989 was spent on the Paramus project against a forecast of approximately \$4.1 million. This brought total spend through the end of the second quarter of 2021 on the project to approximately \$5.4 million. Notable activities conducted during the second quarter of 2021 included:

- Civil construction start (contingency switchgear);
- Electrical construction PO issued and start of electrical construction; and,
- Partial 4kV contingency feeder rows delivered.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$0	\$840,200	\$358,846	\$4,176,989	\$1,215,200	\$1,314,500	\$11,108,617

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$5,376,035	\$20,200,000	\$19,014,352	27%

### 3. Plainfield

During the second quarter of 2021, \$367,543 was spent on the Plainfield project against a forecast of approximately \$914,000. The variance between actual and forecasted spend was largely the result of Division work planned for June that was shifted to July-August due to weather constraints (which contributed to the 14-day slip in the in-service date noted above). This brought total spend through the end of the second quarter of 2021 on the project to approximately \$900,000. Notable activities conducted during the second quarter of 2021 included civil and electrical drawings IFC.

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>				<i>Forecast</i>		
\$0	\$682,325	\$214,632	\$367,543	\$1,787,346	\$1,202,569	\$15,390,900

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,264,500	\$22,600,000	\$19,645,315	4%

### 4. Woodbury

During the second quarter of 2021, \$356,225 was spent on the Woodbury project against a forecast of approximately \$356,000. This brought the total spend on the project to approximately \$1.4 million. Notable activities conducted during the second quarter of 2021 included:

- Planning board hearing and permits issued;
- Controls drawings IFC; and,
- Civil and electrical construction out for bid.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$0	\$551,165	\$540,138	\$356,225	\$228,137	\$633,995	\$15,590,340

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,447,528	\$18,700,000	\$17,900,000	6%

### 5. State Street (Outside Plant)

The scope of work for the State Street OP project is comprised of new 4kV OP underground and overhead distribution equipment including manholes and duct banks as required to connect the existing State Street 4kV circuits to the new State Street substation located at Cooper Street.

During the second quarter of 2021, \$17,633 was spent on the State Street (OP) project against a forecast of approximately \$128,000. This variance was primarily due an error that captured the forecast for July 2021 within the June 2021 forecast. This was the first quarter with spend on this project and the minimal spend to date was related to setting up the project and initial planning efforts.

The actual spend by quarter for State Street (OP) as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$0	\$0	\$0	\$17,633	\$469,426	\$145,608	\$19,067,333

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$17,633	\$22,700,000	\$19,700,000	0%

### F. Gas M&R Station Upgrades

Through the end of the second quarter of 2021, primary activities in the Gas M&R subprogram continued to focus on advancing the engineering at each station and other pre-construction activities such as reviewing scope and permit documents and performing noise and geotechnical studies. **Table 20 – ES 2 Gas M&R Summary Status as of June 30, 2021** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

*Table 20 – ES 2 Gas M&R Summary Status as of June 30, 2021*

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Study	\$24,300,000	\$5,000,000	\$29,300,000	\$1,669,208	6%	Dec 2022
2. Central*	Study	\$23,900,000	\$5,100,000	\$29,000,000	\$1,182,818	4%	Dec 2022
3. East Rutherford	Study	\$13,800,000	\$2,700,000	\$16,500,000	\$1,128,559	7%	Dec 2022
4. Mount Laurel	Study	\$9,400,000	\$2,000,000	\$11,400,000	\$673,165	6%	Dec 2022
5. Paramus*	Study	\$11,500,000	\$2,200,000	\$13,700,000	\$828,841	6%	Dec 2023
6. Westampton	Definitive	\$9,100,000	\$900,000	\$10,000,000	\$4,736,632	47%	Dec 2021
<b>Subprogram Total</b>		<b>\$92,000,000</b>	<b>\$17,900,000</b>	<b>\$109,900,000</b>	<b>\$10,219,223</b>	<b>9%</b>	<b>Dec 2023</b>
*-Included in the Stipulated Base.							
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.							
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.							

During the second quarter of 2021, the Westampton project saw its 70%/Conceptual level estimate internally approved in May 2021, followed by the URB approval of the 90%/Definitive level estimate in June 2021. The total estimate remains at \$10.0 million, unchanged from the prior estimate for the project, but includes \$0.8 million released from R&C to the base estimate. There were no changes to the forecasted in-service dates for the Gas M&R project in this period.

Findings & Observations:

- The primary efforts to date on the subprogram continue to be primarily related to pre-construction planning efforts, including the issuing material procurement POs, performing geotechnical tests and groundwater studies. The Westampton project became the first Gas M&R station to enter construction, which commenced in April 2021 and is forecasted to be complete by the end of the year. Engineering and procurement efforts continued to be a main focus of 2021 second quarter activities at the other stations.
- While still early in the subprogram, the IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget. The Westampton project advanced through the Conceptual level estimate to have it Definitive level estimate approved by the URB in June 2021, which resulted in no net change to the project’s estimate. The overall subprogram currently has a total forecast of \$92 million, which remains under the Stipulation budget of \$101 million.

1. Camden

During the second quarter of 2021, \$290,839 was spent on the Camden project compared to a forecast of approximately \$378,000, which brought the total spend to approximately \$1.7 million. Continuing with the pre-construction efforts, during the second quarter of 2021 notable activities completed on the Camden project included:

- Completed geotechnical borings;
- Issued material procurement PO;
- Presented and received conditional zoning board approval; and,
- Received NJDEP Flood Hazard Area (FHA) permit.

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$13,326	\$859,350	\$505,693	\$290,839	\$1,695,488	\$5,650,303	\$15,285,001

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,669,208	\$29,300,000	\$24,300,000	6%

2. Central

During the second quarter of 2021, \$190,109 was spent on the Central project compared to a forecast of approximately \$247,000, which brought the total spend to approximately \$1.2 million. Continuing with the pre-construction efforts, during the second quarter of 2021, notable activities completed on the Central project included:

- Received preliminary cathodic protection drawings for review;
- Issued material procurement PO;
- Completed 3D model review of station design;
- Submitted environmental key plan to township; and,
- Prepared construction bid package.

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$6,869	\$670,582	\$315,258	\$190,109	\$2,636,014	\$7,791,681	\$12,289,486

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,182,817	\$29,000,000	\$23,900,000	4%

### 3. East Rutherford

During the second quarter of 2021, \$260,112 was spent on the East Rutherford project compared to a forecast of approximately \$245,000, which brought the total spend to approximately \$1.1 million. Continuing the pre-construction efforts, during the second quarter of 2021 notable activities completed on the East Rutherford project included:

- Collected water samples for groundwater study and received groundwater study report; and,
- Received Licensing & Permitting drawing package.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$9,010	\$521,865	\$337,573	\$260,112	\$234,569	\$985,999	\$11,450,873

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,128,560	\$16,500,000	\$13,800,000	7%

### 4. Mount Laurel

During the second quarter of 2021, \$149,682 was spent on the Mount Laurel project compared to a forecast of approximately \$122,000, which brought the total spend to approximately \$673,000. Continuing the pre-construction efforts, during the second quarter of 2021 notable activities completed on the Mount Laurel project included:

- Competed soft digs to confirm underground pipe locations;
- Completed page turn of 90% design drawings;
- Performed station boundary survey; and,
- Received information for bidders (IFB) construction drawing package.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$5,965	\$362,167	\$155,351	\$149,682	\$441,985	\$968,060	\$7,316,791

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$673,166	\$11,400,000	\$9,400,000	6%

## 5. Paramus

During the second quarter of 2021, \$129,694 was spent on the Paramus project compared to a forecast of approximately \$142,000, which brought the total spend to approximately \$829,000. Continuing the pre-construction efforts, during the second quarter of 2021 notable activities completed on the Paramus project included the issuance of the material procurement PO.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$8,842	\$462,452	\$277,854	\$129,694	\$123,989	\$82,693	\$10,464,477

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$828,841	\$13,700,000	\$11,500,000	6%

## 6. Westampton

During the second quarter of 2021, \$3,217,496 was spent on the Westampton project compared to a forecast of approximately \$3.0 million, which brought the total spend to approximately \$4.7 million. Construction on the Westampton project commenced in April 2021, while other notable activities completed on the Westampton project during the second quarter of 2021 included:

- Started foundation work and completed data building foundation;
- Received fully executed interconnection agreement with Transco;
- Set data building on foundation;
- Received demolition permits;
- Completed successful hydrotest of all prefabricated piping;
- Completed asbestos remediation at existing regulator building; and,
- Received new regulator building.

During the second quarter of 2021, the project team internally approved the Conceptual level estimate in May 2021 and submitted an updated estimate to the URB in June 2021 that transitioned to the Definitive estimate level with a total estimate of \$10.0 million that represented no net change to the total estimate but saw \$0.8 million of R&C released into the base estimate. The \$0.8 million increase in the base estimate was the result of:



- Increased construction costs based on revised environmental estimates and increased oversight duration (\$0.4 million);
- Increased procurement costs based on POs issued (\$0.3 million); and,
- Project management, design & engineering, and licensing & permitting adjustments (\$0.1 million).

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>				<i>Forecast</i>		
\$8,395	\$1,032,670	\$478,072	\$3,217,496	\$2,252,945	\$1,948,690	\$161,734

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$4,736,632	\$10,000,000	\$9,100,000	47%

#### IV. Additional Information Following the End of the Second Quarter of 2021

While the vast majority of this IM report is focused on the activities and status of the ES 2 Program during the second quarter of 2021, the timing of certain Program elements and information provided by PSE&G naturally carried over beyond the end of the calendar quarter. Such information will generally be covered in the next IM quarterly report but given the importance of some of this information, the IM has provided additional remarks to provide a more complete view of the status of the ES Program based on the available information as of the date of this IM 2021 Second Quarter Report.

##### A. Market Street In-Service Date

As of the end of the second quarter of 2021, the Market Street in-service was forecasted for September 2021 when the 26kV equipment associated with the 26kV reconfiguration work was to be installed. Following the second quarter of 2021, engineering design was completed for the 26kV reconfiguration, which allowed PSE&G to determine that no new equipment was needed for the reconfiguration, and thus no further in-service date required for the Market Street project beyond the 4kV to 13kV OP conversion scope that was completed as of June 25, 2021.

##### B. Updated Fiber Projects

During the fourth quarter of 2021, PSE&G's DSCADA and Transmission Fiber Infrastructure (TFI) groups evaluated that the Howell Street fiber project would not provide the redundancy and resiliency benefits that the ES 2 Program aims to obtain, as the Howell Street substation shares a site with the Jersey City switching station that already has a TFI rack that links back to Howell Street, and thus the Howell Street project was removed from the ES 2 Program. This is consistent with the approach used by PSE&G for the fiber projects, which initially identified a pool of 41 fiber installations for the ES 2 Program and previously removed two projects where a future substation elimination is planned. At this time, PSE&G does not anticipate replacing the cancelled fiber projects with new fiber projects.

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2021 SECOND QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

MAY 5, 2022

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2021 Second Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
RCR-INF-1	With reference to page 3 of the Independent Monitor's Draft Second Quarter 2021 Report, please provide an update to the Waverly site plan approval process.	The Waverly site plan received unanimous approval during the City of Newark's Planning Board meeting on December 14, 2021. Normally, it would then be memorialized in the next meeting, however, the City attorney was out with Covid-19 at that time, which coupled with a backlog of applications resulted in it not being memorialized until the February 3, 2022 meeting.	No change
RCR-INF-2	With reference to page 3 of the Independent Monitor's Draft Second Quarter 2021 Report, please explain if the revised and delayed site plan for the Waverly substation will increase projected costs for the project.	As noted in the IM's 2021 First Quarter Report, PSE&G's preliminary office level estimate on the changes resulting from the revised site plan indicate an estimated cost increase of \$2.6 million. This is comprised of: additional engineering (\$0.8 million), revised fencing and external façade improvements (\$1.0 million), and additional charges for extended project duration (\$0.8 million).	No change
RCR-INF-3	With reference to page 5 of the Independent Monitor's Draft Second Quarter 2021 Report, please indicate how many of the 330 reclosers (177 13kV reclosers and 153 4kV reclosers) would be part of the Company's Poorest Performing Circuit program.	Of these 330 reclosers on 238 circuits identified for removal from the ES 2 Program, 54 circuits were part of the last two years Poorest Performing Circuit.	<b>Section II.A.1.</b>
RCR-INF-4	With reference to page 5 of the Independent Monitor's Draft Second Quarter 2021 Report, please indicate how many of the 330 reclosers (177 13 kV reclosers and 153 4kV reclosers) are part of some other program that is neither Energy Strong 2 nor the Poorest Performing Circuit program. Please identify the program(s).	Of these 330 recloser on 238 circuits identified for removal from the ES 2 Program, beyond the 54 circuits mentioned in response to RCR-INF-3 as part of the Poorest Performing Circuit initiative, 78 circuits received other reliability enhancements outside of the ES 2 Program.	<b>Section II.A.1.</b>
RCR-INF-5	With reference to page 5 of the Independent Monitor's Draft Second Quarter 2021 Report, please explain why the replacement reclosers are skewed towards 13kV reclosers.	The number and type of reclosers added to the Contingency Reconfiguration subprogram was the result of PSE&G's detailed review of 4kV and 13kV circuits that sought to identify cost effective opportunities to include additional circuits in the program in order to improve reliability by reducing the number of customers impacted by an outage and evaluated the options utilizing the same cost benefit process performed for the ES 2 filing.	No change

ID #	Question/Comment	IM Response	Report Changes						
RCR-INF-6	With reference to page 5 of the Independent Monitor’s Draft Second Quarter 2021 Report, please describe the gaps in performance testing and the lessons learned by Hurricane Isaias.	<p>Initially discussed in the IM 2021 First Quarter Report (Section IV.A.2.), the gaps in performance testing on the integrated systems included the OMS experiencing multiple issues with the high volume of data transmitted during the storm, which impacted all communication channels and field management activities. The suspected root cause of the OMS performance issues included: SCADA alarms and customer reports not processed at a rate fast enough to keep up with incoming reports; and stale and repeated outage reports were being submitted erroneously to the OMS when initial submission attempts timed out. The OMS unresponsiveness caused delays to work processes and led to a lower quality of estimated time of recovery information.</p> <p>Among the lessons learned from this storm were two that specifically impact the OMS implementation:</p> <ol style="list-style-type: none"> <li>1. Do not introduce any major system changes immediately before storm season.</li> <li>2. Ensure enhanced performance testing is conducted for each system and its ecosystem. These tests should be repeated annually, with the proper infrastructure, to ensure reliability and availability of critical systems when they are needed most.</li> </ol> <p>The above lessons learned dictated the following changes to the OMS implementation:</p> <ul style="list-style-type: none"> <li>• Shift the deployment date from May 2022 until after the June-September major storm season.</li> <li>• Increase the services scope for the additional enhanced performance testing expectations.</li> <li>• Enhance the OMS architecture to ensure separate development/testing environments for the long-term.</li> <li>• Including contingency to mitigate performance issues in OMS and its ecosystem.</li> </ul>	No change						
RCR-INF-7	With reference to page 5 of the Independent Monitor’s Draft Second Quarter 2021 Report, please describe the enhanced performance testing in response to Hurricane Isaias.	See the response to <b>RCR-INF-6</b> above.	No change						
RCR-INF-8	With reference to page 5 of the Independent Monitor’s Draft Second Quarter 2021 Report, please explain what portion of the \$2.3 million increase in costs is attributed to additional scope and what is attributable to the revised deployment date.	<p>The estimated \$2.3 million cost increase related to the OMS implementation is comprised of the following components:</p> <table border="1"> <thead> <tr> <th>Component</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>Extend OSI services contract</td> <td>\$1.5 million</td> </tr> <tr> <td>Extend Cognizant services contract</td> <td>\$0.2 million</td> </tr> </tbody> </table>	Component	Cost	Extend OSI services contract	\$1.5 million	Extend Cognizant services contract	\$0.2 million	<b>Section II.A.2.</b>
Component	Cost								
Extend OSI services contract	\$1.5 million								
Extend Cognizant services contract	\$0.2 million								

ID #	Question/Comment	IM Response	Report Changes												
		<table border="1"> <tr> <td>Extend Pontoon services contract</td> <td>\$0.2 million</td> </tr> <tr> <td>Extend Internal subject matter experts</td> <td>\$0.2 million</td> </tr> <tr> <td>Development Environment</td> <td>\$0.2 million</td> </tr> <tr> <td>Development Contingency</td> <td>\$0.3 million</td> </tr> <tr> <td>Reduced Travel &amp; Expenses</td> <td>(\$0.3 million)</td> </tr> <tr> <td>Total</td> <td>\$2.3 million</td> </tr> </table>	Extend Pontoon services contract	\$0.2 million	Extend Internal subject matter experts	\$0.2 million	Development Environment	\$0.2 million	Development Contingency	\$0.3 million	Reduced Travel & Expenses	(\$0.3 million)	Total	\$2.3 million	
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Reduced Travel & Expenses	(\$0.3 million)														
Total	\$2.3 million														
RCR-INF-9	With reference to Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2011, please explain the increase in the projected cost of the Clay Street Substation from \$29.8 to \$30.8 million.	The Q1 2021 to Q2 2021 forecast increase on the Clay Street substation project was driven by higher than previously estimated cutover costs based on an updated estimate from the Division (\$0.5 million) and an increase in surcharge rates based on the 2020 surcharge methodology (\$0.5 million).	<b>Section III.A.2.</b>												
RCR-INF-10	With reference to Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2021, please explain the increase in the projected cost of the Market Street Substation from \$26.1 to \$29.3 million.	The forecast increase on the Market Street project was driven by additional OP overhead and restoration work along with associated material and surchargers based on the complexity of the work and the field conditions, including higher than estimated traffic control as per city/county requirements.	<b>Section III.A.8.</b>												
RCR-INF-11	With reference to Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2021, please explain the increase in the projected cost of the Ridgefield 4kV Substation from \$18.8 to \$21.2 million.	The forecast increase on Ridgefield 4kV project was driven by: additional engineering and overhead labor required to remove primary wires and complete the 4-13kV conversions; the contract for manhole rebuild work was awarded higher than estimated; additional labor and material required to rebuild several secondary buses and reroute two underground circuits around an existing gas main that was not known at the time of the prior estimate.	<b>Section III.A.12.</b>												
RCR-INF-12	With reference to Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2021, please explain the decrease in the projected cost of the State Street Substation from \$38.9 to \$19.0 million.	The forecast decrease on the State Street project was driven by the scope change that split the OP scope into a separate project carried out under the Electric Stipulated Base.	No change												
RCR-INF-13	With reference to Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2021, please explain the increase in the projected cost of the Waverly Substation from \$33.8 to \$35.0 million.	The forecast increase on the Waverly project was driven by higher carrying costs based on the extended duration stemming from the site plan denial along with additional engineering and licensing and permitting costs related to site plan revisions (see also the response to RCR-INF-2 above).	<b>Section III.A.15.</b>												
RCR-INF-14	With reference to Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2021, please explain the increase in the projected cost of the Woodlynne Substation from \$18.3 to \$21.2 million.	The forecast increase on the Woodlynne project was driven by higher than previously estimated civil construction work, which was slightly offset by lower in-house engineering costs and lower than estimated costs of piles procurement.	<b>Section III.A.16.</b>												

ID #	Question/Comment	IM Response	Report Changes
RCR-INF-15	With reference to page 22 of the Independent Monitor’s Draft Second Quarter 2021 Report, please explain why the outside plant portion of the project has been incorporated into the Company’s \$100 million electric base component that was originally intended for life cycle station upgrades.	PSE&G informed the IM that discussions it had with BPU Staff and Rate Counsel regarding the mitigation change on the State Street project resulted in the decision to recover the increased cost for the State Street project (then estimated at \$16.5 million) in the Company’s next rate case as opposed to the ES 2 accelerated recovery. PSE&G’s view is that while these increased costs on State Street are prudent and can and should be recovered by way of the accelerated recovery mechanism, it will in this one circumstance defer its request for recovery and credit the additional cost toward the Company’s stipulated base requirements for the ES 2 Program.	<b>Section III.A.13.</b>
RCR-INF-16	With reference to page 32 of the Independent Monitor’s Draft Second Quarter 2021 Report, please describe the proposed outside plant scope of work for the State Street substation proposed by the Company as part of the \$100 million electric base.	Related to the change in mitigation method for the State Street project that changed the scope from raise and rebuilt to relocate, the State Street OP scope is comprised of new 4kV OP underground and overhead distribution equipment including manholes and duct banks as required to connect the existing State Street 4kV circuits to the new State Street substation.	<b>Section III.E.5.</b>
RCR-INF-17	With reference to page 32 of the Independent Monitor’s Draft Second Quarter 2021 Report, please distinguish the difference of the proposed outside plant scope of work for the State Street substation, and the \$19.09 million forecasted for the State Street substation as part of the Electric Station Flood Mitigation subprogram.	The State Street scope within the Electric Station Flood Mitigation subprogram contemplates the relocation of the State Street substation from its current site to the new location identified at Cooper Street. The State Street OP scope being executed under the Electric Stipulated Base involves the extensive underground installation required to connect the new 4kV circuits back to the existing 4kV circuits and to maintain the current capacity of these circuits.	<b>Section III.A.13.</b>
S-INF-1	<b><u>Reference Page 16, Electric Station Flood Mitigation Projects (Clay Street)</u></b> What is attributed to the forecasted in-service date for the Clay Street project advancing 50 days?	The advancement of the forecasted in-service date for the Clay Street project experienced during the second quarter of 2021 was driven by the planned start of electrical construction advancing from August 2022 to June 2022.	No change
S-INF-2	<b><u>Reference Page 18, Electric Station Flood Mitigation Projects (Hasbrouck Heights)</u></b> Please provide additional details about the “Change in T&D surcharge methodology” which resulted in the estimated cost of the Hasbrouck Heights project increasing by \$0.6 million.	The change in surcharge methodology primarily impacted outside service electrical construction and various internal labor categories (Project Manager, Staff Engineer, Project Engineer, Project Controls Engineer), which resulted in the following estimate change: <ul style="list-style-type: none"> <li>• Outside Services Electrical Construction: \$0.1 million</li> <li>• Internal Labor: \$0.5 million</li> <li>• Total Change in T&amp;D Surcharge Methodology increase: \$0.6 million</li> </ul>	<b>Section III.A.4.</b>
S-INF-3	<b><u>Reference Page 19, Electric Station Flood Mitigation Projects (Leonia)</u></b>	The change in surcharge methodology primarily impacted outside service electrical construction and various internal labor categories	<b>Section III.A.7.</b>

ID #	Question/Comment	IM Response	Report Changes
	Please provide additional details about the “Change in T&D surcharge methodology” which resulted in the estimated cost of the Leonia project increasing by \$1.2 million.	(Project Manager, Staff Engineer, Project Engineer, Project Controls Engineer), which resulted in the following estimate change: <ul style="list-style-type: none"> <li>• Outside Services Electrical Construction: \$0.6 million</li> <li>• Internal Labor: \$0.6 million</li> <li>• Total Change in T&amp;D Surcharge Methodology increase: \$1.2 million</li> </ul>	
S-INF-4	<b><u>Reference Page 21, Electric Station Flood Mitigation Projects (Ridgefield 13kV)</u></b> Please provide additional details about the “Change in T&D surcharge methodology” which resulted in the estimated cost of the Ridgefield 13kV project increasing by \$1.7 million.	The change in surcharge methodology primarily impacted outside service electrical construction and various internal labor categories (Project Manager, Staff Engineer, Project Engineer, Project Controls Engineer), which resulted in the following estimate change: <ul style="list-style-type: none"> <li>• Outside Services Electrical Construction: \$0.6 million</li> <li>• Internal Labor: \$1.1 million</li> <li>• Total Change in T&amp;D Surcharge Methodology increase: \$1.7 million</li> </ul>	<b>Section III.A.11.</b>
S-INF-5	<b><u>Reference Page 23, Electric Station Flood Mitigation Projects (Waverly)</u></b> Regarding the Waverly project: <ol style="list-style-type: none"> <li>Please provide additional details describing the work included within the approximately \$2.8 million in spending during the second quarter of 2021.</li> <li>Please confirm that this work will not be affected by the Newark Planning Board’s denial of the site plan for the project.</li> </ol>	The majority of the actual spend during the second quarter of 2021 was associated with the delivery of the 26kV switchgear in April 2021 (\$2.3 million), with the remaining spend in the quarter related to project support costs (Project Management, licensing and permitting) of \$0.2 million, engineering costs of \$0.2 million, and A/E procured equipment of \$0.15 million. The Waverly project site plan was approved by the City in early 2022 with the construction permits received in April 2022.	<b>Section III.A.15.</b>
S-INF-6	<b><u>Reference Page 24, Table 12 – ES 2 Program Recloser Status as of June 30, 2021</u></b> Please provide the total number of 13kV reclosers and 4kV reclosers currently expected to be installed within the Contingency Reconfiguration subprogram.	Recloser installations were completed in early 2022 with a final amount of 932 13kV reclosers and 510 4kV recloser installed during the ES 2 Program.	No change
S-INF-7	<b><u>Reference Page 25, Figure 3 – 2021 Recloser Installations as of June 30, 2021</u></b> What is attributed to the actual 13kV recloser installations (as of June 30, 2011) exceeding planned 13kV recloser installations for all of 2021?	The change in the number of 13kV reclosers planned stemmed from the decision to identify opportunities to include additional circuits in the subprogram (discussed in Section IV.A.1. of the IM 2021 First Quarter Report and <b>Section II.A.1.</b> of this IM 2021 Second Quarter Report). As a result of this review, 365 reclosers on 342 circuits were identified for inclusion in the subprogram, which was comprised of 275 13kV units and 90 4kV units. These were added after the 2021 installation plan was established, which resulted in the actual 13kV recloser installations exceeding the 2021 installation plan.	<b>Section III.B.</b>

ID #	Question/Comment	IM Response	Report Changes
S-INF-8	<p><b><u>Reference Page 27, Grid Modernization – Communication System</u></b>  Regarding retrofit recloser installations:</p> <ol style="list-style-type: none"> <li>a. Please compare the current forecast (2,364 retrofit reclosers) to the originally planned total.</li> <li>b. Please compare the currently forecasted cost of retrofit recloser installations to the originally budgeted cost.</li> </ol>	<p>Regarding the retrofit recloser installations:</p> <ol style="list-style-type: none"> <li>a. PSE&amp;G initially forecasted that 2,601 units would be installed as part of the ES 2 Program, which included 204 substation RTU retrofits. As execution progressed, PSE&amp;G split the tracking of substation RTU retrofits out from the recloser retrofits. The forecasted units also continued periodically to update the forecast based on reviews of current phone line devices, circuit reconfigurations, and removed or replaced units. At completion in December 2021, 2,318 recloser retrofits were installed.</li> <li>b. The budget for the retrofit reclosers was established at \$29.6 million while the forecast as of December 2021 was \$25.9 million.</li> </ol>	
S-INF-9	<p><b><u>Reference Page 27, Table 15 – Fiber Projects by Division</u></b>  Please confirm that the Waverly fiber project is not expected to be impacted by the site plan denial associated with the Waverly substation project.</p>	<p>The site plan delay on the Waverly substation project resulted in a delay to the Waverly fiber project. The fiber racks and equipment can only be installed after the new control house is built. As such, the Waverly fiber project will be rescheduled to align with the substation control house construction.</p>	<b>Table 16</b>
S-INF-10	<p><b><u>Reference Page 28, Table 16 – ES 2 Program Fiber Projects Status as of June 30, 2021</u></b>  For each fiber project, please compare the forecasted cost to the originally budgeted cost.</p>	<p>The budget and forecasted fiber project cost information has been incorporated into <b>Table 16</b>.</p>	<b>Table 16</b>
S-INF-11	<p><b><u>Reference Page 32, Electric Stipulated Base</u></b>  Refer to the statement “The bulk of outside plant higher design and construction standards work is planned to commence in January 2022.”</p> <ol style="list-style-type: none"> <li>a. Please provide additional details about any “outside plant higher design and construction standards” projects that the Company currently expects to include within the “Electric Stipulated Base” spending (excluding the State Street project).</li> <li>b. Please estimate the total spending associated with “outside plant higher design and construction standards” that the Company currently expects to include within “Electric Stipulated Base” spending (excluding the State Street project).</li> </ol>	<p>Regarding these requests relating to the Electric Stipulated Base OP higher design and construction standards:</p> <ol style="list-style-type: none"> <li>a. The OP-Higher Design Standards projects will harden selected 13kV circuits with poor storm performance by changing the construction standard from cross-arm open wire construction to spacer cable construction. In addition to replacing the cross-arms and wires, the scope also provides for replacing poles as needed to meet the higher design standards.</li> <li>b. The original assumption of 1/3 Lifecycle stations and 2/3 OP-Higher Design Standards will be revised by PSE&amp;G based on opportunities to shift Lifecycle stations from Stipulated Base to be funded under the Accelerated Recovery given the final estimates of the 16 electric station flood mitigation stations four previously approved life cycle station projects.</li> </ol>	<b>Section III.E.</b>



ID #	Question/Comment	IM Response	Report Changes
S-INF-12	<p><b>Reference Page 40, Updated Fiber Projects</b>  Regarding the removal of the Howell Street fiber project from the program:</p> <ul style="list-style-type: none"> <li>a. Please provide additional detail describing the Company’s determination that this project would not provide sufficient redundancy and resiliency benefits.</li> <li>b. Please indicate if the Company is considering adding additional fiber projects to replace any removed fiber projects.</li> </ul>	<p>The Howell Street substation is located on the same property as the Jersey City Switching Station, which already has a TFI rack that links back to Howell Street. Therefore, PSE&amp;G determined an additional TFI rack at Howell Street was not required for redundancy and resiliency benefits.</p> <p>PSE&amp;G is not anticipating to replace the cancelled fiber projects with new fiber projects.</p>	<b>Section IV.B.</b>
4/7/2022 Letter from Rate Counsel	<p>In addition to the above informal questions issued by Rate Counsel, the IM also received a letter on April 7, 2022 from Rate Counsel that provided additional comments on the draft IM 2021 Q2 Report. The nature of the comments in this letter generally summarized the key contents of the draft report and did not include additional specific questions and/or requests, as such the IM is noting receipt of the letter here but has no further response to it.</p>	N/A	N/A
PSE&G-1	<p>Referencing <b>Table 1</b>, the total spend to date excludes the Front Street project in the Electric Station Flood Mitigation subprogram.</p>	<p>The IM has corrected the total spend as of the end of the second quarter of 2021 on the Electric Station Flood Mitigation subprogram to \$90,603,138, which reflects the inclusion of the Front Street project (\$190,915 spend) and still excludes the cancelled Constable Hook project (\$133,616 spend).</p> <p>In review of <b>Table 1</b>, the IM also identified that the total forecast for the Electric Station Flood Mitigation subprogram included the actual spend associated with the cancelled Constable Hook project, which has now been removed for a revised total forecast of \$346,463,155 as of the end of the second quarter of 2021. Similar corrections were also made to <b>Table 11</b>.</p>	<b>Table 1 &amp; Table 11</b>
PSE&G-2	<p>Referencing the following, “During the second quarter of 2021, retrofit installations continued to ramp up with 685 installations completed during the quarter against a target of 680. In total, 1,432 retrofit reclosers have been installed on the Program through the end of the second quarter out of a total program forecast of 2,364 (which is periodically reviewed and updated).” The number of installations completed during the second quarter of 2021 should be 684 units, not 685 (the total of 1,432 is correct, however).</p>	<p>The IM has corrected the number of retrofit recloser installations completed during the second quarter of 2021 to 684 units.</p>	<b>Section III.C.</b>

<b>ID #</b>	<b>Question/Comment</b>	<b>IM Response</b>	<b>Report Changes</b>
PSE&G-3	Referencing the first bullet under “Findings & Observations” for the Grid Modernization – ADMS subprogram, it should state “resource constraints” not “recourse constraints”.	The identified typo has been corrected in this final report.	<b>Section III.D.</b>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2021 THIRD QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

AUGUST 24, 2022

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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Advanced Metering Interface .....	AMI
Allowance for Funds Used During Construction.....	AFUDC
Architect and Engineer .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System.....	DERMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Gas Metering & Regulating.....	Gas M&R
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Bid.....	IFB
Issued for Construction .....	IFC
Mobile Work Management System .....	MWMS
New Jersey Department of Environmental Protection.....	NJDEP
New Jersey Sports and Exposition Authority .....	NJSEA
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Outside Plant.....	OP
Pipeline and Hazardous Materials Safety Administration .....	PHMSA
Public Service Electric & Gas .....	PSE&G
Purchase Order.....	PO
Record of Decision .....	ROD
Remote Control Unit.....	RCU
Remote Terminal Unit .....	RTU
Risk and Contingency.....	R&C

Supervisory Control and Data Acquisition .....SCADA  
System Average Interruption Duration Index..... SAIDI  
Utility Review Board ..... URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram). This report contains the Independent Monitor's (IM's) findings and observations on the ES 2 Program elements and other information on the Program's status as of the third quarter of 2021.

During the third quarter of 2021, the bulk of the spend within the ES 2 Program continued to be in the two largest subprograms: Electric Station Flood Mitigation with six projects continuing in construction; and Contingency Reconfiguration that continues to advance the installation and commissioning of reclosers largely in alignment with PSE&G's plan. Within the other subprograms, the Grid Modernization – Communication System subprogram placed eight additional fiber installation projects and one additional fiber cutover project in-service, and continued the retrofit recloser installations, with 562 units installed during the third quarter of 2021, bringing the total number of retrofit reclosers installed to 1,994 units out of a current forecast of 2,357 units. The Grid Modernization – ADMS subprogram completed the factory acceptance testing and received and setup server hardware equipment. The Gas M&R subprogram continued construction on the Westampton project, while other stations continued to advance design, submitted site plan/permit packages, and continued other preliminary activities. The Hamilton, Plainfield, and Woodbury projects in the Electric Stipulated Base scope commenced construction during the third quarter of 2021, while construction continued to advance on the Paramus project. **Table 1 – ES 2 Subprogram & Stipulated Base Status as of September 30, 2021** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

*Table 1 – ES 2 Subprogram & Stipulated Base Status as of September 30, 2021*

Subprogram	Q3 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Electric Station Flood Mitigation	\$10,647,819	\$101,384,572	\$346,555,960	29%	Dec 2024	\$389M
Contingency Reconfiguration	\$11,715,206	\$97,274,191	\$145,494,461	67%	Dec 2023	\$145M
Grid Modernization – Communications	\$6,721,006	\$40,110,017	\$63,110,594	64%	Dec 2023	\$64.3M
Grid Modernization – ADMS	\$2,368,648	\$23,509,654	\$42,722,333	55%	Dec 2022	\$42.7M
Electric Stipulated Base	\$4,279,681	\$13,385,388	\$100,000,000	13%	Dec 2023	\$100M
Gas M&R Station Upgrades^	\$2,950,314	\$13,169,538	\$95,801,855	14%	Dec 2023	\$101M
<b>Total*</b>	<b>\$38,682,675</b>	<b>\$288,833,359</b>	<b>\$793,685,204</b>	<b>36%</b>	<b>Dec 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 11** and **Table 20** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\* -Final in-service date.

\*\*\*-Following the \$7.7 million transfer in July 2021 from the Grid Modernization – Communications subprogram to the Grid Modernization – ADMS subprogram.

^-Includes both the ES 2 projects and the Stipulated Base gas projects.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2021**.

**Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2021**

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$10,500,000	\$5,431,127	52%	10/20/2021 (↑)
2. Clay Street	\$33,800,000	\$3,255,941	10%	12/27/2022 (↓)
3. Front Street <sup>^</sup>	\$27,400,000	\$1,261,050	5%	11/6/2023 (↓)
4. Hasbrouck Heights	\$22,700,000	\$2,091,795	9%	2/7/2023
5. Kingsland	\$8,300,000	\$531,370	6%	10/4/2023
6. Lakeside Avenue	\$47,900,000	\$1,045,328	2%	11/8/2023 (↑)
7. Leonia	\$26,400,000	\$14,399,755	55%	10/10/2022 (↓)
8. Market Street	\$29,900,000	\$25,293,157	85%	<b>6/25/2021</b>
9. Meadow Road	\$9,000,000	\$899,374	10%	9/22/2023
10. Orange Valley	\$20,200,000	\$702,848	4%	12/29/2023
11. Ridgefield 13kV	\$27,600,000	\$14,893,425	54%	11/11/2022 (↓)
12. Ridgefield 4kV	\$21,300,000	\$20,404,916	96%	<b>5/16/2021</b>
13. State Street	\$21,400,000	\$1,764,732	8%	9/23/2022
14. Toney's Brook	\$18,800,000	\$1,122,883	6%	4/21/2023
15. Waverly	\$35,400,000	\$6,339,767	18%	12/18/2024
16. Woodlynne	\$19,400,000	\$1,947,106	10%	10/10/2023

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). **Bold** dates indicate the actual in-service date.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

<sup>^</sup>- The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

As indicated in **Table 2**, the projects that previously started construction (Academy Street, Leonia, Market Street, Ridgefield 13kV, Ridgefield 4kV, and Waverly) continue to have the highest total spend to date. Additionally, four of the stations (Leonia, Market Street, Ridgefield 4kV, and State Street) had new estimates approved by the PSE&G's Utility Review Board (URB) in during the third quarter of 2021.

**Table 2** also shows that six of the sixteen projects had movement during the third quarter of 2021 in the forecasted in-service date, with two advancing and four slipping. Of these six projects, five of the projects (Academy Street, Clay Street, Front Street, Leonia, and Ridgefield 13kV) had forecasted in-service dates



change by less than two weeks. While the Lakeside Avenue forecasted in-service date advanced 35 days from the status as of the end of the second quarter of 2021. As previously reported, the Waverly final in-service date is currently forecasted for December 2024, unchanged from the prior quarter while the project team continues to work on a new site plan application, which once approved will provide PSE&G with a clearer view of the Waverly schedule, including potential opportunities to advance the in-service date.

The IM has found nothing to date that would jeopardize the ES 2 Program being completed on budget. However, schedule challenges, particularly on the Waverly substation and other projects with forecasted in-service dates near the Program end date will continue to warrant further monitoring by the IM to ensure the ES 2 Program is completed within the defined timeline.

As per N.J.A.C. Section 14:3-2A.5(c)2, the IM reports are to address:

- i. *The effectiveness of Infrastructure Investment Program investments in meeting project objectives;*
- ii. *The cost-effectiveness and efficiency of investments;*
- iii. *The appropriateness of cost assignments; and*
- iv. *Any other information required by the Board.*

The IM focuses the majority of the discussion within each report on these primary objectives and has summarized the findings on these areas as follows:

- **Effectiveness of ES 2 investments in meeting project objectives:** The objectives for each subprogram within the ES 2 were defined within PSE&G's ES 2 filing and confirmed by the Stipulation. The overall objectives focused on improving system resiliency, reliability, and hardening through rebuilding or replacing selected substations, installing smart control and monitoring devices on distribution circuits (reclosers, fuse savers, etc.), installing ADMS and a new communication system, and rebuilding selected Gas M&R stations. Within **Section III** of this report, the IM provides a review of the status of the efforts performed to meet these objectives for each subprogram.
- **Cost-effectiveness and efficiency of investments:** To assess the cost effectiveness and efficiency of ES 2 investments, the IM began with a review of the initial scope, estimate, and related planning documents for each project to establish a baseline to monitor progress against as the work advances. The IM concurrently reviewed the program governance and structure, including the Company's policies and procedures, to understand how the Company intended to execute the projects. As the Program execution advances, the IM evaluates actual costs against the initial estimates and current forecasts, including seeking additional information relating to any variances identified. In the initial IM report on the ES 2 Program (the IM 2020 First Quarter Report), a review of the Program governance and the policies and procedures utilized by PSE&G was performed with the IM finding it provided a solid foundation for PSE&G to execute the Program. While the overall Program's current cost forecast is below the Stipulation amount, the IM has observed cost increases realized on specific projects or aspects of the Program and found the majority of these increases stem from scope evolution and/or more detailed estimates from the time of the ES 2 filing, as well as the more recent changes in general market conditions (e.g. Covid-19 impacts, supply chain issues, etc.).

- **Appropriateness of cost assignments:** The IM receives and reviews recurring data concerning the accumulation of costs within the Program. Based on that review, the IM submits follow-up questions to the Company regarding that data for the reporting period. Such follow-up questions generally focus on the following aspects:
  - Review of any unusual changes in cost elements from period-to-period, including but not limited to allowance for funds used During construction (AFUDC), cost of removal (COR), and the allocation of overheads.
  - Review spend on capital accounts, such as Construction Work in Progress (CWIP) as it relates to overall spend, AFUDC, and COR.
  - Verify cost accumulations and classifications appear to be in accordance with Generally Accepted Accounting Principles (GAAP), to the extent the IM has access to such information.
  - Review and investigation of prior period adjustments and/or corrections to capital accounts.
  - Engage the Company’s Internal Audit group on specific areas to audit, review, and assess – particularly for areas in which the IM has limited or no visibility (proprietary data, accounting systems, etc.).

Through the above steps, the IM tracks and monitors how the Company is recording costs to support the finding that the cost assignments appear to be appropriately applied.

Within the Stipulation, it also noted the IM was to review and report “on the impact of the Program on overall system performance during severe weather events.” In each quarterly report, the IM reviews any Major Events that occurred in the reporting period, including the system performance metrics provided by PSE&G, and seeks additional information as appropriate to have a more robust view of the system performance. The results of this review are detailed within **Section D.** of the IM report.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On June 7, 2022, a draft IM 2021 Third Quarter Report was submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses.** This **Appendix A** also identifies specific sections within this IM 2021 Third Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2021 Third Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report</i> )
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1. in the IM 2021 Second Quarter Report</i> )
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2.</i>

Subprogram	Record of Decision	IM Comments
		<i>the IM 2021 Second Quarter Report)</i>

During the third quarter of 2021, there were no additional RODs issued.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

During the third quarter of 2021, PSE&G issued notice to the BPU that it is transferring \$7.7 million of funds from the Grid Modernization – Communication System subprogram to the Grid Modernization – ADMS subprogram. The Stipulation provides that PSE&G can immediately reallocate funds amongst the electric subprograms of the ES 2 Program provided that the amount transferred is 5% or less of the overall ES 2 Program electric investment amount. At \$7.7 million, this transfer represents approximately 1% of the total \$641 million allocated for electric investments in the ES 2 Program. This transfer was supported by the updated estimates completed in the second quarter of 2021 for these two Grid Modernization subprograms (which saw the Grid Modernization – Communication System subprogram estimate decrease by \$9.4 million and the Grid Modernization – ADMS subprogram estimate increase by \$7.7 million).

## **C. Cost Assignments**

### **1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Program Costs of Removal as of September 30, 2021**, below itemizes the charges to COR for the first three quarters of 2021, total 2020, total 2019 (which was only the fourth quarter) and total ES 2 Program COR to date. These amounts do not reflect any salvage value reductions, which have been *de minimis* in the ES 2 Program through September 30, 2021.

**Table 4 – ES 2 Program Costs of Removal as of September 30, 2021**

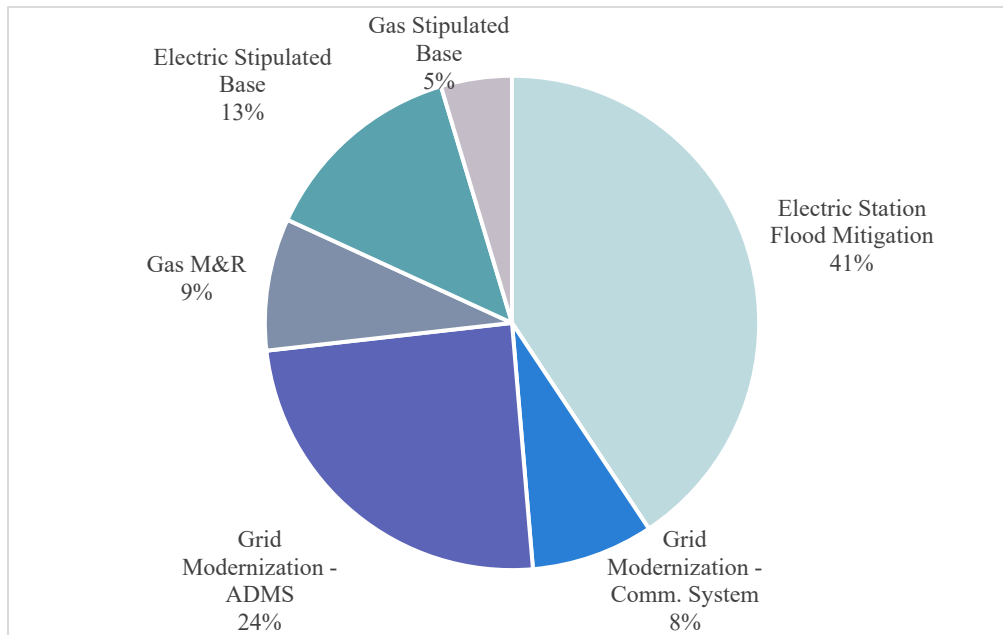
Subprogram	Q3 2021	Q2 2021	Q1 2021	Year-to-Date 2021	Total 2020	Total 2019 (Q4)	Total COR
<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$1,464.2	\$1,141.0	\$1,129.5	\$3,734.7	\$1,021.1	\$0	\$4,755.8
Contingency Reconfiguration	\$811.4	\$485.2	\$622.9	\$1,919.5	\$2,198.9	\$431.0	\$4,549.4
Grid Modernization – Communications	\$38.6	\$37.9	\$37.8	\$114.3	\$24.4	\$0	\$138.7
Grid Modernization – ADMS	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Electric Stipulated Base	\$3.2	\$0	\$0	\$3.2	\$0	\$0	\$3.2
Gas M&R Station Upgrades	\$63.5	\$87.6	\$0	\$151.1	\$0	\$0	\$151.1
Gas Stipulated Base	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$2380.9</b>	<b>\$1,751.7</b>	<b>\$1,790.2</b>	<b>\$5,922.8</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$9,598.2</b>

The increase in COR for the third quarter of 2021 from the second quarter reflects, (i) demolition and removal of various 4kV equipment at the Market Street and Ridgefield Electric Station Flood Mitigation elimination projects, and (ii) higher levels of pole fixture, switches, and other equipment removal across virtually all districts in connection with the reclosure projects.

**2. Construction Work-in-Progress (CWIP) & In-Service Transfers**

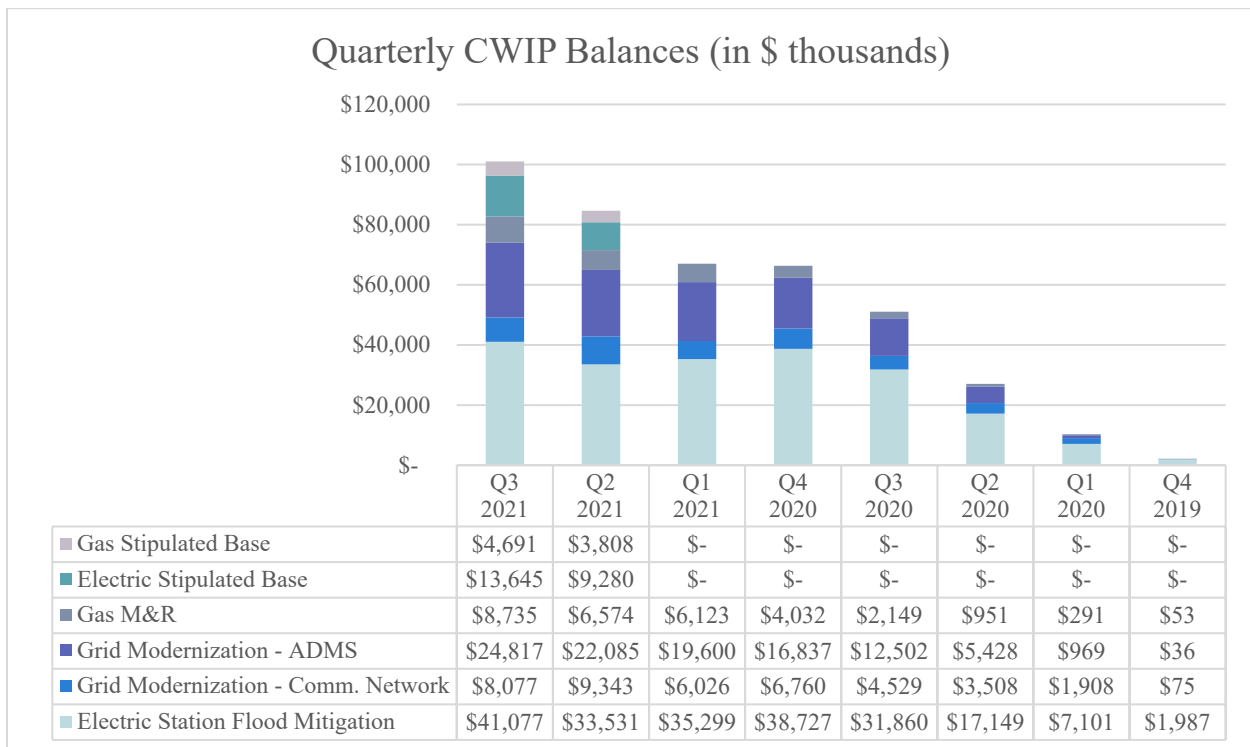
As of September 30, 2021, the Energy Strong CWIP balance was \$101.0 million, compared to \$84.6 million as of June 30, 2021. The largest components of the September 30, 2021 CWIP were the Leonia (\$7.0 million), Waverly (\$6.6 million), Westampton (\$6.5 million), Ridgefield (\$6.4 million) and Academy Street (\$5.8 million) substations, as well as the Paramus substation Electric Stipulated Base lifecycle project (\$7.1 million), and work associated with the Advanced Distribution and Management System (\$24.8 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of September 30, 2021** below.

**Figure 1 – ES 2 CWIP as of September 30, 2021**



In addition, the **Figure 2 – ES 2 CWIP Balances by Subprogram as of September 30, 2021** below depicts the composition of end-of-quarter CWIP balances by subprogram for the third, second and first quarters of 2021, each quarter of 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of September 30, 2021**



Transfers from CWIP to plant in service totaled \$3.8 million during the third quarter of 2021, comprised of fiber projects in the Grid Modernization – Communication Network subprogram. Total ES 2 Program transfers from CWIP have been \$38.4 million through September 30, 2021. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no AFUDC is recorded on these expenditures. This accounting treatment is in accord with generally accepted accounting principles and the Company’s accounting policies.

**3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each Energy Strong subprogram during the third, second and first quarters of 2021, AFUDC for 2021 to date, total AFUDC for the years 2020 and 2019 and total Energy Strong AFUDC accrued to date, is shown below in **Table 5 – ES 2 Program AFUDC as of September 30, 2021**.

*Table 5 – ES 2 Program AFUDC as of September 30, 2021*

Subprogram	Q3 2021	Q2 2021	Q1 2021	Year-to-Date 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$581.6	\$576.7	\$558.6	\$1,716.9	\$936.5	\$9.9	\$2,663.3
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grid Modernization – Communications	\$105.2	\$95.5	\$59.0	\$259.7	\$184.3	\$0.2	\$444.2
Grid Modernization – ADMS	\$363.5	\$316.9	\$274.2	\$954.6	\$352.7	\$0.1	\$1,307.4
Electric Stipulated Base	\$160.9	\$80.5	\$49.6	\$291.0	\$44.0	\$0	\$335.0
Gas M&R Station Upgrades (incl. Stip. Base)	\$157.0	\$107.6	\$72.2	\$336.8	\$70.0	\$0.2	\$407.0
<b>Total</b>	<b>\$1,368.2</b>	<b>\$1,177.2</b>	<b>\$1,013.6</b>	<b>\$3,559.0</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$5,156.9</b>

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2021, the new AFUDC rate was calculated to be 6.81%, using the capital structure and component costs as of January 31, 2021. This rate is lower than the 2020 rate of 6.95%, primarily due to a significantly lower interest rate used for short-term debt in the AFUDC calculation, and also to a reduction in the Company’s embedded cost of long-term debt. In calculating the 2021 AFUDC rate, the Company used (i) a 3.85% embedded cost of long-term debt (vs. 4.02% in 2020), (ii) a short-term debt rate of 0.32% (vs. 1.86% in 2020), and (iii) a cost of equity of 9.60% (unchanged from 2020).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the third quarter of 2021, based on data as of September 30, 2021, the recalculated weighted average AFUDC accrual rate (6.84%) did not meet this criterion to warrant changing from the annual rate (6.81%) in effect. Therefore, AFUDC was accrued during the third quarter of 2021 at the calculated rate of 6.81%.

AFUDC accrued for Energy Strong projects during the third quarter of 2021 increased over AFUDC accrued during the second quarter of 2021 as the result of increases in total average CWIP balances for almost all subprograms.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Energy Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to third quarter 2021 Energy Strong project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these Energy Strong projects. The IM will continue to review future Energy Strong AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### 4. Allocated Overheads

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Program Overhead Allocations as of September 30, 2021** are the allocated overhead costs charged to ES 2 subprograms for the first three quarters of 2021, total 2021 year to date, total 2020, total 2019 and total ES 2 Program allocated overheads to date.

*Table 6 – ES 2 Program Overhead Allocations as of September 30, 2021*

Subprogram	Q3 2021	Q2 2021	Q1 2021	Year-to-Date 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$2,527	\$4,352	\$5,588	\$12,467	\$14,023	\$287	\$26,776
Contingency Reconfiguration	\$3,683	\$4,006	\$4,215	\$11,904	\$17,109	\$3,415	\$32,428
Grid Modernization – Communications	\$2,230	\$2,506	\$1,743	\$6,479	\$3,625	\$12	\$10,116
Grid Modernization – ADMS	\$125	\$124	\$119	\$368	\$426	\$11	\$805
Electric Stipulated Base	\$903	\$287	\$126	\$1,316	\$259	\$0	\$1,575
Gas M&R Station Upgrades (incl. Stip. Base)	\$185	\$169	\$131	\$485	\$291	\$15	\$791



Subprogram	Q3 2021	Q2 2021	Q1 2021	Year-to-Date 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
<i>(in \$ thousands)</i>							
<b>Total</b>	<b>\$9,653</b>	<b>\$11,444</b>	<b>\$11,922</b>	<b>\$33,019</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$72,491</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the third quarter of 2021 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most (approximately 75%) of the third quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The decreases in overhead costs for the third quarter 2021 from the second quarter of 2021 reflect generally lower total subprogram spending levels. Additionally, the IM 2021 Second Quarter Report indicated a total of \$11.393 million in allocated overheads during the second quarter of 2021. This figure was updated with revised information provided to the IM after the issuance of that report in which PSE&G identified that the original data provided to the IM contained an error based on when the data was extracted (i.e. the original data was extracted earlier in the month than it should have been). The correct allocated overheads data for the second quarter of 2021 is the \$11.444 million shown above in **Table 6**.

#### D. System Performance

##### 1. Current Reporting Quarter Major Events

During the third quarter of 2021, there were two Major Events reported in PSE&G's service territory, one concerning a load shedding event in East Orange on September 1-2, 2021, which overlapped with a State of Emergency issued by Governor Murphy on September 1, 2021, due to heavy rains and flooding associated with the remnants of Hurricane Ida. The weather associated with the State of Emergency saw heavy rains fall across PSE&G's service territory over a three-week period. The direct impacts from the remnants of Hurricane Ida were experienced on September 1-2, 2021 and resulted in 105,722 PSE&G customers experiencing service interruptions. During the following weeks through the Major Event period an additional 109,470 PSE&G customers experienced service interruptions. In total, 215,192 PSE&G customers were affected by this Major Event, with 99% of those customers returned to service within 48 hours.

The IM has received PSE&G's report on the performance of its investments from this Major Event and has reproduced the results in **Table 7 – Q3 2021 Major Event Performance** below.

*Table 7 – Q3 2021 Major Event Performance*

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
<b>ADA 8012</b>	<b>0.02574</b>	<b>0.02991</b>
<b>ADA 8024</b>		<b>0.01838</b>
ALD 8015	0.12276	0.00000
ALD 8016	0.00654	0.00000
ALD 8022	0.05448	0.00000
<b>BAO 8014</b>		<b>0.00164</b>
<b>BAO 8023</b>		<b>0.04859</b>
BEA 8003	0.00238	0.00000

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
<b>BEA 8010</b>	<b>0.07397</b>	<b>0.17328</b>
<b>BEF 8014</b>	<b>0.01387</b>	<b>0.10160</b>
<b>BEN 8016</b>	<b>0.01934</b>	<b>0.14705</b>
<b>BEN 8021</b>	<b>0.00143</b>	<b>0.01645</b>
BEN 8022	0.00232	0.00181
BEN 8023	0.18243	0.00000
<b>BLO 4006</b>	<b>0.00535</b>	<b>0.38192</b>
BRU 8011	0.04127	0.03143

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
BRU 8012	0.01648	0.00240
<b>BRU 8013</b>	<b>0.00121</b>	<b>0.00249</b>
BUS 8013	0.21323	0.01037
BUS 8015	0.00494	0.00000
CAS 8001	0.02438	0.00084
CED 8013	0.00134	0.00062
CED 8021	0.10724	0.02195
CED 8022	0.05071	0.00061
CET 4012	0.17321	0.09823
<b>CET 4019</b>		<b>0.06238</b>
CHA 4013	0.01874	0.00586
CIN 8001	0.12834	0.00237
CIN 8004	0.03186	0.00000
CIN 8005	0.04256	0.00000
CIN 8043	0.18459	0.00262
CLF 8025	0.00177	0.00000
CLK 8014	0.20056	0.00000
CLK 8022	0.06677	0.00673
<b>CLK 8023</b>	<b>0.00019</b>	<b>0.00079</b>
CLK 8024	0.01526	0.00000
<b>CLK 8032</b>	<b>0.01489</b>	<b>0.07217</b>
<b>CON 8001</b>		<b>0.01379</b>
<b>COR 8015</b>	<b>0.00123</b>	<b>0.01616</b>
COR 8042	0.05446	0.00000
CRX 8001	0.16798	0.03532
CRX 8009	0.20824	0.00560
CUT 8006	0.59550	0.00073
CUT 8007	0.67234	0.02496
CUT 8041	0.07628	0.00142
DAY 8001	0.15084	0.00440
DAY 8002	0.03617	0.00371
<b>DEA 4001</b>		<b>0.02289</b>
DFD 8007	0.06056	0.00496
<b>DFD 8009</b>	<b>0.03737</b>	<b>0.03992</b>
DFD 8031	0.13025	0.06888
<b>DFD 8041</b>	<b>0.20440</b>	<b>0.42586</b>
<b>DOR 8012</b>		<b>0.01725</b>
<b>DOR 8025</b>		<b>0.00000</b>
DVB 8011	0.02010	0.00304
<b>DVB 8013</b>	<b>0.00455</b>	<b>0.00499</b>
EAO 4019	0.03000	0.01262
EAO 4023	0.08458	0.01803
EAT 8011	0.09890	0.03162
EAT 8013	0.13363	0.00078
<b>EAT 8021</b>	<b>0.01128</b>	<b>0.06889</b>

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
EAT 8022	0.08703	0.00068
<b>EAT 8025</b>		<b>0.00000</b>
FAW 8011	0.63063	0.00000
FAW 8014	0.21021	0.00000
FAW 8015	0.06006	0.00000
FAW 8016	0.12332	0.00000
FED 4010	0.01943	0.00289
<b>FED 4022</b>		<b>0.01411</b>
FIT 8003	0.01301	0.00000
<b>FRA 8012</b>		<b>0.00000</b>
<b>FRA 8021</b>		<b>0.00000</b>
GBK 8011	0.27452	0.00068
GBK 8014	0.30784	0.02020
GET 4007	0.06673	0.00000
<b>HAD 4002</b>	<b>0.03536</b>	<b>0.05181</b>
<b>HAT 8012</b>		<b>0.00000</b>
HAT 8021	0.00164	0.00000
HAT 8022	0.30670	0.02147
HAT 8023	0.01869	0.00000
HAT 8027	0.00007	0.00000
<b>HAT 8034</b>		<b>0.00000</b>
HAT 8035	0.04291	0.00501
HAW 8032	0.22973	0.00000
<b>HAW 8041</b>	<b>0.00290</b>	<b>0.00888</b>
HID 8011	0.11110	0.01377
HID 8013	0.02446	0.00369
HID 8044	0.08229	0.01545
HID 8045	0.12747	0.01115
HNC 8021	0.02280	0.00745
HNC 8025	0.49719	0.01143
HOE 8044	0.00039	0.00000
<b>HOM 8003</b>	<b>0.01571</b>	<b>0.02652</b>
JAC 8012	0.09238	0.03152
JAC 8024	0.25423	0.00265
<b>KEN 4006</b>		<b>0.00237</b>
<b>KIL 8023</b>		<b>0.00026</b>
KIL 8041	0.02511	0.00000
KIL 8043	0.00194	0.00110
KIL 8044	0.03622	0.00609
<b>KIN 8011</b>		<b>0.00000</b>
<b>KIN 8012</b>		<b>0.00004</b>
<b>KIN 8022</b>	<b>0.01206</b>	<b>0.01380</b>
KIN 8023	0.02086	0.00033
<b>KUL 8012</b>	<b>0.02022</b>	<b>0.11076</b>
<b>KUS 8002</b>	<b>0.06162</b>	<b>0.06911</b>

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
KUS 8004	0.00500	0.00181
KUS 8042	0.07830	0.02821
KUS 8044	0.01605	0.00000
KUS 8045	0.02505	0.00179
LAF 8026	0.04406	0.01141
LAU 8011	0.30809	0.00382
LAU 8012	0.09474	0.00058
LAU 8021	0.44101	0.01061
LAU 8023	0.82844	0.06185
<b>LAU 8025</b>	<b>0.02009</b>	<b>0.10303</b>
LAU 8034	0.60195	0.00061
LAW 8015	0.02138	0.00766
LAW 8016	0.14895	0.00054
LCE 8003	0.15926	0.00242
LCE 8005	0.11803	0.00228
LCE 8010	0.05624	0.00090
LCE 8012	0.30622	0.00000
LCE 8032	0.30801	0.00085
LCE 8033	0.42672	0.00000
LCE 8034	0.08300	0.01673
LEO 8005	0.61152	0.01065
LEO 8006	0.07368	0.00191
LEO 8032	0.00287	0.00136
LEO 8034	0.03370	0.00439
<b>LEO 8041</b>	<b>0.05678</b>	<b>0.19273</b>
<b>LEV 8002</b>	<b>0.06064</b>	<b>0.06469</b>
<b>LEV 8008</b>	<b>0.04412</b>	<b>0.22621</b>
LEV 8012	0.25318	0.00790
LEV 8016	0.00021	0.00000
<b>LOC 8014</b>		<b>0.00000</b>
LUM 8014	0.29932	0.00336
MAD 8022	0.41375	0.01250
MAI 8013	0.05318	0.04007
MAR 8002	0.04356	0.00225
MAR 8008	0.30277	0.00017
MAR 8010	0.29544	0.00000
MAR 8012	0.05857	0.00003
MAR 8013	0.36502	0.00035
MAR 8016	0.26336	0.00163
MDF 8012	0.58371	0.00116
MDF 8023	0.26488	0.00220
MDF 8024	0.26556	0.00261
MEA 8013	0.04040	0.01311
MEA 8024	0.09438	0.04539
MIN 8013	0.00714	0.00000

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
MIN 8015	0.01242	0.00052
MIN 8026	0.01780	0.00000
MON 8002	0.35076	0.01259
MON 8003	0.27132	0.00639
MOT 8001	0.08290	0.00011
MOT 8002	0.12549	0.03369
MRO 8012	1.08732	0.01453
MRO 8013	0.46710	0.00476
MRO 8022	0.23183	0.00411
MRO 8023	0.19878	0.00363
MRO 8024	0.29163	0.09292
MSD 8001	0.40760	0.00000
NBS 8012	0.09414	0.00000
<b>NBS 8013</b>		<b>0.91343</b>
<b>NBS 8021</b>		<b>0.00000</b>
NED 8013	0.03270	0.00074
<b>NED 8024</b>		<b>0.00257</b>
NED 8025	0.01640	0.01282
<b>NEW 8013</b>	<b>0.01180</b>	<b>0.38418</b>
<b>NEW 8014</b>	<b>0.01839</b>	<b>0.04522</b>
NEW 8023	0.02660	0.01247
NEW 8025	0.00343	0.00187
<b>NEW 8032</b>		<b>0.00063</b>
NEW 8034	0.10522	0.02843
<b>NEW 8041</b>	<b>0.00280</b>	<b>0.00362</b>
NEW 8044	0.00273	0.00101
NIN 4001	0.05314	0.04194
<b>NOT 8011</b>		<b>0.00000</b>
NOT 8023	0.00214	0.00032
NRB 8014	0.03116	0.00000
<b>NRB 8022</b>		<b>0.00000</b>
<b>NRP 4004</b>		<b>0.01437</b>
<b>NRP 4010</b>		<b>0.04988</b>
OAK 4004	0.05636	0.00000
ORA 4002	0.07591	0.00126
<b>PAT 4003</b>		<b>0.00721</b>
<b>PEH 8004</b>		<b>0.00387</b>
<b>PEH 8015</b>		<b>0.03327</b>
PEH 8025	0.00149	0.00000
PEK 8018	0.08524	0.00000
PEK 8021	0.00069	0.00010
PEK 8023	0.05457	0.00088
<b>PEK 8026</b>	<b>0.04523</b>	<b>0.18109</b>
PEK 8035	0.28036	0.00550
PIE 8013	0.02355	0.08797

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
PIE 8015	0.05606	0.00000
<b>PLI 8004</b>	<b>0.01320</b>	<b>0.03537</b>
PLI 8007	0.05542	0.00000
PLI 8008	0.19552	0.00115
<b>POH 8012</b>		<b>0.00000</b>
POH 8013	0.00898	0.00428
POH 8015	0.12765	0.00000
POH 8022	0.01503	0.00000
<b>POL 4001</b>		<b>0.00248</b>
<b>RFL 8011</b>	<b>0.00742</b>	<b>0.02311</b>
<b>RFL 8021</b>		<b>0.00007</b>
<b>RFL 8023</b>	<b>0.00885</b>	<b>0.02943</b>
RFL 8032	0.12446	0.00056
RFL 8034	0.04180	0.01396
RGW 4004	0.00776	0.00647
RIV 8006	0.00765	0.00604
<b>RUN 8001</b>		<b>0.00032</b>
RUN 8004	0.29484	0.00485
<b>RVR 8022</b>		<b>0.00000</b>
<b>SAD 8032</b>		<b>0.00000</b>
<b>SAD 8043</b>	<b>0.00775</b>	<b>0.02839</b>
<b>SAD 8044</b>	<b>0.00192</b>	<b>0.00594</b>
<b>SDH 8021</b>		<b>0.00154</b>
SDH 8026	0.01685	0.00155
<b>SDH 8034</b>		<b>0.00000</b>
<b>SMV 8011</b>	<b>0.00774</b>	<b>0.01043</b>
<b>SMV 8013</b>		<b>0.00293</b>
<b>SMV 8021</b>		<b>0.24553</b>
<b>SMV 8024</b>		<b>0.00000</b>
SMV 8025	0.01386	0.00575
SOH 8022	0.16946	0.00000
SOO 4011	0.62019	0.00232
SOO 4012	0.14426	0.03350
<b>SOP 4007</b>		<b>0.01162</b>
SPF 8012	0.78752	0.04433
<b>SPF 8016</b>		<b>0.00000</b>
SPF 8023	0.01271	0.00188
SPF 8024	0.00263	0.00000
SPF 8025	0.09408	0.00000

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
SUN 8011	0.05952	0.01374
<b>SUN 8013</b>		<b>0.00000</b>
<b>SUN 8021</b>		<b>0.00000</b>
SUN 8034	0.02298	0.00204
SUN 8035	0.03902	0.00000
<b>SUN 8044</b>		<b>0.01258</b>
<b>SWT 8001</b>		<b>0.01151</b>
<b>TNY 4002</b>	<b>0.05690</b>	<b>0.13013</b>
<b>TNY 4003</b>	<b>0.03940</b>	<b>0.45732</b>
TUR 8004	0.00879	0.00019
VIL 8001	0.24055	0.00000
WAD 8011	0.08512	0.02281
WAD 8013	0.12231	0.02871
<b>WAN 8014</b>		<b>0.04307</b>
<b>WAN 8015</b>		<b>0.00009</b>
WAN 8025	0.66194	0.00000
<b>WAV 4018</b>	<b>0.02277</b>	<b>0.03127</b>
WEW 8021	0.21824	0.02186
WEW 8025	0.00255	0.00115
<b>WEW 8031</b>		<b>0.00088</b>
WEW 8033	0.03506	0.02681
<b>WEW 8041</b>		<b>0.00957</b>
WEW 8042	0.01304	0.00000
WEW 8044	0.07375	0.00735
WFL 8012	0.02690	0.02304
<b>WFL 8032</b>	<b>0.11140</b>	<b>0.27363</b>
WFL 8034	0.04228	0.00082
WOR 8011	0.02748	0.00579
<b>WOR 8013</b>	<b>0.13969</b>	<b>0.37336</b>
<b>WOR 8022</b>	<b>0.00042</b>	<b>0.00517</b>
WOR 8025	0.03185	0.00000
WYN 4003	0.31855	0.00312
YRD 8014	0.05063	0.02029
YRD 8024	0.08273	0.00820

\*-System Average Interruption Duration Index (SAIDI) calculations are in minutes; bold values indicate circuits with a higher Major Event SAIDI than the 5-year Major Event SAIDI average.

In the circuit data in **Table 7** above, the “0.00000” indicates an outage, but the value is beyond five decimal points captured by PSE&G, while blank cells indicate no outage in the 5-year window. Additionally, all circuits impacted by this Major Event had received investments during either the original Energy Strong Program or through ES 2. As indicated above, there were 269 circuits impacted by this

Major Event 177 of which had a current Major Event SAIDI better than the 5-year Major Event SAIDI average, while an additional 51 circuits had no Major Event outage within the 5-year comparison window, leaving 41 circuits that both had a prior Major Event outage within the past 5-years and had worse performance during this Major Event.

Additional information on the 15 worse performing circuits from this Major Event is provided below in **Table 8 – Q3 2021 Major Event Additional Information on Selected Circuits**. Note that some of these circuits had more than one incident during the Major Event, resulting in a total of 57 incidents from these 15 circuits, and that some show zero customers impacted, which reflects the way the circuit is modeled in PSE&G’s connectivity model and the restoration/isolation steps used to restore service (e.g. isolating a section of cable for repair).

*Table 8 – Q3 2021 Major Event Additional Information on Selected Circuits*

Circuit	5-Year Baseline SAIDI*	Report Quarter SAIDI*	Customers Impacted	Outage Duration*
BEA 8010	0.07397	0.17328	1,644	257
BEA 8010	0.07397	0.17328	19	175
BEF 8014	0.01387	0.10160	873	230
BEF 8014	0.01387	0.10160	873	56
BEN 8016	0.01934	0.14705	410	247
BEN 8016	0.01934	0.14705	1,053	247
BLO 4006	0.00535	0.38192	1,505	567
BLO 4006	0.00535	0.38192	60	179
BLO 4006	0.00535	0.38192	63	69
BLO 4006	0.00535	0.38192	403	174
DFD 8041	0.20440	0.42586	729	303
DFD 8041	0.20440	0.42586	331	303
DFD 8041	0.20440	0.42586	373	364
DFD 8041	0.20440	0.42586	1	3,661
DFD 8041	0.20440	0.42586	44	2,220
DFD 8041	0.20440	0.42586	105	3,877
DFD 8041	0.20440	0.42586	20	4,057
KUL 8012	0.02022	0.11076	878	310
LAU 8025	0.02009	0.10303	62	164
LAU 8025	0.02009	0.10303	1,394	155
LAU 8025	0.02009	0.10303	663	18
LAU 8025	0.02009	0.10303	37	325
LAU 8025	0.02009	0.10303	30	100
LEO 8041	0.05678	0.19273	387	885
LEO 8041	0.05678	0.19273	0	1,042
LEO 8041	0.05678	0.19273	8	1,041
LEO 8041	0.05678	0.19273	20	1,042
LEO 8041	0.05678	0.19273	1,324	43
LEO 8041	0.05678	0.19273	1,324	34
LEV 8008	0.04412	0.22621	2,603	183
LEV 8008	0.04412	0.22621	82	970
NEW 8013	0.01180	0.38418	32	778
NEW 8013	0.01180	0.38418	1,131	258
NEW 8013	0.01180	0.38418	894	258
NEW 8013	0.01180	0.38418	478	830
PEK 8026	0.04523	0.18109	1,556	286

Circuit	5-Year Baseline SAIDI*	Report Quarter SAIDI*	Customers Impacted	Outage Duration*
PEK 8026	0.04523	0.18109	0	53
TNY 4002	0.05690	0.13013	0	182
TNY 4002	0.05690	0.13013	1,380	115
TNY 4002	0.05690	0.13013	39	183
TNY 4002	0.05690	0.13013	451	115
TNY 4002	0.05690	0.13013	17	178
TNY 4002	0.05690	0.13013	52	223
TNY 4002	0.05690	0.13013	6	178
TNY 4002	0.05690	0.13013	599	86
TNY 4002	0.05690	0.13013	775	45
TNY 4003	0.03940	0.45732	0	653
TNY 4003	0.03940	0.45732	647	652
TNY 4003	0.03940	0.45732	1,013	652
TNY 4003	0.03940	0.45732	1,660	25
WFL 8032	0.11140	0.27363	2	2,169
WFL 8032	0.11140	0.27363	1	2,169
WFL 8032	0.11140	0.27363	11	2,169
WFL 8032	0.11140	0.27363	135	4,756
WOR 8013	0.13969	0.37336	1,780	385
WOR 8013	0.13969	0.37336	1,350	172
WOR 8013	0.13969	0.37336	0	62

\*-Calculated in minutes.

As indicated in **Table 8**, in addition to the original Energy Strong Program and ES 2 investments that increased sectionalizing of circuits to reduce the number of customers impacted by outages, the customer impact from a Major Event is also a function of the nature of the outages (extent of damage) and the location of damage relative to the various interrupting devices on the circuit, that is, reclosers or fuses. Additionally, the circuits in **Table 8** with zero customers reflect the way the circuit is modeled in PSE&G’s connectivity model and the restoration/isolation steps used to restore service (e.g. isolating a section of cable for repair, or a transformer with no assigned customers). For some circuits, the 5-year baseline outage(s) were smaller or affected fewer customers, including different device operations (fuse with 10 customers vs. fuse with 150 customers) than the incident from the current Major Event being reported. Some circuits had more non-reclosing device operations in this Major Event (more fuse jobs) or more customers served by the circuit due to circuit rearrangements. Three of the circuits that had more severe outages than the five-year average were DFD 8041, LEO 8041, and WFL 8032, each of which had an outage involving tree impacts, with additional circuit-specific information as follows:

- DFD 8041: a tornado touched down in the area and resulted in the primary line down from wind/tree impacts.
- LEO 8041: a tree brought down all three phases, resulting in no circuit operation.
- WFL 8032: large tree impact resulted in multiple phases down in addition to flooding in the area.

Beyond the circuit-level performance, this Major Event and the flooding associated with resulted in water entering eight of the substations that were raised and rebuilt as part of the original Energy Strong

Program,<sup>1</sup> however, due to the storm hardening at those stations none was interrupted by these flooding events.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of the third quarter of 2021 is provided below in **Table 9 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of September 30, 2021.**

*Table 9 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of September 30, 2021*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS		CO					
	Dec. 2020		<u>KO</u>		<u>C</u>								IS		CO					
	Sep. 2021		<u>KO</u>		<u>C</u>								IS		CO					
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>								C								IS
	Sep. 2021			<u>KO</u>								C				IS				
3. Front Street <sup>^</sup>	Dec. 2019	<i>Not in ES 2 Program</i>																		
	Dec. 2020	<i>Not in ES 2 Program</i>																		
	Sep. 2021								<u>KO</u>				C							IS
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>					C							IS		CO			
	Dec. 2020		<u>KO</u>									C					IS		CO	
	Sep. 2021		<u>KO</u>									C					IS		CO	
5. Kingsland	Dec. 2019			<u>KO</u>				C				IS		CO						
	Dec. 2020			<u>KO</u>										C					IS	
	Sep. 2021			<u>KO</u>											C				IS	
6. Lakeside Avenue	Dec. 2019*				<u>KO</u>			C											IS	
	Dec. 2020					<u>KO</u>								C					IS	
	Sep. 2021					<u>KO</u>								C					IS	
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>		<u>C</u>									IS		CO			
	Sep. 2021			<u>KO</u>		<u>C</u>									IS		CO			
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO									
	Dec. 2020			<u>KO</u>				C	OS		CO									
	Sep. 2021			<u>KO</u>						<u>C/OS</u>		CO								
9. Meadow Road	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>											C				IS	
	Sep. 2021			<u>KO</u>											C				IS	

December 31, 2023 - ES 2 Program End Date

<sup>1</sup> The eight substations upgraded during ES 1 that experienced water intrusions included: Belmont, Cranford, Ewing, Hoboken, New Milford, Port Street, Rahway, and Somerville.

Project	Plan Status Point	2019		2020				2021				2022				2023				2024		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
10. Orange Valley	Dec. 2019	Schedule Under Development																		December 31, 2023 - ES 2 Program End Date		
	Dec. 2020					<u>KO</u>													C		IS (Q1); CO (Q3)	
	Sep. 2021					<u>KO</u>												C			IS (Q1); CO (Q3)	
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C														IS	CO		
	Dec. 2020			<u>KO</u>	<u>C</u>														IS	CO		
	Sep. 2021			<u>KO</u>	<u>C</u>														IS	CO		
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>							C	OS							CO			
	Dec. 2020			<u>KO</u>	<u>C</u>					OS		CO										
	Sep. 2021			<u>KO</u>	<u>C</u>					<u>OS</u>		CO										
13. State Street	Dec. 2019			<u>KO</u>						C									IS		CO (Q1)	
	Dec. 2020			<u>KO</u>						C									IS		CO (Q1)	
	Sep. 2021			<u>KO</u>						<u>C</u>									IS		CO (Q1)	
14. Toney's Brook	Dec. 2019			<u>KO</u>							C									IS	CO (Q2)	
	Dec. 2020			<u>KO</u>															C	IS	CO (Q2)	
	Sep. 2021			<u>KO</u>															C	IS	CO (Q2)	
15. Waverly	Dec. 2019	Schedule Under Development																		December 31, 2023 - ES 2 Program End Date		
	Dec. 2020			<u>KO</u>				<u>C</u>													IS	CO (Q2)
	Sep. 2021			<u>KO</u>				<u>C</u>														IS (Q4); CO (Q2 2025)
16. Woodlyne	Dec. 2019			<u>KO</u>															C	IS	CO (Q2)	
	Dec. 2020			<u>KO</u>															C	IS	CO (Q2)	
	Sep. 2021			<u>KO</u>															C	IS	CO (Q2)	

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout

-Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).

\*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.

^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of the third quarter of 2021 is provided below **Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of September 30, 2021.**

**Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of September 30, 2021**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlyne
Key Drawing Review	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road;



Activity	Total # of Projects	Specific Projects
		Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynn
Scope Locked	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlynn
Major Equipment Purchase Orders (POs)	17*	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley; Ridgefield 13kV*; State Street; Toney's Brook; Waverly*; Woodlynn
Architect/ Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney's Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynn <sup>1</sup>
Construction Start**	7	Academy Street; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; State Street; Waverly
In-Service	2	Market Street; Ridgefield 4kV
<p>*-Three of the listed projects (Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 17 switchgears at 14 substations.  <sup>1</sup>-Indicates Burns &amp; McDonnell is serving as the A/E.  <sup>2</sup>-Indicates PSE&amp;G internal resources are serving as the A/E.  <sup>3</sup>-Indicates Black &amp; Veatch is serving as the A/E.            **-Includes inside plant and/or outside plant construction.</p>		

Beyond the key activities summarized in **Table 10** above, **Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q4 2021** summarizes the planned activities for each project during the fourth quarter of 2021, including any carryover of activities from earlier periods.

**Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q4 2021**

Station	Upcoming Activities for Q4 2021	Carryover Activities from Q3 2021
1. Academy Street	<ul style="list-style-type: none"> <li>Place switchgear in-service on 1<sup>st</sup> circuit</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Civil and electrical drawings (phase 2) Issued for Construction (IFC)</li> <li>Electrical construction out for bid</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
3. Front Street	<ul style="list-style-type: none"> <li>Switchgear Purchase Order (PO) issued</li> <li>License and permitting package issued</li> <li>Site plan submitted for approval</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Switchgear and capacitor bank delivered</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>License and permitting package issued</li> <li>Civil and electrical drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>Commence license and permitting design</li> <li>Continued engineering</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Site plan submittal</li> <li>Vendor drawings received (final switchgear arrangement)</li> </ul>	<ul style="list-style-type: none"> <li>Submit site plan application</li> <li>Vendor drawings received (final switchgear arrangement)</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>13kV switchgear #1 in-service</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering and construction</li> <li>Start commissioning of 13kV switchgear #1</li> </ul>

Station	Upcoming Activities for Q4 2021	Carryover Activities from Q3 2021
8. Market Street	<ul style="list-style-type: none"> <li>Electrical demolition complete</li> </ul>	<ul style="list-style-type: none"> <li>Start civil and electrical demolition</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>Receive New Jersey Department of Environmental Protection (NJDEP) permit</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>City council approval of site plan amendment</li> <li>Vendor drawings received (final switchgear arrangement)</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Commissioning and in-servicing switchgear #2</li> </ul>	<ul style="list-style-type: none"> <li>Continued construction</li> </ul>
12. Ridgefield 4kV	<ul style="list-style-type: none"> <li>Complete civil demolition</li> </ul>	<ul style="list-style-type: none"> <li>Continued demolition</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>Switchgear delivered</li> <li>Start electrical construction</li> </ul>	<ul style="list-style-type: none"> <li>70% estimate completed</li> <li>Switchgear delivered</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Start preliminary civil manhole/conduit work</li> <li>Controls drawings IFC</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Vendor drawings received (final switchgear controls)</li> <li>Civil and electrical drawings IFC</li> <li>New Site Plan meeting</li> </ul>	<ul style="list-style-type: none"> <li>Site plan meeting requested</li> <li>Continued engineering</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>Construction permits received</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>

The current project estimates, including base and R&C amounts, is shown below in **Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of September 30, 2021**. **Table 12** also shows the current estimate level based on PSE&G's estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of the third quarter of 2021.

**Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of September 30, 2021**

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,800,000	\$700,000	\$10,500,000	\$9,012,316	\$5,431,127	52%
2. Clay Street	Conceptual	\$30,300,000	\$3,500,000	\$33,800,000	\$30,735,399	\$3,255,941	10%
3. Front Street*	Study	\$23,000,000	\$4,400,000	\$27,400,000	\$25,889,200	\$1,261,050	5%
4. Hasbrouck Heights	Conceptual	\$20,500,000	\$2,200,000	\$22,700,000	\$20,480,201	\$2,091,795	9%
5. Kingsland	Study	\$5,400,000	\$2,900,000	\$8,300,000	\$6,418,540	\$531,370	6%
6. Lakeside Avenue	Study	\$39,400,000	\$8,500,000	\$47,900,000	\$39,356,279	\$1,045,328	2%
7. Leonia	Definitive	\$24,900,000	\$1,500,000	\$26,400,000	\$24,851,796	\$14,399,755	55%
8. Market Street	Definitive	\$29,100,000	\$800,000	\$29,900,000	\$29,032,028	\$25,293,157	85%

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$7,441,372	\$899,374	10%
10. Orange Valley	Study	\$16,000,000	\$4,200,000	\$20,200,000	\$14,765,212	\$702,848	4%
11. Ridgefield 13kV	Conceptual	\$25,300,000	\$2,300,000	\$27,600,000	\$25,987,975	\$14,893,425	54%
12. Ridgefield 4kV	Definitive	\$20,800,000	\$500,000	\$21,300,000	\$20,716,895	\$20,404,916	96%
13. State Street	Conceptual	\$19,100,000	\$2,300,000	\$21,400,000	\$19,040,411	\$1,764,732	8%
14. Toney's Brook	Conceptual	\$16,200,000	\$2,600,000	\$18,800,000	\$16,254,329	\$1,122,883	6%
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$35,319,007	\$6,339,767	18%
16. Woodlynne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$21,255,000	\$1,947,106	10%
<b>Subprogram Total**</b>		<b>\$332,200,000</b>	<b>\$47,800,000</b>	<b>\$380,000,000</b>	<b>\$346,555,960</b>	<b>\$101,384,573</b>	<b>27%</b>

\*-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

\*\*The Subprogram Total presented in this Table 12 excludes the \$5.3 million previously estimated for the cancelled Constable Hook project and excludes an additional \$3.7 million approved by the URB for the subprogram and currently allocated as a placeholder. The currently approved URB funding for the subprogram includes both these amounts, resulting in a total subprogram estimate of \$389.0 million. The cancelled Constable Hook project and the subprogram placeholder are also not included in the current \$346.6 million subprogram forecast.

### Findings & Observations

- Six of the sixteen Electric Station Flood Mitigation projects had movement in the forecasted in-service date during the third quarter of 2021, with two advancing and four slipping. Of these six projects, five of the projects (Academy Street, Clay Street, Front Street, Leonia, and Ridgefield 13kV) had forecasted in-service dates change by less than two weeks. The Lakeside Avenue forecasted in-service date advanced 35 days from the status as of the end of the second quarter of 2021.
- Following the Market Street and Ridgefield 4kV projects being placed in-service during the second quarter of 2021, the next project forecasted to go in-service is the Academy Street project in October 2021.
- Four projects had new estimates approved by the URB during the third quarter of 2021, including the Leonia project advancing to the Definitive level with a new estimate of \$26.4 million (decreasing \$1.1 from the prior estimate); the Market Street project submitting a revised Definitive level estimate with a new estimate of \$29.9 million (increasing \$3.0 million from the prior estimate); the Ridgefield 4kV project submitted a revised Definitive level estimate with a

new estimate of \$21.3 million (increasing \$1.8 million from the prior estimate); and the State Street project advancing to the Conceptual level with a new estimate of \$21.4 million (decreasing \$1.0 million from the prior estimate).

- The IM has found nothing to date that would jeopardize the subprogram being completed on budget. However, the status of the later projects in this subprogram, and in particular Waverly, will have to continue to be closely followed to monitor if the projects can be completed within the ES 2 Program window. As of the end of the third quarter of 2021, the Waverly project continues to show a final in-service date in December 2024. The Waverly project has multiple major asset in-service dates for the 26kV switchgear, 4kV switchgear, and three transformers, which are currently forecasted from December 2022 (26kV switchgear) to December 2024 (Transformer #3). PSE&G has informed the IM that the project team has every intention of improving the in-service dates and will be examining the potential to shorten durations and/or work activities concurrently to pull the final in-service date back into 2023.

### 1. Academy Street

During the third quarter of 2021, \$217,396 was spent on the Academy Street project compared to a forecast of approximately \$600,000, which brought the total spend to approximately \$5.4 million. The variance in spend during the third quarter of 2021 was driven by the focus on commissioning the Fairmount 69kV project before bringing the Academy Street project in-service. Despite that delay to commissioning activities, the forecasted in-service date for the Academy Street project advanced by five days from the prior quarter to October 20, 2021.

The primary activity conducted during the third quarter of 2021 on the Academy Street project was the continued advancement of construction activities. Construction, which started in July 2020 for non-permit work on Academy Street, advanced 13% during the third quarter to reach 88% complete inside plant (100% complete outside plant), while the total project is reported at 90% complete as of the end of the third quarter of 2021.

The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>					<i>Forecast</i>	
\$150,398	\$4,224,550	\$378,939	\$405,843	\$271,396	\$1,046,595	\$2,534,594

Actuals to Date	Estimate	% of Actuals to Estimate
\$5,431,127	\$10,500,000	52%

### 2. Clay Street

During the third quarter of 2021, \$1,099,440 was spent on the Clay Street project compared to a forecast of approximately \$1.1 million, which brought the total spend to approximately \$3.3 million. The forecasted in-service date for the Clay Street project as of the end of the third quarter of 2021 slipped eight days from the end of the second quarter to December 27, 2022.

The primary activities on the Clay Street project during the third quarter of 2021 included the IFC release of control drawings and civil construction work going out for bid.

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$116,409	\$879,339	\$565,030	\$595,723	\$1,099,440	\$4,968,997	\$22,510,461

Actuals to Date	Estimate	% of Actuals to Estimate
\$3,255,941	\$33,800,000	10%

### 3. Front Street

During the third quarter of 2021, \$1,070,135 was spent on the Front Street project compared to a forecast of approximately \$431,000, which brought total spend to approximately \$1.3 million. The variance in spend during the third quarter of 2021 was driven by a change in the payment terms for the temporary switchgear from full payment at delivery to partial milestones. The forecasted in-service date for the Front Street project as of the end of the third quarter of 2021 slipped four days from the end of the second quarter to November 6, 2023.

The primary activities on the Front Street project during the third quarter of 2021 included the issuance of the PO for the temporary switchgear, completion of the permit compliance matrix, and approval of the scope document.

The actual spend by quarter for Front Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$0	\$0	\$0	\$190,915	\$1,070,135	\$1,074,477	\$23,553,673

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,261,050	\$27,400,000	5%

### 4. Hasbrouck Heights

During the third quarter of 2021, \$71,649 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$910,000, which brought the total spend to approximately \$2.1 million. The variance in spend during the third quarter of 2021 was driven by inclement weather and limited resource availability that delayed the start of Outside Plant (OP) Division work. The forecasted in-service date for the Hasbrouck Heights project continues to remain February 7, 2023, which is unchanged from the previous quarter.

Notable activities completed during the third quarter of 2021 included the contingency plan control drawings IFC and the start of OP manhole enlargement work.

The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$149,848	\$1,129,934	\$550,795	\$189,748	\$71,469	\$5,370,203	\$13,018,203

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,091,795	\$22,700,000	9%

### 5. Kingsland

During the third quarter of 2021, \$150,084 was spent on the Kingsland project compared to a forecast of approximately \$243,000, which brought the total spend to \$531,370. The forecasted in-service date for the Kingsland project continues to remain October 4, 2023, which is unchanged from the previous quarter.

During the third quarter of 2021, the Kingsland project commenced detailed design and license and permitting design work.

The actual spend by quarter for Kingsland as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$104,112	\$209,667	\$30,621	\$36,886	\$150,084	\$202,265	\$5,684,906

Actuals to Date	Estimate	% of Actuals to Estimate
\$531,370	\$8,300,000	6%

### 6. Lakeside Avenue

During the third quarter of 2021, \$89,151 was spent on the Lakeside Avenue project compared to a forecast of approximately \$105,000. The forecasted in-service date for the Lakeside Avenue project as of the end of the third quarter of 2021 advanced 35 days from the prior quarter to November 8, 2023.

Notable activities completed during the third quarter of 2021 included the submittal of the site plan application, receipt of vendor drawings (final switchgear arrangement), and the commencement of detailed engineering.

The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$148,943	\$453,994	\$178,973	\$174,268	\$89,151	\$216,131	\$38,094,820

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,045,328	\$47,900,000	2%

## 7. Leonia

During the third quarter of 2021, \$1,365,412 was spent on the Leonia project compared to a forecast of approximately \$1.4million, which brought the total spend to approximately \$14.4 million. The forecasted in-service date for the Leonia project as of the end of the third quarter of 2021 slipped 10 days from the prior quarter to October 10, 2022.

Notable activities completed during the third quarter of 2021 included the commissioning of the 13kV switchgear #1. The Leonia project also advanced to the Definitive level estimate, which was approved by the URB in July 2021. This Definitive level estimate resulted in the total estimate for the project being reduced to \$26.4 million from \$27.5 million (at the Conceptual level estimate). The reduction in the current estimate was the result of:

- Revised estimate for Division underground work: -\$0.4 million;
- Increase in construction costs: \$0.3 million; and,
- Reduction in R&C based on the current risk profile for the project: -\$1.0 million.

The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$44,792	\$6,033,379	\$2,809,628	\$4,146,544	\$1,365,412	\$1,642,466	\$8,809,575

Actuals to Date	Estimate	% of Actuals to Estimate
\$14,399,755	\$26,400,000	55%

## 8. Market Street

During the third quarter of 2021, \$1,779,029 was spent on the Market Street project compared to a forecast of approximately \$2.0 million, which brought the total spend to approximately \$25.3 million. Notable activities conducted during the third quarter of 2021 included the commencement of electrical demolition at the station, which was placed out of service on June 25, 2021 following the completion of the 4kV to 13kV conversion work.

The Market Street project also had a revised Definitive level estimate approved by the URB in August 2021, which resulted in the total estimate increasing by \$3.0 million from the previous Definitive level estimate. The increase was driven by:

- Additional OP overhead and restoration work along with associated material and surcharges based on the complexity of the work and the field conditions: \$2.8 million, which was comprised of:
  - Unknown OP field conditions: condition of poles, conductors, transformers, and service wires along with space constraints for equipment operation required increased labor and

material to resolve. In addition, hazardous soils required use of backhoes, which in turn required additional road closures/traffic safety control;

- Cutover procedures: During the procedures for the 13kV conversions, the City mandated additional police around the work areas to ensure public safety and to minimize traffic detours. While construction activities were ongoing, the system being upgraded needed to remain in service and operations to continue to serve customers, which resulted in a higher than estimated level of effort and materials to complete this work safely and reliably; and,
- Traffic control procedures: Included in the conditions of permit approval, County and City officials required additional police presence and other traffic control contractor labor to safeguard work areas and mitigate traffic disruptions.
- Higher than estimated traffic control as per city/county requirements: \$1.1 million.
- Reduction in R&C based on the current risk profile for the project: -\$0.9 million.

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>					<i>Forecast</i>	
\$251,193	\$16,079,601	\$4,035,880	\$3,147,454	\$1,779,029	\$3,020,923	\$717,949

Actuals to Date	Estimate	% of Actuals to Estimate
\$25,293,157	\$29,900,000	85%

### 9. Meadow Road

During the third quarter of 2021, \$113,271 was spent on the Meadow Road project compared to a forecast of \$69,000, which brought the total spend to approximately \$900,000. Preliminary design work continued to progress during the third quarter of 2021, with minimal other activities conducted on the Meadow Road project this quarter as the bulk of this project's activities planned for 2022-2023. The forecasted in-service date for the Meadow Road project as of the end of the third quarter of 2021 remained unchanged from the prior quarter at September 22, 2023.

The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$63,128	\$535,081	\$117,672	\$70,220	\$113,271	\$88,000	\$6,453,998

Actuals to Date	Estimate	% of Actuals to Estimate
\$899,374	\$9,000,000	10%

### 10. Orange Valley

During the third quarter of 2021, \$108,806 was spent on the Orange Valley project compared to a forecast of approximately \$75,000, which brought the total spend to approximately \$703,000. Preliminary design work continued to progress during the third quarter of 2021, with minimal other activities conducted on



the Orange Valley project this quarter as the bulk of this project’s activities planned for 2022-2023. The forecasted in-service date for the Orange Valley project as of the end of the third quarter of 2021 remained unchanged from the project quarter at December 29, 2023.

The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$77,029	\$362,895	\$7,291	\$146,827	\$108,807	\$68,426	\$13,993,938

Actuals to Date	Estimate	% of Actuals to Estimate
\$702,848	\$20,200,000	4%

### **11. Ridgefield 13kV**

During the third quarter of 2021, \$1,573,500 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$2.2 million, which brought the total spend to approximately \$14.9 million. The variance in spend during the third quarter of 2021 was driven by manhole and duct bank work planned for September that was postponed due to an obstruction by the concrete slab in the way of the manhole modification that was not part of the original design, and thus was not identified during the design phase of the project. The forecasted in-service date for the Ridgefield 13kV project as of the end of the third quarter of 2021 slipped three days from the prior quarter to November 11, 2022.

Notable activities completed during the third quarter of 2021 included the start of electrical construction and the setting of the first permanent 13kV switchgear. Construction at Ridgefield 13kV advanced to 70% complete inside plant as of the end of the second quarter of 2021, compared to 58% complete at the end of the prior quarter, with the total project at a reported 70% completion.

The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$205,982	\$6,232,692	\$3,215,967	\$3,665,283	\$1,573,500	\$2,760,022	\$8,334,528

Actuals to Date	Estimate	% of Actuals to Estimate
\$14,893,425	\$27,600,000	54%

### **12. Ridgefield 4kV**

During the third quarter of 2021, \$1,653,764 was spent on the Ridgefield 4kV project compared to a forecast of approximately \$1.9 million, which brought the total spend to approximately \$20.4 million. The variance in spend this quarter was driven by Division accruals released while the invoice was paid against an incorrect workorder (corrected via journal entry). The project was placed in-service on May 16, 2021.

The primary activities performed during the third quarter of 2021 included the commencement of station demolition. The total project is reported at 99% complete as of the end of the second quarter of 2021, up from 85% complete as of the end of the prior quarter.

The Ridgefield 4kV project also had a revised Definitive level estimate approved by the URB in July 2021, which resulted in the total estimate increasing by \$1.8 million from the previous Definitive level estimate. The increase was driven by:

- Division manhole rebuild work awarded higher than estimate: \$0.3 million;
- Additional Division labor and material required to rebuild several secondary buses and reroute two underground circuits around an existing gas main: \$0.8 million;
- Additional engineering and overhead hours required to remove primary wires to complete 4-13kV conversions (involving aerial cable removal omitted from prior estimates): \$1.2 million; and,
- Reduction in R&C based on the current risk profile of the project: -\$0.5 million.

The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>					<i>Forecast</i>	
\$143,414	\$11,239,534	\$2,808,765	\$4,559,439	\$1,653,764	\$251,980	\$60,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$20,404,916	\$21,300,000	96%

### 13. State Street

During the third quarter of 2021, \$571,099 was spent on the State Street project compared to a forecast of approximately \$4.2 million, which brought the total spend to approximately \$1.8 million. The variance in spend during the quarter was driven by the switchgear delivery shifting from September as forecasted to October. The forecasted in-service date for the State Street project as of the end of the third quarter of 2021 remains unchanged from the prior quarter at September 23, 2022. The sequencing of the IP and OP scopes of the State Street project always planned on the IP scope being completed prior to the OP scope, with that continued sequencing there is no advancement in the in-service date for this project following the split of the State Street OP scope to an Electric Stipulated Base project.

Notable activities performed on State Street during the third quarter of 2021 included the commencement of civil construction. The State Street project also advanced to the Conceptual level estimate, which was approved by the URB in August 2021. This Conceptual level estimate resulted in the total estimate for the project being reduced to \$21.4 million from \$22.4 million (at the revised Study level estimate). The reduction in the current estimate was the result of:

- Cost of removal scope award lower than estimated: -\$0.5 million;
- Lower carrying cost: -\$0.4 million;
- Capacitor banks award higher than estimated: \$0.2 million;
- Revised Division electrical construction estimate: \$0.5 million;
- Reduction in R&C based on the project's current risk profile: -\$0.8 million

The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$77,590	\$662,148	\$237,415	\$216,479	\$571,099	\$6,885,880	\$10,389,799

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,764,732	\$21,400,000	8%

#### 14. Toney's Brook

During the third quarter of 2021, \$159,132 was spent on the Toney's Brook project compared to a forecast of approximately \$186,000, which brought the total spend to approximately \$1.1 million. The forecasted in-service date for the Toney's Brook project as of the end of the third quarter of 2021 remains unchanged from the prior quarter at April 21, 2023.

Notable activities achieved during the third quarter of 2021 included the approval of state and municipal permits.

The actual spend by quarter for Toney's Brook as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$211,940	\$373,096	\$88,947	\$289,769	\$159,132	\$437,135	\$14,694,311

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,122,883	\$18,800,000	6%

#### 15. Waverly

During the third quarter of 2021, \$277,739 was spent on the Waverly project compared to a forecast of approximately \$437,000, which brought the total spend to approximately \$6.3 million. The variance in second quarter spend was largely driven an engineering milestone that shifted from September to October and work delayed in September due to lack of resources in the Metro Division. The forecasted in-service date for the Waverly project as of the end of the third quarter of 2021 remains unchanged from the prior quarter at December 18, 2024 as the project awaits resolution of its site plan application.

As reported in the IM 2021 First Quarter Report, the project team requested a special meeting to maintain the project's schedule, which was held in March 2021. The Newark Planning Board denied the site plan application at this meeting, which requires the project team to prepare a new site plan application. The comments received on the original site plan from the Newark Planning Board generally focused on the outward appearance of the substation. The revised site plan was submitted to the Newark Planning Board in early September 2021 with the site plan approval expected to be granted in a December 2021 meeting. The revised site plan incorporated feedback received from community meetings and from discussions with the Director of Arts and Culture for the City of Newark and the Newark Arts Council. The result is redesigned street facing frontages to the substation that includes a fence with brick finish (giving a wall-like appearance) and locations for artwork to be placed, two entrance gates with matching color schemes, portions of the isolation walls that were visible were redesigned to match the brick finishes on the street facing fences, and landscaping around the sidewalk area outside the substation was also added.

The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2025
<i>Actuals</i>					<i>Forecast</i>	
\$103,748	\$2,460,815	\$659,572	\$2,837,893	\$277,739	\$930,920	\$28,048,320

Actuals to Date	Estimate	% of Actuals to Estimate
\$6,339,767	\$35,400,000	18%

## 16. Woodlynne

During the third quarter of 2021, \$428,009 was spent on the Woodlynne project compared to a forecast of approximately \$414,000, which brought the total spend to approximately \$1.9 million. The forecasted in-service date for the Woodlynne project as of the end of the third quarter of 2021 remains unchanged from the prior quarter at October 10, 2023.

Preliminary design work continued to progress during the third quarter of 2021, with minimal other activities conducted on the Woodlynne project this quarter as the bulk of this project's activities planned for 2022-2023.

The actual spend by quarter for Woodlynne as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$110,982	\$993,298	\$282,187	\$132,630	\$428,009	\$1,248,185	\$18,059,709

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,947,106	\$19,400,000	10%

## B. Contingency Reconfiguration

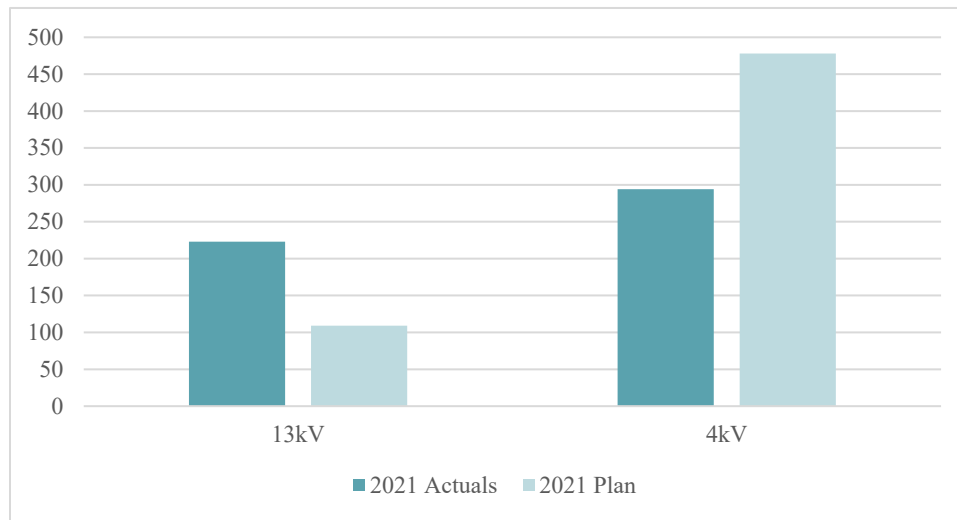
During the third quarter of 2021, work continued to progress in the Contingency Reconfiguration subprogram with all four Divisions continuing to install reclosers with a total of 161 installed during the quarter and 173 commissioned. **Table 13 – ES 2 Program Recloser Status as of September 30, 2021** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the current status of engineering, installation, and commissioning; while **Figure 3 – 2021 Recloser Installations as of September 30, 2021** compares the installed reclosers as of the end of the third quarter of 2021 against PSE&G's 2021 installation plan.<sup>2</sup>

<sup>2</sup> Note that as discussed in the IM 2021 First Quarter Report (Section IV.A.1.) and the IM 2021 Second Quarter Report (Section II.A.1.), the number of reclosers identified the Contingency Reconfiguration subprogram was updated after the 2021 installation plan was established, which resulted in a net reduction of the 4kV reclosers planned for the subprogram and a net increase of the 13kV reclosers planned for the subprogram.

**Table 13 – ES 2 Program Recloser Status as of September 30, 2021**

Type	Engineering Packages Completed (1 recloser ea.)			Reclosers Installed			Reclosers Commissioned		
	Q3 Qty.	2021 Total	Program Total	Q3 Qty.	2021 Total	Program Total	Q3 Qty.	2021 Total	Program Total
13kV	74	220	919	81	223	884	91	227	871
4kV	60	248	502	80	294	451	82	294	449
<b>Total</b>	134	468	1,421	161	517	1,335	173	519	1,320

**Figure 3 – 2021 Recloser Installations as of September 30, 2021**



As shown in **Table 13** and **Figure 3**, PSE&G continued to maintain progress during the third quarter of 2021 and stayed on track for the 2021. As discussed in prior IM reports, there was an identified resource constraints within the Metro Division that prompted PSE&G to engage a contractor to perform the pole settings from the recloser scope, which commenced early in the second quarter of 2021, to reduce schedule impacts including avoiding other potential resource constraints if the recloser installations were to slip further into 2022 and overlap with the Fuse Saver scope.

The Fuse Saver pilot program commenced in November 2020 and was primarily completed in January 2021.<sup>3</sup> In total, this phase of the Fuse Saver pilot program included the installation and commissioning of 80 Fuse Saver devices. During execution of the pilot program, PSE&G observed factors that will help it prepare for execution of the full Fuse Saver scope, including installation specifications (the remote control unit (RCU) must be placed directly below the Fuse Saver to avoid communications issues), and cost elements for some of the locations (new poles, traffic control, etc.). While monitoring performance of the installed Fuse Savers, PSE&G experienced other communication issues between the Fuse Savers and the RCU, wherein the Supervisory Control and Data Acquisition (SCADA) communication indicated a false open/close alarm on some of the devices. Siemens has provided a prototype Fuse Saver to address the communication issues, which PSE&G will monitor to ensure it addresses the issues prior to placing

<sup>3</sup> In the second quarter of 2021, PSE&G decided to install the remaining 34 Fuse Savers in its inventory to capture additional cost and performance data to better inform the planning and execution of the full scope of work. These installations were completed across the second and third quarters of 2021.

additional orders. Because of this, the full Fuse Saver scope is no longer anticipated to commence in 2021.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of September 30, 2021**. This table also shows the forecasted final in-service dates as of the end of the second quarter of 2021 to show movement to the forecast as of the end of the third quarter of 2021.

**Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of September 30, 2021**

Scope & Division		Q2 2021 Forecasted Completion Date	Q3 2021 Forecasted Completion Date
Reclosers	Central	1/31/2022	1/31/2022
	Metro	1/31/2022	1/31/2022
	Palisades	10/31/2021	12/31/2021
	Southern	1/31/2022	1/31/2022
Fuse Savers	Central	12/30/2023	9/30/2023
	Metro	12/30/2023	10/31/2023
	Palisades	12/30/2023	12/30/2023
	Southern	12/30/2023	10/31/2023

As shown in **Table 14**, the forecasted final in-service dates for three of the four Division’s Fuse Saver program advanced two to three months based on a reduction of the number of units to be installed, with the final number of units still under evaluation by PSE&G as it seeks the optimal mix of locations (maximizing customers served against locations requiring pole replacements) based on ongoing field assessments to accommodate the higher costs observed in the pilot program and the fixed budget for this scope of work. While the only change to the recloser scope of work was the Palisades Division slipping two months, which was driven by engineering delays on the remaining approved units.

The Contingency Reconfiguration subprogram costs through the end of the third quarter of 2021 are presented in **Table 15 – ES 2 Contingency Reconfiguration Costs as of September 30, 2021**.

**Table 15 – Contingency Reconfiguration Costs as of September 30, 2021**

Scope & Division	2019	2020	Q1 2021	Q2 2021	Q3 2021	Total to Date	Forecast	% of Actuals to Forecast	
	Actuals								
Reclosers	Central	\$2,737,167	\$12,050,820	\$3,007,686	\$2,392,608	\$2,116,213	\$22,304,495	\$25,105,143	89%
	Metro	\$2,231,431	\$10,726,610	\$587,396	\$4,051,716	\$3,926,036	\$21,523,190	\$24,376,440	88%
	Palisades	\$2,515,569	\$12,119,436	\$3,109,037	\$2,591,672	\$1,991,442	\$22,327,156	\$22,913,508	97%
	Southern	\$2,081,220	\$12,405,684	\$5,008,143	\$4,065,891	\$2,742,523	\$26,303,462	\$28,940,957	91%
Fuse Savers	Central	\$9,970	\$789,937	\$375,811	\$107,384	\$255,092	\$1,538,195	\$12,022,135	13%
	Metro	\$7,557	\$561,915	\$216,511	\$89,860	\$144,511	\$1,020,354	\$10,958,702	9%
	Palisades	\$7,468	\$522,454	\$133,552	\$63,808	\$276,182	\$1,003,464	\$8,409,356	12%
	Southern	\$9,792	\$859,014	\$65,018	\$56,845	\$263,207	\$1,253,876	\$12,768,220	10%
<b>Total</b>	<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$12,503,156</b>	<b>\$13,419,784</b>	<b>\$11,715,206</b>	<b>\$97,274,191</b>	<b>\$145,494,461</b>	<b>67%</b>	

Findings & Observations:

- PSE&G continued to maintain progress on the recloser installations during the third quarter of 2021 and stayed on track for the 2021, assisted by the ongoing engagement of a pole setting contractor to alleviate resource constraints in the Metro Division.
- The forecasted completion of the recloser scope of this subprogram remained unchanged from the prior quarter for three of the four Divisions, while the Palisades Division forecasted completion slipped two months based on the progress of engineering. For the Fuse Savers, while the Palisades Division completion remained unchanged, the other three Divisions advanced their forecasted completion date two to three months reflecting a reduction in the number of planned units.
- The Contingency Reconfiguration subprogram forecast was reduced approximately \$1.6 million to a total forecast of \$145.5 million as of the end of the third quarter of 2021 from the prior quarter. This was largely driven by reductions to the planned number of fuse savers anticipated for the subprogram.

**C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system.

As reported in the IM 2020 Second Quarter Report, PSE&G made the strategic decision to focus on new recloser installations and has delayed the ramp-up in retrofit installations from August 2020 to January 2021 due to resource constraints. During the third quarter of 2021, retrofit installations continued to advance with 562 installations completed during the quarter against a target of 573. In total, 1,994 retrofit reclosers have been installed on the Program through the end of the third quarter out of a total program forecast of 2,357 (which is periodically reviewed and updated). The remaining units are expected to be completed by the end of 2021.

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with two of 41 installation projects since removed due to the scheduled elimination of the targeted substations. The list of identified fiber installation and cutover projects is presented in **Table 16 – Fiber Projects by Division as of September 30, 2021**.

*Table 16 – Fiber Projects by Division as of September 30, 2021*

<b>Division</b>	<b>Fiber Installation</b>	<b>Fiber Cutover</b>
<b>Central</b>	Cranford; Elizabeth Sub HQ; Rahway; Hadley Road HQ; Roselle; Central HQ; Carteret; Edison; Keasby; Mechanic Street; First Street; Lehigh Avenue	Elizabeth; Henry Street
<b>Metro</b>	East Orange; Metro HQ; Bloomfield; Central Avenue; Haldeon; Irvington; Irvington Sub HQ; Montclair; South Orange; Norfolk Street; Waverly	-

Division	Fiber Installation	Fiber Cutover
Palisades	Bergen Point; Hackensack Sub HQ; Fort Lee; Harrison; Ridgewood; West New York; Palisades HQ; Culver Avenue; Morgan Street; Howell Street*	Tonnelle Avenue; Spring Valley Road; Union City; Fairview; Polk Street; West Orange
Southern	Southern HQ; Princeton; Chauncey Street; Bordentown; Haddon Heights; Thirty Second Street	Delair; East Riverton; Riverside; Mount Holly
<b>Total</b>	<b>39 projects</b>	<b>12 projects</b>

\*-As discussed in Section IV.B. of the IM 2021 Second Quarter Report, the Howell Street project was identified for removal from the subprogram as the result of a PSE&G review of the project conducted in the fourth quarter of 2021.

During the third quarter of 2021, eight additional fiber installation projects (Bordentown, Central Ave., Chauncey Street, First Street, Harrison, Norfolk Street, Princeton, and South Orange) and one fiber cutover project (Henry Street) were placed in-service. **Table 17 – Q3 Fiber Projects Budget vs. Actual Cost** shows the original budget of these projects against the actual costs as of the end of the third quarter of 2021.

**Table 17 – Q3 Fiber Projects Budget vs. Actual Cost**

Project	Budget	Actual (as of Q3 2021)	Variance
Bordentown*	\$0	\$528,017	\$528,017
Central Ave.	\$480,000	\$110,548	(\$369,452)
Chauncey Street	\$840,000	\$849,852	\$9,852
First Street	\$300,000	\$570,579	\$270,579
Harrison	\$300,000	\$563,245	\$263,245
Norfolk Street	\$300,000	\$183,294	(\$116,706)
Princeton	\$300,000	\$1,070,766	\$770,766
South Orange	\$390,000	\$302,912	(\$87,088)
Henry Street (cutover)**	\$50,000	\$206,685	\$156,685

\*-Not on initial project list and therefore no initial budget, added after review of projects performed (See the ROD on this discussed in Section IV.A. of the IM 2020 Third Quarter Report)  
 \*\*-Cutover projects were budgeted by Division (each cutover project is budgeted at the Division budget divided by number of stations in the scope for that Division).

With the eight additional fiber installation projects and one additional fiber cutover project placed in-service during the third quarter of 2021, it brought the total projects in-service as of the end of the third quarter of 2021 to 17 for the fiber installation projects and nine for the fiber cutover projects. **Table 18 – ES 2 Program Fiber Projects Status as of September 30, 2021** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of the third quarter of 2021 with the projects in italics representing those placed in-service.

**Table 18 – ES 2 Program Fiber Projects Status as of September 30, 2021**

Project Name	Q3 2021 Status
<b>Fiber Installation Projects</b>	
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>
Bloomfield	Inside Plant (IP) IFC issued



<b>Project Name</b>	<b>Q3 2021 Status</b>
<i>Bordentown</i>	<i>In-Service (Q3 2021)</i>
Carteret	OP IFC issued
<i>Central Ave</i>	<i>In-Service (Q3 2021)</i>
Central HQ	Received approved railroad crossing agreement
<i>Chauncey Street</i>	<i>In-Service (Q3 2021)</i>
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>
Culver Ave	Preliminary engineering
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>
Edison	OP construction mobilized
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>
<i>First Street</i>	<i>In-Service (Q3 2021)</i>
Fort Lee	Continued construction
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>
Haddon Heights	Preliminary engineering
Hadley Rd HQ	IP IFC issued
Haledon	IP civil construction complete; OP construction complete
<i>Harrison</i>	<i>In-Service (Q3 2021)</i>
Howell Street	Preliminary engineering*
Irvington	IP IFC issued; OP construction complete; IP construction mobilized
Irvington Sub HQ	IP, OP IFC issued; OP construction complete; IP construction mobilized
Keasbey	Preliminary engineering
Lehigh Avenue	Preliminary engineering
Mechanic Street	Preliminary engineering
<i>Metro HQ</i>	<i>In-Service (Q1 2021)</i>
Montclair	IP IFC issued
Morgan Street	OP construction mobilized
<i>Norfolk St</i>	<i>In-Service (Q3 2021)</i>
Palisades HQ	Continued construction
<i>Princeton</i>	<i>In-Service (Q3 2021)</i>
<i>Rahway</i>	<i>In-Service (Q1 2021)</i>
Ridgewood	IP IFC issued; IP civil construction complete
<i>Roselle</i>	<i>In-Service (Q2 2021)</i>
<i>So Orange</i>	<i>In-Service (Q3 2021)</i>
<i>Southern HQ</i>	<i>In-Service (Q4 2020)</i>
Thirty Second Street	Preliminary engineering
Waverly	Preliminary engineering
West New York	IP civil construction completed; OP IFC issued
<b><i>Fiber Cutover Projects</i></b>	
<i>Delair</i>	<i>In-Service (Q4 2020)</i>
<i>East Riverton</i>	<i>In-Service (Q4 2020)</i>
<i>Elizabeth</i>	<i>In-Service (Q1 2021)</i>

Project Name	Q3 2021 Status
Fairview	Completion dependent upon Fort Lee fiber installation project
Henry St	In-Service (Q3 2021)
Mount Holly	In-Service (Q4 2020)
Polk Street	Completion dependent upon West New York fiber installation project
Riverside	In-Service (Q4 2020)
Spring Valley Rd	In-Service (Q1 2021)
Tonnelle Ave	In-Service (Q4 2020)
Union City	In-Service (Q1 2021)
West Orange	Completion dependent upon redundant link to Montclair substation being ready (two redundant fiber links required for each router to support reliability guidelines)
<b>Substation Remote Terminal Unit (RTU) Cutovers</b>	
Scope: 204 units	9 cutovers completed
* -As indicated in the IM 2021 Second Quarter Report, the Howell Street fiber project was identified for removal from the subprogram during the fourth quarter of 2021.	

The Grid Modernization – Communication System subprogram costs through the end of the third quarter of 2021 are presented in **Table 19 – ES 2 Grid Modernization – Communication System Costs as of September 30, 2021**.

**Table 19 – ES 2 Grid Modernization – Communication System Costs as of September 30, 2021**

Scope & Division		2019	2020	Q1 2021	Q2 2021	Q3 2021	Total to Date	Forecast	% of Actuals to Forecast
		Actuals							
Retrofit Reclosers	Central	\$0	\$884,278	\$1,067,295	\$1,027,602	\$715,214	\$3,694,388	\$6,817,605	54%
	Metro	\$0	\$818,620	\$436,089	\$683,893	\$733,376	\$2,671,977	\$5,485,018	49%
	Palisades	\$0	\$825,174	\$754,869	\$965,416	\$888,467	\$3,433,927	\$6,173,947	56%
	Southern	\$0	\$929,058	\$956,444	\$1,005,852	\$1,082,897	\$3,974,252	\$7,314,919	54%
Fiber	Central	\$1,691	\$2,418,851	\$796,586	\$1,349,407	\$1,007,245	\$5,573,779	\$9,178,564	61%
	Metro	\$1,457	\$1,866,697	\$340,713	\$831,337	\$1,198,777	\$4,238,981	\$7,885,388	54%
	Palisades	\$1,582	\$2,046,762	\$248,558	\$725,030	\$605,647	\$3,627,579	\$6,022,939	60%
	Southern	\$4,731	\$910,483	\$645,219	\$1,029,156	\$591,125	\$3,180,714	\$3,366,815	94%
	Cutovers*	\$0	\$876,502	\$323,458	\$86,115	\$109,880	\$1,395,955	\$2,967,868	47%
Wireless Network		\$74,306	\$6,035,441	\$287,086	\$312,404	\$124,015	\$6,833,252	\$7,897,530	87%
Bulk Purchase**		\$0	\$1,524,874	\$450,013	(\$154,037)	(\$335,637)	\$1,485,213	\$0	-
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$6,306,330</b>	<b>\$7,862,175</b>	<b>\$6,721,006</b>	<b>\$40,110,017</b>	<b>\$63,110,594</b>	<b>64%</b>
* -Includes fiber communication cutovers and substation RTU cutovers (the latter of which began having spend in Q1 2021).									
** -The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.									

**Findings & Observations:**

- During the third quarter of 2021, retrofit installations continued to advance following the ramp-up earlier in 2021 with 562 installations completed during the quarter against a target of 573. In total, 1,994 retrofit reclosers have been installed on the Program through the end of the third quarter of

2021 out of a total program forecast of 2,357 (which continues to be periodically reviewed and updated).

- Eight additional fiber installation projects and one fiber cutover project were placed in-service during the third quarter of 2021, bringing the total number of projects in-service to 17 fiber installation projects and nine fiber cutover projects.
- The forecast for the Grid Modernization – Communication system subprogram increased approximately \$2.7 million as of the end of the third quarter of 2021 from the prior quarter. The bulk of this increase (\$2.6 million) was in the fiber scope, which was driven by the updated fiber and communication requirements based on the current status of the PSE&G substations and Operations Centers selected for this scope, including IP contractor quotes higher than estimated and costs of outsourcing the overhead scope on selected projects to augment Division resources . Overall, the subprogram forecast of \$63.1 million remains below the adjusted Stipulation budget amount of \$64.3 million (following the \$7.7 million transfer of funds to the Grid Modernization – ADMS subprogram).

#### **D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS), the Outage Management System (OMS), and ADMS platform upgrades. The primary activities in 2021 are focused on the continued development of the systems and platforms that comprise this subprogram.

The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the third quarter of 2021 are presented as follows:

##### **DMS/DERMS**

- Scope: Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- Q3 2021 Activities:
  - Resolved factory acceptance testing action items list and compiled factory acceptance testing results.
  - Conducted advanced metering interface (AMI) use case compilation discussion and completed AMI use case demo from Open Systems International Inc. (OSII).
- Forecasted In-Service Date as of the end of the third quarter of 2021: 12/19/2022.

##### **OMS**

- Scope: Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G’s network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years’ worth of existing OMS data will be migrated into the new system as well.

- Q3 2021 Activities:
  - Conducted additional AMI interface workshops and initial mobile security design sessions.
  - Completed database installation for outage data warehouse.
  - Onboarded mobile work management system (MWMS) interface team and conducted MWMS design workshops.
- Forecasted In-Service Date as of the end of the third quarter of 2021: 12/2/2022.

**ADMS Platform**

- Scope: Replace, enhance, and expand the existing Distribution Supervisory Control and Data acquisition (DSCADA) platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q3 2021 Activities:
  - Reviewed testing gaps, selected testing tools, and created testing strategy.
  - Received all ADMS equipment shipments.
- Forecasted In-Service Date as of the end of the third quarter of 2021: 12/10/2021.

The Grid Modernization – ADMS subprogram costs through the end of the third quarter of 2021 are presented in **Table 20 – ES 2 Grid Modernization – ADMS Costs as of September 30, 2021.**

*Table 20 – ES 2 Grid Modernization – ADMS Costs as of September 30, 2021*

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$36,213	\$16,447,624	\$2,488,980	\$2,168,187	\$2,368,648	\$3,564,757	\$15,647,923

Actuals to Date	Forecast	% of Actuals to Forecast
\$23,509,654	\$42,722,333	55%

**Findings & Observations:**

- The server equipment received during the third quarter of 2021 required approximately one month to set up the equipment in alignment with PSE&G’s security standards. The PSE&G team was able to implement the network segmentation, although the setting up and connecting of the server hardware consumed the bulk of the float in the schedule. However, the forecasted in-service date for the subprogram remains at December 2022 as of the end of the third quarter of 2021.
- The Grid Modernization – ADMS forecast remained nearly unchanged as of the end of the third quarter of 2021 from the second quarter of 2021, with an approximate \$10,000 forecast increase to the \$42.7 million subprogram.

## E. Electric Stipulated Base

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric outside plant higher design and construction standards and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>4</sup> The bulk of outside plant higher design and construction standards work is planned to commence in January 2022. In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. In the second quarter of 2021 a fifth station, State Street, was approved by the URB for its outside plant scope to be transferred from the related Electric Station Flood Mitigation project to the life cycle scope. These five stations and their current estimate compared to the actuals to date are provided in **Table 21 – ES 2 Life Cycle Station Upgrade Project Status as of September 30, 2021**.

**Table 21 – ES 2 Life Cycle Station Upgrade Project Status as of September 30, 2021**

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Hamilton	Study	\$14,500,000	\$3,700,000	\$18,200,000	\$2,083,445	11%	10/12/2022
2. Paramus	Study	\$14,800,000	\$5,400,000	\$20,200,000	\$6,940,343	34%	11/11/2022 (↑)
3. Plainfield	Study	\$18,400,000	\$4,200,000	\$22,600,000	\$2,478,976	11%	10/17/2022 (↑)
4. Woodbury	Study	\$15,400,000	\$3,300,000	\$18,700,000	\$1,811,330	10%	12/27/2022
5. State Street (OP)	Study	\$19,700,000	\$3,000,000	\$22,700,000	\$71,294	0%	3/2/2023 (↑)

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).  
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 21**, of the five life cycle station upgrade projects, the Paramus, Plainfield, and State Street OP projects each saw a slight advancement to their forecasted in-service dates, advancing four, three, and 13 days, respectively. Given the relatively small magnitude of these changes, the IM has not performed additional schedule analyses on these projects but will continue to monitor for potential trends. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

### Findings & Observations:

- The primary activities during the third quarter of 2021 continued to center around advancing the engineering, permitting, and procurement processes for the life cycle station upgrade projects.

<sup>4</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

Construction also commenced on the Hamilton, Plainfield, and Woodbury projects during the third quarter of 2021, and continued on Paramus, which started construction in the second quarter of 2021.

- There was minor movement to the forecasted in-service dates for the Paramus, Plainfield, and State Street OP projects during the third quarter of 2021, with each advancing between 3-13 days from the prior quarter's forecast. Each of the original four life cycle station upgrade projects remains forecasted for completion in the fourth quarter of 2022 while the State Street OP project is forecasted for completion in the first quarter of 2023.

### 1. Hamilton

During the third quarter of 2021, \$1,083,435 was spent on the Hamilton project against a forecast of approximately \$1.3 million. This brought total spend on the project to approximately \$2.1 million through the end of the third quarter of 2021.

Notable activities conducted during the third quarter of 2021 included:

- Municipal permits received;
- Controls drawings IFC; and,
- Electrical construction out for bid.

The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$0	\$362,372	\$236,783	\$400,855	\$1,083,435	\$1,723,783	\$12,477,686

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$2,083,446	\$18,200,000	\$16,284,915	11%

### 2. Paramus

During the third quarter of 2021, \$1,564,308 was spent on the Paramus project against a forecast of approximately \$1.7 million. This brought total spend on the project to approximately \$6.9 million through the end of the third quarter of 2021.

Notable activities conducted during the third quarter of 2021 included:

- Site plan approval received;
- 4kV contingency feeder rows delivered;
- Civil and electrical drawings IFC; and,
- Civil and electrical construction out for bid.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below. The current forecast of approximately \$20.5 million represents an increase to the forecast of approximately \$1.5 million from the status as of the end of the second quarter of 2021. This forecast increase was driven by higher than estimated construction and material/equipment awards.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$0	\$840,200	\$358,846	\$4,176,989	\$1,564,308	\$1,023,572	\$12,533,678

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$6,940,343	\$20,200,000	\$20,497,593	34%

### 3. Plainfield

During the third quarter of 2021, \$1,214,476 was spent on the Plainfield project against a forecast of approximately \$2.2 million. The variance between actual and forecasted spend was driven by lower than estimated hours to complete the work performed in the quarter and some work shifting to October. This brought total spend on the project to approximately \$2.5 million through the end of the third quarter of 2021. The current forecast of approximately \$22.1 million represents an increase to the forecast of approximately \$2.4 million from the status as of the end of the second quarter of 2021. This forecast increase was driven by higher than estimated construction and additional steel quantities with a higher steel price than was initially estimated.

Notable activities conducted during the third quarter of 2021 included:

- Municipal permits approved; and,
- OP construction commenced.

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>					<i>Forecast</i>	
\$0	\$682,325	\$214,632	\$367,543	\$1,214,476	\$1,966,058	\$17,640,676

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$2,478,976	\$22,600,000	\$22,085,710	11%

### 4. Woodbury

During the third quarter of 2021, \$363,802 was spent on the Woodbury project against a forecast of approximately \$380,000. This brought the total spend on the project to approximately \$1.8 million through the end of the third quarter of 2021.

Notable activities conducted during the third quarter of 2021 included the issuance of civil and electrical construction POs.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$0	\$551,165	\$540,138	\$356,225	\$363,802	\$480,591	\$15,571,232

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,811,330	\$18,700,000	\$17,863,153	10%

### 5. State Street (Outside Plant)

During the third quarter of 2021, \$53,660 was spent on the State Street (OP) project against a forecast of approximately \$42,000. This brought the total spend on the project to approximately \$71,000.

Notable activities conducted during the third quarter of 2021 included the signoff of the project's scope document. The forecasted in-service date for the State Street (OP) project, currently forecasted for March 2, 2023, reflects the continued planned sequencing of this project, which will be completed after the State Street project within Electric Station Flood Mitigation subprogram is completed.

The actual spend by quarter for State Street (OP) as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$0	\$0	\$0	\$17,633	\$53,660	\$729,292	\$18,912,003

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$71,294	\$22,700,000	\$19,712,589	0%

### F. Gas M&R Station Upgrades

Through the end of the third quarter of 2021, primary activities in the Gas M&R subprogram continued to focus on advancing the pre-construction activities for the five projects not in construction, while the Westampton project continued its construction activities towards a fourth quarter of 2021 in-service date.

**Table 22 – ES 2 Gas M&R Summary Status as of September 30, 2021** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

*Table 22 – ES 2 Gas M&R Summary Status as of September 30, 2021*

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Study	\$24,300,000	\$5,000,000	\$29,300,000	\$2,082,756	7%	Dec 2022
2. Central*	Study	\$23,900,000	\$5,100,000	\$29,000,000	\$1,493,901	5%	Dec 2022
3. East Rutherford	Study	\$13,800,000	\$2,700,000	\$16,500,000	\$1,318,297	8%	Dec 2022
4. Mount Laurel	Study	\$9,400,000	\$2,000,000	\$11,400,000	\$794,330	7%	Dec 2022
5. Paramus*	Study	\$11,500,000	\$2,200,000	\$13,700,000	\$921,080	7%	Dec 2023
6. Westampton	Definitive	\$9,100,000	\$900,000	\$10,000,000	\$6,559,174	66%	Oct 2021 (↑)
<b>Subprogram Total</b>		<b>\$92,000,000</b>	<b>\$17,900,000</b>	<b>\$109,900,000</b>	<b>\$13,169,538</b>	<b>12%</b>	<b>Dec 2023</b>

\*-Included in the Stipulated Base.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.



Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
<i>(↓)-Indicates the forecasted in-service date slipped from the prior quarter.</i>							

The in-service dates for the Gas M&R projects as of the end of the third quarter of 2021 remained static from the status at the end of the prior quarter except for the Westampton project, which advanced from a forecasted in-service date of December 16, 2021 to October 22, 2021 based on the progression of the construction work.

**Findings & Observations:**

- The primary efforts to date on the subprogram continue to be primarily related to pre-construction planning efforts, including completing and submitting site plan packages, ordering long lead materials, and preparing construction bid packages. The Westampton project, which commenced construction in April 2021 and is forecasted to be complete by the end of 2021, advanced ahead of schedule.
- The IM has found nothing to date that would jeopardize the subprogram being completed on time and/or on budget. During the third quarter of 2021 there were no updates to the Gas M&R project estimates and the forecast in-service dates remained unchanged from the prior quarter for the majority of the projects, except the Westampton project which advanced approximately two months based on the progress of the works.

**1. Camden**

During the third quarter of 2021, \$413,548 was spent on the Camden project compared to a forecast of approximately \$357,000, which brought the total spend to approximately \$2.1 million. The current forecast of approximately \$26.3 million represents an increase to the forecast of approximately \$2.0 million from the status as of the end of the second quarter of 2021. This forecast increase was driven by material costs coming in higher than what was initially estimated.

The forecasted in-service date for the Camden project as of the end of the third quarter of 2021 remains unchanged from the prior quarter at December 30, 2022.

Notable activities completed on the Camden project during the third quarter of 2021 included:

- Received approved resolution from the City of Camden;
- Ordered long lead materials/equipment; and,
- Received issued for bid (IFB) construction package.

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$13,326	\$859,350	\$505,693	\$290,839	\$413,548	\$1,321,924	\$22,868,132

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$2,082,756	\$29,300,000	\$26,272,811	7%

## 2. Central

During the third quarter of 2021, \$311,084 was spent on the Central project compared to a forecast of approximately \$264,000, which brought the total spend to approximately \$1.5 million. The current forecast of approximately \$25.7 million represents an increase to the forecast of approximately \$1.8 million from the status as of the end of the second quarter of 2021. This forecast increase was driven by higher than estimated material costs and additional design efforts required to address the complexity of the station and to incorporate modifications to meet the site plan approval requirements.

The forecasted in-service date for the Central project as of the end of the third quarter of 2021 remains unchanged from the prior quarter at December 30, 2022.

Notable activities completed on the Central project during the third quarter of 2021 included:

- Received construction bids and held bid clarification meetings;
- Received site plan approval from the Township of Edison;
- Submitted Title V air permit; and,
- Building PO issued to vendor.

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$6,869	\$670,582	\$315,258	\$190,109	\$311,084	\$6,765,527	\$17,469,616

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,493,901	\$29,000,000	\$25,729,044	5%

## 3. East Rutherford

During the third quarter of 2021, \$189,737 was spent on the East Rutherford project compared to a forecast of approximately \$210,000, which brought the total spend to approximately \$1.3 million. The forecasted in-service date for the East Rutherford project remains unchanged from the prior quarter at December 30, 2022.

Notable activities completed on the East Rutherford project during the third quarter of 2021 included:

- Issued Pipeline and Hazardous Materials Safety Administration (PHMSA) notification as required for upcoming construction; and,
- Completed final license and permit package and submitted permit application to the New Jersey Sports and Exposition Authority (NJSEA) and Bergen County.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$9,010	\$521,865	\$337,573	\$260,112	\$189,737	\$1,030,830	\$11,450,873

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$1,318,297	\$16,500,000	\$13,800,000	7%

#### 4. Mount Laurel

During the third quarter of 2021, \$121,165 was spent on the Mount Laurel project compared to a forecast of approximately \$182,000, which brought the total spend to approximately \$794,000. The forecasted in-service date for the Mount Laurel project remains unchanged from the prior quarter at December 30, 2022.

Notable activities completed on the Mount Laurel project during the third quarter of 2021 included:

- Received soil erosion and sediment control permit;
- Submitted site package and received conditional approval from the Burlington County Planning Board; and,
- Received IFB drawing package for review.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$5,965	\$362,167	\$155,351	\$149,682	\$121,165	\$510,606	\$8,095,064

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$794,330	\$11,400,000	\$9,400,000	7%

#### 5. Paramus

During the third quarter of 2021, \$92,239 was spent on the Paramus project compared to a forecast of approximately \$131,000, which brought the total spend to approximately \$921,000. The forecasted in-service date for the Paramus project remains unchanged from the prior quarter at December 29, 2023.

Notable activities completed on the Paramus project during the third quarter of 2021 included the receipt of the preliminary drawing package for review.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$8,842	\$462,452	\$227,854	\$129,694	\$92,239	\$114,443	\$10,464,477

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$921,080	\$13,700,000	\$11,500,000	7%

**6. Westampton**

During the third quarter of 2021, \$1,822,542 was spent on the Westampton project compared to a forecast of approximately \$1.7 million, which brought the total spend to approximately \$6.6 million. The forecasted in-service date for the Westampton project advanced 55 days from the status at the end of the second quarter of 2021 to October 22, 2021, which was the result of the progress of the construction efforts on the project.

Construction on the Westampton project, which commenced in April 2021, was reported at 85% complete as of September 2021. Other notable activities completed on the Westampton project during the third quarter of 2021 included:

- Completed demolition of existing regulator building;
- Completed header piping and regulator piping installation; and,
- Completed new regulator building foundation and started building erection.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>					<i>Forecast</i>	
\$8,395	\$1,032,670	\$478,072	\$3,217,496	\$1,822,542	\$2,191,211	\$349,615

Actuals to Date	Estimate	Current Forecast	% of Actuals to Estimate
\$6,559,174	\$10,000,000	\$9,100,000	66%

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2021 THIRD QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

AUGUST 24, 2022

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2021 Third Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
S-INF-1	<p><b><u>Reference Q3 2021 Report, Page 1</u></b>            Regarding the Grid Modernization – Communication System subprogram, what is attributed to the reduction in forecasted retrofit recloser installations from 2,449 units (See Q2 2021 Report, Page 1) to 2,357 units?</p>	<p>PSE&amp;G periodically revises the number of forecasted retrofit recloser units to be installed under the ES 2 Program based on reviews of current phone line devices, circuit reconfigurations, and previously removed or replaced units. As a result of the updated status of these factors, the number of planned units is subject to being reduced.</p>	<p>No change</p>
S-INF-2	<p><b><u>Reference Q3 2021 Report, Page 2, Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2021</u></b>            Regarding the Electric Station Flood Mitigation project “State Street”:</p> <ol style="list-style-type: none"> <li>a. Why has the forecasted in-service date of this project not advanced from September 2022 after the outside plant portion of this project was added to Electric Stipulated Base?</li> <li>b. Why is the outside plant portion of this project not expected to be placed in-service until March 2023 (See Q3 2021 Report, Page 35, Table 20) given that the Electric Station Flood Mitigation portion of this project has been projected to be placed in-service in September 2022 since before the outside plant portion was removed?</li> </ol>	<p>When the IP and OP scopes of the State Street project were planned to be executed as one project, the IP portion (which remains in the Electric Station Flood Mitigation subprogram) was forecasted to be placed in-service in September 2022, while the OP portion (now executed under Electric Stipulated Base) had been forecasted to be executed following the completion of the IP scope with a then forecasted in-service date of April 2023.</p> <p>This sequencing is effectively unchanged following the split of the IP and OP scopes on this project, though since that split the forecasted in-service date for the State Street OP project has advanced to March 2023.</p>	<p><b>Section III.A.13. &amp; Section III.E.5.</b></p>
S-INF-3	<p><b><u>Reference Q3 2021 Report, Pages 8-9, Table 6 – ES 2 Program Overhead Allocations as of September 30, 2021</u></b>            What is attributed to Q2 2021 overhead allocations increasing from \$11,393,000 in the IM’s previous report (See Q2 2021 Report, Page 11) to \$11,444,000 in this report?</p>	<p>The change in overhead allocations for the second quarter of 2021 from \$11.393 million as reported in the IM 2021 Second Quarter Report to \$11.444 million in this IM 2021 Third Quarter Report was the result of an error in the original second quarter data provided to the IM by PSE&amp;G. PSE&amp;G informed the IM this error was caused by a difference in the date/time the SAP data was extracted for each report, with the original second quarter data downloaded earlier in the month than typical. The correct amount for the second quarter of 2021 is the \$11.444 million shown in <b>Table 6</b> of this report.</p>	<p><b>Section II.C.4.</b></p>

ID #	Question/Comment	IM Response	Report Changes
S-INF-4	<p><b><u>Reference Q3 2021 Report, Page 26, Electric Station Flood Mitigation Projects (Waverly)</u></b></p> <p>a. Please provide additional details about the modifications incorporated into the Waverly substation project and their associated costs which led to the Newark Planning Board approving the site plan in early 2022 (as indicated in the response to S-INF-5 in the IM’s Q2 2021 Report).</p> <p>b. Please indicate if the Waverly substation project is currently expected to be placed in service within the Energy Strong II program window.</p>	<p>Regarding the requests concerning the Waverly project:</p> <p>a. When the initial site plan was rejected, the comments received from the Newark Planning Board generally focused on the outward appearance of the substation. The revised site plan incorporated feedback received from community meetings and from discussions with the Director of Arts and Culture for the City of Newark and the Newark Arts Council. The result was redesigned street facing frontages to the substation that included a fence with brick finish (giving a wall-like appearance) and locations for artwork to be placed, two entrance gates with matching color schemes, portions of the isolation walls that were visible were also redesigned to match the brick finishes on the street facing fences, and landscaping around the sidewalk area outside the substation.</p> <p>b. As of April 2022 (the most recent data available to the IM at the time of this report), the final in-service date had improved to February 27, 2024, which still remains outside of the ES 2 program window. This relates to the transformer #3 in-service date, while the 4kV switchgear and transformers #1-2 are forecasted to be in-service in October 2023.</p>	<p><b>Section III.A.15.</b></p>
S-INF-5	<p><b><u>Reference Q3 2021 Report, Page 28, Contingency Reconfiguration Subprogram</u></b></p> <p>Regarding the Contingency Reconfiguration subprogram, please compare the total number of reclosers currently forecasted to be installed to originally budgeted totals.</p>	<p>At the time of the ES 2 filing, PSE&amp;G estimated 1,816 reclosers to be installed in the Program. With the completion of the recloser scope in January 2022, a total of 1,467 reclosers were installed. The revision to the number of units planned in the subprogram was also discussed in the IM 2021 First and Second Quarter Reports (Section IV.A.1 and Section II.A.1, respectively).</p> <p>Additionally, as of the initial subprogram forecast received by the IM (April 2020, when the IM engagement began), the recloser scope of the Contingency Reconfiguration subprogram had a forecast of \$107,976,302, while the final costs of the recloser scope was \$101,920,298.</p>	<p>No change</p>
S-INF-6	<p><b><u>Reference Q3 2021 Report, Page 29, Contingency Reconfiguration Subprogram</u></b></p> <p>With respect to the Contingency Reconfiguration subprogram, it is noted that “the forecasted final in-service dates for three of the four Division’s Fuse Saver program advanced two to three months based on a reduction of the number of units to be installed.”</p>	<p>Regarding the Fuse Saver scope of work:</p> <p>a. PSE&amp;G is still evaluating the number of Fuse Saver units to be removed from the Program through on ongoing field assessments and a prioritization based on customers served and locations not requirement a pole replacement. PSE&amp;G expects this to be an iterative process with the final number of</p>	<p><b>Section III.B.</b></p>

ID #	Question/Comment	IM Response	Report Changes																														
	<p>a. Please provide the total number of Fuse Saver units removed from the program for each division.</p> <p>b. Please provide additional details describing the Company’s rationale for reducing the number of Fuse Saver units.</p>	<p>units determined by the average cost per unit based on the most optimal mix of locations with and without pole replacements given the fixed budget.</p> <p>b. The reduction in the planned number of Fuse Saver units is the result of the higher cost per unit observed in the pilot program.</p>																															
S-INF-7	<p><b><u>Reference Q3 2021 Report, Page 30, Grid Modernization – Communication System Subprogram</u></b>  Regarding the Grid Modernization – Communication System subprogram, it is stated that “During the third quarter of 2021, eight additional fiber installation projects (Bordentown, Central Ave., Chauncey Street, First Street, Harrison, Norfolk Street, Princeton, and South Orange) and one fiber cutover project (Henry Street) were placed in-service.” For each of these projects placed in-service during Q3 2021, please compare the final cost to the budgeted cost.</p>	<p>For the projects placed in-service during the third quarter of 2021, the budgeted vs. actual costs are shown below:</p> <table border="1"> <thead> <tr> <th>Project</th> <th>Budget</th> <th>Actual (as of Q3 2021)</th> </tr> </thead> <tbody> <tr> <td>Bordentown*</td> <td>\$0</td> <td>\$528,017</td> </tr> <tr> <td>Central Ave.</td> <td>\$480,000</td> <td>\$110,548</td> </tr> <tr> <td>Chauncey Street</td> <td>\$840,000</td> <td>\$849,852</td> </tr> <tr> <td>First Street</td> <td>\$300,000</td> <td>\$570,579</td> </tr> <tr> <td>Harrison</td> <td>\$300,000</td> <td>\$563,245</td> </tr> <tr> <td>Norfolk Street</td> <td>\$300,000</td> <td>\$183,294</td> </tr> <tr> <td>Princeton</td> <td>\$300,000</td> <td>\$1,070,766</td> </tr> <tr> <td>South Orange</td> <td>\$390,000</td> <td>\$302,912</td> </tr> <tr> <td>Henry Street (cutover)**</td> <td>\$50,000</td> <td>\$206,685</td> </tr> </tbody> </table> <p>*-Not on initial project list and therefore no initial budget, added after review of projects performed (See the ROD on this discussed in Section IV.A. of the IM 2020 Third Quarter Report)  **-Cutover projects were budgeted by Division (each cutover project is budgeted at the Division budget divided by number of stations in the scope for that Division).</p>	Project	Budget	Actual (as of Q3 2021)	Bordentown*	\$0	\$528,017	Central Ave.	\$480,000	\$110,548	Chauncey Street	\$840,000	\$849,852	First Street	\$300,000	\$570,579	Harrison	\$300,000	\$563,245	Norfolk Street	\$300,000	\$183,294	Princeton	\$300,000	\$1,070,766	South Orange	\$390,000	\$302,912	Henry Street (cutover)**	\$50,000	\$206,685	Section III.C. (Table 17)
Project	Budget	Actual (as of Q3 2021)																															
Bordentown*	\$0	\$528,017																															
Central Ave.	\$480,000	\$110,548																															
Chauncey Street	\$840,000	\$849,852																															
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South Orange	\$390,000	\$302,912																															
Henry Street (cutover)**	\$50,000	\$206,685																															
S-INF-8	<p><b><u>Reference Q3 2021 Report, Page 31, Table 17 – ES 2 Program Fiber Projects Status as of September 30, 2021</u></b>  With respect to the fiber installation project “Bergen Point”, please discuss if this project will remain used and useful following the upcoming retirement of the Bergen Point substation.</p>	<p>PSE&amp;G confirmed to the IM that the Bergen Point fiber project will remain used and useful through the schedule retirement of the Bergen Point substation in 2026. PSE&amp;G intends to replace the substation with a 69kV/13kV station and the fiber connectivity design at this new station will determine if any portion of the current Bergen Point fiber installation will remain used and useful.</p>	No change																														
S-INF-9	<p><b><u>Reference Q3 2021 Report, Page 31, Table 17 – ES 2 Program Fiber Projects Status as of September 30, 2021</u></b>  With respect to the fiber installation project “Howell Street”, please reconcile why the project’s Q3 2021 status is listed as “preliminary engineering” when the IM’s previous report indicated that this project was removed from the program (See Q2 2021 Report, Page 42).</p>	<p>As indicated in the IM 2021 Second Quarter Report, the decision to remove the Howell Street fiber project was made during the fourth quarter of 2021. The IM’s approach is to have the main body of the quarterly reports generally reflect the Program status as of the end of the reporting quarter (while providing notable post-quarter information in a separate section of the report). Thus, <b>Table 18</b> (renumbered after</p>	Section III.C. (Table 18)																														



ID #	Question/Comment	IM Response	Report Changes
		the new Table 17 was added in response to S-INF-7 above) shows the fiber project status as of September 30, 2021.	
S-INF-10	<p><b><u>Reference Q3 2021 Report, Page 32, Table 18 – ES 2 Grid Modernization – Communication System Costs as of September 30, 2021</u></b>  Regarding the Grid Modernization – Communication System subprogram, what is the currently anticipated in-service date of the Wireless Network project?</p>	The wireless network scope was placed in-service as of December 16, 2021.	No change
S-INF-11	<p><b><u>Reference Q3 2021 Report, Pages 32-33, Grid Modernization – Communication System Subprogram</u></b>  Refer to the statement “The forecast for the Grid Modernization – Communication system subprogram increased approximately \$2.7 million as of the end of the third quarter of 2021 from the prior quarter. The bulk of this increase (\$2.6 million) was in the fiber scope, which was driven by the updated fiber and communication requirements based on the current status of the PSE&amp;G substations and Operations Centers.” Please provide additional details about the updated fiber and communication requirements.</p>	This forecast increase was driven by higher overall cost estimates resulting from changes in communication requirements, costs of outsourcing overhead scope on some projects (needed to augment Division resources), and IP contractor quotes higher than estimated. Updated communication requirements contained within the new cost estimates reflect the adjustment of the project list discussed in the ROD reviewed in Section IV.A. of the IM 2020 Third Quarter Report.	<b>Section III.C.</b>
S-INF-12	<p><b><u>Reference Q3 2021 Report, Page 36, Electric Stipulated Base (Paramus Project)</u></b>  Regarding the Paramus life cycle substation project, what factors are attributed to the forecasted cost (\$20,497,593) exceeding the base cost plus risk and contingency (\$20,200,000)?</p>	The higher forecast on the Paramus life cycle substation project is driven by higher than estimated construction and material/equipment awards.	<b>Section III.E.2.</b>
S-INF-13	<p><b><u>Reference Q3 2021 Report, Pages 36-37, Electric Stipulated Base (Plainfield Substation Project)</u></b>  With respect to the Plainfield life cycle substation project, what is attributed to the forecasted cost increasing from \$19,645,315 (See Q2 2021 Report, Page 37) to \$22,085,710?</p>	The higher forecast on the Plainfield life cycle substation project is driven by higher than estimated construction awards and additional steel with a higher steel price than estimated.	<b>Section III.E.3.</b>
S-INF-14	<p><b><u>Reference Q3 2021 Report, Page 39, Gas M&amp;R Station Upgrades (Camden M&amp;R Station Project)</u></b>  Regarding the Camden M&amp;R station project, what is attributed to the forecasted cost increasing from \$24,300,000 (See Q2 2021 Report, Page 39) to \$26,272,811?</p>	The approximately \$2.0 million increase in the Camden M&R station project forecast from the second to third quarter of 2021 was driven by material costs higher than estimated.	<b>Section III.F.1.</b>
S-INF-15	<p><b><u>Reference Q3 2021 Report, Page 39, Gas M&amp;R Station Upgrades (Central M&amp;R Station Project)</u></b></p>	The approximately \$1.8 million increase in the Central M&R station project forecast from the second to third quarter of 2021 was driven by:	<b>Section III.F.2.</b>

ID #	Question/Comment	IM Response	Report Changes
	Regarding the Central M&R station project, what is attributed to the forecasted cost increasing from \$23,900,000 (See Q2 2021 Report, Pages 39-40) to \$25,729,044?	<ul style="list-style-type: none"> <li>• \$0.4 million attributed to: additional design efforts required due to the complexity of the station and drawing modifications to meet the township site plan approval requirements.</li> <li>• \$1.5 million attributed to: material costs higher than estimated.</li> <li>• \$0.1 million reduction attributed to: reduced licensing and permitting costs based on actuals to date and an updated estimate of remaining work.</li> </ul>	
RCR-IM-1	With reference to page 2 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide an update on the status of the Academy Street substation including actual in-service date or anticipated in-service date.	The Academy Street substation project was placed in-service on October 19, 2021, when the switchgear was placed in-service.	No change
RCR-IM-2	With reference to page 2 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide an update on the status of the Market Street substation including actual in-service date or anticipated in-service date.	The Market Street substation elimination project was placed in-service as of June 25, 2021, when all the 4kV circuits were converted to 13kV.	No change
RCR-IM-3	With reference to page 2 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide an update on the status of the Ridgefield 4kV substation including actual in-service date or anticipated in-service date.	The Ridgefield 4kV substation elimination project was placed in-service as of May 16, 2021, when all the 4kV circuits were converted to 13kV.	No change
RCR-IM-4	With reference to page 2 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide an update on the status of anticipated in-service date of substation work expected to be completed in 2022.	<p>As shown in <b>Table 2</b>, the Clay Street, Leonia, Ridgefield 13kV, and State Street projects were forecasted as of the end of the third quarter of 2021 to be placed in-service during 2022. As of the end of June 2022 (most current information presently available to the IM), the status of the forecasted in-service dates for these projects is as follows:</p> <ul style="list-style-type: none"> <li>• Clay Street: slipped to January 2023 due to delays in receiving the above grade structures and electrical construction permits.</li> <li>• Leonia: forecasted for December 2022.</li> <li>• Ridgefield 13kV: forecasted for December 2022.</li> <li>• State Street: forecasted for December 2022.</li> </ul>	No change
RCR-IM-5	With reference to page 3 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide an update regarding the Waverly substation site plan approval process.	The site plan received conditional approval by the Newark Planning Board in December 2021 with memorialization of the compliance resolution in January 2022.	No change
RCR-IM-6	With reference to page 3 of the Independent Monitor’s Draft Third Quarter 2021 Report, please explain if the delayed site	PSE&G updated the estimate for the Waverly substation project in January 2022. In this updated estimate, the base estimate increased	No change

ID #	Question/Comment	IM Response	Report Changes
	plan for the Waverly substation will increase projected costs for the project.	from \$29.4 million to \$36.2 million, which included \$2.6 million related to additional engineering (\$0.8 million), revised fencing and external façade improvements (\$1.0 million), and additional charges for extended project duration (\$0.8 million).	
RCR-IM-7	With reference to Table 8 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide additional details regarding the outages identified for circuits DFD 8041, LEO 8041, and WFL 8032 including the circumstances leading to the outage and whether something unique about the outage caused it to be much more severe than the reported 5-year baseline level.	<p>These circuits all saw severe impacts from the Major Event, in particular tree impacts. Specific information on each circuit is provided as follows:</p> <ul style="list-style-type: none"> <li>• DFD 8041: a tornado touched down in the area and resulted in the primary line down from wind/tree impacts.</li> <li>• LEO 8041: a tree brought down all three phases, resulting in no circuit operation.</li> <li>• WFL 8032: large tree impact resulted in multiple phases down in addition to flooding in the area.</li> </ul>	<b>Section II.D.1.</b>
RCR-IM-8	With reference to page 14 of the Independent Monitor’s Draft Third Quarter 2021 Report, please identify the eight substations that experienced water intrusion.	The eight substations that experienced water intrusions during the Major Event included: Belmont, Cranford, Ewing, Hoboken, New Milford, Port Street, Rahway, and Somerville.	<b>Section II.D.1.</b>
RCR-IM-9	With reference to page 23 of the Independent Monitor’s Draft Third Quarter 2021 Report, please describe the additional outside plant work that resulted in the \$2.8 million increase.	<p>The additional OP overhead and restoration work that drove the \$2.8 million increase to the Market Street project was driven by unknown OP field conditions, more complicated cutover and traffic control procedures than previously anticipated, and overall quantity of labor and material higher than previously estimated to complete the project scope. Additional details on these cost drivers are as follows:</p> <ul style="list-style-type: none"> <li>• Unknown OP field conditions: condition of poles, conductors, transformers, and service wires along with space constraints for equipment operation required increased labor and material to resolve. In addition, hazardous soils required use of backhoes, which in turn required additional road closures/traffic safety control.</li> <li>• Cutover procedures: During the procedures for the 13kV conversions, the City mandated additional police around the work areas to ensure public safety and to minimize traffic detours. While construction activities were ongoing, the system being upgraded needed to remain in service and operations to continue to serve customers, which resulted in a higher that estimated level of effort and materials to complete this work safely and reliably.</li> <li>• Traffic control procedures: Included in the conditions of permit approval, County and City officials required additional</li> </ul>	<b>Section III.A.8.</b>

ID #	Question/Comment	IM Response	Report Changes
		police presence and other traffic control contractor labor to safeguard work areas and mitigate traffic disruptions.	
RCR-IM-10	With reference to page 23 of the Independent Monitor’s Draft Third Quarter 2021 Report, please explain if the Company is experiencing higher than estimated traffic control requirements for other projects and if the Company is factoring increased traffic control requirements for future projects. If not, please explain why not.	Generally, PSE&G has not experienced higher than estimated traffic control requirements across the ES 2 Program, however higher traffic costs have been experienced on certain individual projects (e.g. Market Street) based on additional requirements required by the local municipality. PSE&G develops its traffic control estimates based on the amount of street work expected to be executed and the permit requirements for each location.	No change
RCR-IM-11	With reference to page 24 of the Independent Monitor’s Draft Third Quarter 2021 Report, please explain if the concrete slab impacting the Ridgefield 13 kV substation was identified during the design phase of the project. If not, please explain why not	The concrete slab that obstructed the manhole/duct bank work was not identified during the design phase of the project. The manhole modifications were not required by the original design and therefore were not part of the original scope.	<b>Section III.A.11.</b>
RCR-IM-12	With reference to page 25 of the Independent Monitor’s Draft Third Quarter 2021 Report, please describe the additional work that resulted in the \$1.2 million increase to remove primary wires to complete 4-13kV conversions.	The additional work was aerial cable removal required to complete the 4kV to 13kV conversions, which had been omitted from the estimate for the OP scope on the project.	<b>Section III.A.12.</b>
RCR-IM-13	With reference to page 26 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide an update to the status of the plan application for the Waverly project	The site plan received conditional approval by the Newark Planning Board in December 2021 with memorialization of the compliance resolution in January 2022.	No change
RCR-IM-14	With reference to page 26 of the Independent Monitor’s Draft Third Quarter 2021 Report, please indicate if the current forecasted budget remains adequate to address the current delays to the Waverly project. If not, please provide an updated cost estimate for the project.	PSE&G updated the estimate for the Waverly substation project in January 2022. In this updated estimate, the base estimate increased from \$29.4 million to \$36.2 million, which included: \$2.9 million related to equipment awards higher than estimated; \$1.1 million from a change in T&D surcharge methodology; \$0.2 million from higher than estimated laydown area costs; and \$2.6 million related to additional engineering (\$0.8 million), revised fencing and external façade improvements (\$1.0 million), and additional charges for extended project duration (\$0.8 million).	No change
RCR-IM-15	With reference to page 26 of the Independent Monitor’s Draft Third Quarter 2021 Report, please provide an update on the project status of the Woodlyne substation work. Please indicate if the Company anticipates any additional costs for the project.	Civil construction on the Woodlyne substation project commenced in February 2022, and as of the end of the first quarter of 2022 there was no change to the forecasted in-service date (which remains at October 10, 2023 – the same status as of the end of the third quarter of 2021 as shown in <b>Table 2</b> ). In January 2022, PSE&G updated the Woodlyne estimate, which transitioned from the Study (50% level) to Conceptual (70% level) estimate phase. The updated base estimate increased from \$15.8	No change

ID #	Question/Comment	IM Response	Report Changes
		million to \$21.3 million, driven by higher than estimated civil construction award (\$3.9 million), higher than estimated switchgear award (\$0.8 million), and increased carrying cost (\$0.8 million).	
RCR-IM-16	With reference to page 32 of the Independent Monitor’s Draft Third Quarter 2021 Report, please indicate if the Company currently anticipates that progress for the Grid Modernization - Communication System subprogram remains as forecasted. If not, please explain why not and provide an updated budget and project completion forecast.	The forecast for the Grid Modernization – Communication System subprogram increased from \$63.1 million as of the end of the third quarter of 2021 to \$66.3 million as of the end of the second quarter of 2022. This increase is predominantly the result of higher forecasts in the fiber projects based on actual conditions and will be further discussed in the upcoming IM 2022 Second Quarter Report.	No change
6/27/2022 Letter from Rate Counsel	Rate Counsel notes that the Report does not clearly state the IM’s findings regarding: (1) the effectiveness of IIP investments in meeting project objectives; (2) the cost-effectiveness and efficiency of investments; nor (3) the appropriateness of cost assignments. Findings on these issues are required by the IIP rules. Rate Counsel believes findings by the IM on these topics are critical to proper review of the ESII and the prudency review of the Company’s investments.	The IM structures its reports such that the majority of the discussion within the reports is focused on these three primary objectives of the IM review. For additional clarity, a summary of the findings on these three points as been incorporated into the executive summary of the report.	<b>Section I.</b>
6/27/2022 Letter from Rate Counsel	In the Third Quarter Report, the IM noted that PSE&G increased its estimate for the Market Street substation by a net \$3 million primarily due to 1) additional outside plant overhead and restoration work along with associated material and surcharges based on the complexity of the work and the field conditions, 2) higher than estimated traffic control costs, and 3) reduction in the estimated risk and contingency based on the current risk profile for the project. Rate Counsel is interested in understanding if the Company is experiencing increased traffic control costs across all projects and if increased traffic control costs are now included in new project cost estimates.	See the response to <b>RCR-IM-10</b> above.	No change

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2021 FOURTH QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

DECEMBER 21, 2022

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Advanced Metering Interface .....	AMI
Allowance for Funds Used During Construction.....	AFUDC
Architect and Engineer .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distributed Energy Resource Management System.....	DERMS
Distribution Management System.....	DMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Gas Metering & Regulating.....	Gas M&R
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Construction .....	IFC
Issued for Review .....	IFR
New Jersey Department of Environmental Protection.....	NJDEP
New Jersey Sports and Exposition Authority .....	NJSEA
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Outside Plant.....	OP
Public Service Electric & Gas .....	PSE&G
Purchase Order.....	PO
Record of Decision .....	ROD
Remote Control Unit.....	RCU
Remote Terminal Unit .....	RTU
Risk and Contingency .....	R&C



Supervisory Control and Data Acquisition .....SCADA  
System Average Interruption Duration Index..... SAIDI  
Utility Review Board ..... URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram). This report contains the Independent Monitor's (IM's) findings and observations on the ES 2 Program elements and other information on the Program's status as of the fourth quarter of 2021.

During the fourth quarter of 2021, the bulk of the spend within the ES 2 Program continued to be in the two largest subprograms: Electric Station Flood Mitigation with two additional projects commencing construction during the quarter, bringing half of the projects in the subprogram past the start of construction; and Contingency Reconfiguration where the bulk of the planned recloser installations have now been completed. Within the other subprograms, the Grid Modernization – Communication System subprogram placed three additional fiber installation projects in-service, with 20 fiber installation projects now completed through the ES 2 Program. The Grid Modernization – Communication System also completed the final recloser retrofit installations during the fourth quarter of 2021, with a total 2,318 retrofits installed, and continued the retrofit substation remote terminal unit (RTU) scope, with 10 substations completed out of a forecasted scope of 196 substations. The Grid Modernization – ADMS subprogram completed sprints 11 and 12 in the Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS) scope and sprint 9 within the Outage Management System (OMS) scope. The Gas M&R subprogram placed its first project, the Westampton project, in-service while other stations continued to advance pre-construction efforts, including completing site plan packages, ordering long lead materials, and awarding the construction work. The Hamilton, Paramus, Plainfield, and Woodbury projects in the Electric Stipulated Base scope continued construction during the fourth quarter of 2021, while the State Street (Outside Plant) project held its kickoff meeting and commenced detailed engineering. **Table 1 – ES 2 Subprogram & Stipulated Base Status as of December 31, 2021** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

*Table 1 – ES 2 Subprogram & Stipulated Base Status as of December 31, 2021*

Subprogram	Q4 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Electric Station Flood Mitigation	\$19,768,173	\$121,152,744	\$347,842,636	35%	Sep 2024	\$389M
Contingency Reconfiguration	\$8,418,831	\$105,693,021	\$145,767,428	73%	Dec 2023	\$145M
Grid Modernization – Communications	\$8,254,991	\$48,365,008	\$63,628,856	76%	Dec 2023	\$64.3M
Grid Modernization – ADMS	\$2,828,626	\$26,338,279	\$43,494,127	61%	Dec 2022	\$42.7M

Subprogram	Q4 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Electric Stipulated Base	\$4,669,633	\$18,055,021	\$100,000,000	18%	Dec 2023	\$100M
Gas M&R Station Upgrades^	\$7,006,451	\$20,175,989	\$107,798,888	19%	Dec 2023	\$101M
<b>Total*</b>	<b>\$50,946,704</b>	<b>\$339,780,063</b>	<b>\$808,531,934</b>	<b>42%</b>	<b>Dec 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 11** and **Table 20** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.  
\*\*-Final in-service date.  
\*\*\*-Following the \$7.7 million transfer in July 2021 from the Grid Modernization – Communications subprogram to the Grid Modernization – ADMS subprogram.  
^-Includes both the ES 2 projects and the Stipulated Base gas projects.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of December 31, 2021**.

**Table 2 – ES 2 Electric Station Flood Mitigation Status as of December 31, 2021**

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$10,500,000	\$6,129,738	58%	<b>10/19/2021</b> (↑-1)
2. Clay Street	\$33,800,000	\$3,802,341	11%	11/7/2022 (↑-50)
3. Front Street^	\$27,400,000	\$2,351,832	9%	11/16/2023 (↓+10)
4. Hasbrouck Heights	\$22,700,000	\$5,456,031	24%	2/1/2023 (↑-6)
5. Kingsland	\$8,300,000	\$824,722	10%	6/30/2023 (↑-96)
6. Lakeside Avenue	\$47,900,000	\$1,173,651	2%	11/8/2023
7. Leonia	\$26,400,000	\$15,190,427	58%	11/9/2022 (↓+30)
8. Market Street	\$29,900,000	\$27,012,282	90%	<b>6/25/2021</b>
9. Meadow Road	\$9,000,000	\$1,043,444	12%	9/22/2023
10. Orange Valley	\$20,200,000	\$797,976	4%	12/29/2023
11. Ridgefield 13kV	\$27,600,000	\$17,288,355	63%	12/20/2022 (↓+39)
12. Ridgefield 4kV	\$21,300,000	\$20,646,800	97%	<b>5/16/2021</b>
13. State Street	\$21,400,000	\$8,832,965	41%	9/23/2022
14. Toney’s Brook	\$18,800,000	\$1,526,556	8%	4/21/2023
15. Waverly	\$35,400,000	\$6,979,786	20%	9/17/2024 (↑-92)
16. Woodlynne	\$19,400,000	\$2,095,910	11%	10/10/2023

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). **Bold** dates indicate the actual in-service date.  
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.  
^- The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

As indicated in **Table 2**, the projects that started construction prior to the fourth quarter of 2021 (Academy Street, Leonia, Market Street, Ridgefield 13kV, Ridgefield 4kV, and Waverly) continue to have the highest total spend to date, with the Academy Street project also achieving its in-service status during the fourth quarter. The Electric Station Flood Mitigation project estimates remain unchanged from the third quarter of 2021, with a total subprogram estimate of \$389 million (comprised of \$339.8 in base costs and \$49.2 million in R&C). **Table 2** also shows that half of the sixteen projects had movement during the third quarter of 2021 in the forecasted in-service date, with five advancing and three slipping. Of these eight projects, three of the projects (Academy Street, Front Street, Hasbrouck Heights) had forecasted in-service dates change by less than two weeks. The biggest shifts in forecasted in-service dates were on the Kingsland (advancing 96 days) and Waverly (advancing 92 days) projects, with the former driven by material availability that supported schedule improvement and the latter driven by approval of the site plan in December 2021 that improved the construction schedule. The forecasted in-service date for the Waverly project of September 17, 2024, as of the end of 2021, continues to be outside of the ES 2 Program window as PSE&G continues to seek opportunities to improve the schedule. Additional information on the forecasted in-service changes during the fourth quarter of 2021 is provided in the project-specific discussions under **Section III.A**.

As the Covid-19 related impacts continue to be experienced, particularly in the supply chain, and general economic conditions show increased cost pressures, these impacts are starting to be realized in the cost forecasts for the ES 2 Program. These cost impacts were particularly evident within the Gas M&R subprogram that is currently forecasted at approximately \$107.8 million (above the Stipulation amount of \$101 million), however the overall Program remains forecasted under the total Stipulation amount (forecast of approximately \$808.5 million against a Stipulation budget of \$842 million). The IM has generally found these cost impacts reflect a change in underlying assumptions and economic conditions from when the initial estimates were prepared and will continue to monitor these cost pressures and any resulting impacts on the Program. Currently, schedule challenges, particularly on the Waverly substation that is forecasted to have its final assets in-service during the third quarter of 2024 and other projects with forecasted in-service dates near the Program end date will continue to warrant further monitoring by the IM to see if opportunities exist to advance the forecasted in-service dates.

As per N.J.A.C. Section 14:3-2A.5(c)2, the IM reports are to address:

- i. *The effectiveness of Infrastructure Investment Program investments in meeting project objectives;*
- ii. *The cost-effectiveness and efficiency of investments;*
- iii. *The appropriateness of cost assignments; and*
- iv. *Any other information required by the Board.*

The IM focuses the majority of the discussion within each report on these primary objectives, after introducing summarized the findings on these areas in the IM 2021 Third Quarter Report, the IM will continue to provide a summary on these areas for each report with an emphasis on new information relative to the current reporting period. These summarized findings are as follows:

- **Effectiveness of ES 2 investments in meeting project objectives:** The objectives for each subprogram within the ES 2 were defined within PSE&G's ES 2 filing and confirmed by the Stipulation. The overall objectives focused on improving system resiliency, reliability, and hardening through rebuilding or replacing selected substations, installing smart control and monitoring devices on distribution circuits (reclosers, fuse savers, etc.), installing ADMS and a

new communication system, and rebuilding selected Gas M&R stations. Within **Section III** of this report, the IM provides a review of the status of the efforts performed to meet these objectives for each subprogram. During the fourth quarter of 2021, the following projects/scopes were placed in-service and/or completed:

- Electric Station Flood Mitigation: Academy Street placed in-service.
  - Contingency Reconfiguration: Metro Division recloser scope completed.
  - Grid Modernization – Communication System: Recloser retrofit scope completed (final 324 completed in the fourth quarter out of a total scope of 2,318 units); two substation RTU retrofits completed (bringing the total to 10 substations out of a current scope of 196); three fiber installation projects were completed (bringing the total to 20 out of a current scope of 38); and one fiber cutover project was completed (bringing the total to nine out of a current scope of 12).
  - Electric Stipulated Base: Paramus contingency switchgear placed in-service.
  - Gas M&R: Westampton placed in-service.
- **Cost-effectiveness and efficiency of investments:** To assess the cost effectiveness and efficiency of ES 2 investments, the IM began with a review of the initial scope, estimate, and related planning documents for each project to establish a baseline to monitor progress against as the work advances. As the Program execution advances, the IM continues to evaluate actual costs against the initial estimates and current forecasts, including seeking additional information relating to any variances identified. While the overall Program’s current cost forecast is below the Stipulation amount, the IM has observed cost increases realized on specific projects or aspects of the Program and found the majority of these increases stem from scope evolution and/or more detailed estimates from the time of the ES 2 filing, as well as the more recent changes in general market conditions (e.g. Covid-19 impacts, supply chain issues, etc.). The updated subprogram forecasts as of the end of 2021 compared to the end of the third quarter of 2021 were as follows:
    - Electric Station Flood Mitigation: subprogram forecast increased approximately \$1.3 million (or 0.4%) to approximately \$347.8 million.
    - Contingency Reconfiguration: subprogram forecast increased approximately \$273,000 (or 0.2%) to approximately \$145.8 million.
    - Grid Modernization – Communication System: subprogram forecast increased approximately \$518,000 (or 0.8%) to approximately \$63.6 million.
    - Grid Modernization – ADMS: subprogram forecast increased approximately \$772,000 (or 1.8%) to approximately \$43.5 million.
    - Electric Stipulated Base: subprogram forecast remained at \$100.0 million.
    - Gas M&R: subprogram forecast increased approximately \$12.0 million (or 13%) to approximately \$107.8 million.

As shown above, the nearly every subprogram within the ES 2 Program saw a cost forecast increase during the fourth quarter of 2021. The majority of these increases were relatively minor (under 2%). However, the Gas M&R subprogram saw a 13% forecast increase that was driven by actual costs for materials and construction for the Central and East Rutherford projects that

reflects the ongoing volatility in market conditions compared to when the initial estimates were prepared.

- **Appropriateness of cost assignments:** The IM receives and reviews recurring data concerning the accumulation of costs within the Program. Based on that review, the IM submits follow-up questions to the Company regarding that data for the reporting period. Such follow-up questions generally focus on the following aspects:
  - Review of any unusual changes in cost elements from period-to-period, including but not limited to allowance for funds used During construction (AFUDC), cost of removal (COR), and the allocation of overheads.
  - Review spend on capital accounts, such as Construction Work in Progress (CWIP) as it relates to overall spend, AFUDC, and COR.
  - Verify cost accumulations and classifications appear to be in accordance with Generally Accepted Accounting Principles (GAAP), to the extent the IM has access to such information.
  - Review and investigation of prior period adjustments and/or corrections to capital accounts.
  - Engage the Company’s Internal Audit group on specific areas to audit, review, and assess – particularly for areas in which the IM has limited or no visibility (proprietary data, accounting systems, etc.).

Through the above steps, the IM tracks and monitors how the Company is recording costs to support the finding that the cost assignments appear to be appropriately applied. These cost items are discussed further within **Section II.** of this IM report.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On September 20, 2022, a draft IM 2021 Fourth Quarter Report was submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2021 Fourth Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2021 Fourth Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

**Table 3 – ES 2 Records of Decisions**

<b>Subprogram</b>	<b>Record of Decision</b>	<b>IM Comments</b>
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report</i> )
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1. in the IM 2021 Second Quarter Report</i> )
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2. the IM 2021 Second Quarter Report</i> )

During the fourth quarter of 2021, there were no additional RODs issued.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-

term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

### C. Cost Assignments

#### 1. Costs of Removal (COR)

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Program Costs of Removal as of December 31, 2021**, below itemizes the charges to COR for each quarter of 2021, total 2021, total 2020, total 2019 (which was only the fourth quarter) and total ES 2 Program COR to date. These amounts do not reflect any salvage value reductions, which have been *de minimis* in the ES 2 Program through December 31, 2021.

*Table 4 – ES 2 Program Costs of Removal as of December 31, 2021*

Subprogram	Q4 2021	Q3 2021	Q2 2021	Q1 2021	Total 2021	Total 2020	Total 2019 (Q4)	Total COR
	<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$1,824.0	\$1,464.2	\$1,141.0	\$1,129.5	\$5,558.7	\$1,021.1	\$0	\$6,579.8
Contingency Reconfiguration	\$330.7	\$811.4	\$485.2	\$622.9	\$2,250.2	\$2,198.9	\$431.0	\$4,880.1
Grid Modernization – Communications	\$23.5	\$38.6	\$37.9	\$37.8	\$137.8	\$24.4	\$0	\$162.2
Grid Modernization – ADMS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Electric Stipulated Base	\$146.8	\$3.2	\$0	\$0	\$150.0	\$0	\$0	\$150.0
Gas M&R Station Upgrades	(\$2.2)	\$63.5	\$87.6	\$0	\$148.9	\$0	\$0	\$148.9
Gas Stipulated Base	\$196.1	\$0	\$0	\$0	\$196.1	\$0	\$0	\$196.1
<b>Total</b>	<b>\$2,518.9</b>	<b>\$2380.9</b>	<b>\$1,751.7</b>	<b>\$1,790.2</b>	<b>\$8,441.7</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$12,117.1</b>

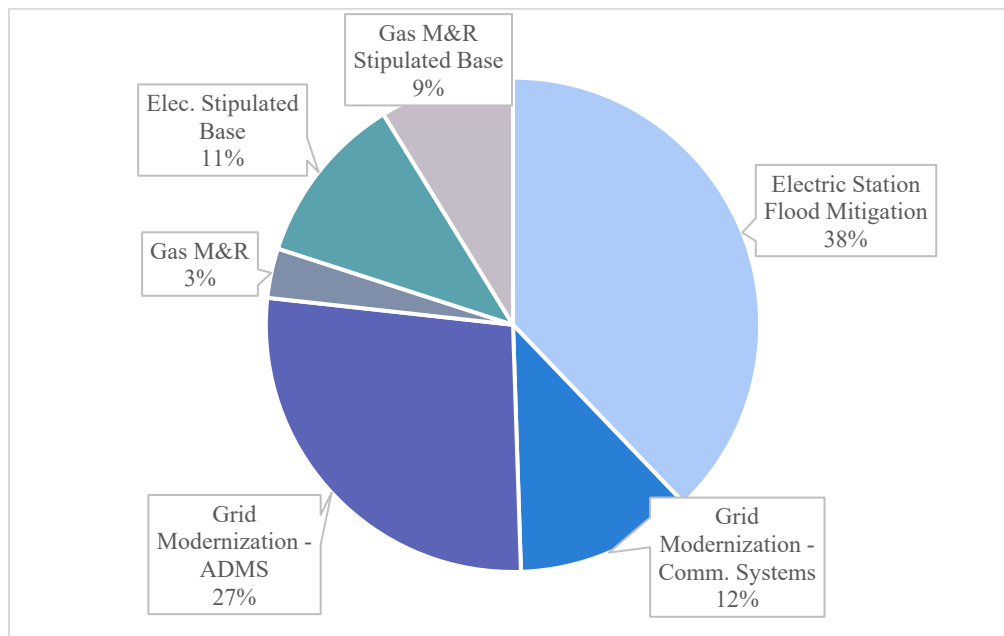
The COR charges for the fourth quarter of 2021 primarily reflect COR activities at the Market Street Sub Elimination project, including removal of 4kV cabling and switchgear, circuit breakers, transformers, foundations, and asbestos abatement.



## 2. Construction Work-in-Progress (CWIP) & In-Service Transfers

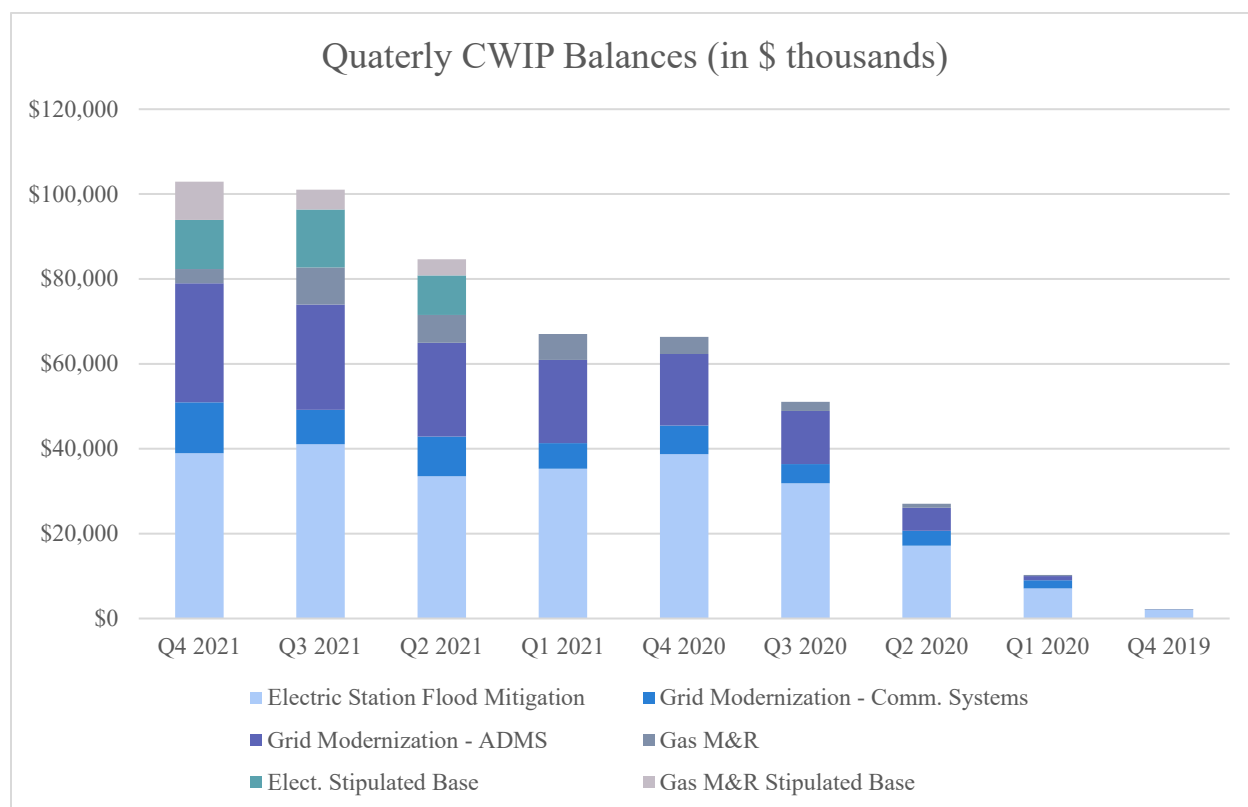
As of December 31, 2021, the Energy Strong CWIP balance was \$102.9 million, compared to \$101.0 million as of September 30, 2021. The largest components of CWIP as of December 31, 2021, were the State Street (\$9.0 million), Waverly (\$7.4 million) and Hasbrouck (\$5.6 million), projects with the Electric Station Flood Mitigation subprogram, the Central (\$4.8 million) Gas Stipulated Base M&R project, and work associated with the Grid Modernization – ADMS subprogram (\$28.1 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of December 31, 2021** below.

**Figure 1 – ES 2 CWIP as of December 31, 2021**



In addition, the **Figure 2 – ES 2 CWIP Balances by Subprogram as of December 31, 2021** below depicts the composition of end-of-quarter CWIP balances by subprogram for each quarter of 2021 and 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of December 31, 2021**



Transfers from CWIP to plant in service totaled \$32.4 million during the fourth quarter of 2021, the largest quarterly transfer to date. During the fourth quarter, the Academy Street substation and the Westhampton Gas M&R substation projects were completed and placed in-service, and switchgear assets were placed in-service at the Leonia substation and Paramus substation projects. Total ES 2 Program transfers from CWIP have been \$70.8 million through December 31, 2021. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no AFUDC is recorded on these expenditures. This accounting treatment is in accord with generally accepted accounting principles and the Company’s accounting policies.

**3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each ES 2 subprogram during each quarter of 2021, total AFUDC for the years 2021, 2020, and 2019, and total Energy Strong AFUDC accrued through the end of 2021, is shown below **Table 5 – ES 2 Program AFUDC as of December 31, 2021.**

**Table 5 – ES 2 Program AFUDC as of December 31, 2021**

Subprogram	Q4 2021	Q3 2021	Q2 2021	Q1 2021	Total 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>							
<b>Electric Station Flood Mitigation</b>	\$564.3	\$581.6	\$576.7	\$558.6	\$2,281.2	\$936.5	\$9.9	\$3,227.6

Subprogram	Q4 2021	Q3 2021	Q2 2021	Q1 2021	Total 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>							
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grid Modernization – Communications	\$127.2	\$105.2	\$95.5	\$59.0	\$386.9	\$184.3	\$0.2	\$571.4
Grid Modernization – ADMS	\$411.0	\$363.5	\$316.9	\$274.2	\$1,365.6	\$352.7	\$0.1	\$1,718.4
Electric Stipulated Base	\$233.6	\$160.9	\$80.5	\$49.6	\$524.6	\$44.0	\$0	\$568.6
Gas M&R Station Upgrades (incl. Stip. Base)	\$133.2	\$157.0	\$107.6	\$72.2	\$470.0	\$70.0	\$0.2	\$540.2
<b>Total</b>	<b>\$1,469.3</b>	<b>\$1,368.2</b>	<b>\$1,177.2</b>	<b>\$1,013.6</b>	<b>\$5,028.3</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$6,626.2</b>

AFUDC accrued for ES 2 projects during the fourth quarter of 2021 increased over AFUDC accrued during the third quarter of 2021 as the result of increases in total average CWIP balances for the Grid Modernization – Communications and Grid Modernization – ADMS subprograms and the full quarterly effect of AFUDC accrued on the Paramus substation, which saw its contingency switchgear transferred into in-service in December 2021.

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2021, the new AFUDC rate was calculated to be 6.81%, using the capital structure and component costs as of January 31, 2021. This rate is lower than the 2020 rate of 6.95%, primarily due to a significantly lower interest rate used for short-term debt in the AFUDC calculation, and also to a reduction in the Company’s embedded cost of long-term debt. In calculating the 2021 AFUDC rate, the Company used (i) a 3.85% embedded cost of long-term debt (vs. 4.02% in 2020), (ii) a short-term debt rate of 0.32% (vs. 1.86% in 2020), and (iii) a cost of equity of 9.60% (unchanged from 2020).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the fourth quarter of 2021, based on data as of November 30, 2021, the recalculated weighted average AFUDC accrual rate (6.84%) did not meet this criterion to warrant changing from the annual rate (6.81%) in effect. Therefore, AFUDC was accrued during the second quarter of 2021 at the calculated rate of 6.81%.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to fourth quarter 2021 Energy Strong project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these Energy Strong projects. The IM will continue to review future Energy Strong AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### 4. Allocated Overheads

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Program Overhead Allocations as of December 31, 2021** are the allocated overhead costs charged to ES 2 subprograms for the four quarters of 2021, total 2021, total 2020, total 2019 and total ES 2 Program allocated overheads to date.

**Table 6 – ES 2 Program Overhead Allocations as of December 31, 2021**

Subprogram	Q4 2021	Q3 2021	Q2 2021	Q1 2021	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
	<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$1,902	\$2,527	\$4,352	\$5,588	\$14,368	\$14,023	\$287	\$28,678
Contingency Reconfiguration	\$2,516	\$3,683	\$4,006	\$4,215	\$14,420	\$17,109	\$3,415	\$34,944
Grid Modernization – Communications	\$2,692	\$2,230	\$2,506	\$1,743	\$9,171	\$3,625	\$12	\$12,808
Grid Modernization – ADMS	\$133	\$125	\$124	\$119	\$501	\$426	\$11	\$938
Electric Stipulated Base	\$807	\$903	\$287	\$126	\$2,123	\$259	\$0	\$2,382
Gas M&R Station Upgrades (incl. Stip. Base)	\$250	\$185	\$169	\$131	\$735	\$291	\$15	\$1,041
<b>Total</b>	<b>\$8,300</b>	<b>\$9,653</b>	<b>\$11,444</b>	<b>\$11,922</b>	<b>\$41,318</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$80,791</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the fourth quarter of 2021 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most (approximately 74%) of the 2021 fourth quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The decreases in overhead costs for the fourth quarter 2021 from the third quarter of 2021 reflect reduced activities that attract overheads, such as material costs and outside services, especially in the Electric Station Flood Mitigation subprogram.

## D. System Performance

### 1. Current Reporting Quarter Major Events

During the fourth quarter of 2021, there was one Major Event reported in PSE&G's service territory from October 25 to November 1, 2021, which involved a State of Emergency related to storm flooding from a Nor'easter and Mutual Aid provided to Jersey City Power & Light. The weather associated with the State of Emergency saw thunderstorms and heavy rains across PSE&G's service territory and resulted in 42,329 PSE&G customers experiencing service interruption with all impacted customers returned to service within 24 hours. None of the switching stations or substations raised and rebuilt during the original Energy Strong Program were affected by floodwaters during this Major Event.

The IM has received PSE&G's report on the performance of its investments from this Major Event and has reproduced the results in **Table 7 – Q4 2021 Major Event Performance** below.

*Table 7 – Q4 2021 Major Event Performance*

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*	Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
ALD 8015	0.12276	0.00000	FAW 8014	0.21021	0.00814
ALD 8016	0.00654	0.00000	FAW 8016	0.12332	0.00964
ALD 8022	0.05448	0.00000	FOH 4006	0.01339	0.00000
<b>BAO 8006</b>		<b>0.00202</b>	GBK 8014	0.30784	0.00037
BAO 8015	0.00023	0.00000	HAT 8021	0.00164	0.00072
BEA 8001	0.00458	0.00068	HNC 8025	0.49719	0.00000
<b>BEF 8021</b>	<b>0.00320</b>	<b>0.01943</b>	HOM 8033	0.08934	0.00438
BEM 8001	0.00675	0.00000	JAC 8021	0.00477	0.00000
BEN 8015	0.01246	0.00018	<b>KIL 8013</b>		<b>0.00000</b>
BRU 8012	0.01648	0.01004	KIL 8016	0.01491	0.00000
CED 8025	0.00153	0.00092	KIN 8023	0.02086	0.00578
CIN 8031	0.06823	0.00959	KUS 8043	0.12886	0.00000
CIN 8033	0.14578	0.00376	LAF 8015	0.00354	0.00000
CIN 8043	0.18459	0.00114	LAF 8026	0.04406	0.00000
CLK 8015	0.23135	0.00001	LAU 8012	0.09474	0.00362
CLK 8016	0.39621	0.00020	LAU 8023	0.82844	0.00736
<b>CLK 8031</b>		<b>0.00403</b>	LAW 8016	0.14895	0.00062
<b>CON 8001</b>		<b>0.00188</b>	LAW 8023	0.01733	0.00146
CRX 8003	0.07703	0.00671	LCE 8032	0.30801	0.01615
CRX 8005	0.04402	0.00052	LCE 8035	0.01296	0.00089
CRX 8007	0.78411	0.00308	LCE 8042	0.04252	0.00077
CUT 8001	0.12150	0.00000	<b>LCE 8044</b>		<b>0.00000</b>
CUT 8042	0.03420	0.00059	LCE 8046	0.01692	0.00072
DAY 8001	0.15084	0.00846	LCU 8051	0.19366	0.00000
DFD 8031	0.13025	0.00143	LEO 8005	0.61152	0.00000
DFD 8041	0.20440	0.00654	LEO 8041	0.05678	0.00352
<b>DOR 8035</b>	<b>0.03042</b>	<b>0.03873</b>	<b>LEV 8016</b>	<b>0.00021</b>	<b>0.00140</b>
DOR 8045	0.00647	0.00128	<b>LOC 8012</b>		<b>0.00000</b>
DUM 4007	0.00474	0.00425	LOI 8001	0.00850	0.00000
FAW 8011	0.63063	0.01277	LUM 8021	0.26968	0.00891

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
MAD 8021	0.19231	0.00026
MAD 8031	0.45221	0.00375
MAR 8008	0.30277	0.00067
MAR 8016	0.26336	0.00123
MCL 4007	0.02282	0.00766
<b>MEA 8012</b>		<b>0.00027</b>
MEA 8016	0.00228	0.00138
MEA 8024	0.09438	0.03168
MEA 8025	0.11896	0.00119
MEC 8004	0.01253	0.00000
MIN 8013	0.00714	0.00000
<b>MIN 8024</b>		<b>0.00310</b>
MON 8002	0.35076	0.00037
MON 8004	0.21535	0.00768
MOT 8003	0.00646	0.00309
MRO 8012	1.08732	0.00054
MRO 8013	0.46710	0.00103
MRO 8023	0.19878	0.01582
MRO 8024	0.29163	0.00441
NBS 8011	0.01516	0.00489
NED 8015	0.09467	0.00000
<b>NED 8016</b>	<b>0.00729</b>	<b>0.00870</b>
NEW 8011	0.07862	0.00168
<b>NOT 8011</b>		<b>0.00000</b>

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
<b>NRP 4002</b>		<b>0.00000</b>
PEK 8036	0.10806	0.00428
<b>PIE 8022</b>		<b>0.00782</b>
<b>PLI 8004</b>	<b>0.01320</b>	<b>0.14784</b>
PLI 8008	0.19552	0.00416
POH 8022	0.01503	0.01445
POH 8023	0.22676	0.00656
RAV 8003	0.00674	0.00000
RUN 8004	0.29484	0.01992
<b>SAD 8008</b>		<b>0.00000</b>
SOH 8022	0.16946	0.00230
<b>SUN 8024</b>	<b>0.00104</b>	<b>0.00150</b>
WAD 8013	0.12231	0.00000
WAD 8041	0.11575	0.00324
WEW 8021	0.21824	0.00073
WEW 8042	0.01304	0.00231
WEW 8044	0.07375	0.00292
WFL 8034	0.04228	0.01247
WOA 4003	0.04886	0.00309
WOR 8013	0.13969	0.00385

\*-System Average Interruption Duration Index (SAIDI) calculations are in minutes; bold values indicate circuits with a higher Major Event SAIDI than the 5-year Major Event SAIDI average.

In the circuit data in **Table 7** above, the “0.00000” indicates an outage, but the value is beyond five decimal points captured by PSE&G, while blank cells indicate no outage in the 5-year window. Additionally, all circuits impacted by this Major Event had received investments during either the original Energy Strong Program or through ES 2. The average of the circuits impacted by this Major Event compared to circuits not impacted is provided in **Table 8 – Impacted vs. Non-Impacted Circuits During Q4 2021 Major Event**.

**Table 8 – Impacted vs. Non-Impacted Circuits During Q4 2021 Major Event**

Circuits Impacted in Q4 2021 Major Events (104 circuits)		Circuits <u>Not</u> Impacted in Q4 2021 Major Events (903 circuits)
Average of 5-Year Baseline SAIDI	Average of Q4 2021 SAIDI	Average 5-Year Baseline SAIDI
0.14816	0.00528	0.08234

As shown in **Table 8** above the circuits impacted by the fourth quarter of 2021 Major Events had a worse 5-year average SAIDI than the non-impacted circuits, but also showed improved performance during this Major Event.

As indicated in **Table 7** above, there were 104 circuits impacted by this Major Event 86 of which (or 83%) had a current Major Event SAIDI better than the 5-year Major Event SAIDI average, while 12 circuits had no Major Event outage within the 5-year comparison window, leaving six circuits that both had a prior Major Event outage within the past 5-years and had worse performance during this Major Event. Additional information on the six worse performing circuits from this Major Event is provided below in **Table 9 – Q4 2021 Major Event Additional Information on Selected Circuits**. As shown in **Table 9**, some of these circuits had more than one incident during the Major Event, resulting in a total of 12 incidents from these six circuits, and that some may show zero customers impacted, which reflects the way the circuit is modeled in PSE&G’s connectivity model and the restoration/isolation steps used to restore service (e.g. isolating a section of cable for repair).

**Table 9 – Q4 2021 Major Event Additional Information on Selected Circuits**

Circuit	5-Year Baseline SAIDI*	Report Quarter SAIDI*	Customers Impacted	Outage Duration*	Additional Comments
BEF 8021	0.00320	0.01943	5	198	Tree damage
BEF 8021	0.00320	0.01943	47	995	Tree damage
DOR 8035	0.03042	0.03873	872	72	Rotted/broken pole
DOR 8035	0.03042	0.03873	144	225	Open wire
LEV 8016	0.00021	0.00140	0	964	Phase cutout open / large motel customer requested work performed at 8AM
LEV 8016	0.00021	0.00140	47	73	Primary cable burned open
NED 8016	0.00729	0.00870	171	125	Blown fuse
PLI 8004	0.01320	0.14784	305	285	Lightning impact
PLI 8004	0.01320	0.14784	83	157	Defective cable
PLI 8004	0.01320	0.14784	1,720	167	Recloser failure
PLI 8004	0.01320	0.14784	306	206	Recloser failure
SUN 8024	0.00104	0.00150	44	84	Broken ridge pin
* - Calculated in minutes.					

As indicated in **Table 9**, in addition to the original Energy Strong Program and ES 2 investments that increased sectionalizing of circuits to reduce the number of customers impacted by outages, the customer impact from a Major Event is also a function of the nature of the outages (extent of damage) and the location of damage relative to the various interrupting devices on the circuit, that is, reclosers or fuses. For some circuits, the 5-year baseline outage(s) were smaller or affected fewer customers, including

different device operations (fuse with 10 customers vs. fuse with 150 customers) than the incident from the current Major Event being reported. Some circuits had more non-reclosing device operations in this Major Event (more fuse jobs) or more customers served by the circuit due to circuit rearrangements. Additionally, the circuits in **Table 9** with zero customers reflect the way the circuit is modeled in PSE&G’s connectivity model and the restoration/isolation steps used to restore service (e.g. isolating a section of cable for repair, or a transformer with no assigned customers).

Beyond the circuit-level performance, the heavy rains from this Major Event did not result in water entering any of the stations that were raised and rebuilt as part of the original Energy Strong Program.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of 2021 compared to the status as of the end of 2019 and end of 2020 is provided below in **Table 10 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of December 31, 2021**.

*Table 10 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of December 31, 2021*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1. Academy Street	Dec. 2019		<u>KO</u>					C						IS		CO					
	Dec. 2020		<u>KO</u>		<u>C</u>									IS		CO					
	Dec. 2021		<u>KO</u>		<u>C</u>								IS						CO		
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																			
	Dec. 2020			<u>KO</u>								C									IS
	Dec. 2021			<u>KO</u>								<u>C</u>				IS					
3. Front Street^	Dec. 2019	<i>Not in ES 2 Program</i>																			
	Dec. 2020	<i>Not in ES 2 Program</i>																			
	Dec. 2021										<u>KO</u>				C						IS
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>							C						IS		CO			
	Dec. 2020		<u>KO</u>											C				IS		CO	
	Dec. 2021		<u>KO</u>											C				IS	CO		
5. Kingsland	Dec. 2019			<u>KO</u>				C				IS		CO							
	Dec. 2020			<u>KO</u>											C					IS	
	Dec. 2021			<u>KO</u>												C		IS		CO	

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Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
6. Lakeside Avenue	Dec. 2019*				KO				C										IS	CO (Q2)
	Dec. 2020						<u>KO</u>							C					IS	CO (Q2)
	Dec. 2021						<u>KO</u>							C					IS	CO (Q2)
7. Leonia	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>		<u>C</u>												IS	CO	
	Dec. 2021			<u>KO</u>		<u>C</u>											IS	CO		
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO									
	Dec. 2020			<u>KO</u>					C	OS		CO								
	Dec. 2021			<u>KO</u>						C/OS	<u>CO</u>									
9. Meadow Road	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>													C		IS	CO (Q2)
	Dec. 2021			<u>KO</u>											C				IS	CO (Q1)
10. Orange Valley	Dec. 2019	Schedule Under Development																		
	Dec. 2020					<u>KO</u>												C		IS (Q1); CO (Q3)
	Dec. 2021					<u>KO</u>											C		IS	CO (Q3)
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C												IS	CO		
	Dec. 2020			<u>KO</u>	<u>C</u>												IS	CO		
	Dec. 2021			<u>KO</u>	<u>C</u>												IS	CO		
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>						C	OS		CO							
	Dec. 2020			<u>KO</u>	<u>C</u>				OS		CO									
	Dec. 2021			<u>KO</u>	<u>C</u>				OS		<u>CO</u>									
13. State Street	Dec. 2019		<u>KO</u>					C									IS		CO (Q1)	
	Dec. 2020		<u>KO</u>						C					IS					CO (Q1)	
	Dec. 2021		<u>KO</u>						<u>C</u>					IS				CO		
14. Toney's Brook	Dec. 2019			<u>KO</u>						C								IS	CO (Q2)	
	Dec. 2020			<u>KO</u>										C			IS		CO (Q2)	
	Dec. 2021			<u>KO</u>										C				IS	CO (Q2)	
15. Waverly	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>			<u>C</u>												IS	CO (Q2)
	Dec. 2021			<u>KO</u>			<u>C</u>													IS (Q3); CO (Q1 2025)
16. Woodlynn	Dec. 2019		<u>KO</u>													C		IS	CO (Q2)	
	Dec. 2020		<u>KO</u>													C		IS	CO (Q2)	
	Dec. 2021		<u>KO</u>													C		IS	CO (Q2)	

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**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout

-Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).

\*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.

^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of 2021 is provided below **Table 11 – ES 2 Electric Station Flood Mitigation Summary Status as of December 31, 2021.**

**Table 11 – ES 2 Electric Station Flood Mitigation Summary Status as of December 31, 2021**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynne
Key Drawing Review	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynne
Scope Locked	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney’s Brook; Waverly; Woodlynne
Major Equipment Purchase Orders (POs)	18*	Academy Street; Clay Street; Front Street*; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley; Ridgefield 13kV*; State Street; Toney’s Brook; Waverly*; Woodlynne
Architect/ Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney’s Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynne <sup>1</sup>
Construction Start**	8	Academy Street; Clay Street; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; State Street; Waverly
In-Service	3	Academy Street; Market Street; Ridgefield 4kV
Partial In-Service	2	Leonia; Ridgefield 13kV

\*-Three of the listed projects (Front Street, Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 18 switchgears at 14 substations.  
<sup>1</sup>-Indicates Burns & McDonnell is serving as the A/E.  
<sup>2</sup>-Indicates PSE&G internal resources are serving as the A/E.  
<sup>3</sup>-Indicates Black & Veatch is serving as the A/E.  
 \*\*-Includes inside plant and/or outside plant construction.

Beyond the key activities summarized in Table 11 above, Table 12 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q1 2022 summarizes the planned activities for each project during the first quarter of 2022, including any carryover of activities from earlier periods.

**Table 12 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q1 2022**

Station	Upcoming Activities for Q1 2022	Carryover Activities from Q4 2021
1. Academy Street	<ul style="list-style-type: none"> <li>Continued civil and electrical construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil and electrical construction</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Major equipment (4kV sheltered aisle switchgear) delivery</li> <li>Major municipal licenses and permits issuance</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil construction</li> </ul>
3. Front Street	<ul style="list-style-type: none"> <li>Civil and electrical drawings Issued for Review (IFR)</li> <li>Site plan approval</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>90% estimate complete</li> <li>Start civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>

Station	Upcoming Activities for Q1 2022	Carryover Activities from Q4 2021
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Control drawings IFR</li> <li>Civil and electrical drawings Issued for Construction (IFC)</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>All cutovers complete – Switchgear #1</li> <li>Phase 2 electrical construction complete</li> </ul>	<ul style="list-style-type: none"> <li>Continued electrical construction</li> </ul>
8. Market Street	<ul style="list-style-type: none"> <li>Municipal licenses and permits issuance for civil demolition</li> </ul>	<ul style="list-style-type: none"> <li>Continued site demolition</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Civil and electrical drawings IFR</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
11. Ridgfield 13kV	<ul style="list-style-type: none"> <li>Phase 1 civil and electrical construction complete</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil and electrical construction</li> </ul>
12. Ridgfield 4kV	<ul style="list-style-type: none"> <li>Project complete</li> </ul>	<ul style="list-style-type: none"> <li>Project complete</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>90% estimate complete</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil and electrical construction</li> </ul>
14. Toney’s Brook	<ul style="list-style-type: none"> <li>Relay settings received by Inside Plant (IP) Construction Relay Group</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Phase 3 controls IFR</li> <li>Start phase 2 civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
16. Woodlynn	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>

The current project estimates, including base and R&C amounts, are shown below in **Table 13 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2021**. **Table 13** also shows the current estimate level based on PSE&G’s estimating processes and as approved by the Utility Review Board (URB), the actual spend, and percentage of actuals to estimate as of the end of 2021.

**Table 13 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2021**

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,800,000	\$700,000	\$10,500,000	\$8,681,267	\$6,129,738	58%
2. Clay Street	Conceptual	\$30,300,000	\$3,500,000	\$33,800,000	\$31,302,000	\$3,802,341	11%
3. Front Street*	Study	\$23,000,000	\$4,400,000	\$27,400,000	\$25,884,733	\$2,351,831	9%
4. Hasbrouck Heights	Conceptual	\$20,500,000	\$2,200,000	\$22,700,000	\$20,380,526	\$5,456,031	24%
5. Kingsland	Study	\$5,400,000	\$2,900,000	\$8,300,000	\$6,418,541	\$824,722	10%
6. Lakeside Avenue	Study	\$39,400,000	\$8,500,000	\$47,900,000	\$39,356,279	\$1,173,651	3%
7. Leonia	Definitive	\$24,900,000	\$1,500,000	\$26,400,000	\$24,887,497	\$15,190,427	58%
8. Market Street	Definitive	\$29,100,000	\$800,000	\$29,900,000	\$28,201,027	\$27,012,282	90%
9. Meadow Road	Study	\$7,200,000	\$1,800,000	\$9,000,000	\$7,497,449	\$1,043,444	12%

Project	Estimate Level	Base	Risk & Contingency	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
10. Orange Valley	Study	\$16,000,000	\$4,200,000	\$20,200,000	\$14,769,606	\$797,976	4%
11. Ridgefield 13kV	Conceptual	\$25,300,000	\$2,300,000	\$27,600,000	\$26,601,954	\$17,288,355	63%
12. Ridgefield 4kV	Definitive	\$20,800,000	\$500,000	\$21,300,000	\$20,726,799	\$20,646,800	97%
13. State Street	Conceptual	\$19,100,000	\$2,300,000	\$21,400,000	\$19,417,411	\$8,832,965	41%
14. Toney's Brook	Conceptual	\$16,200,000	\$2,600,000	\$18,800,000	\$16,254,329	\$1,526,556	8%
15. Waverly	Study	\$29,400,000	\$6,000,000	\$35,400,000	\$36,199,218	\$6,979,786	20%
16. Woodlynne	Study	\$15,800,000	\$3,600,000	\$19,400,000	\$21,264,000	\$2,095,910	11%
<b>Subprogram Total</b>		<b>\$332,200,000</b>	<b>\$47,800,000</b>	<b>\$380,000,000</b>	<b>\$347,842,636</b>	<b>\$121,152,745</b>	<b>31%</b>
*The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.							

### Findings & Observations

- Eight of the sixteen Electric Station Flood Mitigation projects had movement in the forecasted in-service date during the fourth quarter of 2021, with five advancing and three slipping. The biggest changes came on the Kingsland (advancing 96 days from October 4, 2023 to June 30, 2023), Waverly (advancing 92 days from December 18, 2024 to September 17, 2024), and the Clay Street (slipping 50 days from November 7, 2022 to December 27, 2022) projects.
- Following the Market Street and Ridgefield 4kV projects being placed in-service during the second quarter of 2021, the Academy Street achieved in-service status as of October 19, 2021. The Leonia and Ridgefield 13kV projects also reached partial in-service status during the fourth quarter of 2021 (with each project placing one of its two switchgear in-service).
- There were no updated estimates completed in the subprogram during the fourth quarter of 2021 and the overall subprogram forecast increased \$1.3 million (or 0.4%) to \$347.8 million as of the end of 2021. The forecast continues to remain under the current subprogram estimate of \$380.0 million and the Stipulation amount of \$389.0 million.
- The IM has found nothing to date that would jeopardize the subprogram being completed on budget. However, the status of the later projects in this subprogram, and in particular Waverly, will have to continue to be closely followed to monitor if the projects can be completed within the ES 2 Program window. As of the end of 2021, the Waverly project continues to show a final in-service date in 2024, although it has advanced from December to September 2024. The Waverly project has multiple major asset in-service dates for the 26kV switchgear, 4kV switchgear, and three transformers, which are currently forecasted from September 2022 (26kV switchgear) to

September 2024 (Transformer #3). PSE&G has informed the IM that the project team will continue to assess the project schedule and will be examining the potential to shorten durations and/or work activities concurrently to pull the final in-service date back into 2023.

**1. Academy Street**

During the fourth quarter of 2021, \$698,611 was spent on the Academy Street project compared to a forecast of approximately \$1.3 million, which brought the total spend to approximately \$6.1 million. The variance in spend during the fourth quarter of 2021 was primarily the result of commissioning activities being charged to the Fairmount 69kV Project (same site location) and less than estimated trailing costs after the project was placed in-service. The commissioning activities that were wrongly charged to the Fairmount 69kV project were budgeted to the Academy Street project and were performed by Commissioning Engineers that worked on the Fairmount 69kV project prior to working on the Academy Street project. This error was identified and corrected during the monthly forecast variance analysis process when it was realized that this work was done as planned with cash flow forecasted, but not included in the October actual costs.

The primary activity conducted during the fourth quarter of 2021 was the completion of commissioning for the switchgear with the project being achieving in-service status on October 19, 2021 when the first circuit was completed. Civil and electrical construction work will continue to the fourth quarter of 2022.

The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>						<i>Forecast</i>
\$150,398	\$4,224,550	\$378,939	\$405,843	\$271,396	\$698,611	\$2,551,529

Actuals to Date	Estimate	% of Actuals to Estimate
\$6,129,738	\$10,500,000	58%

**2. Clay Street**

During the fourth quarter of 2021, \$546,400 was spent on the Clay Street project compared to a forecast of approximately \$642,000, which brought the total spend to approximately \$3.8 million. The forecasted in-service date for the Clay Street project as of the end of the fourth quarter of 2021 advanced 50 days from the end of the third quarter to November 7, 2022. This shift was the result of a revision to the construction sequence to split the foundation activity, regulators installation, and commissioning activities along with the cutovers into two phases. This also helps alleviate space and manhole access constraints on the project.

The primary activities on the Clay Street project during the fourth quarter of 2021 included the phase 2 civil and electrical drawings being IFC and the civil and electrical POs issued, followed by the start of civil construction late in December.

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$116,409	\$879,339	\$565,030	\$595,723	\$1,099,440	\$546,400	\$27,499,659

Actuals to Date	Estimate	% of Actuals to Estimate
\$3,802,341	\$33,800,000	11%

### 3. Front Street

During the fourth quarter of 2021, \$1,090,782 was spent on the Front Street project compared to a forecast of approximately \$1.06 million, which brought total spend to approximately \$2.4 million. The forecasted in-service date for the Front Street project as of the end of the fourth quarter of 2021 slipped ten days from the end of the third quarter to November 16, 2023.

The primary activities on the Front Street project during the fourth quarter of 2021 included the issuance of the switchgear PO, completion of the license and permitting package, and the submittal of the project site plan.

The actual spend by quarter for Front Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$0	\$0	\$0	\$190,915	\$1,070,135	\$1,090,782	\$23,532,901

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,351,832	\$27,400,000	9%

### 4. Hasbrouck Heights

During the fourth quarter of 2021, \$3,364,236 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$3.6 million, which brought the total spend to approximately \$5.5 million. The variance in spend during the fourth quarter of 2021 was driven by the contractor's invoice lower than previously accrued and 26kV control house abatement work pushing out pending completion of electrical removal of racks. Despite that work shifting out, the forecasted in-service date for the Hasbrouck Heights project as of the end of the fourth quarter of 2021 advanced six days from the end of the third quarter to February 1, 2023.

Notable activities completed during the fourth quarter of 2021 included the delivery of the 4kV sheltered aisle switchgear and capacitor bank.

The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$149,848	\$1,129,934	\$550,795	\$189,748	\$71,469	\$3,364,236	\$14,924,495

Actuals to Date	Estimate	% of Actuals to Estimate
\$5,456,031	\$22,700,000	24%

### 5. Kingsland

During the fourth quarter of 2021, \$293,352 was spent on the Kingsland project compared to a forecast of approximately \$243,000, which brought the total spend to \$824,722. The forecasted in-service date for the Kingsland project as of the end of the fourth quarter of 2021 advanced 96 days from the end of the third quarter to June 30, 2023. This advancement in the forecasted in-service date was driven by material availability that supported schedule improvement.

During the fourth quarter of 2021, primary activities on the Kingsland project included constructability reviews, the issuance of the license and permitting package, and the IFC release of civil and electrical drawings.

The actual spend by quarter for Kingsland as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$104,112	\$209,667	\$30,621	\$36,886	\$150,084	\$293,352	\$5,593,820

Actuals to Date	Estimate	% of Actuals to Estimate
\$824,722	\$8,300,000	10%

### 6. Lakeside Avenue

During the fourth quarter of 2021, \$128,323 was spent on the Lakeside Avenue project compared to a forecast of approximately \$168,000. The forecasted in-service date for the Lakeside Avenue project as of the end of the fourth quarter of 2021 remained unchanged from the prior quarter at November 8, 2023.

Notable activities completed during the fourth quarter of 2021 included approval of the site plan at a zoning board meeting, the IFR release of civil and electrical drawings, and a constructability review.

The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$148,943	\$453,994	\$178,973	\$174,268	\$89,151	\$128,323	\$38,182,628

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,173,651	\$47,900,000	3%

**7. Leonia**

During the fourth quarter of 2021, \$790,673 was spent on the Leonia project compared to a forecast of approximately \$1.08 million, which brought the total spend to approximately \$15.2 million. The variance in spend during the fourth quarter was driven by a temporary resource availability within the Division that shifted some non-critical path work to future periods. The forecasted in-service date for the Leonia project as of the end of the fourth quarter of 2021 slipped 30 days from the prior quarter to November 9, 2022.

Notable activities completed during the fourth quarter of 2021 included the 13kV switchgear #1 being placed in-service on October 19, 2021.

The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$44,792	\$6,033,379	\$2,809,628	\$4,146,544	\$1,365,412	\$790,673	\$9,697,069

Actuals to Date	Estimate	% of Actuals to Estimate
\$15,190,427	\$26,400,000	58%

**8. Market Street**

During the fourth quarter of 2021, \$1,719,125 was spent on the Market Street project compared to a forecast of approximately \$2.25 million, which brought the total spend to approximately \$27.0 million. The variance in spend during the fourth quarter was largely the result of poor weather and resource constraints, including unplanned emergency work that pulled resources from the project.

Notable activities conducted during the fourth quarter of 2021 included the completion of electrical demolition at the station, which was placed out of service on June 25, 2021 following the completion of the 4kV to 13kV conversion work.

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>						<i>Forecast</i>
\$251,193	\$16,079,601	\$4,035,880	\$3,147,454	\$1,779,029	\$1,719,125	\$1,188,746

Actuals to Date	Estimate	% of Actuals to Estimate
\$27,012,281	\$29,900,000	90%

**9. Meadow Road**

During the fourth quarter of 2021, \$144,070 was spent on the Meadow Road project compared to a forecast of \$88,000, which brought the total spend to approximately \$1.0 million. The forecasted in-service date for the Meadow Road project as of the end of the fourth quarter of 2021 remained unchanged from the prior quarter at September 22, 2023.



Detailed engineering commenced during the fourth quarter of 2021, in addition the New Jersey Department of Environmental Protection (NJDEP) permit was received and a site plan exception was granted.

The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$63,128	\$535,081	\$117,672	\$70,220	\$113,271	\$144,070	\$6,454,006

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,043,444	\$9,000,000	12%

### 10. Orange Valley

During the fourth quarter of 2021, \$95,128 was spent on the Orange Valley project compared to a forecast of approximately \$67,000, which brought the total spend to approximately \$798,000. The forecasted in-service date for the Orange Valley project as of the end of the fourth quarter of 2021 remained unchanged from the prior quarter at December 29, 2023.

During the fourth quarter of 2021, major activities on the Orange Valley project included the start of detailed engineering, the redevelopment agreement approval by the City Council, vendor drawings received for final switchgear arrangement, and the site plan was submitted.

The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$77,029	\$362,895	\$7,291	\$146,827	\$108,807	\$95,128	\$13,971,630

Actuals to Date	Estimate	% of Actuals to Estimate
\$797,976	\$20,200,000	4%

### 11. Ridgefield 13kV

During the fourth quarter of 2021, \$2,394,930 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$3.4 million, which brought the total spend to approximately \$17.3 million. The variance in spend during the third quarter of 2021 was driven by manhole rebuild work being delayed due to the contractor's workload and Division manhole work and cable pulling being postponed due to IP conduit installation completed later than expected. These delays contributed to the forecasted in-service date for the Ridgefield 13kV project as of the end of the fourth quarter of 2021 slipping 39 days from the prior quarter to December 20, 2022.

Notable activities completed during the fourth quarter of 2021 included the start and completion for commissioning of the 13kV switchgear #2, which was placed in-service on December 16, 2021.

The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$205,982	\$6,232,692	\$3,215,967	\$3,665,283	\$1,573,500	\$2,394,930	\$9,313,599

Actuals to Date	Estimate	% of Actuals to Estimate
\$17,288,355	\$27,600,000	63%

## 12. Ridgefield 4kV

During the fourth quarter of 2021, \$241,884 was spent on the Ridgefield 4kV project compared to a forecast of approximately \$267,000, which brought the total spend to approximately \$20.4 million. The project was placed in-service on May 16, 2021.

The primary activities performed during the fourth quarter of 2021 included the completion of IP civil demolition.

The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022
<i>Actuals</i>						<i>Forecast</i>
\$143,414	\$11,239,534	\$2,808,765	\$4,559,439	\$1,653,764	\$241,884	\$80,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$20,646,799	\$21,300,000	97%

## 13. State Street

During the fourth quarter of 2021, \$7,068,233 was spent on the State Street project compared to a forecast of approximately \$7.9 million, which brought the total spend to approximately \$8.8 million. The variance in spend during the quarter was driven by the project receiving only half of the forecasted feeder rows due to a Covid-19 outbreak at the vendor's facilities. The forecasted in-service date for the State Street project as of the end of the fourth quarter of 2021 remains unchanged from the prior quarter at September 23, 2022.

Notable activities performed on State Street during the fourth quarter of 2021 included the commencement of electrical construction, continued civil construction, and the delivery of the 4kV sheltered aisle switchgear. IP construction on the project advanced to 20% complete, up from 10% at the end of the prior quarter, with the total project reported at 28% complete.

The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$77,590	\$662,148	\$237,415	\$216,479	\$571,099	\$7,068,233	\$10,584,445

Actuals to Date	Estimate	% of Actuals to Estimate
\$8,832,966	\$21,400,000	41%

#### 14. Toney's Brook

During the fourth quarter of 2021, \$403,672 was spent on the Toney's Brook project compared to a forecast of approximately \$341,000, which brought the total spend to approximately \$1.5 million. The forecasted in-service date for the Toney's Brook project as of the end of the fourth quarter of 2021 remains unchanged from the prior quarter at April 21, 2023.

Notable activities achieved during the fourth quarter of 2021 included the controls drawings IFC and control and power cables material received on site.

The actual spend by quarter for Toney's Brook as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$211,940	\$373,096	\$88,947	\$289,769	\$159,132	\$403,672	\$14,727,774

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,526,555	\$18,800,000	8%

#### 15. Waverly

During the fourth quarter of 2021, \$277,739 was spent on the Waverly project compared to a forecast of approximately \$437,000, which brought the total spend to approximately \$6.3 million. The variance in second quarter spend was largely driven an engineering milestone that shifted from September to October and work delayed in September due to lack of resources in the Metro Division. The forecasted in-service date for the Waverly project as of the end of the fourth quarter of 2021 advanced 92 days from the prior quarter to September 17, 2024, which was driven by the site plan approval that in turn improved the construction schedule by advancing the anticipated permit approval dates that are precursors to the start of construction activities.

As previously reported, the project team requested a special meeting to maintain the project's schedule, which was held in March 2021. The Newark Planning Board denied the site plan application at this meeting, which required the project team to prepare a new site plan application. The revised site plan was submitted to the Newark Planning Board in early September 2021 with the site plan approved during a December 2021 meeting. Other activities performed during the fourth quarter of 2021 included the receipt of vendor drawings (final switchgear controls) and civil and electrical drawings IFC.

The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$103,748	\$2,460,815	\$659,572	\$2,837,893	\$277,739	\$640,019	\$29,219,432

Actuals to Date	Estimate	% of Actuals to Estimate
\$6,979,786	\$35,400,000	20%

## 16. Woodlynne

During the fourth quarter of 2021, \$148,804 was spent on the Woodlynne project compared to a forecast of approximately \$302,000, which brought the total spend to approximately \$2.1 million. The variance in spend during the fourth quarter was driven by lower than estimated spend on civil supervision, security, and safety, and the A/E not reaching a planned payment milestone in December. The forecasted in-service date for the Woodlynne project as of the end of the fourth quarter of 2021 remains unchanged from the prior quarter at October 10, 2023.

Preliminary design work continued to progress during the fourth quarter of 2021, with minimal other activities conducted on the Woodlynne project this quarter as the bulk of this project's activities planned for 2022-2023, including construction scheduled to commence in early 2023.

The actual spend by quarter for Woodlynne as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$110,982	\$993,298	\$282,187	\$132,630	\$428,009	\$148,804	\$19,168,090

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,095,910	\$19,400,000	11%

## B. Contingency Reconfiguration

During the fourth quarter of 2021, work continued to progress in the Contingency Reconfiguration subprogram with all four Divisions continuing to install reclosers with a total of 109 installed during the quarter and 122 commissioned. **Table 14 – ES 2 Program Recloser Status as of December 31, 2021** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the current status of engineering, installation, and commissioning; while **Figure 3 – 2021 Recloser Installations as of December 31, 2021** compares the installed reclosers as of the end of the third quarter of 2021 against PSE&G's 2021 installation plan.<sup>1</sup>

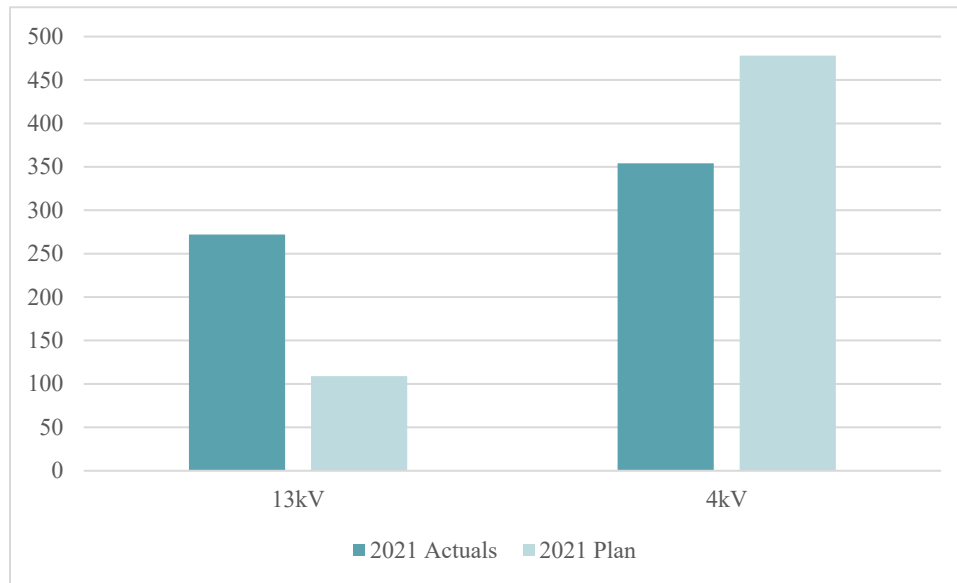
*Table 14 – ES 2 Program Recloser Status as of December 31, 2021*

Type	Engineering Packages Completed (1 recloser ea.)			Reclosers Installed			Reclosers Commissioned		
	Q4 Qty.	2021 Total	Program Total	Q4 Qty.	2021 Total	Program Total	Q4 Qty.	2021 Total	Program Total
13kV	29	249	948	49	272	933	61	288	932
4kV	13	261	515	60	354	511	61	353	510

<sup>1</sup> Note that as discussed in the IM 2021 First Quarter Report (Section IV.A.1.) and the IM 2021 Second Quarter Report (Section II.A.1.), the number of reclosers identified the Contingency Reconfiguration subprogram was updated after the 2021 installation plan was established, which resulted in a net reduction of the 4kV reclosers planned for the subprogram and a net increase of the 13kV reclosers planned for the subprogram.

Type	Engineering Packages Completed (1 recloser ea.)			Reclosers Installed			Reclosers Commissioned		
	Q4 Qty.	2021 Total	Program Total	Q4 Qty.	2021 Total	Program Total	Q4 Qty.	2021 Total	Program Total
<b>Total</b>	42	510	1,463	109	626	1,444	122	641	1,442

*Figure 3 – 2021 Recloser Installations as of December 31, 2021*



As shown in **Table 14** and **Figure 3**, PSE&G continued to maintain progress during the fourth quarter of 2021 and as of the end of the year only 23 units remained to be installed to complete the recloser scope of the subprogram. As also shown in **Figure 3**, the 2021 installation plan shifted the focus primarily to the 4kV reclosers from the 13kV reclosers that were prioritized in 2020. However, actual installations of 13kV reclosers were above the initial 2021 plan due to the change in reclosers planned for the subprogram following PSE&G’s review, which resulted in an additional 275 13kV reclosers and 90 4kV reclosers (also discussed in Section IV.A.1. of the IM 2021 First Quarter Report and Section II.A.1. of the IM 2021 Second Quarter Report).

As previously discussed in prior IM reports, the Fuse Saver pilot program commenced in November 2020 and was primarily completed in January 2021. In total, this phase of the Fuse Saver pilot program included the installation and commissioning of 80 Fuse Saver devices. During execution of the pilot program, PSE&G observed factors that will help it prepare for execution of the full Fuse Saver scope, including installation specifications (the remote control unit (RCU) must be placed directly below the Fuse Saver to avoid communications issues), and cost elements for some of the locations (new poles, traffic control, etc.). While monitoring performance of the installed Fuse Savers, PSE&G experienced other communication issues between the Fuse Savers and the RCU, wherein the Supervisory Control and Data Acquisition (SCADA) communication indicated a false open/close alarm on some of the devices. Siemens has provided a prototype Fuse Saver to address the communication issues, which PSE&G will monitor to ensure it addresses the issues prior to placing additional orders. Because of this, commencement of the full Fuse Saver scope was pushed to 2022. However, PSE&G opted to install the remaining Fuse Saver units from its initial inventory to capture additional cost and performance data to better inform the planning and execution of the full scope of work. This resulted in an additional three 2-

phase units and 30 1-phase units being installed during the second half of 2021, bringing the total number of Fuse Savers installed through the end of 2021 to 113 units out of a forecasted 1,713 units. Costs incurred in the Fuse Saver scope during the fourth quarter of 2021 related to project management costs and direct costs (labor, material, engineering, storage, traffic control), which included some older invoices for work performed prior to the fourth quarter of 2021.

Concerning the forecasted number of Fuse Savers planned to be installed during the ES 2 Program, PSE&G continues to utilize an iterative process to evaluate the number of devices anticipated for the Fuse Saver scope of work. The targeted number of Fuse Saver units is revised based on updated field assessments as well as the final number of units driven by the average cost per unit based on the most optimal mix of locations given the fixed budget. For example, if an identified location requires a pole replacement based on the field conditions, it will have a much higher installation cost than a location not requiring a pole replacement.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 15 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of December 31, 2021**. This table also shows the forecasted final in-service dates as of the end of the third quarter of 2021 to show movement to the forecast as of the end of the fourth quarter of 2021.

**Table 15 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of December 31, 2021**

Scope & Division		Q3 2021 Forecasted Completion Date	Q4 2021 Forecasted Completion Date
Reclosers	Central	1/31/2022	1/31/2022
	Metro	1/31/2022	12/31/2021 (Actual)
	Palisades	12/31/2021	2/28/2022
	Southern	1/31/2022	1/31/2022
Fuse Savers	Central	9/30/2023	9/30/2023
	Metro	10/31/2023	10/31/2023
	Palisades	12/30/2023	12/30/2023
	Southern	10/31/2023	9/30/2023

As shown in **Table 15**, the forecasted final in-service dates remained constant for the majority of the scopes, with the Metro and Palisades Divisions recloser efforts and the Southern Division Fuse Saver efforts having new forecasted in-service dates. Within the Metro Division recloser scope, improvements in the material availability allowed the schedule to be completed earlier than previously forecasted, with the final installations completed in December 2021. The Palisades Division recloser scope saw the final in-service date shift to February 2022 as the result of three recloser in the Division that required the development and implementation of a unique operating procedure. While the only change to the Fuse Saver scope of work was the Southern Division advancing one month as the installation schedules continue to be developed and refined prior to the commence of that scope in 2022.

The Contingency Reconfiguration subprogram costs through the end of 2021 are presented in **Table 16 – ES 2 Contingency Reconfiguration Costs as of December 31, 2021**.

**Table 16 – Contingency Reconfiguration Costs as of December 31, 2021**

Scope & Division		2019	2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total to Date	Forecast	% of Actuals to Forecast
		Actuals								
Reclosers	Central	\$2,737,167	\$12,050,820	\$3,007,686	\$2,392,608	\$2,116,213	\$2,336,304	\$24,640,799	\$25,368,784	97%
	Metro	\$2,231,431	\$10,726,610	\$587,396	\$4,051,716	\$3,926,036	\$2,803,260	\$24,326,450	\$24,483,210	99%
	Palisades	\$2,515,569	\$12,119,436	\$3,109,037	\$2,591,672	\$1,991,442	\$588,372	\$22,915,527	\$23,162,771	99%
	Southern	\$2,081,220	\$12,405,684	\$5,008,143	\$4,065,891	\$2,742,523	\$2,221,485	\$28,524,946	\$28,937,756	99%
Fuse Savers	Central	\$9,970	\$789,937	\$375,811	\$107,384	\$255,092	\$115,831	\$1,654,025	\$12,061,825	14%
	Metro	\$7,557	\$561,915	\$216,511	\$89,860	\$144,511	\$56,860	\$1,077,214	\$10,969,592	10%
	Palisades	\$7,468	\$522,454	\$133,552	\$63,808	\$276,182	\$103,572	\$1,107,036	\$8,462,697	13%
	Southern	\$9,792	\$859,014	\$65,018	\$56,845	\$263,207	\$193,147	\$1,447,023	\$12,320,792	12%
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$12,503,156</b>	<b>\$13,419,784</b>	<b>\$11,715,206</b>	<b>\$8,418,831</b>	<b>\$105,693,021</b>	<b>\$145,767,428</b>	<b>73%</b>

**Findings & Observations:**

- PSE&G continued to maintain progress on the recloser installations during the fourth quarter of 2021, including completing the Metro Division scope, with the remaining Divisions expected to be completed early in 2022.
- The forecasted completion of the recloser scope of this subprogram remained unchanged from the prior quarter for three of the four Divisions, while the Palisades Division forecasted completion slipped two months based on three reclosers in the Division that required the development and implementation of a unique operating procedure. For the Fuse Savers, while three of the four Division’s completion dates remained unchanged, the Southern Division advanced their forecasted completion date one month reflecting an updated installation schedule.
- The Contingency Reconfiguration subprogram forecast remained relatively static as of the end of the fourth quarter of 2021 from the prior quarter, with the total forecast increasing by approximately \$273,000 (or 0.2%) to \$145.8 million.

**C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system.

During the fourth quarter of 2021, the final recloser retrofit installations were completed with 324 units installed during the quarter. In total, 2,318 retrofit reclosers were installed on the Program compared to an initial forecast of 2,561, with the variance driven by updated system status information. Also during the fourth quarter of 2021, two additional retrofits of substation RTUs were completed, bringing the total as of the end of 2021 to 10 substations completed out of a currently forecasted scope of 196 substations. The retrofit substation RTU scope is planned to ramp-up in 2022 with all installation expected to be completed by the fourth quarter of 2022. Under the Wireless Network scope, radios continue to be prepared for the Fuse Savers, which reflects the remaining spend associated with the Wireless Network.

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with three of 41 installation projects since removed due to the scheduled elimination of the targeted substations or the intended redundancy benefits not achievable after site review. The list of identified fiber installation and cutover projects is presented in **Table 17 – Fiber Projects by Division as of December 31, 2021**.

*Table 17 – Fiber Projects by Division as of December 31, 2021*

Division	Fiber Installation	Fiber Cutover
<b>Central</b>	Cranford; Elizabeth Sub HQ; Rahway; Hadley Road HQ; Roselle; Central HQ; Carteret; Edison; Keasby; Mechanic Street; First Street; Lehigh Avenue	Elizabeth; Henry Street
<b>Metro</b>	East Orange; Metro HQ; Bloomfield; Central Avenue; Haldeon; Irvington; Irvington Sub HQ; Montclair; South Orange; Norfolk Street; Waverly	-
<b>Palisades</b>	Bergen Point; Hackensack Sub HQ; Fort Lee; Harrison; Ridgewood; West New York; Palisades HQ; Culver Avenue; Morgan Street	Tonnelle Avenue; Spring Valley Road; Union City; Fairview; Polk Street; West Orange
<b>Southern</b>	Southern HQ; Princeton; Chauncey Street; Bordentown; Haddon Heights; Thirty Second Street	Delair; East Riverton; Riverside; Mount Holly
<b>Total</b>	<b><i>38 projects</i></b>	<b><i>12 projects</i></b>

During the fourth quarter of 2021, three additional fiber installation projects (Irvington, Irvington Sub HQ, and Morgan Street) were placed in-service. This brought the total projects in-service as of the end of 2021 to 20 for the fiber installation projects and nine for the fiber cutover projects. **Table 18 – ES 2 Program Fiber Projects Status as of December 31, 2021** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of 2021 with the projects in italics representing those placed in-service.

*Table 18 – ES 2 Program Fiber Projects Status as of December 31, 2021*

Project Name	Q4 2021 Status
<i>Fiber Installation Projects</i>	
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>
<i>Bloomfield</i>	Continued engineering
<i>Bordentown</i>	<i>In-Service (Q3 2021)</i>
<i>Carteret</i>	IP IFC issued
<i>Central Ave</i>	<i>In-Service (Q3 2021)</i>
<i>Central HQ</i>	OP overhead construction underway
<i>Chauncey Street</i>	<i>In-Service (Q3 2021)</i>
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>
<i>Culver Ave</i>	IP IFCs issued; IP civil construction complete; battery installation complete; OP construction mobilized
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>
<i>Edison</i>	IP IFC issued
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>
<i>First Street</i>	<i>In-Service (Q3 2021)</i>
<i>Fort Lee</i>	IP civil work complete; OP overhead contractors mobilized; IP IFC issued
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>
<i>Haddon Heights</i>	Preliminary engineering
<i>Hadley Rd HQ</i>	Continued engineering



Project Name	Q4 2021 Status
Haledon	County road occupancy permit received to fix a break in the line between Haledon and Hawthorne substations
Harrison	<i>In-Service (Q3 2021)</i>
Howell Street	Removed from ES 2 Program after evaluation determined that the redundancy and resiliency benefits would not be obtained through this project (which shares a site with the Jersey Steet station that already has a TFI rack installed)
Irvington	<i>In-Service (Q4 2021)</i>
Irvington Sub HQ	<i>In-Service (Q4 2021)</i>
Keasbey	OP IFC issued; OP construction mobilized; IP IFC issued
Lehigh Avenue	Preliminary engineering
Mechanic Street	IP IFC issued
<i>Metro HQ</i>	<i>In-Service (Q1 2021)</i>
Montclair	IP civil work complete
Morgan Street	<i>In-Service (Q4 2021)</i>
<i>Norfolk St</i>	<i>In-Service (Q3 2021)</i>
Palisades HQ	Continued construction
<i>Princeton</i>	<i>In-Service (Q3 2021)</i>
<i>Rahway</i>	<i>In-Service (Q1 2021)</i>
Ridgewood	Continued construction
<i>Roselle</i>	<i>In-Service (Q2 2021)</i>
<i>So Orange</i>	<i>In-Service (Q3 2021)</i>
<i>Southern HQ</i>	<i>In-Service (Q4 2020)</i>
Thirty Second Street	Preliminary engineering
Waverly	Preliminary engineering
West New York	OP construction mobilized
<b><i>Fiber Cutover Projects</i></b>	
<i>Delair</i>	<i>In-Service (Q4 2020)</i>
<i>East Riverton</i>	<i>In-Service (Q4 2020)</i>
<i>Elizabeth</i>	<i>In-Service (Q1 2021)</i>
Fairview	Completion dependent upon Fort Lee fiber installation project
<i>Henry St</i>	<i>In-Service (Q3 2021)</i>
<i>Mount Holly</i>	<i>In-Service (Q4 2020)</i>
Polk Street	Completion dependent upon West New York fiber installation project
<i>Riverside</i>	<i>In-Service (Q4 2020)</i>
<i>Spring Valley Rd</i>	<i>In-Service (Q1 2021)</i>
<i>Tonnelle Ave</i>	<i>In-Service (Q4 2020)</i>
<i>Union City</i>	<i>In-Service (Q1 2021)</i>
West Orange	Completion dependent upon redundant link to Montclair substation being ready (two redundant fiber links required for each router to support reliability guidelines)
<b><i>Substation Remote Terminal Unit (RTU) Cutovers</i></b>	
Scope: 196 units	10 cutovers completed

For the three fiber projects placed in-service during the fourth quarter of 2021 (Irvington, Irvington Sub HQ, and Morgan Street), the original budget and actual costs as of December 31, 2021 are presented in **Table 19 – Q4 2021 Fiber Projects Budget vs. Actual Cost**.

***Table 19 – Q4 2021 Fiber Projects Budget vs. Actual Cost***

Project	Original Budget (ES 2 filing)	Actual Costs as of Dec. 2021	Budget-Actual Variance
Irvington	\$300,000	\$157,175	(\$142,825)
Irvington Sub HQ	\$300,000	\$578,009	\$278,009

Project	Original Budget (ES 2 filing)	Actual Costs as of Dec. 2021	Budget-Actual Variance
Morgan Street*	\$0	\$457,217	\$457,217
* -Morgan Street was not on the initial project list in the ES 2 filing and was added after PSE&G reviewed the fiber requirements and current status of all substations and operations centers to verify communication needs (see the ROD on this discussed in Section IV.A. of the IM 2020 Third Quarter Report).			

The overall Grid Modernization – Communication System subprogram costs through the end of 2021 are presented in **Table 20 – ES 2 Grid Modernization – Communication System Costs as of December 31, 2021**.

**Table 20 – ES 2 Grid Modernization – Communication System Costs as of December 31, 2021**

Scope & Division		2019	2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total to Date	Forecast	% of Actuals to Forecast
		Actuals								
Retrofit Reclosers	Central	\$0	\$884,278	\$1,067,295	\$1,027,602	\$715,214	\$494,686	\$4,189,074	\$6,786,837	62%
	Metro	\$0	\$818,620	\$436,089	\$683,893	\$733,376	\$509,422	\$3,181,399	\$5,590,363	57%
	Palisades	\$0	\$825,174	\$754,869	\$965,416	\$888,467	\$506,721	\$3,940,648	\$6,200,559	64%
	Southern	\$0	\$929,058	\$956,444	\$1,005,852	\$1,082,897	\$817,622	\$4,791,874	\$7,325,098	65%
Fiber	Central	\$1,691	\$2,418,851	\$796,586	\$1,349,407	\$1,007,245	\$2,820,417	\$8,394,196	\$9,513,484	88%
	Metro	\$1,457	\$1,866,697	\$340,713	\$831,337	\$1,198,777	\$715,269	\$4,954,250	\$7,765,395	64%
	Palisades	\$1,582	\$2,046,762	\$248,558	\$725,030	\$605,647	\$2,023,898	\$5,651,478	\$6,132,422	92%
	Southern	\$4,731	\$910,483	\$645,219	\$1,029,156	\$591,125	\$200,977	\$3,381,691	\$3,381,691	100%
	Cutovers*	\$0	\$876,502	\$323,458	\$86,115	\$109,880	\$87,603	\$1,483,558	\$3,018,032	49%
Wireless Network	\$74,306	\$6,035,441	\$287,086	\$312,404	\$124,015	\$559,481	\$7,392,732	\$7,914,973	93%	
Bulk Purchase**	\$0	\$1,524,874	\$450,013	(\$154,037)	(\$335,637)	(\$481,105)	\$1,004,108	\$0	-	
<b>Total</b>	<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$6,306,330</b>	<b>\$7,862,176</b>	<b>\$6,721,006</b>	<b>\$8,254,991</b>	<b>\$48,365,008</b>	<b>\$63,110,594</b>	<b>77%</b>	
* -Includes fiber communication cutovers and substation RTU cutovers (the latter of which began having spend in Q1 2021).										
** -The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.										

**Findings & Observations:**

- During the fourth quarter of 2021, the final 325 recloser retrofit installations were completed. In total, 2,318 retrofit reclosers were installed in the Program. The retrofit substation RTU scope commenced at the end of the fourth quarter of 2021, with 10 substations completed out of a forecasted scope of 196 substations.
- Three additional fiber installation projects were placed in-service during the fourth quarter of 2021, bringing the total number of projects in-service to 20 fiber installation projects and nine fiber cutover projects. The fiber scope is expected to be completed by the end of 2022.
- The forecast for the Grid Modernization – Communication system subprogram slightly increased from \$63.1 million as of the end of the third quarter of 2021 to \$63.6 million as of the end of the fourth quarter of 2021. Overall, the subprogram forecast of \$63.6 million continues to remain below the adjusted Stipulation budget amount of \$64.3 million (following the prior \$7.7 million transfer of funds to the Grid Modernization – ADMS subprogram).

## **D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: DMS/DERMS, the OMS, and ADMS platform upgrades. The primary activities in 2021 are focused on the continued development of the systems and platforms that comprise this subprogram.

The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the fourth quarter of 2021 are presented as follows:

### **DMS/DERMS**

- Scope: Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- Q4 2021 Activities:
  - Compiled advance metering interface (AMI) interface requirements.
  - Completed sprints 11 and 12.
- Forecasted Completion as of the end of the fourth quarter of 2021: 12/19/2022.

### **OMS**

- Scope: Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G’s network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years’ worth of existing OMS data will be migrated into the new system as well.
- Q4 2021 Activities:
  - Completed sprint 9 with Open Systems International Inc. (OSII).
  - Onboarded new Project Manager for OMS scope.
  - Reviewed integration/Mulesoft documentation.
  - Completed drafts of SAP integration documentation.
  - Completed onsite workshops at ADMS lab in Edison with System Integrator.
- Forecasted Completion as of the end of the fourth quarter of 2021: 12/23/2022.

### **ADMS Platform**

- Scope: Replace, enhance, and expand the existing Distribution Supervisory Control and Data acquisition (DSCADA) platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q4 2021 Activities:

- Completed network segmentation for Newark; drafted network segmentation for Edison.
- Secured vulnerability testing vendor (Dragos).
- Completed setup for industrial defender.
- Forecasted Completion as of the end of the fourth quarter of 2021: 12/10/2021.

With the ADMS Platform being placed in-service in December 2021, this meant the domains (environments) used to manage and support the SCADA system that is in production and used for distribution operations as the system of record were in-service. The platform environments are also currently being used for DMS/DERMS and OMS as these components progress (for example, in performance and release testing). Changes to the shared environments are coordinated and controlled by a team comprised of two Environment Managers (one from PSE&G and one from OSII) and the ADMS-OMS Solution Architect.

The Grid Modernization – ADMS subprogram costs through the end of 2021 are presented in **Table 21 – ES 2 Grid Modernization – ADMS Costs as of December 31, 2021.**

*Table 21 – ES 2 Grid Modernization – ADMS Costs as of December 31, 2021*

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$36,213	\$16,447,624	\$2,488,980	\$2,168,187	\$2,368,648	\$2,828,626	\$17,155,847

Actuals to Date	Forecast	% of Actuals to Forecast
\$26,338,279	\$43,494,127	61%

Findings & Observations:

- While the OMS component of the Grid Modernization – ADMS subprogram slipped 21 days from its status as of the end of the third quarter of 2021, the forecasted in-service date for the subprogram continues to remain at December 2022.
- The Grid Modernization – ADMS forecast as of the end of 2021 increased approximately \$772,000 from the third quarter of 2021, with the total forecast now at \$43.5 million.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric outside plant higher design and construction standards and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>2</sup> The bulk of outside plant higher design and construction standards work is planned to commence in January 2022. In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station

<sup>2</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. In the second quarter of 2021 a fifth station, State Street, was approved by the URB for its outside plant scope to be transferred from the related Electric Station Flood Mitigation project to the life cycle scope. These five stations and their current estimate compared to the actuals to date are provided in **Table 22 – ES 2 Life Cycle Station Upgrade Project Status as of December 31, 2021**.

**Table 22 – ES 2 Life Cycle Station Upgrade Project Status as of December 31, 2021**

Project	Estimate Level	Base	Risk & Contingency	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date*
1. Hamilton	Study	\$14,500,000	\$3,700,000	\$18,200,000	\$3,503,394	19%	10/12/2022
2. Paramus	Study	\$14,800,000	\$5,400,000	\$20,200,000	\$7,908,965	39%	12/29/2022 (↓)
3. Plainfield	Study	\$18,400,000	\$4,200,000	\$22,600,000	\$4,266,426	19%	11/8/2022 (↓)
4. Woodbury	Study	\$15,400,000	\$3,300,000	\$18,700,000	\$2,164,988	12%	12/27/2022
5. State Street (OP)	Study	\$19,700,000	\$3,000,000	\$22,700,000	\$211,247	1%	4/30/2023 (↓)

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).  
 (↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
 (↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 22**, of the five life cycle station upgrade projects, the Paramus, Plainfield, and State Street OP projects each saw their respective forecasted in-service dates slip during the fourth quarter of 2021, reversing the advancement in these projects gained in the third quarter of 2021. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

**Findings & Observations:**

- Construction continued on the Hamilton, Plainfield, and Woodbury projects, which commenced during the third quarter of 2021, and also continued on Paramus, which started in the second quarter of 2021. The Paramus project placed the contingency switchgear in-service in December 2021.
- The forecasted in-service dates for the Paramus, Plainfield, and State Street OP projects each slipped during the fourth quarter of 2021, reflective of actual site conditions and resource availability. Each of the original four life cycle station upgrade projects remains forecasted for completion in the fourth quarter of 2022 while the State Street OP project is forecasted for completion in the second quarter of 2023.

**1. Hamilton**

During the fourth quarter of 2021, \$1,419,949 was spent on the Hamilton project against a forecast of approximately \$1.6 million. The variance between forecasted and actual spend in the fourth quarter was driven by foundations and 4kV duct banks not completed as planned due to contractor unavailability

(though no resulting change to the forecasted in-service date). This brought total spend on the project to approximately \$3.5 million through the end of 2021.

Notable activities conducted during the fourth quarter of 2021 included the commencement of the first phase of civil works on the project, which includes the installation of foundations for the 4kV equipment, the grounding grid, and new OP duct banks. The electrical scope is expected to commence in the first quarter of 2022.

The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$0	\$362,372	\$236,783	\$400,855	\$1,083,435	\$1,419,949	\$13,014,013

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$3,503,395	\$18,200,000	\$16,517,408	21%

## 2. Paramus

During the fourth quarter of 2021, \$968,622 was spent on the Paramus project against a forecast of approximately \$908,000. This brought total spend on the project to approximately \$7.9 million through the end of 2021. The forecasted in-service date for the Paramus project slipped from November 11, 2022, as of the end of the third quarter of 2021, to December 29, 2022, as of the end of the fourth quarter of 2021. This shift was the result of manhole repairs required and correction of a condensation issue within the contingency (temporary) feeder row gear. The condensation was a result of the design of some of the rear panels on the contingency feeder rows as well as the settings on the heaters and humidifiers. The units which did not have vented panels experienced the condensation and when this was corrected, and the settings on the heaters and humidifiers were adjusted, the issue was resolved.

Notable activities conducted during the fourth quarter of 2021 included:

- Civil and Electrical POs issued;
- Control drawings IFC;
- Construction permits received; and,
- The contingency switchgear placed in-service.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$0	\$840,200	\$358,846	\$4,176,989	\$1,564,308	\$968,622	\$12,937,137

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$7,908,965	\$20,200,000	\$20,846,102	38%

### 3. Plainfield

During the fourth quarter of 2021, \$1,787,450 was spent on the Plainfield project against a forecast of approximately \$2.3 million. The variance between forecasted and actual spend during the fourth quarter was driven by civil activities delayed due to permitting and material availability from the Palisades Division. This brought total spend on the project to approximately \$4.3 million through the end of 2021. The forecasted in-service date for the Plainfield project slipped from October 17, 2022, as of the end of the third quarter of 2021, to November 8, 2022, as of the end of the fourth quarter of 2021. This shift was the result of an unknown underground obstruction requiring foundation design changes and the determination that a NJ Transit temporary access permit is required for approved crane use in proximity to the nearby NJ Transit tracks. The unknown underground obstruction at Plainfield included existing below grade concrete structures and direct buried cables that were not included in the record drawings and also resulted in marginal increases to the engineering and construction costs on the project.

Notable activities conducted during the fourth quarter of 2021 included:

- Civil PO issued;
- OP circuit cutovers completed;
- Control drawings IFC; and,
- Electrical construction out for bid.

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2024
<i>Actuals</i>						<i>Forecast</i>
\$0	\$682,325	\$214,632	\$367,543	\$1,214,476	\$1,787,450	\$17,898,069

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$4,266,426	\$22,600,000	\$22,164,495	19%

### 4. Woodbury

During the fourth quarter of 2021, \$353,658 was spent on the Woodbury project against a forecast of approximately \$544,000. The variance between forecasted and actual spend in the fourth quarter was driven by foundation work not completed as planned due to material availability and a missed accrual for December work. This brought the total spend on the project to approximately \$2.2 million through the end of 2021. The unavailable material involved perimeter wall foundation materials that shifted the construction of the wall foundation from December 2021 to January 2022 (though no resulting change to the forecasted in-service date).

Notable activities conducted during the fourth quarter of 2021 included the issuance of construction permits and the commencement of OP work.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$0	\$551,165	\$540,138	\$356,225	\$363,802	\$353,658	\$15,919,012

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$2,164,988	\$18,700,000	\$18,084,000	12%

### 5. State Street (Outside Plant)

During the fourth quarter of 2021, \$139,953 was spent on the State Street (OP) project against a forecast of approximately \$296,000. The variance between forecasted and actual spend in the fourth quarter was driven by lower spend than estimated for A/E supporting underground design work, less A/E work completed in December than forecasted, and the November A/E invoice lower than accrued. This brought the total spend on the project to approximately \$211,000. The forecasted in-service date for the State Street OP project slipped from March 2, 2023, as of the end of the third quarter of 2021, to April 30, 2023, as of the end of the fourth quarter of 2021. This shift was the result of a review of the anticipated resource availability.

Notable activities conducted during the fourth quarter of 2021 included the project kickoff meeting and the commencement of detailed engineering.

The actual spend by quarter for State Street (OP) as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$0	\$0	\$0	\$17,633	\$53,660	\$139,953	\$19,501,342

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$211,247	\$22,700,000	\$19,712,589	0%

### F. Gas M&R Station Upgrades

Through the end of 2021, primary activities in the Gas M&R subprogram continued to focus on advancing the pre-construction activities for the five projects not in construction, while the Westampton project continued its construction activities in support of reaching an October 2021 in-service date. **Table 23 – ES 2 Gas M&R Summary Status as of December 31, 2021** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

*Table 23 – ES 2 Gas M&R Summary Status as of December 31, 2021*

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service**
1. Camden*	Study	\$24,300,000	\$5,000,000	\$29,300,000	\$3,020,373	10%	Dec 2022
2. Central*	Study	\$23,900,000	\$5,100,000	\$29,000,000	\$4,903,727	17%	Dec 2022
3. East Rutherford	Study	\$13,800,000	\$2,700,000	\$16,500,000	\$2,314,498	14%	Dec 2022



Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service**
4. Mount Laurel	Study	\$9,400,000	\$2,000,000	\$11,400,000	\$895,473	8%	Dec 2022
5. Paramus*	Study	\$11,500,000	\$2,200,000	\$13,700,000	\$1,039,637	8%	Dec 2023
6. Westampton	Definitive	\$9,100,000	\$900,000	\$10,000,000	\$8,002,281	80%	<b><i>Oct 2021</i></b>
<b><i>Subprogram Total</i></b>		<b><i>\$92,000,000</i></b>	<b><i>\$17,900,000</i></b>	<b><i>\$109,900,000</i></b>	<b><i>\$20,175,989</i></b>	<b><i>18%</i></b>	<b><i>Dec 2023</i></b>
*Included in the Stipulated Base.							
**-Bold/italics indicate actual in-service date achieved.							
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.							
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.							

The in-service dates for the Gas M&R projects as of the end of the fourth quarter of 2021 remained static from the status at the end of the prior quarter. The Westampton project was placed in-service as of October 22, 2021, which was the forecasted date as of the end of the prior quarter.

Findings & Observations:

- The primary efforts to date on the subprogram continue to be primarily related to pre-construction planning efforts, including completing and submitting site plan packages, ordering long lead materials, and awarding the construction work. The Westampton project, which commenced construction in April 2021, was placed in-service as of October 22, 2021, and will have some remaining restoration and punch list work ongoing in 2022.
- The forecast increased on the Central and East Rutherford projects based on the actual PO/contract pricing received for materials and construction, as well as additional engineering efforts. These cost pressures are being evaluated on the other remaining projects. However, despite these increases, the overall subprogram forecast of \$107.8 million remains below the current total estimate of \$109.9 million (although both are above the Stipulation amount of \$101.0 million).
- The IM has found nothing to date that would jeopardize the subprogram being completed on time, while the cost pressures noted above have pushed the forecast over the Stipulation amount. During the fourth quarter of 2021 there were no updates to the Gas M&R project estimates and the forecast in-service dates remained unchanged from the prior quarter, while the first of the six Gas M&R projects was also placed in-service (Westampton).

1. Camden

During the fourth quarter of 2021, \$937,617 was spent on the Camden project compared to a forecast of approximately \$948,000, which brought the total spend to approximately \$3.0 million. The forecasted in-service date for the Camden project as of the end of 2021 remains unchanged from the forecast as of the end of the third quarter at December 30, 2022.

Notable activities completed on the Camden project during the fourth quarter of 2021 included:

- Held pre-bid site walk through;
- Received construction bids; and,
- Resolution compliance completed for City of Camden.

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$13,326	\$859,350	\$505,693	\$290,839	\$413,548	\$937,617	\$23,366,961

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$3,020,373	\$29,300,000	\$26,387,333	11%

## 2. Central

During the fourth quarter of 2021, \$3,409,826 was spent on the Central project compared to a forecast of approximately \$4.0 million, which brought the total spend to approximately \$4.9 million. The forecasted in-service date for the Central project as of the end of 2021 remains unchanged from the forecast as of the end of the third quarter at December 30, 2022.

Notable activities completed on the Central project during the fourth quarter of 2021 included:

- Awarded construction contract;
- Held pre-construction meeting and reviewed permit package with contractor;
- Received fully executed agreement with Transco; and,
- Installed air bridges and matting over underground pipeline crossings.

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The current forecast of \$34.0 million reflects an increase of approximately \$8.2 million from the forecast as of the end of the prior quarter. This increase was driven by the actual PO/contract pricing received for materials and construction and additional engineering efforts. The increase in construction costs reflects the current market conditions, as PSE&G had awarded the work to the lowest bidder, at a price 12.5%-59% below other bidders. The additional engineering efforts involve design evolution on the building configuration (increasing from two buildings to four) and foundations, which also ties into the final piping design. Other design factors include the relocation of the station by-pass away from the regulation building in case of station emergency.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$6,869	\$670,582	\$315,258	\$190,109	\$311,084	\$3,409,826	\$29,064,009

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$4,903,727	\$29,000,000	\$33,967,736	14%

## 3. East Rutherford

During the fourth quarter of 2021, \$996,202 was spent on the East Rutherford project compared to a forecast of approximately \$927,000, which brought the total spend to approximately \$2.3 million. The forecasted in-service date for the East Rutherford project as of the end of 2021 remains unchanged from forecast as of the end of the third quarter at December 30, 2022.

Notable activities completed on the East Rutherford project during the fourth quarter of 2021 included:

- Completed IFC drawing page turn with project team and A/E;
- Awarded construction contract;
- Held pre-construction meeting with contractor;
- Held meeting with Transco to discuss site requirements;
- Received water discharge surface permit; and,
- Submitted response to New Jersey Sports and Exposition Authority (NJSEA) comments on permit application.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The current forecast of \$18.1 million reflects an increase of approximately \$4.3 million from the forecast as of the end of the prior quarter. This increase was driven by the actual PO/contract pricing received for materials and construction and additional engineering efforts. The increase in construction costs reflects the current market conditions, as PSE&G had awarded the work to the lowest bidder, at a price 52%-102% below other bidders. The additional engineering efforts involve a change from one larger heater to two smaller heaters to facilitate maintenance, increased piping wall thickness to mitigate noise levels, updates to temporary regulator skids to allow operational controls during construction, the identified need for upgraded electrical service, and larger diameter piping and valves with longer regulator runs that resulted in an increase to the building size.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$9,010	\$521,865	\$337,573	\$260,112	\$189,737	\$996,202	\$15,809,210

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$2,314,498	\$16,500,000	\$18,123,708	13%

#### 4. Mount Laurel

During the fourth quarter of 2021, \$101,143 was spent on the Mount Laurel project compared to a forecast of approximately \$96,000, which brought the total spend to approximately \$895,000. The forecasted in-service date for the Mount Laurel project as of the end of 2021 remains unchanged from the forecast as of the end of the third quarter at December 30, 2022.

Notable activities completed on the Mount Laurel project during the fourth quarter of 2021 included:

- Opened construction bid;
- Issued material procurement PO; and,
- Site plan deemed completed and placed on Burlington County Planning Board agenda for approval.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$5,965	\$362,167	\$155,351	\$149,682	\$121,165	\$101,143	\$8,504,527

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$895,473	\$11,400,000	\$9,400,000	10%

### 5. Paramus

During the fourth quarter of 2021, \$118,557 was spent on the Paramus project compared to a forecast of approximately \$93,000, which brought the total spend to approximately \$1.0 million. The forecasted in-service date for the Paramus project as of the end of 2021 remains unchanged from the forecast as of the end of the third quarter at December 29, 2023.

Notable activities completed on the Paramus project during the fourth quarter of 2021 included:

- Submitted permit package to township;
- Received comments on site plan application; and,
- Held air permit coordination meeting.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$8,842	\$462,452	\$227,854	\$129,694	\$92,239	\$118,557	\$10,460,363

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$1,039,637	\$13,700,000	\$11,500,000	9%

### 6. Westampton

During the fourth quarter of 2021, \$1,443,107 was spent on the Westampton project compared to a forecast of approximately \$1.5 million, which brought the total spend to approximately \$8.0 million. The Westampton was placed in-service as of October 22, 2021, remaining activities include site restoration and final punch list items that will carry over into 2022.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	Q1 2021	Q2 2021	Q3 2021	Q4 2021	2022-2023
<i>Actuals</i>						<i>Forecast</i>
\$8,395	\$1,032,670	\$478,072	\$3,217,496	\$1,822,542	\$1,443,107	\$417,830

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$8,002,281	\$10,000,000	\$8,420,111	95%

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2021 FOURTH QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

DECEMBER 21, 2022

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2021 Fourth Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes									
S-INF-1	<p><b><u>Reference Q4 2021 Report, Page 11, Table 7 – Q4 2021 Major Event Performance</u></b>            For the 104 circuits impacted by the Q4 2021 Major Event that received investments during either the original Energy Strong Program or through Energy Strong 2, please compare the cumulative five (5)-year baseline System Average Interruption Duration Index (“SAIDI”) of all circuits to the cumulative Q4 2021 SAIDI of all circuits.</p>	<p>Out of a total of 1,007 circuits, 104 circuits were impacted by the Q4 2021 Major Events and 903 circuits were <u>not</u> impacted by this Major Event. The SAIDI of these circuits is as follows:</p> <table border="1"> <thead> <tr> <th colspan="2">Circuits Impacted in Q4 2021 Major Events (104)</th> <th>Circuits <u>Not</u> Impacted in Q4 2021 Major Events (903)</th> </tr> <tr> <th>Average of 5-Year Baseline SAIDI</th> <th>Average of Q4 2021 SAIDI</th> <th>Average 5-Year Baseline SAIDI</th> </tr> </thead> <tbody> <tr> <td>0.14816</td> <td>0.00528</td> <td>0.08234</td> </tr> </tbody> </table> <p>As shown above the circuits impacted by the Q4 2021 Major Event had a worse 5-year average SAIDI than the non-impacted circuits, but also showed improved performance during this Major Event.</p>	Circuits Impacted in Q4 2021 Major Events (104)		Circuits <u>Not</u> Impacted in Q4 2021 Major Events (903)	Average of 5-Year Baseline SAIDI	Average of Q4 2021 SAIDI	Average 5-Year Baseline SAIDI	0.14816	0.00528	0.08234	<p><b>Section II.D.1.</b>            (new Table 8)</p>
Circuits Impacted in Q4 2021 Major Events (104)		Circuits <u>Not</u> Impacted in Q4 2021 Major Events (903)										
Average of 5-Year Baseline SAIDI	Average of Q4 2021 SAIDI	Average 5-Year Baseline SAIDI										
0.14816	0.00528	0.08234										
S-INF-2	<p><b><u>Reference Q4 2021 Report, Page 13, Table 8 – Q4 2021 Major Event Additional Information on Selected Circuits</u></b>            With respect to the six (6) circuits improved within Energy Strong or Energy Strong 2 that had worse performance during the Q4 2021 Major Event than the five (5)-year baseline:</p> <ol style="list-style-type: none"> <li>a. Please describe the improvements made to each circuit within the Energy Strong or Energy Strong 2 program.</li> <li>b. Please estimate why these investments were not effective in improving the circuit’s SAIDI.</li> </ol>	<p>Regarding these comments on circuit performance:</p> <ol style="list-style-type: none"> <li>a. The Contingency Reconfiguration subprogram for both the Energy Strong and ES 2 programs involved increasing the number of sections in present loop designs utilizing reclosers, providing alternative circuit feeds or circuit reconfigurations, and placing new devices on the system that will provide reclosing where it previously did not exist and allow PSE&amp;G to receive outage notifications without customer calls. Reclosers essentially serve as an automatic, high-voltage electric switch that sense and interrupt fault currents and automatically restore service after a momentary outage has occurred. Momentary outages may include situations such as: windblown conductors touching one another; lightning surges flashing over an insulator; small animals bridging between an energized line and grounded surface; tree branches touching energized lines; or switching surges that flash over an insulator. If a fault is permanent, the recloser locks open after a preset number of operations isolating the faulted section from the main</li> </ol>	<p>No change</p>									

ID #	Question/Comment	IM Response	Report Changes
		<p>part of the system to reduce the outage area and help repair crews quickly locate the problem and restore power.</p> <p>b. It is the IM’s opinion that the performance of the circuits listed in <b>Table 9</b> (renumbered after the new <b>Table 8</b> was added in response to <b>S-INF-1</b>), which had worse SAIDI metrics in this Major Event than the 5-year average, reflects the nature of these specific outages where circumstances such as additional restoration effort required (such as pole replacement), equipment failure, and/or very low customer counts (lowering the restoration priority) contributed to the comparatively worse performance.</p>	
S-INF-3	<p><b><u>Reference Q4 2021 Report, Page 16, Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of December 31, 2021</u></b>          Please provide additional details about the facilities placed in-service at the Leonia and Ridgefield 13kV substations during Q4 2021, which resulted in these substations being classified as partially in-service.</p>	<p>Regarding the partial in-service status achieved by the Leonia and Ridgefield 13kV projects involved one of each projects’ switchgears being placed in-service:</p> <ul style="list-style-type: none"> <li>• For Leonia, the 13kV switchgear #1 was placed in-service as of October 19, 2021 (while switchgear #2 was placed in-service on June 29, 2022).</li> <li>• For Ridgefield 13kV, the 13kV switchgear #2 was placed in-service as of December 16, 2021 (while switchgear #1 is forecasted to be placed in-service in December 2022).</li> </ul>	No change
S-INF-4	<p><b><u>Reference Q4 2021 Report, Page 19, Academy Street Substation</u></b>          Regarding the Academy Street substation project, please refer to the statement “The variance in spend during the fourth quarter of 2021 was primarily the result of commissioning activities being charged to the Fairmount 69kV Project (same site location) and less than estimated trailing costs after the project was placed in-service.”</p> <p>a. Please clarify if the costs for commissioning activities that were charged to the Fairmount 69kV project were originally budgeted within the Academy Street substation project.</p> <p>b. If so, please provide additional details explaining why these costs were charged to the Fairmount 69kV project.</p>	<p>The Fairmount 69kV project and the ES 2 Academy Street project are co-located on a common site and are being jointly executed. The commissioning activities that were wrongly charged to the Fairmount 69kV project were budgeted to the Academy Street project and were performed by Commissioning Engineers that worked on the Fairmount 69kV project prior to working on the Academy Street project. This error was identified and corrected during the monthly forecast variance analysis process when it was realized that this work was done as planned with cash flow forecasted, but not included in the October actual costs.</p>	<b>Section III.A.1.</b>

ID #	Question/Comment	IM Response	Report Changes
S-INF-5	<p><b><u>Reference Q4 2021 Report, Page 25, Waverly Substation</u></b>  Regarding the Waverly substation project, please estimate the additional costs expected to be incurred as a result of the increased scope of the revised site plan.</p>	<p>As indicated in response to RCR-IM-6 in the IM 2021 Third Quarter Report, PSE&amp;G updated the Waverly project estimate in January 2022, with the base estimate increasing from \$29.4 million to \$36.2 million. Of this increase, approximately \$2.6 million was related to the site plan revisions, including: additional engineering (\$0.8 million), revised fencing and external façade improvements (\$1.0 million), and additional charges for extended project duration (\$0.8 million).</p>	No change
S-INF-6	<p><b><u>Reference Q4 2021 Report, Page 25, Woodlynne Substation</u></b>  Regarding the Woodlynne substation project, please provide additional details about the cost savings resulting from “the A/E not reaching a planned payment milestone in December.”</p>	<p>The A/E not reaching a planned payment milestone in December resulted in lower than forecasted spend specifically for the fourth quarter of 2021 and has a negligible impact on the overall project cost.</p>	No change
S-INF-7	<p><b><u>Reference Q4 2021 Report, Page 27, Contingency Reconfiguration Subprogram</u></b>  Regarding the Fuse Saver component of the Contingency Reconfiguration subprogram, it is noted that the Company currently forecasts a total of 1,713 units. It is further noted that the Company previously reduced forecasted Fuse Saver installations from 2,572 units to 1,967 units. (See Q1 2021 Report, Page 27). Please discuss the Company’s rationale for further reducing the scope of the Fuse Saver component and indicate if any further reductions are expected.</p>	<p>PSE&amp;G continues to utilize an iterative process to evaluate the number of devices anticipated for the Fuse Saver scope of work. The targeted number of Fuse Saver units is revised based on updated field assessments as well as the final number of units driven by the average cost per unit based on the most optimal mix of locations given the fixed budget. For example, if an identified location requires a pole replacement based on the field conditions, it will have a much higher installation cost than a location not requiring a pole replacement.</p>	<b>Section III.B.</b>
S-INF-8	<p><b><u>Reference Q4 2021 Report, Page 28, Table 15 – Contingency Reconfiguration Costs as of December 31, 2021</u></b>  Please provide additional details about the nature of the costs incurred for the Fuse Saver component of the Contingency Reconfiguration subprogram in Q4 2021, given that full Fuse Saver scope was pushed to 2022.</p>	<p>While the full Fuse Saver scope was pushed to 2022, installations of the remaining pilot program units continued in the fourth quarter of 2021, with five additional units installed. One additional unit was also engineering during the fourth quarter of 2021.  The costs incurred from the Fuse Saver scope during the fourth quarter of 2021 included project management costs and direct costs (labor, material, engineering, storage, traffic control), which included some older invoices for work prior to the fourth quarter of 2021.</p>	<b>Section III.B.</b>
S-INF-9	<p><b><u>Reference Q4 2021 Report, Page 29, Grid Modernization – Communication System Subprogram</u></b></p>	<p>Regarding these comments on the Grid Modernization – Communication System subprogram:  a. PSE&amp;G initially planned for 2,561 reclosers to be retrofitted with wireless radio communications.</p>	<b>Section III.C.</b>



ID #	Question/Comment	IM Response	Report Changes												
	<p>a. Please compare the final number of retrofit reclosers (2,318) to originally budgeted totals.</p> <p>b. What is attributed to the forecasted scope of substation RTU retrofits being reduced from 204 units in the IM’s Q3 2021 Report to 196 units in the IM’s Q4 2021 Report?</p> <p>c. Refer to the statement “Also during the fourth quarter of 2021, two additional retrofits of substation RTUS were completed, bringing the total as of the end of 2021 to 10 substations completed...” please reconcile this with the IM’s Q3 2021 Report, which indicated that nine (9) fiber cutover projects had been placed in-service through Q3 2021. (See Q3 Report, Page 34)</p>	<p>b. The reduction in planned substation RTU retrofits was due to updated system status information.</p> <p>c. Under this subprogram, PSE&amp;G is cutting over new fiber installations to 12 existing substations (referenced as the “Fiber Cutover Projects” in <b>Table 18</b>), as of the end of 2021, nine of these 12 projects were completed, which is unchanged from the status as of the end of the third quarter of 2021. This subprogram also involves the retrofitting of RTUs to existing substations and as of the end of 2021, 10 RTU retrofits had been completed. As of the end of the third quarter of 2021, eight RTU retrofits had been completed (although Table 18 from the IM 2021 Third Quarter Report identified nine complete as an error).</p>													
S-INF-10	<p><b><u>Reference Q4 2021 Report, Page 30, Grid Modernization – Communication System Subprogram</u></b>                      Regarding the Grid Modernization – Communication System subprogram, it is stated that “During the fourth quarter of 2021, three additional fiber installation projects (Irvington, Irvington Sub HQ, and Morgan Street) were placed in-service.” For each of these projects placed in-service during Q4 2021, please compare the final cost to the budgeted cost.</p>	<p>For the fiber projects placed in-service during the fourth quarter of 2021, the original budgeted cost compared to the actual costs is as follows:</p> <table border="1"> <thead> <tr> <th>Project</th> <th>Original Budget (ES 2 filing)</th> <th>Actual Costs as of Dec. 2021</th> </tr> </thead> <tbody> <tr> <td>Irvington</td> <td>\$300,000</td> <td>\$157,175</td> </tr> <tr> <td>Irvington Sub HQ</td> <td>\$300,000</td> <td>\$578,009</td> </tr> <tr> <td>Morgan Street*</td> <td>\$0</td> <td>\$457,217</td> </tr> </tbody> </table> <p>*-Morgan Street was not on the initial project list in the ES 2 filing and was added after PSE&amp;G reviewed the fiber requirements and current status of all substations and operations centers to verify communication needs (see the ROD on this discussed in Section IV.A. of the IM 2020 Third Quarter Report).</p>	Project	Original Budget (ES 2 filing)	Actual Costs as of Dec. 2021	Irvington	\$300,000	\$157,175	Irvington Sub HQ	\$300,000	\$578,009	Morgan Street*	\$0	\$457,217	<p><b>Section III.C.</b>                      (new <b>Table 19</b>)</p>
Project	Original Budget (ES 2 filing)	Actual Costs as of Dec. 2021													
Irvington	\$300,000	\$157,175													
Irvington Sub HQ	\$300,000	\$578,009													
Morgan Street*	\$0	\$457,217													
S-INF-11	<p><b><u>Reference Q4 2021 Report, Page 31, Table 18 – ES 2 Grid Modernization – Communication System Costs as of December 31, 2021</u></b>                      Regarding the Wireless Network component of the Grid Modernization – Communication System subprogram, Table 18 reports actual spending through Q4 2021 of \$7,392,732 and total forecasted spending of \$7,914,973. Please provide additional</p>	<p>The Wireless Network, as noted, was placed in-service as of December 16, 2021. Remaining work in the Wireless Network scope relates to providing radios for the Fuse Savers currently being installed, which constitutes the approximately half million in remaining spend.</p>	<p><b>Section III.C.</b></p>												

ID #	Question/Comment	IM Response	Report Changes																								
	<p>details about the work included within this \$522,241 of additional spending, given that the Wireless Network scope was placed in-service as of December 16, 2021. (See Q3 2021 Report, Comment S-INF-10)</p>																										
S-INF-12	<p><b><u>Reference Q4 2021 Report, Page 32, Grid Modernization – ADMS Subprogram</u></b>  For each component of the Grid Modernization – ADMS subprogram (DMS/DERMS, OMS, ADMS), please compare the currently forecasted cost to the originally budgeted cost.</p>	<p>The original budget and forecasted costs as of December 2021 for the major Grid Modernization – ADMS components are as follows:</p> <table border="1"> <thead> <tr> <th>Scope</th> <th>Original Budget</th> <th>Estimate at Completion (as of Dec 2021)</th> <th>Variance</th> </tr> </thead> <tbody> <tr> <td>OMS</td> <td>\$27,289,272</td> <td>\$27,820,234</td> <td>\$530,962</td> </tr> <tr> <td>DMS/DERMS</td> <td>\$6,436,387</td> <td>\$6,665,333</td> <td>\$228,946</td> </tr> <tr> <td>Platform Upgrade</td> <td>\$4,630,926</td> <td>\$4,631,667</td> <td>\$741</td> </tr> <tr> <td>ADMS Hardware</td> <td>\$4,356,031</td> <td>\$4,376,892</td> <td>\$20,861</td> </tr> <tr> <td><i>Total</i></td> <td><i>\$42,712,616</i></td> <td><i>\$43,494,127</i></td> <td><i>\$781,511</i></td> </tr> </tbody> </table>	Scope	Original Budget	Estimate at Completion (as of Dec 2021)	Variance	OMS	\$27,289,272	\$27,820,234	\$530,962	DMS/DERMS	\$6,436,387	\$6,665,333	\$228,946	Platform Upgrade	\$4,630,926	\$4,631,667	\$741	ADMS Hardware	\$4,356,031	\$4,376,892	\$20,861	<i>Total</i>	<i>\$42,712,616</i>	<i>\$43,494,127</i>	<i>\$781,511</i>	No change
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S-INF-13	<p><b><u>Reference Q4 2021 Report, Page 33, Grid Modernization – ADMS Subprogram</u></b>  Regarding the ADMS platform component of the Grid Modernization – ADMS subprogram, please indicate if a competitive bidding process was used to select the vulnerability testing vendor (Dragos). If so, please indicate if Dragos submitted the lowest bid.</p>	<p>PSE&amp;G used a competitive bidding process to select the vulnerability testing vendor. Dragos, the selected vendor, was not the lowest cost bidder, but was the only bidder who met all the requirements for this scope of work.</p>	No change																								
S-INF-14	<p><b><u>Reference Q4 2021 Report, Page 33, Grid Modernization – ADMS Subprogram</u></b>  Please discuss how the ADMS platform (completed in December 2021) will be leveraged while the DMS/DERMS and OMS remain under development until December 2022.</p>	<p>The ADMS Platform put in service the domains (environments) used to manage and support the SCADA system that is in production and used for distribution operations as the system of record. The platform environments are also currently being used for DMS/DERMS and OMS as these components progress. (for example, OMS- SIT/SAT/Performance/Release Testing, DMS/DERMS – Performance/Release Testing).  Changes to the shared environments are coordinated and controlled by a team comprised of two Environment Managers (one from PSE&amp;G and one from OSII) and the ADMS-OMS Solution Architect.</p>	<b>Section III.D.</b>																								
S-INF-15	<p><b><u>Reference Q4 2021 Report, Page 38, Gas M&amp;R Station Upgrades – Camden</u></b></p>	<p>In the first quarter of 2022, PSE&amp;G updated its estimate for the Camden Gas M&amp;R Project, which resulted in a \$10.7 million estimate increase from the Study level estimate to a current estimate of \$36.6 million. While details of this</p>	No change																								

ID #	Question/Comment	IM Response	Report Changes
	Regarding the Camden Gas M&R project, please indicate if the construction bids received were higher than anticipated, similar to the Central an East Rutherford Gas M&R projects.	estimate will be discussed in the upcoming IM 2022 First Quarter Report, the contractor bids had a minimal impact compared to other cost drivers (site plan remediation impacts, additional electric load requirements, final building design, schedule constraints, etc.).	
S-INF-16	<p><b><u>Reference Q4 2021 Report, Page 39, Gas M&amp;R Station Upgrades</u></b>  Regarding the Central and East Rutherford Gas M&amp;R projects:</p> <ul style="list-style-type: none"> <li>a. Please indicate if the construction contracts were awarded to the lowest bidders. If not please explain.</li> <li>b. Please provide additional information about the need for additional engineering efforts.</li> </ul>	<p>Regarding these comments on the Central and East Rutherford Gas M&amp;R projects:</p> <ul style="list-style-type: none"> <li>a. For both these projects, the construction contracts were awarded to the lowest bidder (which was also the highest overall evaluated contractor). On the Central project, the winning bidder’s price proposal was 12.5%-59% below the other bidders; while on the East Rutherford project, the winning bidder’s price proposal was 52%-102% below the other bidders.</li> <li>b. On Central, the additional engineering efforts involved design evolution of the building configuration (increasing from two buildings to four) and foundations, which also ties to the final piping design. Other factors include a relocation of the station by-pass away from the regulation building in case of station emergency. On East Rutherford, the additional engineering efforts involved a change from one large heater to two smaller heaters to facilitate maintenance, increased piping wall thickness to mitigate noise levels, updates to temporary regulator skids to allow operational controls during construction, the identified need for upgraded electrical service, and larger diameter piping and valves with longer regulator runs that resulted in an increase to the building size.</li> </ul>	<p><b>Sections III.F.2. and III.F.3.</b></p>
S-INF-17	<p><b><u>Reference Q4 2021 Report, Page 39, Gas M&amp;R Station Upgrades – East Rutherford</u></b>  Regarding the East Rutherford Gas M&amp;R project, please provide additional details about the New Jersey Sports and Exposition Authority (“NJSEA”) comments on the permit application. Please also indicate if any scope changes are expected as a result of the NJSEA comments.</p>	<p>The comments received from NJSEA on the East Rutherford projects were similar to comments typically received from other municipal planning or zoning boards, and included requests such as: Provide documentation that the standby generator complies with NAJC 19:4-7; Provide a gate detail; Verify that all equipment susceptible to flooding are above elevation of 9 feet NACD88; All imported fill must be approved by NJSEA; Provide copies of approvals from other agencies with jurisdiction such as NJDEP and Bergen County Soil Conservation District; Applicant must comply with the signage requirements to satisfy the East Rutherford Fire Department.</p> <p>PSE&amp;G expects no scope changes to the project as a result of the comments.</p>	<p>No change</p>
S-INF-18	<p><b><u>Reference Q4 2021 Report, Page 40, Gas M&amp;R Station Upgrades</u></b></p>	<p>During the second quarter of 2022, PSE&amp;G updated the estimates for the Mount Laurel and Paramus Gas M&amp;R projects (in addition to the other projects within this subprogram). The Mount Laurel estimate included cost increases identified</p>	<p>No change</p>

ID #	Question/Comment	IM Response	Report Changes
	Regarding the Mount Laurel and Paramus Gas M&R projects, please discuss if the Company expects increased costs for materials and construction, similar to the Central and East Rutherford Gas M&R projects.	for construction and materials based on current quotes received, while the Paramus estimate had no change to the base estimate, but increased R&C by \$6.2 million based in part on the observed cost pressures experienced on the more advanced projects in the subprogram.	
S-INF-19	<b><u>Reference Q4 2021 Report, Page 41, Gas M&amp;R Station Upgrades – Westampton</u></b> Please indicate if the completed Westampton Gas M&R project incorporated any major scope changes as compared to the originally planned scope of work.	No major scope changes were introduced on the Westampton Gas M&R project.	No change
RCR-IM-1	With reference to page 2 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please provide an update on the status of the Orange Valley substation including actual in-service date or anticipated in-service date.	As of the end of the third quarter of 2022 (most recent set of schedule data available as of the date of this report), the Orange Valley forecasted in-service date is in February 2024.	No change
RCR-IM-2	With reference to page 2 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please provide an update on the status of the Waverly substation including actual in-service date or anticipated in-service date.	As of the end of the third quarter of 2022 (most recent set of schedule data available as of the date of this report), the Waverly forecasted in-service date is in April 2024.	No change
RCR-IM-3	With reference to page 2 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please provide an update on the status of the Leonia substation including actual in-service date or anticipated in-service date.	The Leonia project was placed in-service in November 2022.	No change
RCR-IM-4	With reference to page 2 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please provide an update on the status of the Ridgefield 13kV substation including actual in-service date or anticipated in-service date.	As of the end of the third quarter of 2022 (most recent set of schedule data available as of the date of this report), the Ridgefield 13kV forecasted in-service date continues to be December 2022.	No change
RCR-IM-5	With reference to page 2 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please provide an update on the status of anticipated in-service date of any substation work expected to be completed in 2022.	As of the end of 2021, the following Electric Station Flood Mitigation projects were forecasted to be put in-service during 2022: Clay Street, Leonia, Ridgefield 13kV, and State Street. Of these projects, all remain forecasted as of the end of the third quarter of 2022 to be in-service during 2022 with the exception of the Clay Street project that has slipped to March 2023.	No change
RCR-IM-6	With reference to page 2 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please indicate if the Company would seek IIP accelerated	PSE&G informed the IM that it does not have authority to seek accelerated recovery for any substation work that is put into service after December 31, 2023 under the ES 2 Stipulation and Order approving same (dated 9/11/2019).	No change

ID #	Question/Comment	IM Response	Report Changes
	cost recovery treatment for substation work that is not completed until after December 31, 2023. If so, please explain.	However, in accordance with paragraph 20 of the Stipulation, PSE&G does have the option of seeking Board approval to extend the Program beyond the term provided.	
RCR-IM-7	With reference to page 3 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please explain how the approved Waverly substation site plan has enabled PSE&G to accelerate the scheduled completion date by 92 days.	As of the end of the third quarter of 2021, PSE&G forecasted to have the Waverly construction permits approved in July 2022, which was based on projected dates provided from the City of Newark and drives the construction start and in-service dates. The City of Newark had better than anticipated progress in advancing the permitting process, which improved the construction permit timeline to March 2022 and allowed the PSE&G team to implement improved dates for the construction start and in-service milestones. PSE&G also continues to evaluate options to further improve the schedule, such as sequencing activities in parallel if possible. See also the response to <b>RCR-IM-9</b> .	<b>Section III.A.15.</b>
RCR-IM-8	With reference to page 10 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please indicate if PSE&G has any plans to review the July 2003 BPU-approved cost allocation schedule. If so, please indicate the proposed timing of the review. If not, please explain why not.	PSE&G indicated it has reviewed the 2003 schedule and the amended and restated agreement approved in September 2022.	No change
RCR-IM-9	With reference to pages 18 and 19 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please identify and describe what work activities and project schedule items are being examined to accelerate the scheduled completion date of the Waverly project that is currently scheduled for closeout in first quarter of 2025.	As of the end of the third quarter of 2021, the Waverly project was forecasted to go in-service on 12/18/2024. This was driven by construction permits being anticipated to be received in July 2022 (based on projected dates from the Newark City). Based on better than expected permitting progress identified in the fourth quarter of 2022, the construction permit approval timeline advanced to March 2022, which supported an improved construction start date and overall in-service date, which advanced to 9/17/2024 as of the end of 2021. After the construction permits were received in the first quarter of 2022, the project management team worked with the construction team and Division to improve the construction schedule and sequence by paralleling activities where possible that further advanced the forecasted in-service date to February/March 2024. As part of the regular schedule review efforts, PSE&G will continue to seek opportunities to improve the schedule. See also the response to <b>RCR-IM-7</b> .	<b>Section III.A.15.</b>
RCR-IM-10	With reference to pages 18 and 19 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please state whether any accelerated or compressed scheduling of the Waverly substation project would increase the current forecasted cost of	Accelerating or compressing the schedule can potentially add costs due to the extra resources/shifts required, which would somewhat be offset by lower carrying costs from the reduced project duration. The actual impacts would be dependent on the specific factors involved (e.g. what the specific carrying costs	No change

ID #	Question/Comment	IM Response	Report Changes
	\$36.19 million. If so, please explain. If not, please explain why not.	are, how many extra resources required, how much the schedule was compressed, etc.).	
RCR-IM-11	With reference to page 19 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please provide an update to the Fairmont 69kV project and please indicate if the Company anticipates addition[al] project costs will be allocated from the Academy Street to the Fairmont 69kV project.	There was no allocation of costs from the Academy Street project to the Fairmont 69kV project, the issue was commissioning activities that were budgeted to the Academy Street project but charged in error against the Fairmont 69kV project. This was identified and corrected during the monthly forecast variance analysis process. See also the response to <b>S-INF-4</b> .	<b>Section III.A.1.</b>
RCR-IM-12	With reference to page 19 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please explain if the Fairmont 69kV project schedule has impacted the closeout of the Academy Street project. If so, please explain.	The Fairmont 69kV project has not impacted the close out of the Academy Street ES 2 project. The retired Academy Station is currently being demolished and close out of the ES 2 Academy Street project is pending completion of demolition.	No change
RCR-IM-13	With reference to page 21 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please indicate if the Company is still experiencing resource availability issues that impact spending for the Leonia substation. If so, please explain what steps the Company is taking to address resource availability. If not, please explain what steps the Company took to resolve resource availability issues.	The resource availability issue resulted in an actual cost/forecast variance for the month of November 2021 and shifted the timing of planned work to future periods. This was a temporary issue and PSE&G has maintained the critical path on the project.	<b>Section III.A.7.</b>
RCR-IM-14	With reference to page 22 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please describe the unplanned emergency work that impacted spending for the Market Street substation. Please indicate if the unplanned emergency work impacted other Energy Strong II projects.	The unplanned emergency work in that impacted the Market Street project related to unplanned storms and related events (Tropical Storm Elsa, Tropical Storm Henri, Hurricane Ida, emergency cable failures) that diverted internal resources from the Market Street project to perform restoration efforts. There were no impacts to other ES 2 projects and no other ES 2 projects utilized Southern Division resources in this period.	No change
RCR-IM-15	With reference to page 23 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please explain if the Company is experiencing higher than estimated traffic control requirements for other projects and if the Company is factoring increased traffic control requirements for future projects. If not, please explain why not.	Generally, PSE&G has not experienced higher than estimated traffic control requirements across the ES 2 Program, however higher traffic costs have been experienced on certain individual projects (e.g. Market Street) based on additional requirements required by the local municipality. PSE&G develops its traffic control estimates based on the amount of street work expected to be executed and the permit requirements for each location.	No change
RCR-IM-16	With reference to page 23 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please	PSE&G has recurring schedule review meetings on the project schedules to review the progress and identify possible opportunities for schedule	No change

ID #	Question/Comment	IM Response	Report Changes
	<p>indicate if the Company has identified possible work activities and project schedule items to accelerate the scheduled completion date of the Orange Valley project. If so, please describe.</p>	<p>improvement through resequencing, running activities in parallel, or utilizing extra shifts. The schedule requirements are viewed holistically with the project costs, resource availability, and other relevant project data to provide an informed decision on how best to proceed. For Orange Valley, as of the end of the third quarter of 2022, the forecasted in-service date has slipped to 2/2/2024 due to equipment delivery delays being experienced that are pushing the project's critical path out.</p>	
RCR-IM-17	<p>With reference to page 23 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please indicate if any accelerated or compressed scheduling of the Orange Valley substation project would increase the current forecasted cost of \$14.77 million. If so, please explain. If not, please explain why not.</p>	<p>Accelerating or compressing the schedule typically would add costs due to the extra resources/shifts required, which would somewhat be offset by lower carrying costs from the reduced project duration. The actual impacts would be dependent on the specific factors involved (e.g. how many extra shifts required, how much the schedule was compressed, etc.).</p>	No change
RCR-IM-18	<p>With reference to page 29 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please explain why the three reclosers in the Palisades Division require unique operating procedures. Please indicate if the Company has identified other recloser installations that have the same unique requirements. If so, please explain.</p>	<p>The three reclosers in the Palisades Division were to be installed with a unique operating procedure (in a single-phase operation) since the downstream load was primarily single-phase. With the unique operating procedure setting, only the 1 or 2 phases affected by a fault event will have an outage, not all three phases as would be the case with the standard operating procedure. No other reclosers have been identified for the unique operating procedure beyond these three in the Palisades Division.</p> <p>Ultimately, PSE&amp;G installed these three reclosers following the standard operating procedure due to the time required to develop and implement a unique operating procedure. This will require the reclosers to be reprogrammed in the future from the standard operating procedure to the unique operating procedure, as of the end of October 2022, the reclosers are still using the standard operating procedure setting.</p>	No change
RCR-IM-19	<p>With reference to page 32 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please provide an update on the status of the DMS/DERMS scope of work.</p>	<p>During the fourth quarter of 2022, PSE&amp;G has been working on end-to-end testing with OSII on the DMS/DERMS scope as it prepares for operational readiness.</p>	No change
RCR-IM-20	<p>With reference to page 33 of the Independent Monitor's Draft Fourth Quarter 2021 Report, please provide an update on the status of the ADMS Platform scope of work.</p>	<p>Following the ADMS Platform being placed in-service in December 2021, PSE&amp;G has completed system acceptance testing and vulnerability testing, it has also completed deconstruction of the Edison Production rack and imaged workstations for the Divisions in preparation of training.</p>	No change

ID #	Question/Comment	IM Response	Report Changes
RCR-IM-21	With reference to page 35 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please describe the condensation issues affecting the Paramus substation. Please indicate if the condensation issue is related to the design of the temporary feeder row or the result of construction activities.	The condensation was a result of the design of some of the rear panels on the contingency feeder rows as well as the settings on the heaters and humidifiers. The units which did not have vented panels experienced the condensation and when this was corrected, and the settings on the heaters and humidifiers were adjusted, the issue was resolved.	<b>Section III.E.2.</b>
RCR-IM-22	With reference to pages 35 and 36 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please describe the unknown underground obstruction affecting the Plainfield substation.	The unknown underground obstructions at Plainfield included existing below grade concrete structures and direct buried cables that were not included in the record drawings. The unknown underground obstructions resulted in marginal increases to engineering and construction costs.	<b>Section III.E.3.</b>
RCR-IM-23	With reference to page 36 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please provide an update on the material unavailability issue that impacted the Woodbury project.	The material unavailability issues involved perimeter wall foundations material delivery, which was delayed and pushed the construction of the wall foundation work from December 2021 to January 2022. This work was shifted with no impact to the project critical path and this issue was resolved as of January 2022.	<b>Section III.E.4.</b>
RCR-IM-24	With reference to page 36 of the Independent Monitor’s Draft Fourth Quarter 2021 Report, please indicate if the Company is still experiencing material unavailability issues that impacted spending for the Woodbury substation. If so, please explain what steps the Company is taking to address material availability. If not, please explain what steps the Company took to resolve material availability issues.	This was a temporary issue. See the response to <b>RCR-IM 23</b> .	No change
Rate Counsel 10/11/2022 Letter	At the end of the fourth quarter 2021, the ESII program is slightly over 42 percent completed in spending. The Independent Monitor reports that electric spending for the quarter ending December 31, 2021 has been \$43.946 million or 6.3 percent of the current forecast of \$700.731 million electric ESII program (including the \$100 million for Electric Stipulated Base). Rate Counsel notes that the parties stipulated to \$842 million to complete the ES II Program with \$641 million for electric, \$50.5 million for gas, and \$150.5 million within Stipulated Base for electric and gas spending.	The IM confirms this statement.	No change
Rate Counsel	Rate Counsel continues to note that the budget for Electric stipulated base has been set to \$100 million	The IM confirms this statement.	No change



ID #	Question/Comment	IM Response	Report Changes
10/11/2022 Letter	for the life cycle subprogram. In the report for this quarter, Pegasus continued to provide Study level estimates for the five substations (Hamilton, Paramus, Plainfield, Woodbury, and State Street). The current Study level estimate for the subprogram remains at \$102.4 million including \$19.6 million for risk and contingency.		
Rate Counsel 10/11/2022 Letter	The current forecast for the Electric Flood mitigation program increased slightly from \$346.55 million in the Third Quarter Report to \$347.842 million in the Fourth Quarter Report, including risk and contingency estimates. Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2021, states that the base spending amount for the subprogram remains at \$332.200 million in budgeted base project costs and \$47.8 million allocated to risk and contingency.	The IM confirms this statement.	No change
Rate Counsel 10/11/2022 Letter	In the Fourth Quarter Report, the IM noted that PSE&G decreased its estimate for the Market Street substation by about \$831,000. The IM noted that actual spending was below budgeted spending due to poor weather and resource constraints that included unplanned emergency work that pulled resources away from the project. Rate Counsel is interested in understanding if the Company has adequate resources to address ongoing work across the substations and address unforeseen situations.	<p>PSE&amp;G continuously works with its internal teams and its Divisions to coordinate schedules and allocate resources, including identifying the priority of different scopes of work. Unplanned outages and work related to ensuring the safety of the system are prioritized over standard project or routine work, but generally this type work is limited in duration so any impacts to the project schedules are similarly limited. PSE&amp;G also utilizes contractor labor as appropriate.</p> <p>The IM also notes the forecast for Market Street decreased by approximately \$831,000 during the fourth quarter of 2021, but the project estimate was not updated in this period.</p>	No change
Rate Counsel 10/11/2022 Letter	In the Fourth Quarter Report, the IM noted that PSE&G has forecasted that the Orange Valley substation work is scheduled for completion on December 29, 2023 and that the Waverly substation project is scheduled for completion on September 17, 2024. The scheduled completion date for the Orange Valley substation is near the program end date of December 31, 2023, but the scheduled completion date for the Waverly substation is after the program end date. Rate Counsel is interested in	Since the end of the fourth quarter of 2021, the Waverly schedule has improved significantly based on better than expected timing of the permit approvals that improved the forecasted in-service date to February/March 2024 (see also the response to <b>RCR-IM-2</b> , <b>RCR-IM-7</b> , and <b>RCR-IM-9</b> ). This reflects the final in-service date for transformer #3, while the 4kV switchgear and transformers #1-2 are forecasted to be in-service in December 2023. For the Orange Valley project, the most recent schedule data as of the end of the third quarter of 2022 indicates the forecasted in-service date has slipped into early February 2024.	No change

ID #	Question/Comment	IM Response	Report Changes
	<p>understanding if PSE&amp;G plans to accelerate work for both substations, and if accelerated work will impact current budgets for the two substations.</p>	<p>PSE&amp;G continuously assesses the schedule and evaluates opportunities to advance the forecasted in-service date, primarily through resequencing activities or working activities in parallel. New information such as the actual status, updated durations, updated or completed engineering, and current permit or equipment receipt dates informs the current view of the schedule. Part of the schedule assessment also includes determining if it is appropriate to add resources, and if so, what cost impacts might be realized as a result. As both the Orange Valley and Waverly projects will be commencing construction (Phase 3 for Waverly) around the end of 2022/beginning of 2023, it is expected the schedule assumptions will be updated and through the recurring schedule reviews a determination will be reached on if the schedule can be advanced.</p>	
PSEG-1	<p>Under “Findings &amp; Observations” for the Electric Station Flood Mitigation subprogram where the projects placed in-service are noted, the Leonia and Ridgefield 13kV projects achieved partial in-service during the fourth quarter of 2021.</p>	<p>The report finding has been updated to indicate the partial in-service status achieved by Leonia and Ridgefield 13kV.</p>	<b>Section III.A.</b>
PSEG-2	<p>Under Section III.A.7., it notes the Leonia switchgear #1 was placed in-service during the fourth quarter of 2021. The actual in-service date for this equipment was October 19, 2021.</p>	<p>The actual in-service date for Leonia’s switchgear #1 has been added to the report.</p>	<b>Section III.A.7.</b>
PSEG-3	<p>Within the Executive Summary and repeated under “Findings &amp; Observations” for the Grid Modernization – Communication System subprogram, the number of retrofit reclosers completed during the fourth quarter was 324, not 325.</p>	<p>The number of retrofit reclosers completed during the fourth quarter of 2021 has been corrected to 324.</p>	<b>Sections I. and III.C.</b>

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2022 FIRST QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

APRIL 17, 2022

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Allowance for Funds Used During Construction.....	AFUDC
Architect and Engineer .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System.....	DERMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Gas Metering & Regulating.....	Gas M&R
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Construction .....	IFC
Issued for Review .....	IFR
Mobile Work Management System .....	MWMS
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Outside Plant.....	OP
Outside Plant-Higher Design Standards .....	OP-HDS
Plain Old Telephone Service .....	POTS
Public Service Electric & Gas .....	PSE&G
Purchase Order.....	PO
Record of Decision .....	ROD
Remote Control Unit.....	RCU
Remote Terminal Unit .....	RTU
Risk and Contingency .....	R&C
Supervisory Control and Data Acquisition.....	SCADA
System Acceptance Testing .....	SAT

System Average Interruption Duration Index.....	SAIDI
Transmission & Distribution .....	T&D
Utility Review Board .....	URB
Virtual Private Network.....	VPN

## I. Executive Summary

Public Service Electric & Gas’s (PSE&G’s) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram). This report contains the Independent Monitor’s (IM’s) findings and observations on the ES 2 Program elements and other information on the Program’s status as of the first quarter of 2022.

During the first quarter of 2022, the bulk of the spend within the ES 2 Program continued to be in the largest subprogram, Electric Station Flood Mitigation, with two additional projects commencing construction during the quarter (Hasbrouck Heights and Woodlynne), and no additional projects being placed in-service (with Academy Street, Market Street, and Ridgefield 4kV previously being placed in-service). Within the other subprograms, the Contingency Reconfiguration subprogram completed the final batch of reclosers during the first quarter of 2022 and is now shifting to the Fuse Saver scope of work. The Grid Modernization – Communication System subprogram placed seven additional fiber installation projects and two additional fiber cutover projects in-service, with 27 fiber installation projects and 11 fiber cutover projects now completed in the ES 2 Program and the remaining projects expected to be completed by the end of 2022. The Grid Modernization – Communication System also continued to advance the retrofit substation remote terminal unit (RTU) scope, with the 75 additional substations completed, for a total of 85 completed as of the end of the first quarter of 2022 out of a forecasted scope of 218 substations. The Grid Modernization – ADMS subprogram completed sprints 14 and 15 in the Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS) scope and sprints 12 and 13 within the Outage Management System (OMS) scope, while the ADMS Platform scope completed additional testing and prepared for Division training. The Gas M&R subprogram saw its highest quarterly spend to date on the ES 2 Program, which reflected three projects entering the construction phase (Camden, Central, and East Rutherford), while closeout and restoration activities continued on the Westampton project that was placed in-service during the fourth quarter of 2021. The Hamilton, Paramus, Plainfield, and Woodbury projects in the Electric Stipulated Base scope continued construction during the fourth quarter of 2021, while the State Street (Outside Plant, or “OP”) project continued to advance the detailed engineering.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of March 31, 2022** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

*Table 1 – ES 2 Subprogram & Stipulated Base Status as of March 31, 2022*

Subprogram	Q1 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Electric Station Flood Mitigation	\$18,695,029	\$139,847,773	\$349,562,560	40%	Mar 2024	\$389M

Subprogram	Q1 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Contingency Reconfiguration	\$2,277,408	\$107,970,429	\$145,273,272	74%	Nov 2023	\$145M
Grid Modernization – Communications	\$6,196,033	\$54,561,042	\$66,144,306	82%	Dec 2023	\$64.3M
Grid Modernization – ADMS	\$3,197,877	\$29,536,156	\$43,525,894	68%	Apr 2023	\$42.7M
Electric Stipulated Base	\$8,262,179	\$26,317,199	\$98,591,950	27%	Dec 2023	\$100M
Gas M&R Station Upgrades^	\$11,864,125	\$32,040,114	\$128,336,312	22%	Dec 2023	\$101M
<b>Total*</b>	<b>\$50,492,652</b>	<b>\$390,272,715</b>	<b>\$831,434,293</b>	<b>47%</b>	<b>Mar 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See Table 11 and Table 20 for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\*-Final in-service date.

\*\*\*-Following the \$7.7 million transfer in July 2021 from the Grid Modernization – Communications subprogram to the Grid Modernization – ADMS subprogram.

^-Includes both the ES 2 projects and the Stipulated Base gas projects.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of March 31, 2022.**

**Table 2 – ES 2 Electric Station Flood Mitigation Status as of March 31, 2022**

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$9,300,000	\$6,260,799	67%	<b>10/19/2021</b>
2. Clay Street	\$30,800,000	\$8,846,983	29%	1/30/2023 (↓+84)
3. Front Street^	\$25,900,000	\$2,781,438	11%	10/26/2023 (↑-21)
4. Hasbrouck Heights	\$19,300,000	\$9,779,630	51%	1/24/2023 (↑-8)
5. Kingsland	\$6,400,000	\$1,126,185	18%	10/2/2023 (↓+94)
6. Lakeside Avenue	\$39,400,000	\$1,525,371	4%	9/18/2023 (↑-51)
7. Leonia	\$24,900,000	\$16,979,539	69%	11/15/2022 (↓+6)
8. Market Street	\$29,100,000	\$27,820,378	96%	<b>6/25/2021</b>
9. Meadow Road	\$7,200,000	\$1,331,494	19%	9/22/2023
10. Orange Valley	\$14,700,000	\$909,541	6%	12/29/2023
11. Ridgefield 13kV	\$26,100,000	\$19,399,451	74%	12/13/2022 (↑-7)
12. Ridgefield 4kV	\$20,800,000	\$20,689,404	100%	<b>5/16/2021</b>
13. State Street	\$19,600,000	\$9,584,815	49%	12/19/2022 (↓+87)
14. Toney's Brook	\$16,200,000	\$1,664,826	10%	4/21/2023
15. Waverly	\$36,200,000	\$7,412,639	21%	3/5/2024 (↑-196)
16. Woodlynne	\$21,300,000	\$3,735,353	18%	10/10/2023

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). **Bold** dates indicate the actual in-service date.



Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
(↑)-Indicates the forecasted in-service date advanced from the prior quarter in days. (↓)-Indicates the forecasted in-service date slipped from the prior quarter in days. ^- The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.				

As indicated in **Table 2**, the projects that previously started construction (including Academy Street, Leonia, Market Street, Ridgefield 13kV, Ridgefield 4kV, State Street, and Waverly) continue to have the highest total spend to date. For the three projects placed in-service, Academy Street, Market Street, and Ridgefield 4kV, each were completed under their estimates. Additionally, PSE&G updated the base estimates to 10 of the 16 projects during the first quarter of 2022, with a net increase of \$15.0 million, which also included the State Street and Hasbrouck Heights project estimates advancing to the Definitive stage.

**Table 2** also shows that nine of the 16 projects had movement during the first quarter of 2022 in the forecasted in-service date, with five advancing and four slipping. Of these nine projects, four of the projects (Front Street, Hasbrouck Heights, Leonia, and Ridgefield 13kV) had forecasted in-service dates change by less than three weeks. As previously reported, the Waverly final in-service date was forecasted for September 2024, which had been a slight improvement from the previously forecasted December 2024 in-service date. Following the site plan approval in December 2021, PSE&G’s team evaluated and updated the construction schedule, which allowed the in-service date to advance to March 2024 and continues to assess potential opportunities to advance the in-service date. The other largest shift to the forecasted in-service dates was the Kingsland project, which slipped 94 days from June 30, 2023 to October 2, 2023, and was driven by delays to the switchgear delivery on the Ridgefield 13kV project (as PSE&G intends to use the Ridgefield 13kV contingency switchgear on Kingsland). Major equipment deliveries constitute one of the largest current risks to the subprogram as further discussed in **Section III.A.** of this IM report.

While the subprogram forecast increased by approximately \$1.7 million during the first quarter of 2022, it remains approximately \$40 million under the Stipulation budget. The IM has continued to find nothing to date that would jeopardize the ES 2 Program being completed on budget. However, schedule challenges, particularly on the Waverly substation and other projects with forecasted in-service dates near the Program end date of December 2023 will continue to warrant further monitoring by the IM to confirm the ES 2 Program is completed within the defined timeline.

As per N.J.A.C. Section 14:3-2A.5(c)2, the IM reports are to address:

- i. *The effectiveness of Infrastructure Investment Program investments in meeting project objectives;*
- ii. *The cost-effectiveness and efficiency of investments;*
- iii. *The appropriateness of cost assignments; and*
- iv. *Any other information required by the Board.*

The IM focuses the majority of the discussion within each report on these primary objectives, after introducing summarized the findings on these areas in the IM 2021 Third Quarter Report, the IM will

continue to provide a summary on these areas for each report with an emphasis on new information relative to the current reporting period. These summarized findings are as follows:

- **Effectiveness of ES 2 investments in meeting project objectives:** The objectives for each subprogram within the ES 2 were defined within PSE&G's ES 2 filing and confirmed by the Stipulation. The overall objectives focused on improving system resiliency, reliability, and hardening through rebuilding or replacing selected substations, installing smart control and monitoring devices on distribution circuits (reclosers, fuse savers, etc.), installing ADMS and a new communication system, and rebuilding selected Gas M&R stations. Within **Section III** of this report, the IM provides a review of the status of the efforts performed to meet these objectives for each subprogram. During the first quarter of 2022, the following projects/scopes were placed in-service and/or completed:
  - Electric Station Flood Mitigation: Academy Street, Market Street, and Ridgefield 4kV previously placed in-service.
  - Contingency Reconfiguration: Recloser scope completed with installation of final 23 units and commissioning of the remaining 25 units during the first quarter of 2022.
  - Grid Modernization – Communication System: 75 substation RTU retrofits completed (bringing the total to 85 out of a total scope of 218 substations); seven fiber installation projects were completed (bringing the total to 27); and two fiber cutover projects were completed (bringing the total to eleven out of a current scope of 12).
  - Electric Stipulated Base: Final circuit cutovers completed on the Paramus contingency switchgear.
  - Gas M&R: Westampton previously placed in-service in October 2021, the next stations forecasted for completion are the Camden and East Rutherford stations planned to go in-service by the end of 2022.
- **Cost-effectiveness and efficiency of investments:** To assess the cost effectiveness and efficiency of ES 2 investments, the IM began with a review of the initial scope, estimate, and related planning documents for each project to establish a baseline to monitor progress against as the work advances. As the Program execution advances, the IM continues to evaluate actual costs against the initial estimates and current forecasts, including seeking additional information relating to any variances identified. While the overall Program's current cost forecast is below the Stipulation amount, the IM has observed cost increases realized on specific projects or aspects of the Program and found the majority of these increases stem from scope evolution and/or more detailed estimates from the time of the ES 2 filing, as well as the more recent changes in general market conditions (e.g. Covid-19 impacts, supply chain issues, etc.). The updated subprogram forecasts as of the end of the first quarter of 2022 compared to the end of 2021 were as follows:
  - Electric Station Flood Mitigation: subprogram forecast increased approximately \$1.7 million (or 0.5%) to approximately \$349.6 million.
  - Contingency Reconfiguration: subprogram forecast decreased approximately \$494,000 (or -0.3%) to approximately \$145.3 million.
  - Grid Modernization – Communication System: subprogram forecast increased approximately \$2.5 million (or 4.0%) to approximately \$66.1 million.

- Grid Modernization – ADMS: subprogram forecast increased approximately \$32,000 (or 0.1%) to approximately \$43.5 million.
- Electric Stipulated Base: subprogram forecast decreased approximately \$1.4 million (or -1.4%) to approximately \$98.6 million.
- Gas M&R: subprogram forecast increased approximately \$20.5 million (or 19.1%) to approximately \$128.3 million.

As shown above, the biggest subprogram forecast changes during the first quarter of 2022 were in the Grid Modernization – Communication System, Electric Stipulated Base, and Gas M&R subprograms. Within the Grid Modernization – Communication System, the recent fiber projects have seen increased material and labor costs, while the Electric Stipulated Base projects saw slight forecast increases across all but the State Street OP project. Within the Gas M&R subprogram, the forecast growth includes the LPA components at certain projects that will be removed from the ES 2 project scope (which will also reduce the forecast accordingly).

- **Appropriateness of cost assignments:** The IM receives and reviews recurring data concerning the accumulation of costs within the Program. Based on that review, the IM submits follow-up questions to the Company regarding that data for the reporting period. Such follow-up questions generally focus on the following aspects:
  - Review of any unusual changes in cost elements from period-to-period, including but not limited to allowance for funds used During construction (AFUDC), cost of removal (COR), and the allocation of overheads.
  - Review spend on capital accounts, such as Construction Work in Progress (CWIP) as it relates to overall spend, AFUDC, and COR.
  - Verify cost accumulations and classifications appear to be in accordance with Generally Accepted Accounting Principles (GAAP), to the extent the IM has access to such information.
  - Review and investigation of prior period adjustments and/or corrections to capital accounts.
  - Engage the Company’s Internal Audit group on specific areas to audit, review, and assess – particularly for areas in which the IM has limited or no visibility (proprietary data, accounting systems, etc.).

Through the above steps, the IM tracks and monitors how the Company is recording costs to support the finding that the cost assignments appear to be appropriately applied. These cost items are discussed further within **Section II.C.** of this IM report.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On February 13, 2022, a draft IM 2022 Fourth Quarter Report was submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in

**Appendix A – Draft Report Comments and Responses.** This **Appendix A** also identifies specific sections within this IM 2022 First Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current RODs as of the date of this IM 2022 First Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**. During the first quarter of 2022, there were no additional RODs issued.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report</i> )
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1.</i> )

Subprogram	Record of Decision	IM Comments
		<i>in the IM 2021 Second Quarter Report)</i>
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2. the IM 2021 Second Quarter Report</i> )

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

Early in 2022 PSE&G instituted a change in the way it manages the R&C for the Electric Station Flood Mitigation projects shifting from each project maintaining its own R&C funds to managing the R&C at the subprogram level. Prior to this shift, the projects’ R&C was updated at the time of an estimate transition (50% to 70% to 90%). This change allows PSE&G to manage the R&C month-to-month based on the current project risk registers, which are updated monthly by the project team and reviewed by the subprogram lead. When the individual projects go through an estimate transition any variance to the base estimate results in additional funds added to the R&C placeholder (if the base estimate decreased) or release of R&C to cover the increase in base. Additionally, PSE&G’s Utility Review Board (URB) continues to review and approve any estimate changes.

As part of the exercise in transitioning R&C from the project to the subprogram level, PSE&G also updated the base estimates for any Electric Station Flood Mitigation project that changed by more than \$0.5 million (increasing or decreasing). Details of the updated estimates and the results of the shifting of R&C funds on the individual projects are discussed within **Section III.A.** and **Section III.E.**

## **C. Cost Assignments**

### **1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Program Costs of Removal as of March 31, 2022**, below itemizes the charges to COR for the first quarter of 2022, the fourth quarter of 2021 (for comparative purposes), total COR for the years 2021, 2020, 2019, and total ES 2 Program COR to date. These amounts do not reflect any salvage value reductions, which have been *de minimis* in the ES 2 Program through March 31, 2022.

*Table 4 – ES 2 Program Costs of Removal as of March 31, 2022*

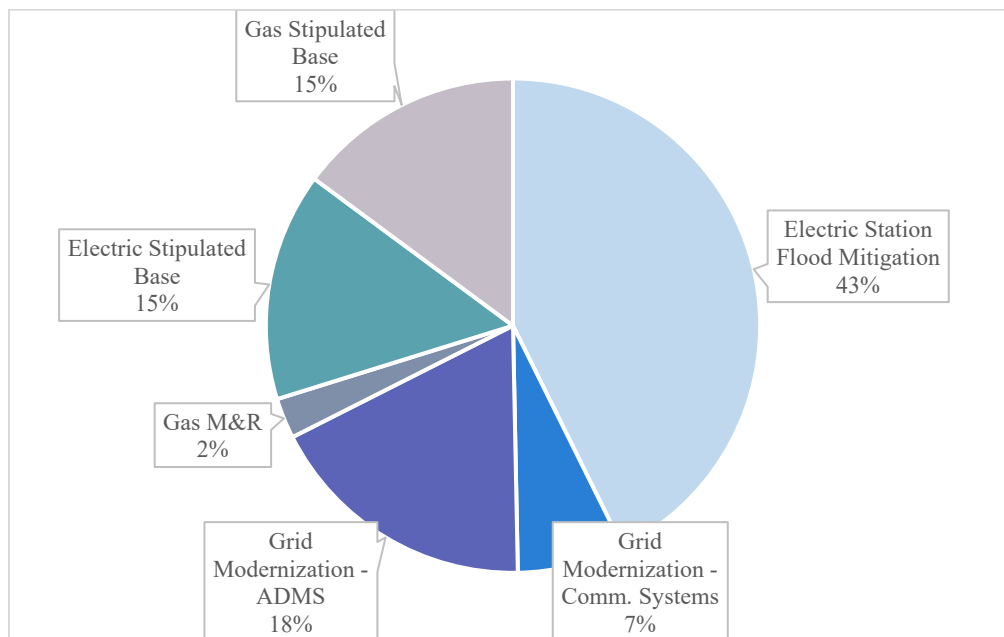
Subprogram	Q1 2022	Q4 2021	Total 2021	Total 2020	Total 2019 (Q4)	Total COR
<i>(in \$ thousands)</i>						
Electric Station Flood Mitigation	\$873.4	\$1,824.0	\$5,558.7	\$1,021.1	\$0	\$7,453.2
Contingency Reconfiguration	\$229.3	\$330.7	\$2,250.2	\$2,198.9	\$431.0	\$5,109.4
Grid Modernization – Communications	\$11.0	\$23.5	\$137.8	\$24.4	\$0	\$173.2
Grid Modernization – ADMS	\$0	\$0	\$0	\$0	\$0	\$0
Electric Stipulated Base	\$370.0	\$146.8	\$150.0	\$0	\$0	\$520.0
Gas M&R Station Upgrades	(\$0.4)	(\$2.2)	\$148.9	\$0	\$0	\$148.5
Gas Stipulated Base	\$431.5	\$196.1	\$196.1	\$0	\$0	\$627.6
<b>Total</b>	<b>\$1,914.8</b>	<b>\$2,518.9</b>	<b>\$8,441.7</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$14,031.9</b>

The COR charges for the first quarter of 2022 primarily reflect (i) approximately \$0.7 million of COR activities at the Market Street substation elimination project, including demolition of the building and foundations, (ii) approximately \$0.2 million related to partial removal of foundations at the Paramus lifecycle project, and (iii) approximately \$0.4 million related to removal of certain concrete structures, such as a former tank pad, at the Central M&R station.

## **2. Construction Work-in-Progress (CWIP) & In-Service Transfers**

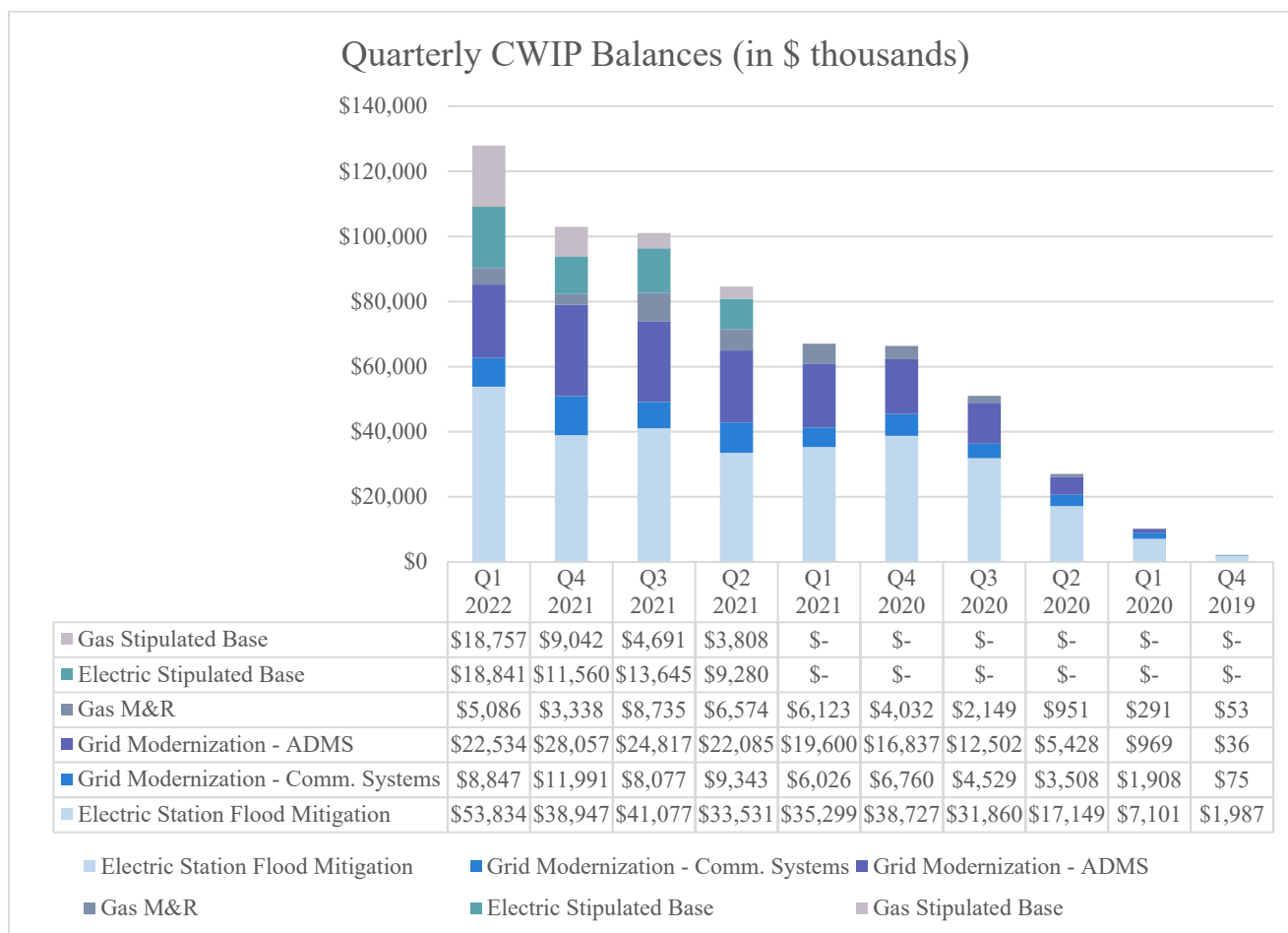
As of March 31, 2022, the ES 2 CWIP balance was \$127.9 million, compared to \$102.9 million as of December 31, 2021. The largest components of CWIP as of the end of the first quarter of 2022 were the Hasbrouck (\$10.0 million), State Street (\$9.9 million), Clay Street (\$9.1 million), and Waverly (\$7.9 million) Electric Station Flood Mitigation substation projects, the Central (\$11.6 million) and Camden (\$6.0 million) Gas M&R projects, the Hamilton (\$7.4 million) and Plainfield (\$5.3 million) substations Lifecycle projects, and work associated with the ADMS subprogram (\$22.5 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of March 31, 2022** below.

**Figure 1 – ES 2 CWIP as of March 31, 2022**



In addition, the **Figure 2 – ES 2 CWIP Balances by Subprogram as of March 31, 2022** below depicts the composition of end-of-quarter CWIP balances by subprogram for the first quarter of 2022, each quarter of 2021 and 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of March 31, 2022**



Transfers from CWIP to plant in service totaled \$15.1 million during the first quarter of 2022. During the first quarter of 2022, \$6.6 million of Grid Modernization fiber projects were transferred to plant in service, as well as \$8.4 million of assets associated with the ADMS subprogram. The ADMS assets transferred were hardware and software which were completed and successfully tested, and replaced the Company’s legacy Distribution Supervisory Control and Data Acquisition (DSCADA) system, which was at the end of its lifecycle. Total ES 2 transfers from CWIP have been \$85.9 million through March 31, 2022. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no allowance for funds used during construction (AFUDC) is recorded on these expenditures. This accounting treatment is in accord with generally accepted accounting principles and the Company’s accounting policies.

**3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for the ES 2 subprogram during the first quarter of 2022, the fourth quarter of 2021 (for comparative purposes), total AFUDC for the years 2021, 2020, and 2019, and total ES 2 Program AFUDC accrued through the end of 2021, is shown below **Table 5 – ES 2 Program AFUDC as of March 31, 2022.**



*Table 5 – ES 2 Program AFUDC as of March 31, 2022*

Subprogram	Q1 2022	Q4 2021	Total 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>					
Electric Station Flood Mitigation	\$759.0	\$564.3	\$2,281.2	\$936.5	\$9.9	\$3,986.6
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0	\$0
Grid Modernization – Communications	\$115.6	\$127.2	\$386.9	\$184.3	\$0.2	\$687.0
Grid Modernization – ADMS	\$385.7	\$411.0	\$1,365.6	\$352.7	\$0.1	\$2,104.1
Electric Stipulated Base	\$230.0	\$233.6	\$524.6	\$44.0	\$0	\$798.6
Gas M&R Station Upgrades (incl. Stip. Base)	\$208.3	\$133.2	\$470.0	\$70.0	\$0.2	\$748.5
<b>Total</b>	<b>\$1,698.6</b>	<b>\$1,469.3</b>	<b>\$5,028.3</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$8,324.8</b>

AFUDC accrued for ES 2 projects during the first quarter of 2022 increased over AFUDC accrued during the fourth quarter of 2021 primarily as the result of increases in total average CWIP balances, especially for the Electric Station Flood Mitigation and Gas M&R/Gas Stipulated Base projects.

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2022, the new AFUDC rate was calculated to be 6.92%, using the capital structure and component costs as of January 31, 2022. This rate is higher than the 2021 rate of 6.81%, primarily due to a zero balance of short-term in the 2022 calculation (vs. a \$44 million balance of short-term debt in 2021), and also to an 8% reduction in the Company’s amount of long-term debt outstanding (lowering the debt component of the capital structure from 45.5% to 44.8%), and a reduction in the embedded cost of long-term debt, both as used in the AFUDC calculation. In calculating the 2022 AFUDC rate, the Company used (i) a 3.63% embedded cost of long-term debt (vs. 3.85% in 2021), (ii) no short-term debt, and (iii) a cost of equity of 9.60% (unchanged from 2021).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the first quarter of 2022, based on data as of March 31, 2022, the recalculated weighted average AFUDC accrual rate (6.92%) did not meet this criterion to warrant changing from the annual rate (6.92%) in effect. Therefore, AFUDC was accrued during the first quarter of 2022 at the calculated rate of 6.92%.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Energy Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to ES 2 project costs in the first quarter of 2022 is consistent with the applicable dictates of the Stipulation entered into with respect to these ES 2 projects. The IM will continue to review future ES 2 Program AFUDC accruals for

consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### **4. Allocated Overheads**

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003 as updated in September 2022. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Program Overhead Allocations as of March 31, 2022** are the allocated overhead costs charged to ES 2 projects for the first quarter of 2022, the fourth quarter of 2021 (for comparative purposes), total 2021, total 2020, total 2019 and total ES 2 Program allocated overheads to date.

**Table 6 – ES 2 Program Overhead Allocations as of March 31, 2022**

<b>Subprogram</b>	<b>Q1 2022</b>	<b>Q4 2021</b>	<b>Total 2021</b>	<b>Total 2020</b>	<b>Total 2019 (Q4)</b>	<b>Total to Date</b>
	<i>(in \$ thousands)</i>					
<b>Electric Station Flood Mitigation</b>	\$2,185	\$1,902	\$14,368	\$14,023	\$287	\$30,863
<b>Contingency Reconfiguration</b>	\$843	\$2,516	\$14,420	\$17,109	\$3,415	\$35,787
<b>Grid Modernization – Communications</b>	\$1,802	\$2,692	\$9,171	\$3,625	\$12	\$14,610
<b>Grid Modernization – ADMS</b>	\$76	\$133	\$501	\$426	\$11	\$1,014
<b>Electric Stipulated Base</b>	\$1,449	\$807	\$2,123	\$259	\$0	\$3,832
<b>Gas M&amp;R Station Upgrades (incl. Stip. Base)</b>	\$197	\$250	\$735	\$291	\$15	\$1,238
<b>Total</b>	<b>\$6,552</b>	<b>\$8,300</b>	<b>\$41,318</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$87,344</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the first quarter of 2022 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most (approximately 77%) of the 2022 first quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The decrease in overhead costs for the first quarter of 2022 from the fourth quarter 2021 reflects the completion of recloser scope of work in the Contingency Reconfiguration subprogram early in the first quarter of 2022 and completion of the Grid Modernization recloser retrofit scope in the fourth quarter of 2021.

## D. System Performance

### 1. Current Reporting Quarter Major Events

During the first quarter of 2022, there were two Major Events reported in PSE&G's service territory, each involving a State of Emergency related to snowstorms experienced in the region.

The first one occurred from January 6-12, 2022, and saw 11,999 PSE&G customers experience service interruptions, while the second State of Emergency occurred from January 28-February 4, 2022, and saw 40,277 PSE&G customers experience service interruptions. Between these two storms, neither brought flooding issues to PSE&G substations or switching stations.

The IM has received PSE&G's report on the performance of its investments from these Major Events and has reproduced the results in **Table 7 – Q1 2022 Major Event Performance** below.

*Table 7 – Q1 2022 Major Event Performance*

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*	Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
ADA 8012	0.02574	0.00083	JAC 8023	0.05394	0.00221
ALD 8012	0.37227	0.00059	JAC 8033	0.00350	0.00266
ALD 8022	0.05448	0.00096	KIL 8012	0.21603	0.00000
<b>BEN 8011</b>	<b>0.00163</b>	<b>0.02166</b>	KIL 8034	0.44870	0.00016
<b>BLO 4009</b>		<b>0.03680</b>	<b>KIN 8011</b>		<b>0.01061</b>
BUS 8012	0.04422	0.00000	KIN 8014	0.00171	0.00031
CED 8011	0.05594	0.00475	KUS 8034	0.01739	0.00047
CED 8016	0.07119	0.00659	KUS 8045	0.02505	0.00000
CIN 8009	0.14835	0.00089	LAF 8013	0.00125	0.00000
CIN 8043	0.18459	0.00010	LAU 8011	0.30809	0.00157
<b>CLF 8015</b>	<b>0.01520</b>	<b>0.06820</b>	LAU 8021	0.44101	0.00206
CLK 8014	0.20056	0.00951	LAU 8025	0.02009	0.01377
CLK 8023	0.00019	0.00000	LAU 8035	0.29567	0.00000
CLK 8024	0.01526	0.00000	LAW 8023	0.01733	0.00049
CLK 8042	0.35206	0.00033	LCE 8033	0.42672	0.00964
COR 8042	0.05446	0.00000	<b>LEO 8004</b>	<b>0.00027</b>	<b>0.03249</b>
CRX 8008	0.24596	0.00065	LEO 8005	0.61152	0.00654
CUT 8004	0.18618	0.00071	LEO 8042		0.00000
CUT 8033	0.02286	0.00000	LEO 8043	0.07891	0.00037
<b>DEA 4009</b>		<b>0.00043</b>	LEV 8008	0.04412	0.00082
<b>DOR 8012</b>		<b>0.01776</b>	<b>LEV 8016</b>	<b>0.00021</b>	<b>0.00245</b>
DOR 8015	0.02588	0.00153	LIT 8001	0.02586	0.01920
<b>EAT 8023</b>		<b>0.04074</b>	LUM 8014	0.29932	0.00000
FAW 8016	0.12332	0.01109	MAD 8018	0.20763	0.00000
FAW 8023	0.02811	0.00060	MAR 8002	0.04356	0.00220
<b>FOR 4009</b>		<b>0.00738</b>	MAR 8004	0.02404	0.00603
FRA 8011		0.00000	MAR 8013	0.36502	0.00000
GBK 8021	0.06208	0.00000	MAY 8024	0.00558	0.00119
HID 8034	0.25737	0.00000	MCL 4008		0.00145
<b>HOE 8037</b>	<b>0.00573</b>	<b>0.02260</b>	MEA 8021	0.06020	0.00000
HOE 8047	0.05561	0.01624	MRO 8012	1.08732	0.00008
JAC 8022	0.04453	0.01036	MRO 8013	0.46710	0.00000

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
MTL 8013	0.02134	0.00000
MTL 8014	0.00035	0.00000
NED 8016	0.00729	0.00504
NEW 8025	0.00343	0.00000
<b>NEW 8041</b>	<b>0.00280</b>	<b>0.00550</b>
NEW 8042	0.05837	0.03241
<b>NOT 8022</b>	<b>0.00091</b>	<b>0.02638</b>
<b>PEH 8004</b>		<b>0.00053</b>
PIE 8013	0.02355	0.00465
<b>PIE 8022</b>		<b>0.00490</b>
POH 8015	0.12765	0.00000
RFL 8011	0.00742	0.00522
<b>RFL 8012</b>	<b>0.00235</b>	<b>0.03403</b>
<b>SAD 8002</b>		<b>0.00270</b>
<b>SAD 8032</b>		<b>0.01434</b>
SDH 8023	0.00860	0.00530
SDH 8026	0.01685	0.00003
<b>SDH 8031</b>	<b>0.01726</b>	<b>0.03019</b>
SMV 8011	0.00774	0.00231

Circuit	5 Year Baseline SAIDI*	Report Quarter SAIDI*
SMV 8014	0.06467	0.00549
SMV 8023	0.01943	0.00089
SOH 8022	0.16946	0.00000
SOS 8015	0.19304	0.02441
<b>SPF 8014</b>		<b>0.03536</b>
<b>SPF 8016</b>		<b>0.00078</b>
STP 8002	0.02921	0.01204
SUN 8013		0.00000
WAN 8014		0.00000
<b>WAN 8015</b>		<b>0.00056</b>
WAV 4004	0.09979	0.02798
WEW 8021	0.21824	0.00000
WEW 8042	0.01304	0.00163
WEW 8044	0.07375	0.00203
WFL 8034	0.04228	0.00690
WOR 8037	0.00017	0.00000
WOR 8039	0.18307	0.00068
*-Calculated in minutes.		

In the circuit data in **Table 7** above, the “0.00000” indicates an outage, but the value is beyond five decimal points captured by PSE&G, while blank cells indicate no outage in the 5-year window. Additionally, all circuits impacted by this Major Event had received investments during either the original Energy Strong Program or through ES 2. As indicated above, there were 100 circuits impacted by these two Major Events, 73 of which had a current Major Event System Average Interruption Duration Index (SAIDI) better than the 5-year Major Event SAIDI average, while 18 circuits had no Major Event outage within the 5-year comparison window, leaving nine circuits that both had a prior Major Event outage within the past 5-years and had worse performance during these Major Events.

Additional information on the nine circuits that had worse performance during these Major Events than the 5-year Major Event SAIDI average is provided below in **Table 8 – Q1 2022 Major Event Additional Information on Selected Circuits** (note that some of these circuits had more than one incident during the Major Event, resulting in a total of 17 incidents from these nine circuits).

**Table 8 – Q1 2022 Major Event Additional Information on Selected Circuits**

Circuit	5-Year Baseline SAIDI*	Report Quarter SAIDI*	Customers Impacted	Outage Duration*
BEN 8021	0.00163	0.02166	673	80
CLF 8015	0.01520	0.06820	1,156	108
CLF 8015	0.01520	0.06820	324	138
HOE 8037	0.00573	0.02260	133	413
HOE 8037	0.00573	0.02260	1	1,250
LEO 8004	0.00027	0.03249	1,224	66
LEV 8016	0.00021	0.00245	610	10
NEW 8041	0.00280	0.00550	253	29
NEW 8041	0.00280	0.00550	253	25
NOT 8022	0.00091	0.02638	305	193

Circuit	5-Year Baseline SAIDI*	Report Quarter SAIDI*	Customers Impacted	Outage Duration*
NOT 8022	0.00091	0.02638	6	516
NOT 8022	0.00091	0.02638	4	516
NOT 8022	0.00091	0.02638	3	516
RFL 8012	0.00235	0.03403	1,880	45
SDH 8031	0.01726	0.03019	480	79
SDH 8031	0.01726	0.03019	384	79
SDH 8031	0.01726	0.03019	453	15

\*-Calculated in minutes.

As indicated in **Table 8**, in addition to the original Energy Strong Program and ES 2 investments that increased sectionalizing of circuits to reduce the number of customers impacted by outages, the customer impact from a Major Event is also a function of the nature of the outages (extent of damage) and the location of damage relative to the various interrupting devices on the circuit, that is, reclosers or fuses. For some circuits, the 5-year baseline outage(s) were smaller or affected fewer customers, including different device operations (fuse with 10 customers vs. fuse with 150 customers) than the incident from the current Major Event being reported. Some circuits had more non-reclosing device operations in this Major Event (more fuse jobs) or more customers served by the circuit due to circuit rearrangements. Additionally, the circuits in **Table 8** with zero customers reflect the way the circuit is modeled in PSE&G’s connectivity model and the restoration/isolation steps used to restore service (e.g. isolating a section of cable for repair, or a transformer with no assigned customers). The cause of the individual circuit incidents also varied, with some related to spacer cable issues (CLF 8015), some related to transformer failures (HOE 8037), some related to vegetation issues (LEV 8016 and NEW 8041), and some related to broken or damaged poles (NEW 8041 and NOT 8022).

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of the first quarter of 2022 compared to the status as of the end of 2019, end of 2020, and end of 2021 is provided below in **Table 9 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of March 31, 2022**. Note that the Market Street and Ridgefield 4kV projects were previously placed in-service and closed out, thus there are no further updates to these projects (which have been further called out in italics in **Table 9**).

**Table 9 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of March 31, 2022**

Project	Plan Status Point	2019		2020				2021				2022				2023				2024	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS		CO						
	Dec. 2020		<u>KO</u>		<u>C</u>									CO							
	Dec. 2021		<u>KO</u>		<u>C</u>							<u>IS</u>							CO		
	Mar. 2022		<u>KO</u>		<u>C</u>							<u>IS</u>							CO		
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																			
	Dec. 2020			<u>KO</u>															IS		CO (Q2)
	Dec. 2021			<u>KO</u>								<u>C</u>						IS			CO (Q1)
	Mar. 2022			<u>KO</u>								<u>C</u>						IS			CO (Q1)

Project	Plan Status Point	2019		2020				2021				2022				2023				2024	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
3. Front Street^	Dec. 2019	<i>Not in ES 2 Program</i>																			
	Dec. 2020	<i>Not in ES 2 Program</i>																			
	Dec. 2021										<u>KO</u>					C				IS	CO (Q2)
	Mar. 2022										<u>KO</u>					C				IS	CO (Q2)
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>								C							IS	CO		
	Dec. 2020		<u>KO</u>										C					IS	CO		
	Dec. 2021		<u>KO</u>										C					IS	CO		
	Mar. 2022		<u>KO</u>										<u>C</u>					IS	CO		
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO								
	Dec. 2020			<u>KO</u>										C					IS	CO	CO (Q2)
	Dec. 2021			<u>KO</u>											C			IS	CO		
	Mar. 2022			<u>KO</u>												C			IS	CO	CO (Q2)
6. Lakeside Avenue	Dec. 2019*				KO				C											IS	CO (Q2)
	Dec. 2020						<u>KO</u>									C				IS	CO (Q2)
	Dec. 2021						<u>KO</u>									C				IS	CO (Q2)
	Mar. 2022						<u>KO</u>									C				IS	CO (Q1)
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																			
	Dec. 2020			<u>KO</u>		<u>C</u>												IS	CO		
	Dec. 2021			<u>KO</u>		<u>C</u>												IS	CO		
	Mar. 2022			<u>KO</u>		<u>C</u>												IS	CO		
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO										
	Dec. 2020			<u>KO</u>					C	OS		CO									
	Dec. 2021			<u>KO</u>							<u>C/OS</u>	<u>CO</u>									
9. Meadow Road	Dec. 2019	<i>Schedule Under Development</i>																			
	Dec. 2020			<u>KO</u>													C			IS	CO (Q2)
	Dec. 2021			<u>KO</u>												C				IS	CO (Q1)
	Mar. 2022			<u>KO</u>												C				IS	CO (Q1)
10. Orange Valley	Dec. 2019	<i>Schedule Under Development</i>																			
	Dec. 2020					<u>KO</u>												C			IS (Q1); CO (Q3)
	Dec. 2021					<u>KO</u>												C			IS (Q1); CO (Q3)
	Mar. 2022					<u>KO</u>												C		IS	CO (Q2)
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C													IS	CO		
	Dec. 2020			<u>KO</u>	<u>C</u>													IS	CO		
	Dec. 2021			<u>KO</u>	<u>C</u>													IS	CO		
	Mar. 2022			<u>KO</u>	<u>C</u>													IS	CO		
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>						C	OS		CO								
	Dec. 2020			<u>KO</u>	<u>C</u>					OS		CO									
	Dec. 2021			<u>KO</u>	<u>C</u>					<u>OS</u>		<u>CO</u>									
13. State Street	Dec. 2019		<u>KO</u>					C										IS			CO (Q1)
	Dec. 2020		<u>KO</u>						C					IS							CO (Q1)
	Dec. 2021		<u>KO</u>						<u>C</u>						IS				CO		
	Mar. 2022		<u>KO</u>						<u>C</u>							IS			CO		
14. Toney's Brook	Dec. 2019			<u>KO</u>						C										IS	CO (Q2)
	Dec. 2020			<u>KO</u>												C			IS		CO (Q2)
	Dec. 2021			<u>KO</u>												C			IS		CO (Q2)
	Mar. 2022			<u>KO</u>												C			IS		CO (Q2)

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
15. Waverly	Dec. 2019	Schedule Under Development																				
	Dec. 2020			<u>KO</u>			<u>C</u>													IS	CO (Q2)	
	Dec. 2021			<u>KO</u>			<u>C</u>														IS (Q3); CO (Q1 2025)	
	Mar. 2022			<u>KO</u>			<u>C</u>														IS (Q1); CO (Q3)	
16. Woodlynn	Dec. 2019		<u>KO</u>												C					IS	CO (Q2)	
	Dec. 2020		<u>KO</u>												C						IS	CO (Q2)
	Dec. 2021		<u>KO</u>												C						IS	CO (Q2)
	Mar. 2022		<u>KO</u>								<u>C</u>										IS	CO (Q2)

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.  
 ^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of the first quarter of 2022 is provided below in **Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2022.**

*Table 10 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2022*

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Key Drawing Review	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Scope Locked	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney’s Brook; Waverly; Woodlynn
Major Equipment Purchase Orders (POs)	18*	Academy Street; Clay Street; Front Street*; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley; Ridgefield 13kV*; State Street; Toney’s Brook; Waverly*; Woodlynn
Architect/ Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney’s Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynn <sup>1</sup>
Construction Start**	10	Academy Street; Clay Street; Hasbrouck Heights; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; State Street; Waverly; Woodlynn
In-Service	3	Academy Street; Market Street; Ridgefield 4kV
Partial In-Service	2	Leonia; Ridgefield 13kV

Activity	Total # of Projects	Specific Projects
<p>*-Three of the listed projects (Front Street, Leonia, Ridgfield 13kV, and Waverly) have two switchgears, thus the current count reflects 18 switchgears at 14 substations.  <sup>1</sup>-Indicates Burns &amp; McDonnell is serving as the A/E.  <sup>2</sup>-Indicates PSE&amp;G internal resources are serving as the A/E.  <sup>3</sup>-Indicates Black &amp; Veatch is serving as the A/E.                      **-Includes inside plant (IP) and/or outside plant (OP) construction.</p>		

Beyond the key activities summarized in **Table 10** above, **Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q2 2022** summarizes the upcoming planned activities for each project during the second quarter of 2022, including any carryover of activities from earlier periods.

**Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q2 2022**

Station	Upcoming Activities for Q2 2022	Carryover Activities from Q1 2022
1. Academy Street	<ul style="list-style-type: none"> <li>Complete closeout report</li> <li>Demo existing foundations, remove old equipment at existing Academy St. station</li> </ul>	<ul style="list-style-type: none"> <li>Continue civil and electrical construction</li> <li>Continue circuit cutovers</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Commence pile driving</li> </ul>	<ul style="list-style-type: none"> <li>Major municipal licenses and permits issuance</li> </ul>
3. Front Street	<ul style="list-style-type: none"> <li>Civil drawings Issued for Construction (IFC)</li> <li>Civil and electrical POs issued</li> <li>Start civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Continue engineering</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Start civil foundations</li> <li>Start electrical construction</li> </ul>	<ul style="list-style-type: none"> <li>Continue civil construction</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Civil and electrical construction out for bid</li> </ul>	<ul style="list-style-type: none"> <li>Continue engineering</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Civil PO issued</li> <li>Major state licenses and permits issued</li> </ul>	<ul style="list-style-type: none"> <li>Continue engineering</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Complete demo of existing feeder rows</li> <li>Receive switchgear #2</li> <li>Switchgear #2 circuits cutover to temporary switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Continue civil and electrical construction</li> </ul>
8. Market Street	<ul style="list-style-type: none"> <li>Complete demolition and site remediation</li> </ul>	<ul style="list-style-type: none"> <li>Continue demolition</li> </ul>
9. Meadow Road	<ul style="list-style-type: none"> <li>Civil, controls, and electrical drawings IFC</li> <li>Transition to 70% estimate</li> </ul>	<ul style="list-style-type: none"> <li>Continue engineering</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Controls drawings Issued for Review (IFR)</li> <li>Civil and electrical drawings IFC</li> <li>Site plan memorialization</li> <li>Civil and electrical construction out for bid</li> </ul>	<ul style="list-style-type: none"> <li>Continue engineering</li> </ul>
11. Ridgfield 13kV	<ul style="list-style-type: none"> <li>Complete circuit cutovers to new switchgear #2</li> <li>Complete circuit cutovers from existing switchgear #1 to temporary switchgear</li> <li>Demo existing switchgear #1</li> </ul>	<ul style="list-style-type: none"> <li>Continue construction</li> </ul>
12. Ridgfield 4kV	<ul style="list-style-type: none"> <li>Project complete</li> </ul>	<ul style="list-style-type: none"> <li>Project complete</li> </ul>
13. State Street	<ul style="list-style-type: none"> <li>Start civil foundations</li> </ul>	<ul style="list-style-type: none"> <li>Continue construction</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Continue engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continue engineering</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Receive phase 2 permits and hold pre-construction review with contractor</li> <li>Start phase 2 civil and electrical construction</li> <li>Set 26kV switchgear and commence commissioning</li> </ul>	<ul style="list-style-type: none"> <li>Continue construction</li> </ul>



Station	Upcoming Activities for Q2 2022	Carryover Activities from Q1 2022
16. Woodlynne	• Continue engineering	• Continue engineering

During the first quarter of 2022, PSE&G’s switchgear vendor, Powercon, informed PSE&G that due to various material and sub-supplier delays, the major equipment deliveries may be impacted beyond the delay previously identified to the Ridgefield 13kV switchgear. As of the end of the first quarter of 2022, Powercon advised PSE&G that delivery delays were now expected for the Hamilton switchgear (delayed two months) and the Clay Street regulators (delayed five months), while also possible for equipment on the Paramus, Plainfield, Toney’s Brook, Woodbury, and Woodlynne projects.<sup>1</sup> PSE&G was able to re-sequence the Hamilton schedule to mitigate the majority of this delay impact, while the Clay Street equipment was scheduled to be stored and has no schedule impact as a result at this time.

PSE&G receives weekly updates from Powercon on the current status of the deliveries, has initiated status calls to inquire further information on the current status, and has conducted site visits to gain further awareness on the status of this equipment. The overall status remains fluid, based on the current information from Powercon and this issue continues to be managed beyond the first quarter of 2022, but PSE&G has generally been able to mitigate any project impacts either from having the initial ship dates in advance of the project need dates, thereby building in float to the schedule, or by resequencing activities. One current exception is the Kingsland project, which saw its in-service date slip 94 days from June 30, 2023 to October 2, 2023 due to delays in the 13kV switchgear delivery on the Ridgefield 13kV project (for cost efficiencies, PSE&G plans to use the contingency switchgear from the Ridgefield 13kV project on Kingsland, which saves an estimated \$1.7 million compared to if this option had not been available and is also the same approach that was used for the Meadow Road contingency switchgear that will serve as the permanent switchgear on Leonia).

The current project estimates are shown below in **Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2022**. As discussed in **Section II.B.**, during the first quarter of 2022, PSE&G decided to consolidate the R&C on the individual projects into one R&C balance for the entire subprogram, thus there is no estimated R&C amount at the project level. **Table 12** also shows the current estimate level based on PSE&G’s estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of the first quarter of 2022.

**Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2022**

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,300,000	\$-	\$9,300,000	\$8,698,421	\$6,260,799	67%
2. Clay Street	Conceptual	\$30,800,000	\$-	\$30,800,000	\$31,302,000	\$8,846,983	29%
3. Front Street**	Study	\$25,900,000	\$-	\$25,900,000	\$25,693,360	\$2,781,438	11%

<sup>1</sup> The Hamilton, Paramus, Plainfield, and Woodbury projects are all within the Electric Stipulated Base scope of the ES 2 Program.

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
4. Hasbrouck Heights	Definitive	\$19,300,000	\$-	\$19,300,000	\$19,027,836	\$9,779,630	51%
5. Kingsland	Study	\$6,400,000	\$-	\$6,400,000	\$6,427,155	\$1,126,185	18%
6. Lakeside Avenue	Study	\$39,400,000	\$-	\$39,400,000	\$36,697,209	\$1,525,371	4%
7. Leonia	Definitive	\$24,900,000	\$-	\$24,900,000	\$24,952,795	\$16,979,539	68%
8. Market Street	Definitive	\$29,100,000	\$-	\$29,100,000	\$28,235,161	\$27,820,378	96%
9. Meadow Road	Study	\$7,200,000	\$-	\$7,200,000	\$7,782,150	\$1,331,494	19%
10. Orange Valley	Study	\$14,700,000	\$-	\$14,700,000	\$14,742,882	\$909,541	6%
11. Ridgefield 13kV	Conceptual	\$26,100,000	\$-	\$26,100,000	\$27,245,211	\$19,399,451	74%
12. Ridgefield 4kV	Definitive	\$20,800,000	\$-	\$20,800,000	\$20,707,403	\$20,689,404	100%
13. State Street	Definitive	\$19,600,000	\$-	\$19,600,000	\$19,837,904	\$9,584,815	49%
14. Toney's Brook	Conceptual	\$16,200,000	\$-	\$16,200,000	\$16,254,329	\$1,664,826	10%
15. Waverly	Study	\$36,200,000	\$-	\$36,200,000	\$37,648,812	\$7,412,639	21%
16. Woodlynne	Study	\$21,300,000	\$-	\$21,300,000	\$24,310,000	\$3,735,353	18%
ES 2 Station Placeholder	N/A	\$-	\$41,800,000	\$41,800,000	\$-	\$-	-
<b>Subprogram Total</b>		<b>\$347,200,000</b>	<b>\$41,800,000</b>	<b>\$389,000,000</b>	<b>\$349,562,629</b>	<b>\$139,847,775</b>	<b>36%</b>

\*-As discussed in **Section II.B.**, during the first quarter of 2022, PSE&G made the decision to hold risk and contingency at the subprogram level, which resulted in updated estimates being prepared for each project to reflect this change and other project-specific updates as warranted.

\*\* -The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

#### Findings & Observations

- Nine of the sixteen Electric Station Flood Mitigation projects had movement in the forecasted in-service date during the first quarter of 2022, with five advancing and four slipping. The biggest changes came on the following projects:

- Waverly (advancing 196 days from September 17, 2024 to March 5, 2024), driven by improvements in the construction schedule following the site plan approval in December 2021;
- Kingsland (slipping 94 days from June 30, 2023 to October 2, 2023), driven by delays to the 13kV switchgear delivery on the Ridgefield 13kV project (Kingsland plans to use the contingency switchgear from the Ridgefield 13kV project), which effectively reversed the 96 day schedule advancement reported in the fourth quarter of 2022;
- State Street (slipping 87 days from September 23, 2022 to December 19, 2022), driven by an updated Southern Division OP schedule for when the first circuit will be ready for energization, which is a prerequisite to place the IP substation assets in-service;
- Clay Street (slipping 84 days from November 7, 2022 to January 30, 2023), driven by delays in securing the above grade structures and electric construction permits; and
- Lakeside Avenue (advancing 51 days from November 8, 2023 to September 18, 2023), driven by updates to the construction schedule that allowed installation of the switchgear foundation to commence in 2022 instead of 2023.

The forecasted in-service date shifts to the other four projects (Front Street, Hasbrouck Heights, Leonia, and Ridgefield 13kV) were between six days and 21 days and reflective of actual project conditions experienced in the first quarter of 2022.

- No change in completed projects during the first quarter of 2022, with three of the 16 projects previously put in-service (Market Street and Ridgefield during the second quarter of 2021 and Academy Street in the fourth quarter of 2021). The next project forecasted to be placed in-service are the Leonia, Ridgefield 13kV, and State Street projects, each forecasted to go in-service during the fourth quarter of 2022.
- In conjunction with the change how the projects' R&C on the subprogram is managed (shifting from project-level to subprogram-level), PSE&G also updated the base project estimates for the Academy Street, Clay Street, Front Street, Hasbrouck Heights, Kingsland, Orange Valley, Ridgefield 13kV, State Street, Waverly, and Woodlynne projects (with Hasbrouck Heights and State Street also advancing to the Definitive stage). Collectively these changes in base estimates resulted in a \$15.0 million increase (with \$12.3 million of that increase attributed to the Waverly (\$6.8 million) and Woodlynne (\$5.5 million) projects).
- The overall subprogram forecast as of the end of the first quarter of 2022 increased \$1.7 million (or 0.5%) to \$349.6 million from the status as of the end of 2021. The forecast continues to remain under the current subprogram estimate of \$389.0 million (which includes \$41.8 million of contingency and also matches the Stipulation amount of \$389.0 million).
- With 40% of the subprogram forecast now spent (36% of the Stipulation amount), the IM has found nothing to date that would jeopardize the subprogram being completed on budget. However, the status of the later projects in this subprogram, and in particular Waverly, will have to continue to be closely followed to monitor if the projects can be completed within the ES 2 Program window. Other projects currently forecasted to be in-service in the final quarter of the Program (fourth quarter of 2023) include: Front Street, Kingsland, Orange Valley, and Woodlynne.

- Relative to the Waverly project, as of the end of the first quarter of 2022, the project continues to show a final in-service date in 2024, now at March 2024, which has advanced as PSE&G details the schedule following the site plan approval in December 2021. The Waverly project has multiple major asset in-service dates for the 26kV switchgear, 4kV switchgear, and three transformers, which are currently forecasted from September 2022 (26kV switchgear) to March 2024 (Transformer #3). PSE&G has informed the IM that the project team will continue to assess the project schedule and will be examining the potential to shorten durations and/or work activities concurrently to pull the final in-service date back into 2023. The IM will continue to review the proposed actions by PSE&G and report on the status in future IM quarterly reports,

### 1. Academy Street

During the first quarter of 2022, \$131,061 was spent on the Academy Street project compared to a forecast of approximately \$159,000, which brought the total spend to approximately \$6.3 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Academy Street estimate was revised with the base estimate decreasing from \$9.8 million to \$9.3 million, which was the result of efficiencies gained in the construction and commissioning activities.

This project was placed in-service on October 19, 2021, and there were minimal activities performed during the first quarter of 2022 other than the continued circuit cutovers. The elimination of equipment at the old substation site and related demolition activities are expected to commence in the second quarter of 2022.

The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023+
<i>Actuals</i>				<i>Forecast</i>			
\$150,398	\$4,224,550	\$1,754,789	\$131,061	\$185,615	\$206,354	\$2,045,653	\$-

Actuals to Date	Estimate	% of Actuals to Estimate
\$6,260,799	\$9,300,000	67%

### 2. Clay Street

During the first quarter of 2022, \$5,044,642 was spent on the Clay Street project compared to a forecast of approximately \$4.9 million, which brought the total spend to approximately \$8.8 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Clay Street estimate was revised with the base estimate increasing from \$30.3 million to \$30.8 million, which was the result of the change in Transmission & Distribution (T&D) surcharge methodology. The current forecast of \$31.3 million reflects changes in status, conditions, and assumptions since the time of the estimate update, including specifically an additional \$0.5 million over the current estimate based on additional civil work required (e.g. enlarging two manholes, extra shifts).

The forecasted in-service date for the Clay Street project as of the end of the first quarter of 2022 slipped 84 days from the status as of the end of 2021. This shift was the result of delays in securing the above grade structures and electrical construction permits and eliminates the advancement in the forecasted in-service date gained during the fourth quarter of 2021.

The primary activities on the Clay Street project during the first quarter of 2022 included the submittal of the below grade permit package and the partial delivery of the switchgear (with the regulators expected to be delivered in May 2022).

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$116,409	\$879,339	\$2,806,593	\$5,044,642	\$5,964,696	\$5,553,877	\$5,147,098	\$5,789,346

Actuals to Date	Estimate	% of Actuals to Estimate
\$8,846,983	\$30,800,000	29%

### 3. Front Street

During the first quarter of 2022, \$429,607 was spent on the Front Street project compared to a forecast of approximately \$465,000, which brought total spend to approximately \$2.8 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Front Street estimate was revised with the base estimate increasing from \$23.0 million to \$25.9 million, which was the result of higher than estimated switchgear award (\$2.1 million), higher than previously estimated construction supervision costs (\$0.5 million), and utilizing an external A/E firm rather than in-house engineering as initially planned (\$0.3 million). The switchgear was competitively bid and was awarded to the same vendor that was previously awarded the switchgear for other projects in the Program, suggesting current market conditions have contributed to the cost growth. Additionally, concerning the switch to an external A/E firm, PSE&G determined it did not have the internal resources to support the project schedule, thus after preliminary engineering was complete, it outsourced the detailed engineering scope.

The forecasted in-service date for the Front Street project as of the end of the first quarter of 2022 advanced 21 days from the status as of the end of 2021 to October 26, 2023.

The primary activities on the Front Street project during the first quarter of 2022 included:

- The continuation of the civil construction that commenced late in 2021;
- The receipt of the Soil Conservation District permit; and,
- Civil and electrical drawings IFR, and the civil and electrical contingency drawings IFC.

The actual spend by quarter for Front Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$-	\$-	\$2,351,832	\$429,607	\$785,609	\$4,512,621	\$1,982,573	\$15,631,119

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,781,438	\$25,900,000	11%

#### 4. Hasbrouck Heights

During the first quarter of 2022, \$4,323,599 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$4.5 million, which brought the total spend to approximately \$9.8 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Hasbrouck Heights estimate advanced to the Definitive stage with a \$1.2 million reduction to the base estimate (while the R&C was removed as discussed above), for a new estimate of \$19.3 million. The total forecast for the Hasbrouck Heights project decreased approximately \$1.4 million from the prior quarter for a current forecast of \$19.0 million. The decrease was driven by lower than previously estimated dewatering costs based on soil conditions in the specific construction area.

The forecasted in-service date for the Hasbrouck Heights project as of the end of the first quarter of 2022 advanced eight days from the status as of the end of 2021 to January 24, 2023.

Notable activities completed during the first quarter of 2022 included:

- The delivery of regulator sections to complete the switchgear delivery;
- The pre-construction licensing and permitting compliance and construction requirements review with the contractor; and,
- Commencement of civil construction and demolition of the existing control house.

The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$149,848	\$1,129,934	\$4,176,249	\$4,323,599	\$2,141,254	\$1,588,496	\$2,148,686	\$3,369,770

Actuals to Date	Estimate	% of Actuals to Estimate
\$9,779,630	\$19,300,000	51%

#### 5. Kingsland

During the first quarter of 2022, \$301,463 was spent on the Kingsland project compared to a forecast of approximately \$291,000, which brought the total spend to approximately \$1.1 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Kingsland estimate was revised with the base estimate increasing from \$5.4 million to \$6.4 million, which was the result of the change in T&D surcharge methodology.

The forecasted in-service date for the Kingsland project as of the end of the first quarter of 2022 slipped 94 days from the status as of the end of 2021 to October 2, 2023. This was driven by the delay to the 13kV switchgear delivery on the Ridgefield 13kV project as the Kingsland project plans to use the contingency switchgear from the Ridgefield 13kV project. This shift in the forecasted in-service date reverses the 96-day advancement gained during the fourth quarter of 2021.

During the first quarter of 2022, primary activity on the Kingsland project was the site plan submittal.

The actual spend by quarter for Kingsland as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$104,112	\$209,667	\$510,943	\$301,463	\$159,197	\$147,083	\$1,079,078	\$3,915,613

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,126,185	\$6,400,000	18%

## 6. Lakeside Avenue

During the first quarter of 2022, \$351,720 was spent on the Lakeside Avenue project compared to a forecast of approximately \$312,000. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Lakeside Avenue estimate was revised with no change to the base estimate (while the R&C was removed as discussed above). The total forecast for the Lakeside Avenue project decreased approximately \$2.7 million from the prior quarter for a current forecast of \$36.7 million. The decrease was driven by the civil construction bid being lower than previously estimated.

The forecasted in-service date for the Lakeside Avenue project as of the end of the first quarter of 2022 advanced 51 days from the status as of the end of 2021. This change was driven by an updated construction schedule that supported the commencement of the installation of the switchgear foundation in 2022 instead of 2023 as earlier planned, which allowed the in-service date to advance from November 2023 to September 2023.

Notable activities completed during the first quarter of 2022 included the IFC release of civil and electrical drawings, constructability reviews of the IP controls design drawing, and civil construction work out for bid.

The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$148,943	\$453,994	\$570,713	\$351,720	\$433,537	\$851,140	\$312,218	\$33,574,943

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,525,371	\$39,400,000	4%

## 7. Leonia

During the first quarter of 2022, \$1,789,112 was spent on the Leonia project compared to a forecast of approximately \$1.5 million, which brought the total spend to approximately \$17.0 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Leonia estimate was revised with no change to the base estimate (while the R&C was removed as discussed above).

The forecasted in-service date for the Leonia project as of the end of the first quarter of 2022 slipped six days from the status at the end of 2021.

Notable activities completed during the first quarter of 2022 included finishing the circuit cutovers on the 13kV switchgear #1 (which was placed in-service at the end of 2021) and the start of circuit cutovers from the existing switchgear #2 to the temporary switchgear.

The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$44,792	\$6,033,379	\$9,112,257	\$1,789,112	\$3,939,075	\$1,119,964	\$1,415,109	\$1,499,108

Actuals to Date	Estimate	% of Actuals to Estimate
\$16,979,539	\$24,900,000	68%

## **8. Market Street**

During the first quarter of 2022, \$808,096 was spent on the Market Street project compared to a forecast of approximately \$976,000, which brought the total spend to approximately \$27.8 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Market Street estimate was revised with no change to the base estimate (while the R&C was removed as discussed above).

Notable activities conducted during the first quarter of 2022 included the receipt of the building demolition permit and the commencement of the building demolition. Demolition and site remediation activities are expected to be completed during the second quarter of 2022.

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$251,193	\$16,079,601	\$10,681,487	\$808,096	\$325,784	\$47,000	\$42,000	\$-

Actuals to Date	Estimate	% of Actuals to Estimate
\$27,820,378	\$29,100,000	96%

## **9. Meadow Road**

During the first quarter of 2022, \$288,050 was spent on the Meadow Road project compared to a forecast of \$226,000, which brought the total spend to approximately \$1.3 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Meadow Road estimate was revised with no change to the base estimate (while the R&C was removed as discussed above).

The forecasted in-service date for the Meadow Road project as of the end of the first quarter of 2022 remained unchanged from the status as of the end of 2021 at September 22, 2023.

The primary activity during the first quarter of 2022 was the continued advancement on detailed engineering, which commenced during the fourth quarter of 2021.



The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$63,128	\$535,081	\$445,234	\$288,050	\$141,114	\$410,445	\$1,365,600	\$4,533,498

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,331,494	\$7,200,000	19%

### 10. Orange Valley

During the first quarter of 2022, \$111,565 was spent on the Orange Valley project compared to a forecast of approximately \$116,000, which brought the total spend to approximately \$910,000. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Orange Valley estimate was revised with the base estimate decreasing from \$16.0 million to \$14.7 million. This decrease to the base estimate was driven by lower than estimated A/E award (-\$0.5 million, revised 4kV equipment relocation estimate from the Division (-\$0.5 million), lower than estimated switchgear award (\$-0.2 million), and lower carrying cost (-\$0.1 million).

The forecasted in-service date for the Orange Valley project as of the end of the first quarter of 2022 remained unchanged from the status as of the end of 2021 at December 29, 2023.

During the first quarter of 2022, major activities on the Orange Valley project included the DEP permit submission, the IFR release of civil and electrical drawings, and constructability reviews of the civil and electrical design drawings.

The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$77,029	\$362,895	\$358,052	\$111,565	\$254,365	\$173,034	\$115,980	\$13,289,963

Actuals to Date	Estimate	% of Actuals to Estimate
\$909,541	\$14,700,000	6%

### 11. Ridgefield 13kV

During the first quarter of 2022, \$2,111,096 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$2.15 million, which brought the total spend to approximately \$19.4 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Ridgefield 13kV estimate was revised as the project transitioned to the definitive estimate phase with the base estimate increasing by \$0.8 million to \$26.1 million. This increase in the base estimate was driven by required rebuilds of two additional manholes and more Division underground labor required for cable pulling and cutovers. The current forecast of \$27.2 million reflects changes in status, conditions, and assumptions since the time of the estimate update, including specifically:

- More than anticipated dewatering and updated design of manhole modifications (\$0.5 million); and,
- More Division effort required on manhole expansion and circuits cutovers due to difficulty of breaking back the duct bank (high strength concrete) and working around the energized circuits (\$0.6 million).

The forecasted in-service date for the Ridgefield 13kV project as of the end of the first quarter of 2022 advanced seven days from the status as of the end of 2021 to December 13, 2022.

Notable activities completed during the first quarter of 2022 included the continued manhole modifications and circuit cutovers to the new switchgear #2.

The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$205,982	\$6,232,692	\$10,849,681	\$2,111,096	\$3,943,529	\$1,655,900	\$1,442,330	\$804,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$19,399,451	\$26,100,000	67%

### 12. Ridgefield 4kV

During the first quarter of 2022, \$42,604 was spent on the Ridgefield 4kV project compared to a forecast of \$48,000, which brought the total spend to approximately \$20.7 million. The project was placed in-service on May 16, 2021.

The project is essentially complete now with final closeout activities performed during the first quarter of 2022.

The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$143,414	\$11,239,534	\$9,263,852	\$42,604	\$18,000	-	-	-

Actuals to Date	Estimate	% of Actuals to Estimate
\$20,689,404	\$20,800,000	100%

### 13. State Street

During the first quarter of 2022, \$751,849 was spent on the State Street project compared to a forecast of approximately \$636,000, which brought the total spend to approximately \$9.6 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the State Street estimate advanced to the Definitive stage with a \$500,000 increase to the base estimate (while the R&C was removed as discussed above) for a new estimate of \$19.6 million.

The forecasted in-service date for the State Street project as of the end of the first quarter of 2022 slipped 87 days from the status as of the end of 2021 to December 19, 2022. This shift was driven by an updated Southern Division OP schedule for when the first circuit will be ready for energization, which is needed to place the IP substation assets in-service. The initial plan assumed that an overhead route out of the station would be used for this circuit, however during field inspections and detailed engineering it was determined this route was not feasible due to an existing pole in the area that was not known of at the time of initial design. The updated route exits the station at a different side of the station that does not permit overhead electrical infrastructure, thus requiring installation of an underground manhole and duct bank system.

Notable activities performed on State Street during the first quarter of 2022 included the submittal of the test pit permit package and the test pit scope of work sent out for bid. The test pits will inform the engineering design of the 4kV manhole and ductbanks required to be installed through congested underground streets in Camden, New Jersey.

The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$77,590	\$662,148	\$8,093,227	\$751,849	\$1,414,761	\$1,146,801	\$1,612,741	\$6,078,786

Actuals to Date	Estimate	% of Actuals to Estimate
\$9,584,815	\$19,600,000	49%

#### **14. Toney's Brook**

During the first quarter of 2022, \$432,853 was spent on the Toney's Brook project compared to a forecast of approximately \$403,000, which brought the total spend to approximately \$1.7 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Toney's Brooke estimate was revised with no change to the base estimate (while the R&C was removed as discussed above).

The forecasted in-service date for the Toney's Brook project as of the end of the first quarter of 2022 remains unchanged from the status as of the end of 2021 at April 21, 2023.

The primary activities on during the first quarter of 2022 involved the continued advancement of detailed engineering.

The actual spend by quarter for Toney's Brook as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$211,940	\$373,096	\$941,519	\$138,270	\$116,627	\$994,981	\$6,016,246	\$7,461,650

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,664,826	\$16,200,000	10%

**15. Waverly**

During the first quarter of 2022, \$432,853 was spent on the Waverly project compared to a forecast of approximately \$403,000, which brought the total spend to approximately \$7.4 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Waverly estimate was revised with the base estimate increasing from \$29.4 million to \$36.2 million. This \$6.8 million increase in the base estimate was driven by:

- Equipment awards higher than estimated (\$2.9 million);
- Additional charges for site plan revisions and related extended project duration (\$2.6 million), comprised of:
  - Additional engineering (\$0.8 million);
  - Revised fencing and external façade improvements (\$1.0 million); and,
  - Additional charges for extended project duration (\$0.8 million).
- Change in T&D surcharge methodology (\$1.1 million); and,
- Cost of laydown area higher than estimated (\$0.2 million).

The current forecast of \$37.6 million reflects changes in status, conditions, and assumptions since the time of the estimate update, including specifically:

- Civil construction PO awarded higher than estimated (\$1.3 million); and,
- Cost of switchgear storage (\$0.1 million).

The forecasted in-service date for the Waverly project as of the end of the first quarter of 2022 continued to advance as the project team details the construction schedule following the site plan approval in December 2021. The current forecasted in-service date advanced 196 days from the status as of the end of 2021 to March 5, 2024.

The primary activities performed during the first quarter of 2022 included the issuance of the Soil Conservation District permit, phase 2 electrical work awarded, and phase 3 civil work awarded.

The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$103,748	\$2,460,815	\$4,415,223	\$432,853	\$7,176,838	\$2,542,671	\$2,473,315	\$18,043,349

Actuals to Date	Estimate	% of Actuals to Estimate
\$7,412,639	\$36,200,000	21%

## 16. Woodlynne

During the first quarter of 2022, \$1,639,443 was spent on the Woodlynne project compared to a forecast of approximately \$1.4 million, which brought the total spend to approximately \$3.7 million. As part of the Electric Station Flood Mitigation subprogram re-estimating process that was completed in the first quarter of 2022, the Woodlynne estimate was revised with the base estimate increasing from \$15.8 million to \$21.3 million. This \$5.5 million increase in the base estimate was driven by:

- Higher than estimated civil construction award (\$3.9 million);
- Higher than estimated switchgear award (\$0.8 million); and,
- Increased carrying cost (\$0.8 million).

The current forecast of \$24.3 million reflects changes in status, conditions, and assumptions since the time of the estimate update, including specifically:

- Material and civil construction POs higher than estimated and bids (\$0.4 million); and,
- Revised Division estimate (\$2.6 million).

The forecasted in-service date for the Woodlynne project as of the end of the first quarter of 2022 remains unchanged from the status as of the end of 2021 at October 10, 2023.

Design work continued to progress during the first quarter of 2022 and the civil construction work commenced later in the quarter.

The actual spend by quarter for Woodlynne as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$110,982	\$993,298	\$991,630	\$1,639,443	\$660,694	\$1,078,409	\$6,335,309	\$12,500,235

Actuals to Date	Estimate	% of Actuals to Estimate
\$3,735,353	\$21,300,000	18%

## B. Contingency Reconfiguration

During the first quarter of 2022, the final reclosers were installed and commissioned, completing this scope of the Contingency Reconfiguration subprogram. **Table 13 – ES 2 Program Recloser Status as of March 31, 2022** provides a summary of the recloser aspect of the Contingency Reconfiguration subprogram, indicating the number of units completed during the first quarter of 2022 and for the total program, showing the status of engineering, installation, and commissioning.

*Table 13 – ES 2 Program Recloser Status as of March 31, 2022*

Type	Engineering Packages Completed (1 recloser ea.)		Reclosers Installed		Reclosers Commissioned	
	Q1 Qty.	Program Total	Q1 Qty.	Program Total	Q1 Qty.	Program Total
13kV	6	954	21	954	22	954
4kV	-2	513	2	513	3	513
<b>Total</b>	4	1,467	23	1,467	25	1,467

As shown in **Table 13**, the final 23 reclosers were installed during the first quarter of 2022 along with the commissioning of 25 reclosers (which included two installed at the end of 2021). The reduction of two 4kV recloser engineering packages recorded during the first quarter of 2022 was the result of a reconciliation of the engineering packages, which identified two previously completed engineering packages in the Southern Division that were abandoned after completion of the engineering due to the location no longer being feasible as a result of a change in field conditions stemming from other completed projects that altered the original design condition. PSE&G also removed the costs associated with these two engineering packages from the ES 2 Program.

As previously discussed in prior IM reports, the Fuse Saver pilot program commenced in November 2020 and was primarily completed in January 2021. In total, this phase of the Fuse Saver pilot program included the installation and commissioning of 80 Fuse Saver devices with an additional 33 units installed during the second half of 2021 to allow PSE&G to capture additional cost and performance data from the existing inventory of Fuse Savers. During execution of the pilot program, PSE&G observed factors that will help it prepare for execution of the full Fuse Saver scope, including installation specifications (the remote control unit (RCU) must be placed directly below the Fuse Saver to avoid communications issues), and cost elements for some of the locations (new poles, traffic control, etc.). The observed experience from the 113 units installed in the pilot program saw communications issues present at 10 locations, with the external antenna addressing the communication issues at added cost of approximately \$1,100 per unit (plus some additional labor to install the antenna). While monitoring performance of the installed Fuse Savers, PSE&G experienced other communication issues between the Fuse Savers and the RCU, wherein the Supervisory Control and Data Acquisition (SCADA) communication indicated a false open/close alarm on some of the devices. Siemens has provided a prototype Fuse Saver to address the communication issues, which PSE&G will monitor to ensure it addresses the issues prior to placing additional orders. Because of this, commencement of the full Fuse Saver scope was pushed to 2022 and is expected to commence during the second quarter of 2022.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of March 31, 2022**. This table also shows the forecasted final in-service dates as of the end of 2021 to show movement to the forecast as of the end of the first quarter of 2022.

**Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of March 31, 2022**

Scope & Division		Q4 2021 Forecasted Completion Date	Q1 2022 Forecasted Completion Date
Reclosers	Central	1/31/2022	1/31/2022 (Actual)
	Metro	12/31/2021	12/31/2021 (Actual)
	Palisades	2/28/2022	1/31/2022 (Actual)
	Southern	1/31/2022	1/31/2022 (Actual)
Fuse Savers	Central	9/30/2023	9/30/2023
	Metro	10/31/2023	10/31/2023
	Palisades	12/30/2023	11/30/2023
	Southern	9/30/2023	9/30/2023

As shown in **Table 14**, the Central, Palisades, and Southern Divisions completed their respective recloser scopes at the end of January 2022 (while the Metro Division had previously completed its recloser scope in December 2021). The forecasted in-service dates for the Fuse Saver scope remained unchanged from the prior quarter for three of the four Divisions, with the Palisades Division advancing its forecasted final

in-service date to the end of November 2023, and each Division forecasted to complete this scope between September-November 2023.

The Contingency Reconfiguration subprogram costs through the end of the first quarter of 2022 are presented in **Table 15 – ES 2 Contingency Reconfiguration Costs as of March 31, 2022**.

**Table 15 – Contingency Reconfiguration Costs as of March 31, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Total to Date	Forecast	% of Actuals to Forecast
		Actuals						
Reclosers	Central	\$2,737,167	\$12,050,820	\$9,852,812	\$880,537	\$25,521,336	\$25,521,336	100%
	Metro	\$2,231,431	\$10,726,610	\$11,368,409	\$150,325	\$24,476,775	\$24,476,776	100%
	Palisades	\$2,515,569	\$12,119,436	\$8,280,522	(\$66,771)	\$22,848,756	\$22,848,756	100%
	Southern	\$2,081,220	\$12,405,684	\$14,038,043	\$530,051	\$29,054,997	\$29,054,997	100%
Fuse Savers	Central	\$9,970	\$789,937	\$854,118	\$249,268	\$1,903,293	\$10,376,485	18%
	Metro	\$7,557	\$561,915	\$507,742	\$160,801	\$1,238,016	\$11,787,531	11%
	Palisades	\$7,468	\$522,454	\$577,113	\$127,207	\$1,234,242	\$9,566,946	13%
	Southern	\$9,792	\$859,014	\$578,217	\$245,990	\$1,693,013	\$11,640,444	15%
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$46,056,977</b>	<b>\$2,277,408</b>	<b>\$107,970,428</b>	<b>\$145,273,272</b>	<b>74%</b>

As shown in **Table 15**, while the Contingency Reconfiguration subprogram forecast remained relatively unchanged from the prior quarter (in total, decreased approximately \$500,000), the Central and Palisades Division forecasts for the Fuse Savers scope experienced more variance with the Central Division Fuse Savers scope decreasing by approximately \$1.7 million and the Palisades Division Fuse Savers scope increasing by approximately \$1.1 million. These forecast changes were driven by an adjustment to the number of Fuse Saver units assigned to each Division with the reallocation assigning a more equal number of units to each Division. In addition, the negative actuals recorded in the first quarter of 2022 in the Palisades Division for the reclosers scope was the net result of credits received for eight reclosers removed from the subprogram.

**Findings & Observations:**

- The final 23 reclosers on the subprogram were installed during the first quarter of 2022. With these final installations, the total number of reclosers installed in the ES 2 Program was 1,467 (954 13kV devices and 513 4kV devices).
- The status of the Fuse Savers scope of the subprogram remained relatively unchanged, with no installations in the period and no change in the forecasted final in-service dates for three of the four the Divisions, while the Palisades Division advanced its forecasted final in-service date approximately 30 days. The Fuse Savers costs incurred in the first quarter of 2022 related to advancing and completing more engineering packages in advance of the upcoming installations.
- The Contingency Reconfiguration subprogram forecast continued to remain relatively static as of the end of the first quarter of 2022 from the end of 2021, with the total forecast decreasing by approximately \$494,000 (or 0.3%) to \$145.3 million.

**C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of

dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system. The primary scopes within the Grid Modernization – Communication System include installation of the wireless network, fiber installations at selected stations, fiber cutovers at selected station with existing fiber to the PSE&G fiber network, and retrofitting existing reclosers and RTUs with updated routers. A summary of the status of these primary scopes of work as of the end of the first quarter of 2022 is as follows:

- Wireless network: placed in-service as of December 16, 2021; remaining work involves providing radios to support the installation of Fuse Savers.
- Fiber installations and cutovers: 27 out of 38 fiber installation projects completed and 11 out of 12 fiber cutover projects completed.
- Retrofitting existing reclosers: completed as of the fourth quarter of 2021 with a total of 2,318 retrofit reclosers installed.
- Retrofitting RTUs: 85 substation retrofits completed (75 during the first quarter of 2022) out of a current scope of 218 substations.

The retrofit RTU scope increased from 196 substations to 218 substations following PSE&G’s determination to include not only substations served by Verizon plain old telephone service (POTS) (which represented the 196 substations), but also those served by Verizon 4G service (which represented the 22 additional stations). This brings the scope in alignment with PSE&G’s objective of replacing all third party RTU communication services within its system.

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with three of 41 installation projects since removed due to the scheduled elimination of the targeted substations or the intended redundancy benefits not achievable after site review. The list of identified fiber installation and cutover projects is presented in **Table 16 – ES 2 Program Fiber Projects by Division as of March 31, 2022**.

*Table 16 – ES 2 Program Fiber Projects by Division as of March 31, 2022*

<b>Division</b>	<b>Fiber Installation*</b>	<b>Fiber Cutover*</b>
<b>Central</b>	<u>Cranford</u> ; <u>Elizabeth Sub HQ</u> ; <u>Rahway</u> ; <u>Hadley Road HQ</u> ; <u>Roselle</u> ; <u>Central HQ</u> ; <u>Carteret</u> ; <u>Edison</u> ; <u>Keasby</u> ; <u>Mechanic Street</u> ; <u>First Street</u> ; <u>Lehigh Avenue**</u>	<u>Elizabeth</u> ; <u>Henry Street</u>
<b>Metro</b>	<u>East Orange</u> ; <u>Metro HQ</u> ; <u>Bloomfield</u> ; <u>Central Avenue</u> ; <u>Haldeon</u> ; <u>Irvington</u> ; <u>Irvington Sub HQ</u> ; <u>Montclair</u> ; <u>South Orange</u> ; <u>Norfolk Street</u> ; <u>Waverly**</u>	-
<b>Palisades</b>	<u>Bergen Point</u> ; <u>Hackensack Sub HQ</u> ; <u>Fort Lee</u> ; <u>Harrison</u> ; <u>Ridgewood</u> ; <u>West New York</u> ; <u>Palisades HQ</u> ; <u>Culver Avenue</u> ; <u>Morgan Street</u>	<u>Tonnelle Avenue</u> ; <u>Spring Valley Road</u> ; <u>Union City</u> ; <u>Fairview</u> ; <u>Polk Street</u> ; <u>West Orange</u>
<b>Southern</b>	<u>Southern HQ</u> ; <u>Princeton</u> ; <u>Chauncey Street</u> ; <u>Bordentown</u> ; <u>Haddon Heights**</u> ; <u>Thirty Second Street**</u>	<u>Delair</u> ; <u>East Riverton</u> ; <u>Riverside</u> ; <u>Mount Holly</u>
<b>Total</b>	<b>38 projects</b>	<b>12 projects</b>
*Projects underlined have been placed in-service. **-Identified for removal from subprogram during Q2 2022 (see Section IV).		



During the first quarter of 2022, seven additional fiber installation projects (Central HQ, Culver Ave, Fort Lee, Hadley Road HQ, Haledon, Ridgewood, and West New York) and two additional fiber cutover projects (Fairview and Polk Street) were placed in-service. This brought the total projects in-service as of the end of the first quarter of 2022 to 27 for the fiber installation projects and 11 for the fiber cutover projects. **Table 17 – ES 2 Program Fiber Projects Status as of March 31, 2022** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of the first quarter of 2022 with the projects in italics representing those placed in-service.

**Table 17 – ES 2 Program Fiber Projects Status as of March 31, 2022**

Project Name	Q1 2022 Status
<i>Fiber Installation Projects</i>	
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>
Bloomfield	Continued construction
<i>Bordentown</i>	<i>In-Service (Q3 2021)</i>
Carteret	IP work preparation underway; awaiting railroad permits
<i>Central Ave</i>	<i>In-Service (Q3 2021)</i>
<i>Central HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Chauncey Street</i>	<i>In-Service (Q3 2021)</i>
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>
<i>Culver Ave</i>	<i>In-Service (Q1 2022)</i>
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>
Edison	IP work preparation underway; awaiting railroad permits
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>
<i>First Street</i>	<i>In-Service (Q3 2021)</i>
<i>Fort Lee</i>	<i>In-Service (Q1 2022)</i>
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>
Haddon Heights	Preliminary engineering*
<i>Hadley Rd HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Haledon</i>	<i>In-Service (Q1 2022)</i>
<i>Harrison</i>	<i>In-Service (Q3 2021)</i>
Irvington	<i>In-Service (Q4 2021)</i>
Irvington Sub HQ	<i>In-Service (Q4 2021)</i>
Keasbey	IP work preparation underway; awaiting railroad permits
Lehigh Avenue	Preliminary engineering*
Mechanic Street	IP work preparation underway; awaiting railroad permits
<i>Metro HQ</i>	<i>In-Service (Q1 2021)</i>
Montclair	Continued construction
Morgan Street	<i>In-Service (Q4 2021)</i>
<i>Norfolk St</i>	<i>In-Service (Q3 2021)</i>
Palisades HQ	IP work preparation underway; awaiting railroad permits
<i>Princeton</i>	<i>In-Service (Q3 2021)</i>
<i>Rahway</i>	<i>In-Service (Q1 2021)</i>
<i>Ridgewood</i>	<i>In-Service (Q1 2022)</i>
<i>Roselle</i>	<i>In-Service (Q2 2021)</i>
<i>So Orange</i>	<i>In-Service (Q3 2021)</i>
<i>Southern HQ</i>	<i>In-Service (Q4 2020)</i>
Thirty Second Street	Preliminary engineering*
Waverly	Preliminary engineering*
<i>West New York</i>	<i>In-Service (Q1 2022)</i>

Project Name	Q1 2022 Status
<b>Fiber Cutover Projects</b>	
Delair	In-Service (Q4 2020)
East Riverton	In-Service (Q4 2020)
Elizabeth	In-Service (Q1 2021)
Fairview	In-Service (Q1 2022)
Henry St	In-Service (Q3 2021)
Mount Holly	In-Service (Q4 2020)
Polk Street	In-Service (Q1 2022)
Riverside	In-Service (Q4 2020)
Spring Valley Rd	In-Service (Q1 2021)
Tonnelle Ave	In-Service (Q4 2020)
Union City	In-Service (Q1 2021)
West Orange	Completion dependent upon redundant link to Montclair substation being ready (two redundant fiber links required for each router to support reliability guidelines)
<b>Substation Remote Terminal Unit (RTU) Cutovers</b>	
Scope: 218 units	85 cutovers completed
*-Project identified for removal from subprogram after the current reporting period, see Section IV for additional information.	

The Grid Modernization – Communication System subprogram costs through the end of the first quarter of 2022 are presented in **Table 18 – ES 2 Grid Modernization – Communication System Costs as of March 31, 2022.**

**Table 18 – ES 2 Grid Modernization – Communication System Costs as of March 31, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Total to Date	Total Forecast	% of Actuals to Forecast
		Actuals						
Retrofit Reclosers	Central	\$0	\$884,278	\$3,304,797	\$215,275	\$4,404,349	\$6,700,030	66%
	Metro	\$0	\$818,620	\$2,362,779	\$135,374	\$3,316,774	\$5,593,403	59%
	Palisades	\$0	\$825,174	\$3,115,474	\$186,059	\$4,126,707	\$6,387,150	65%
	Southern	\$0	\$929,058	\$3,862,816	\$194,826	\$4,986,700	\$7,259,273	69%
Fiber	Central	\$1,691	\$2,418,851	\$5,973,655	\$1,581,263	\$9,975,460	\$10,727,513	93%
	Metro	\$1,457	\$1,866,697	\$3,086,096	\$1,576,328	\$6,530,578	\$7,717,563	85%
	Palisades	\$1,582	\$2,046,762	\$3,603,134	\$656,307	\$6,307,785	\$6,398,139	99%
	Southern	\$4,731	\$910,483	\$2,466,477	\$96,721	\$3,478,412	\$4,236,200	82%
	Cutovers*	\$0	\$876,502	\$607,056	\$851,293	\$2,334,850	\$3,249,145	72%
<b>Wireless Network</b>		\$74,306	\$6,035,441	\$1,282,986	\$61,558	\$7,454,290	\$7,875,891	95%
<b>Bulk Purchase**</b>		\$0	\$1,524,874	(\$520,766)	\$641,029	\$1,645,137	\$0	-
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$29,144,503</b>	<b>\$6,196,033</b>	<b>\$54,561,043</b>	<b>\$66,144,306</b>	<b>82%</b>
*-Includes fiber communication cutovers and substation RTU cutovers (the latter of which began having spend in Q1 2021).								
**-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.								

As shown in **Table 18**, the total forecast for the Grid Modernization – Communication System subprogram increased to \$66.1 million as of the end of the first quarter of 2022, up approximately \$2.5

million from the \$63.6 million forecast as of the end of 2021. This increase was primarily driven by the following factors:<sup>2</sup>

- Fiber – Central Division: forecast increased \$1.2 million, comprised of:
  - Added Lehigh Avenue project to the subprogram scope/forecast: \$0.5 million.
  - Added scope required for battery installation at Edison: \$0.2 million.
  - Additional OP Division labor required: \$0.3 million.
  - Updated vendor quotes on IP finishing work (Keasbey, Mechanic Street, and Edison): \$0.2 million.
- Fiber – Palisades Division: forecast increased \$0.2 million, comprised of West New York to Polk Street trailing underground chargers higher than initially forecasted.
- Fiber – Southern Division: forecast increased \$0.9 million, comprised of:
  - Added Haddon Heights project to the subprogram scope/forecast: \$0.7 million.
  - Higher project management costs than previously forecasted: \$0.2 million.
- Substation RTU Cutovers: forecast increased \$0.2 million, comprised of an increase in actual costs per unit driven by the complexity of antenna installation at certain stations with a need for Division labor not previously identified.

#### Findings & Observations:

- The retrofit substation RTU scope ramped up in the first quarter of 2022, with 75 substations completed during the quarter (and 85 total completed) out of a currently forecasted scope of 218 substations.
- Seven additional fiber installation projects and two additional fiber cutover projects were placed in-service during the first quarter of 2022, bringing the total number of projects in-service to 27 fiber installation projects and 11 fiber cutover projects. The fiber scope is expected to be completed by the end of 2022 (see also **Section IV** concerning changes to the fiber scope that occurred after the first quarter of 2022).
- The forecast for the Grid Modernization – Communication system subprogram increased by approximately \$2.5 million from the status as of the end of 2021 to \$66.1 million as of the end of the first quarter of 2022. The forecast increase was driven by higher costs in the current fiber projects (cost drivers on the individual projects included additional scope, additional labor requirements, and updated vendor quotes).

#### D. Grid Modernization – ADMS

The Grid Modernization – ADMS scope is split between three primary sections: DMS/DERMS, the OMS, and ADMS platform upgrades. The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the first quarter of 2022 are presented as follows:

<sup>2</sup> Note: part of the forecast increase included adding the Lehigh Avenue and Haddon Heights projects to the subprogram forecast, these projects were subsequently removed from the subprogram during the second quarter of 2022 due to budgetary constraints, see **Section IV**.

## **DMS/DERMS**

- **Scope:** Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program's objectives and use cases.
- **Q1 2022 Activities:**
  - Prepared and sent laptop to Open Systems International, Inc. (OSII) for use with testing.
  - Completed Sprint 14 & 15.
  - Completed schedule review.
  - Reorganized review of variance documentation with OSII.
- **Forecasted Completion as of the end of the first quarter of 2022:** 12/19/2022.

## **OMS**

- **Scope:** Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G's network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years' worth of existing OMS data will be migrated into the new system as well.
- **Q1 2022 Activities:**
  - Completed virtual private network (VPN) weather interface.
  - Completed onsite meetings to review SAP claims requirements and configurations.
  - Completed Sprint 12 and Sprint 12 retrospective.
  - Completed onsite visit for schedule planning for damage records, referrals, and reporting.
  - Completed reviews with cyber security.
  - Completed first and second round of converted data and feedback sessions.
  - Completed Sprint 13.
- **Forecasted Completion as of the end of the first quarter of 2022:** 4/30/2023.

## **ADMS Platform**

- **Scope:** Replace, enhance, and expand the existing DSCADA platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- **Q1 2022 Activities:**
  - Completed System Acceptance Testing (SAT) and analysis of results.
  - Completed vulnerability testing.

- Completed deconstruction of Edison Production rack.
- Imaged workstations for Divisions in preparation for training.
- Actual In-Service Date: 1/28/2022.

The currently forecasted in-service dates for the OMS scopes slipped 128 days from the status as of the end of 2021. This shift in the forecasted completion of the OMS scope was the result of rescheduling the “go live” date due to delays in the OMS interface alignment with Mobile Work Management System (MWMS), which was driven by delays in the in-service date of the MWMS (which is not part of the ES 2 Program). The ADMS Platform was placed in-service on January 28, 2022.

The Grid Modernization – ADMS subprogram costs through the end of the first quarter of 2022 are presented in **Table 19 – ES 2 Grid Modernization – ADMS Costs as of March 31, 2022**.

*Table 19 – ES 2 Grid Modernization – ADMS Costs as of March 31, 2022*

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$36,213	\$16,447,624	\$9,854,442	\$3,197,877	\$2,764,836	\$2,474,510	\$6,673,902	\$2,076,489

Actuals to Date	Forecast	% of Actuals to Forecast
\$29,536,155	\$43,525,894	68%

Findings & Observations:

- The first of three primary ADMS components was placed in-service during the first quarter of 2022 (the ADMS Platform). While the remaining DMS/DERMS and OMS are currently forecasted to be placed in-service in December 2022 and April 2023, respectively. The OMS scope was rescheduled during the first quarter of 2022 to account for delays to the MWMS (outside of ES 2, but interface alignment required to complete the OMS scope).
- The Grid Modernization – ADMS forecast as of the end of the first quarter of 2022 increased very slightly (approximately \$32,000) from the end of 2022, with the total forecast remaining at \$43.5 million.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric Outside Plant-Higher Design Standards (OP-HDS) and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>3</sup> The OP-HDS scope is expected to commence in the summer of 2022 with detailed engineering on a number of circuits that meet the upgrade criteria and reflective of the circuit prioritization, the OP-HDS work is expected to continue through December 2023. In accordance with what the Stipulation provides, PSE&G plans to

<sup>3</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. In the second quarter of 2021 a fifth station, State Street, was approved by the URB for its outside plant scope to be transferred from the related Electric Station Flood Mitigation project to the life cycle scope. These five stations and their current estimate compared to the actuals to date are provided in **Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of March 31, 2022**.

**Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of March 31, 2022**

Project	Estimate Level	Base	Risk & Contingency*	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date**
1. Hamilton	Study	\$16,200,000	-	\$16,200,000	\$7,274,152	45%	10/28/2022 (↓ +16)
2. Paramus	Study	\$20,500,000	-	\$20,500,000	\$8,861,478	43%	11/14/2022 (↑ -45)
3. Plainfield	Study	\$22,700,000	-	\$22,700,000	\$5,948,906	26%	11/8/2022
4. Woodbury	Study	\$17,800,000	-	\$17,800,000	\$3,625,514	20%	12/30/2022 (↓ +3)
5. State Street (OP)	Study	\$19,700,000	-	\$19,700,000	\$607,150	3%	12/19/2022 (↑ -132)
R&C Balance	-	-	\$3,100,000	\$3,100,000	-	-	-

\*-As discussed in **Section II.B.**, during the first quarter of 2022, PSE&G made the decision to hold risk and contingency at the subprogram level, which resulted in updated estimates being prepared for each project to reflect this change and other project-specific updates as warranted.

\*\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 20**, of the five life cycle station upgrade projects, the Paramus and State Street OP projects saw respective forecasted in-service dates advance during the first quarter of 2022, while the Hamilton and Woodbury projects saw their respective forecasted in-service dates slip during the first quarter of 2022. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

**Findings & Observations:**

- Construction continued on the Hamilton, Paramus, Plainfield, and Woodbury projects, while engineering continued to advance on the State Street OP project (which is expected to commence construction in the fourth quarter of 2022).
- There was movement in the forecasted in-service dates for four of the five life cycle upgrade projects during the first quarter of 2022. For Hamilton and Woodbury, the changes were relatively minor (slipping 16 days and 3 days, respectively). While the Paramus project advanced

45 days driven by better than planned construction progress and the State Street OP project advanced 132 days based on an updated schedule from Southern Division on the completion of the circuit, which is required to complete the project.

- The cost forecasts for the five life cycle upgrade projects collectively increased \$1.3 million (or 1.3%) from the status as of the end of 2021 to a total forecast of \$98.6 million as of the end of the first quarter of 2022. This increase was distributed fairly evenly across the individual projects.

### 1. Hamilton

During the first quarter of 2022, \$3,770,758 was spent on the Hamilton project against a forecast of approximately \$3.7 million. This brought total spend on the project to approximately \$7.3 million through the end of the first quarter of 2022. The forecasted in-service date for the Hamilton project slipped 16 days from the status as of the end of 2021 to October 28, 2022.

Notable activities conducted during the first quarter of 2022 included the completion of the switchgear foundations and partial delivery of the switchgear (with regulators expected to be delivered in April 2022).

The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>			<i>Forecast</i>				
\$0	\$362,372	\$3,141,022	\$3,770,758	\$3,315,653	\$2,406,733	\$2,269,989	\$1,583,299

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$7,274,152	\$16,200,000	\$16,849,828	45%

### 2. Paramus

During the first quarter of 2022, \$952,513 was spent on the Paramus project against a forecast of approximately \$922,000. This brought total spend on the project to approximately \$8.9 million through the end of the first quarter of 2022. The forecasted in-service date for the Paramus project advanced from December 29, 2022, as of the end of 2021, to November 14, 2022, as of the end of the first quarter of 2022. This advancement in the forecasted in-service date was driven by construction progressing better than anticipated.

Notable activities conducted during the first quarter of 2022 on the Paramus project included:

- Pre-construction license and permit compliance/construction requirement review with contractor completed;
- All circuit cutovers completed on the contingency switchgear; and,
- Existing feeder row demolition commenced.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>			<i>Forecast</i>				
\$0	\$840,200	\$7,068,765	\$952,513	\$6,053,040	\$1,458,915	\$1,094,131	\$3,510,574

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$8,861,478	\$20,500,000	\$20,978,138	43%

### 3. Plainfield

During the first quarter of 2022, \$1,682,480 was spent on the Plainfield project against a forecast of approximately \$1.7 million. This brought total spend on the project to approximately \$5.9 million through the end of the first quarter of 2022. The forecasted in-service date for the Plainfield project as of the end of the first quarter of 2022 remained unchanged from the prior quarter at November 8, 2022.

Notable activities conducted during the first quarter of 2022 included the award of the electrical construction scope of work, which is expected to commence in June/July 2022.

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$0	\$682,325	\$3,584,101	\$1,682,480	\$6,147,328	\$5,429,853	\$1,710,404	\$3,479,832

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$5,948,906	\$22,700,000	\$22,716,323	26%

### 4. Woodbury

During the first quarter of 2022, \$1,460,525 was spent on the Woodbury project against a forecast of approximately \$1.1 million. The variance between forecasted and actual spend in the first quarter was driven by additional soil loadouts and more water sampling needed as well as contracted material handling and control work completed ahead of schedule. This brought the total spend on the project to approximately \$3.6 million through the end of the first quarter 2022. The forecasted in-service date for the Woodbury project slipped from December 27, 2022 as of the end of 2021 to December 30, 2022 as of the end of the first quarter of 2022.

Notable activities conducted during the first quarter of 2022 included the start of preliminary civil manhole/conduit work.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$0	\$551,165	\$1,613,823	\$1,460,525	\$5,006,277	\$3,307,944	\$2,436,417	\$3,958,921

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$3,625,514	\$17,800,000	\$18,335,072	20%



### 5. State Street (Outside Plant)

During the first quarter of 2022, \$395,903 was spent on the State Street (OP) project against a forecast of approximately \$291,921. The variance between forecasted and actual spend in the first quarter was driven by the A/E completing more design and engineering work and more test pits completed than planned. This brought the total spend on the project to approximately \$607,000. The forecasted in-service date for the State Street OP project advanced from April 30, 2023, as of the end of 2021, to December 19, 2022, as of the end of the first quarter of 2022. This shift was driven by the Southern Division committing to completing the State Street OP 4kV circuit by the end of 2022.

Notable activities conducted during the first quarter of 2022 included the continuation of detailed engineering.

The actual spend by quarter for State Street (OP) as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$0	\$0	\$211,247	\$395,903	\$884,618	\$2,397,665	\$1,969,139	\$13,854,017

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$607,150	\$19,700,000	\$19,712,589	3%

### F. Gas M&R Station Upgrades

During the first quarter of 2022, three additional projects commenced construction activities (Camden, Central, and East Rutherford), while the Westampton project continued closeout and restoration activities following it being placed in-service in October 2021. **Table 21 – ES 2 Gas M&R Summary Status as of March 31, 2022** below provides the currently approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

*Table 21 – ES 2 Gas M&R Summary Status as of March 31, 2022*

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Study	\$24,300,000	\$5,000,000	\$29,300,000	\$5,812,073	20%	Dec 2022 (↑)
2. Central*	Study	\$23,900,000	\$5,100,000	\$29,000,000	\$12,016,345	41%	Nov 2023 (↓)
3. East Rutherford	Study	\$13,800,000	\$2,700,000	\$16,500,000	\$3,865,788	23%	Dec 2022 (↑)
4. Mount Laurel	Study	\$9,400,000	\$2,000,000	\$11,400,000	\$1,031,112	9%	Nov 2023 (↓)
5. Paramus*	Study	\$11,500,000	\$2,200,000	\$13,700,000	\$1,134,392	8%	Dec 2023
6. Westampton	Study	\$9,100,000	\$900,000	\$10,000,000	\$8,180,404	82%	Oct 2021
<b>Subprogram Total</b>		<b>\$92,000,000</b>	<b>\$17,900,000</b>	<b>\$109,900,000</b>	<b>\$32,040,114</b>	<b>29%</b>	<b>Dec 2023</b>

\*-Included in the Stipulated Base.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

The in-service dates for the Central and Mount Laurel projects as of the end of the first quarter of 2022 slipped approximately 11 months to November 30, 2023, which was driven by a change in schedule priorities for 2022 work. This shift improves the balancing of the spend across the Program duration and avoids outage constraints that require the projects' in-service dates to occur prior the winter heating season. PSE&G anticipates no significant cost increases as a result of this shift in schedule prioritization. As previously reported, the Westampton project was placed in-service as of October 22, 2021.

Findings & Observations:

- The primary efforts to date on the subprogram continue to be primarily related to pre-construction planning efforts, including completing and submitting site plan packages, ordering long lead materials, and awarding the construction work. The Camden, Central, and East Rutherford projects each started the construction phase during the first quarter of 2022.
- The in-service dates of two projects (Central and Mount Laurel) shifted out approximately 11 months to November 2023, which reflected a change in the execution strategy of these projects to better balance the subprogram spend across the full Program and to avoid outage constraints. No meaningful cost impacts are anticipated as a result of this shift.
- The subprogram forecast increased from \$107.8 million as of the end of 2021 to \$128.3 million as of the end of the first quarter of 2022. The largest contributor for this increase was a \$10.2 million increase to the Camden project forecast (while the Central, East Rutherford, and Mount Laurel projects each saw forecast increases of approximately \$3.3 to \$3.6 million). The forecast increase was driven by additional costs for materials, equipment, and construction based on purchase orders and bid proposals compared to the initial project estimates.
- The IM has found nothing to date that would jeopardize the subprogram being completed on time, particularly given the advancement of the final projects in the subprogram (Central, Mount Laurel, and Paramus). The continued cost pressures noted above have pushed the subprogram forecast to approximately \$27.3 million above the Stipulation budget of \$101 million.

1. Camden

During the first quarter of 2022, \$2,791,701 was spent on the Camden project compared to a forecast of approximately \$2.9 million, which brought the total spend to approximately \$5.8 million. The forecasted in-service date for the Camden project as of the end of the first quarter of 2022 advanced 14 days from the status as of the end of 2021 to December 16, 2022.

Notable activities completed on the Camden project during the first quarter of 2022 included:

- Received foundation and structural permits;
- Awarded construction contract and held construction kickoff meeting;
- IFC mechanical drawings released; and,
- Site construction commenced.

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$13,326	\$859,350	\$2,147,696	\$2,791,701	\$10,015,027	\$12,778,011	\$6,840,283	\$1,154,606

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$5,812,073	\$29,300,000	\$36,600,000	16%

## 2. Central

During the first quarter of 2022, \$7,112,617 was spent on the Central project compared to a forecast of approximately \$7.5 million, which brought the total spend to approximately \$12.0 million. The variance in first quarter spend was largely driven by later than expected receipt of final building drawings, which impacted the construction permits and the start of construction. The forecasted in-service date for the Central project as of the end of the first quarter of 2022 slipped 335 days from the status as of the end of 2021 to November 30, 2023 due to a reprioritization of the sequencing of the projects.

Notable activities completed on the Central project during the first quarter of 2022 included:

- Removed portions of existing underground pipelines due to interferences;
- Received majority of steel pipe and some fittings to the site;
- Set up laydown areas;
- Received IFC drawings from the building manufacturer;
- Installed safety fence along access road; and,
- Started demolition and civil work.

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$6,869	\$670,582	\$4,226,277	\$7,112,617	\$6,629,415	\$3,939,027	\$2,447,316	\$12,367,898

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$12,016,345	\$29,000,000	\$37,400,000	32%

## 3. East Rutherford

During the first quarter of 2022, \$1,551,290 was spent on the East Rutherford project compared to a forecast of approximately \$1.3 million, which brought the total spend to approximately \$3.9 million. The variance in first quarter spend was driven by the contractor mobilizing to site and receiving materials earlier than anticipated, which also locked in material pricing to avoid price increases. The forecasted in-service date for the East Rutherford project as of the end of the first quarter of 2022 advanced 14 days from the status as of the end of 2021 to December 16, 2022.

Notable activities completed on the East Rutherford project during the first quarter of 2022 included:

- IFC drawings received from A/E;
- Order placed for small diameter pipe and fittings;
- Began receiving materials on site;
- Installed site fence around perimeter and construction trailer delivered;
- Began performing test pits on site; and,
- Began submitting material test records for approval.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$9,010	\$521,865	\$1,783,623	\$1,551,290	\$5,547,595	\$7,740,480	\$3,843,635	\$702,502

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$3,865,788	\$16,500,000	\$21,700,000	18%

#### 4. Mount Laurel

During the first quarter of 2022, \$135,639 was spent on the Mount Laurel project compared to a forecast of approximately \$96,000, which brought the total spend to approximately \$1.0 million. The forecasted in-service date for the Mount Laurel project as of the end of the first quarter of 2022 slipped 335 days from the status as of the end of 2021 to November 30, 2023 due to a reprioritization of the sequencing of the projects.

Notable activities completed on the Mount Laurel project during the first quarter of 2022 included the conditional approval of the site plan by the township planning board.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>				<i>Forecast</i>			
\$5,965	\$362,167	\$527,341	\$135,639	\$58,457	\$77,421	\$102,058	\$11,430,952

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$1,031,112	\$11,400,000	\$12,700,000	8%

#### 5. Paramus

During the first quarter of 2022, \$94,755 was spent on the Paramus project compared to a forecast of approximately \$140,000, which brought the total spend to approximately \$1.1 million. The forecasted in-service date for the Paramus project as of the end of the first quarter of 2022 remains unchanged from the forecast as of the end of 2021 at December 29, 2023.

Notable activities completed on the Paramus project during the fourth quarter of 2021 included:

- Soil erosion permit approved; and,
- Paramus zoning board approved the project.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$8,842	\$462,452	\$568,344	\$94,755	\$150,612	\$118,427	\$694,206	\$9,402,362

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$1,134,392	\$13,700,000	\$11,500,000	10%

## 6. Westampton

During the first quarter of 2022, \$178,124 was spent on the Westampton project compared to a forecast of approximately \$130,000, which brought the total spend to approximately \$8.2 million. The Westampton was placed in-service as of October 22, 2021, remaining activities include site restoration and final punch list items that will carry over into 2022.

During the first quarter of 2022, notable activities on the Westampton project included:

- New perimeter fence installed; and,
- Security cameras/security system installed.

The remaining items to closeout the project include corrosion protection work and final punch list items relating to site paving/grading. PSE&G expects these activities to be fully complete around July.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>				<i>Forecast</i>			
\$8,395	\$1,032,670	\$6,961,216	\$178,124	\$187,876	\$33,985	\$34,045	\$0

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$8,180,404	\$10,000,000	\$8,436,311	97%

## **IV. Additional Information Following the end of the First Quarter of 2022**

While the vast majority of this IM report is focused on the activities and status of the ES 2 Program during the first quarter of 2022, the timing of certain Program elements and information provided by PSE&G naturally carried over beyond the end of the calendar quarter. Such information will generally be covered in the next IM quarterly report but given the importance of some of this information as it pertains to the ES 2 Program, the IM has provided additional remarks to provide a more complete view of these mitigation changes based on the available information as of the date of this IM 2022 First Quarter Report.

### **Grid Modernization – Communication System**

During the second quarter of 2022, PSE&G updated its fiber project listing based on the current status of scope and cost refinement across the projects and a prioritization of projects based on the available budget. As a result, four additional fiber projects were removed from the subprogram (Haddon Heights, Lehigh Avenue, Thirty-Second Street, and Waverly). Of these projects selected for removal, Waverly was

the only one that was identified in the ES 2 filing and its removal was based on the determination that Waverly project under the Electric Station Flood Mitigation subprogram included fiber installation for the IP scope (with base capital funding provided for the OP scope). For the other three projects selected for removal, each was part of the additional locations reviewed by PSE&G for inclusion in the subprogram as part of the full review of all PSE&G substations and Operation Centers previously conducted (see Section IV.A. in the IM 2020 Third Quarter Report). Ultimately, the available budget did not allow these additional projects to be included within the ES 2 Program, though PSE&G has indicated to the IM that the Haddon Heights and Lehigh Avenue fiber projects will be executed outside of the ES 2 Program.

The Stipulation approved \$72 million to be invested in the Grid Modernization – Communication System subprogram, but otherwise did not specify specific fiber projects. Following the earlier detailed review conducted by PSE&G to verify current status and communication needs and the current adjustment based on the available budget, the fiber scope now contains fiber installations at 27 distribution substations and eight Operation Centers, in addition to fiber cutovers to stations with existing fiber and the retrofitting of substation RTUs.

This complete list of fiber projects, including those originally proposed, those added (including those preliminarily added and later removed), and those removed, along with their corresponding cost data has been assembled in **Table 22 – ES 2 Fiber Project Status as of March 2023**.

*Table 22 – ES 2 Fiber Project Status as of March 2023*

Project Name	ES 2 Program Status	Budget*	Forecast	Actual
Bergen Point	Original	\$750,000	\$701,459	\$702,777
Bloomfield	Original	\$300,000	\$1,482,687	\$869,907
Bordentown	Added	\$0	\$682,285	\$687,515
Carteret	Added	\$0	\$753,816	\$974,932
Central Ave	Original	\$480,000	\$112,759	\$113,360
Central HQ	Original	\$570,000	\$1,800,274	\$1,881,116
Chauncey Street	Original	\$840,000	\$875,395	\$870,023
Cranford	Original	\$300,000	\$357,876	\$363,658
Culver Ave	Added	\$0	\$832,145	\$861,758
East Orange	Original	\$480,000	\$1,143,568	\$1,026,100
Edison	Added	\$0	\$1,070,066	\$1,484,149
Elizabeth	Removed**	\$210,000	\$0	\$0
Elizabeth Sub HQ	Original	\$555,000	\$749,712	\$750,226
First Street	Original	\$300,000	\$618,118	\$618,401
Fort Lee	Original	\$480,000	\$1,263,941	\$1,262,214
Hackensack	Removed	\$480,000	\$0	\$0
Hackensack Sub HQ	Original	\$825,000	\$595,412	\$619,055
Haddon Heights	Added & Removed***	\$0	\$738,942	\$0
Hadley Rd HQ	Added	\$0	\$1,460,786	\$1,583,448
Haledon	Original	\$300,000	\$567,567	\$610,260
Harrison	Original	\$300,000	\$576,805	\$576,805
Howell Street	Added & Removed	\$0	\$0	\$0
Irvington	Original	\$300,000	\$174,633	\$175,166
Irvington Sub HQ	Original	\$300,000	\$601,657	\$634,347
Keasbey	Original	\$840,000	\$784,856	\$1,051,327
Lakeside	Removed	\$570,000	\$0	\$0
Lehigh Avenue	Added & Removed***	\$0	\$818,014	\$0

Project Name	ES 2 Program Status	Budget*	Forecast	Actual
Market Street	Removed	\$390,000	\$0	\$0
Mechanic Street	Original	\$1,200,000	\$925,256	\$1,047,867
Metro HQ	Original	\$300,000	\$582,568	\$583,020
Montclair	Original	\$840,000	\$2,147,782	\$2,696,966
Morgan Street	Added	\$0	\$518,181	\$534,856
Nineteenth Ave.	Removed	\$390,000	\$0	\$0
Norfolk St	Original	\$300,000	\$186,265	\$187,317
Orange Valley	Removed	\$300,000	\$0	\$0
Palisades HQ	Original	\$255,000	\$409,690	\$616,105
Princeton	Original	\$300,000	\$1,132,137	\$1,129,128
Rahway	Original	\$390,000	\$1,026,601	\$1,075,955
Ridgewood	Original	\$390,000	\$483,367	\$491,302
Roselle	Original	\$390,000	\$428,183	\$430,033
So Orange	Original	\$390,000	\$312,099	\$314,997
Southern HQ	Original	\$570,000	\$708,350	\$672,201
State Street	Removed	\$390,000	\$0	\$0
Thirty Second Street	Added & Removed	\$0	\$0	\$0
Toney's Brook	Removed	\$480,000	\$0	\$0
Waverly	Removed***	\$300,000	\$439,640	\$0
West New York	Original	\$300,000	\$997,565	\$930,181

\*-Only the projects from the initial list had established budgets.

\*\* -The Elizabeth Substation retained a fiber cutover scope that was executed as part of the ES 2 Program.

\*\*\*-These projects were/will be completed outside of the ES 2 Program.

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2022 FIRST QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

APRIL 17, 2023

PEGASUS GLOBAL HOLDINGS, INC. ®



## Questions & Comments to the IM 2022 First Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
S-INF-1	<p><b>Reference Q1 2022 Report, Page 16</b></p> <p>Please provide additional details explaining how PSE&amp;G’s plan to use the contingency switchgear from the Ridgefield 13kV project on the Kingsland project will result in cost efficiencies. Please also indicate when PSE&amp;G expects to obtain the contingency switchgear to be used on the Ridgefield 13kV project.</p>	<p>The use of the Kingsland and Meadow Road switchgears as temporary (contingency) switchgears on the Ridgefield 13kV and Leonia projects, respectively, resulted in cost savings approximately equal to the purchase price of two 13kV sheltered aisle switchgears.</p> <p>Each project would have had to spend an additional \$1.69 million (the actual price for the switchgears at Kingsland and Meadow Road) if PSE&amp;G had not utilized the switchgears at Ridgefield 13kV and Leonia in this approach as these projects both required contingency switchgear to facilitate a construction sequence that maintained reliable supply to the customers.</p>	<p><b>Section III.A.</b></p>
S-INF-2	<p><b>Reference Q1 2022 Report, Page 20, Front Street Substation</b></p> <p>Regarding the Front Street Substation project:</p> <ol style="list-style-type: none"> <li>a. Please provide additional details about the “higher than estimated switchgear award (\$2.1 million)”, including the budgeted and actual cost of the switchgear. Please also describe the competitive bidding process utilized.</li> <li>b. Please explain why PSE&amp;G elected to utilize an external A/E firm rather than in-house engineering as initially planned (resulting in an increase of \$0.3 million).</li> </ol>	<p>The contract award price for the permanent switchgear was \$5,540,793, with PSE&amp;G adding a 10% management reserve to its cost account not part of the purchase order to cover unforeseen changes in scope (project complexities or field conditions). This was \$1.2 million above PSE&amp;G’s estimate (with the contingency switchgear accounting for an additional \$0.9 million above PSE&amp;G’s estimate). This appears to generally reflect market conditions as similar switchgear ordered earlier in the Program (pre-Covid 19) from the same vendor was approximately \$1.4 million less than this current order.</p> <p>As with other switchgear procurements, PSE&amp;G utilized a competitive bid process for the award of the Front Street switchgear. This included requests for quotations issued to three vendors, with two submitting bids (PowerCon and Powell). The evaluation criteria included: delivery date, cost, PSE&amp;G specification, testing and commissioning, technical exceptions, installations support, warranty and other terms and conditions, training, previous project performance, and supplier diversity spend.</p> <p>Based on PSE&amp;G’s evaluation of the bids, it found Powell had a slightly more competitive commercial proposal (approximately \$5.1 million against approximately \$5.5 million), but PowerCon had a superior technical proposal. Additionally, while both vendors have past experience with PSE&amp;G, Powell provided the Waverly 4kV switchgear, which saw approximately \$300K in change</p>	<p><b>Section III.A.3.</b></p>

ID #	Question/Comment	IM Response	Report Changes
		<p>orders and were anticipated to be expected on this switchgear as well if Powell was awarded the work. Thus, based on the superior technical proposal and the past experience, PSE&amp;G awarded this switchgear to PowerCon.</p> <p>Concerning the switch from internal resources to an external A/E, PSE&amp;G determined it did not have the resources available to support the project schedule. PSE&amp;G did perform the preliminary engineering on this project before outsourcing the detailed engineering.</p>	
S-INF-3	<p><b>Reference Q1 2022 Report, Page 25, State Street Substation</b>  Regarding the State Street Substation project, please provide additional details explaining why the first circuit will not be ready for energization when originally expected (resulting in a delay of 87 days).</p>	<p>When the project started field inspections and detailed engineering, it was determined that the initially planned overhead route was not feasible due to an existing overhead pole in the area that was not known at the time of the initial design.</p> <p>The updated route changes to exit the station at a different side of the station, which required installation of an underground manhole and duct bank system as overhead electrical infrastructure is not permitted on this side of the station.</p>	<b>Section III.A.13.</b>
S-INF-4	<p><b>Reference Q1 2022 Report, Page 26, Waverly Substation</b>  Regarding the Waverly Substation project:</p> <ol style="list-style-type: none"> <li>a. Please provide additional details about the “Additional charges for site plan revisions and related extended project duration (\$2.6 million)”.</li> <li>b. Please estimate the total costs associated with site plan revisions to date.</li> </ol>	<p>PSE&amp;G’s \$2.6 million estimate of the costs resulting from the revised site plan is comprised of: additional engineering (\$0.8 million), revised fencing and external façade improvements (\$1.0 million), and additional charges for extended project duration (\$0.8 million).</p> <p>Concerning the actual site plan revisions, based on the feedback received from the City of Newark Zoning Board and others involved in the community outreach, PSE&amp;G redesigned the street facing frontages of the project to have a fence with a brick finish such that they appear to be walls, with the two entrances gates having a matching color scheme. The fences have locations for artwork to be placed with lighting for nighttime viewing. Additionally, the portions of the isolation walls that are visible were redesigned to match the brick and related features and finishes of the street facing fences. The new site plan also included the addition of street trees, shrubs and landscaping in the sidewalk area that will not interfere with the electric utilities.</p>	<b>Section III.A.15.</b>
S-INF-5	<p><b>Reference Q1 2022 Report, Page 29, Contingency Reconfiguration Subprogram</b>  Regarding the Fuse Savers scope, please indicate if there were any adjustments during Q1 2022 to the total number of Fuse Saver units to be installed.</p>	<p>During the first quarter of 2022, there was no change to the targeted number of Fuse Savers to be installed in the Program, which remained at 1,713 units.</p> <p>PSE&amp;G’s approach has been to review the actual cost data and related installation status information on a quarterly basis to update the installation plan and overall quantity of units planned for the Program.</p>	No change

ID #	Question/Comment	IM Response	Report Changes
S-INF-6	<p><b>Reference Q1 2022 Report, Page 30, Grid Modernization – Communication System Subprogram</b>  Regarding the Retrofit Substation Remote Terminal Unit (RTU) scope:</p> <ol style="list-style-type: none"> <li>a. What is attributed to the scope increasing from 196 substations (as indicating in the IM’s Q4 2021 Report, Page 32) to 218 substations?</li> <li>b. Please compare the cost of the current scope to the cost of the originally budgeted scope.</li> </ol>	<p>The retrofit substation RTU scope increased from 196 to 218 to support PSE&amp;G’s objective of replacing all third party RTU communication service within its system rather than an earlier assumption to replace only those relying on plain old telephone service (POTS).</p> <p>The 196-unit scope was based on the substations served on Verizon POTS lines, while the 218-unit scope adds 22 other substations that are served by Verizon 4G service.</p> <p>The original budget for the substation RTU scope was \$1,629,394 to replace 218 units. The actual costs per unit have increased by approximately 15% over the original budget driven by additional work to install antennas on the external of the control houses at some substations.</p>	<b>Section III.C.</b>
S-INF-7	<p><b>Reference Q1 2022 Report, Page 32, Grid Modernization – Communication System Subprogram</b>  Please provide the anticipated in-service date of the fiber cutover project “West Orange.”</p>	<p>The West Orange project was successfully cutover to the TFI network on August 11, 2022.</p>	No change
S-INF-8	<p>Regarding the Grid Modernization – Communication System (Fiber Scope), please identify all locations added to the project scope (pursuant to the Record of Decision decisions in Section IV.A. of the IM 2020 Third Quarter Report) and provide their estimated costs. Please also identify all locations removed from the project scope and provide their originally budgeted costs.</p>	<p>This complete list of fiber projects, including those originally proposed, those added, and those removed, along with their corresponding cost data has been assembled and inserted into the body of the report at <b>Section IV.</b></p>	<b>Section IV.</b>
S-INF-9	<p><b>Reference Q1 2022 Report, Page 36, Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of March 31, 2022</b>  Please clarify if the risk and contingency associated with Electric Stipulated Base projects is included within the total risk and contingency for the Electric Station Flood Mitigation subprogram (\$41.8 million). If not, please provide the risk and contingency associated with the Electric Stipulated Base project.</p>	<p>The R&amp;C for the electric Stipulated Base life cycle projects is held under a subprogram placeholder as base funding. As of March 31, 2022, this base funding had a \$3.1 million balance.</p>	<b>Table 20</b>
S-INF-10	<p><b>Reference Q1 2022 Report, Page 38, Plainfield Substation</b></p>	<p>The \$20,978,138 forecast shown for Plainfield had incorrectly copied the Paramus forecast. The correct forecast for the Plainfield project as of the end of the first quarter of 2022 is \$22,716,323. This represents an increase of approximately</p>	<b>Section III.E.3.</b>

ID #	Question/Comment	IM Response	Report Changes
	What is attributed to the decrease in the forecasted cost of the Plainfield Substation project from \$22,164,495 (See Q4 2021 Report, Page 38) to \$20,978,138?	\$500,000 from the end of 2022 and was largely the result of the electrical PO being higher than estimated, slightly offset by Division actuals being lower than estimated.	
S-INF-11	<p><b>Reference Q1 2022 Report, Page 39, Table 21 – ES 2 Gas M&amp;R Summary Status as of March 31, 2022</b></p> <p>With reference to the Gas M&amp;R projects, please refer to Table 21 which indicates that the Camden M&amp;R project is included in Stipulated Base. Please reconcile this with PSE&amp;G’s recent Energy Strong II cost recovery filing (BPU Docket Nos. ER22110669 and GR22110670), Filed November 1, 2022), in which PSE&amp;G requested accelerated cost recovery of Camden M&amp;R project expenditures placed in-service through January 31, 2023.</p>	<p>PSE&amp;G initially projected to seek accelerated recovery on the Mount Laurel, East Rutherford, and Westampton M&amp;R Stations based on the schedule forecasts that projected these stations to be the first three in-service in the subprogram. However, due to subsequent schedule changes, the Camden M&amp;R station achieved in-service status ahead of Mount Laurel, therefore PSE&amp;G is requesting cost recovery on Camden M&amp;R station in this recent filing.</p> <p>This is consistent with the Stipulation that provides the first \$50.5 million in Gas M&amp;R investments to be recovered through the accelerated recovery, with any prudently incurred costs beyond \$50.5 million being applied to the Stipulated Base.</p>	No change
S-INF-12	Regarding the Central Gas M&R project, please provide additional details describing the need to increase the project scope from two (2) buildings to four (4) buildings (as discussed in S-INF-16 of the IM’s Q4 2021 Report).	<p>The design refinement resulted in a change of heater technology from water bath to the more efficient glycol heaters that provide for lower emissions. The reduced emissions facilitate obtaining the Title V Air Permit. This technology change also included replacement of four additional heaters that are near end of life, so PSE&amp;G replaced them all, thus allowing the project to benefit from the improved technology. The original office level scope included the replacement of only one water bath heater.</p> <p>PSE&amp;G also determined that use of two additional buildings would better address safety and other operational requirements/concerns. One of the additional buildings houses the circulating glycol heaters and the other houses the heat exchangers and the flow control equipment that balances the flow between the pipeline companies.</p>	No change
S-INF-13	<p><b>Reference Q1 2022 Report, Page 43, Section IV. Additional Information Following the end of the First Quarter of 2022</b></p> <p>Please indicate if the three (3) fiber projects removed from the Program (Haddon Heights, Lehigh Avenue, Thirty-Second Street) will be conducted outside of the Program.</p>	PSE&G has indicated that the Haddon Heights and Lehigh Avenue projects are being executed outside of the ES 2 Program under base capital funding, but are scheduled to be completed within the Program window. The Thirty-Second Street project has been cancelled and will not be executed at this time.	<b>Section IV.</b>
RCR-IM-1	With reference to page 3 of the Independent Monitor’s Draft First Quarter 2022 Report, please provide an update to the Kingsland switchgear delivery delay.	The reference on page 3 speaks to a delay to the switchgear #1 for the Ridgefield 13kV project, which impacts Kingsland as the contingency switchgear currently being used on the Ridgefield 13kV project will be the permanent switchgear for Kingsland once the switchgear #1 is received on the Ridgefield 13kV project.	No change

ID #	Question/Comment	IM Response	Report Changes
		<p>Regarding the delivery status of switchgear #1 for the Ridgefield 13kV project, as of the end of the first quarter it was forecasted for delivery on July 22, 2022, with the actual delivery taking place on August 24, 2022 (or approximately one more month of delay from the status as of the end of the first quarter of 2022).</p>	
RCR-IM-2	<p>With reference to page 3 of the Independent Monitor’s Draft First Quarter 2022 Report, please explain if the other projects are affected by major equipment deliveries and how this may increase individual project costs.</p>	<p>Due to the material and resource availability issues impacting Powercon, PSE&amp;G’s switchgear manufacturer, the outstanding switchgear deliveries are all at risk. As of the end of the first quarter of 2022, the following projects had open switchgear deliveries: Meadow Road, Ridgefield 13kV (switchgear #1), Lakeside, Leonia (switchgear #2), Clay Street, Toney’s Brook, Waverly, Woodlynne, Orange Valley, Front Street (contingency and permanent switchgears). The 4kV life cycle station upgrade projects are similarly at risk with their open deliveries, which as of the end of the first quarter of 2022, was each of these projects (aside from the contingency switchgear on Paramus that was delivered in July 2021).</p> <p>The impacts from equipment delivery delays varies project to project depending on when the switchgear is needed to support the construction schedule (some of these deliveries were originally scheduled for storage due to being planned to be received well ahead of the need date). Additionally, as delivery delays are realized, the workarounds or mitigation options vary by project, with some more capable of absorbing impacts by resequencing or working activities in parallel when possible. PSE&amp;G indicated to the IM that to date there have been no cost increases resulting from the major equipment delivery delays as PSE&amp;G has been able to reprioritize deliveries with its vendor in addition to utilizing project float and/or shifting project schedules. There remains a risk for any project with open deliveries that the delivery date continues to shift out, which eventually can extend the project duration and lead to additional costs.</p>	No change
RCR-IM-3	<p>With reference to page 5 of the Independent Monitor’s Draft First Quarter 2022 Report, please indicate how the project risk and contingency current risk registers are tracked.</p>	<p>The individual project risk registers are updated monthly by the project teams and reviewed by the subprogram and program leads, with the total R&amp;C amounts aggregated and tracked at the subprogram level. During estimate transitions, if a project’s base estimate increases, funding from the R&amp;C placeholder is released to the project to fund the additional amount (likewise, if the base estimate decreases, the variance is returned to the R&amp;C placeholder).</p>	No change
RCR-IM-4	<p>With reference to Table 12 ES 2 Electric Substation Flood Mitigation Project Cost Status as of March 31, 2022, please explain the increase in the projected cost of the Clay Street Substation from \$30.8 to \$31.3 million.</p>	<p><b>Table 12</b> shows the current estimate and forecast for the Electric Station Flood Mitigation projects. For Clay Street, the current estimate (revised Conceptual level) is \$30.8 million and was approved in January 2022, while the current forecast is \$31.3 million and reflects the change in status, conditions, and</p>	<b>Section III.A.2.</b>

ID #	Question/Comment	IM Response	Report Changes
		<p>assumptions that have occurred since that last estimate update, including specifically:</p> <ul style="list-style-type: none"> <li>• Additional civil work required (enlarging two manholes, extra shifts) (\$0.5 million).</li> </ul>	
RCR-IM-5	<p>With reference to Table 12 ES 2 Electric Substation Flood Mitigation Project Cost Status as of March 31, 2022, please explain the increase in the projected cost of the Ridgefield 13kV Substation from \$26.1 to \$27.2 million.</p>	<p>The \$1.1 million forecast increase on the Ridgefield 13kV project reported during the first quarter of 2022 was driven by:</p> <ul style="list-style-type: none"> <li>• More than anticipated dewatering and updated design of manhole modifications (\$0.5 million); and,</li> <li>• More Division effort required on manhole expansion and circuits cutovers due to difficult of breaking back the duct bank (high strength concrete) and working around the energized circuits (\$0.6 million).</li> </ul>	<b>Section III.A.11.</b>
RCR-IM-6	<p>With reference to Table 12 ES 2 Electric Substation Flood Mitigation Project Cost Status as of March 31, 2022, please explain the increase in the projected cost of the Waverly Substation from \$36.2 to \$37.6 million.</p>	<p>The \$1.4 million forecast increase on the Waverly project reported during the first quarter of 2022 was driven by:</p> <ul style="list-style-type: none"> <li>• Civil construction PO awarded higher than estimated (\$1.3 million); and,</li> <li>• Cost of switchgear storage (\$0.1 million).</li> </ul>	<b>Section III.A.15.</b>
RCR-IM-7	<p>With reference to Table 12 ES 2 Electric Substation Flood Mitigation Project Cost Status as of March 31, 2022, please explain the increase in the projected cost of the Woodlynne Substation from \$21.3 to \$24.3 million.</p>	<p>The \$3.0 million forecast increase on the Woodlynne project reported during the first quarter of 2022 was driven by:</p> <ul style="list-style-type: none"> <li>• Material and civil construction POs higher than estimated and bids (\$0.4 million); and,</li> <li>• Revised Division estimate (\$2.6 million).</li> </ul>	<b>Section III.A.16.</b>
RCR-IM-8	<p>With reference to page 18 of the Independent Monitor’s Draft First Quarter 2022 Report, please explain the individual project updates to the Academy Street, Clay Street, Front Street, Hasbrouck Heights, Kingsland, Orange Valley, Ridgefield 13kV, State Street, Waverly, and Woodlynne projects (with Hasbrouck Heights and State Street also advancing to the Definitive stage) that collectively resulted in a \$15.0 million increase.</p>	<p>The reference on page 18 reflects a summary of the updated estimates for these Electric Station Flood Mitigation projects that are individually discussed in greater detail within the respective project subsection under <b>Section III.A.</b></p> <p>The IM notes that of the collective \$15.0 million estimate increase on these projects, \$12.3 million stemmed from two projects specifically: Waverly, which increased \$6.8 million; and Woodlynne, which increased \$5.8 million. Details of these updated project estimates are discussed within <b>Section III.A.15.</b> and <b>Section III.A.16.</b>, respectively.</p>	No change
RCR-IM-9	<p>With reference to page 28 of the Independent Monitor’s Draft First Quarter 2022 Report, please explain how many installed Fuse Savers have experienced communication issues and have any remote control units been replaced and what are the costs with projected repairs or replacement.</p>	<p>In total, PSE&amp;G installed 113 Fuse Savers during its pilot program, of which 10 locations experienced communication issues. PSE&amp;G installed the modified external antenna at each of these 10 locations, which resolved the communication issues. Design of the standard RCU (enclosure and components) was modified to include the provision to install an external antenna in the field where needed (which has been at approximately 10% of the locations). The costs associated with the modified units are approximately \$1,100 per unit and these units also require slightly longer installation times, but this is not tracked separately.</p>	<b>Section III.B.</b>

ID #	Question/Comment	IM Response	Report Changes												
RCR-IM-10	<p>With reference to Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2022, please explain the change in the subprogram risk and contingency total for Academy Street, Clay Street, Front Street, Hasbrouck Heights, Kingsland, Lakeside Avenue, Leonia, Market Street, Meadow Road, Orange Valley, Ridgefield 13kV, Ridgefield 4kV, State Street, Toney’s Brook, Waverly and Woodlynne Substations compared to Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2021 in Independent Monitor’s Draft Fourth Quarter 2021 Report.</p>	<p>A summary of the Electric Station Flood Mitigation project estimate updates from the prior status as of the end of 2021 to the status as of the first quarter of 2022 is provided below:</p> <table border="1"> <thead> <tr> <th></th> <th>Base</th> <th>R&amp;C</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>As of Dec. 2021</td> <td>\$339,800,000*</td> <td>\$49,200,000</td> <td>\$389,000,000</td> </tr> <tr> <td>As of Mar. 2022</td> <td>\$347,200,000</td> <td>\$41,800,000</td> <td>\$389,000,000</td> </tr> </tbody> </table> <p><i>*-included \$3.7 million as a placeholder (to match the Stipulation budget of \$389 million), this was absorbed by the R&amp;C balance in the updated estimates.</i></p> <p>Early in 2022 PSE&amp;G instituted a change in the way it manages the R&amp;C for the Electric Station Flood Mitigation projects shifting from each project maintaining its own R&amp;C funds to managing the R&amp;C at the subprogram level. Prior to this shift, the projects’ R&amp;C was updated at the time of an estimate transition (50% to 70% to 90%). This change allows PSE&amp;G to manage the R&amp;C month-to-month based on the current project risk registers, which are updated monthly by the project team and reviewed by the subprogram lead. When the individual projects go through an estimate transition any variance to the base estimate results in additional funds added to the R&amp;C placeholder (if the base estimate decreased) or release of R&amp;C to cover the increase in base.</p>		Base	R&C	Total	As of Dec. 2021	\$339,800,000*	\$49,200,000	\$389,000,000	As of Mar. 2022	\$347,200,000	\$41,800,000	\$389,000,000	
	Base	R&C	Total												
As of Dec. 2021	\$339,800,000*	\$49,200,000	\$389,000,000												
As of Mar. 2022	\$347,200,000	\$41,800,000	\$389,000,000												
RCR-IM-11	<p>With reference to Table 20 ES 2 Life Cycle Station Upgrade Project Status as of March 31, 2022, please explain the subprogram risk and contingency total for Hamilton, Paramus, Plainfield, Woodbury and State Street Substations.</p>	<p>A summary of the Life Cycle Station Upgrade project estimate updates from the prior status as of the end of 2021 to the status as of the first quarter of 2022 is provided below:</p> <table border="1"> <thead> <tr> <th></th> <th>Base</th> <th>R&amp;C</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>As of Dec. 2021</td> <td>\$82,800,000</td> <td>\$19,600,000</td> <td>\$102,400,000</td> </tr> <tr> <td>As of Mar. 2022</td> <td>\$96,900,000</td> <td>\$3,100,000</td> <td>\$100,000,000</td> </tr> </tbody> </table> <p>For the purposes of internal budget allocations and authorizations, PSE&amp;G has planned for a portion of the Life Cycle Station Upgrade projects to be funded through the Accelerated Recovery (Electric Station Flood Mitigation funding) as provided in the Stipulation (“If the Company determines the work on the 16 aforementioned substations identified in the flood mitigation subprogram can be completed under the \$389 million investment ceiling associated with substations, PSE&amp;G may reallocate any funds to those stations identified in the life cycle station upgrade portion of the petition for accelerated recovery.”).</p>		Base	R&C	Total	As of Dec. 2021	\$82,800,000	\$19,600,000	\$102,400,000	As of Mar. 2022	\$96,900,000	\$3,100,000	\$100,000,000	<b>Table 20</b>
	Base	R&C	Total												
As of Dec. 2021	\$82,800,000	\$19,600,000	\$102,400,000												
As of Mar. 2022	\$96,900,000	\$3,100,000	\$100,000,000												

ID #	Question/Comment	IM Response	Report Changes
PSEG-1	Please indicate circuit cutovers continued on the Academy Street project during the first quarter of 2022 and that circuit cutovers will be completed in the second quarter of 2022.	This activity has been added to the Academy Street project discussion.	<b>Section III.A.1. and Table 11</b>
PSEG-2	Please indicate in <b>Table 11</b> that the Waverly project upcoming activities for the second quarter of 2022 include setting the 26kV switchgear and start of commissioning.	This activity has been added to the Waverly project discussion.	<b>Table 11</b>



ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2022 SECOND QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

JUNE 28, 2023

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Advanced Metering Interface .....	AMI
Allowance for Funds Used During Construction.....	AFUDC
Architect and Engineer .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System.....	DERMS
Distribution Supervisory Control and Data Acquisition.....	D-SCADA
Energy Strong 2 .....	ES 2
Fault Protection Analysis.....	FPA
Gas Metering & Regulating .....	Gas M&R
Geographic Information System .....	GIS
Henkels & McCoy .....	H&M
Independent Monitor.....	IM
Industrial Site Recovery Act.....	IRSA
Inside Plant .....	IP
Issued for Construction .....	IFC
Liquid Propane Air .....	LPA
Mobile Work Management System .....	MWMS
Open Systems International Inc. ....	OSII
Outage Management System .....	OMS
Outside Plant.....	OP
Outside Plant-Higher Design Standards .....	OP-HDS
Project & Construction .....	P&C
Protective Distribution System .....	PDS
Public Service Electric & Gas .....	PSE&G
Purchase Order.....	PO

Quality Assurance System ..... QAS  
Record of Decision ..... ROD  
Remote Terminal Unit ..... RTU  
Risk and Contingency ..... R&C  
Supervisory Control and Data Acquisition ..... SCADA  
Transmission Fiber Infrastructure ..... TFI  
Utility Review Board ..... URB  
Value of Loss Load ..... VOLL

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram). This report contains the Independent Monitor's (IM's) findings and observations on the ES 2 Program elements and other information on the Program's status as of the second quarter of 2022.

During the second quarter of 2022, the bulk of the spend within the ES 2 Program was within the subprograms with larger individual projects (Electric Station Flood Mitigation, Electric Stipulated Base, and Gas M&R). Within the Electric Station Flood Mitigation subprogram, eight projects remain in construction as of the end of the second quarter of 2022 (with Market Street completing its construction scope and Front Street commencing construction during the quarter). Four of these projects are forecasted to be placed in-service during the fourth quarter of 2022, with the remaining stations forecasted to be completed in 2023 or early 2024. Within the Electric Stipulated Base scope, four of the five projects are in construction (with pre-construction activities underway on the other project, State Street Outside Plant (OP)), all five of these projects remain forecasted to go in-service during the fourth quarter of 2022. On the Gas M&R subprogram, three of the projects continued construction during the second quarter of 2022, each of these three projects is forecasted to go in-service during the fourth quarter of 2022. This will leave the Mount Laurel and Paramus projects as the two remaining projects in the subprogram (following the earlier completion of the Westampton project). Updated project estimates were also prepared for the Gas M&R projects during the second quarter of 2022, which saw the overall subprogram estimate increase by \$18.9 million as driven by scope and execution refinement, with larger impacts realized from limited front-end planning performed on the stations at the time of the ES 2 filing.

Within the other subprograms, Fuse Saver installations recommenced in the Contingency Reconfiguration subprogram following the earlier pilot program conducted in 2020-2021. The Fuse Saver installations are expected to continue through the end of 2023, with 1,641 units currently forecasted for this scope of work. Within the Grid Modernization – Communication System subprogram, primary efforts during the second quarter of 2022 continued to focus on completing the remaining fiber installations (seven remaining as of the end of the quarter) and the remaining substation remote terminal unit (RTU) retrofits (48 remaining as of the end of the quarter). A new Grid Modernization – Communication System subprogram estimate was also completed during the second quarter of 2022, with the fiber installation scope estimate increasing \$3.0 million from the prior estimate based on the higher costs observed on completed projects and the wireless network and retrofits scope decreasing by \$1.3 million from the prior estimate based on an updated number of radios planned for the subprogram. Within the Grid Modernization – ADMS subprogram, go-live was achieved on the ADMS platform in June 2022, the quality assurance system (QAS) environment was built in the Outage Management System (OMS) scope, and additional patches were competed in the Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS) scope. An updated estimate was also prepared for the Grid

Modernization – ADMS subprogram during the second quarter of 2022, which resulted in the subprogram estimate increasing by \$13.6 million from the prior estimate, with the increase driven by scope updates, extended schedules/resource requirements, and additional risk and contingency (R&C).

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2022** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast, Stipulation budget, and forecasted completion for each.

*Table 1 – ES 2 Subprogram & Stipulated Base Status as of June 30, 2022*

Subprogram	Q2 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Budget***
Electric Station Flood Mitigation	\$17,828,688	\$157,676,463	\$358,158,627	44%	Feb 2024	\$389M
Contingency Reconfiguration	\$2,123,126	\$110,093,554	\$145,612,679	76%	Dec 2023	\$145M
Grid Modernization – Communications	\$3,225,559	\$57,786,702	\$66,279,811	87%	Dec 2023	\$64.3M
Grid Modernization – ADMS	\$8,230,861	\$37,767,016	\$53,479,258	71%	Dec 2022	\$42.7M
Electric Stipulated Base	\$13,592,008	\$39,909,208	\$99,102,305	40%	Dec 2023	\$100M
Gas M&R Station Upgrades^	\$19,389,664	\$51,429,779	\$104,273,652	49%	Dec 2023	\$101M
<b>Total*</b>	<b>\$64,389,907</b>	<b>\$454,662,622</b>	<b>\$826,906,331</b>	<b>55%</b>	<b>Feb 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast R&C in its forecasts for these projects. See **Table 11** and **Table 20** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\*-Final in-service date.

\*\*\*-Following the \$7.7 million transfer in July 2021 from the Grid Modernization – Communications subprogram to the Grid Modernization – ADMS subprogram.

^-Includes both the ES 2 projects and the Stipulated Base gas projects.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending (before the Stipulated Base consideration), a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of June 30, 2022**.

*Table 2 – ES 2 Electric Station Flood Mitigation Status as of June 30, 2022*

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$9,300,000	\$6,404,971	69%	<b>10/19/2021</b>
2. Clay Street	\$30,800,000	\$10,783,240	35%	1/30/2023
3. Front Street^	\$25,900,000	\$3,670,971	14%	11/8/2023 (↓+13)
4. Hasbrouck Heights	\$19,300,000	\$11,967,537	62%	12/23/2022 (↑-32)
5. Kingsland	\$6,400,000	\$1,665,091	26%	10/4/2023 (↓+2)
6. Lakeside Avenue	\$39,400,000	\$1,756,207	5%	9/18/2023
7. Leonia	\$24,900,000	\$20,947,894	84%	12/13/2022 (↓+28)
8. Market Street	\$29,100,000	\$28,022,997	96%	<b>6/25/2021</b>
9. Meadow Road	\$7,200,000	\$1,652,591	23%	9/22/2023
10. Orange Valley	\$14,700,000	\$1,186,155	8%	12/29/2023
11. Ridgefield 13kV	\$26,100,000	\$21,957,130	84%	12/13/2022

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
12. Ridgefield 4kV	\$20,800,000	\$20,703,809	100%	<b>5/16/2021</b>
13. State Street	\$19,600,000	\$10,631,628	54%	12/19/2022
14. Toney's Brook	\$16,200,000	\$2,294,598	14%	4/17/2023 (↑-4)
15. Waverly	\$36,200,000	\$8,949,013	25%	2/27/2024 (↑-7)
16. Woodlynne	\$21,300,000	\$5,082,698	24%	10/10/2023

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). **Bold** dates indicate the actual in-service date.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

^~ The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

During the second quarter of 2022, there were no updated estimates approved for the Electric Station Flood Mitigation projects. The projects that are active in construction (Clay Street, Front Street, Hasbrouck Heights, Leonia, Ridgefield 13kV, State Street, Waverly, and Woodlynne) had the highest spend during the quarter. **Table 2** also shows that six of the sixteen projects had movement during the second quarter of 2022 in the forecasted in-service date, with three advancing and three slipping. Of these six projects, four had the forecasted in-service dates change by less than two weeks (Front Street, Kingsland, Toney's Brook, and Waverly). While the Hasbrouck Heights forecasted in-service date advanced 32 days from the prior quarter, driven by resequencing construction activities and better than expected progress, and the Leonia forecasted in-service date slipped 28 days, driven by delays to the 13kV switchgear #2 delivery that slipped from mid-May to an actual delivery of June 16, 2022. As previously reported, the Waverly final in-service date had improved following the receipt of the approved site plan, but remains outside the Program end date following the earlier site plan delays due to slips in the forecasted delivery of the 4kV switchgear for the project, with a current forecasted in-service date of February 27, 2024.

The IM has found nothing to date that would jeopardize the overall ES 2 Program being completed on budget, although most individual subprograms are forecasted near or above their Stipulation budgets. Additionally, schedule challenges, particularly on the Waverly substation and other projects with forecasted in-service dates near the Program end date that are at risk due to the delays on the switchgear deliveries will continue to warrant further monitoring by the IM to identify if the ES 2 Program will be completed within the defined timeline. At this time, the following projects have forecasted in-service dates near the end of the Program end date and have open switchgear deliveries: Front Street, Lakeside Avenue, Orange Valley, Waverly, and Woodlynne. For Waverly specifically, the forecasted delivery date for the 4kV switchgear slipped 11 days from the status as of the end of the prior quarter. As previously discussed, on a monthly basis, PSE&G reviews the project schedules and assesses opportunities to improve the schedule based on the current status and information available, including the current delivery projections for the remaining switchgear.

As per N.J.A.C. Section 14:3-2A.5(c)2, the IM reports are to address:

- i. *The effectiveness of Infrastructure Investment Program investments in meeting project objectives;*

- ii. *The cost-effectiveness and efficiency of investments;*
- iii. *The appropriateness of cost assignments; and*
- iv. *Any other information required by the Board.*

The IM focuses the majority of the discussion within each report on these primary objectives, after introducing summarized the findings on these areas in the IM 2021 Third Quarter Report, the IM will continue to provide a summary on these areas for each report with an emphasis on new information relative to the current reporting period. These summarized findings are as follows:

- **Effectiveness of ES 2 investments in meeting project objectives:** The objectives for each subprogram within the ES 2 were defined within PSE&G's ES 2 filing and confirmed by the Stipulation. The overall objectives focused on improving system resiliency, reliability, and hardening through rebuilding or replacing selected substations, installing smart control and monitoring devices on distribution circuits (reclosers, fuse savers, etc.), installing ADMS and a new communication system, and rebuilding selected Gas M&R stations. Within **Section III** of this report, the IM provides a review of the status of the efforts performed to meet these objectives for each subprogram. During the second quarter of 2022, the following projects/scopes were placed in-service and/or completed:
  - Electric Station Flood Mitigation: Academy Street, Market Street, and Ridgefield 4kV previously placed in-service. Next projects forecasted to go in-service are the Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street projects, each forecasted to go in-service by the end of 2022.
  - Contingency Reconfiguration: Fuse Saver installations recommenced in May 2022 with 13 units installed during the quarter (126 units installed on the Program in total out of a currently planned scope of 1,641 units).
  - Grid Modernization – Communication System: 85 substation RTU retrofits completed (bringing the total to 170 out of a total scope of 218 substations); seven fiber projects and one fiber cutover project remaining.
  - Electric Stipulated Base: Hamilton's substation battery was placed in-service during the quarter. Each life cycle station upgrade project is forecasted to go in-service by the end of 2022.
  - Gas M&R: Westampton previously placed in-service in October 2021, the next stations forecasted for completion are the Camden and East Rutherford stations planned to go in-service by the end of 2022.
- **Cost-effectiveness and efficiency of investments:** To assess the cost effectiveness and efficiency of ES 2 investments, the IM began with a review of the initial scope, estimate, and related planning documents for each project to establish a baseline to monitor progress against as the work advances. As the Program execution advances, the IM continues to evaluate actual costs against the initial estimates and current forecasts, including seeking additional information relating to any variances identified. While the overall Program's current cost forecast is below the Stipulation amount, the IM has observed cost increases realized on specific projects or aspects of the Program and found the majority of these increases stem from scope evolution and/or more detailed estimates from the time of the ES 2 filing, as well as the more recent changes in general market conditions (e.g. Covid-19 impacts, supply chain issues, etc.). The updated subprogram



forecasts as of the end of the second quarter of 2022 compared to the end of the prior quarter were as follows:

- Electric Station Flood Mitigation: subprogram forecast increased approximately \$8.6 million (or 2.5%) to approximately \$358.2 million.
- Contingency Reconfiguration: subprogram forecast increased approximately \$339,000 (or 0.2%) to approximately \$145.6 million.
- Grid Modernization – Communication System: subprogram forecast increased approximately \$136,000 (or 0.2%) to approximately \$66.3 million.
- Grid Modernization – ADMS: subprogram forecast increased approximately \$10.0 million (or 22.9%) to approximately \$53.4 million.
- Electric Stipulated Base: subprogram forecast increased approximately \$0.5 million (or 0.5%) to approximately \$99.1 million.
- Gas M&R: subprogram forecast decreased approximately \$24.1 million (or -18.7%) to approximately \$104.3 million.

As shown above, the biggest subprogram forecast changes during the second quarter of 2022 were in the Electric Station Flood Mitigation, Grid Modernization – ADMS, and Gas M&R subprograms. Within the Electric Station Flood Mitigation subprogram, this increase was primarily on the Clay Street, Kingsland, Orange Valley, and Waverly projects, each seeing construction awards higher than estimated, slightly offset by a scope reduction on the Lakeside Avenue project. Within the Grid Modernization – ADMS subprogram, the forecast increase reflected an updated estimate that detailed the scope and interface complexities in the project. Within the Gas M&R subprogram, the forecast decrease primarily reflected PSE&G removing the LPA scope on the Camden and Central projects from the ES 2 Program.

- **Appropriateness of cost assignments:** The IM receives and reviews recurring data concerning the accumulation of costs within the Program. Based on that review, the IM submits follow-up questions to the Company regarding that data for the reporting period. Such follow-up questions generally focus on the following aspects:
  - Review of any unusual changes in cost elements from period-to-period, including but not limited to allowance for funds used During construction (AFUDC), cost of removal (COR), and the allocation of overheads.
  - Review spend on capital accounts, such as Construction Work in Progress (CWIP) as it relates to overall spend, AFUDC, and COR.
  - Verify cost accumulations and classifications appear to be in accordance with Generally Accepted Accounting Principles (GAAP), to the extent the IM has access to such information.
  - Review and investigation of prior period adjustments and/or corrections to capital accounts.
  - Engage the Company's Internal Audit group on specific areas to audit, review, and assess – particularly for areas in which the IM has limited or no visibility (proprietary data, accounting systems, etc.).

Through the above steps, the IM tracks and monitors how the Company is recording costs to support the finding that the cost assignments appear to be appropriately applied. These cost items are discussed further within **Section II.C.** of this IM report.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On April 19, 2023, a draft IM 2022 Second Quarter Report was submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2022 Second Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

During the second quarter of 2022, there were no additional RODs issued. The current and pending RODs as of the date of this IM 2022 Second Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM</i> )

Subprogram	Record of Decision	IM Comments
		<i>2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report)</i>
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report)</i>
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report)</i>
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report)</i>
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1. in the IM 2021 Second Quarter Report)</i>
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2. the IM 2021 Second Quarter Report)</i>

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

## **C. Cost Assignments**

### **1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Program Costs of Removal as of June 30, 2022**, below itemizes the charges to COR for the second quarter of 2022, the first quarter of 2022 (for comparative purposes), total COR for the years 2021, 2020, 2019, and total ES 2 Program COR to date. These amounts do not reflect any salvage value reductions, which have been *de minimis* in the ES 2 program through June 30, 2022.

**Table 4 – ES 2 Program Costs of Removal as of June 30, 2022**

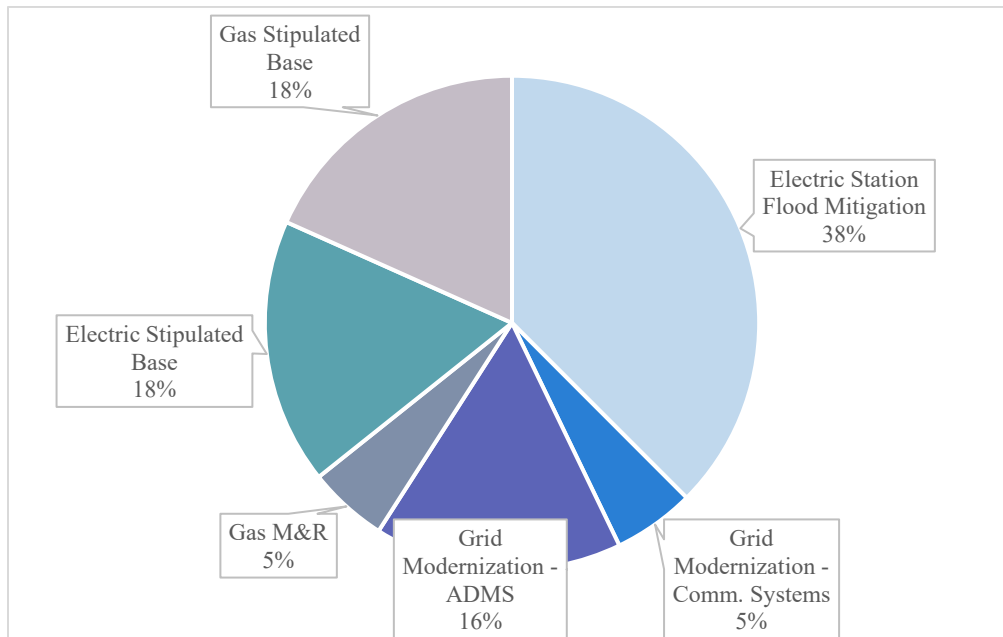
Subprogram	Q2 2022	Q1 2022	Total 2022 (YTD)	Total 2021	Total 2020	Total 2019 (Q4)	Total COR
	<i>(in \$ thousands)</i>						
Electric Station Flood Mitigation	\$595.7	\$873.4	\$1,469.1	\$5,558.7	\$1,021.1	\$0	<b>\$8,048.9</b>
Contingency Reconfiguration	\$35.7	\$229.3	\$265.0	\$2,250.2	\$2,198.9	\$431.0	<b>\$5,145.1</b>
Grid Modernization – Communications	\$14.0	\$11.0	\$25.0	\$137.8	\$24.4	\$0	<b>\$187.2</b>
Grid Modernization – ADMS	\$0	\$0	\$0	\$0	\$0	\$0	<b>\$0</b>
Electric Stipulated Base	\$340.5	\$370.0	\$710.5	\$150.0	\$0	\$0	<b>\$860.5</b>
Gas M&R Station Upgrades	\$0	(\$0.4)	(\$0.4)	\$148.9	\$0	\$0	<b>\$148.5</b>
Gas Stipulated Base	\$0	\$431.5	\$431.5	\$196.1	\$0	\$0	<b>\$627.6</b>
<b>Total</b>	<b>\$985.9</b>	<b>\$1,914.8</b>	<b>\$2,900.7</b>	<b>\$8,441.7</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$15,017.8</b>

The COR charges incurred on the Program for the second quarter of 2022 primarily reflect: (i) approximately \$0.2 million of COR activities at the Ridgefield 13kV substation project for demolition of the bus system, disconnect switch, and feeder rows; (ii) approximately \$0.2 million at the Leonia substation project for foundation demolition and underground cable removal; and (iii) approximately \$150,000 of foundation and feeder row removal costs at the Paramus lifecycle project under the Electric Stipulated Base.

**2. Construction Work-in-Progress (CWIP) & In-Service Transfers**

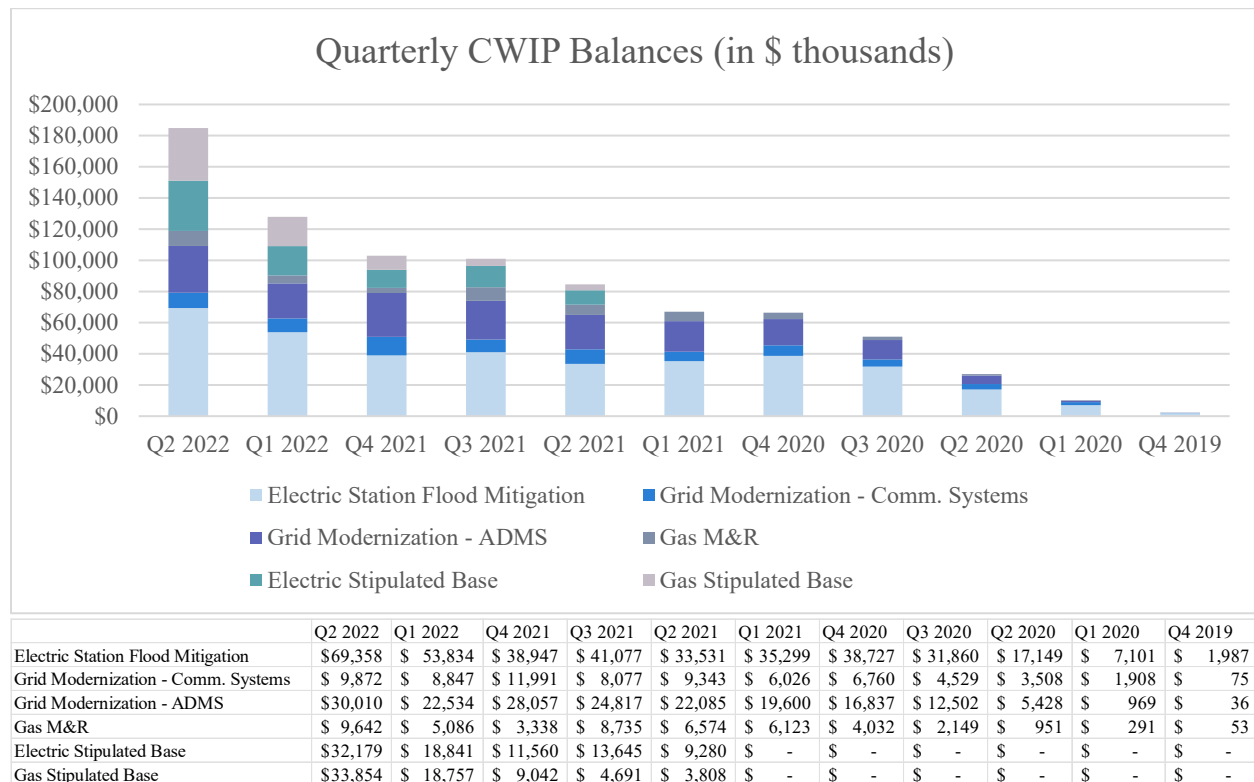
As of June 30, 2022, the ES 2 CWIP balance was \$184.9 million, compared to \$127.9 million as of the end of the prior quarter. The largest components of CWIP as of June 30, 2022 were the Hasbrouck (\$12.4 million), State Street (\$11.1 million), Clay Street (\$11.0 million), and Waverly (\$9.7 million) Electric Station Flood Mitigation projects; the Central (\$18.8 million) and Camden (\$13.7 million) Gas Stipulated Base M&R projects; the Hamilton (\$10.5 million) and Plainfield (\$7.9 million) substations under the Electric Stipulated Base; and, work associated with the ADMS subprogram (\$30.0 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of June 30, 2022** below.

**Figure 1 – ES 2 CWIP as of June 30, 2022**



In addition, **Figure 2 – ES 2 CWIP Balances by Subprogram as of June 30, 2022** below depicts the composition of end-of-quarter CWIP balances by subprogram for the second quarter of 2022, the first quarter of 2022, and each quarter of 2021 and 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of June 30, 2022**



Transfers from CWIP to plant in service were minimal during the second quarter of 2022, totaling approximately \$0.1 million. Total ES 2 transfers from CWIP have been \$86 million through June 30, 2022. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no AFUDC is recorded on these expenditures. This accounting treatment is in accord with generally accepted accounting principles and the Company's accounting policies.

### 3. Allowance for Funds Used During Construction (AFUDC)

The amount of quarterly AFUDC recorded by the Company for each ES 2 subprogram during the second and first quarters of 2022, total 2022 to date, total AFUDC for the years 2021, 2020 and 2019, and total ES 2 AFUDC accrued to date, is shown below **Table 5 – ES 2 Program AFUDC as of June 30, 2022**.

**Table 5 – ES 2 Program AFUDC as of June 30, 2022**

Subprogram	Q2 2022	Q1 2022	Total 2022 (YTD)	Total 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$944.5	\$759.0	\$1,703.5	\$2,281.2	\$936.5	\$9.9	<b>\$4,931.1</b>
Contingency Reconfiguration	\$0	\$0	\$0	\$0	\$0	\$0	<b>\$0</b>
Grid Modernization – Communications	\$123.1	\$115.6	\$238.7	\$386.9	\$184.3	\$0.2	<b>\$810.1</b>
Grid Modernization – ADMS	\$438.9	\$385.7	\$824.6	\$1,365.6	\$352.7	\$0.1	<b>\$2,543.0</b>
Electric Stipulated Base	\$383.9	\$230.0	\$613.9	\$524.6	\$44.0	\$0	<b>\$1,182.5</b>
Gas M&R Station Upgrades (incl. Stip. Base)	\$395.6	\$208.3	\$603.9	\$470.0	\$70.0	\$0.2	<b>\$1,144.1</b>
<b>Total</b>	<b>\$2,286.0</b>	<b>\$1,698.6</b>	<b>\$3,984.6</b>	<b>\$5,028.3</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$10,610.8</b>

AFUDC accrued for ES 2 projects during the second quarter of 2022 increased over AFUDC accrued during the first quarter of 2022 as the result of increases in total average CWIP balances across all subprograms.

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2022, the new AFUDC rate was calculated to be 6.92%, using the capital structure and component costs as of January 31, 2022. This rate is higher than the 2021 rate of 6.81%, primarily due to a zero balance of short-term in the 2022 calculation (vs. a \$44 million balance of short-term debt in 2021), and also to an 8% reduction in the Company's amount of long-term debt outstanding (lowering the debt component of the capital structure from 45.5% to 44.8%), and a reduction in the embedded cost of long-term debt, both as used in the AFUDC calculation. In calculating the 2022 AFUDC rate, the Company used (i) a 3.63% embedded cost of long-term debt (vs. 3.85% in 2021), (ii) no short-term debt, and (iii) a cost of equity of 9.60% (unchanged from 2021).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the second quarter of 2022, based on data as of June 30, 2022, the recalculated weighted average

AFUDC accrual rate (6.92%) did not meet this criterion to warrant changing from the annual rate (6.92%) in effect. Therefore, AFUDC was accrued during the second quarter of 2022 at the calculated rate of 6.92%.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to second quarter 2022 ES 2 project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these Energy Strong projects. The IM will continue to review future ES 2 AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### 4. Allocated Overheads

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. This Order was amended by a BPU Order dated June 8, 2022, allowing the company to transfer certain employees to the PSE&G Service Company in an effort to better support transmission growth opportunities and projects. This action had no impact on existing overhead allocations. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Program Overhead Allocations as of June 30, 2022** are the allocated overhead costs charged to ES 2 subprograms for the second and first quarters of 2022 (for comparative purposes), 2022 year-to-date, total 2021, total 2020, total 2019, and total ES 2 Program allocated overheads to date.

**Table 6 – ES 2 Program Overhead Allocations as of June 30, 2022**

Subprogram	Q2 2022	Q1 2022	Total 2022 (YTD)	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$2,208	\$2,185	\$4,393	\$14,368	\$14,023	\$287	<b>\$33,071</b>
Contingency Reconfiguration	\$795	\$843	\$1,638	\$14,420	\$17,109	\$3,415	<b>\$36,582</b>
Grid Modernization – Communications	\$717	\$1,802	\$2,519	\$9,171	\$3,625	\$12	<b>\$15,327</b>
Grid Modernization – ADMS	\$124	\$76	\$200	\$501	\$426	\$11	<b>\$1,138</b>
Electric Stipulated Base	\$1,275	\$1,449	\$2,724	\$2,123	\$259	\$0	<b>\$5,106</b>

Subprogram	Q2 2022	Q1 2022	Total 2022 (YTD)	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
	<i>(in \$ thousands)</i>						
Gas M&R Station Upgrades (incl. Stip. Base)	\$339	\$197	\$536	\$735	\$291	\$15	\$1,577
<b>Total</b>	<b>\$5,458</b>	<b>\$6,552</b>	<b>\$12,010</b>	<b>\$41,318</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$92,801</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the second quarter of 2022 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most (approximately 83%) of the second quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The decrease in overhead costs for the second quarter of 2022 from the first quarter of 2022 reflects primarily the decrease in spend on outside services and labor on Grid Modernization projects.

#### D. System Performance

##### 1. Current Reporting Quarter Major Events

During the second quarter of 2022, there were no Major Events reported in PSE&G’s service territory.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of the second quarter of 2022 compared to the status as of the end of 2019, end of 2020, and end of 2021 is provided below in **Table 7 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of June 30, 2022**. Note that the Market Street and Ridgefield 4kV projects were previously placed in-service and closed out, thus there are no further updates to these projects (which have been further called out in italics in **Table 7**).

*Table 7 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of June 30, 2022*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
<i>1. Academy Street</i>	Dec. 2019		<u>KO</u>					C					IS		CO								
	Dec. 2020		<u>KO</u>		<u>C</u>									CO									
	Dec. 2021		<u>KO</u>		<u>C</u>							<u>IS</u>					CO						
	Jun. 2022		<u>KO</u>		<u>C</u>							<u>IS</u>		<u>CO</u>									
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																					
	Dec. 2020			<u>KO</u>												C				IS			CO (Q2)
	Dec. 2021			<u>KO</u>												<u>C</u>				IS			CO (Q1)
	Jun. 2022			<u>KO</u>												<u>C</u>				IS			CO (Q1)
3. Front Street <sup>^</sup>	Dec. 2019	<i>Not in ES 2 Program</i>																					
	Dec. 2020	<i>Not in ES 2 Program</i>																					
	Dec. 2021											<u>KO</u>				C						IS	CO (Q2)
	Jun. 2022											<u>KO</u>				C						IS	CO (Q2)

December 31, 2023 - ES 2 Program End



Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>						C							IS		CO		
	Dec. 2020		<u>KO</u>									C					IS		CO	
	Dec. 2021		<u>KO</u>									C					IS		CO	
	Jun. 2022		<u>KO</u>									<u>C</u>				IS			CO	
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO							
	Dec. 2020			<u>KO</u>										C						IS
	Dec. 2021			<u>KO</u>											C		IS			CO
	Jun. 2022			<u>KO</u>										C						IS
6. Lakeside Avenue	Dec. 2019*				KO			C												IS
	Dec. 2020					<u>KO</u>								C						IS
	Dec. 2021					<u>KO</u>								C						IS
	Jun. 2022					<u>KO</u>								C						IS
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>		<u>C</u>										IS		CO		
	Dec. 2021			<u>KO</u>		<u>C</u>										IS		CO		
	Jun. 2022			<u>KO</u>		<u>C</u>										IS		CO		
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO									
	Dec. 2020			<u>KO</u>					C	OS		CO								
	Dec. 2021			<u>KO</u>							<u>C/OS</u>	<u>CO</u>								
9. Meadow Road	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>												C				IS
	Dec. 2021			<u>KO</u>												C				IS
	Jun. 2022			<u>KO</u>												C				IS
10. Orange Valley	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020					<u>KO</u>											C			
	Dec. 2021					<u>KO</u>											C			
	Jun. 2022					<u>KO</u>											C			
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C											IS		CO		
	Dec. 2020			<u>KO</u>	<u>C</u>											IS		CO		
	Dec. 2021			<u>KO</u>	<u>C</u>											IS		CO		
	Jun. 2022			<u>KO</u>	<u>C</u>											IS		CO		
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>						C	OS		CO							
	Dec. 2020			<u>KO</u>	<u>C</u>					OS		CO								
	Dec. 2021			<u>KO</u>	<u>C</u>					<u>OS</u>		<u>CO</u>								
13. State Street	Dec. 2019		<u>KO</u>					C								IS				
	Dec. 2020		<u>KO</u>						C				IS							
	Dec. 2021		<u>KO</u>						<u>C</u>					IS					CO	
	Jun. 2022		<u>KO</u>						<u>C</u>						IS			CO		
14. Toney's Brook	Dec. 2019			<u>KO</u>						C										IS
	Dec. 2020			<u>KO</u>										C			IS			
	Dec. 2021			<u>KO</u>										C			IS			
	Jun. 2022			<u>KO</u>										C			IS		CO	

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
15. Waverly	Dec. 2019	Schedule Under Development																					
	Dec. 2020			<u>KO</u>			<u>C</u>													IS	December 31, 2023 - ES 2 Progr	CO (Q2)	
	Dec. 2021			<u>KO</u>			<u>C</u>															IS (Q3); CO (Q1 2025)	
	Jun. 2022			<u>KO</u>			<u>C</u>																IS (Q1); CO (Q3)
Dec. 2019		<u>KO</u>																	C			IS	CO (Q2)
16. Woodlynn	Dec. 2020		<u>KO</u>																	C		IS	CO (Q2)
	Dec. 2021		<u>KO</u>																	C		IS	CO (Q2)
	Jun. 2022		<u>KO</u>									<u>C</u>										IS	CO (Q2)

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.  
 ^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of the second quarter of 2022 is provided below **Table 8 – ES 2 Electric Station Flood Mitigation Summary Status as of June 30, 2022.**

**Table 8 – ES 2 Electric Station Flood Mitigation Summary Status as of June 30, 2022**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Key Drawing Review	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Scope Locked	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney’s Brook; Waverly; Woodlynn
Major Equipment Purchase Orders (POs)	18*	Academy Street; Clay Street; Front Street*; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley; Ridgefield 13kV*; State Street; Toney’s Brook; Waverly*; Woodlynn
Architect/ Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney’s Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynn <sup>1</sup>
Construction Start**	11	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; State Street; Waverly; Woodlynn
In-Service	3	Academy Street; Market Street; Ridgefield 4kV

Activity	Total # of Projects	Specific Projects
Partial In-Service	2	Leonia; Ridgefield 13kV
<p>*-Three of the listed projects (Front Street, Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 18 switchgears at 14 substations.  <sup>1</sup>-Indicates Burns &amp; McDonnell is serving as the A/E.  <sup>2</sup>-Indicates PSE&amp;G internal resources are serving as the A/E.  <sup>3</sup>-Indicates Black &amp; Veatch is serving as the A/E.  **-Includes projects that have commenced inside plant and/or outside plant construction; also maintains identification of projects that have since completed construction (generally those that are shown as in-service).</p>		

Beyond the key activities summarized in **Table 8** above, **Table 9 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q3 2022** summarizes the upcoming planned activities for each project during the third quarter of 2022, including any carryover of activities from earlier periods.

**Table 9 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q3 2022**

Station	Upcoming Activities for Q3 2022	Carryover Activities from Q2 2022
1. Academy Street	<ul style="list-style-type: none"> <li>Complete fiber cutover to new station</li> </ul>	<ul style="list-style-type: none"> <li>Demo existing foundations, remove old equipment at existing Academy St. station</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Commence phase 1 civil work</li> </ul>	<ul style="list-style-type: none"> <li>Commence pile driving</li> </ul>
3. Front Street	<ul style="list-style-type: none"> <li>Manhole/trench work for contingency switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil construction (contingency switchgear)</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Continued civil/electrical construction</li> <li>Switchgear commissioning</li> </ul>	<ul style="list-style-type: none"> <li>Switchgear assembly</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Commencing civil and electrical construction</li> </ul>	<ul style="list-style-type: none"> <li>Issue electrical PO</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Commence civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Install lightning mast, continued construction</li> </ul>	<ul style="list-style-type: none"> <li>Complete switchgear #2 assembly</li> </ul>
8. Market Street	<i>Project complete</i>	
9. Meadow Road	<ul style="list-style-type: none"> <li>Commence civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Civil and electrical POs issued</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Issue civil and electrical POs</li> <li>Commence civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Civil and electrical construction out for bid</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Commence electrical construction</li> </ul>	<ul style="list-style-type: none"> <li>Demo existing switchgear #1 (foundations)</li> </ul>
12. Ridgefield 4kV	<i>Project complete</i>	
13. State Street	<ul style="list-style-type: none"> <li>Relay testing and commissioning switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Continued construction</li> </ul>
14. Toney’s Brook	<ul style="list-style-type: none"> <li>Commence civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Prepare for construction</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Commissioning new switchgear</li> <li>Demolition of existing switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Continued construction</li> <li>Switchgear assembly</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>	<ul style="list-style-type: none"> <li>Continued engineering</li> </ul>

As discussed in the IM 2022 First Quarter Report, PSE&G’s switchgear vendor, Powercon, informed PSE&G that due to various material and sub-supplier delays, the remaining major equipment deliveries may continue to see impacts. PSE&G continues to receive weekly updates from Powercon on the current status of the deliveries and PSE&G’s management visited Powercon’s site in May 2022 with additional onsite visits planned. Powercon is exploring options to improve its production floor efficiencies and

ordering supplies earlier to potentially alleviate further impacts. PSE&G has requested more detailed and frequent status updates from Powercon to better inform its project planning, including details of Powercon’s production schedules and information from its sub-vendors/suppliers. The status of the major equipment deliveries for the Electric Station Flood Mitigation projects is presented in **Table 10 – Electric Station Flood Mitigation Major Switchgear Deliveries as of June 30, 2022**.

**Table 10 – Electric Station Flood Mitigation Switchgear Deliveries as of June 30, 2022**

Station	Description	Delivery Status as of Q1 2022	Delivery Status as of Q2 2022
1. Academy Street	13kV switchgear	<b><i>11/7/2020</i></b>	<b><i>11/7/2020</i></b>
2. Clay Street	4kV switchgear	6/16/2022	8/30/2022
3. Front Street	4kV switchgear	5/22/2023	5/22/2023
	4kV cont. switchgear	7/18/2022	7/17/2022
4. Hasbrouck Heights	4kV switchgear	<b><i>11/30/2021</i></b>	<b><i>11/30/2021</i></b>
5. Kingsland	13kV switchgear <sup>1</sup>	<b><i>9/30/2020</i></b>	<b><i>9/30/2020</i></b>
6. Lakeside Avenue	4kV switchgear	1/26/2023	1/26/2023
7. Leonia	13kV switchgear #1	<b><i>5/24/2021</i></b>	<b><i>5/24/2021</i></b>
	13kV switchgear #2	5/15/2022	<b><i>6/16/2022</i></b>
	13kV cont. switchgear <sup>2</sup>	<b><i>10/16/2020</i></b>	<b><i>10/16/2020</i></b>
8. Market Street	Elimination project		
9. Meadow Road	13kV switchgear <sup>2</sup>	1/3/2023	2/14/2023
10. Orange Valley	4kV switchgear	6/14/2023	5/29/2023
11. Ridgefield 13kV	13kV switchgear #1	7/22/2022	8/2/2022
	13kV switchgear #2	<b><i>4/27/2021</i></b>	<b><i>4/27/2021</i></b>
	13kV cont. switchgear <sup>1</sup>	<b><i>9/30/2020</i></b>	<b><i>9/30/2020</i></b>
12. Ridgefield 4kV	Elimination project		
13. State Street	4kV switchgear	<b><i>12/15/2021</i></b>	<b><i>12/15/2021</i></b>
14. Toney’s Brook	4kV switchgear	12/21/2022	12/20/2022
15. Waverly	26kV switchgear	<b><i>4/30/2021</i></b>	<b><i>4/30/2021</i></b>
	4kV switchgear	7/25/2022	8/5/2022
16. Woodlynne	4kV switchgear	9/21/2022	11/22/2022
<p>Note: bold/italicized dates indicate actual delivery dates.  <sup>1</sup>The Kingsland 13kV switchgear was delivered to the Ridgefield 13kV site where it is being used as the contingency/temporary switchgear for that project before its permanent installation on the Kingsland project.  <sup>2</sup>The Meadow Road project will use the Leonia project’s 13kV contingency switchgear as its permanent switchgear.</p>			

As shown in **Table 10**, as of the end of the second quarter of 2022, there were 10 switchgear deliveries outstanding for the subprogram, with one actual delivery realized during the quarter (the 13kV switchgear #2 for Leonia, which was received later than scheduled and led to the in-service date shift discussed in **Section III.A.7.**). The forecasted delivery dates for the remaining switchgear saw varying degrees of movement from the status at the end of the first quarter of 2022, with four of the 10 units seeing virtually no change, three seeing movement of less than one month (including Orange Valley’s 4kV switchgear advancing), and three experiencing more significant slips, with Clay Street, Meadow Road, and Woodlynne each seeing the associated equipment delivery dates slip between 42 and 75 days, however this did not cause a change to the forecasted in-service dates for these projects at this time.

The current project estimates and forecasts are shown below in **Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of June 30, 2022**. As discussed in the IM 2022 First Quarter Report, PSE&G decided to consolidate the R&C on the individual projects into one R&C balance for the entire subprogram, thus there is no estimated R&C amount at the project level. Additionally, R&C funds are

released when projects transition estimate levels and during the second quarter of 2022 there were no updated estimates in the subprogram, thus the R&C balance remained unchanged from the prior quarter. **Table 11** also shows the current estimate level based on PSE&G's estimating processes and as approved by its Utility Review Board (URB), the actual spend, and percentage of actuals to estimate as of the end of the second quarter of 2022.

**Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of June 30, 2022**

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,300,000	\$-	\$9,300,000	\$8,499,311	\$6,404,971	69%
2. Clay Street	Conceptual	\$30,800,000	\$-	\$30,800,000	\$33,614,140	\$10,783,240	35%
3. Front Street**	Study	\$25,900,000	\$-	\$25,900,000	\$26,155,627	\$3,670,971	14%
4. Hasbrouck Heights	Definitive	\$19,300,000	\$-	\$19,300,000	\$18,923,124	\$11,967,537	62%
5. Kingsland	Study	\$6,400,000	\$-	\$6,400,000	\$8,502,960	\$1,655,091	26%
6. Lakeside Avenue	Study	\$39,400,000	\$-	\$39,400,000	\$34,900,034	\$1,756,207	5%
7. Leonia	Definitive	\$24,900,000	\$-	\$24,900,000	\$25,116,227	\$20,947,894	84%
8. Market Street	Definitive	\$29,100,000	\$-	\$29,100,000	\$28,291,584	\$28,022,997	96%
9. Meadow Road	Study	\$7,200,000	\$-	\$7,200,000	\$8,285,425	\$1,652,591	23%
10. Orange Valley	Study	\$14,700,000	\$-	\$14,700,000	\$17,022,378	\$1,186,155	8%
11. Ridgefield 13kV	Conceptual	\$26,100,000	\$-	\$26,100,000	\$27,990,304	\$21,957,130	84%
12. Ridgefield 4kV	Definitive	\$20,800,000	\$-	\$20,800,000	\$20,703,808	\$20,703,809	100%
13. State Street	Definitive	\$19,600,000	\$-	\$19,600,000	\$19,838,101	\$10,631,628	54%
14. Toney's Brook	Conceptual	\$16,200,000	\$-	\$16,200,000	\$16,250,526	\$2,294,598	14%
15. Waverly	Study	\$36,200,000	\$-	\$36,200,000	\$39,911,783	\$8,949,013	25%
16. Woodlynne	Conceptual	\$21,300,000	\$-	\$21,300,000	\$24,153,365	\$5,082,698	24%
ES 2 Station Placeholder	N/A	\$-	\$41,800,000	\$41,800,000	\$-	\$-	-

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
<b>Subprogram Total</b>		<b>\$347,200,000</b>	<b>\$41,800,000</b>	<b>\$389,000,000</b>	<b>\$358,158,627</b>	<b>\$157,676,463</b>	<b>41%</b>
<p><i>*-As discussed in Section II.B. of the IM 2022 First Quarter Report, PSE&amp;G made the decision to hold risk and contingency at the subprogram level, which resulted in updated estimates being prepared for each project to reflect this change and other project-specific updates as warranted.</i></p> <p><i>** -The Front Street project was proposed by PSE&amp;G during the second quarter of 2021 to replace the cancelled Constable Hook project.</i></p>							

Findings & Observations

- No change in completed projects during the second quarter of 2022, with three of the 16 projects previously put in-service (Market Street and Ridgefield during the second quarter of 2021 and Academy Street in the fourth quarter of 2021). The next projects forecasted to be placed in-service are the Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street projects, each forecasted to go in-service during the fourth quarter of 2022.
- Six of the remaining thirteen Electric Station Flood Mitigation projects had movement in the forecasted in-service date during the second quarter of 2022, with three advancing and three slipping. For four of those projects, the change was less than two weeks, with the biggest changes involving the following projects:
  - Hasbrouck Heights (advancing 32 days from January 23, 2023 to December 23, 2022); and
  - Leonia (slipping 28 days from November 15, 2022 to December 13, 2022).
- The overall subprogram forecast as of the end of the second quarter of 2022 increased \$8.6 million (or 2.5%) to \$358.2 million from the status as of the prior quarter. The forecast continues to remain under the current subprogram estimate and Stipulation amount of \$389.0 million (which includes \$41.8 million in R&C). The change in the subprogram forecast was predominantly driven by changes to the project forecasts on five of the projects, including:
  - Kingsland (increased \$2.1 million to \$8.5 million): driven by civil and electrical construction awards higher than estimated and an increased quantity of piles based on the final design.
  - Lakeside Avenue (decreased \$1.8 million to \$34.9 million): electrical construction award lower than estimated (driven by scope reduction) and the transfer of the 4kV bus scope to the 69kV transmission project.
  - Clay Street (increased \$2.3 million to \$33.6 million): electrical construction award higher than estimated; equipment procurement higher than estimated; scope increases; and construction schedule recovery.
  - Waverly (increased \$2.3 million to \$39.9 million): civil construction award higher than estimated.
  - Orange Valley (increased \$2.3 million to \$17.0 million): civil construction award higher than estimated.

- With 44% of the subprogram forecast now spent (41% of the Stipulation amount), the IM has found nothing to date that would jeopardize the subprogram being completed on budget as even with some cost pressures on certain projects, there is adequate R&C remaining in the subprogram. However, the schedule status of the later projects in this subprogram, and in particular Waverly, will continue to be closely followed by the IM to monitor if the projects can be completed within the ES 2 Program window. At this time, the primary risk to the project schedule is the major equipment deliveries, followed by resource availability to support schedule requirements. Other projects currently forecasted to be in-service in the final quarter of the Program (fourth quarter of 2023) include: Front Street, Kingsland, Orange Valley, and Woodlynne.
- Concerning the major equipment deliveries, the primary issues appear to be continued supply chain challenges stemming from the Covid-19 and post-pandemic marketplace impacts, particularly with the sub-vendors to the switchgear manufacturer. In response to these unforeseen challenges, PSE&G has sought and received additional information and more frequent updates from its manufacturer, including conducting site visits to the fabrication facility. Based on the current information it receives, PSE&G assesses the project schedules and determines if there is any expected schedule impact from the delivery delays, and if so, if resequencing of activities or accelerating work is an option to recover the schedule. The IM is monitoring PSE&G's efforts in this regard to recover the schedule slippage and minimize any impacts to the overall Program completion.
- Relative to the Waverly project, as of the end of the second quarter of 2022, the project continues to show a final in-service date in 2024, now at February 2024, which has continued to show improvements as PSE&G details the schedule following the site plan approval in December 2021. The Waverly project has multiple major asset in-service dates for the 26kV switchgear, 4kV switchgear, and three transformers, which are currently forecasted from September 2022 (26kV switchgear) to February 2024 (Transformer #3). PSE&G has informed the IM that the project team will continue to assess the project schedule and will be examining the potential to shorten durations and/or work activities concurrently to pull the final in-service date back into 2023. The IM will continue to monitor the PSE&G efforts in this regard and will report on any recovery actions taken and how those actions assist in reducing the current slippage.

**1. Academy Street**

During the second quarter of 2022, \$144,172 was spent on the Academy Street project compared to a forecast of approximately \$135,000, which brought the total spend to approximately \$6.4 million.

This project was placed in-service on October 19, 2021, and there were minimal activities performed during the second quarter of 2022. The elimination of equipment at the old substation site and related demolition activities are expected to commence and be completed in the second half of 2022.

The actual spend by quarter for Academy Street as compared to the current approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$150,398	\$4,224,550	\$1,754,789	\$131,061	\$144,172	\$103,424	\$1,948,915	\$42,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$6,404,971	\$9,300,000	69%

## 2. Clay Street

During the second quarter of 2022, \$1,936,258 was spent on the Clay Street project compared to a forecast of approximately \$2.7 million, which brought the total spend to approximately \$10.8 million. The variance in forecasted to actual spend during the second quarter of 2022 was attributed to civil pile driving delayed (from May-June to June-July) due to the T3 contingency not being completed in April as initially planned and less foundation and duct bank work completed in June 2022 than originally planned. Part of this impact stemmed from a work standdown in June 2022 that was instituted in response to a reliability incident where the underground contractor excavating for new duct banks hit an obstruction (concrete at the top of an existing duct bank), which damaged two of the four pipes in the duct bank. This incident resulted in no injuries or customers impacted, and during the standdown PSE&G and the contractor reviewed safety and excavation procedures. Ultimately this had an approximate 10-day impact to the construction work on the project.

The forecast for the Clay Street project increased approximately \$2.3 million from the prior quarter to a forecast of approximately \$33.6 million as of the end of the second quarter of 2022. This forecast increase was driven by:

- Electrical construction award higher than estimated: \$900,000;
- Construction schedule recovery due to permitting delays: \$600,000;
- A/E procured equipment higher than estimated: \$400,000;
- Addition of Human Machine Interface (HMI) to switchgear: \$200,000; and,
- Requirement for a contingency capacitor bank: \$200,000.

Despite less work completed in June 2022 than planned, the forecasted in-service date for the Clay Street project as of the end of the second quarter of 2022 remains unchanged from the status as of the end of the first quarter of 2022 at January 30, 2023.

The primary activities on the Clay Street project during the second quarter of 2022 included the receipt of the below grade construction permit and commencement of pile driving and civil works, which both began in June 2022.

The actual spend by quarter for Clay Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$116,409	\$879,339	\$2,806,593	\$5,044,642	\$1,936,258	\$7,016,356	\$6,276,325	\$9,538,218

Actuals to Date	Estimate	% of Actuals to Estimate
\$10,783,240	\$30,800,000	35%



### 3. Front Street

During the second quarter of 2022, \$889,533 was spent on the Front Street project compared to a forecast of approximately \$904,000, which brought total spend to approximately \$3.7 million. The forecasted in-service date for the Front Street project as of the end of the second quarter of 2022 slipped 13 days from the status as of the end of the first quarter of 2022 to November 8, 2023.

The primary activities on the Front Street project during the second quarter of 2022 included:

- Start of civil construction inside plant (IP) to prepare for the contingency switchgear;
- Final vendor controls drawings received (for the permanent switchgear); and,
- Electrical construction PO issued (with electrical construction expected to commence in August 2022).

The actual spend by quarter for Front Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$-	\$-	\$2,351,832	\$429,607	\$889,533	\$4,980,522	\$1,873,016	\$16,631,118

Actuals to Date	Estimate	% of Actuals to Estimate
\$3,670,971	\$25,900,000	14%

### 4. Hasbrouck Heights

During the second quarter of 2022, \$2,187,907 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$2.3 million, which brought the total spend to approximately \$12.0 million. The forecasted in-service date for the Hasbrouck Heights project as of the end of the second quarter of 2022 advanced 32 days from the status as of the end of the first quarter of 2022 to December 23, 2022. This forecasted in-service date advancement was driven by a combination of re-sequencing the civil and electrical construction activities and better than expected electrical construction progress.

Notable activities completed during the second quarter of 2022 included:

- Commencement of electrical construction;
- Start of civil foundations and other civil IP work (grounding grid, trenches); and,
- Setting the switchgear.

The actual spend by quarter for Hasbrouck Heights as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$149,848	\$1,129,934	\$4,176,249	\$4,323,599	\$2,187,907	\$1,702,906	\$2,320,722	\$2,931,960

Actuals to Date	Estimate	% of Actuals to Estimate
\$11,967,537	\$19,300,000	62%

## 5. Kingsland

During the second quarter of 2022, \$538,096 was spent on the Kingsland project compared to a forecast of approximately \$512,000, which brought the total spend to approximately \$1.7 million. The forecast for the Kingsland project increased approximately \$2.1 million from the prior quarter to a forecast of approximately \$8.5 million as of the end of the second quarter of 2022. This forecast increase was driven by:

- Civil construction award higher than estimated: \$1,500,000;
- Increase in piles based on final design: \$300,000; and,
- Electrical construction award higher than estimated: \$300,000.

The forecasted in-service date for the Kingsland project as of the end of the second quarter of 2022 remained nearly unchanged from the status as of the end of the first quarter of 2022, with two-day slip to October 4, 2023.

During the second quarter of 2022, primary activity on the Kingsland project was the civil and electrical work going out for bid, with the civil PO issued in June 2022. Civil and electrical construction are expected to commence in the third quarter of 2022.

The actual spend by quarter for Kingsland as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$104,112	\$209,667	\$510,943	\$301,463	\$538,906	\$390,263	\$2,357,731	\$4,089,875

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,665,091	\$6,400,000	26%

## 6. Lakeside Avenue

During the second quarter of 2022, \$230,836 was spent on the Lakeside Avenue project compared to a forecast of approximately \$159,000. The forecasted in-service date for the Lakeside Avenue project as of the end of the second quarter of 2022 remained unchanged from the status as of the end of the first quarter of 2022 at September 18, 2023.

Notable activities completed on the Lakeside Avenue project during the second quarter of 2022 included the civil PO being issued. Civil construction is expected to commence in the third quarter of 2022, followed by electrical construction commencing in the fourth quarter of 2022.

The actual spend by quarter for Lakeside Avenue as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Lakeside Avenue project decreased \$1.8 million from the status as of the prior quarter to \$34.9 million (shown in **Table 11**), which was driven by electrical construction award lower than estimated (in turn driven by scope reduction as initially planned elevated stairs and rigging of the switchgear was no longer required) and the transfer of the 4kV bus scope to the 69kV transmission project (based on the sections transferred being tied to the high-side bushings of the 69/4kV transformers, and as such considered a transmission asset under PSE&G's practices).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$148,943	\$453,994	\$570,713	\$351,720	\$230,836	\$2,263,003	\$1,656,432	\$29,224,392

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,756,207	\$39,400,000	5%

## 7. Leonia

During the second quarter of 2022, \$3,968,355 was spent on the Leonia project compared to a forecast of approximately \$3.98 million, which brought the total spend to approximately \$20.9 million. The forecasted in-service date for the Leonia project as of the end of the second quarter of 2022 slipped 28 days from the status at the end of the first quarter of 2022 to December 13, 2022. This forecasted in-service date slip was driven by delivery delays on the switchgear.

Notable activities completed on the Leonia project during the second quarter of 2022 included:

- Completed the demolition of the existing feeder rows;
- Switchgear #2 circuits cutover to the temporary switchgear;
- Start of demolition of existing switchgear #2; and,
- The new switchgear #2 was received at site and set.

The actual spend by quarter for Leonia as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$44,792	\$6,033,379	\$9,112,257	\$1,789,112	\$3,968,355	\$1,190,086	\$1,147,384	\$1,830,862

Actuals to Date	Estimate	% of Actuals to Estimate
\$20,947,895	\$24,900,000	84%

## 8. Market Street

During the second quarter of 2022, \$202,619 was spent on the Market Street project compared to a forecast of approximately \$221,000, which brought the total spend to approximately \$28.0 million. The Market Street substation was taken out of service as of June 25, 2021.

Notable activities conducted during the second quarter of 2022 included the completion of civil demolition and the associated Industrial Site Recovery Act (IRSA) compliance activities.

The actual spend by quarter for Market Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$251,193	\$16,079,601	\$10,681,487	\$808,096	\$202,619	\$181,588	\$51,000	\$36,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$28,022,997	\$29,100,00	96%

### 9. Meadow Road

During the second quarter of 2022, \$321,098 was spent on the Meadow Road project compared to a forecast of \$273,000, which brought the total spend to approximately \$1.7 million. The forecasted in-service date for the Meadow Road project as of the end of the second quarter of 2022 remained unchanged from the status as of the end of the first quarter of 2022 at September 22, 2023.

The primary activities conducted on the Meadow Road project during the second quarter of 2022 included:

- Civil, electrical, and controls drawings issued for construction (IFC); and
- Civil and electrical construction out for bid.

Civil construction is expected to commence in the third quarter of 2022, while electrical construction is currently forecasted to being in early 2023.

The actual spend by quarter for Meadow Road as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$63,128	\$535,081	\$445,234	\$288,050	\$321,098	\$573,894	\$1,415,692	\$4,643,248

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,652,591	\$7,200,000	23%

### 10. Orange Valley

During the second quarter of 2022, \$276,614 was spent on the Orange Valley project compared to a forecast of approximately \$241,000, which brought the total spend to approximately \$1.2 million. The forecasted in-service date for the Orange Valley project as of the end of the second quarter of 2022 remained unchanged from the status as of the end of the first quarter of 2022 at December 29, 2023.

During the second quarter of 2022, major activities on the Orange Valley project included the civil and electrical work being issued for bid and the IFC release of the civil and electrical drawing packages. Civil construction is anticipated to commence in the third quarter of 2022, while electrical construction is currently forecasted to start in early 2023.

The actual spend by quarter for Orange Valley as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$77,029	\$362,895	\$358,052	\$111,565	\$276,614	\$376,925	\$708,865	\$14,750,433

Actuals to Date	Estimate	% of Actuals to Estimate
\$1,186,155	\$14,700,000	8%

### 11. Ridgefield 13kV

During the second quarter of 2022, \$2,557,679 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$2.5 million, which brought the total spend to approximately \$22.0 million. The forecasted in-service date for the Ridgefield 13kV project as of the end of the second quarter of 2022 remained unchanged from the status as of the end of the first quarter of 2022 at December 13, 2022.

Notable activities performed during the second quarter of 2022 included:

- Relay setting information delivered to the IP construction relay group;
- New Switchgear #2 all circuit cutover completed;
- Existing switchgear #1 circuits cutover to the temporary switchgear;
- Completed demolition of the existing switchgear #1; and,
- Started civil construction for the new switchgear #1.

The actual spend by quarter for Ridgefield 13kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$205,982	\$6,232,692	\$10,849,681	\$2,111,096	\$2,557,679	\$3,412,979	\$1,816,195	\$804,000

Actuals to Date	Estimate	% of Actuals to Estimate
\$21,957,130	\$26,100,000	84%

### 12. Ridgefield 4kV

During the second quarter of 2022, \$14,405 was spent on the Ridgefield 4kV project compared to a forecast of \$13,000, which held the total spend at approximately \$20.7 million. The project was placed in-service on May 16, 2021.

The project is essentially complete now with final closeout activities performed during the first quarter of 2022 that included some trailing costs in the second quarter of 2022.

The actual spend by quarter for Ridgefield 4kV as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$143,414	\$11,239,534	\$9,263,852	\$42,604	\$14,405	-	-	-

Actuals to Date	Estimate	% of Actuals to Estimate
\$20,703,809	\$20,800,000	100%

**13. State Street**

During the second quarter of 2022, \$1,046,814 was spent on the State Street project compared to a forecast of approximately \$1.07 million, which brought the total spend to approximately \$10.6 million. The forecasted in-service date for the State Street project as of the end of the second quarter of 2022 remained unchanged from the status as of the end of the first quarter of 2022 at December 19, 2022.

Notable activities performed on State Street during the second quarter of 2022 included the continued advancement of civil and electrical construction.

The actual spend by quarter for State Street as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$77,590	\$662,148	\$8,093,227	\$751,849	\$1,046,814	\$1,199,012	\$1,885,426	\$6,122,034

Actuals to Date	Estimate	% of Actuals to Estimate
\$10,631,629	\$19,600,000	54%

**14. Toney's Brook**

During the second quarter of 2022, \$629,773 was spent on the Toney's Brook project compared to a forecast of approximately \$110,000, which brought the total spend to approximately \$2.3 million. The variance in forecasted to actual spend during the second quarter of 2022 was attributed to early delivery of steel platforms and standard shape structures that had previously been forecasted to arrive in July 2022.

The forecasted in-service date for the Toney's Brook project as of the end of the second quarter of 2022 advanced four days from the status as of the end of the first quarter of 2022 to April 17, 2023.

The primary activities on during the second quarter of 2022 involved preparations for construction, with civil and electrical construction both forecasted to commence in the third quarter of 2022.

The actual spend by quarter for Toney's Brook as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$211,940	\$373,096	\$941,519	\$138,270	\$629,773	\$793,356	\$5,704,738	\$7,457,834

Actuals to Date	Estimate	% of Actuals to Estimate
\$2,294,598	\$16,200,000	14%

**15. Waverly**

During the second quarter of 2022, \$1,536,375 was spent on the Waverly project compared to a forecast of approximately \$1.5 million, which brought the total spend to approximately \$8.9 million.

The forecasted in-service date for the Waverly project as of the end of the second quarter of 2022 continued to achieve advancements as the project team details the construction schedule following the site

plan approval in December 2021. The current forecasted in-service date advanced seven days from the status as of the end of the first quarter of 2022 to February 27, 2024.

The primary activities performed during the second quarter of 2022 included:

- Construction permits approved;
- Start of civil construction;
- 26kV switchgear set on foundation; and,
- Start of electrical construction.

The 26kV switchgear is currently forecasted to be placed in-service in September 2022.

The actual spend by quarter for Waverly as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$103,748	\$2,460,815	\$4,415,223	\$432,853	\$1,536,375	\$8,643,675	\$2,258,298	\$20,060,797

Actuals to Date	Estimate	% of Actuals to Estimate
\$8,949,014	\$36,200,000	25%

## 16. Woodlynne

During the second quarter of 2022, \$1,347,345 was spent on the Woodlynne project compared to a forecast of approximately \$1.4 million, which brought the total spend to approximately \$5.1 million. The forecasted in-service date for the Woodlynne project as of the end of the second quarter of 2022 remains unchanged from the status as of the end of the first quarter of 2022 at October 10, 2023.

The primary activities performed on the Woodlynne project during the second quarter of 2022 involved the continuation of civil construction that commenced in late February 2022. Electrical construction is currently forecasted to commence in early 2023.

The actual spend by quarter for Woodlynne as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$110,982	\$993,298	\$991,630	\$1,639,443	\$1,347,345	\$972,053	\$5,617,958	\$12,480,656

Actuals to Date	Estimate	% of Actuals to Estimate
\$5,082,698	\$21,300,000	24%

## B. Contingency Reconfiguration

During the first quarter of 2022, the final reclosers were installed and commissioned, completing this scope of the Contingency Reconfiguration subprogram and with the remaining work involving the installation of Fuse Saver devices. **Table 12 – ES 2 Program Fuse Saver Status as of June 30, 2022** provides a summary of the Fuse Saver scope of the Contingency Reconfiguration subprogram, indicating

the number of units completed during the second quarter of 2022 and for the total program, showing the status of engineering, installation, and commissioning out of a total scope of 1,641 units. This represents a reduction of 72 units in the forecasted number of units for the Program from the status as of the end of the first quarter of 2022 and follows PSE&G’s approach on forecasting the Fuse Saver scope based on a quarterly review of the actual cost data and related installation status information to inform the installation plan. PSE&G continues seeking to optimize the number of Fuse Savers installed in alignment with the overall budget for the subprogram.

**Table 12 – ES 2 Program Fuse Saver Status as of June 30, 2022**

Type	Engineering Packages Completed (1 Fuse Saver ea.)	Fuse Savers Installed	Fuse Savers Commissioned
Q2 Qty.	170	13	12
Program Total to Date	417	126	125
Remaining	1,224	1,515	1,516

The installation of Fuse Savers recommenced in May 2022, following the earlier installations performed as part of the Fuse Saver pilot program in 2020-2021. As shown in **Table 12**, installations in the second quarter of 2022 were limited to 13 devices, which was the result of a hold placed on installations after a technical issue was observed on a couple devices and installations not being performed in periods when a D-SCADA freeze was initiated. The technical issue involved voltage observed when the unit was in the open position, PSE&G sent back two units to Siemens for testing, which determined that the root cause was ghost or induced voltage (due to close proximity to a live conductor). PSE&G assessed potential safety hazards when the devices are in the open configuration and is considering a change in the measuring instrument, but cleared the installations to continue.

Regarding the D-SCADA freeze, PSE&G implemented a D-SCADA freeze in late April/early May 2022 and again in mid-June 2022, which was needed to support the Platform go-live milestone achieved in the Grid Modernization – ADMS subprogram. This was identified ahead of implementation of the D-SCADA freeze, but nonetheless resulted in an approximate two-week period where installations were not available. As a result, PSE&G intends to add more installations than initially planned in the third and fourth quarters of 2022 and also push some installations into 2023, though expects no significant cost impacts as a result of this shift.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 13 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of June 30, 2022**. This table also shows the forecasted final in-service dates as of the end of the first quarter of 2022 to show movement to the forecast as of the end of the second quarter of 2022.

**Table 13 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of June 30, 2022**

Scope & Division		Q1 2022 Forecasted Completion Date	Q2 2022 Forecasted Completion Date
F u Reclosers	Central	1/31/2022 (Actual)	1/31/2022 (Actual)
	Metro	12/31/2021 (Actual)	12/31/2021 (Actual)
	Palisades	1/31/2022 (Actual)	1/31/2022 (Actual)
	Southern	1/31/2022 (Actual)	1/31/2022 (Actual)
F u	Central	9/30/2023	12/30/2023



Scope & Division		Q1 2022 Forecasted Completion Date	Q2 2022 Forecasted Completion Date
	Metro	10/30/2023	12/30/2023
	Palisades	12/30/2023	12/30/2023
	Southern	9/30/2023	12/30/2023

As shown in **Table 13**, the forecasted in-service dates for the Fuse Saver scope slipped for the Central, Metro, and Southern Divisions based on adjusted monthly distribution to account for the delays in installation encountered in the second quarter of 2022 as discussed above.

The Contingency Reconfiguration subprogram costs through the end of the second quarter of 2022 are presented in **Table 14 – ES 2 Contingency Reconfiguration Actual Costs as of June 30, 2022**.

**Table 14 – Contingency Reconfiguration Actual Costs as of June 30, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Q2 2022	Total to Date
<i>Actuals</i>							
Reclosers	Central	\$2,737,167	\$12,050,820	\$9,852,812	\$880,537	\$45,064	\$25,566,400
	Metro	\$2,231,431	\$10,726,610	\$11,368,409	\$150,325	(\$31,771)	\$24,445,004
	Palisades	\$2,515,569	\$12,119,436	\$8,280,522	(\$66,771)	\$2,816	\$22,851,572
	Southern	\$2,081,220	\$12,405,684	\$14,038,043	\$530,051	\$4,112	\$29,059,110
Fuse Savers	Central	\$9,970	\$789,937	\$854,118	\$249,268	\$433,473	\$2,336,767
	Metro	\$7,557	\$561,915	\$507,742	\$160,801	\$298,329	\$1,536,344
	Palisades	\$7,468	\$522,454	\$577,113	\$127,207	\$656,533	\$1,890,775
	Southern	\$9,792	\$859,014	\$578,217	\$245,990	\$714,570	\$2,407,583
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$46,056,977</b>	<b>\$2,277,408</b>	<b>\$1,824,151</b>	<b>\$110,093,555</b>

**Table 15 – Contingency Reconfiguration Forecasted Costs as of June 30, 2022** examines the forecast as of the end of the second quarter of 2022 for each Division’s Fuse Saver scope compared to the total actual costs incurred through the end of the second quarter of 2022.

**Table 15 – Contingency Reconfiguration Forecasted Costs as of June 30, 2022**

Scope & Division		Total to Date	Forecast	Remaining Forecast	% of Actuals to Forecast
Reclosers	Central	\$25,566,400	\$25,575,700	\$9,300	100%
	Metro	\$24,445,004	\$24,445,004	-	100%
	Palisades	\$22,851,572	\$22,851,571	-	100%
	Southern	\$29,059,110	\$29,059,110	-	100%
Fuse Savers	Central	\$2,336,767	\$10,532,401	\$8,195,635	22%
	Metro	\$1,536,344	\$11,677,063	\$10,140,719	13%
	Palisades	\$1,890,775	\$9,776,369	\$7,885,594	19%
	Southern	\$2,407,583	\$11,695,459	\$9,287,876	21%
<b>Total</b>		<b>\$110,093,555</b>	<b>\$145,612,679</b>	<b>\$35,519,124</b>	<b>76%</b>

As shown in **Table 15**, the overall Contingency Reconfiguration subprogram was spent 76% of its current forecast. With the total forecast as of the end of the second quarter of 2022 increasing \$339,407 from the status as of the end of the prior quarter.

Findings & Observations:

- Progress on the Fuse Savers scope of the subprogram began to ramp-up following the completion of the reclosers scope in the first quarter of 2022, but was limited due to a D-SCADA freeze and a technical issue encountered (and resolved) during the quarter. During the second quarter of 2022, an additional 170 Fuse Saver engineering packages were completed, 13 units installed, and 12 units commissioned; with a total of 125 units commissioned as of the end of the second quarter of 2022 out of a current scope of 1,641 units.
- The slower than planned progress during the second quarter contributed to revised in-service dates for the Fuse Saver scope of work following the adjustment of the monthly installation targets, with each Division now forecasted to complete the Fuse Savers scope by December 2023.
- The Contingency Reconfiguration subprogram forecast continued to remain relatively static as of the end of the second quarter of 2022, with the total forecast increasing by approximately \$339K (or less than 0.0%) to \$145.6 million. This is slightly above the Stipulation budget of \$145.0 million.

### **C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system. The primary scopes within the Grid Modernization – Communication System include installation of the wireless network, fiber installations at selected stations, fiber cutovers at selected station with existing fiber to the PSE&G fiber network, and retrofitting existing reclosers and RTUs with updated routers. A summary of the status of these primary scopes of work as of the end of the second quarter of 2022 is as follows:

- Wireless network: placed in-service as of December 16, 2021; remaining work involves providing radios to support the installation of Fuse Savers in the Contingency Reconfiguration subprogram.
- Fiber installations and cutovers: 27 out of 34 fiber installation projects completed and 11 out of 12 fiber cutover projects completed.
- Retrofitting existing reclosers: completed as of the fourth quarter of 2021 with a total of 2,318 retrofit reclosers installed.
- Retrofitting RTUs: 170 substation retrofits completed (85 during the second quarter of 2022) out of a current scope of 218 substations.

PSE&G has planned the Grid Modernization – Communication System scope of work by grouping the wireless network and retrofit components into one estimate for approval before its URB and having a separate estimate for the fiber installations and cutovers scope. During the second quarter of 2022, PSE&G transitioned these estimates to the Definitive stage, which were approved by its URB in June 2022. **Table 16 – Grid Modernization – Communication System Estimate** shows the current Definitive stage estimate compared to the earlier Study and Office stage estimates.

**Table 16 – Grid Modernization – Communication System Estimate**

Scope	Item	Description	Cost
Fiber Installations & Cutovers	<i>Office Estimate</i>		<b>\$23,400,000</b>
	New Fiber Scope Refinement	Substation and Operation Center fiber installation scope and estimates modified to align with current communication needs	\$7,900,000
	Project Management, Licensing & Permitting, Engineering	Reduction in scope of Distribution Stations with existing fiber that still required communications to be cutover	(\$3,800,000)
	<i>Study Estimate</i>		<b>\$27,500,000</b>
	Outside Plant Estimates	Actual costs higher than estimated for contracted work (\$1.6 million) and work performed with internal resources (\$0.9 million) based on scope and estimate refinement	\$2,500,000
	Inside Plant Estimates	Office level estimates further refined	\$2,200,000
	Changed Routes	Route changed in order to provide simplified design and avoid extensive inspections and permitting associated with original OP routes for Montclair (+\$1.3 million) and Bloomfield (-\$0.4 million).	\$900,000
	Fiber Cutovers	Increase due to scope and estimate refinement	\$300,000
	Scope Reduction	32 <sup>nd</sup> Street, Howell Street, Waverly, Haddon Heights, and Lehigh Avenue stations removed from ES 2 Program	(\$2,900,000)
	<i>Definitive Estimate</i>		<b>\$30,500,000</b>
Wireless Network & Retrofits	<i>Office Estimate</i>		<b>\$48,600,000</b>
	FirstNet Wireless Network Solution	Selection of FirstNet as the wireless network solution in lieu of original plan to build a solely owned and operated private network	(\$13,500,000)
	<i>Conceptual Estimate</i>		<b>\$35,100,000</b>
	Radio Reduction	387-unit reduction related to Fuse Savers, Retrofits, and Reclosers – including material and labor	(\$1,300,000)
<i>Definitive Estimate</i>		<b>\$33,800,000</b>	
<b>Total Grid Modernization – Communication System Definitive Estimate</b>			<b>\$64,300,000</b>

As shown in **Table 16**, since the initial Office estimate, the Grid Modernization – Communication System subprogram has seen cost adjustments primarily related to scope refinements and updated cost data. Overall, PSE&G has managed the subprogram to maintain its overall funding level (following the earlier transfer of \$7.7 million to the Grid Modernization – ADMS subprogram), though cost pressures, particularly on the fiber installation projects have led the current forecast of \$66.3 million to be slightly above the Definitive estimate of \$64.3 million. PSE&G assessed the issues encountered to date with the Grid Modernization – Communication System subprogram and identified the following challenges and lessons learned:

- Changes in electric system and fiber communication availability at locations between the ES 2 filing and the BPU approval of the Program.
- Inadequate site investigations resulted in critical items being left out of initial scope definitions of IP (station batteries, facilities upgrade) and OP (underground/overhead splices) for various stations.
- Significant increase in construction duration resulting from time taken to obtain railroad permits and flaggers; lead time for scheduling Transmission Fiber Infrastructure (TFI) commissioning

resources; new outages required for splicing into fiber communication circuits supporting transmission line.

- Budget for ES 2 fiber projects was fixed with zero R&C.
- Lack of comprehensive review and updating of location requirements, grouping, and prioritizing locations for new fiber installation.

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with three of 41 installation projects were previously removed due to the scheduled elimination of the targeted substations or the intended redundancy benefits not achievable after site review. During the second quarter of 2022, PSE&G assessed the remaining budget for the fiber scope and determined it would remove four additional projects from the planned list due to budgetary constraints (in addition to one of the removed stations, Waverly, having the IP fiber installation included as part of the Electric Station Flood Mitigation project at the substation). The list of identified fiber installation and cutover projects is presented in **Table 17 – Fiber Projects by Division as of June 30, 2022**.

**Table 17 – Fiber Projects by Division as of June 30, 2022**

<b>Division</b>	<b>Fiber Installation*</b>	<b>Fiber Cutover*</b>
<b>Central</b>	<u>Cranford</u> ; <u>Elizabeth Sub HQ</u> ; <u>Rahway</u> ; <u>Hadley Road HQ</u> ; <u>Roselle</u> ; <u>Central HQ</u> ; <u>Carteret</u> ; <u>Edison</u> ; <u>Keasby</u> ; <u>Mechanic Street</u> ; <u>First Street</u> ; <u>Lehigh Avenue**</u>	<u>Elizabeth</u> ; <u>Henry Street</u>
<b>Metro</b>	<u>East Orange</u> ; <u>Metro HQ</u> ; <u>Bloomfield</u> ; <u>Central Avenue</u> ; <u>Haldeon</u> ; <u>Irvington</u> ; <u>Irvington Sub HQ</u> ; <u>Montclair</u> ; <u>South Orange</u> ; <u>Norfolk Street</u> ; <u>Waverly**</u>	-
<b>Palisades</b>	<u>Bergen Point</u> ; <u>Hackensack Sub HQ</u> ; <u>Fort Lee</u> ; <u>Harrison</u> ; <u>Ridgewood</u> ; <u>West New York</u> ; <u>Palisades HQ</u> ; <u>Culver Avenue</u> ; <u>Morgan Street</u>	<u>Tonnelle Avenue</u> ; <u>Spring Valley Road</u> ; <u>Union City</u> ; <u>Fairview</u> ; <u>Polk Street</u> ; <u>West Orange</u>
<b>Southern</b>	<u>Southern HQ</u> ; <u>Princeton</u> ; <u>Chauncey Street</u> ; <u>Bordentown</u> ; <u>Haddon Heights**</u> ; <u>32<sup>nd</sup> Street**</u>	<u>Delair</u> ; <u>East Riverton</u> ; <u>Riverside</u> ; <u>Mount Holly</u>
<b>Total</b>	<b>38 projects</b>	<b>12 projects</b>
*Projects underlined have been placed in-service.		
**-Identified for removal from subprogram during Q2 2022.		

During the second quarter of 2022 no additional fiber installation or fiber cutover projects were placed in-service. Thus, the total projects in-service as of the end of the second quarter of 2022 remained at 27 for the fiber installation projects and 11 for the fiber cutover projects. **Table 18 – ES 2 Program Fiber Projects Status as of June 30, 2022** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of the second quarter of 2022 with the projects in italics representing those placed in-service.

**Table 18 – ES 2 Program Fiber Projects Status as of June 30, 2022**

<b>Project Name</b>	<b>Q2 2022 Status</b>
<b>Fiber Installation Projects</b>	
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>
Bloomfield	Continued construction; township permit required to complete OP installation; verbal approval received in June 2022

<b>Project Name</b>	<b>Q2 2022 Status</b>
<i>Bordentown</i>	<i>In-Service (Q3 2021)</i>
<i>Carteret</i>	IP construction underway; submitted engineer-stamped drawings to railroad agencies
<i>Central Ave</i>	<i>In-Service (Q3 2021)</i>
<i>Central HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Chauncey Street</i>	<i>In-Service (Q3 2021)</i>
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>
<i>Culver Ave</i>	<i>In-Service (Q1 2022)</i>
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>
<i>Edison</i>	IP work preparation underway; awaiting railroad permits
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>
<i>First Street</i>	<i>In-Service (Q3 2021)</i>
<i>Fort Lee</i>	<i>In-Service (Q1 2022)</i>
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>
<i>Haddon Heights</i>	Removed from subprogram
<i>Hadley Rd HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Haledon</i>	<i>In-Service (Q1 2022)</i>
<i>Harrison</i>	<i>In-Service (Q3 2021)</i>
<i>Irvington</i>	<i>In-Service (Q4 2021)</i>
<i>Irvington Sub HQ</i>	<i>In-Service (Q4 2021)</i>
<i>Keasbey</i>	IP work preparation underway; railroad permits received for one of two OP runs
<i>Lehigh Avenue</i>	Removed from subprogram
<i>Mechanic Street</i>	Railroad permits received; Division scheduling work and railroad flaggers
<i>Metro HQ</i>	<i>In-Service (Q1 2021)</i>
<i>Montclair</i>	OP splices completed; TFI checklist submitted; router cut-in scheduled for July 2022
<i>Morgan Street</i>	<i>In-Service (Q4 2021)</i>
<i>Norfolk St</i>	<i>In-Service (Q3 2021)</i>
<i>Palisades HQ</i>	IP work preparation underway; railroad permit received, Contractor scheduling safety training and flagger support
<i>Princeton</i>	<i>In-Service (Q3 2021)</i>
<i>Rahway</i>	<i>In-Service (Q1 2021)</i>
<i>Ridgewood</i>	<i>In-Service (Q1 2022)</i>
<i>Roselle</i>	<i>In-Service (Q2 2021)</i>
<i>So Orange</i>	<i>In-Service (Q3 2021)</i>
<i>Southern HQ</i>	<i>In-Service (Q4 2020)</i>
<i>Thirty Second Street</i>	Removed from subprogram
<i>Waverly</i>	Removed from subprogram
<i>West New York</i>	<i>In-Service (Q1 2022)</i>
<b><i>Fiber Cutover Projects</i></b>	
<i>Delair</i>	<i>In-Service (Q4 2020)</i>
<i>East Riverton</i>	<i>In-Service (Q4 2020)</i>
<i>Elizabeth</i>	<i>In-Service (Q1 2021)</i>
<i>Fairview</i>	<i>In-Service (Q1 2022)</i>
<i>Henry St</i>	<i>In-Service (Q3 2021)</i>
<i>Mount Holly</i>	<i>In-Service (Q4 2020)</i>
<i>Polk Street</i>	<i>In-Service (Q1 2022)</i>
<i>Riverside</i>	<i>In-Service (Q4 2020)</i>
<i>Spring Valley Rd</i>	<i>In-Service (Q1 2021)</i>
<i>Tonnelle Ave</i>	<i>In-Service (Q4 2020)</i>
<i>Union City</i>	<i>In-Service (Q1 2021)</i>

Project Name	Q2 2022 Status
West Orange	Rack installation completed; in-service dependent upon Montclair substation being placed in-service (achieved in late June 2022), TFI checklist submitted and router cut-in scheduled for July 2022.
<b>Substation Remote Terminal Unit (RTU) Cutovers</b>	
Scope: 218 units	85 cutovers completed
*-Project identified for removal from subprogram after the current reporting period, see Section IV for additional information.	

The Grid Modernization – Communication System subprogram costs by major period through the end of the second quarter of 2022 are presented in **Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of June 30, 2022**, while **Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of June 30, 2022** provides the current forecasts as of the end of the second quarter of 2022 compared to the actual costs.

**Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of June 30, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Q2 2022	Total to Date
		<i>Actuals</i>					
Retrofit Reclosers	Central	\$0	\$884,278	\$3,304,797	\$215,275	\$186,505	\$4,590,854
	Metro	\$0	\$818,620	\$2,362,797	\$135,374	\$192,271	\$3,509,045
	Palisades	\$0	\$825,174	\$3,115,474	\$186,059	\$184,718	\$4,311,425
	Southern	\$0	\$929,058	\$3,862,816	\$194,826	\$193,249	\$5,179,949
Fiber	Central	\$1,691	\$2,418,851	\$5,973,655	\$1,581,263	\$681,857	\$10,657,317
	Metro	\$1,457	\$1,866,697	\$3,086,096	\$1,576,328	\$347,002	\$6,877,580
	Palisades	\$1,582	\$2,046,762	\$3,603,134	\$656,307	\$93,875	\$6,401,660
	Southern	\$4,731	\$910,483	\$2,466,477	\$96,721	\$33,229	\$3,511,641
	Cutovers	\$0	\$876,502	\$479,927	\$49,907	\$8,735	\$1,415,071
<b>Wireless Network</b>		\$74,306	\$6,035,441	\$1,282,986	\$61,558	\$99,655	\$7,553,946
<b>Substation RTU Cutovers</b>		\$0	\$0	\$127,129	\$801,385	\$920,534	\$1,849,048
<b>Bulk Purchase*</b>		\$0	\$1,524,874	(\$520,766)	\$641,029	\$283,929	\$1,929,066
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$29,144,503</b>	<b>\$6,196,033</b>	<b>\$3,225,559</b>	<b>\$57,786,601</b>

\*-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.

**Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of June 30, 2022**

Scope & Division		Total to Date	Total Forecast	% of Actuals to Forecast
		<i>Actuals</i>		
Retrofit Reclosers	Central	\$4,590,854	\$6,639,697	69%
	Metro	\$3,509,045	\$5,553,635	63%
	Palisades	\$4,311,425	\$6,363,959	68%
	Southern	\$5,179,949	\$7,189,013	72%
Fiber	Central	\$10,657,317	\$11,237,905	95%
	Metro	\$6,877,580	\$7,613,808	90%
	Palisades	\$6,401,660	\$6,640,530	96%
	Southern	\$3,511,641	\$3,451,015	102%
	Cutovers	\$1,415,071	\$1,437,071	98%
<b>Wireless Network</b>		\$7,553,946	\$8,045,603	94%
<b>Substation RTU Cutovers</b>		\$1,849,048	\$2,107,575	88%
<b>Bulk Purchase*</b>		\$1,929,066	\$-	-

Scope & Division	Total to Date	Total Forecast	% of Actuals to Forecast
	Actuals		
<b>Total</b>	<b>\$57,786,601</b>	<b>\$66,279,811</b>	<b>87%</b>
<i>*-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.</i>			

As shown in **Table 19**, actual costs incurred in the second quarter of 2022 were roughly half that incurred in the first quarter of 2022, which reflected much less work performed in the fiber scope due to the few projects remaining while the retrofit reclosers scope essentially mirrored the progress and costs seen in the first quarter of 2022. The forecasts shown in **Table 20** remained relatively unchanged from the status as of the end of the first quarter of 2022, with an overall forecast increase of approximately \$136,000 (or a 0.2% increase).

Findings & Observations:

- The retrofit substation RTU scope continued to advance in the second quarter of 2022 following the ramp up in the first quarter of 2022, with an additional 85 substations completed during the quarter, bringing the total to 170 substations completed out of a currently forecasted scope of 218 substations.
- No additional fiber installation of fiber cutover projects were completed during the second quarter of 2022, leaving the total number of projects in-service at 27 for the fiber installation projects and 11 for the fiber cutover projects. The fiber scope still is expected to be completed by the end of 2022.
- The forecast for the Grid Modernization – Communication system subprogram remained relatively unchanged from the status as of the end of the first quarter of 2022, with an overall forecast increase of approximately \$136,000 (or a 0.2% increase) to \$66.3 million.
- PSE&G transitioned the two primary estimates generated for the subprogram (fiber installation & cutovers and wireless network & retrofits) to the Definitive stage. The fiber scope estimate increased by \$3.0 million from the prior estimate, driven primarily by higher than estimated construction costs and scope changes. While the wireless network & retrofits scope estimate decreased by \$1.3 million from the prior estimate due to a reduction in the number of radio units expected to be installed in the subprogram (that was in turn driven by a reduction in reclosers, Fuse Savers, and retrofit reclosers).
- Following the updated estimate, PSE&G identified the challenges and lessons learned from the subprogram’s execution. With cost pressures driven by changes in the status of the sites from the ES 2 filing to the approval of the Program, further exacerbated by inadequate site investigations that left required items out of the initial scope and no R&C within the initial budget. Scheduling commissioning resources and railroad flaggers was also identified as a challenge to project execution. These identified lessons learned were drivers to the increased costs, particularly in the fiber scope, and demonstrate some of the challenges in executing a group of similar, smaller sized projects that despite relatively common scopes (installing fiber), have unique station-specific requirements that are not identified until detailed engineering and site inspections take place.

## **D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: DMS/DERMS, the OMS, and ADMS platform upgrades. The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the second quarter of 2022 are presented as follows:

### **DMS/DERMS**

- **Scope:** Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- **Q2 2022 Activities:**
  - Completed and provided Supervisory Control and Data Acquisition (SCADA) keys to Open Systems International Inc. (OSII) (forecast module).
  - Completed testing Fault Protection Analysis (FPA) module in Protective Distribution System (PDS).
  - Completed work on patching plan for FPA.
  - Compiled information for end user training.
  - Completed patch DERMS PDS.
- **Forecasted Completion as of the end of the second quarter of 2022:** 12/19/2022 (unchanged from Q1).

### **OMS**

- **Scope:** Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G’s network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. Ten (10) years’ worth of existing OMS data will be migrated into the new system as well.
- **Q2 2022 Activities:**
  - Completed converted data and feedback sessions.
  - Combined PDS for Configuration.
  - Received code review approvals for Interfaces from Arch Review Board.
  - Attended onsite Mobile Work Management System (MWMS) Discovery Workshops and revised analysis.
  - Completed buildout of QAS environment.
  - Approved code review for SAP archive Job Dip.



- Approved design review for SAP claims and Geographic Information System (GIS) smart notes.
- Configured Compass PDS as part of Sprint 15.
- Identified variances in PDS environment and escalated to OSII.
- Forecasted Completion as of the end of the second quarter of 2022: 4/30/2023 (unchanged from Q1).

**ADMS Platform**

- Scope: Replace, enhance, and expand the existing D-SCADA platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q2 2022 Activities:
  - Completed training for Divisions and Relay Chiefs.
  - Completed Division workstations and monitor setups for cutover.
  - Completed buildout of management servers configuration.
  - Completed vulnerability migration.
  - Attempted go-live on 5/11/2022, identified and remediated defects and initiated go-live freeze on 6/15/2022, which was completed on 6/23/2022.
- Actual In-Service Date: 1/28/2022.

During the second quarter of 2022, PSE&G transitioned the Grid Modernization – ADMS subprogram estimate to the Definitive level. **Table 21 – Grid Modernization – ADMS Subprogram Estimate** shows the current Definitive stage estimate compared to the earlier Study and Office stage estimates.

***Table 21 – Grid Modernization – ADMS Subprogram Estimate***

Item	Description	Cost
<b><i>Office Estimate</i></b>		<b><i>\$35,000,000</i></b>
Additional Interface and Hardware Requirements	During preliminary design, additional system integration and architecture requirements were identified since the original ES 2 filing	\$5,400,000
Performance Testing	Due to lessons learned from Tropical Storm Isaias, additional performance testing scope was added to the project	\$2,300,000
<b><i>Conceptual Estimate</i></b>		<b><i>\$42,700,000</i></b>
<b><i>Detail of OMS Scope Changes</i></b>		
OMS Scope Changes	Additional system architects – incremental need regarding amount of integration; underestimated due to intricacies with Mulesoft and various interfaces (SAP, Advanced Metering Interface (AMI), MWMS, Visualizations, etc.); outsourced original architect and acquired additional architect to meet the level of effort required	\$700,000
	Additional Distribution Operations Subject Matter Experts – Quality control; ex-Operational staff to test system; omitted from prior scope/estimates	\$400,000
		\$7,500,000

Item	Description	Cost
	Additional Project Manager – required to manage complex infrastructure, systems integration, and compliance	\$400,000
	Additional GIS resources – due to availability challenges with current staff	\$500,000
	Additional Engineer and Architect – needed to support Platform integration with OMS; scope omitted from prior estimates	\$500,000
	Additional Project Coordinator – to assist Project Manager with coordinating deliverables and requirements due to increased level of effort needed to effectively manage execution	\$200,000
	Additional Controller – outsourced replacement for prior PSE&G controller	\$200,000
	Energy Cloud Governance – oversee and manage cross-program dependencies; implement best program management	\$1,100,000
	Organizational Change Management – right-sizing to program magnitude	\$500,000
	OSII scope changes – related to OMS, Visualizations, Compass, etc.; enhanced performance testing	\$2,600,000
	Additional Hardware	\$200,000
	Platform Delay – additional costs for rework and additional work required due to Platform delay	\$200,000
MWMS Delay	Due to the MWMS delay, schedules adjusted for alignment and resources extended	\$3,300,000
R&C	Additional R&C	\$2,800,000
<b>Definitive Estimate</b>		<b>\$56,300,000</b>

As shown in **Table 21**, the Grid Modernization – ADMS subprogram estimate has increased \$21.3 million since the initial Office level estimate. The changes summarized above that drove the cost increases generally relate to improving the product quality to match the company needs (including updated security requirements and application interfaces), enhancing the testing, additional staffing/program management, additional R&C, and impacts from the MWMS delay. PSE&G assessed the issues encountered to date with the Grid Modernization – ADMS subprogram and identified the following challenges and lessons learned:

- R&C should be included when estimating large and complex IT initiatives.
- IT projects differ from construction projects regarding risks and dependencies.
- Large and complex IT projects with significant dependencies on in-flight projects need greater levels of oversight/governance.
- Lack of project organization with understanding future projects within portfolio/strategy.
- Deficiency of proper resources in place and understanding future technologies.
- Organization change management is necessary when releasing new large and complex projects to gain user acceptance.

The Grid Modernization – ADMS subprogram costs through the end of the second quarter of 2022 are presented in **Table 22 – ES 2 Grid Modernization – ADMS Costs as of June 30, 2022**.

**Table 22 – ES 2 Grid Modernization – ADMS Costs as of June 30, 2022**

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$36,213	\$16,447,624	\$9,854,442	\$3,197,877	\$8,230,861	\$3,235,879	\$6,055,743	\$6,420,617

Actuals to Date	Forecast	% of Actuals to Forecast
\$37,767,018	\$53,479,258	71%

Findings & Observations:

- The first of three primary ADMS components (the ADMS Platform) was placed in-service during the first quarter of 2022, with work in the second quarter of 2022 involving continued training and preparing workstations. The remaining DMS/DERMS and OMS scopes are continued to be forecasted to be placed in-service in December 2022 and April 2023, respectively.
- During the second quarter of 2022, PSE&G transitioned the Grid Modernization – ADMS subprogram estimate to the Definitive level, which saw the estimate increase by \$13.6 million from the Conceptual level estimate (including an additional \$2.8 million in R&C). The bulk of the estimate increase was attributed to scope and standardization changes reflecting the complexity of the OMS scope and aligning with updated security requirements and application interfaces. The subprogram forecast as of the end of the second quarter of 2022 similarly increased from the prior quarter, with the total forecast now at \$53.5 million.
- Based on the challenges experienced in planning and estimating the ADMS scope of work, PSE&G appropriately identified lessons learned that will help it plan and prepare for future IT-type projects that differ in approach from typical construction projects. While both construction projects and IT/software projects can both be extremely complex, with many interfaces and different stakeholders among the common complexities, IT/software projects often have a higher degree of dynamism, or rate of change, compared to typical construction projects that can require different project management approaches.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric Outside Plant-Higher Design Standards (OP-HDS) and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>1</sup> The OP-HDS scope continues to advance engineering ahead of construction commencing in the third quarter of 2022; the OP-HDS work is expected to continue through December 2023. The OP-HDS scope currently contemplates upgrades to approximately 40-50 circuit miles and replacement of approximately 700 poles. Initial selection of circuits for OP-HDS investments is based on the Value of Loss Load (VOLL) based on the highest annual VOLL from 2010-2020 over the baseline performance, while final circuit selection will reflect the VOLL rankings with the execution requirements driven by field conditions in an effort to maximize the customer benefit.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. In the second quarter of 2021 a fifth station, State Street, was approved by the URB for its outside plant scope to be transferred from the related Electric Station Flood Mitigation project

<sup>1</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

to the life cycle scope. During the second quarter of 2022, PSE&G advanced the Hamilton, Plainfield, and Woodbury project estimates to the Definitive level. The five life cycle station upgrade projects and their current estimate compared to the actuals to date are provided in **Table 23 – ES 2 Life Cycle Station Upgrade Project Status as of June 30, 2022**.

*Table 23 – ES 2 Life Cycle Station Upgrade Project Status as of June 30, 2022*

Project	Estimate Level	Base	Risk & Contingency*	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date**
1. Hamilton	Definitive	\$16,800,000	-	\$16,800,000	\$10,363,391	62%	10/5/2022 (↑ -23)
2. Paramus	Conceptual	\$20,500,000	-	\$20,500,000	\$14,804,042	72%	11/3/2022 (↑ -11)
3. Plainfield	Definitive	\$22,600,000	-	\$22,600,000	\$8,631,746	38%	11/28/2022 (↓ +20)
4. Woodbury	Definitive	\$18,100,000	-	\$18,100,000	\$5,402,352	30%	12/30/2022
5. State Street (OP)	Study	\$19,700,000	-	\$19,700,000	\$707,678	4%	12/19/2022
ES 2 Station Placeholder	-	-	\$2,300,000	\$2,300,000	-	-	-

\*-As discussed in the IM 2022 First Quarter Report, during the first quarter of 2022, PSE&G made the decision to hold R&C at the subprogram level.  
\*\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).  
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 23**, of the five life cycle station upgrade projects, the Plainfield project saw its forecasted in-service date advance during the second quarter of 2022, while the Hamilton and Woodbury projects saw their respective forecasted in-service dates slip during the second quarter of 2022. Overall, these shifts in forecasted in-service dates were relatively minor, with all five of the life cycle station upgrade projects still forecasted for completion by the end of 2022. The R&C balance as of the end of the second quarter of 2022 decreased by \$0.8 million from the prior quarter, with these R&C funds being allocated to the base estimate for Hamilton (\$600K) and Woodbury (\$300K), slightly offset by a reduction to the base estimate for Plainfield (-\$100K) with those funds returning to the R&C balance. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

Similar to the Electric Station Flood Mitigation subprogram, the life cycle station upgrade projects within the Electric Stipulated Base have started to experience delays to the forecasted delivery dates of the major equipment. The status of the major equipment deliveries for the Electric Stipulated Base projects is presented in **Table 24 – Electric Station Flood Mitigation Major Switchgear Deliveries as of June 30, 2022**.

**Table 24 – Electric Station Flood Mitigation Switchgear Deliveries as of June 30, 2022**

Station	Description	Delivery Status as of Q1 2022	Delivery Status as of Q2 2022
1. Hamilton	4kV switchgear	4/5/2022	<b>4/5/2022</b>
2. Paramus	4kV switchgear	5/16/2022	<b>5/31/2022</b>
	4kV cont. switchgear	<b>7/8/2021</b>	<b>7/8/2021</b>
3. Plainfield	4kV switchgear	7/27/2022	8/26/2022
4. Woodbury	4kV switchgear	7/20/2022	7/20/2022
Note: bold/italicized dates indicate actual delivery dates.			

As shown in **Table 24**, the Hamilton and Paramus projects received their respective 4kV switchgears during the second quarter of 2022 (with Paramus having previously received a contingency switchgear to support the construction plan). For the remaining deliveries, both Plainfield and Woodbury are forecasted for the third quarter of 2022, with the Plainfield delivery slipping approximately one month from the status as of the end of the prior quarter.

Findings & Observations:

- Construction continued on the Hamilton, Paramus, Plainfield, and Woodbury projects, while engineering continued to advance on the State Street OP project (which is expected to commence construction in the fourth quarter of 2022).
- There was little movement in the forecasted in-service dates for three of the five life cycle upgrade projects during the second quarter of 2022, with Hamilton and Paramus slipping 23 and 11 days, respectively, and Plainfield advancing 20 days. Each of the five life cycle upgrade projects is currently forecasted to be in-service during the fourth quarter of 2022.
- The cost forecasts for the five life cycle upgrade projects collectively increased by approximately \$0.5 million (or 0.5%) from the status as of the end of the first quarter of 2022 to a total forecast of \$99.1 million as of the end of the second quarter of 2022. This increase was predominantly accounted for within the Paramus and Plainfield projects, while the Woodbury project saw a forecast decrease and Hamilton and the State Street OP projects had very minor forecast changes.
- Updated estimates were approved during the second quarter of 2022 on the Hamilton, Plainfield, and Woodbury projects, each of which advanced to the Definitive estimate stage and each saw the base estimate increase by \$100K to \$600K, with the primary drivers relating to higher than estimated construction costs.

**1. Hamilton**

During the second quarter of 2022, \$3,089,239 was spent on the Hamilton project against a forecast of approximately \$3.1 million. This brought total spend on the project to approximately \$10.4 million through the end of the second quarter of 2022. The forecasted in-service date for the Hamilton project advanced 23 days from the status as of the end of the first quarter of 2022 to October 5, 2022. This forecasted in-service date advancement was driven by commissioning starting earlier than expected due to better than expected construction progress.

Notable activities performed during the second quarter of 2022 included the delivery of the regulators to complete the Powercon switchgear delivery and the commencement of electrical construction with the substation’s battery being placed in-service in May 2022.

During the second quarter of 2022, PSE&G advanced the Hamilton estimate to the Definitive stage, which resulted in the base estimate increasing by \$600K to \$16.8 million. This increase was driven by:

- \$0.3 million: higher than estimated Division costs for design change on manholes and cable work;
- \$0.2 million: higher testing and commissioning costs based on refined scope for underground cutover work;
- \$0.2 million: higher than previously estimated bill of materials award. And,
- (\$0.1 million): lower carrying costs based on actual trend.

The actual spend by quarter for Hamilton as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$0	\$362,372	\$3,141,022	\$3,770,758	\$3,089,239	\$2,115,676	\$2,342,184	\$2,089,733

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$10,363,392	\$16,800,000	\$16,910,986	61%

## 2. Paramus

During the second quarter of 2022, \$5,942,564 was spent on the Paramus project against a forecast of approximately \$6.2 million. This brought total spend on the project to approximately \$14.8 million through the end of the second quarter of 2022. The forecasted in-service date for the Paramus project advanced from November 14, 2022, as of the end of the first quarter of 2022, to November 3, 2022, as of the end of the second quarter of 2022.

Notable activities conducted during the second quarter of 2022 on the Paramus project included the commencement of IP civil and electrical construction, which included:

- Civil construction efforts included installation of foundations, duct banks, conduits and cable tray, and the grounding grid.
- Electrical construction efforts included the assembly of the 4kV switchgear (delivered at the end of May 2022) and the start of prepping and pulling cable to the new switchgear.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$0	\$840,200	\$7,068,765	\$952,513	\$5,942,564	\$1,711,285	\$1,217,431	\$3,597,807

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$14,804,042	\$20,500,000	\$21,330,565	69%

### 3. Plainfield

During the second quarter of 2022, \$2,682,840 was spent on the Plainfield project against a forecast of approximately \$3.1 million. This brought total spend on the project to approximately \$8.6 million through the end of the second quarter of 2022. The forecasted in-service date for the Plainfield project as of the end of the second quarter of 2022 slipped 20 days from the status as of the prior quarter to November 28, 2022. This forecasted in-service date slip was driven by delivery delays on the switchgear.

Notable activities conducted during the second quarter of 2022 included:

- Installation of new manholes;
- Installation of foundations and duct banks; and,
- Completion of the demolition of the existing feeder rows (started in the first quarter of 2022).

During the second quarter of 2022, PSE&G advanced the Plainfield estimate to the Definitive stage, which resulted in the base estimate decreasing by \$100K to \$22.6 million. This decrease was driven by:

- \$0.9 million: Civil and electrical construction awards higher than previously estimated (\$0.2 million and \$0.7 million, respectively); and,
- (\$1.0 million): Lower than estimated actual costs for Division overhead (-\$0.6 million) and updated underground estimate based on current construction sequence (-\$0.4 million).

The actual spend by quarter for Plainfield as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$0	\$682,325	\$3,584,101	\$1,682,480	\$2,682,840	\$8,827,318	\$1,803,873	\$3,785,103

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$8,631,745	\$22,600,000	\$23,048,040	37%

### 4. Woodbury

During the second quarter of 2022, \$1,776,838 was spent on the Woodbury project against a forecast of approximately \$1.6 million. This brought the total spend on the project to approximately \$5.4 million through the end of the second quarter 2022. The forecasted in-service date for the Woodbury project as of the end of the second quarter of 2022 remained unchanged from the status as of the end of the prior quarter at December 30, 2022.

Notable activities conducted during the second quarter of 2022 included:

- Completion of the duct banks from the station property line to OP manholes;
- Completion of the switchgear foundation;
- Installation of cable trench;
- Installation of the grounding grid; and,
- Site restoration and installation of station driveways.

During the second quarter of 2022, PSE&G advanced the Woodbury estimate to the Definitive stage, which resulted in the base estimate increasing by \$300K to \$18.1 million. This increase was driven by:

- \$1.2 million: higher than estimated civil construction award (\$1.1 million) and electrical supervision estimate (\$0.1 million);
- \$0.4 million: higher engineering estimate due to additional design and engineering needed for guidelines, SCADA updates, manhole access, and perimeter wall updates;
- \$0.3 million: higher than estimated award for station wiring; and,
- (\$1.6 million): Division estimate refinement after field verifications and preliminary engineering completed.

The actual spend by quarter for Woodbury as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$0	\$551,165	\$1,613,823	\$1,460,525	\$1,776,838	\$6,444,584	\$2477,880	\$3,775,253

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$5,402,351	\$18,100,000	\$18,100,069	30%

### 5. State Street (Outside Plant)

During the second quarter of 2022, \$101,527 was spent on the State Street (OP) project against a forecast of approximately \$572,000. The variance between forecasted and actual spend in the second quarter was driven by delays in reaching an agreement with Camden County on restoration efforts, which caused permit delays and delays to the test pits work. The County had requested PSE&G use concrete and doweling for the temporary patching of the roadways following the test pits, but PSE&G advised the County that it would be installing manholes and duct banks in this area in the immediate future, which would make use of concrete for the temporary patching excessive. After additional discussions, the County and PSE&G reached an agreement to forego the use of concrete for the temporary patching (with a provision that if there is a failure, any repair would utilize concrete). PSE&G expects no additional costs associated with this effort, but the delay in permit approval is expected to affect the schedule, which is being evaluated. As of the end of the second quarter of 2022, the forecasted in-service date for the State Street OP project remained unchanged from the status as of the prior quarter at December 19, 2022.

Notable activities conducted during the second quarter of 2022 included the continuation of detailed engineering and outreach to the local municipalities concerning the underground work (test pits) that are expected to commence in the third quarter of 2022.

The actual spend by quarter for State Street (OP) as compared to the current URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$0	\$0	\$211,247	\$395,903	\$100,527	\$1,529,615	\$2,933,398	\$14,541,955

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$707,677	\$19,700,000	\$19,712,645	4%



## F. Gas M&R Station Upgrades

During the second quarter of 2022, PSE&G submitted updated estimates for each of the Gas M&R projects for approval by the URB. As part of this effort, the Camden, Central, East Rutherford, and Mount Laurel projects advanced the Conceptual level estimate, while Paramus and Westampton remained at the Study and Definitive stages, respectively. **Table 25 – ES 2 Gas M&R Summary Status as of June 30, 2022** below provides these newly approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

**Table 25 – ES 2 Gas M&R Summary Status as of June 30, 2022**

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Conceptual	\$18,500,000	\$3,300,000	\$21,800,000	\$13,467,350	62%	Dec 2022
2. Central*	Conceptual	\$31,400,000	\$5,500,000	\$36,900,000	\$19,046,123	52%	Nov 2023
3. East Rutherford	Conceptual	\$21,700,000	\$4,300,000	\$26,000,000	\$8,279,623	32%	Dec 2022
4. Mount Laurel	Conceptual	\$12,700,000	\$3,100,000	\$15,800,000	\$1,073,372	7%	Nov 2023
5. Paramus*	Study	\$11,500,000	\$8,400,000	\$19,900,000	\$1,250,390	6%	Dec 2023
6. Westampton	Definitive	\$8,400,000	\$-	\$8,400,000	\$8,312,921	99%	Oct 2021 (actual)
<b>Subprogram Total</b>		<b>\$104,200,000</b>	<b>\$24,600,000</b>	<b>\$128,800,000</b>	<b>\$51,429,779</b>	<b>40%</b>	<b>Dec 2023</b>
*-Included in the Stipulated Base.							
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.							
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.							

Collectively, the updated estimates resulted in the overall subprogram estimate increasing by \$18.9 million, or 17%, from the prior estimates. While details of the individual estimate changes are discussed within the individual project discussions that follow, PSE&G reviewed its estimating process including conducting a deep dive into the drivers to the changes from the Office level estimates and found:

- The original ES 2 filing estimates were completed in January 2018 and included seven projects totaling \$136 million. The Stipulation as approved in September 2019 provided six stations at a total of \$101 million, which saw the lowest priority station eliminated along with R&C being reduced from 60% to 35% and an additional 15% cut from the subprogram.
- There was insufficient investigation in the development of the projects during front-end planning to support the BPU filing (i.e. project scope not locked, lack of constructability review, final site layout incomplete).
- The upfront scope development did not consider design and execution refinement, resulting in deviation from the preliminary scope as formal scope lockdown for these projects did not occur.
- The R&C was insufficient and did not cover the final scope definition thereby leading to cost increases throughout the estimate phases.
- Front-end planning activities were not completed, nor were all stage gates met when Study level estimate were developed by the project teams with A/E firm assistance and submitted to the URB.
- Comparative estimates were not developed to support the review of the A/E estimates to ensure consistency.

- Scope items, such as Liquid Propane Air (LPA) systems at Camden and Central, scrubber improvements at Central and line strainers at each site were added, expanding upon the original BPU filing scope to take advantage of the mobilization on these projects, and then later carved out upon further evaluation, ensuring alignment with the filing.
- A more experienced project team executed ES 1, which were less complex stations, mitigating potential impacts due to lack of front-end planning within the existing processes. The current ES 2 stations are more complex and being managed by a less experienced project team, highlighting the need for a more formalized front-end planning process.
- Due to Covid-19, material price inflation as per market conditions contributed to increased material costs.

PSE&G also identified actions to implement to avoid this issue in the future, including:

- Evaluate and modify the existing Gas M&R project origination process:
  - Implement changes to the more closely model the electric project origination process.
  - Further develop gas expertise to perform feasibility analyses, further develop the design, and perform constructability analyses.
  - Better define project scope in the origination process to minimize undocumented scope evolution.
- Develop and expand Gas M&R expertise in the Projects & Construction (P&C) estimating group:
  - P&C estimating group has expanded to include gas projects.
  - Project teams have supplied the P&C estimating group with information as prices are received (materials, construction, etc.).
  - Benchmark with Gas Construction estimating group, Gas Asset Management and A/E firms subject matter experts to expand and support the gas estimating program.
- Implement the modified project origination process and expanded expertise.
- For future programs, if the settlement value is materially different than the filing, there needs to be a review to see if the original project scope is still achievable under the proposed settlement amount.

In consideration of the above, the IM has reviewed PSE&G's recommendations to award for the construction contractor scope of the Gas M&R projects awarded to date (all except Mt. Laurel and Paramus). A summary of this review is provided as follows:

- Camden: Henkels & McCoy (H&M) selected as the construction contractor after receiving the highest evaluated score (combined technical, commercial, and supplemental aspects) of the three contractors that submitted bids. H&M had the second lowest price (1.4% above the lowest bid, but 21.5% below the highest bid), but had a higher overall score due to their experience with similarly complex projects and their ability to meet the schedule and resource requirements.
- Central: H&M selected as the construction contractor after receiving the highest evaluated score of the three contractors that submitted bids. In addition to having the requisite experience and capabilities, H&M was the lowest bidder on this project (12.5% and 59% below the other bidders).
- East Rutherford: J. Fletcher Creamer selected as the construction contractor after receiving the highest evaluated score of the four contractors that submitted bids. In addition to having the requisite experience and capabilities, J. Fletcher Creamer was the lowest bidder on this project (52% to 102% below the other bidders).

- Westampton: H&M selected as the construction contractor after receiving the highest evaluated score of the five contractors that submitted bids. In addition to having the requisite experience and capabilities, H&M was the lowest bidder on this project (3.5% to 84% below the other bidders).

Relative to the forecasted in-service dates shown in **Table 25**, as of the end of the second quarter of 2022, the forecasted in-service dates for the remaining Gas M&R projects remained unchanged from the status as of the end of the prior quarter. As previously reported, the Westampton project was placed in-service as of October 22, 2021.

#### Findings & Observations:

- The six projects that comprise the Gas M&R subprogram continues to advance at various stages of development or delivery. During the second quarter of 2022, construction continued to advance on the Camden, Central, and East Rutherford projects, while the Mount Laurel and Paramus projects continued pre-construction activities including advancing design efforts and receiving the interconnection agreement with Transco. The Westampton project was previously put in-service in October 2021, while punch list items and site restoration activities continued in the second quarter of 2022.
- There were no changes to the forecasted in-service dates of the Gas M&R projects during the second quarter of 2022. The next projects to be completed are the Camden and East Rutherford projects, which are forecasted to be placed in-service by the end of 2022.
- PSE&G updated the estimates for each of the Gas M&R projects during the second quarter of 2022, resulting in the overall subprogram estimate increasing by \$18.9 million. While the Camden and Westampton project estimates decreased, the other stations within the subprogram saw estimate increases ranging from \$4.4 million to \$9.5 million. The estimate increases were generally related to design evolution, scope refinement, and current market conditions, which were more impactful due to the reduction in R&C from the original ES 2 filing to the approved Stipulation (reducing R&C from 60% to 35%). Despite these estimate increases, the overall subprogram forecast was reduced to \$104.3 million (from \$128.3 million as of the end of the first quarter of 2022) and remains below the current total estimate of \$128.8 million, with the difference between the forecast and the estimate primarily reflecting the R&C funds.
- With the significant increase in the updated project estimates, the IM finds that PSE&G appropriately assessed why and how the project cost estimates have changed since the filing including identifying lessons learned and actions to be taken on future initiatives. Generally speaking, the increases were driven by scope refinement and market conditions, further exacerbated by the budget and R&C reduction from the ES 2 filing to the approved Stipulation.
- The IM has found nothing to date that would jeopardize the subprogram being completed on time, however, the current forecast of \$104.3 million exceeds the Stipulation budget of \$101.0 million.

#### 1. Camden

During the second quarter of 2022, \$7,655,276 was spent on the Camden project compared to a forecast of approximately \$9.1 million, which brought the total spend to approximately \$13.5 million. The variance in forecasted to actual spend in the second quarter of 2022 was attributed to delayed delivery of material to site due to availability from the sub-vendors. Despite these material delays, PSE&G has held

the forecasted in-service date for the Camden project at December 16, 2022 by re-sequencing certain activities and implementing contingency plans such as working with Transco to tie-in on their facility upstream of the pressure regulators and using a valve to connect to the new M&R station, this allows the old station to remain operating until the new station is ready and can make the cutover without taking a two to three day outage. PSE&G anticipates this contingency plan will require minor amounts of additional piping and minimal valve costs, but should not have a material impact on the project cost.

Notable activities on the Camden project during the second quarter of 2022 included:

- Contractor mobilized and began receiving materials;
- Soil conservation measures installed;
- Excavation for building footings and foundations;
- Pipe fabrication;
- Steel erection for regulator, heater, and control buildings;
- Installation of meter runs in the regulator building.

The actual spend by quarter for Camden as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. During the second quarter of 2022, PSE&G submitted the Conceptual estimate for the Camden project to its URB for approval. This updated estimate saw the overall estimate decrease by \$7.5 million (\$5.8 million in the base estimate and \$1.7 million in R&C) from the previously approved Study level estimate, with the changes driven by:

- \$3.6 million – changes in site plan due to required site remediation resulted in approximately 70% more pipe and conduit. There was a limited portion of the site that was remediated prior to the start of the project, while the project had a requirement to avoid the non-remediated areas, which resulted in the layout of the buildings not being optimized to minimize the pipe routing.
- \$3.3 million – due to the new compressor sizing requiring additional load, the existing 5kV transformers were not adequate and required replacement of equipment, associated switchgear, and an additional 30x42 foot raised platform to house the equipment.
- \$2.9 million – additional schedule coordination needed to meet site remediation deadline requirements required additional resources.
- \$1.7 million – building size increase based on final piping design; additional steel and prices higher than estimated.
- \$0.8 million – higher than estimated mobilization/demobilization costs based on actual bids; asbestos abatement of M&R building and onsite security.
- \$0.6 million – updated R&C based on current risk register.
- (\$18.1 million) – removal of LPA components from ES 2 project scope (includes valves, piping, buildings, construction costs, engineering, testing and commissioning).
- (\$2.3 million) – adjustment to R&C to remove risk items associated with LPA scope.

As much of this updated estimate involves impacts associated with the LPA scope, PSE&G also presented an estimate to its URB that documented the changes from the \$15.4 million Office level estimate to the current \$21.8 million Conceptual estimate to present a summarized view of the changes to the current ES 2 project scope (i.e. no LPA scope adjustments, addition or removal). The cost drivers from the earlier Office level estimate to the current Conceptual estimate were:

- \$2.9 million – changes in site plan due to required site remediation that impacted the building location relative to inlet/outlet piping and resulted in additional piping and conduit required.

- \$2.4 million – additional schedule coordination needed to meet site remediation deadline requirements (added resources, premium time).
- \$1.8 million – building size increased based on final piping design; additional steel required and prices higher than estimated.
- \$1.4 million – other construction: Higher mobilization/demobilization costs based on actual contractor bids; Asbestos abatement of M&R building.
- (\$2.1 million) – drawdown of R&C based on current risk register.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$13,326	\$859,350	\$2,147,696	\$2,791,701	\$7,655,276	\$1,862,886	\$2,978,844	\$191,919

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$13,467,350	\$21,800,000	\$18,500,999	73%

## 2. Central

During the second quarter of 2022, \$7,029,778 was spent on the Central project compared to a forecast of approximately \$7.4 million, which brought the total spend to approximately \$19.0 million. The forecasted in-service date for the Central project as of the end of the second quarter of 2022 remains at November 30, 2023, unchanged from the status as of the end of the first quarter of 2022.

Notable activities on the Central project during the second quarter of 2022 included:

- Excavated footings and foundations for regulator and heat exchanger/flow control buildings;
- Started forming and pouring foundations;
- Pipe fabrication;
- Steel erection for regulator, heater, and control buildings;
- Started installation of meter runs in regulator building;
- Set SCADA building in place.

The actual spend by quarter for Central as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. During the second quarter of 2022, PSE&G submitted the Conceptual estimate for the Central project to its URB for approval. This updated estimate saw the overall estimate increase by \$7.9 million (\$7.5 million in the base estimate and \$0.4 million in R&C) from the previously approved Study level estimate, with the changes driven by:

- \$6.6 million – design evolution of building configuration/foundations caused modifications to: inlet/outlet header configurations, overpressure protection, piping, electrical, conduits, and refinement of material/equipment specifications.
- \$3.0 million – based on final IFC piping design and building layout, LPA injection points required relocation needing additional valves, material, foundations, demolition, and pipe supports.
- \$1.8 million – Transco scrubber: final design flow exceeds existing scrubber capacity, requiring a new and larger scrubber with additional piping, valves, and foundation.
- \$1.6 million – station by-pass: relocated away from proposed regulation building to allow access in case of station emergency.

- \$0.5 million – shift in-service date: additional mobilization and demobilization of the construction contractor and associated carrying costs to shift in-service from 2022 to 2023.
- \$2.4 million – updated R&C.
- (\$5.0 million) – removal of LPA components from ES 2 project scope (includes valves, piping, buildings, construction costs, engineering, and testing and commissioning).
- (\$1.0 million) – adjustment to R&C to remove risk items associated with LPA scope.
- (\$1.0 million) – removal of scrubber components from ES 2 project scope (includes scrubber equipment, valves, piping, construction costs, and engineering).
- (\$0.2 million) – adjustment to R&C to remove risk items associated with scrubber scope.
- (\$0.8 million) – updated R&C based on current risk register.

As much of this updated estimate involves impacts associated with the LPA scope, PSE&G also presented an estimate to its URB that documented the changes from the \$19.7 million Office level estimate to the current \$36.9 million Conceptual estimate to present a summarized view of the changes to the current ES 2 project scope (i.e. no LPA scope adjustments, addition or removal). The cost drivers from the earlier Office level estimate to the current Conceptual estimate were:

- \$6.9 million – construction: based on actual bids & PO for construction costs; includes additional pipe supports, foundations, gas main tie-ins, pipe prefabrications, additional electrical and instrumentation, and current market conditions.
- \$5.4 million – building/foundation & mechanical: driven by design evolution of the building configuration/foundations; increasing the building count from two to four buildings and increasing the number of heater replacements from one to five. This design evolution led to modifications to: inlet/outlet header configurations, additional foundations; overpressure protection, piping, electrical, instrumentation, conduits, and refinement of material/equipment specifications.
- \$3.0 million – procurement: driven by procurement of two additional buildings and four heaters required for final design and increases due to market conditions.
- \$1.6 million – station by-pass: relocated away from the proposed regulation building to allow access in case of station emergency.
- \$1.2 million – project management, licensing & permitting, and engineering: increase due to actual spend to date and estimate to complete.
- \$0.5 million – shift in-service date: additional mobilization and demobilization of the construction contractor and associated carrying costs to shift in-service from 2022 to 2023.
- (\$1.4 million) – update of R&C based on current risk register.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$6,869	\$670,582	\$4,226,277	\$7,112,617	\$7,029,778	\$3,671,463	\$1,479,499	\$7,203,120

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$19,046,122	\$36,900,000	\$31,400,204	61%

### 3. East Rutherford

During the second quarter of 2022, \$4,413,835 was spent on the East Rutherford project compared to a forecast of approximately \$4.8 million, which brought the total spend to approximately \$8.3 million. The

forecasted in-service date for the East Rutherford project as of the end of the second quarter of 2022 remains unchanged from the status as of the end of the prior quarter at December 16, 2022.

Notable activities on the East Rutherford project during the second quarter of 2022 included:

- Set up frac tank for ground water management;
- Excavated for temporary bypass lines and installed hot taps for temporary bypass;
- Completed hazardous abatement in regulator building;
- Initiated station outage;
- Completed demolition of regulator building and removal of all existing yard pipe;
- Prepared for pile driving;
- Continued pipe fabrication;
- Installed water filtering equipment.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. During the second quarter of 2022, PSE&G submitted the Conceptual estimate for the East Rutherford project to its URB for approval. This updated estimate saw the overall estimate increase by \$9.5 million (\$7.9 million in the base estimate and \$1.6 million in R&C) from the previously approved Study level estimate, with the changes driven by:

- \$3.3 million – outage constraint: construction contractor sequencing and durations were longer than anticipated and required additional resources; construction limited by winter heating season.
- \$1.6 million – design evolution: changed from one large heater to two smaller heaters to facilitate maintenance of heater tubes; increased piping wall thickness to mitigate high noise levels; upgraded temporary regulator skids to allow additional operational controls during construction.
- \$0.5 million – design required upgrade to electrical service from 200a/120vac to 400a/480vac to support additional equipment and includes the separation of the currently shared Transco/PSE&G electrical service to the station. This requirement stemmed from the Interconnection Agreement between Transco and PSE&G that called for PSE&G to provide power to Transco and by utilizing a separate service disconnect, it ensures that an electrical shutdown by either Transco or PSE&G will not impact the other party, improving the safety and reliability of the station as a result.
- \$2.0 million – building footprint: increased costs associated with regulator and control buildings, including materials, building erection, piles, foundations, and fit out of instrumentation and controls.
- \$0.5 million – environmental: based on samples taken during detail design, the building/piping will require lead/asbestos/PCB abatement; higher than anticipated water table requires additional dewatering.
- \$1.6 million – updated R&C based on current risk register.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$9,010	\$521,865	\$1,783,623	\$1,551,290	\$4,413,835	\$9,523,474	\$3,194,450	\$702,502

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$8,279,623	\$26,000,000	\$21,700,048	38%

#### 4. Mount Laurel

During the second quarter of 2022, \$42,260 was spent on the Mount Laurel project compared to a forecast of approximately \$58,000, which brought the total spend to approximately \$1.1 million. The forecasted in-service date for the Mount Laurel project as of the end of the second quarter of 2022 remained unchanged from the status as of the end of the prior quarter at November 30, 2023.

Notable activities on the Mount Laurel project during the second quarter of 2022 included PSE&G receiving updated pricing from construction contractors and PSE&G receiving the interconnection agreement from Transco.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. During the second quarter of 2022, PSE&G submitted the Conceptual estimate for the Mount Laurel project to its URB for approval. This updated estimate saw the overall estimate increase by \$4.4 million (\$3.3 million in the base estimate and \$1.1 million in R&C) from the previously approved Study level estimate, with the changes driven by:

- \$1.9 million – construction bid: direct impacts to construction contractor based on current market conditions since original estimate.
- \$0.7 million – material price increase: increase in material costs and shipping based on current quotes received.
- \$0.7 million – project management/oversight: additional project management, oversight, and carrying costs to shift in-service from 2022 to 2023.
- \$1.1 million – updated R&C based on current risk register.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$5,965	\$362,167	\$527,341	\$135,639	\$42,260	\$77,419	\$118,261	\$11,430,951

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$1,073,372	\$15,800,000	\$12,700,000	8%

#### 5. Paramus

During the second quarter of 2022, \$115,998 was spent on the Paramus project compared to a forecast of approximately \$150,000, which brought the total spend to approximately \$1.3 million. The forecasted in-service date for the Paramus project as of the end of the second quarter of 2022 remains unchanged from the forecast as of the end of the prior quarter at December 29, 2023.

Notable activities on the Paramus project during the second quarter of 2022 included:

- Engineer developed and submitted 70% drawings for review; and,
- RFP issued for major equipment items.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. During the second quarter of 2022, PSE&G submitted an updated Study level estimate for the Paramus project to its URB for approval. This updated estimate saw the overall estimate increase by \$6.2 million (entirely within R&C, no increase to



the base estimate) from the previously approved Study level estimate, with the changes driven by the current risk register and the experience of other more advanced projects in the ES 2 Program.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>					<i>Forecast</i>		
\$8,842	\$462,452	\$568,344	\$94,755	\$115,998	\$120,754	\$726,505	\$9,402,362

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$1,250,390	\$19,900,000	\$11,500,011	11%

## 6. Westampton

During the second quarter of 2022, \$132,517 was spent on the Westampton project compared to a forecast of approximately \$191,000, which brought the total spend to approximately \$8.3 million. The Westampton was placed in-service as of October 22, 2021, remaining activities include site restoration and final punch list items that continued to be performed in 2022.

During the second quarter of 2022, notable activities on the Westampton project included:

- Completed installation of cathodic protection components; and,
- Continuing to work through punch list items.

The remaining items to closeout the project include corrosion protection work and final punch list items relating to site paving/grading. PSE&G expects these activities to be fully complete around July.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. A revised Definitive estimate was submitted by PSE&G and approved by its URB in the second quarter of 2022. As the project was essentially complete at this time, the updated estimate removed the remaining R&C (\$900K) and reduced the base estimate to reflect the actual costs (reducing the base estimate by \$700K).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>					<i>Forecast</i>		
\$8,395	\$1,032,670	\$6,961,216	\$178,124	\$132,517	\$123,562	\$35,903	\$-

Actuals to Date	Estimate	Current Forecast	% of Actuals to Forecast
\$8,312,921	\$8,400,000	\$8,472,386	98%

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2022 SECOND QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

JUNE 28, 2023

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2022 Second Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
S-INF-1	<p><b><u>Reference Q1 2022 Report, S-INF-3</u></b>            Regarding the State Street Substation project, the IM's Q1 2022 Report state that the initially planned overhead route was no longer feasible due to an existing overhead pole in the area that was not known at the time of the initial design, and the updated route requires the installation of an underground manhole and duct bank system.</p> <ol style="list-style-type: none"> <li>a. Please estimate the cost increases associated with this scope change.</li> <li>b. Please provide additional details explaining how the existing overhead pole caused the initially planned overhead route to become infeasible.</li> <li>c. Please indicate if the Company considered other overhead alternatives before opting for an underground route.</li> <li>d. Please explain why the existing overhead pole was not identified during field inspections.</li> </ol>	<p>Regarding the State Street project:</p> <ol style="list-style-type: none"> <li>a. PSE&amp;G estimates the costs associated with the overhead route design change is approximately \$370,000, with a total cost of approximately \$870,000 for this circuit 4005/tie feeder.</li> <li>b. The initial planned route for the circuit 4005/tie feeder was based on an Office level overhead design/scope that was not confirmed in the field at the time. During field inspections in the detailed design phase, it was discovered that an existing pole line already occupied the intended route along Cooper Street.</li> <li>c. Three overhead routers were evaluated by PSE&amp;G (Cooper Street, Federal/Market, and Right-of-way to Route 30).</li> <li>d. The existing overhead pole was identified during field inspections that occurred in the detailed design phase.</li> </ol>	No change
S-INF-2	<p><b><u>Reference Q2 2022 Report, Page 4, Cost-Effectiveness and Efficiency of Investments</u></b>            Please discuss the cost-effectiveness of the Contingency Reconfiguration subprogram given that the total anticipated number of recloser and fuse saver installations has decreased significantly from originally budgeted totals.</p>	<p>The initial scope and estimate to the actual installed scope and final costs can serve as a baseline in evaluating the cost-effectiveness and efficiency of executing the work, but consideration also must be given to the underlying drivers and reasons for any changes in scope or cost. Each month PSE&amp;G reviews the actual cost per unit and hours per unit on the installations and assesses any variances from its estimate and assumptions to inform the forecast at completion.</p> <p>Below the IM discusses the primary changes from the initial scope and estimate to final installed units and costs for the Fuse Savers and reclosers, respectively.</p> <p><u>Fuse Savers</u>            In the ES 2 filing, PSE&amp;G identified 3,282 circuits where customers are served from overhead facilities on a branch line as candidates to receive reclosing devices (Fuse Savers). At the time of the ES 2 filing, PSE&amp;G</p>	No change

ID #	Question/Comment	IM Response	Report Changes
		<p>estimated installation of these devices would range between \$11,721 for single-phase devices and \$18,262 for two-phase devices. The Black &amp; Veatch “Electric Cost-Benefit Analysis” study attached to PSE&amp;G’s ES 2 filing noted that “PSE&amp;G currently does not have any of these devices installed; therefore, some work is required to develop a construction standard and training to ensure the workforce is familiar with the construction and operation of the reclosing devices.” The construction standard and training was developed through implementation of the Fuse Saver pilot program that commenced in November 2020 and was primarily completed in January 2021 (PSE&amp;G installed 80 devices in this initial period, then opted to install the remaining units in inventory to capture additional cost and performance data, resulting in a total of 113 units installed as of the end of 2021).</p> <p>The actual costs observed through the Fuse Saver pilot program actuals saw single phase devices average \$35,216 and two-phase devices average \$48,031, significantly higher than the estimate at the time of the ES 2 filing. The cost increases were primarily driven by:</p> <ul style="list-style-type: none"> <li>• The ES 2 filing estimate not including management costs, tree trimming, storage, or traffic control costs;</li> <li>• Higher material costs than estimated, including pole replacements at multiple locations (pole replacement costs not included in the initial estimate assumptions, adds approximately \$10,000 in costs); and,</li> <li>• Average labor hours 4x higher than the ES 2 filing estimate and increased labor rates since filing.</li> </ul> <p>PSE&amp;G’s approach on forecasting the Fuse Saver scope during its execution is based on a quarterly review of the actual cost data and related installation status information to inform and update the installation plan. PSE&amp;G continues seeking to optimize the number of Fuse Savers installed in alignment with the overall budget for the subprogram. For example, given the added costs of the pole replacements, PSE&amp;G considered attempting to avoid such locations, but in many cases the existing equipment and height/spacing requirements on the pole required installation of a new pole.</p> <p><u>Reclosers</u></p> <p>In the ES 2 filing, PSE&amp;G identified 1,190 circuits as candidates for recloser investments, comprised of 690 13kV circuits and 500 4kV circuits.</p>	

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		<p>PSE&amp;G’s approach to this scope was to update the circuit list on a recurring basis through the execution of the Program to reflect changes to the system (either work already completed or work planned in the near-term). This effort included conducting detailed reviews of the system to identify cost effective opportunities to include other circuits in the Program following the same cost/benefit process utilized in the ES 2 filing. Ultimately, PSE&amp;G installed a total of 1,467 reclosers through the ES 2 Program, which included 954 13kV circuits and 513 4kV circuits, representing an increase of 277 units from what was initially planned.</p>	
S-INF-3	<p><b><u>Reference Q2 2022 Report, Page 18</u></b>  Regarding the cost reductions associated with the Lakeside Avenue project:</p> <ol style="list-style-type: none"> <li>a. Please provide additional information about the scope reduction associated with the electrical construction award, including estimated cost savings.</li> <li>b. Please explain why the 4kV bus scope was transferred to the 69kV transmission project and provide the estimated Energy Strong II cost savings.</li> </ol>	<p>Regarding the drivers to the cost forecast reduction on the Lakeside Avenue project:</p> <ol style="list-style-type: none"> <li>a. The project initially planned for elevated stair rails and rigging of the switchgear that was no longer required. This resulted in a contract price that was approximately \$1.5 million lower than what was estimated with that initial scope.</li> <li>b. PSE&amp;G transferred the 4kV bus scope based on its practice for delineation of the transmission/distribution systems interconnection point at the high side bushing on the transmission/distribution transformer. The sections of the 4kV bus scope (bus work and steel supports) transferred to the 69kV transmission project are tied to the high-side bushings of the three 69/4kV transformers, which is classified as a transmission asset. PSE&amp;G estimates the costs associated with this transferred scope are approximately \$300,000.</li> </ol>	<b>Section III.A.6.</b>
S-INF-4	<p><b><u>Reference Q2 2022 Report, Page 18</u></b>  Please provide additional information about the scope increases on the Clay Street substation project and this associated cost increases.</p>	<p>The detail of this cost forecast increase has been added to the discussion on the Clay Street project within <b>Section III.A.2.</b></p>	<b>Section III.A.2.</b>
S-INF-5	<p><b><u>Reference Q2 2022 Report, Page 28, Contingency Reconfiguration Subprogram</u></b>  Regarding the Fuse Saver projects:</p> <ol style="list-style-type: none"> <li>a. What is attributed to the scope being reduced from 1,713 units (<u>See Q1 2022 Report, S-INF-5</u>) to 1,641 units?</li> <li>b. Of the 1,641 total forecasted units, how many are expected to require an external antenna to address communication issues?</li> </ol>	<p>Regarding the Fuse Saver scope of work:</p> <ol style="list-style-type: none"> <li>a. PSE&amp;G’s approach on forecasting the number of Fuse Savers to be installed during the Program continues to follow a quarterly review of the actual cost data and related installation status information to update the installation plan and overall quantity of units planned for the Program to align with the established budget for this scope of work.</li> <li>b. Based on the units installed to date, PSE&amp;G estimates that approximately 10% of the locations will require the modified external antenna.</li> </ol>	<b>Section III.B.</b>

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	<p>c. Please explain why the delay in Fuse Saver installations associated with the Company’s D-SCADA freeze could not be reasonably foreseen during the scheduling process. Please also indicate if additional D-SCADA freezes are expected to occur within the remainder of Energy Strong II.</p>	<p>c. The D-SCADA freeze was identified ahead of its implementation, however it still resulted in an approximate two-week period in which installations were unavailable. The other major factor that influenced Fuse Saver installations during the second quarter of 2022 was the technical issues encountered on two of the first devices installed following the earlier pilot program (<i>see also</i> RCR-IM-15). There are no ES 2 related D-SCADA production system freezes planned or contemplated for the remainder of the Program.</p>	
S-INF-6	<p><b>Reference Q2 2022 Report, Page 29, Grid Modernization – Communication System Subprogram</b>  Regarding the Retrofit Substation Remote Terminal Unit (RTU) scope:</p> <p>a. Please identify the projects removed from the program and explain how PSE&amp;G determined that the projects are no longer necessary.</p> <p>b. Please discuss PSE&amp;G’s rationale to include not only substations served by Verizon plain old telephone service (POTS) (which represented 196 substations), but also those served by Verizon 4G service (which represented 22 additional stations). (See Q1 2022 Report, S-INF-6).</p>	<p>Regarding the Retrofit Substation RTU scope:</p> <p>a. No stations have been removed from the Retrofit Substation RTU scope.</p> <p>b. The intent of PSE&amp;G was to replace the RTUs relying on third-party communication, which included both the Verizon POTS and Verizon 4G service. Previously, PSE&amp;G removed the substations served by the Verizon 4G service from the subprogram following an initial assumption that only the RTUs served by Verizon POTS would be replaced that was later clarified to include all third-party services.</p>	No change
S-INF-7	<p><b>Reference Q2 2022 Report, Page 30, Grid Modernization – Communication System Subprogram</b>  Regarding the identified challenges and lessons learned for the Grid Modernization – Communication System subprogram, please discuss if these issues (including inadequate site investigations and lack of comprehensive review and updating location requirements, grouping, and prioritizing locations for new fiber installation) specifically contributed to any cost increases that would not have otherwise occurred absent these issues.</p>	<p>Given the variety of factors that influenced the execution of the fiber projects within the Grid Modernization – Communication System subprogram (including executing through the Covid-19 pandemic), it would be difficult to parse out specific cost impacts stemming from specific issues encountered in the execution of the fiber projects. For example, one of the issues identified by PSE&amp;G was inadequate site investigations that resulted in required items being left out of the initial scope definitions. This led to cost increases as the missing scope items were identified and included in the projects, but they were nonetheless requirements for the project to achieve its intended objectives.</p> <p>From the IM’s perspective, there are elements of these issues/lessons learned that potentially caused cost inefficiencies, such as the lack of a comprehensive review to update location requirements and group projects for potential efficiencies. However, other issues encountered were more related to typical project execution risks, such as the increased time to</p>	No change

ID #	Question/Comment	IM Response	Report Changes
		obtain railroad permits and lead time for scheduling commissioning resources, and with this scope of work having a fixed budget with no R&C, any realized risks inherently led to cost increases.	
S-INF-8	<p><b><u>Reference Q2 2022 Report, Pages 32-33, Tables 19 and 20</u></b>  Please clarify if the spending for “Retrofit reclosers” also includes spending for retrofitting RTUs. If not, please explain the significant amount of forecasted spending, given that retrofitting of reclosers was completed in Q4 2021.</p>	<p>The Grid Modernization – Communication System subprogram is responsible for the procurement, handling, delivery and oversight of the Fuse Saver radios being installed within the Contingency Reconfiguration subprogram. The current spend for the Retrofit reclosers scope relates to materials (radios and kitting) and associated project management costs for the Fuse Saver scope.  The specific costs related to the Substation RTU scope have been split out in <b>Table 19</b> and <b>Table 20</b>.</p>	<b>Table 19 &amp; Table 20</b>
S-INF-9	<p><b><u>Reference Q2 2022 Report, Page 34, Grid Modernization – Communication System Subprogram</u></b>  Regarding the Grid Modernization – Communication System subprogram, please provide additional details about the fiber scope changes which contributed to a cost increase of \$3 million.</p>	<p>The details of the transition of the fiber installation and cutovers scope from the Office level estimate to Study level estimate to the current Definitive level estimate are shown on <b>Table 16</b>. In summary, the drivers of the current \$3.0 million estimate increase are:</p> <ul style="list-style-type: none"> <li>• OP estimates: \$2.5 million – actual costs higher than estimated.</li> <li>• IP estimates: \$2.2 million – refinement of Office level estimates.</li> <li>• Changed routes: \$0.9 million – routes for Montclair (+\$1.3 million) and Bloomfield (-\$0.4 million) projects changed to provide simplified designs and avoid extensive inspections and permitting associated with the original OP routes.</li> <li>• Fiber cutovers: \$0.3 million – increase due to scope and estimate refinement.</li> <li>• Scope reduction: (\$2.9 million) – removal of selected projects from the subprogram.</li> </ul> <p>The specific scope refinement related to changes made to meet updated system communication requirements.</p>	No change
S-INF-10	<p><b><u>Reference Q2 2022 Report, Page 35, Grid Modernization – ADMS Subprogram</u></b>  Regarding the ADMS project, it is noted that the scope of work includes the replacement of existing D-SCADA elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra). Please discuss if any equipment deployed within the Company’s system will become obsolete as a result of the ADMS implementation.</p>	<p>The infrastructure for Common Gate Interface (CGI) – Outage Management System (OMS) will be obsolete and retired after OSI OMS go live. The associated CAD infrastructure will also be obsolete after DWMS CAD for electric and gas operations is completely replaced by MWMS, which is expected by mid-2024. For the Platform, DSCADA-Legacy hardware was decommissioned as part of the hardware upgrade involved with the Platform scope and implementation.</p>	No change

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S-INF-11	<p><b><u>Reference Q2 2022 Report, Page 37, Grid Modernization – ADMS Subprogram</u></b>            Regarding the identified challenges and lessons learned for the Grid Modernization – ADMS subprogram:</p> <ol style="list-style-type: none"> <li>a. Please discuss if these issues (including lack of project organization with understanding future projects within portfolio/strategy and deficiency of proper resources) specifically contributed to any cost increases that would not otherwise have occurred absent these issues.</li> <li>b. Please discuss if these issues are expected to have any implications on the functionality of the ADMS.</li> </ol>	<p>The issues identified and encountered with the execution of the Grid Modernization – ADMS subprogram generally relate to the first-of-a-kind nature of this scope of work, the limited project definition at the time of the ES 2 filing, and the decision to incorporate lessons learned from Tropical Storm Isaias shortly after operational planning for the project had completed.</p> <p><b>Table 21</b> summarizes the evolution of the Grid Modernization – ADMS subprogram estimate from the initial \$35.0 Office level estimate through the \$42.7 million Conceptual level estimate to the current \$56.3 million Definitive level estimate. In further examining these cost drivers, the IM has grouped them into the following primary categories:</p> <ul style="list-style-type: none"> <li>• Scope changes/design evolution: \$10.5 million;</li> <li>• Project execution/resources: \$4.5 million;</li> <li>• Schedule impacts: \$3.5 million; and,</li> <li>• R&amp;C: \$2.8 million.</li> </ul> <p>Concerning the identified challenges and lessons learned and if those specifically contributed to any cost increases that otherwise would not have occurred, it is the IM’s view that the majority of these costs would likely have been incurred for delivery of the final scope of work (considering the scope evolution, including lessons learned from Tropical Storm Isaias, that also drove changes to the schedule and resource requirements). Importantly, these issues will not have impacts on the functionality of the ADMS, which will also benefit from the updated scope and lessons learned incorporated from Tropical storm Isaias).</p>	
S-INF-12	<p><b><u>Reference Q2 2022 Report, Page 38, Electric Stipulated Base</u></b>            Regarding the Outside Plant-Higher Design Standards (OP-HDS) projects within Electric Stipulated Base:</p> <ol style="list-style-type: none"> <li>a. It is indicated that circuits will be selected based upon Value of Lost Load (VOLL). Please discuss if the circuits’ reliability metrics will also be considered.</li> <li>b. Please provide the estimated costs of the currently contemplated OP-HDS scope.</li> </ol>	<p>Regarding the OP-HDS scope:</p> <ol style="list-style-type: none"> <li>a. The VOLL metric combines the customer minutes interrupted reliability metrics with the economic cost impact on the affected customers to estimate the value to customers of improved circuit performance.</li> <li>b. While PSE&amp;G is preparing and advancing the OP-HDS work, at this time it has incurred no costs within the ES 2 Program. While PSE&amp;G intends to use any remaining funds from the Life Cycle projects towards the OP-HDS scope of work, in early 2023 PSE&amp;G also transferred some of this work to its Infrastructure Advancement Program that has a similar scope.</li> </ol>	No change



ID #	Question/Comment	IM Response	Report Changes
S-INF-13	<p><b><u>Reference Q2 2022 Report, Page 42, State Street (Outside Plant)</u></b>  Please provide additional details about the “delays in reaching an agreement with the County on restoration efforts”, including any additional costs resulting from the eventual agreement.</p>	<p>Camden County requested PSE&amp;G use concrete and doweling for temporary patching in the roadways after the test pits on the State Street OP project were completed. PSE&amp;G met with the County to advise them that the manhole and duct bank installation would closely follow completion of the test pits and that would make the temporary patching requested by the County to go beyond typical restoration efforts considering the project would be excavating in the same locations in the near future. After further negotiations with the County, an agreement was reached to forego the use of concrete for the temporary patching (with the provision that if there is a failure, any repair would utilize concrete). PSE&amp;G expects no additional costs associated with this effort, but the delay in reaching a resolution on this did affect the project schedule.</p>	<p><b>Section III.E.5.</b></p>
S-INF-14	<p><b><u>Reference Q2 2022 Report, Page 43, Gas M&amp;R Station Upgrades</u></b>  Regarding the Gas M&amp;R Station Upgrades, please indicate if all six (6) projects will incorporate a change in heater technology from water bath to more efficient glycol heaters. Please also discuss any cost increases associated with this scope change.</p>	<p>PSE&amp;G implemented a change in heater technology at the Camden, Central, and Paramus stations. This change from water bath to more efficient glycol heaters was only made at facilities where all of the heaters warranted life cycle replacement, as such this was not considered a scope change.</p>	<p>No change</p>
S-INF-15	<p><b><u>Reference Q2 2022 Report, Page 43, Gas M&amp;R Station Upgrades</u></b>  Regarding the cost increases for the Gas M&amp;R Station Upgrade projects from the Office level estimates:</p> <ol style="list-style-type: none"> <li>a. Please discuss if the identified issues and lessons learned (including insufficient investigations in the development of the projects during front-end planning, lack of formal scope lockdown, lack of comparative estimates, and a lesser experienced project team) specifically contributed to any cost increases that would not have otherwise occurred absent these issues.</li> <li>b. Please indicate if PSE&amp;G incorporated these lessons learned before proceeding with the Gas M&amp;R station upgrades approved in PSE&amp;G’s Infrastructure Advancement Program (approved June 29, 2022 in Docket Nos. EO2111211 and GO2111212).</li> </ol>	<p>The challenges encountered and the resulting lessons learned resulted in cost increases to the Gas M&amp;R projects that largely would have been required to complete the objectives of improving the reliability, safety, and environmental performance of the stations as they generally related to lack of scope definition and related upfront planning and are less tied to the actual execution of the projects. For example, on the Central M&amp;R project that went from an Office level estimate of \$15.4 million to a Conceptual level estimate of \$36.9 million, the cost increase detailed in <b>Section III.F.2.</b> can be primarily attributed to the complexity of the station that has three pipeline companies feeding the station (essentially creating three mini-stations on one site) that required extensive coordination for construction, outages, and testing and commissioning, including the use of a station by-pass. In addition, the end-of-life condition of the station’s heaters resulted in the need for two additional buildings and four additional heaters from the initial scope. On top of that, the general market conditions during and after the Covid-19 pandemic have led to higher than expected cost increases for labor, equipment, and material. The lessons learned identified by PSE&amp;G largely focus on enhancing the project origination and estimating processes, including performing a review if the settlement</p>	<p>No change</p>

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		<p>value is materially different than what was initially filed. For the ES 2 Program, PSE&amp;G's estimate for the six projects ultimately approved for the Program was \$119.3 million, however, the Stipulation budget was established at \$101.0 million (combined accelerated and stipulated base funding). As a result, the original R&amp;C amounts were reduced along with an arbitrary cut to align with the Stipulation budget.</p> <p>PSE&amp;G has informed the IM that the identified lessons learned have been incorporated into the Company's planning and execution of the Gas M&amp;R projects within the Infrastructure Advancement Program.</p>	
S-INF-16	<p><b><u>Reference Q2 2022 Report, Page 46, Camden M&amp;R Station</u></b>  Regarding the cost increase of \$3.6 million on the Camden M&amp;R Station project associated with site plan changes:</p> <ol style="list-style-type: none"> <li>a. Please provide additional details explaining how the required site remediation resulted in approximately 70% more pipe and conduit being necessary.</li> <li>b. Please provide additional details about the required site remediation, including how this relates to the Camden M&amp;R Station project.</li> </ol>	<p>Regarding the \$3.6 million cost increase on the Camden M&amp;R project associated with site plan changes:</p> <ol style="list-style-type: none"> <li>a. This was due to the limited area of the site that was remediated prior to the project and the need for the project to avoid the non-remediated areas, which resulted in the layout of the buildings not being optimized to minimize the pipe routing.</li> <li>b. The portion of the site where the M&amp;R station is being built has already been remediated. The remainder of the site will be remediated after completion of the Camden M&amp;R project.</li> </ol>	<b>Section III.F.1.</b>
S-INF-17	<p><b><u>Reference Q2 2022 Report, Page 46, Camden M&amp;R Station</u></b>  Regarding the cost increase of \$3.3 million on the Camden M&amp;R Station project associated with the new compressor sizing, please compare the new compressor sizing to that of the prior compressor and rationalize the need for a higher capability compressor.</p>	<p>The referenced \$3.3 million increase associated with the compressor were removed from the ES 2 project scope as part of PSE&amp;G removing the LPA scope from the Gas M&amp;R projects (referenced by the \$18.1 million reduction noted in the estimate discussion). With this scope adjustment, PSE&amp;G also presented an updated estimate to its URB that has been added to this discussion on the Camden M&amp;R project estimate.</p>	<b>Section III.F.1.</b>
S-INF-18	<p><b><u>Reference Q2 2022 Report, Page 47, Central M&amp;R Station</u></b>  Regarding the cost increase of \$3.0 million on the Central M&amp;R Station project associated with the relocation of Liquid Propane Air (LPA) injection points, please clarify if these costs were removed from Energy Strong II similarly to the other LPA components.</p>	<p>The estimated \$3.0 million increase associated with the relocation of the LPA injection points was removed from the ES 2 project similar to the other LPA components.</p>	<b>Section III.F.2.</b>
S-INF-19	<p><b><u>Reference Q2 2022 Report, Page 47, Central M&amp;R Station</u></b></p>	<p>Regarding the noted \$1.0 million cost decrease on the Central M&amp;R project estimate associated with removal of the scrubber components from the ES 2 project scope:</p>	No change

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	<p>Regarding the cost decrease of \$1.0 million on the Central M&amp;R Station project due to the removal of scrubber components from Energy Strong II project scope:</p> <ol style="list-style-type: none"> <li>Please explain the Company’s rationale for removing the scrubber components from the program.</li> <li>Please indicate if the scrubber components will also be removed from the program for the other M&amp;R Station projects.</li> <li>Please clarify if the cost increase of \$1.8 million associated with the Transco scrubber will also be removed from the program.</li> </ol>	<ol style="list-style-type: none"> <li>PSE&amp;G removed the scrubber components from the ES 2 project scope as the replacement of the scrubber was not identified in the filing documents.</li> <li>The scrubber components will not be removed from the other ES 2 Gas M&amp;R projects as they were listed components in the filing documents for those projects.</li> <li>PSE&amp;G has removed costs associated with the Transco scrubber components from the ES 2 Program.</li> </ol>	
S-INF-20	<p><b><u>Reference Q2 2022 Report, Page 48, East Rutherford M&amp;R Station</u></b>  Regarding the cost increase of \$0.5 million on the East Rutherford M&amp;R Station project associated with the electrical service upgrade, please explain the need to separate the shared Transco/PSE&amp;G electrical service.</p>	<p>The Interconnection Agreement between Transco and PSE&amp;G specifically requires PSE&amp;G to provide power to Transco. By providing Transco with a separate service disconnect, it ensures that an electrical shutdown by either Transco or PSE&amp;G will not impact service to the other and improves the safety and reliability of the station as a result.</p>	<b>Section III.F.3.</b>
RCR-IM-1	<p>With reference to page 3 of the Independent Monitor’s Draft Second Quarter 2022 Report, please provide an update to the Leonia switchgear delivery delay.</p>	<p>The Leonia 13kV switchgear #2 was delivered on June 16, 2022 (as shown in <b>Table 10</b>).</p>	<b>Section I.</b>
RCR-IM-2	<p>With reference to page 3 of the Independent Monitor’s Draft Second Quarter 2022 Report, please identify the “certain individual subprograms ... forecasted near or above their Stipulation budgets.”</p>	<p>The current subprogram forecasts and ES 2 Program budgets are shown in <b>Table 1</b>, which indicates the Grid Modernization – Communication System, Grid Modernization – ADMS, Gas M&amp;R, and Contingency Reconfiguration subprograms have current forecasts above the Program budget.  Overall, the total ES 2 Program forecast of approximately \$826.9 million represents 98% of the \$842 million Program budget (including the accelerated recovery and stipulated base funding mechanisms).</p>	<b>Section I.</b>
RCR-IM-3	<p>With reference to page 3 of the Independent Monitor’s Draft Second Quarter 2022 Report, please identify the “other projects with forecasted in-service dates near the Program end date that are at risk due to the delays on the switchgear deliveries[.]”</p>	<p>The Electric Station Flood Mitigation subprogram projects with forecasted in-service dates near the end of the Program end date of December 2023 and with open switchgear deliveries as of the end of the second quarter of 2022 included (with the current in-service forecast indicated in parentheses): Front Street (11/8/2023); Lakeside Avenue (9/18/2023); Orange Valley (12/29/2023); Waverly (2/27/2024); and Woodlynne (10/10/2023).</p>	<b>Section I.</b>
RCR-IM-4	<p>With reference to page 3 of the Independent Monitor’s Draft Second Quarter 2022 Report, please indicate whether other</p>	<p>The forecasted in-service date for the Waverly substation project was originally planned for the fourth quarter of 2023, but after the initial site</p>	<b>Section I.</b>

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	<p>supply chain issues in addition to the 4 kV switchgear delivery delays are contributing to the February 27, 2024 forecasted in-service date for the Waverly substation.</p>	<p>plan was rejected in March 2021, this shifted the entire project out by approximately one year to the end of 2024 (based on the timeline around resubmitting the site plan). In September 2021, the revised site plan was submitted to the Newark Planning Board and approved in December 2021. With the revised site plan approved earlier than planned, it advanced the forecasted in-service date to September 2024 by shifting the construction activities forward as supported by the improved permit dates. During the first quarter of 2022, the project team continued to detail and analyze the construction schedule for opportunities, which led to the in-service date to improve to March 2024. During the second quarter of 2022, progress advanced largely on or ahead of schedule, which contributed to the in-service date advancing seven days to February 27, 2024.</p> <p>The Waverly project also has multiple in-service dates, from the 26kV switchgear (forecasted for September 2022), the 4kV switchgear, T1, and T2 (forecasted for October 2023), and the T3 (forecasted for February 2024). While the 4kV switchgear delivery accounted for the 11 day slip to the forecasted in-service date from the first to second quarter of 2022, the primary driver to the current in-service date for Waverly was the impact from requiring a revised site plan as detailed above.</p>											
RCR-IM-5	<p>With reference to page 4 of the Independent Monitor’s Draft Second Quarter 2022 Report, please confirm that only 13 fuse saver units were installed during the 2022 Second Quarter, leaving 1,515 units to be installed by December 31, 2023 as part of the Contingency Reconfiguration subprogram.</p>	<p>This status of the Fuse Savers as of the end of the second quarter of 2022 is confirmed, with 13 devices installed during the second quarter for a total of 126 devices installed during the Program out of a forecast of 1,516 devices.</p>	No change										
RCR-IM-6	<p>With reference to Figure 2 – ES 2 CWIP Balances by Subprogram as of June 30, 2022, please explain the discrepancy between the \$69.3 million Q2 2022 subtotal for Electric Station Flood Mitigation, while a preceding paragraph on page 8 notes a CWIP Electric Station Flood Mitigation costs for “Hasbrouck (\$12.4 million), State Street (\$11.1 million), Clay Street (\$11.0 million), and Waverly (\$9.7 million)” of \$44.2 million in total for the same subprogram.</p>	<p>The referenced text concerning the CWIP balances for the Electric Station Flood Mitigation subprogram highlights the individual projects with the highest CWIP balances, but does not detail every project within the subprogram. The CWIP balances as of the end of the second quarter of 2022 for each substation projects is provided as follows:</p> <table border="1"> <thead> <tr> <th>Project</th> <th>Q2 2022 CWIP Balance</th> </tr> </thead> <tbody> <tr> <td>Academy Street</td> <td>\$-</td> </tr> <tr> <td>Clay Street</td> <td>\$11,047,959</td> </tr> <tr> <td>Front Street</td> <td>\$3,796,963</td> </tr> <tr> <td>Hasbrouck Heights</td> <td>\$12,352,213</td> </tr> </tbody> </table>	Project	Q2 2022 CWIP Balance	Academy Street	\$-	Clay Street	\$11,047,959	Front Street	\$3,796,963	Hasbrouck Heights	\$12,352,213	No change
Project	Q2 2022 CWIP Balance												
Academy Street	\$-												
Clay Street	\$11,047,959												
Front Street	\$3,796,963												
Hasbrouck Heights	\$12,352,213												

ID #	Question/Comment	IM Response	Report Changes																										
		<table border="1"> <tr> <td>Kingsland</td> <td>\$1,754,738</td> </tr> <tr> <td>Lakeside Avenue</td> <td>\$1,860,702</td> </tr> <tr> <td>Leonia</td> <td>\$4,668,986</td> </tr> <tr> <td>Market Street</td> <td>\$149,782</td> </tr> <tr> <td>Meadow Road</td> <td>\$1,777,667</td> </tr> <tr> <td>Orange Valley</td> <td>\$1,268,318</td> </tr> <tr> <td>Ridgefield 13kV</td> <td>\$2,284,652</td> </tr> <tr> <td>Ridgefield 4kV</td> <td>\$-</td> </tr> <tr> <td>State Street</td> <td>\$11,081,551</td> </tr> <tr> <td>Toney's Brook</td> <td>\$2,452,994</td> </tr> <tr> <td>Waverly</td> <td>\$9,641,079</td> </tr> <tr> <td>Woodlynne</td> <td>\$5,220,160</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$69,357,695</b></td> </tr> </table>	Kingsland	\$1,754,738	Lakeside Avenue	\$1,860,702	Leonia	\$4,668,986	Market Street	\$149,782	Meadow Road	\$1,777,667	Orange Valley	\$1,268,318	Ridgefield 13kV	\$2,284,652	Ridgefield 4kV	\$-	State Street	\$11,081,551	Toney's Brook	\$2,452,994	Waverly	\$9,641,079	Woodlynne	\$5,220,160	<b>Total</b>	<b>\$69,357,695</b>	
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RCR-IM-7	<p>With reference to Table 9 – ES 2 Electric Substation Flood Mitigation Upcoming Activities for Q3 2022, please explain the inclusion of the switchgear assembly at Hasbrouck Heights when there was no mention of this activity in the Draft First Quarter 2022 Report, Table 11 – ES 2 Electric Station Flood Mitigation Upcoming Activities for Q2 2022 on page 15, for this substation.</p>	<p>In the IM 2022 First Quarter Report, the upcoming activities on the Hasbrouck Heights project planned for the second quarter of 2022 were identified as the start of civil foundations and the start of electrical construction. The electrical construction activities at the end of the second quarter of 2022 primarily involved the switchgear assembly, which is why this activity was highlighted in <b>Table 9</b>.</p>	No change																										
RCR-IM-8	<p>With reference to page 15 of the Independent Monitor’s Draft Second Quarter 2022 Report, concerning communications provided by PSE&amp;G’s switchgear vendor, Powercon, please explain the “more detailed and frequent status updates from Powercon” referred to in the Draft Second Quarter 2022 Report regarding remaining major equipment deliveries beyond “receiv[ing] weekly updates from Powercon on the current status of the deliveries and PSE&amp;G’s management” onsite visits to the vendor.</p>	<p>Concerning the additional information from Powercon, PSE&amp;G requested and has received details in Powercon’s production schedules and information from the sub-vendors/suppliers.</p>	<b>Section III.A.</b>																										
RCR-IM-9	<p>With reference to Table 10 – ES 2 Electric Substation Flood Mitigation Switchgear Deliveries as of June 30, 2022, please explain why the Ridgefield 13 kV cont. switchgear is</p>	<p>The 13kV contingency switchgear for Ridgefield 13kV shows a September 30, 2020 delivery date as this is when this switchgear was delivered to the project. This switchgear will also be the permanent switchgear for</p>	No change																										

ID #	Question/Comment	IM Response	Report Changes
	shown with delivery date in bold of September 30, 2020 when it is the “Kingsland 13kV switchgear [] delivered to the Ridgefield 13kV site where it is being used as the contingency/temporary switchgear for that project before its permanent installation on the Kingsland project[]” and will be removed.	Kingsland following its use as a contingency switchgear for the Ridgefield 13kV project.	
RCR-IM-10	With reference to Table 11 – ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2022, on page 16 and the Findings and Observations on page 18, please specify the costs for each subcategory noted “[1] electrical construction award higher than estimated; [2] equipment procurement higher than estimated; [3] scope increases; and [4] construction schedule recovery” contributing to the \$2.3 million increase in the projected cost of the Clay Street Substation from \$30.8 to \$33.6 million.	The detail of this cost forecast increase has been added to the discussion on the Clay Street project within <b>Section III.A.2.</b>	<b>Section III.A.2.</b>
RCR-IM-11	With reference to Table 11 – ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2022, on page 16 and the Findings and Observations on page 18, please specify the costs for each subcategory noted “[1] civil and electrical construction awards higher than estimated and [2] an increased quantity of piles based on the final design” contributing to the \$2.1 million increase in the projected cost of the Kingsland Substation from \$6.4 to \$8.5 million.	The detail of this cost forecast increase has been added to the discussion on the Kingsland project within <b>Section III.A.5.</b>	<b>Section III.A.5.</b>
RCR-IM-12	With reference to Table 11 – ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2022, on page 16 and the Findings and Observations on page 18, please specify the costs for each subcategory noted “[1] civil and electrical construction awards higher than estimated and [2] an increased quantity of piles based on the final design” contributing to the \$2.1 million increase in the projected cost of the Kingsland Substation from \$6.4 to \$8.5 million.	The detail of this cost forecast increase has been added to the discussion on the Kingsland project within <b>Section III.A.5.</b>	<b>Section III.A.5.</b>
RCR-IM-13	With reference to page 19 of the Independent Monitor’s Draft Second Quarter 2022 Report, please explain what the other “[p]art of this impact” contributing the variance for Clay Street substation between forecasted second quarter spending of \$2.7 million and actual spending of \$1.9 million, including any delays in April and May 2022.	The second quarter of 2022 cost forecast to actual variance on Clay Street was driven by civil piling work shifting from a planned May-June execution to June-July due to the T3 contingency not being completed in April 2022 as initially planned and less foundation and duct bank work completed in June 2022 than was planned due to a safety standdown, which resulted in an approximate 10-day impact to the construction schedule.	<b>Section III.A.2.</b>

ID #	Question/Comment	IM Response	Report Changes
RCR-IM-14	With reference to page 18 of the Independent Monitor’s Draft Second Quarter 2022 Report, please explain the individual project updates to the Academy Street, Clay Street, Front Street, Hasbrouck Heights, Kingsland, Orange Valley, Ridgefield 13kV, State Street, Waverly, and Woodlynne projects (with Hasbrouck Heights and State Street also advancing to the Definitive stage) that collectively resulted in a \$15.0 million increase.	<p>This description appears to reference the IM’s First Quarter 2022 Report, where the updated estimates to the Electric Station Flood Mitigation projects resulted in an overall \$15.0 million increase to the overall base estimate for the subprogram.</p> <p>Details of these estimate updates were discussed within the individual project sections under Section III.A. of this report. During the second quarter of 2022 there were no updates to the estimates for the projects within the Electric Station Flood Mitigation subprogram, though the subprogram forecast increased by \$8.6 million as detailed in the Findings &amp; Observations in <b>Section III.A.</b>.</p>	No change
RCR-IM-15	With reference to page 27 of the Independent Monitor’s Draft Second Quarter 2022 Report, please explain how many installed Fuse Savers experienced communication issues other than the two units returned to Siemens for testing, have any remote control units been replaced, and what are the costs with projected repairs or replacement.	<p>PSE&amp;G has encountered communication issues on approximately 10% of the installed Fuse Savers (including 10 devices of the 113 installed in the pilot program). The costs associated with the RCU modifications to address the communication issues are approximately \$1,100 per unit in material and also slightly longer installation times, though the installation costs are not tracked separately for the devices with and without the modification.</p> <p>The devices returned to Siemens for testing in the second quarter of 2022 did not have communication issues, but instead encountered a voltage reading when in the open position that was determined to be ghost/induced voltage stemming from the device’s proximity to a live conductor and not an issue with the device itself.</p>	No change
RCR-IM-16	With reference to page 27 of the Independent Monitor’s Draft Second Quarter 2022 Report, please explain how many of the 1,515 remaining to be installed Fuse Savers does PSE&G intend to install than “initially planned in the third and fourth quarters of 2022” and at what additional cost.	There is no material cost impact expected from this shift, essentially following the installations delays encountered during the second quarter of 2022 (as discussed in <b>Section III.B.</b> ), PSE&G shifted the balance of the installations originally planned for the second quarter of 2022 across the installations planned for the remainder of the year. In total, during the second quarter of 2022, PSE&G commissioned 12 Fuse Savers in this period out of a target of 168.	No change
RCR-IM-17	With reference to Table 15 – Contingency Reconfiguration Forecasted Cost of June 30, 2022 and the findings and observations on page 28 of the Independent Monitor’s Draft Second Quarter 2022 Report, please explain how “each Division [is] now forecasted to complete the Fuse Savers scope by December 2023” when as of June 30, 2022 \$8.1 million, 19 percent of the \$43.9 million forecasted budget	<p>The current end of 2023 forecasted completion for the Fuse Saver scope of work reflects a slight slip from the forecast as of the end of the first quarter of 2022 (as shown in <b>Table 13</b>). This slip reflects the limited installations conducted in the second quarter of 2022 due to the technical issues and D-SCADA freeze discussed in <b>Section III.B.</b></p> <p>PSE&amp;G continues to establish quarterly installation targets with the Divisions, which are then split into monthly targets with forecasts updated bi-weekly, which supports completing this scope of work by the end of</p>	No change

ID #	Question/Comment	IM Response	Report Changes
	for Fuse Saver installations and out of 1,641 total projected units, 125 units have been commissioned.	2023 (as of the end of the first quarter of 2023, 957 units had been commissioned).	
RCR-IM-18	With reference the findings and observations on page 28 of the Independent Monitor’s Draft Second Quarter 2022 Report, please explain what accounted for the Contingency Reconfiguration subprogram forecast increasing by \$339,000, to a total of \$145.6 million, above the Stipulation budget of \$145.0 million.	<p>The updated forecast for the Contingency Reconfiguration continues to reflect the actual costs and field conditions encountered to date as based on the currently projected number of units (Fuse Savers and reclosers) to be installed as part of the subprogram with PSE&amp;G continuing to seek to optimize the number of units installed against the subprogram budget. For example, PSE&amp;G’s initial assumption was for 1,713 Fuse Savers to be installed as part of this subprogram, based on the actual costs incurred through the end of the second quarter of 2022, the planned number of Fuse Savers was reduced to 1,641 units after the costs per unit increased (due to a combination of higher labor, higher traffic control, and higher project management costs).</p> <p>Overall, the subprogram forecast has remained fairly constant since the third quarter of 2021, fluctuating between \$145.3 million and \$145.8 million in this time.</p>	No change
RCR-IM-19	With reference to the findings and observations for Grid Modernization – Communications System on page 34 of the Independent Monitor’s Draft Second Quarter 2022 Report, please explain the “inadequate site investigations that left required items out of the initial scope and no R&C within the initial budget” that PSE&G noted affected the Grid Modernization – Communications System subprogram budget.	<p>The initial fiber estimates reflected a scope that essentially included just the fiber installation itself, PSE&amp;G identified through the first batch of projects completed that certain stations had other scope elements required to complete the fiber installation, such as battery rack space, redundant feeders, and/or similar items that had not been included in the initial project estimates. Similarly, execution of the work identified other site-specific issues, such as on the Edison project where blocked conduit contributed to an approximate \$40,000 cost increase. Because these site-specific items were not identified earlier in the estimating process, they contributed to cost increases realized during execution of these projects. Additionally, because there was no R&amp;C budget for the subprogram, any realized risks (such as missing scope or site conditions) contributed to direct cost increases rather than being absorbed by R&amp;C funds.</p> <p>The approach of not including R&amp;C funds for a group of smaller, repetitive type projects is not unusual, but does mean with a fixed budget that the overall number of projects delivered may be reduced as a result of any cost increases realized. The IM also agrees with PSE&amp;G’s decision to include R&amp;C for future fiber installation efforts as the site-specific nature of this work and required interfaces (transmission, railroads, etc.) can lead to deviations from the initial budget assumptions and having R&amp;C funding</p>	No change



ID #	Question/Comment	IM Response	Report Changes
		ensures the initially targeted scope of the overall program is more likely to be achieved when these types of issues are encountered. <i>See also S-INF-7.</i>	
RCR-IM-20	With reference to Table 21 – Grid Modernization – ADMS Subprogram Estimate on page 36, please add subtotals in a separate column for OMS Scope Changes that contributed to the \$21.3 million subprogram budget increase.	The subtotals for the OMS scope changes were originally listed in Table 21 next to the scope change descriptions, but for clarity Table 21 has been revised to better show these values.	<b>Table 21</b>
RCR-IM-21	With reference to Table 23 – ES 2 Life Cycle Station Upgrade Project Status as of June 30, 2022 on page 38, please explain whether the subprogram risk and contingency total if \$2.3 million for Hamilton, Paramus, Plainfield, Woodbury and State Street substations represents a change in total compared the risk and contingency total (not shown) in Table 20 – ES 2 Life Cycle Station Upgrade Project Status as of March 31, 2022 in Independent Monitor’s Draft First Quarter 2022 Report on page 36.	As of the end of the first quarter of 2022, the R&C balance for the Life Cycle Station Upgrade projects was \$3.1 million. As of the end of the second quarter of 2022, the R&C balance was reduced to \$2.3 million (with the \$0.9 million of R&C allocated during the second quarter of 2022 going to Hamilton (\$600K), Woodbury (\$300K), and offset by a reduction in the base estimate to Plainfield (-\$100K) with those funds returning to the R&C balance.  The IM also notes the R&C balance was added to Table 20 in the IM’s First Quarter 2022 Final Report.	<b>Section III.E.</b>
Rate Counsel 5/3/2023 Letter	Rate Counsel continues to note that the budget for Electric stipulated base has been set to \$100 million for the life cycle subprogram. In the report for this quarter, Pegasus continued to provide Study level estimates for the five substations (Hamilton, Paramus, Plainfield, Woodbury, and State Street). (See Table 23, p. 38). The current Study level estimate for the subprogram increased by \$800,000 to \$97.7 million. Pegasus notes that “[d]uring the second quarter of 2022, PSE&G advanced the Hamilton, Plainfield, and Woodbury project estimates to the Definitive level.” Much of the increase is attributed to advancement of Hamilton to the definitive stage with a \$600,000 increase to \$16.8 million and a revised forecast of \$16.9 million. (p. 40).	The IM notes that only the State Street OP project remains at the Study level estimate, the other projects have either advanced to the Conceptual level (Paramus) or Definitive level (Hamilton, Plainfield, and Woodbury). The total subprogram estimate of \$97.7 million is correct, but does not include the \$2.3 million in R&C funds.	No change
Rate Counsel 5/3/2023 Letter	The current forecast for the Electric Flood mitigation program increased from \$349.56 million in the First Quarter 2022 Report to \$358.15 million in the Second Quarter Report. The IM notes the “forecast continues to remain under the current subprogram estimate and Stipulation amount of \$389.0 million (which includes \$41.8 million in R&C). (p. 18). Rate Counsel notes the R&C subtotal of \$41.8 million remains unchanged since PSE&G discontinued providing individual project risk and	PSE&G updates the project forecasts and the project risk registers on a monthly basis, but release of R&C funds is tied to the projects going through estimate transitions. During the second quarter of 2022, none of the Electric Station Flood Mitigation projects reached an estimate transition, thus no R&C funds were released during the quarter and the R&C balance remained unchanged from the status as of the end of the first quarter of 2022. To appreciate the availability of R&C funds, the variances between the project estimates and forecasts can be reviewed, as the forecasts offer a leading indicator in the periods between estimate	<b>Section III.A.</b>

ID #	Question/Comment	IM Response	Report Changes
	<p>contingency costs as reported in the First Quarter 2022 Report, although the IM reports further delays in the completion dates with “three projects slipping” and the “overall subprogram forecast as of the end of the second quarter of 2022 increased \$8.6 million (or 2.5%) to \$358.2 million from the status as of the prior quarter.”(p. 17) Rate Counsel is interested in learning how the risk and contingency estimate total of \$41.80 million remains unchanged from the First Quarter 2022 Report when the subprogram forecast was \$347.20 million.</p>	<p>transitions on if additional R&amp;C funding will likely be required at the next estimate transition. Under this approach, and with the data from <b>Table 11</b>, it shows that the Electric Station Flood Mitigation subprogram has a current forecast of \$358.2 million that is approximately \$11.0 million above the current Base estimate for the subprogram, suggesting if the current trends hold approximately \$11.0 million of R&amp;C will be released.</p>	
<p>Rate Counsel 5/3/2023 Letter</p>	<p>In the First Quarter 2022 Report, the IM noted that PSE&amp;G reported that the completion date for Kingsland had slipped 94 days (from June 30, 2023 to October 2, 2023), “driven by delays to the 13kV switchgear delivery on the Ridgefield 13kV project (Kingsland plans to use the contingency switchgear from the Ridgefield 13kV project).” In the Second Quarter 2022, the IM notes that switchgear delivery delays affect:</p> <ul style="list-style-type: none"> <li>• Clay Street - 4kV switchgear (delayed 76 days)</li> <li>• Leonia - 13kV switchgear #2 (delayed 33 days)</li> <li>• Ridgefield 13kV - 13kV switchgear #1(delayed 12 days)</li> <li>• Waverly – 4kV switchgear (delayed 12 days)</li> </ul> <p>As the IM notes in Table 10 – Electric Station Flood Mitigation Switchgear Deliveries as of June 30, 2022, p. 15, of the two switchgear deliveries scheduled for the second quarter 2022, as noted in the First Quarter 2022 Report, only one switchgear delivery is reported for the second quarter 2022 in the Second Quarter 2022 Report. As the IM notes “as of the end of the second quarter of 2022, there were 10 switchgear deliveries outstanding for the subprogram[.]” Table 10 – Electric Station Flood Mitigation Switchgear Deliveries as of June 30, 2022 indicates six switchgear deliveries are scheduled in 2022 and 4 are scheduled in 2023. Rate Counsel is interested in understanding if the Company has adequate resources and planning contingencies to address the impact of further delays in equipment deliveries affecting multiple</p>	<p>The remaining switchgear deliveries continue to present a risk to the completion of the projects in the Electric Station Flood Mitigation and Electric Station Life Cycle subprograms, including the slip for the Clay Street switchgear that had previously been expected to be received in the second quarter of 2022. While the shifting delivery dates have added challenges to delivering the projects, PSE&amp;G has attempted to mitigate these impacts by resequencing or advancing other work where possible and meeting with the Divisions at least monthly to review the current schedules and availability of resources. PSE&amp;G and its Divisions schedule the Division resources based on the current equipment delivery dates and related items required to support the project schedule.</p>	<p>No change</p>

ID #	Question/Comment	IM Response	Report Changes
	substations and address unforeseen situations beyond those reported in the Second Quarter 2022 Report.		
Rate Counsel 5/3/2023 Letter	<p>In the Second Quarter 2022 Report, the IM reports that PSE&amp;G continues to forecast work completion for six (Front Street, Kingsland, Lakeside Avenue, Meadow Road, Orange Valley and Woodlynn) of sixteen substation projects in the ES 2 Electric Station Flood Mitigation program during the third and fourth quarters of 2023, while the completion date for a seventh project (Waverly) remains outside the program end date of December 31, 2023. The IM noted that PSE&amp;G continues to forecast that the Orange Valley substation work is scheduled for completion on December 29, 2023 and that the Waverly substation project is now scheduled for completion on February 27, 2024, an improvement of a week from the March 5, 2024 date provided in the First Quarter 2022 Report. The completion date for Front Street has slipped nearly two weeks to November 11, 2023, and the IM reports spending was 14 percent, \$3.67 million of the total estimate of \$25.9 million. The scheduled completion date for the Orange Valley substation is near the program end date of December 31, 2023, and the IM reports spending is \$1.18 million, 8 percent of the total estimate of \$14.7 million. The completion date for Lakeside Avenue is September 18, 2023, and actual spending is 5 percent, \$1.75 million of the total estimate of \$39.4 million. The scheduled completion date for the Waverly substation is after the program end date of December 31, 2023, and the IM reports spending is twenty-five percent, \$8.94 million, of total estimate of \$36.2 million. Rate Counsel is interested in understanding how PSE&amp;G plans to manage work for six substation projects (Front Street, Kingsland, Lakeside Avenue, Meadow Road, Orange Valley and Woodlynn) in the third and fourth quarters of 2023, and if any accelerated work will impact current budgets for the delayed substation work in the ES 2 Electric Station Flood Mitigation program.</p>	<p>Concerning the six Electric Station Flood Mitigation project currently forecasted to go in-service during the third and fourth quarters of 2023, PSE&amp;G continues to update the project schedules on a monthly basis to reflect the current status including the current forecasted delivery dates for projects with open switchgear deliveries and has also sought out additional information from its vendor (production schedules, sub-vendor statuses, etc.). Based on this updated information, the project teams evaluate any opportunities to improve the schedule and coordinate to ensure resources are available to meet the project needs. While having six of the 16 Electric Station Flood Mitigation projects go in-service over a two-quarter period represents a significant effort, particularly for testing and commissioning resources, PSE&amp;G's planning and efforts to date have demonstrated this level of effort is achievable as in a six-week period at the end of 2022, PSE&amp;G successfully placed four of the Electric Station Flood Mitigation projects in-service.</p>	No change

ID #	Question/Comment	IM Response	Report Changes
Rate Counsel 5/3/2023 Letter	<p>In the Second Quarter 2022 Report, the IM reports that PSE&amp;G Outside Plant-Higher Design Standards (OP-HDS) scope “scope currently contemplates upgrades to approximately 40-50 circuit miles and replacement of approximately 700 poles.” (p. 38). Prior quarterly reports have not included such detail. The IM notes that “[i]nitial selection of circuits for OP-HDS investments is based on ... the highest annual [Value of Loss Load] (VOLL) from 2010-2020 over the baseline performance, while final circuit selection will reflect the VOLL rankings ... driven by field conditions.” The Rate Counsel is interested in understanding what specific “field conditions” PSE&amp;G is planning on using for OP-HDS selection criteria. (p. 38).</p>	<p>Final circuit selection for the OP-HDS scope involves consideration of the actual field conditions where impacts from other projects may have resulted in a change to the actual field conditions on the circuit and may warrant no longer including particular circuits in the scope of work as a result.</p> <p>The IM also notes that in early 2023, PSE&amp;G made the decision to transition the OP-HDS work planned for the ES 2 Program to its Infrastructure Advancement Program (under the Open Wire to Spacer project) due to limited funding available in the Electric Stipulated Base portion of the ES 2 Program.</p>	No change
Rate Counsel 5/3/2023 Letter	<p>The forecast for the Grid Modernization – Communication system subprogram remained relatively unchanged from the status as of the end of the first quarter of 2022, with an overall forecast increase of approximately \$136,000 (or a 0.2% increase) to \$66.3 million. (p. 34) Rate Counsel is interested in understanding what risk &amp; contingency level for the Grid Modernization – Communication would PSE&amp;G have assigned retrospectively based on lessons learned from the “inadequate site investigations that left required items out of the initial scope and no R&amp;C within the initial budget.”</p>	<p>Industry standards from AACE provide that there are a broad range of methodologies for estimating contingency amounts. The factors considered include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>• Portfolio, program, or project type: scope, size, complexity, level of technology.</li> <li>• Risk type: strategic versus tactical, systemic versus project-specific.</li> <li>• Project phase: estimate confidence level.</li> <li>• Base estimate methodology: methods, tools, and data used to develop the base estimate.</li> <li>• Skills and knowledge: of the involved participants, both in preparing the estimate and in executing the work.</li> </ul> <p>The approach of not including R&amp;C funds for a group of smaller, repetitive type projects is not unusual, but does mean with a fixed budget that the overall number of projects delivered may be reduced from what was initially estimated as a result of any cost increases or risks realized. The IM also agrees with PSE&amp;G’s decision to include R&amp;C for future fiber installation efforts as the site-specific nature of this work and required interfaces (transmission, railroads, etc.) can lead to deviations from the initial budget assumptions and having R&amp;C funding ensures the initially targeted scope of the overall program is more likely to be achieved when these types of issues are encountered. <i>See also</i> S-INF-7 and RCR-IM-19.</p>	No change

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2022 THIRD QUARTER DRAFT REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

NOVEMBER 13, 2023

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## Appendices

Appendix A.....	Draft Report Comments and Responses
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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Allowance for Funds Used During Construction.....	AFUDC
Architect/Engineer .....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System.....	DERMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Gas Metering & Regulating .....	Gas M&R
Generally Accepted Accounting Principles .....	GAAP
Geographic Information System .....	GIS
Human-Machine Interface .....	HMI
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Bid.....	IFB
Issued for Construction .....	IFC
Liquid Propane Air .....	LPA
New Jersey Department of Environmental Protection.....	NJDEP
Open Systems International Inc. ....	OSI
Outage Management System .....	OMS
Outside Plant.....	OP
Outside Plant-Higher Design Standards .....	OP-HDS
Public Service Electric & Gas .....	PSE&G
Purchase Order.....	PO
Quality Assurance System .....	QAS

Record of Decision ..... ROD  
Remote Terminal Unit ..... RTU  
Request for Information ..... RFI  
Risk and Contingency ..... R&C  
Supervisory Control and Data Acquisition ..... SCADA  
Utility Review Board ..... URB



## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram). This report contains the Independent Monitor's (IM's) findings and observations on the ES 2 Program elements and other information on the Program's status as of the third quarter of 2022.

During the third quarter of 2022, the bulk of the spend within the ES 2 Program continued to be in the largest subprogram, Electric Station Flood Mitigation, with spend in the quarter up approximately \$11.8 million from the prior quarter driven by five additional projects commencing construction, which brought all projects in the subprogram past the start of construction milestone. Spend also ramped up in the Contingency Reconfiguration subprogram where the Fuse Savers scope of work had its first full quarter of implementation. Within the other subprograms, the Grid Modernization – Communication System subprogram placed two additional fiber installation projects and one fiber cutover project in-service, with all of the fiber cutover projects and 29 of the 34 fiber installation projects now completed in the ES 2 Program. The Grid Modernization – Communication System also completed the retrofit substation remote terminal unit (RTU) scope, with an additional 48 substations completed in the third quarter of 2022, for a total of 218 substation retrofits completed in the Program. The Grid Modernization – ADMS subprogram completed sprint 21 in the Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS) scope and completed the Quality Assurance System (QAS) build and configuration for the Outage Management System (OMS) scope. The Gas M&R subprogram continued to advance construction on the Camden and East Rutherford, both forecasted to be in-service by the end of 2022 and both also having updated estimates approved during the third quarter of 2022 that resulted to no overall change in the subprogram estimate. The Hamilton, Paramus, Plainfield, and Woodbury projects in the Electric Stipulated Base scope continued construction during the third quarter of 2022, while the State Street (Outside Plant) project performed test pits ahead of the manhole and conduit work. The Outside Plant-Higher Design Standards (OP-HDS) work under the Electric Stipulated Base also commenced in the third quarter, though at this time PSE&G is performing this work outside of the ES 2 Program due to the forecasts for the life cycle station upgrade projects currently consuming the entirety of the Electric Stipulated Base budget.

Major equipment (primarily switchgear) deliveries continue to be a primary risk item for the Electric Station Flood Mitigation and Electric Stipulated Base projects with open deliveries. During the third quarter of 2022, switchgear deliveries were received on the Front Street, Ridgefield 13kV, Plainfield, and Woodbury projects. This completes the deliveries for the Electric Stipulated Base projects and leaves eight remaining for the Electric Station Flood Mitigation projects.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of September 30, 2022** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of September 30, 2022**

Subprogram	2022 Q3 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Electric Station Flood Mitigation	\$29,627,767	\$187,304,228	\$356,924,105	52%	Apr 2024	\$389M
Contingency Reconfiguration	\$7,708,933	\$117,802,488	\$147,615,838	80%	Dec 2023	\$145M
Grid Modernization – Communications	\$3,391,702	\$61,178,303	\$66,564,461	92%	Dec 2023	\$64.3M
Grid Modernization – ADMS	\$3,194,435	\$40,961,453	\$60,907,462	67%	Jun 2023	\$42.7M^
Electric Stipulated Base	\$19,163,528	\$59,072,735	\$100,582,790	59%	Dec 2023	\$100M
Gas M&R Station Upgrades^^	\$24,947,158	\$76,376,937	\$110,272,385	69%	Dec 2023	\$101M^^^
<b>Total*</b>	<b>\$88,033,523</b>	<b>\$542,696,145</b>	<b>\$842,867,041</b>	<b>64%</b>	<b>Apr 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 11** and **Table 23** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\*-Final in-service date.

\*\*\*-Following the \$7.7 million transfer in July 2021 from the Grid Modernization – Communications subprogram to the Grid Modernization – ADMS subprogram.

^-PSE&G has increased the funding for the Grid Modernization – ADMS subprogram by \$13.6 million over the Stipulation amount to a total of \$56.3 million (including \$2.8 million in R&C).

^^-Includes both the ES 2 projects and the Stipulated Base gas projects.

^^^PSE&G has increased the funding for the Gas M&R subprogram by \$27.8 million over the Stipulation amount to a total of \$128.8 million (including \$24.6 million in R&C). This R&C balance is currently at \$19.1 million as of the end of the third quarter of 2022.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending (before the Stipulated Base consideration), a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2022**.

**Table 2 – ES 2 Electric Station Flood Mitigation Status as of September 30, 2022**

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$9,300,000	\$6,519,897	70%	<b>10/19/2021</b>
2. Clay Street	\$30,800,000	\$13,021,870	39%	3/23/2023 (↓+52)
3. Front Street^	\$25,900,000	\$9,558,510	37%	1/9/2024 (↓+62)
4. Hasbrouck Heights	\$19,300,000	\$13,926,106	72%	11/18/2022 (↑-35)
5. Kingsland	\$8,700,000	\$2,219,794	26%	11/6/2023 (↓+33)
6. Lakeside Avenue	\$39,400,000	\$3,292,610	8%	2/28/2024 (↓+163)
7. Leonia	\$24,900,000	\$22,304,216	90%	11/16/2022 (↑-27)
8. Market Street	\$29,100,000	\$28,140,833	97%	<b>6/25/2021</b>
9. Meadow Road	\$7,200,000	\$2,035,052	25%	9/28/2023 (↓+6)
10. Orange Valley	\$14,700,000	\$2,227,908	15%	2/2/2024 (↓+35)
11. Ridgefield 13kV	\$26,100,000	\$25,524,755	98%	12/8/2022 (↑-5)
12. Ridgefield 4kV	\$20,800,000	\$20,703,808	100%	<b>5/16/2021</b>

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
13. State Street	\$19,600,000	\$11,609,902	59%	12/16/2022 (↑-3)
14. Toney's Brook	\$16,200,000	\$3,034,991	19%	5/26/2023 (↓+39)
15. Waverly	\$36,200,000	\$17,197,448	43%	4/30/2024 (↓+63)
16. Woodlynne	\$24,000,000	\$5,986,596	25%	10/10/2023

\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). **Bold** dates indicate the actual in-service date.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

^ - The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

As indicated in **Table 2**, the projects that previously started construction (Academy Street, Leonia, Market Street, Ridgefield 13kV, Ridgefield 4kV, and Waverly) continue to have the highest total spend to date. Additionally, six of the stations (Clay Street, Kingsland, Meadow Road, Ridgefield 4kV, Waverly, and Woodlynne) had new estimates approved by the PSE&G's Utility Review Board (URB) in during the third quarter of 2022. Overall, the updated estimates resulted in an increase to the base estimate of \$12.5 million that was offset by a release of R&C funds to result in the total subprogram estimate remaining at \$389.0 million. **Table 2** also shows that all of the remaining projects aside from Woodlynne had movement in the forecasted in-service date during the third quarter of 2022, with four advancing and eight slipping. Of these twelve projects, three of the projects (Meadow Road, Ridgefield 13kV, and State Street) had forecasted in-service dates change by less than one week. The largest changes to forecasted in-service dates were on the Lakeside Avenue, Waverly, and Front Street projects that each saw slips to their respective forecasted in-service date of at least 60 days, with Lakeside and Front Street impacted by continued delays to their switchgear deliveries and Waverly impacted by manhole rework required prior to the 26kV switchgear energization and the need for Y-buses prior to the 26kV circuit cutovers that will increase the overall duration of the cutovers. As a result of these continued schedule changes, four projects now have forecasted in-service dates in early 2024 (Front Street, Lakeside Avenue, Orange Valley, and Waverly). While PSE&G continues to assess opportunities to regain the schedule on these projects, each of these projects has an open switchgear delivery that continues to present a risk to the project schedule.

The current cost forecast for the Electric Station Flood Mitigation subprogram of \$356.9 million decreased approximately \$1.2 million from the prior quarter and continues to be below the Stipulation budget of \$389.0 million. However, schedule challenges, particularly on the projects with open switchgear deliveries and forecasted in-service dates near the Program end date will continue to warrant further monitoring by the IM to determine if the projects can be completed within the defined Program timeline. PSE&G continues to work with its switchgear vendor to receive updated information on the status of the remaining deliveries and has also instructed the vendor to prioritize certain deliveries in order to maximize support of the project schedules.

As per N.J.A.C. Section 14:3-2A.5(c)2, the IM reports are to address:

- i. *The effectiveness of Infrastructure Investment Program investments in meeting project objectives;*

- ii. *The cost-effectiveness and efficiency of investments;*
- iii. *The appropriateness of cost assignments; and*
- iv. *Any other information required by the Board.*

The IM focuses the majority of the discussion within each report on these primary objectives, after introducing summarized the findings on these areas in the IM 2021 Third Quarter Report, the IM will continue to provide a summary on these areas for each report with an emphasis on new information relative to the current reporting period. These summarized findings are as follows:

- **Effectiveness of ES 2 investments in meeting project objectives:** The objectives for each subprogram within the ES 2 were defined within PSE&G's ES 2 filing and confirmed by the Stipulation. The overall objectives focused on improving system resiliency, reliability, and hardening through rebuilding or replacing selected substations, installing smart control and monitoring devices on distribution circuits (reclosers, fuse savers, etc.), installing ADMS and a new communication system, and rebuilding selected Gas M&R stations. Within **Section III** of this report, the IM provides a review of the status of the efforts performed to meet these objectives for each subprogram. During the third quarter of 2022, the following projects/scopes were placed in-service and/or completed:
  - Electric Station Flood Mitigation: Academy Street, Market Street, and Ridgefield 4kV previously placed in-service in 2021. The next projects forecasted to go in-service are the Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street projects, each of which continues to be forecasted to go in-service by the end of 2022.
  - Contingency Reconfiguration: Following the completion of the recloser scope in early 2022, the Fuse Saver installations continued with 286 units installed during the quarter (412 units installed on the Program in total out of a currently planned scope of 1,574 units).
  - Grid Modernization – Communication System: the final 48 substation RTU retrofits were completed during the quarter (bringing the total to 218 substations in the Program); the final fiber cutover project was completed out of 12 total projects; and, two additional fiber projects were completed, leaving five projects remaining out of a total scope of 34 projects.
  - Electric Stipulated Base: Three of the five life cycle projects remain forecasted to go in-service by the end of 2022; the other two projects have shifted to 2023 forecasted in-service dates based on updated equipment delivery schedules and design changes.
  - Gas M&R: Westampton previously placed in-service in October 2021, the next stations forecasted for completion are the Camden and East Rutherford stations that continue to be forecasted to go in-service by the end of 2022.
- **Cost-effectiveness and efficiency of investments:** To assess the cost effectiveness and efficiency of ES 2 investments, the IM began with a review of the initial scope, estimate, and related planning documents for each project to establish a baseline to monitor progress against as the work advances. As the Program execution advances, the IM continues to evaluate actual costs against the initial estimates and current forecasts, including seeking additional information relating to any variances identified. The overall Program's current cost forecast now is slightly above the Stipulation amount, reflecting the cost increases that as observed by the IM has largely

stemmed from scope evolution and/or more detailed estimates from the time of the ES 2 filing, as well as the more recent changes in general market conditions (e.g. Covid-19 impacts, supply chain issues, etc.). The updated subprogram forecasts as of the end of the third quarter of 2022 compared to the end of the prior quarter were as follows:

- Electric Station Flood Mitigation: subprogram forecast decreased approximately \$1.2 million (or -0.3%) to approximately \$356.9 million.
- Contingency Reconfiguration: subprogram forecast increased approximately \$2.0 million (or 1.4%) to approximately \$147.6 million.
- Grid Modernization – Communication System: subprogram forecast increased approximately \$285K (or 0.4%) to approximately \$66.6 million.
- Grid Modernization – ADMS: subprogram forecast increased approximately \$7.4 million (or 13.9%) to approximately \$60.9 million.
- Electric Stipulated Base: subprogram forecast increased approximately \$1.5 million (or 1.5%) to approximately \$100.6 million.
- Gas M&R: subprogram forecast increased approximately \$6.0 million (or 5.8%) to approximately \$110.3 million.

As shown above, the biggest subprogram forecast changes during the second quarter of 2022 were in the Grid Modernization – ADMS and Gas M&R subprograms. Within the Grid Modernization – ADMS subprogram, the forecast increase reflected the impacts associated with a change from one OMS production release to two releases. Within the Gas M&R subprogram, the forecast increase primarily relates to the scope changes and related execution requirements identified through the development of detailed design for the Camden and East Rutherford projects.

- **Appropriateness of cost assignments:** The IM receives and reviews recurring data concerning the accumulation of costs within the Program. Based on that review, the IM submits follow-up questions to the Company regarding that data for the reporting period. Such follow-up questions generally focus on the following aspects:
  - Review of any unusual changes in cost elements from period-to-period, including but not limited to allowance for funds used during construction (AFUDC), cost of removal (COR), and the allocation of overheads.
  - Review spend on capital accounts, such as Construction Work in Progress (CWIP) as it relates to overall spend, AFUDC, and COR.
  - Verify cost accumulations and classifications appear to be in accordance with Generally Accepted Accounting Principles (GAAP), to the extent the IM has access to such information.
  - Review and investigation of prior period adjustments and/or corrections to capital accounts.
  - Engage the Company's Internal Audit group on specific areas to audit, review, and assess – particularly for areas in which the IM has limited or no visibility (proprietary data, accounting systems, etc.).

Through the above steps, the IM tracks and monitors how the Company is recording costs to support the finding that the cost assignments appear to be appropriately applied. These cost items are discussed further within **Section II.C** of this IM report.

As noted in the IM 2020 First Quarter Report, the IM conducts its assessment in accordance with Generally Accepted Government Auditing Standards (GAGAS, or more commonly referred to as the “Yellow Book” standards). The Yellow Book provides a framework for conducting performance management reviews/audit engagements with competence, integrity, objectivity, and independence that result in information used for oversight, accountability, transparency, and improvements of the audited programs and operations. On September 7, 2023, a draft IM 2022 Third Quarter Report was submitted to PSE&G, BPU Staff, and Rate Counsel. Per the Yellow Book, the transmittal of a draft report is intended to allow for review and comment by the audited entity and others to develop a fair, complete, and objective report. A summary of the comments on the draft report and the IM’s responses are provided in **Appendix A – Draft Report Comments and Responses**. This **Appendix A** also identifies specific sections within this IM 2022 Third Quarter Report that have been edited, supplemented with additional information, or otherwise revised in response to the comments received.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2022 Third Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and</i>

Subprogram	Record of Decision	IM Comments
		<i>additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report)</i>
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units	Reasonable and appropriate (See Section II.A.2. in the IM 2020 Fourth Quarter Report)
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate (See Section II.A.3. in the IM 2020 Fourth Quarter Report)
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate (See Section IV.A. in the IM 2020 Fourth Quarter Report)
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate (See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1. in the IM 2021 Second Quarter Report)
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate (See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2. the IM 2021 Second Quarter Report)

During the third quarter of 2022, there were no additional RODs issued.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

During the third quarter of 2022, PSE&G hosted the IM for meetings with subprogram personnel to review the status of the Program to date and outlook going forward. The meetings were conducted at PSE&G’s Edison Training Center, which also allowed a visit to the ADMS training room to see the ADMS Platform in use in a simulated environment. In addition, site visits were conducted at the Ridgefield 13kV and State Street substations and the Westampton Gas M&R station.

## **C. Cost Assignments**

### **1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Program Costs of Removal as of September 30, 2022**, below itemizes the charges to COR for the third quarter of 2022, the second quarter of 2022 (for comparative purposes), total COR to date for 2022, total COR for the years 2021, 2020, 2019, and total ES 2 Program COR to date. These amounts do not reflect any salvage value reductions, which have been *de minimis* in the ES 2 program through September 30, 2022 (approximately \$0.3 million).

*Table 4 – ES 2 Program Costs of Removal as of September 30, 2022*

Subprogram	Q3 2022	Q2 2022	Q1 2022	Total 2022 (YTD)	Total 2021	Total 2020	Total 2019 (Q4)	Total COR
<i>(in \$ thousands)</i>								
<b>Electric Station Flood Mitigation</b>	\$397.2	\$595.7	\$873.4	\$1,866.3	\$5,558.7	\$1,021.1	\$0	<b>\$8,446.1</b>
<b>Contingency Reconfiguration</b>	\$213.5	\$35.7	\$229.3	\$478.5	\$2,250.2	\$2,198.9	\$431.0	<b>\$5,358.6</b>
<b>Grid Modernization – Communications</b>	\$5.3	\$14.0	\$11.0	\$30.3	\$137.8	\$24.4	\$0	<b>\$192.5</b>
<b>Grid Modernization – ADMS</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	<b>\$0</b>
<b>Electric Stipulated Base</b>	\$183.1	\$340.5	\$370.0	\$893.6	\$150.0	\$0	\$0	<b>\$1,043.6</b>
<b>Gas M&amp;R Station Upgrades</b>	\$763.0	\$0	(\$0.4)	\$762.6	\$148.9	\$0	\$0	<b>\$911.5</b>
<b>Gas Stipulated Base</b>	\$0	\$0	\$431.5	\$431.5	\$196.1	\$0	\$0	<b>\$627.6</b>
<b>Total</b>	<b>\$1,562.1</b>	<b>\$985.9</b>	<b>\$1,914.8</b>	<b>\$4,462.8</b>	<b>\$8,441.7</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$16,579.9</b>

Approximately half of the \$1.6 million in COR activities in the third quarter of 2022 related to activities at the East Rutherford M&R project for demolition and removal costs associated with the regulator building and foundation, heaters, and yard piping.

## **2. Construction Work-in-Progress (CWIP) & In-Service Transfers**

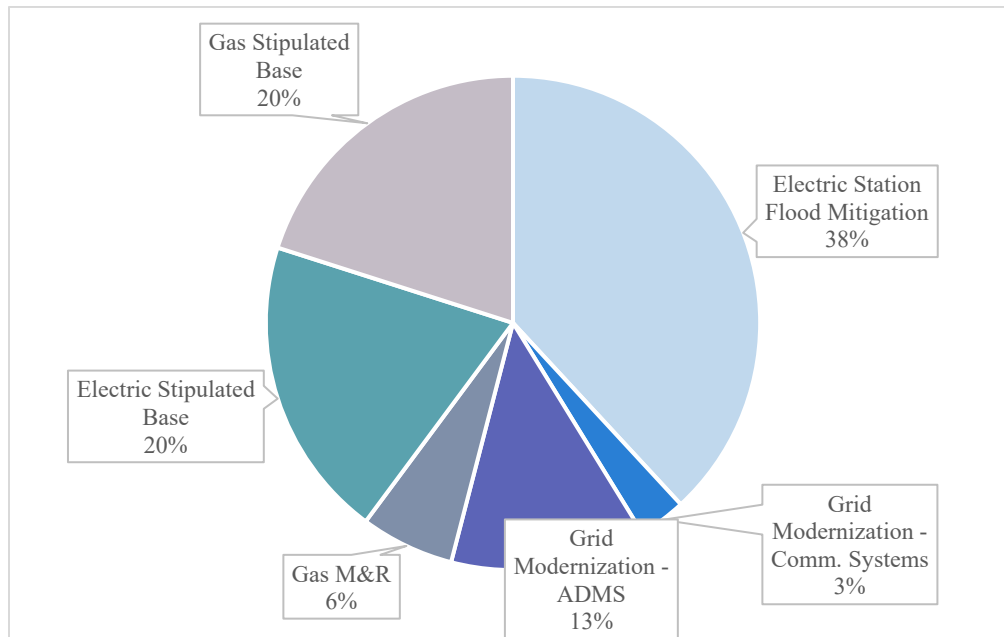
As of September 30, 2022, the ES 2 CWIP balance was \$260.7 million, compared to \$184.9 million as of June 30, 2022. This is the highest balance of CWIP to date in the ES 2 program. The largest components of CWIP as of September 30, 2022 were within:

- The Electric Station Flood Mitigation projects, including: Hasbrouck Heights (\$14.6 million), State Street (\$12.2 million), Clay Street (\$13.5 million), and Waverly (\$18.0 million).
- The Gas M&R projects, including: East Rutherford (\$14.2 million), Central (\$23.7 million), and Camden (\$27.2 million) (the latter of which is part of the Gas Stipulated Base).
- The Lifecycle Station Upgrade projects under Electric Stipulated Base, including: Hamilton (\$13.1 million) and Plainfield (\$16.4 million).
- The ADMS subprogram (\$33.4 million).

The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of September 30, 2022** below.

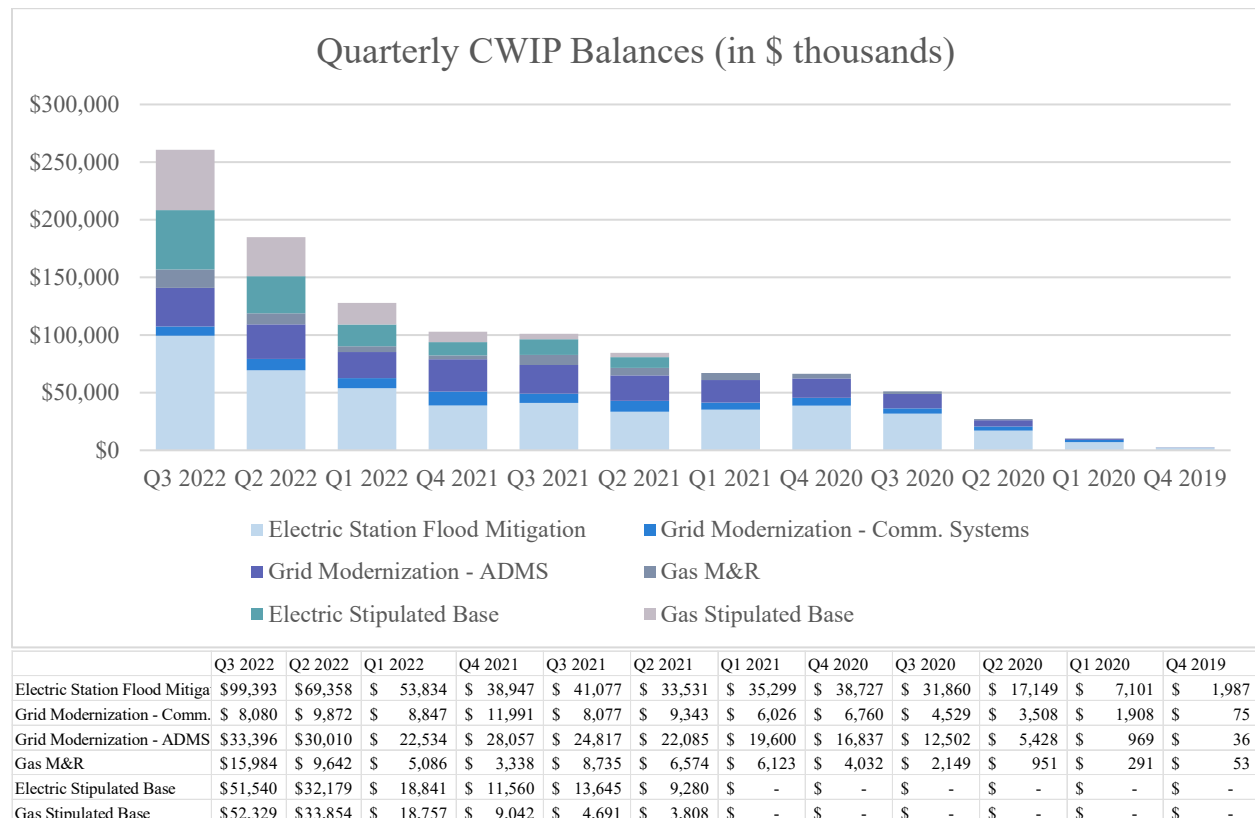


**Figure 1 – ES 2 CWIP as of September 30, 2022**



In addition, the **Figure 2 – ES 2 CWIP Balances by Subprogram as of September 30, 2022** below depicts the composition of end-of-quarter CWIP balances by subprogram for the third, second and first quarters of 2022, and each quarter of 2021 and 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of September 30, 2022**



Transfers from CWIP to plant in service were \$3.1 million during the third quarter of 2022, the majority of which was attributed to placing several Grid Modernization fiber projects in service during the third quarter. Total ES 2 transfers from CWIP have been \$89 million through September 30, 2022. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no AFUDC is recorded on these expenditures. This accounting treatment is in accord with generally accepted accounting principles and the Company's accounting policies.

### 3. Allowance for Funds Used During Construction (AFUDC)

The amount of quarterly AFUDC recorded by the Company for each ES 2 subprogram during the third, second, and first quarters of 2022, total 2022 to date, total AFUDC for the years 2021, 2020 and 2019, and total Energy Strong AFUDC accrued to date, is shown below in **Table 5 – ES 2 Program AFUDC as of September 30, 2022**.

*Table 5 – ES 2 Program AFUDC as of September 30, 2022*

Subprogram	Q3 2022	Q2 2022	Q1 2022	Total 2022 (YTD)	Total 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>							
<b>Electric Station Flood Mitigation</b>	\$1,285.1	\$944.5	\$759.0	\$2,988.6	\$2,281.2	\$936.5	\$9.9	<b>\$6,216.2</b>
<b>Contingency Reconfiguration</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	<b>\$0</b>
<b>Grid Modernization – Communications</b>	\$98.5	\$123.1	\$115.6	\$327.2	\$386.9	\$184.3	\$0.2	<b>\$898.6</b>
<b>Grid Modernization – ADMS</b>	\$536.9	\$438.9	\$385.7	\$1,361.5	\$1,365.6	\$352.7	\$0.1	<b>\$3,079.9</b>
<b>Electric Stipulated Base</b>	\$645.0	\$383.9	\$230.0	\$1,258.9	\$524.6	\$44.0	\$0	<b>\$1,827.5</b>
<b>Gas M&amp;R Station Upgrades (incl. Stip. Base)</b>	\$733.8	\$395.6	\$208.3	\$1,337.7	\$470.0	\$70.0	\$0.2	<b>\$1,877.9</b>
<b>Total</b>	<b>\$3,229.3</b>	<b>\$2,286.0</b>	<b>\$1,698.6</b>	<b>\$7,283.9</b>	<b>\$5,028.3</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$13,910.1</b>

AFUDC accrued for ES 2 projects during the third quarter of 2022 increased over AFUDC accrued during the second quarter of 2022 as the result of increases in total average CWIP balances across almost all subprograms.

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2022, the new AFUDC rate was calculated to be 6.92%, using the capital structure and component costs as of January 31, 2022. This rate is higher than the 2021 rate of 6.81%, primarily due to a zero balance of short-term in the 2022 calculation (vs. a \$44 million balance of short-term debt in 2021), and also to an 8% reduction in the Company's amount of long-term debt outstanding (lowering the debt component of the capital structure from 45.5% to 44.8%), and a reduction in the embedded cost of long-term debt, both as used in the AFUDC calculation. In calculating the 2022 AFUDC rate, the Company used (i) a 3.63% embedded

cost of long-term debt (vs. 3.85% in 2021), (ii) no short-term debt, and (iii) a cost of equity of 9.60% (unchanged from 2021).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the third quarter of 2022, based on data as of September 30, 2022, the recalculated weighted average AFUDC accrual rate (6.92%) did not meet this criterion to warrant changing from the annual rate (6.92%) in effect. Therefore, AFUDC was accrued during the third quarter of 2022 at the calculated rate of 6.92%.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to third quarter 2022 ES 2 project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these Energy Strong projects. The IM will continue to review future ES 2 AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### 4. Allocated Overheads

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. This Order was amended by a BPU Order dated June 8, 2022, allowing the company to transfer certain employees to the PSE&G Service Company in an effort to better support transmission growth opportunities and projects. This action had no impact on existing overhead allocations. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Program Overhead Allocations as of September 30, 2022** are the allocated overhead costs charged to ES 2 subprograms for the first three quarters of 2022, total 2022 year to date, total 2021, total 2020, total 2019 and total ES 2 Program allocated overheads to date.

**Table 6 – ES 2 Program Overhead Allocations as of September 30, 2022**

Subprogram	Q3 2022	Q2 2022	Q1 2022	Total 2022 (YDT)	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
	<i>(in \$ thousands)</i>							
<b>Electric Station Flood Mitigation</b>	\$3,324	\$2,208	\$2,185	\$7,717	\$14,368	\$14,023	\$287	<b>\$36,395</b>
<b>Contingency Reconfiguration</b>	\$3,037	\$795	\$843	\$4,675	\$14,420	\$17,109	\$3,415	<b>\$39,619</b>

Subprogram	Q3 2022	Q2 2022	Q1 2022	Total 2022 (YDT)	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
	<i>(in \$ thousands)</i>							
<b>Grid Modernization – Communications</b>	\$553	\$717	\$1,802	\$3,073	\$9,171	\$3,625	\$12	<b>\$15,881</b>
<b>Grid Modernization – ADMS</b>	\$50	\$124	\$76	\$250	\$501	\$426	\$11	<b>\$1,188</b>
<b>Electric Stipulated Base</b>	\$2,751	\$1,275	\$1,449	\$5,476	\$2,123	\$259	\$0	<b>\$7,858</b>
<b>Gas M&amp;R Station Upgrades (incl. Stip. Base)</b>	\$435	\$339	\$197	\$971	\$735	\$291	\$15	<b>\$2,012</b>
<b>Total</b>	<b>\$10,149</b>	<b>\$5,458</b>	<b>\$6,552</b>	<b>\$22,159</b>	<b>\$41,318</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$102,950</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the third quarter of 2022 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most (approximately 77%) of the third quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The increase in overhead costs for the third quarter of 2022 from the second quarter of 2022 reflects (i) an increase in construction activities at a number of Electric Station Flood Mitigation and Electric Stipulated Base projects, which resulted in higher labor costs and outside services subject to surcharge (including contract labor), and (ii) an increase in the number of installed fuse savers in the Contingency Reconfiguration subprogram, which increased the spend on labor and materials subject to surcharge. The major categories of overhead costs incurred in the second and third quarters of 2022 by subprogram are provided below in **Table 7 – Q2 and Q3 2022 Overhead Cost Comparison**.

*Table 7 – Q2 and Q3 2022 Overhead Cost Comparison*

Overhead Category*	Electric Station Flood Mitigation	Contingency Reconfiguration	Grid Modernization – Communications	Grid Modernization – ADMS	Electric Stipulated Base	Gas M&R (incl Stip. Base)	Total
<i>Q2 2022 (in \$ thousands)</i>							
AMCS	\$102	\$19	\$31	\$2	\$70	\$43	\$268
Fleet	\$89	\$69	\$41	\$8	\$43	\$0	\$250
Fringe	\$370	\$115	\$91	\$41	\$171	\$116	\$903
Labor & Outside Services	\$1,081	\$199	\$303	\$22	\$732	\$117	\$2,453
Labor Only	\$319	\$256	\$168	\$27	\$150	\$0	\$921
Material Handling	\$31	\$37	\$6	\$0	\$15	\$5	\$93
Payroll Tax	\$91	\$30	\$23	\$10	\$41	\$29	\$224
Toolkit and Other Services	\$72	\$22	\$17	\$7	\$35	\$25	\$179

Overhead Category*	Electric Station Flood Mitigation	Contingency Reconfiguration	Grid Modernization – Communications	Grid Modernization – ADMS	Electric Stipulated Base	Gas M&R (incl Stip. Base)	Total
Vehicle Depreciation	\$52	\$49	\$37	\$6	\$18	\$4	\$167
Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$2,208</b>	<b>\$795</b>	<b>\$717</b>	<b>\$124</b>	<b>\$1,275</b>	<b>\$339</b>	<b>\$5,458</b>
<i>Q3 2022 (in \$ thousands)</i>							
AMCS	\$176	\$76	\$26	\$0.3	\$167	\$71	\$517
Fleet	\$115	\$277	\$34	\$0.6	\$99	\$5	\$530
Fringe	\$499	\$416	\$53	\$30	\$291	\$142	\$1,431
Labor & Outside Services	\$1,824	\$746	\$264	\$2	\$1,634	\$112	\$4,581
Labor Only	\$384	\$948	\$123	\$3	\$346	\$19	\$1,824
Material Handling	\$46	\$204	\$3	\$0	\$19	\$13	\$284
Payroll Tax	\$114	\$100	\$12	\$7	\$67	\$33	\$334
Toolkit and Other Services	\$109	\$83	\$14	\$5	\$75	\$33	\$319
Vehicle Depreciation	\$57	\$188	\$24	\$0.7	\$53	\$7	\$329
Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$3,324</b>	<b>\$3,037</b>	<b>\$553</b>	<b>\$50</b>	<b>\$2,751</b>	<b>\$435</b>	<b>\$10,149</b>

\*Asset Management & Centralized Services (AMCS): labor and fringes, material, contractor, consultant or other business expenses from several areas within AMCS that provide general support to Electric, Transmission, and Gas's O&M, Capital, Third Party, and Affiliate work.  
Fleet: Bargaining unit personnel that maintain the vehicles for each Division.  
Fringe: Costs associated with other fringe costs, pensions, and other post-employment benefits.  
Labor & Outside Services: Labor and fringes, material, other business expenses associated with administrative and general costs.  
Labor Only: Travel, fuel, personal protection equipment and troubleshooter labor costs specifically related to the support of the T&D Bargaining Unit work force allocated over all T&D work.  
Material Handling: Costs associated with the materials handling process.  
Payroll Tax: Costs associated with payroll tax.  
Toolkit and Other Services: Costs associated with purchase of personal protective equipment and personal hand tools for Bargaining Unit employees and are utilized to perform O&M, Capital, Third Party, Affiliate, and deferred work activities.  
Vehicle Depreciation: Depreciation expense associated with vehicle usage in each Division.

## D. System Performance

### 1. Current Reporting Quarter Major Events

During the third quarter of 2022, there were no Major Events reported in PSE&G's service territory.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of the third quarter of 2022 compared to the status as of the end of 2019, end of 2020, and end of 2021 is provided below in **Table 8 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of September 30, 2022**. Note that the Academy, Market Street, and Ridgefield 4kV projects were previously placed in-service and closed out, thus there are no further updates to these projects (which have been further called out in italics in **Table 8**).

*Table 8 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of September 30, 2022*

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS		CO					
	Dec. 2020		<u>KO</u>		<u>C</u>									CO						
	Dec. 2021		<u>KO</u>		<u>C</u>						IS						CO			
	Sep. 2022		<u>KO</u>		<u>C</u>						IS		<u>CO</u>							
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>												IS				
	Dec. 2021			<u>KO</u>							<u>C</u>				IS					
	Sep. 2022			<u>KO</u>							<u>C</u>				IS					
3. Front Street^	Dec. 2019	<i>Not in ES 2 Program</i>																		
	Dec. 2020	<i>Not in ES 2 Program</i>																		
	Dec. 2021									<u>KO</u>				C						IS
	Sep. 2022									<u>KO</u>				<u>C</u>						
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>						C						IS		CO			
	Dec. 2020		<u>KO</u>									C				IS		CO		
	Dec. 2021		<u>KO</u>									C				IS		CO		
	Sep. 2022		<u>KO</u>									<u>C</u>			IS			CO		
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO							
	Dec. 2020			<u>KO</u>									C						IS	
	Dec. 2021			<u>KO</u>										C		IS		CO		
	Sep. 2022			<u>KO</u>										<u>C</u>					IS	
6. Lakeside Avenue	Dec. 2019*				KO				C										IS	
	Dec. 2020						<u>KO</u>							C					IS	
	Dec. 2021						<u>KO</u>							C					IS	
	Sep. 2022						<u>KO</u>							<u>C</u>				IS		
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>		<u>C</u>									IS		CO			
	Dec. 2021			<u>KO</u>		<u>C</u>									IS		CO			
	Sep. 2022			<u>KO</u>		<u>C</u>									IS		CO			
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO									
	Dec. 2020			<u>KO</u>					C	OS		CO								
	Dec. 2021			<u>KO</u>						<u>C/OS</u>	<u>CO</u>									
9. Meadow Road	Dec. 2019	<i>Schedule Under Development</i>																		
	Dec. 2020			<u>KO</u>											C				IS	
	Dec. 2021			<u>KO</u>										C				IS		
	Sep. 2022			<u>KO</u>										<u>C</u>				IS		

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
10. Orange Valley	Dec. 2019	Schedule Under Development																		December 31, 2023 - ES 2 Program End Date		
	Dec. 2020					<u>KO</u>													C		IS (Q1); CO (Q3)	
	Dec. 2021					<u>KO</u>													C		IS (Q1); CO (Q3)	
	Sep. 2022					<u>KO</u>									<u>C</u>						IS (Q1); CO (Q2)	
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C														IS	CO		
	Dec. 2020			<u>KO</u>	<u>C</u>														IS	CO		
	Dec. 2021			<u>KO</u>	<u>C</u>														IS	CO		
	Sep. 2022			<u>KO</u>	<u>C</u>														IS	CO		
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>						C	OS				CO							
	Dec. 2020			<u>KO</u>	<u>C</u>					OS		CO										
	Dec. 2021			<u>KO</u>	<u>C</u>					<u>OS</u>		<u>CO</u>										
13. State Street	Dec. 2019		<u>KO</u>					C											IS		CO (Q1)	
	Dec. 2020		<u>KO</u>						C						IS						CO (Q1)	
	Dec. 2021		<u>KO</u>						<u>C</u>						IS					CO		
	Sep. 2022		<u>KO</u>						<u>C</u>							IS				CO		
14. Toney's Brook	Dec. 2019			<u>KO</u>						C										IS	CO (Q2)	
	Dec. 2020			<u>KO</u>											C				IS		CO (Q2)	
	Dec. 2021			<u>KO</u>											C				IS		CO (Q2)	
	Sep. 2022			<u>KO</u>											<u>C</u>				IS	CO		
15. Waverly	Dec. 2019	Schedule Under Development																		December 31, 2023 - ES 2 Program End Date		
	Dec. 2020			<u>KO</u>			<u>C</u>														IS	CO (Q2)
	Dec. 2021			<u>KO</u>			<u>C</u>															IS (Q3); CO (Q1 2025)
	Sep. 2022			<u>KO</u>			<u>C</u>															IS (Q2); CO (Q4)
16. Woodlynn	Dec. 2019		<u>KO</u>																C	IS	CO (Q2)	
	Dec. 2020		<u>KO</u>																C	IS	CO (Q2)	
	Dec. 2021		<u>KO</u>																C	IS	CO (Q2)	
	Sep. 2022		<u>KO</u>									<u>C</u>								IS	CO (Q1)	

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.  
 ^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of the third quarter of 2022 is provided below **Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of September 30, 2022.**

**Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of September 30, 2022**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynn

Activity	Total # of Projects	Specific Projects
Key Drawing Review	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynn
Scope Locked	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlynn
Major Equipment Purchase Orders (POs)	18*	Academy Street; Clay Street; Front Street*; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley; Ridgefield 13kV*; State Street; Toney's Brook; Waverly*; Woodlynn
Architect/ Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney's Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynn <sup>1</sup>
Construction Start**	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Lakeside; Leonia; Kingsland; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlynn
In-Service	3	Academy Street; Market Street; Ridgefield 4kV
Partial In-Service	2	Leonia; Ridgefield 13kV

\*-Three of the listed projects (Front Street, Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 18 switchgears at 14 substations.  
<sup>1</sup>-Indicates Burns & McDonnell is serving as the A/E.  
<sup>2</sup>-Indicates PSE&G internal resources are serving as the A/E.  
<sup>3</sup>-Indicates Black & Veatch is serving as the A/E.  
 \*\*-Includes projects that have commenced inside plant (IP) and/or outside plant (OP) construction; also maintains identification of projects that have since completed construction (generally those that are shown as in-service).

Beyond the key activities summarized in **Table 9** above, **Table 10 – ES 2 Electric Station Flood Mitigation Planned Activities for Q4 2022** summarizes the upcoming planned activities for each project for the fourth quarter of 2022, including any carryover of activities from earlier periods.

**Table 10 – ES 2 Electric Station Flood Mitigation Planned Activities for Q4 2022**

Station	Planned Activities for Q4 2022	Carryover Activities from Q3 2022
1. Academy Street	• Demolition of old station	• Demo existing foundations, remove old equipment at existing Academy St. station
2. Clay Street	• Start electrical construction	• Continue civil construction
3. Front Street	• Commission and energize contingency switchgear	• Continue to prepare the contingency switchgear
4. Hasbrouck Heights	• Energize switchgear and place in-service	• Switchgear commissioning
5. Kingsland	• Start electrical construction	• Continue civil construction
6. Lakeside Avenue	• Start switchgear foundations	• Commence civil construction
7. Leonia	• Energize switchgear and place in-service	• Continue commissioning of switchgear #2
8. Market Street	<i>Project complete</i>	
9. Meadow Road	• Install foundations, conduit, grounding, and cable trench	• Continue civil construction
10. Orange Valley	• Install duct banks, start switchgear foundation	• Continue civil construction



Station	Planned Activities for Q4 2022	Carryover Activities from Q3 2022
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Energize switchgear and place in-service</li> </ul>	<ul style="list-style-type: none"> <li>Continue commissioning new switchgear #1</li> </ul>
12. Ridgefield 4kV	<i>Project complete</i>	
13. State Street	<ul style="list-style-type: none"> <li>Energize switchgear and place in-service</li> </ul>	<ul style="list-style-type: none"> <li>Continue commissioning switchgear</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Install grounding grid, conduit, bus supports</li> <li>Start electrical construction</li> </ul>	<ul style="list-style-type: none"> <li>Continue civil construction</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Demo existing 26kV switchgear</li> <li>Cutovers to new 26kV switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Install new 26kV cables</li> <li>Manhole construction</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>Continued civil construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued ductbank and manhole construction</li> </ul>

As discussed in the IM 2022 First Quarter Report, PSE&G's switchgear vendor, Powercon, informed PSE&G that due to various material and sub-supplier delays, the remaining major equipment deliveries may continue to see impacts. Powercon continues to explore options to improve its production floor efficiencies and ordering supplies earlier to potentially alleviate further impacts. PSE&G has requested more detailed and frequent status updates from Powercon to better inform its project planning. The status of the major equipment deliveries for the Electric Station Flood Mitigation projects is presented in **Table 11 – Electric Station Flood Mitigation Major Switchgear Deliveries as of September 30, 2022.**

*Table 11 – Electric Station Flood Mitigation Switchgear Deliveries as of September 30, 2022*

Station	Description	Delivery Status as of Q2 2022	Delivery Status as of Q3 2022
1. Academy Street	13kV switchgear	<b>11/7/2020</b>	<b>11/7/2020</b>
2. Clay Street	4kV switchgear	8/30/2022	10/3/2022
3. Front Street	4kV switchgear	5/22/2023	8/15/2023
	4kV cont. switchgear	7/17/2022	<b>8/25/2022</b>
4. Hasbrouck Heights	4kV switchgear	<b>11/30/2021</b>	<b>11/30/2021</b>
5. Kingsland	13kV switchgear <sup>1</sup>	<b>9/30/2020</b>	<b>9/30/2020</b>
6. Lakeside Avenue	4kV switchgear	1/26/2023	6/30/2023
7. Leonia	13kV switchgear #1	<b>5/24/2021</b>	<b>5/24/2021</b>
	13kV switchgear #2	<b>6/16/2022</b>	<b>6/16/2022</b>
	13kV cont. switchgear <sup>2</sup>	<b>10/16/2020</b>	<b>10/16/2020</b>
8. Market Street	Elimination project		
9. Meadow Road	13kV switchgear <sup>2</sup>	2/14/2023	2/14/2023
10. Orange Valley	4kV switchgear	5/29/2023	8/15/2023
11. Ridgefield 13kV	13kV switchgear #1	8/2/2022	<b>8/24/2022</b>
	13kV switchgear #2	<b>4/27/2021</b>	<b>4/27/2021</b>
	13kV cont. switchgear <sup>1</sup>	<b>9/30/2020</b>	<b>9/30/2020</b>
12. Ridgefield 4kV	Elimination project		
13. State Street	4kV switchgear	<b>12/15/2021</b>	<b>12/15/2021</b>
14. Toney's Brook	4kV switchgear	12/20/2022	12/20/2022
15. Waverly	26kV switchgear	<b>4/30/2021</b>	<b>4/30/2021</b>
	4kV switchgear	8/5/2022	10/31/2022
16. Woodlynne	4kV switchgear	11/22/2022	2/6/2023

Station	Description	Delivery Status as of Q2 2022	Delivery Status as of Q3 2022
Note: bold/italicized dates indicate actual delivery dates.			
<sup>1</sup> The Kingsland 13kV switchgear was delivered to the Ridgefield 13kV site where it is being used as the contingency/temporary switchgear for that project before its permanent installation on the Kingsland project. Delivery of the switchgear to the Kingsland site will follow the Ridgefield 13kV project being placed in-service, which is forecasted for December 2022 with the disassembly of the contingency/temporary switchgear and delivery to Kingsland expected in the first quarter of 2023.			
<sup>2</sup> The Meadow Road project will use the Leonia project's 13kV contingency switchgear as its permanent switchgear.			

As indicated in **Table 11**, during the third quarter of 2022, there were two additional switchgear deliveries received (the contingency 4kV switchgear for Front Street and the 13kV switchgear #1 for Ridgefield 13kV), leaving eight deliveries remaining for the subprogram. Of the remaining eight deliveries, two had the forecasted delivery date unchanged from the prior quarter, while the other six all slipped between approximately three weeks and 155 days, continuing to reflect the challenges Powercon is experiencing and continuing to impact the forecasted in-service dates for these projects.

The current project estimates are shown below in **Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of September 30, 2022**. As discussed in the IM 2022 First Quarter Report, PSE&G decided to consolidate the R&C on the individual projects into one R&C balance for the entire subprogram, thus there is no estimated R&C amount at the project level. **Table 12** also shows the current estimate level based on PSE&G's estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of the third quarter of 2022.

**Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of September 30, 2022**

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,300,000	\$-	\$9,300,000	\$7,997,585	\$6,519,897	70%
2. Clay Street	Definitive	\$33,600,000	\$-	\$33,600,000	\$33,613,927	\$13,021,870	39%
3. Front Street**	Study	\$25,900,000	\$-	\$25,900,000	\$27,500,832	\$9,558,510	37%
4. Hasbrouck Heights	Definitive	\$19,300,000	\$-	\$19,300,000	\$19,073,778	\$13,926,106	72%
5. Kingsland	Conceptual	\$8,700,000	\$-	\$8,700,000	\$8,993,293	\$2,219,794	26%
6. Lakeside Avenue	Study	\$39,400,000	\$-	\$39,400,000	\$32,706,175	\$3,292,610	8%
7. Leonia	Definitive	\$24,900,000	\$-	\$24,900,000	\$25,680,491	\$22,304,216	90%
8. Market Street	Definitive	\$29,100,000	\$-	\$29,100,000	\$28,308,684	\$28,140,833	97%
9. Meadow Road	Conceptual	\$7,200,000	\$-	\$8,300,000	\$8,406,000	\$2,035,052	25%
10. Orange Valley	Study	\$14,700,000	\$-	\$14,700,000	\$14,903,289	\$2,227,908	15%

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
11. Ridgefield 13kV	Conceptual	\$26,100,000	\$-	\$26,100,000	\$28,244,833	\$25,524,755	98%
12. Ridgefield 4kV	Definitive	\$20,700,000	\$-	\$20,700,000	\$20,703,808	\$20,703,809	100%
13. State Street	Definitive	\$19,600,000	\$-	\$19,600,000	\$19,837,904	\$11,609,902	59%
14. Toney's Brook	Conceptual	\$16,200,000	\$-	\$16,200,000	\$16,250,514	\$3,034,991	19%
15. Waverly	Conceptual	\$39,900,000	\$-	\$39,900,000	\$40,738,565	\$17,197,448	43%
16. Woodlynne	Definitive	\$24,000,000	\$-	\$24,000,000	\$23,964,496	\$5,986,596	25%
ES 2 Station Placeholder	N/A	\$-	\$29,300,000	\$29,300,000	\$-	\$-	-
<b>Subprogram Total</b>		<b>\$359,700,000</b>	<b>\$29,300,000</b>	<b>\$389,000,000</b>	<b>\$356,924,105</b>	<b>\$187,304,230</b>	<b>48%</b>
<p>*-As discussed in Section II.B. of the IM 2022 First Quarter Report, PSE&amp;G made the decision to hold risk and contingency at the subprogram level, which resulted in updated estimates being prepared for each project to reflect this change and other project-specific updates as warranted.</p> <p>** -The Front Street project was proposed by PSE&amp;G during the second quarter of 2021 to replace the cancelled Constable Hook project.</p>							

### Findings & Observations

- No change in completed projects during the third quarter of 2022, with three of the 16 projects previously put in-service (Market Street and Ridgefield during the second quarter of 2021 and Academy Street in the fourth quarter of 2021). The next projects forecasted to be placed in-service are the Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street projects, each continues to advance towards a forecasted in-service date in the fourth quarter of 2022.
- Five additional projects commenced construction during the third quarter of 2022 (Kingsland, Lakeside Avenue, Meadow Road, Orange Valley, and Toney's Brook), with that all projects in the subprogram have passed the construction start milestone.
- Twelve of the remaining thirteen Electric Station Flood Mitigation projects had movement in the forecasted in-service date during the third quarter of 2022, with four advancing and eight slipping. For three of those projects, the change was less than one week, while the biggest changes involved the following projects:
  - Lakeside Avenue (slipping 163 days to February 28, 2024);
  - Waverly (slipping 62 days to April 20, 2024);
  - Front Street (slipping 62 days to January 9, 2024); and,

- Clay Street (slipping 52 days to March 23, 2023).

Of those four projects, all but Clay Street had switchgear delivery delays (while Clay Street had combined impacts from a safety incident, weather impacts, and additional test pits required). As previously discussed, PSE&G updates the schedule on a monthly basis based on the current data and information available and assesses opportunities to improve the schedule as part of this process.

- The overall subprogram forecast as of the end of the third quarter of 2022 decreased \$1.2 million (or -0.3%) to \$356.9 million from the status as of the prior quarter. The forecast continues to remain under the current subprogram estimate and Stipulation amount of \$389.0 million (which includes \$29.3 million in R&C). The change in the subprogram forecast was predominantly driven by changes to the project forecasts on four of the projects, including:
  - Front Street (increased \$1.3 million to \$27.5 million): driven by an updated Division forecast for bringing six circuits from OP to IP, additional handling of contingency feeder rows, and additional costs for contingency wire checker and contingency disassembly.
  - Lakeside Avenue (decreased \$2.2 million to \$32.7 million): driven by lower OP Division cost stemming from 15% decrease in the linear footage of underground cable required and removing the contingency no longer required.
  - Orange Valley (decreased \$2.2 million to \$27.5 million): driven by a reallocation of civil and electrical costs between the Orange Valley and Orange Heights projects.
  - Waverly (increased \$827K to \$40.7 million): driven by more civil work required to rebuild a manhole and escalation in A/E procured steel and cable trench prices.
- With 52% of the subprogram forecast now spent (48% of the Stipulation amount), the IM has found nothing to date that would jeopardize the subprogram being completed on budget as even with some cost pressures on certain projects, there is adequate R&C remaining in the subprogram. However, the schedule status of the later projects in this subprogram, and in particular those with open switchgear deliveries currently forecasted for 2023 will have to continue to be closely followed to monitor if the projects can be completed within the ES 2 Program window. At this time, the primary risk to the project schedule is those major equipment deliveries, followed by resource availability to support schedule requirements and weather-related impacts. Delays to the switchgear deliveries have caused the forecasted in-service dates for Front Street, Lakeside Avenue, Orange Valley, and Waverly to slip into 2024. While the resource risk is primarily within the Metro Division (potentially impacting Lakeside, Clay Street, Waverly, Orange Valley, and Tone's Brook) and Southern Divisions (potentially impacting State Street, Woodlynne, and Woodbury).
- Regarding the projects with remaining switchgear deliveries, PSE&G continues to meet regularly with its vendor to receive updated information as to the status of these deliveries. PSE&G has also worked with the vendor to re-prioritize certain deliveries to optimize the project schedules and advanced the in-service date if possible. During the third quarter of 2022 the 4kV contingency switchgear was received at Front Street and 13kV switchgear #1 was received at Ridgefield 13kV. Of the remaining eight switchgear deliveries, six of the eight saw the forecasted delivery date slip from the status as of the end of the prior quarter (while the other two remained constant).

**1. Academy Street**

During the third quarter of 2022, \$114,926 was spent on the Academy Street project compared to a forecast of approximately \$71,000, which brought the total spend to approximately \$6.5 million.

This project was placed in-service on October 19, 2021, and in the third quarter of 2022 the final circuit was cutover to the switchgear. The demolition of the old substation is expected to commence in October 2022, with the PO associated with this work issued in August 2022.

The actual spend by period for Academy Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The Academy Street forecast decreased approximately \$500,000 during the third quarter of 2022, which was the result of the civil and electrical demolition POs being lower than estimated.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$150,398	\$4,224,550	\$1,754,789	\$131,061	\$144,172	\$114,926	\$1,435,688	\$42,000

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$9,300,000	\$6,519,897	70%
<b>Forecast</b>	\$7,997,585		82%

**2. Clay Street**

During the third quarter of 2022, \$2,238,630 was spent on the Clay Street project compared to a forecast of approximately \$3.0 million, which brought the total spend to approximately \$13.0 million. The variance in forecasted to actual spend during the third quarter of 2022 was largely driven by the delivery of the feeder rows being delayed from September to October 2022.

The forecasted in-service date for the Clay Street project as of the end of the third quarter of 2022 slipped 52 days from the status as of the end of the prior quarter to March 23, 2023. The slip in forecasted in-service date was the combined result of a safety incident on the project, weather impacts in the outside plant civil work that delayed the installation of the switchgear building foundation, and a requirement for additional test pits to confirm the OP underground design.

The primary activities on the Clay Street project during the third quarter of 2022 included the continued advancement of the civil construction, with foundation and duct bank installations performed during the quarter, and the start of work on the switchgear building.

The actual spend by period for Clay Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the third quarter of 2022, the Clay Street project transitioned to the Definitive level estimate, which resulted in the base estimate increasing from \$30.8 million to \$33.6 million. This \$2.8 million increase was driven by:

- Electrical construction award higher than estimated (\$0.8 million);
- Higher revised Division estimate (\$0.7 million);
- Project schedule recovery (\$0.6 million);

- Higher A/E procured equipment award (\$0.4 million);
- Addition of Human-Machine Interface (HMI) to the switchgear PO (\$0.2 million); and
- Addition of a contingency capacitor bank (\$0.1 million).

Regarding the “project schedule recovery” item listed above, this was comprised primarily in additional construction contractor costs (approximately \$475K), with the remainder related to civil and electrical supervision costs. These efforts recovered three months in the project schedule from the six-month delay encountered.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$116,409	\$879,339	\$2,806,593	\$5,044,642	\$1,936,258	\$2,238,630	\$8,640,123	\$11,987,934

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$33,600,000	\$13,021,870	39%
<b>Forecast</b>	\$33,613,927		39%

### 3. Front Street

During the third quarter of 2022, \$5,887,539 was spent on the Front Street project compared to a forecast of approximately \$5.4 million, which brought total spend to approximately \$9.6 million. The higher than forecasted spend during the third quarter of 2022 was attributed to higher than forecasted overhead labor involved with bringing the six circuits from OP to IP.

The forecasted in-service date for the Front Street project as of the end of the third quarter of 2022 slipped 62 days from the status as of the end of the prior quarter to January 9, 2024. This change in the forecasted in-service date was the result of delays to the Powercon switchgear delivery from May 2023 to August 2023, which pushed the project’s critical path out.

The primary activities on the Front Street project during the third quarter of 2022 included:

- Contingency switchgear delivered;
- Civil and electrical drawings issued for construction (IFC); and,
- Commencement of electrical construction (for the contingency switchgear).

The actual spend by period for Front Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$-	\$-	\$2,351,832	\$429,607	\$889,533	\$5,887,539	\$2,385,947	\$15,556,375

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$25,900,000	\$9,558,510	37%
<b>Forecast</b>	\$27,500,832		35%

#### 4. Hasbrouck Heights

During the third quarter of 2022, \$1,958,570 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$2.2 million, which brought the total spend to approximately \$13.9 million. The forecasted in-service date for the Hasbrouck Heights project as of the end of the third quarter of 2022 advanced 35 days from the status as of the end of the prior quarter to November 18, 2022. This advancement in the forecasted in-service date was driven by electrical construction and relay work progressing faster than expected.

Notable activities completed on the Hasbrouck Heights project during the third quarter of 2022 included:

- Switchgear set on the foundation;
- Civil construction completed;
- Commencement of switchgear commissioning;
- Delivery of regulator/reactors (partial).

The actual spend by period for Hasbrouck Heights as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$149,848	\$1,129,934	\$4,176,249	\$4,323,599	\$2,187,907	\$1,958,570	\$1,912,016	\$3,235,656

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$19,300,000	\$13,926,106	72%
Forecast	\$19,073,778		73%

#### 5. Kingsland

During the third quarter of 2022, \$554,703 was spent on the Kingsland project compared to a forecast of approximately \$1.0 million, which brought the total spend to approximately \$2.2 million. The variance in forecasted to actual spend during the third quarter of 2022 was attributed to less electrical work performed than planned in September due to delays on outstanding requests for information.

The forecasted in-service date for the Kingsland project as of the end of the third quarter of 2022 slipped 35 days from the status as of the prior quarter to November 6, 2023. This slip to the forecasted in-service date was driven by resource availability constraints within the Division and intricacies in sequencing the cutovers of the circuits.

The primary activities on the Kingsland project during the third quarter of 2022 included:

- Electrical PO issued;
- Construction permits received;
- Pre-construction licenses and permit review meeting held; and,
- Commencement of civil construction.

The actual spend by period for Kingsland as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the third quarter

of 2022, the Kingsland project transitioned to the Conceptual estimate level, which resulted in the base estimate increasing from \$6.4 million to \$8.7 million. This \$2.3 million increase was driven by:

- Unforeseen contaminated soil (\$0.9 million);
- Final civil design required additional piles (\$0.6 million);
- Contingency plan required for station reliability during outages (\$0.6 million);
- Extended project duration: shift from Q2 2023 to Q4 2023 in-service (\$0.4 million); and,
- Lower licensing and permitting needs: (-\$0.2 million).

Regarding the extended project duration noted above, this was calculated based on additional carrying costs for 2023 (\$25k/month) and an additional five months in 2024 for post in-service closeout (\$20k/month). These carrying costs cover typical project management activities and resources (e.g. project manager, staff engineer, cost engineer, scheduler, etc.).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$104,112	\$209,667	\$510,943	\$301,463	\$538,906	\$554,703	\$1,924,615	\$4,848,885

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$8,700,000	\$2,219,794	26%
<b>Forecast</b>	\$8,993,293		25%

## 6. Lakeside Avenue

During the third quarter of 2022, \$1,536,403 was spent on the Lakeside Avenue project compared to a forecast of approximately \$1.4 million. The forecasted in-service date for the Lakeside Avenue project as of the end of the third quarter of 2022 slipped 163 days from the status as of the end of the prior quarter to February 28, 2024, which was the result of a delay to the anticipated switchgear delivery from April 2023 to July 2023.

Notable activities completed on the Lakeside Avenue project during the third quarter of 2022 included:

- Electrical PO issued;
- Pre-construction licenses and permits review meeting held; and,
- Commencement of civil construction, beginning with manhole and duct bank installations.

The actual spend by period for Lakeside Avenue as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$148,943	\$453,994	\$570,713	\$351,720	\$230,836	\$1,536,403	\$2,101,547	\$27,312,018

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$39,400,000	\$3,292,610	8%
<b>Forecast</b>	\$32,706,175		10%



**7. Leonia**

During the third quarter of 2022, \$1,356,322 was spent on the Leonia project compared to a forecast of approximately \$1.3 million, which brought the total spend to approximately \$22.3 million. The forecasted in-service date for the Leonia project as of the end of the third quarter of 2022 advanced 27 days from the status at the end of the prior quarter to November 16, 2022.

Notable activities completed on the Leonia project during the third quarter of 2022 included:

- Continued installation of the new switchgear #2, including installation of the firewall, pulling cable, and manhole/conduit work; and,
- Commencement of commissioning the new switchgear #2.

The actual spend by period for Leonia as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$44,792	\$6,033,379	\$9,112,257	\$1,789,112	\$3,968,355	\$1,356,322	\$1,591,776	\$1,784,499

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$24,900,000	\$22,304,217	90%
<b>Forecast</b>	\$25,680,491		87%

**8. Market Street**

During the third quarter of 2022, \$117,836 was spent on the Market Street project compared to a forecast of approximately \$203,000, which brought the total spend to approximately \$28.1 million. The Market Street substation was taken out of service as of June 25, 2021.

The final punch list items and site cleanup activities were completed at the end of the second quarter of 2022, remaining costs including those incurred during the third quarter of 2022 relate to final and trailing costs related to this closeout work.

The actual spend by period for Market Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$251,193	\$16,079,601	\$10,681,487	\$808,096	\$202,619	\$117,836	\$121,852	\$46,000

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$29,100,000	\$28,140,832	97%
<b>Forecast</b>	\$28,308,684		99%

**9. Meadow Road**

During the third quarter of 2022, \$382,461 was spent on the Meadow Road project compared to a forecast of \$335,000, which brought the total spend to approximately \$2.0 million. The forecasted in-service date for the Meadow Road project as of the end of the third quarter of 2022 slipped six days from the status as of the end of the prior quarter to September 28, 2023.

The primary activities conducted on the Meadow Road project during the third quarter of 2022 included:

- Civil and electrical POs issued;
- Pre-construction licenses and permits compliance meeting held; and
- Commencement of civil construction, beginning with manhole work and the foundations for the switchgear.

The actual spend by period for Meadow Road as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the third quarter of 2022, the Meadow Road project transitioned to the Conceptual level estimate, which resulted in the base estimate increasing from \$7.2 million to \$8.3 million. This \$1.1 million estimate increase was driven by:

- Higher carrying costs based on current staffing plan and surcharge rates (\$0.7 million);
- Increased engineering due to revisions associated with the New Jersey Department of Environmental Protection (NJDEP) permit application (\$0.6 million);
- Revised estimate for testing and commissioning (\$0.3 million); and,
- Lower Division estimate: (-\$0.5 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$63,128	\$535,081	\$445,234	\$288,050	\$321,098	\$382,461	\$1,860,889	\$4,510,060

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$8,300,000	\$2,035,052	25%
<b>Forecast</b>	\$8,406,000		24%

**10. Orange Valley**

During the third quarter of 2022, \$1.0 million was spent on the Orange Valley project compared to a forecast of approximately \$787,000, which brought the total spend to approximately \$2.2 million. The variance in forecasted to actual spend in the third quarter of 2022 was primarily attributed to manhole installation and related environmental efforts for soil disposal being performed earlier than planned.

The forecasted in-service date for the Orange Valley project as of the end of the third quarter of 2022 slipped 35 days from the status as of the end of the prior quarter to February 2, 2024. This slip in the forecasted in-service date was driven by delays on the expected delivery of the switchgear from Powercon (as shown in **Table 10**).

During the third quarter of 2022, major activities on the Orange Valley project included:

- Civil and electrical construction POs issued;

- Municipal and railroad licenses and permits received; and,
- Commencement of civil construction, beginning with manhole and duct bank work.

The actual spend by period for Orange Valley as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$77,029	\$362,895	\$358,052	\$111,565	\$276,614	\$1,041,753	\$627,797	\$12,047,584

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$14,700,000	\$2,227,908	15%
<b>Forecast</b>	\$14,903,289		15%

### 11. Ridgefield 13kV

During the third quarter of 2022, \$3,567,625 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$3.6 million, which brought the total spend to approximately \$25.5 million. The forecasted in-service date for the Ridgefield 13kV project as of the end of the third quarter of 2022 advanced five days from status as of the end of the prior quarter to December 8, 2022.

Notable activities performed on the Ridgefield 13kV project during the third quarter of 2022 included:

- Continued civil construction of the new switchgear #1, including installation of piles, foundations, and duct banks;
- Delivery of the new switchgear #1; and,
- Installation and commencement of commissioning of the new switchgear #1.

The actual spend by period for Ridgefield 13kV as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$205,982	\$6,232,692	\$10,849,681	\$2,111,096	\$2,557,679	\$3,567,625	\$1,810,079	\$909,998

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$26,100,000	\$25,524,756	98%
<b>Forecast</b>	\$28,244,833		90%

### 12. Ridgefield 4kV

During the third quarter of 2022, there was no spend the Ridgefield, with the total spend remaining at approximately \$20.7 million. The project was placed in-service on May 16, 2021.

The project was closed out during the third quarter of 2022 after the final closeout activities were performed during the first quarter of 2022, which included some trailing costs in the second quarter of 2022.

The actual spend by period for Ridgefield 4kV as compared to the final forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$143,414	\$11,239,534	\$9,263,852	\$42,604	\$14,405	-	-	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$20,700,000	\$20,703,808	100%
<b>Forecast</b>	\$20,703,808		100%

### 13. State Street

During the third quarter of 2022, \$978,273 was spent on the State Street project compared to a forecast of approximately \$815,000, which brought the total spend to approximately \$11.6 million. The forecasted in-service date for the State Street project as of the end of the third quarter of 2022 advanced three days from the status of as of the end of the prior quarter to December 16, 2022.

Notable activities performed on the State Street project during the third quarter of 2022 included:

- Setting the new 4kV switchgear;
- Installation of bus supports and busses from the 4kV switchgear to the transformers;
- Installation of the grounding grid and regulators; and,
- Commencement of switchgear commissioning.

The actual spend by period for State Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$77,590	\$662,148	\$8,093,227	\$751,849	\$1,046,814	\$978,273	\$1,672,283	\$6,555,719

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$19,600,000	\$11,609,902	59%
<b>Forecast</b>	\$19,837,904		59%

### 14. Toney's Brook

During the third quarter of 2022, \$740,393 was spent on the Toney's Brook project compared to a forecast of approximately \$973,000, which brought the total spend to approximately \$3.0 million. The variance in forecasted to actual spend during the third quarter of 2022 was primarily attributed to adverse weather in September that impacted the foundation work, which in turn led to delays in the duct bank work that had been planned for the month.

The forecasted in-service date for the Toney’s Brook project as of the end of the third quarter of 2022 slipped 39 days from the status as of the end of the prior quarter to May 26, 2023. The slip in the forecasted in-service date was driven by delays on the Powercon switchgear delivery (note the switchgear delivery was originally planned for early November 2022, but as of the first quarter of 2022 that had slipped to late December 2022). Delays on this switchgear were driven by unavailability of the cell kits from Powercon’s supplier Eaton. PSE&G worked with its vendors to re-assign the cell kit ready for the Woodlynne switchgear to the Toney’s Brook switchgear to partly mitigate this delay.

The notable activities on the Toney’s Brook project during the third quarter of 2022 included:

- Pre-construction licenses and permits compliance review meeting held;
- Civil contractor mobilized and commenced work on the equipment foundations; and
- Continued engineering for the outside plant scope of work.

The actual spend by period for Toney’s Brook as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$211,940	\$373,096	\$941,519	\$138,270	\$629,773	\$740,393	\$4,038,501	\$9,177,022

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$16,200,000	\$3,034,991	19%
<b>Forecast</b>	\$16,250,514		19%

### 15. Waverly

During the third quarter of 2022, \$8,248,435 was spent on the Waverly project compared to a forecast of approximately \$8.3 million, which brought the total spend to approximately \$17.2 million.

The forecasted in-service date for the Waverly project as of the end of the third quarter of 2022 slipped 63 days from the status as of the end of the prior quarter to April 30, 2024. This slip was due to manhole modifications required before the energization of the 26kV switchgear can occur and the need for Y-buses prior to the 26kV circuit cutovers to support reliability requirements and increasing the overall duration of the cutovers.

The primary activities performed during the third quarter of 2022 included:

- 4kV switchgear building delivered;
- Commissioning of the 26kV switchgear; and,
- Manhole re-design, installation, and repairs.

The actual spend by period for Waverly as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the third quarter of 2022, the Waverly project transitioned to the Conceptual level estimate, which resulted in the Base estimate increasing from \$36.2 million to \$39.9 million. This \$3.7 million increase was driven by:

- Higher than estimated civil construction award (\$2.2 million);

- Higher revised estimate for installation of 4kV equipment due to increased market price/labor rates (\$0.9 million);
- Change in surcharge methodology (\$0.4 million); and,
- Additional storage and handling of the 26kV and 4kV switchgears in warehouse due to site plan revision/delay (\$0.2 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$103,748	\$2,460,815	\$4,415,223	\$432,853	\$1,536,375	\$8,248,435	\$2,930,673	\$20,610,443

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$39,900,000		
<b>Forecast</b>	\$40,738,565	42%	

### 16. Woodlynne

During the third quarter of 2022, \$903,898 was spent on the Woodlynne project compared to a forecast of approximately \$826,000, which brought the total spend to approximately \$6.0 million. The forecasted in-service date for the Woodlynne project as of the end of the third quarter of 2022 remains unchanged from the status as of the end of the prior quarter at October 10, 2023.

The primary activities performed on the Woodlynne project during the third quarter of 2022 included:

- Continued advancement of the duct bank installations that commenced in the February 2022; and,
- Commencement of manhole installations.

The actual spend by period for Woodlynne as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the third quarter of 2022, the Woodlynne project transitioned to the Definitive level estimate, which resulted in the base estimate increasing from \$21.3 million to \$24.0 million. This \$2.7 million increase was driven by:

- Higher Division estimate (\$2.1 million); and,
- Higher revised testing and commissioning estimate (\$0.6 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$110,982	\$993,298	\$991,630	\$1,639,443	\$1,347,345	\$903,898	\$2,159,991	\$15,817,908

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$24,000,000		
<b>Forecast</b>	\$23,964,496	25%	

### B. Contingency Reconfiguration

During the third quarter of 2022, the main efforts in the Contingency Reconfiguration subprogram continue to focus on the installation of additional Fuse Savers, following the completion of the recloser

scope in the first quarter of 2022. **Table 13 – ES 2 Program Fuse Saver Status as of September 30, 2022** provides a summary of the Fuse Saver scope of the Contingency Reconfiguration subprogram, indicating the number of units completed during the third quarter of 2022 and for the total program, showing the status of engineering, installation, and commissioning out of a total scope of 1,574 units, which represents a reduction of 67 units in the Fuse Savers scope. The target installations are assessed on a quarterly basis by PSE&G based on the actual costs per unit observed to date.

**Table 13 – ES 2 Program Fuse Saver Status as of September 30, 2022**

Type	Engineering Packages Completed (1 Fuse Saver ea.)	Fuse Savers Installed	Fuse Savers Commissioned
Q3 Qty.	283	286	285
Program Total to Date	700	412	410
Remaining	874	1,162	1,164

The installation of Fuse Savers recommenced in May 2022, following the earlier installations performed as part of the Fuse Saver pilot program in 2020-2021. As shown in **Table 13**, installations in the third quarter of 2022 ramped up significantly from the prior quarter (which was limited to 13 devices installed due to a hold placed on installations during the second quarter). This followed PSE&G’s plans to add more installations than initially planned in the second half of 2022, and as previously discussed there is no significant cost impact expected from this shift in installations. PSE&G establishes installation targets on a quarterly basis, which are then split into monthly targets for each Division with the forecasts updated on a bi-weekly basis.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of September 30, 2022**. This table also shows the forecasted final in-service dates as of the end of the second quarter of 2022 to show movement to the forecast as of the end of the third quarter of 2022.

**Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of September 30, 2022**

Scope & Division		Q2 2022 Forecasted Completion Date	Q3 2022 Forecasted Completion Date
Reclosers	Central	1/31/2022 (Actual)	1/31/2022 (Actual)
	Metro	12/31/2021 (Actual)	12/31/2021 (Actual)
	Palisades	1/31/2022 (Actual)	1/31/2022 (Actual)
	Southern	1/31/2022 (Actual)	1/31/2022 (Actual)
Fuse Savers	Central	12/30/2023	12/30/2023
	Metro	12/30/2023	12/30/2023
	Palisades	12/30/2023	12/30/2023
	Southern	12/30/2023	12/30/2023

As shown in **Table 14**, the forecasted in-service dates for the Fuse Saver scope of each Division continues to be the end of 2023.

The Contingency Reconfiguration subprogram costs through the end of the third quarter of 2022 are presented in **Table 15 – ES 2 Contingency Reconfiguration Actual Costs as of September 30, 2022**.

**Table 15 – Contingency Reconfiguration Actual Costs as of September 30, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Q2 2022	Q3 2022	Total to Date
		Actuals						
Reclosers	Central	\$2,737,167	\$12,050,820	\$9,852,812	\$880,537	\$45,064	\$46,364	\$25,612,764
	Metro	\$2,231,431	\$10,726,610	\$11,368,409	\$150,325	(\$31,771)	(\$8,856)	\$24,436,149
	Palisades	\$2,515,569	\$12,119,436	\$8,280,522	(\$66,771)	\$2,816	\$500	\$22,852,072
	Southern	\$2,081,220	\$12,405,684	\$14,038,043	\$530,051	\$4,112	\$1,476	\$29,060,585
Fuse Savers	Central	\$9,970	\$789,937	\$854,118	\$249,268	\$433,473	\$2,097,168	\$4,433,935
	Metro	\$7,557	\$561,915	\$507,742	\$160,801	\$298,329	\$1,889,794	\$3,426,138
	Palisades	\$7,468	\$522,454	\$577,113	\$127,207	\$656,533	\$2,059,075	\$3,949,850
	Southern	\$9,792	\$859,014	\$578,217	\$245,990	\$714,570	\$1,623,412	\$4,030,996
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$46,056,977</b>	<b>\$2,277,408</b>	<b>\$1,824,151</b>	<b>\$7,708,933</b>	<b>\$117,802,488</b>

**Table 16 – Contingency Reconfiguration Forecasted Costs as of September 30, 2022** examines the forecast as of the end of the third quarter of 2022 for each Division’s Fuse Saver scope compared to the total actual costs incurred through the end of the third quarter of 2022.

**Table 16 – Contingency Reconfiguration Forecasted Costs as of September 30, 2022**

Scope & Division		Total to Date	Forecast	Remaining Forecast	% of Actuals to Forecast
Reclosers	Central	\$25,612,764	\$25,612,764	-	100%
	Metro	\$24,436,149	\$24,436,149	-	100%
	Palisades	\$22,852,072	\$22,852,072	-	100%
	Southern	\$29,060,585	\$29,060,585	-	100%
Fuse Savers	Central	\$4,433,935	\$11,479,821	\$7,045,886	39%
	Metro	\$3,426,138	\$12,879,102	\$9,452,964	27%
	Palisades	\$3,949,850	\$9,958,265	\$6,008,415	40%
	Southern	\$4,030,996	\$11,337,080	\$7,306,084	36%
<b>Total</b>		<b>\$110,093,555</b>	<b>\$147,615,838</b>	<b>\$29,813,350</b>	<b>80%</b>

As shown in **Table 15**, the overall Contingency Reconfiguration subprogram has spent 80% of its current forecast. With the total forecast as of the end of the third quarter of 2022 increasing \$2.0 million from the status as of the end of the prior quarter, driven by increases to the Central Division Fuse Saver scope (increasing approximately \$950,000) and the Metro Division Fuse Saver scope (increasing approximately \$1.2 million), slightly offset by a forecast decrease to the Southern Division Fuse Saver scope (decreasing approximately \$358,000). These forecast variances reflected the trends observed in the actual cost per unit data, which has seen recent increases in testing and installation labor costs as the work has transitioned from more simple installations to more difficult locations including pole replacements at certain locations.

Findings & Observations:

- Progress on the Fuse Savers scope of the subprogram continued to ramp-up following the with 286 devices installed during the third quarter of 2022. This brought the total number of Fuse Savers installed during the Program to 412 out of a current scope of 1,574 units.
- There was no change to the forecasted completion date of the Fuse Saver scope from the prior quarter, with each Division continuing to forecast the final units being installed in December



2023. Based on the current scope, this averages out to approximately 77 units per month (for comparison in the third quarter of 2022, PSE&G averaged 95 units per month).

- The Contingency Reconfiguration subprogram forecast increased approximately \$2.0 million during the third quarter of 2022 to \$147.6 million, which reflected higher observed costs per unit on the Fuse Savers testing and installation labor. This is above the Stipulation budget of \$145.0 million.

### C. Grid Modernization – Communication System

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system. The primary scopes within the Grid Modernization – Communication System include installation of the wireless network, fiber installations at selected stations, fiber cutovers at selected station with existing fiber to the PSE&G fiber network, and retrofitting existing reclosers and RTUs with updated routers. A summary of the status of these primary scopes of work as of the end of the third quarter of 2022 is as follows:

- Wireless network: placed in-service as of December 16, 2021; remaining work involves providing radios to support the installation of Fuse Savers in the Contingency Reconfiguration subprogram.
- Fiber installations and cutovers: 29 out of 34 fiber installation projects completed and 12 out of 12 fiber cutover projects completed.
- Retrofitting existing reclosers: completed as of the fourth quarter of 2021 with a total of 2,318 retrofit reclosers installed.
- Retrofitting RTUs: 218 substation retrofits completed (48 during the third quarter of 2022) out of a total scope of 218 substations.

As previously reported, the fiber scope includes installing fiber to electric substations and electric operations centers, in addition to cutting over stations with existing fiber service to the PSE&G fiber network. PSE&G preliminarily identified 41 installation projects and 12 cutovers for the subprogram, with three of 41 installation projects were previously removed due to the scheduled elimination of the targeted substations or the intended redundancy benefits not achievable after site review. During the second quarter of 2022, PSE&G assessed the remaining budget for the fiber scope and determined it would remove four additional projects from the planned list due to budgetary constraints (in addition to one of the removed stations, Waverly, having the IP fiber installation included as part of the Electric Station Flood Mitigation project at the substation). The list of currently approved fiber installation and cutover projects is presented in **Table 17 – Fiber Projects by Division as of September 30, 2022**.

*Table 17 – Fiber Projects by Division as of September 30, 2022*

<b>Division</b>	<b>Fiber Installation*</b>	<b>Fiber Cutover*</b>
<b>Central</b>	<u>Cranford</u> ; <u>Elizabeth Sub HQ</u> ; <u>Rahway</u> ; <u>Hadley Road HQ</u> ; <u>Roselle</u> ; <u>Central HQ</u> ; <u>Carteret</u> ; <u>Edison</u> ; <u>Keasby</u> ; <u>Mechanic Street</u> ; <u>First Street</u>	<u>Elizabeth</u> ; <u>Henry Street</u>

<b>Metro</b>	<u>East Orange; Metro HQ; Bloomfield; Central Avenue; Haldeon; Irvington; Irvington Sub HQ; Montclair; South Orange; Norfolk Street</u>	-
<b>Palisades</b>	<u>Bergen Point; Hackensack Sub HQ; Fort Lee; Harrison; Ridgewood; West New York; Palisades HQ; Culver Avenue; Morgan Street</u>	<u>Tonnelle Avenue; Spring Valley Road; Union City; Fairview; Polk Street; West Orange</u>
<b>Southern</b>	<u>Southern HQ; Princeton; Chauncey Street; Bordentown</u>	<u>Delair; East Riverton; Riverside; Mount Holly</u>
<b>Total</b>	<b><i>34 projects</i></b>	<b><i>12 projects</i></b>

\*-Projects underlined have been placed in-service.

During the third quarter of 2022 two additional fiber installation projects (Montclair, Palisades HQ) and the final fiber cutover project (West Orange) were placed in-service. Thus, the total fiber projects in-service as of the end of the third quarter of 2022 was 29 for the fiber installation projects and 12 for the fiber cutover projects. **Table 18 – ES 2 Program Fiber Projects Status as of September 30, 2022** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of the third quarter of 2022 with the projects in italics representing those placed in-service.

**Table 18 – ES 2 Program Fiber Projects Status as of September 30, 2022**

<b>Project Name</b>	<b>Q3 2022 Status</b>
<b><i>Fiber Installation Projects</i></b>	
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>
Bloomfield	Township permit received; OP engineering complete; OP construction complete; IP power installation started
<i>Bordentown</i>	<i>In-Service (Q3 2021)</i>
Carteret	Railroad permit secured; Division scheduled overhead work for Q4
<i>Central Ave</i>	<i>In-Service (Q3 2021)</i>
<i>Central HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Chauncey Street</i>	<i>In-Service (Q3 2021)</i>
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>
<i>Culver Ave</i>	<i>In-Service (Q1 2022)</i>
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>
Edison	Conduit work complete; OP run completion dependent on railroad permits
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>
<i>First Street</i>	<i>In-Service (Q3 2021)</i>
<i>Fort Lee</i>	<i>In-Service (Q1 2022)</i>
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>
<i>Hadley Rd HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Haledon</i>	<i>In-Service (Q1 2022)</i>
<i>Harrison</i>	<i>In-Service (Q3 2021)</i>
Irvington	<i>In-Service (Q4 2021)</i>
Irvington Sub HQ	<i>In-Service (Q4 2021)</i>
Keasbey	OP work complete; TFI rack installed
Mechanic Street	OP railroad crossing work complete; TFI rack installed
<i>Metro HQ</i>	<i>In-Service (Q1 2021)</i>
Montclair	<i>In-Service (Q3 2022)</i>
Morgan Street	<i>In-Service (Q4 2021)</i>
<i>Norfolk St</i>	<i>In-Service (Q3 2021)</i>
Palisades HQ	<i>In-Service (Q3 2022)</i>
<i>Princeton</i>	<i>In-Service (Q3 2021)</i>
<i>Rahway</i>	<i>In-Service (Q1 2021)</i>

Project Name	Q3 2022 Status
Ridgewood	In-Service (Q1 2022)
Roselle	In-Service (Q2 2021)
So Orange	In-Service (Q3 2021)
Southern HQ	In-Service (Q4 2020)
West New York	In-Service (Q1 2022)
<b>Fiber Cutover Projects</b>	
Delair	In-Service (Q4 2020)
East Riverton	In-Service (Q4 2020)
Elizabeth	In-Service (Q1 2021)
Fairview	In-Service (Q1 2022)
Henry St	In-Service (Q3 2021)
Mount Holly	In-Service (Q4 2020)
Polk Street	In-Service (Q1 2022)
Riverside	In-Service (Q4 2020)
Spring Valley Rd	In-Service (Q1 2021)
Tonnelle Ave	In-Service (Q4 2020)
Union City	In-Service (Q1 2021)
West Orange	In-Service (Q3 2022)
<b>Substation Remote Terminal Unit (RTU) Cutovers</b>	
Scope: 218 units	218 cutovers completed

The Grid Modernization – Communication System subprogram costs by major period through the end of the third quarter of 2022 are presented in **Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of September 30, 2022**, while **Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of September 30, 2022** provides the current forecasts as of the end of the second quarter of 2022 compared to the actual costs.

**Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of September 30, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Q2 2022	Q3 2022	Total to Date
		<i>Actuals</i>						
<b>Retrofit Reclosers</b>	Central	\$0	\$884,278	\$3,304,797	\$215,275	\$186,505	\$359,309	\$4,950,163
	Metro	\$0	\$818,620	\$2,362,797	\$135,374	\$192,271	\$315,543	\$3,824,588
	Palisades	\$0	\$825,174	\$3,115,474	\$186,059	\$184,718	\$349,531	\$4,660,956
	Southern	\$0	\$929,058	\$3,862,816	\$194,826	\$193,249	\$292,884	\$5,472,833
<b>Fiber</b>	Central	\$1,691	\$2,418,851	\$5,973,655	\$1,581,263	\$681,857	\$446,818	\$11,104,134
	Metro	\$1,457	\$1,866,697	\$3,086,096	\$1,576,328	\$347,002	\$245,110	\$7,122,690
	Palisades	\$1,582	\$2,046,762	\$3,603,134	\$656,307	\$93,875	\$213,474	\$6,615,134
	Southern	\$4,731	\$910,483	\$2,466,477	\$96,721	\$33,229	\$24,153	\$3,535,794
	Cutovers*	\$0	\$876,502	\$607,056	\$851,293	\$8,735	\$462,707	\$2,311,756
<b>Wireless Network</b>		\$74,306	\$6,035,441	\$1,282,986	\$61,558	\$99,655	\$39,482	\$7,593,428
<b>Bulk Purchase**</b>		\$0	\$1,524,874	(\$520,766)	\$641,029	\$283,929	\$642,690	\$2,571,756
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$29,144,503</b>	<b>\$6,196,033</b>	<b>\$3,225,559</b>	<b>\$3,391,702</b>	<b>\$61,178,303</b>

\*-Includes fiber communication cutovers and substation RTU cutovers (the latter of which began having spend in Q1 2021).

\*\*-.The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.

**Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of September 30, 2022**

Scope & Division		Total to Date	Total Forecast	% of Actuals to Forecast
		Actuals		
Retrofit Reclosers	Central	\$4,950,163	\$6,684,144	74%
	Metro	\$3,824,588	\$5,539,747	69%
	Palisades	\$4,660,956	\$6,373,177	73%
	Southern	\$5,472,833	\$7,258,179	75%
Fiber	Central	\$11,104,134	\$11,482,676	97%
	Metro	\$7,122,690	\$7,397,935	96%
	Palisades	\$6,615,134	\$6,680,329	99%
	Southern	\$3,535,794	\$3,458,757	102%
	Cutovers*	\$1,415,071	\$1,415,071	100%
<b>Wireless Network</b>		\$7,593,428	\$7,967,538	95%
<b>Bulk Purchase**</b>		\$2,571,756	\$0	-
<b>Total</b>		<b>\$61,178,303</b>	<b>\$66,564,461</b>	<b>92%</b>

As shown in **Table 19**, actual costs incurred in the third quarter of 2022 were close to the spend incurred in the second quarter of 2022 and continues to reflect the winding down of the fiber scope and the efforts on the retrofit recloser scope, which was completed during this quarter. The forecasts shown in **Table 20** remained relatively unchanged from the status as of the end of the second quarter of 2022, with an overall forecast increase of approximately \$285,000 (or a 0.4% increase).

Findings & Observations:

- The retrofit substation RTU scope completed 48 substations in the third quarter of 2022, bringing the total to 218 substations completed, which also completes this scope of work ahead of forecast.
- The twelfth and final fiber cutover project was completed during the third quarter of 2022 as were two additional fiber projects, bringing the fiber project total to 29 out of 34 currently planned projects. As of the end of the third quarter of 2022, the fiber scope still is expected to be completed by the end of 2022.
- The forecast for the Grid Modernization – Communication system subprogram continued to remain relatively unchanged from the status as of the prior quarter, with an overall forecast increase of approximately \$285K (or a 0.4% increase) to \$66.6 million.

**D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: DMS/DERMS, the OMS, and ADMS platform upgrades. The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the third quarter of 2022 are presented as follows:

**DMS/DERMS**

- Scope: Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- Q3 2022 Activities:
  - Completed loading updated model.

- Completed Sprint 21.
- Completed and reviewed Development Testing Plan.
- Completed review of module variance list.
- Forecasted Completion as of the end of the third quarter of 2022: 12/19/2022 (unchanged from the prior quarter).

## **OMS**

- Scope: Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G's network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years' worth of existing OMS data will be migrated into the new system as well.
- Q3 2022 Activities:
  - Initial scope of conversion data completed, including 10 years of data.
  - Completed team onsite visit at Edison Training Center.
  - Approved interface end-to-end design by SAP and Mulesoft.
  - Completed PowerBI environment test report.
  - Validated and completed firewalls for QAS environments.
  - Completed initial QAS Compass integrations.
  - Completed QAS build/configuration.
  - Prepared for QAS system integration testing, plan/cases, approvals/prep, and staging.
- Forecasted Completion as of the end of the third quarter of 2022: 6/15/2023 (slipped 46 days from the prior quarter, driven by Platform availability to configure the system, which also contributed to the split from one production release to two production releases).

## **ADMS Platform**

- Scope: Replace, enhance, and expand the existing Distribution Supervisory Control and Data acquisition (DSCADA) platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q3 2022 Activities:
  - Migrated remaining QAS to Edison Legacy Production.
  - Completed discussions for environment management alignment between OMS and Platform.

- Completed meeting with Geographic Information System (GIS) teams on testing plans for EMap and OSI Maestro.
- Completed decommissioning of legacy ADMS infrastructure at Edison.
- Completed operating system patching and forwarded to Open Systems International Inc. (OSI) for application patching.
- Actual In-Service Date: 1/28/2022.

The Grid Modernization – ADMS subprogram costs through the end of the third quarter of 2022 are presented in **Table 21 – ES 2 Grid Modernization – ADMS Costs as of September 30, 2022.**

**Table 21 – ES 2 Grid Modernization – ADMS Costs as of September 30, 2022**

Scope	Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
	Actuals						Forecast	
OMS	\$33,891	\$8,375,966	\$7,140,445	\$2,010,781	\$6,360,390	\$2,267,867	\$5,344,016	\$12,541,708
DMS/DERMS	\$1,498	\$1,858,969	\$1,185,863	\$510,094	\$676,889	\$581,013	\$1,145,585	\$1,813,572
Platform	\$824	\$1,998,769	\$1,411,403	\$646,982	\$934,541	\$310,094	\$208,468	\$246,712
ADMS Hardware	-	\$4,213,920	\$116,732	\$30,020	\$259,042	\$35,462	-	-
<b>Total ADMS</b>	<b>\$36,213</b>	<b>\$16,447,624</b>	<b>\$9,854,442</b>	<b>\$3,197,877</b>	<b>\$8,230,861</b>	<b>\$3,194,435</b>	<b>\$6,698,069</b>	<b>\$13,247,939</b>

Scope	Actuals to Date	Forecast	% of Actuals to Forecast
OMS	\$26,189,340	\$44,075,064	59%
DMS/DERMS	\$4,814,325	\$6,627,897	73%
Platform	\$5,302,613	\$5,549,325	96%
ADMS Hardware	\$4,655,175	\$4,655,175	100%
<b>Total ADMS</b>	<b>\$40,961,453</b>	<b>\$60,907,462</b>	<b>67%</b>

The cost forecast for the Grid Modernization – ADMS subprogram increased by approximately \$7.4 million from the status as of the end of the prior quarter. This increase was driven by the schedule extension on the OMS scope and adjustments to the planned production releases, which changed from one original release planned for April 2023 to two releases planned for May and November 2023. This split was intended to allow all core/mission critical functionalities to be released in May 2023 ahead of the storm season moratorium, with the remaining enhancements included in the November 2023 release after the moratorium period.

**Findings & Observations:**

- The first of three primary ADMS components (the ADMS Platform) was placed in-service during the first quarter of 2022, with work in the third quarter of 2022 involving decommissioning of legacy ADMS infrastructure and operating system patching. The remaining DMS/DERMS and OMS scopes are currently be forecasted to be placed in-service in December 2022 and June 2023, respectively.
- During the third quarter of 2022, the subprogram forecast increased by approximately \$7.4 million to \$60.9 million. This increase was driven by an updated OMS schedule and was

comprised of approximately \$4.1 million related to PSE&G labor and \$3.3 million for staff augmentation costs.

- At PSE&G’s prompting, its software vendor added additional resources with more technical experience than previous deployments. This is expected to improve the performance of the group, particularly as more testing efforts continue.

### E. Electric Stipulated Base

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric OP-HDS and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>1</sup> In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs.

PSE&G commenced the OP-HDS in July 2022, but with the current forecasts for the life cycle station upgrade projects consuming the entire Stipulated Base funding (\$100.6 million forecast compared to the \$100.0 million Electric Stipulated Base budget), this work is presently being executed outside of the ES 2 Program. If the forecasts for the substation projects lower and additional funding becomes available, PSE&G may include some of the OP-HDS through the Program funding. The IM intends to continue to follow the status of this work, but will only report on it should PSE&G include these costs under the ES 2 Program.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. In the second quarter of 2021 a fifth station, State Street, was approved by the URB for its outside plant scope to be transferred from the related Electric Station Flood Mitigation project to the life cycle scope. The five life cycle station upgrade projects and their current estimate compared to the actuals to date are provided in **Table 22 – ES 2 Life Cycle Station Upgrade Project Status as of September 30, 2022**.

*Table 22 – ES 2 Life Cycle Station Upgrade Project Status as of September 30, 2022*

Project	Estimate Level	Base	Risk & Contingency*	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date**
1. Hamilton	Definitive	\$16,800,000	-	\$16,800,000	\$12,901,001	77%	10/24/2022 (↓ +19)
2. Paramus	Definitive	\$21,400,000	-	\$21,400,000	\$16,857,336	79%	11/9/2022 (↓ +6)
3. Plainfield	Definitive	\$22,600,000	-	\$22,600,000	\$17,051,905	76%	12/28/2022 (↓ +30)

<sup>1</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

Project	Estimate Level	Base	Risk & Contingency*	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date**
4. Woodbury	Definitive	\$18,100,000	-	\$18,100,000	\$10,570,960	58%	6/27/2023 (↓ +179)
5. State Street (OP)	Study	\$19,700,000	-	\$19,700,000	\$1,691,533	9%	4/21/2023 (↓ +123)

\*-As discussed in the IM 2022 First Quarter Report, during the first quarter of 2022, PSE&G made the decision to hold risk and contingency at the subprogram level.  
 \*\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).  
 (↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
 (↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 22**, all five life cycle station upgrade projects saw the forecasted in-service date slip from the status as of the end of the prior quarter. Overall, these shifts in forecasted in-service dates were relatively minor in two of the five substations, driven by actual project conditions. On Plainfield and Woodbury, the forecasted in-service date slip was the result of updated delivery switchgear delivery timelines provided by the vendor, while on State Street (OP) the in-service date slip was the result of a change in the manhole and conduit design due to an existing obstruction that will result in the manhole and conduit system not being energized until the second circuit is cutover (rather than with the first circuit as had originally been the plan). Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

Similar to the Electric Station Flood Mitigation subprogram, the life cycle station upgrade projects within the Electric Stipulated Base experienced some delays to the forecasted delivery dates of the major equipment. The status of the major equipment deliveries for the Electric Stipulated Base projects is presented in **Table 23 – Electric Station Flood Mitigation Major Switchgear Deliveries as of September 30, 2022**.

**Table 23 – Electric Station Flood Mitigation Switchgear Deliveries as of September 30, 2022**

Station	Description	Delivery Status as of Q2 2022	Delivery Status as of Q3 2022
1. Hamilton	4kV switchgear	<b><i>4/5/2022</i></b>	<b><i>4/5/2022</i></b>
2. Paramus	4kV switchgear	<b><i>5/31/2022</i></b>	<b><i>5/31/2022</i></b>
	4kV cont. switchgear	<b><i>7/8/2021</i></b>	<b><i>7/8/2021</i></b>
3. Plainfield	4kV switchgear	<b><i>8/26/2022</i></b>	<b><i>9/15/2022</i></b>
4. Woodbury	4kV switchgear	<b><i>7/20/2022</i></b>	<b><i>9/21/2022</i></b>

Note: bold/italicized dates indicate actual delivery dates.

As shown in **Table 23**, the major equipment deliveries for Plainfield and Woodbury were both completed in the third quarter of 2022, although both still experienced some slippage from the status at the end of the prior quarter that impacted the forecasted in-service dates for both projects.

Findings & Observations:

- Construction continued on the Hamilton, Paramus, Plainfield, and Woodbury projects, while engineering continued to advance on the State Street OP project (which continues to be expected to commence construction in the fourth quarter of 2022).



- The forecasted in-service dates for the five life cycle station upgrade projects as of the end of the third quarter of 2022 shows three of the five projects expected to go in-service before the end of 2022 (Hamilton, Paramus, and Plainfield). The forecasted in-service date for Woodbury shifted from December 2022 to June 2023 due to switchgear delivery delays (which also impacted the Plainfield project, but to a lesser degree), while the State Street OP forecasted in-service date shifted from December 2022 to April 2023 due to manhole and conduit redesigns, which resulted in the energization of the manhole and conduit system being tied to the second circuit cutover rather than the first circuit cutover (which is planned for December 2022).
- The cost forecasts for the five life cycle upgrade projects collectively increased by approximately \$1.5 million (or 1.5%) from the status as of the end of the prior quarter to a total forecast of \$100.6 million as of the end of the third quarter of 2022. This increase was largely attributed to minor cost impacts across the projects stemming from actual conditions (e.g. Hamilton and Paramus both had \$0.2 million increases attributed to more Relay tech hours than forecasted, Plainfield had a \$0.2 increase due to unforeseen underground obstructions, etc.).

**1. Hamilton**

During the third quarter of 2022, \$2,537,609 was spent on the Hamilton project against a forecast of approximately \$2.4 million. This brought total spend on the project to approximately \$12.9 million through the end of the third quarter of 2022. The forecasted in-service date for the Hamilton project slipped 19 days from the status as of the end of the prior quarter to October 24, 2022.

Notable activities performed on the Hamilton during the third quarter of 2022 included:

- Installation of new OP duct banks and manholes;
- Continued electrical construction, including cable pulls and terminations; and,
- Completion of the Switchgear commissioning.

The actual spend by quarter for Hamilton as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$0	\$362,372	\$3,141,022	\$3,770,758	\$3,089,239	\$2,537,609	\$1,644,117	\$2,930,830

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$16,800,000	\$12,901,001	77%
Forecast	\$17,475,949		74%

**2. Paramus**

During the third quarter of 2022, \$2,053,294 was spent on the Paramus project against a forecast of approximately \$2.1 million. This brought total spend on the project to approximately \$16.9 million through the end of the third quarter of 2022. The forecasted in-service date for the Paramus project slipped six days from the status as of the end of the prior quarter to November 9, 2022.

Notable activities conducted during the third quarter of 2022 on the Paramus project included:

- Continued setting up/assembly of the new 4kV switchgear;
- Continued cable pulls to the new 4kV switchgear;
- Assembly of the new 4kV regulators;
- Commencement of switchgear commissioning; and,
- Start of 4kV bus support installation.

The actual spend by quarter for Paramus as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$0	\$840,200	\$7,068,765	\$952,513	\$5,942,564	\$2,053,294	\$1,332,615	\$3,589,704

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$21,400,000	\$16,857,336	79%
Forecast	\$21,779,654		77%

### 3. Plainfield

During the third quarter of 2022, \$8,420,160 was spent on the Plainfield project against a forecast of approximately \$6.9 million. This brought total spend on the project to approximately \$17.1 million through the end of the third quarter of 2022. The variance in forecasted to actual spend in the third quarter of 2022 was largely attributed to the invoice for the switchgear being processed earlier than anticipated (last day of the month, which had not been communicated to the cost engineer in advance).

The forecasted in-service date for the Plainfield project as of slipped 30 days from the status as of the prior quarter to December 28, 2022. This slip in the forecasted in-service date was driven by delays associated with the delivery of the switchgear (which slipped from late July 2022 to mid-September 2022).

Notable activities conducted on the Plainfield project during the third quarter of 2022 included:

- Installation of the switchgear platform;
- Commencement of electrical construction, including cable pulls and installing regulators;
- Delivery of the switchgear/setting the switchgear on foundations; and,
- Commencement of switchgear commissioning.

The actual spend by quarter for Plainfield as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$0	\$682,325	\$3,584,101	\$1,682,480	\$2,682,840	\$8,420,160	\$2,403,443	\$3,759,251

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$22,600,000	\$17,051,906	76%
Forecast	\$23,214,599		73%

**4. Woodbury**

During the third quarter of 2022, \$5,168,609 was spent on the Woodbury project against a forecast of approximately \$7.0 million. This brought the total spend on the project to approximately \$10.6 million through the end of the third quarter 2022. The variance in forecasted to actual spend in the third quarter of 2022 was largely attributed to the switchgear delivery shifting out to September 2022 (with the delivery shift occurring after the forecast was locked).

The forecasted in-service date for the Woodbury project slipped 179 days from the status as of the end of the prior quarter to June 27, 2023. The in-service date shift was driven by delays to the switchgear and feeder rows deliveries and an expanded duration for commissioning.

Notable activities conducted on the Woodbury project during the third quarter of 2022 included:

- Start of electrical construction; and,
- Switchgear delivered and set on foundation;

The actual spend by quarter for Woodbury as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$0	\$551,165	\$1,613,823	\$1,460,525	\$1,776,838	\$5,168,609	\$1,875,626	\$5,653,414

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$18,100,000	\$10,570,960	58%
<b>Forecast</b>	\$18,100,000		58%

**5. State Street (Outside Plant)**

During the third quarter of 2022, \$983,856 was spent on the State Street (OP) project against a forecast of approximately \$1.7 million. The variance in forecasted to actual spend for the third quarter of 2022 was predominantly the result of overestimated subcontractor services (traffic control and vacuum truck support) and the Division not being able to start overhead work as planned for circuit 4005, which also relates to the shift in forecasted in-service date discussed below.

As of the end of the third quarter of 2022, the forecasted in-service date for the State Street OP project slipped 123 days from the status as of the prior quarter to April 21, 2023. This forecasted in-service date shift was driven by manhole and conduit exits from the substation that required redesigns due to existing underground obstructions. As a result of this redesign, the circuit 4005 (first circuit to be placed in-service) is being placed on its own manhole and conduit system and the energization will follow the second circuit being cutover in 2023.

Notable activities conducted during the third quarter of 2022 included the approval and receipt of the test pits permit and the commencement and completion of the test pits.

The actual spend by quarter for State Street (OP) as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>						<i>Forecast</i>	
\$0	\$0	\$211,247	\$395,903	\$100,527	\$983,856	\$1,797,246	\$16,523,810

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$19,700,000	\$1,691,534	9%
Forecast	\$20,012,589		8%

## F. Gas M&R Station Upgrades

During the third quarter of 2022, PSE&G submitted updated estimates for the Camden and East Rutherford Gas M&R projects, with both advancing to a Definitive level estimate. **Table 24 – ES 2 Gas M&R Summary Status as of September 30, 2022** below provides these newly approved estimates and the other current estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

**Table 24 – ES 2 Gas M&R Summary Status as of September 30, 2022**

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden	Definitive	\$21,600,000	\$200,000	\$21,800,000	\$26,707,869	123%	Dec 2022
2. Central*	Conceptual	\$31,400,000	\$5,500,000	\$36,900,000	\$23,653,126	64%	Nov 2023
3. East Rutherford	Definitive	\$24,100,000	\$1,900,000	\$26,000,000	\$14,604,488	56%	Dec 2022
4. Mount Laurel*	Conceptual	\$12,700,000	\$3,100,000	\$15,800,000	\$1,680,782	11%	Nov 2023
5. Paramus*	Study	\$11,500,000	\$8,400,000	\$19,900,000	\$1,317,612	7%	Dec 2023
6. Westampton	Definitive	\$8,400,000	\$-	\$8,400,000	\$8,413,061	100%	Oct 2021 (actual)
<b>Subprogram Total</b>		<b>\$109,700,000</b>	<b>\$19,100,000</b>	<b>\$128,800,000</b>	<b>\$76,376,937</b>	<b>59%</b>	<b>Dec 2023</b>

\*-Included in the Stipulated Base.  
 (↑)-Indicates the forecasted in-service date advanced from the prior quarter.  
 (↓)-Indicates the forecasted in-service date slipped from the prior quarter.

The updated estimates for Camden and East Rutherford collectively resulted in no change to the overall subprogram estimate as the \$5.5 million increase to the base estimate was offset by releasing \$5.5 million in R&C funds. Note also that while the current actuals for Camden exceed the updated estimate, this is due to the actuals still including costs associated with the liquid propane air (LPA) scope that was removed from the ES 2 project, a cost adjustment is expected to be recorded to account for this in the fourth quarter of 2022. Details of the individual estimate changes are discussed within the individual project discussions that follow.

Relative to the forecasted in-service dates shown in **Table 24**, as of the end of the third quarter of 2022, the forecasted in-service dates for the remaining Gas M&R projects remained essentially unchanged from the status as of the end of the prior quarter (Camden and East Rutherford both saw forecasted in-service

date shifts of five days or less, but both remain forecasted to go in-service in December 2022). As previously reported, the Westampton project was placed in-service as of October 22, 2021.

Findings & Observations:

- The six projects that comprise the Gas M&R subprogram continues to advance at various stages of development reflecting the targeted delivery schedule. During the third quarter of 2022, construction continued to advance on the Camden, Central, and East Rutherford projects, while the Mount Laurel and Paramus projects continued pre-construction activities including Mount Laurel preparing the civil construction package and Paramus addressing comments from the zoning board. The Westampton project was previously put in-service in October 2021, while punch list items and site restoration activities continued in the third quarter of 2022.
- There were no significant changes to the forecasted in-service dates of the Gas M&R projects during the third quarter of 2022. The next projects to be completed are the Camden and East Rutherford projects, which are forecasted to be placed in-service in December 2022. The final projects, Central, Mount Laurel, and Paramus each continue to be forecasted for November-December 2023 in-service dates.
- As of the end of the third quarter of 2022, the overall subprogram forecast increased approximately \$6.0 million from the status as of the end of the prior quarter. This forecast increase is predominantly within the Camden (forecast increased approximately \$3.1 million) and East Rutherford (forecast increased approximately \$2.4 million) projects, where the forecast increase aligned with an updated estimate on these projects, which reflected the current status of design, procurement, and construction plans and activities.
- The IM has found nothing to date that would jeopardize the subprogram being completed on time, however, the current forecast of \$110.3 million exceeds the Stipulation budget of \$101.0 million and with the latest forecast increase is trending upward.

1. Camden

During the third quarter of 2022, \$13,240,520 was spent on the Camden project compared to a forecast of approximately \$17.3 million, which brought the total spend to approximately \$26.7 million. The variance in forecasted to actual spend in the third quarter of 2022 was driven by permit delays that delayed mechanical construction activities and shipping delays for valves and switchgears. Despite these delays, the forecasted in-service date for the Camden project slipped only three days from the status as of the end of the prior quarter to December 19, 2022.

Notable activities on the Camden project during the third quarter of 2022 included:

- Completed excavations and pouring for building footings and foundations;
- Began excavation in street for distribution tie-ins;
- Continued pipe fabrication;
- Began steel erection for the mix and control buildings;
- Began installing outlet piping within the M&R station; and,
- Continued electrical and plumbing rough in.

The actual spend by quarter for Camden as compared to the current forecast and URB approved estimate is provided below. Late in the third quarter of 2022, PSE&G advanced the Camden project estimate to the

Definitive stage, which saw the overall estimate remain at \$21.8 million after the allocation of R&C. The specific changes from the prior estimate are as follows:

- Change in pressure control valves (\$1.3 million);
- Design refinement – predominantly impacts from unknown underground conditions and electrical requests for information (RFIs) (\$0.8 million);
- Escalated material costs and changes between issued for bid (IFB) and IFC drawings, primarily valves, platforms, and electrical materials (\$0.7 million);
- Pipeline agreement with Transco required additional modifications to be incorporated (\$0.3 million); and,
- Transfer of R&C to base (-\$3.1 million).

While the current estimate of \$21.8 million and the current forecast of \$21.6 million have both been exceeded by the actual costs to date on the Camden project, these actual costs include costs related with the LPA scope of the Camden project that PSE&G is removing from the ES 2 Program and will result in adjusted actual costs for the ES 2 Camden project in the fourth quarter of 2022.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$13,326	\$859,350	\$2,147,696	\$2,791,701	\$7,655,276	\$13,240,520	(\$6,903,540)	\$1,795,670

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$21,800,000	\$26,707,870*	123%
<b>Forecast</b>	\$21,600,000		124%
*-Approximately \$9.9 million of actuals will be journalled out in October 2022 to reflect the split of the LPA scope of the Camden project that removes the LPA scope from the ES 2 project.			

## 2. Central

During the third quarter of 2022, \$4,607,003 was spent on the Central project compared to a forecast of approximately \$4.2 million, which brought the total spend to approximately \$23.7 million. The forecasted in-service date for the Central project as of the end of the third quarter of 2022 remains at November 30, 2023, unchanged from the status as of the end of the prior quarter.

Notable activities on the Central project during the third quarter of 2022 included:

- Completed erection of the regulator and heater buildings;
- Heat exchangers/flow control building erection complete and fit out initiated;
- Began erecting steel skin for the control building;
- Continued fit out of SCADA building;
- Continued pipe fabrication; and
- Continued electrical and plumbing rough in.

The actual spend by quarter for Central as compared to the current forecast and URB approved estimate is provided below. The forecast of \$31.4 million for the Central project remains virtually unchanged from

the status as of the end of the prior quarter and excludes costs associated with the LPA scope that was removed from the Program.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$6,869	\$670,582	\$4,226,277	\$7,112,617	\$7,029,778	\$4,607,003	\$3,740,040	\$4,066,834

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$36,900,000	\$23,653,126	64%
Forecast	\$31,400,000		75%

### 3. East Rutherford

During the third quarter of 2022, \$6,324,865 was spent on the East Rutherford project compared to a forecast of approximately \$11.1 million, which brought the total spend to approximately \$14.6 million. The variance in forecasted to actual spend during the third quarter of 2022 was driven by supply chain/material delivery delays and a delay in finalizing the Transco pipeline agreement addendum that pushed a forecasted payment. The forecasted in-service date for the East Rutherford project as of the end of the third quarter of 2022 slipped five days from the status as of the end of the prior quarter to December 21, 2022.

Notable activities on the East Rutherford project during the third quarter of 2022 included:

- Drained and removed heaters;
- Completed pile driving;
- Foundation work for regulator and control buildings;
- Continued pipe fabrication;
- Continued electrical rough in;
- Received and set the control SCADA building; and,
- Began excavating for yard piping and piping supports.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. Late in the third quarter of 2022, PSE&G advanced the East Rutherford project estimate to the Definitive stage, which resulted in no change to the prior estimate of \$26.0 million after allocation of R&C. The specific changes from the prior estimate are as follows:

- Design refinement of IFCs through submittals and RFIs derived from unforeseen field conditions, construction sequencing, and design revision including impacts to electrical, mechanical, and civil work (\$1.4 million);
- Higher levels of asbestos containing materials and PCB pipe contamination discovered during demolition and change to dewatering strategy (\$0.6 million);
- New requirement stemming from a new requirement in the executed pipeline agreement with Transco for daily supervision to oversee activities on Tansco property (East Rutherford site owned by Transco) (\$0.4 million);
- Transfer of R&C to base (-\$2.4 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$9,010	\$521,865	\$1,783,623	\$1,551,290	\$4,413,835	\$6,324,865	\$9,010,011	\$485,502

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$26,000,000	\$14,604,488	64%
<b>Forecast</b>	\$24,100,000		61%

#### 4. Mount Laurel

During the third quarter of 2022, \$607,409 was spent on the Mount Laurel project compared to a forecast of approximately \$760,000, which brought the total spend to approximately \$1.7 million. The forecasted in-service date for the Mount Laurel project as of the end of the third quarter of 2022 remained unchanged from the status as of the end of the prior quarter at November 30, 2023.

Notable activities on the Mount Laurel project during the third quarter of 2022 included:

- Prepared and issued the civil construction contract; and,
- Finalized interconnection agreement with Transco.

Construction activities on Mount Laurel are planned to commence in the second quarter of 2023.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Mount Laurel project remained essentially unchanged from the prior quarter at approximately \$12.7 million.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$5,965	\$362,167	\$527,341	\$135,639	\$42,260	\$607,409	\$373,513	\$10,645,706

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$15,800,000	\$1,680,782	11%
<b>Forecast</b>	\$12,700,000		13%

#### 5. Paramus

During the third quarter of 2022, \$67,221 was spent on the Paramus project compared to a forecast of approximately \$103,000, which brought the total spend to approximately \$1.3 million. The forecasted in-service date for the Paramus project as of the end of the third quarter of 2022 remains unchanged from the status as of the end of the prior quarter at December 29, 2023.

Notable activities on the Paramus project during the third quarter of 2022 included:

- Responded to comments from the Paramus Zoning Board; and,
- Received draft IFB drawings and documents, which have resulted in no scope changes.

Construction activities on the Paramus project is planned to commence in the second quarter of 2023.



The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Paramus project as of the end of the third quarter of 2022 increased approximately \$500,000 from the prior quarter, driven by additional A/E support required and offset by R&C funds.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$8,842	\$462,452	\$568,344	\$94,755	\$115,998	\$67,221	\$1,067,026	\$9,615,363

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$19,900,000	\$1,317,611	7%
<b>Forecast</b>	\$12,00,000		11%

## 6. Westampton

During the third quarter of 2022, \$100,140 was spent on the Westampton project compared to a forecast of approximately \$242,000, which brought the total spend to approximately \$8.4 million. The Westampton was placed in-service as of October 22, 2021, remaining activities include site restoration and final punch list items that continued to be performed in the third quarter of 2022.

During the third quarter of 2022, notable activities on the Westampton project included:

- Continuing to work through punch list items;
- Completed final paving and site restoration.

This effectively concludes the Westampton project, although minor trailing costs are expected in the fourth quarter of 2022.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$8,395	\$1,032,670	\$6,961,216	\$178,124	\$132,517	\$100,140	\$59,323	\$0

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$8,400,000	\$8,413,062	100%
<b>Forecast</b>	\$8,472,385		99%

ENERGY STRONG PROGRAM  
INDEPENDENT MONITOR  
2022 THIRD QUARTER REPORT

**APPENDIX A – DRAFT REPORT COMMENTS AND  
RESPONSES**

NOVEMBER 13, 2023

PEGASUS GLOBAL HOLDINGS, INC. ®

## Questions & Comments to the IM 2022 Third Quarter Report Formally Submitted to the IM

ID #	Question/Comment	IM Response	Report Changes
S- INF-1	<p><b><u>Reference Q3 2022 Report, Page 2, Table 1 – ES 2 Subprogram &amp; Stipulated Base Status as of September 30, 2022</u></b>  Please reconcile why the Energy Strong II program is forecasted to be completed in February 2024 despite the Electric Station Flood Mitigation subprogram being forecasted to be completed in April 2024.</p>	<p>The “Total” row on <b>Table 1</b> was incorrectly not updated to reflect the latest schedule update to the Waverly Electric Station Flood Mitigation project that shifted from February to April 2024 during the third quarter of 2022 and represents the final forecasted project for the Program.</p>	<p><b>Table 1</b></p>
S- INF-2	<p><b><u>Reference Q3 2022 Report, Page 16, Table 10 – Electric Station Flood Mitigation Switchgear Deliveries as of September 30, 2022</u></b>  Please describe the planned timeline for returning the Kingsland 13kV switchgear, which is being used as the Ridgefield 13kV contingency/temporary switchgear, to be installed on the Kingsland project.</p>	<p>The contingency switchgear on Ridgefield 13kV will be disassembled and delivered to the Kingsland site following the commissioning of the permanent switchgear at the Ridgefield 13kV site. This disassembly at Ridgefield 13kV and delivery to Kingsland is expected to take place during the first quarter of 2023.</p>	<p><b>Table 11</b> (was previously Table 10)</p>
S- INF-3	<p><b><u>Reference Q3 2022 Report, Page 24, Meadow Road Substation Project</u></b>  With respect to the Meadow Road substation project:</p> <ol style="list-style-type: none"> <li>a. Please discuss if any Energy Strong II work will be combined with proposed transmission work occurring adjacent to the Meadow Road substation (See PJM TEAC Presentation dated September 5, 2023, Slides 5-6) (link:<a href="https://www.pjm.com/-/media/committees-groups/committees/teac/2023/20230905/20230905-item-06---pseg-supplemental-projects.ashx">https://www.pjm.com/-/media/committees-groups/committees/teac/2023/20230905/20230905-item-06---pseg-supplemental-projects.ashx</a>).</li> <li>b. The PJM TEAC Presentation notes that PSE&amp;G is proposing to construct a new 230-13kV substation on property adjacent to the existing Meadow Road substation. Please confirm that the scope of the Energy Strong II project still consists of raising and rebuilding the existing Meadow Road substation.</li> </ol>	<p>Regarding the Meadow Road project:</p> <ol style="list-style-type: none"> <li>a. There is no ES 2 project scope combined with the proposed transmission work.</li> <li>b. The ES 2 scope is confirmed as consisting of raising and rebuilding the existing substation.</li> </ol>	<p>No changes</p>
S- INF-4	<p><b><u>Reference Q3 2022 Report, Page 31, Contingency Reconfiguration Subprogram</u></b>  Regarding the Fuse Saver projects within the Contingency Reconfiguration subprogram, please provide additional details about the increases in the actual cost per unit observed since the start of the program.</p>	<p>In the ES 2 filing, PSE&amp;G estimated installation of these devices would range between \$11,721 for single-phase devices and \$18,262 for two-phase devices. The Black &amp; Veatch “Electric Cost-Benefit Analysis” study attached to PSE&amp;G’s ES 2 filing noted that “<i>PSE&amp;G currently does not have any of these devices installed;</i>”</p>	<p><b>Section III.B.</b></p>

ID #	Question/Comment	IM Response	Report Changes
		<p><i>therefore, some work is required to develop a construction standard and training to ensure the workforce is familiar with the construction and operation of the reclosing devices.”</i> The construction standard and training were developed through implementation of the Fuse Saver pilot program that commenced in November 2020 and was primarily completed in January 2021 (PSE&amp;G installed 80 devices in this initial period, then opted to install the remaining units in inventory to capture additional cost and performance data, resulting in a total of 113 units installed as of the end of 2021).</p> <p>The actual costs observed through the Fuse Saver pilot program actuals saw single phase devices average \$35,216 and two-phase devices average \$48,031, significantly higher than the estimate at the time of the ES 2 filing. The cost increases were primarily driven by:</p> <ul style="list-style-type: none"> <li>• The ES 2 filing estimate not including management costs, tree trimming, storage, or traffic control costs;</li> <li>• Higher material costs than estimated, including pole replacements at multiple locations (pole replacement costs not included in the initial estimate assumptions, adds approximately \$10,000 in costs per unit); and,</li> <li>• Average labor hours 4x higher than the ES 2 filing estimate and increased labor rates since filing.</li> </ul> <p>PSE&amp;G’s approach on forecasting the Fuse Saver scope during its execution is based on a quarterly review of the actual cost data and related installation status information to inform and update the installation plan. PSE&amp;G continues seeking to optimize the number of Fuse Savers installed in alignment with the overall budget for the subprogram. For example, given the added costs of the pole replacements, PSE&amp;G considered attempting to avoid such locations, but in</p>	

ID #	Question/Comment	IM Response	Report Changes
		<p>many cases the existing equipment and height/spacing requirements on the pole required installation of a new pole.</p>	
S- INF-5	<p><b><u>Reference Q3 2022 Report, Page 32, Communication System Subprogram</u></b>  Regarding the Communication System subprogram projects placed in-service in Q3 2022, please compare the actual costs to the budgeted costs.</p>	<p>For these projects, which consisted of Montclair, Palisades HQ, and West Orange, the budgeted vs. actual costs are presented as follows:</p> <ul style="list-style-type: none"> <li>• Montclair: budget of \$840,000 vs. actual costs of \$2,725,350.</li> <li>• Palisades HQ: budget of \$255,000 vs. actual costs of \$633,296.</li> <li>• West Orange: budget of \$50,000 vs. actual costs of approximately \$58,000.</li> </ul> <p>The cost variances experienced on Montclair and Palisades HQ were largely due to the fact that the estimates were developed at less than 30% confidence via analogous estimates that did not account for differing station field conditions. Originally, PSE&amp;G used a placeholder value for all stations' Inside Plant costs and later refined these values based on the required equipment. The Outside Plant costs were also estimated with lower levels of confidence and were further refined based on the split of Overhead and Underground scope required.</p>	No change
S- INF-6	<p><b><u>Reference Q3 2022 Report, Page 36, Grid Modernization - ADMS Subprogram</u></b>  Regarding the ADMS project, please provide additional details about the need to incorporate two (2) production releases rather than the originally planned one (1) production release.</p>	<p>The split of OMS implementation into two production releases was intended to go-live with all core/mission critical functionalities in the first release in May 2023 ahead of the start of the “storm season” and remaining enhancements in a second release in fall 2023 after the storm season moratorium.</p> <p>The OMS project ultimately did not meet the May 2023 release date, which resulted in reverting the project to a single production release currently scheduled to go live in December 2023.</p>	<b>Section III.D.</b>
S- INF-7	<p><b><u>Reference Q3 2022 Report, Page 44, Camden M&amp;R Station</u></b>  Regarding the Camden M&amp;R Station project, refer to the statement “Approximately \$9.9 million of actuals will be journaled out in October 2022 to reflect the split of</p>	<p>The \$18.1 million reduction from the LPA scope removal reflected the entire estimate of the LPA scope while the \$9.9 million that will be journaled out of the</p>	No change

ID #	Question/Comment	IM Response	Report Changes
	the LPA scope of the Camden project that removes the LPA scope from the ES 2 project.” Please reconcile this with the IM’s previous report, which indicated that the removal of the LPA scope would result in a \$18.1 million cost reduction to the Camden M&R project (See Q2 2022 Report, Page 48).	ES 2 project actual costs reflects the actual costs incurred on the ES 2 project related to the LPA scope prior to that scope being removed from the Program.	
S- INF-8	<b><u>Reference Q3 2022 Report, Page 45, Central M&amp;R Station</u></b> Regarding the Central M&R Station project, please clarify if the forecasted cost (\$31.4 million) includes the cost of the LPA scope.	The costs associated with the LPA scope were removed from the Central M&R Station project forecast and thus not included in the current \$31.4 million forecast.	<b>Section III.F.2.</b>
S- INF-9	<b><u>Reference Q3 2022 Report, Page 47, Paramus M&amp;R Station</u></b> Regarding the Paramus M&R Station project, please provide additional details about the comments received from the Paramus Zoning Board, including any resulting scope changes.	The comments received from the Paramus Zoning Board on the Paramus Gas M&R project have not resulted in any scope changes, but did require among other things: <ul style="list-style-type: none"> <li>• Improvements are to be completed in accordance with testimony and evidence submitted to the Board.</li> <li>• Building permits are required to be secured, where applicable, prior to conducting any site modifications.</li> <li>• Compliance with the Board Engineer’s review memoranda.</li> <li>• Installation of soundproof paneling on the building interior.</li> <li>• Provide the Air Quality Permit from the NJDEP.</li> <li>• Coordinate with Transco for installation of additional security cameras.</li> </ul>	<b>Section III.F.5.</b>
RCR- IM-1	With reference to page 1 of the Independent Monitor’s Draft Third Quarter 2022 Report, please provide an update on the draw down of risk and contingency funds in the Electric Station Flood Mitigation and Gas M&R subprograms.	The changes to R&C on the Electric Station Flood Mitigation and Gas M&R subprograms during the third quarter of 2022 resulted in the R&C balance in the Electric Station Flood Mitigation subprogram decreasing by \$12.5 million to \$29.3 million (shown as the Placeholder amount in <b>Table 11</b> ) and in the Gas M&R subprogram by \$5.5 million to \$19.1 million (shown in <b>Table 23</b> ). The overall estimates for each of these subprograms remained unchanged as the drawdown in R&C matched an increase in the base estimate for projects that had updated estimates in the quarter (Electric Station Flood Mitigation projects: Clay Street, Meadow Road, Kingsland, Ridgely 4kV	No change

ID #	Question/Comment	IM Response	Report Changes
		(decreased \$100K as part of the project closeout), Waverly, and Woodlynn; and Gas M&R projects: Camden and East Rutherford).	
RCR-IM-2	With reference to page 2 of the Independent Monitor's Draft Third Quarter 2022 Report, Table 1 ES 2 Subprogram & Stipulated Base Status as of September 30, 2022, please identify the additional subprogram costs associated with the delay in the forecasted completion date for the Electric Station Flood Mitigation subprogram from February 2024 reported in the Second Quarter 2022 Report to April 2024.	The Lakeside project within the Electric Station Flood Mitigation subprogram has incurred approximately \$500K in additional costs related to the extended duration (\$400K in extra carrying costs for the extended schedule, \$100K for construction acceleration due to the switchgear delivery over five months after its purchase order delivery date).	No change
RCR-IM-3	With reference to page 2 of the Independent Monitor's Draft Third Quarter 2022 Report, Table 1 ES 2 Subprogram & Stipulated Base Status as of September 30, 2022, please identify the additional subprogram costs associated with the delay in the forecasted completion date for the Grid Modernization - ADMS subprogram from December 2022 reported in the Second Quarter 2022 Report to June 2023.	The delay to the ADMS subprogram has contributed to approximately \$7.4 million in additional costs to the subprogram (approximately \$4.3 million attributed to PSE&G labor, \$3.3 million for staff augmentation costs).  See also the response to <b>RCR-IM-8</b> .	<b>Section III.D.</b>
RCR-IM-4	With reference to page 2 of the Independent Monitor's Draft Third Quarter 2022 Report, Table 1 ES 2 Subprogram & Stipulated Base Status as of September 30, 2022, please identify the source of the \$3.6 million increase in the Gas M&R subprogram included in the total subprogram increase of \$27.8 million over the stipulation amount of \$101 million for this subprogram.	When PSE&G approved this additional funding for the Gas M&R subprogram in the second quarter of 2022, the Base estimate of the six projects within the subprogram totaled \$104.2 million, the R&C balances totaled \$24.6 million, and the overall subprogram estimate was \$128.8 million.  This \$128.8 million represented a \$27.8 million increase over the Stipulation's \$101.0 million budget for the subprogram. Of that \$27.8 million, \$24.6 million was attributed to additional R&C while the remaining \$3.2 million was realized in the increased Base estimates of these projects (\$104.2 million as of the end of the second quarter of 2022, see Table 25 of the IM's 2022 2 <sup>nd</sup> Quarter Report).	No change
RCR-IM-5	With reference to page 2 of the Independent Monitor's Draft Third Quarter 2022 Report, please indicate whether other supply chain issues in addition to the 4 kV switchgear delivery delays are contributing to the 163 day delay in the forecasted in service date for Lakeside Avenue from September 18, 2023 to February 28, 2024.	There are other supply chain issues from sub-vendors to the switchgear manufacturer that are contributing to this switchgear manufacturing delay, but the current delay to the Lakeside Avenue project is driven by the delay to the switchgear delivery.	No change

ID #	Question/Comment	IM Response	Report Changes
RCR-IM-6	With reference to page 4 of the Independent Monitor’s Draft Third Quarter 2022 Report, please confirm for the Contingency Reconfiguration program that only 286 fuse saver units were installed during the 2022 Third Quarter, leaving 1,162 units to be installed by December 31, 2023 as part of the Contingency Reconfiguration subprogram.	The IM confirms 286 Fuse Savers were installed during the third quarter of 2022. This also represented effectively the first full quarter of installations of the Fuse Savers, with nearly 70% of the total devices installed to date installed during this quarter. As noted in the Findings & Observations within <b>Section III.B.</b> , based on the current scope, this averages out to approximately 77 units per month (for comparison in the third quarter of 2022, PSE&G averaged 95 units per month).	No change
RCR-IM-7	With reference to page 4 of the Independent Monitor’s Draft Third Quarter 2022 Report, please explain the discrepancy between the Contingency Reconfiguration program planned scope of 1,574 units compared to planned scope 1,641 fuse saver units reported in the Second Quarter 2022 Report.	PSE&G assesses the actual cost per unit data and adjusts the Program targets on a quarterly basis based on the current data. As the costs per unit of the Fuse Savers has been higher than initially estimated (see also the response to <b>S-INF-4</b> ), this has resulted in PSE&G lowering the targeted number of units to be installed in the Program in order to maintain the established budget.	<b>Section III.B.</b>
RCR-IM-8	With reference to page 5 of the Independent Monitor’s Draft Third Quarter 2022 Report, please elaborate on the \$7.4 million increase in the Grid Modernization ADMS subprogram budget, involving changes in the Outage Management System from one to two production releases, at an increased cost of \$7.4 million, increasing total ADMS subprogram budget from \$53.47 million to \$60.90 million.	The delay to the ADMS subprogram has contributed to approximately \$7.4 million in additional costs to the subprogram (approximately \$4.3 million attributed to PSE&G labor, \$3.3 million for staff augmentation costs). There were no additional costs associated with the split to two production releases.  See also the response to <b>RCR-IM-3</b> and <b>S-INF-6</b> .	<b>Section III.D.</b>
RCR-IM-9	With reference to page 9, Figure 2 -- ES 2 CWIP Balances by Subprogram as of September 30, 2022, please explain the discrepancy between the \$99.39 million Q3 2022 subtotal for the ES 2 Electric Station Flood Mitigation, while the preceding paragraph on page 8 discussing construction work-in-progress highlights CWIP Electric Station Flood Mitigation costs for “Hasbrouck Heights (\$14.6 million), State Street (\$12.2 million), Clay Street (\$13.5 million), and Waverly (\$17.9 million)” for \$58.2 million in total for the same subprogram. Please identify the CWIP balances by project for ES 2 Electric Station Flood Mitigation subprogram for the remaining 41.19 million.	The paragraph introducing the CWIP discussion highlights the largest components of CWIP by subprogram, in this case the Hasbrouck Heights, State Street, Clay Street, and Waverly projects (note Waverly’s balance was incorrectly listed as \$17.9 million rather than the correct \$18.0 million). <b>Figure 2</b> on the other hand depicts the full CWIP balance by subprogram.  The CWIP balances by project for each of the Electric Station Flood Mitigation projects is provided below:	<b>Section II.C.2.</b>



ID #	Question/Comment	IM Response		Report Changes
		Project	Q3 2022 CWIP Balance	
		Academy Street	\$0	
		Clay Street	\$13,472,003	
		Front Street	\$9,767,419	
		Hasbrouck Heights	\$14,535,338	
		Kingsland	\$2,341,261	
		Lakeside Avenue	\$3,431,600	
		Leonia	\$5,958,310	
		Market Street	\$2,230	
		Meadow Road	\$2,196,464	
		Orange Valley	\$2,334,015	
		Ridgefield 13kV	\$5,675,397	
		Ridgefield 4kV	\$0	
		State Street	\$12,216,817	
		Toney's Brook	\$3,235,564	
		Waverly	\$18,022,455	
		Woodlynne	\$6,203,817	
RCR-IM-10	With reference to pages 11 through 12, Table 6 ES 2 Program Overhead Allocations of September 30, 2022, please provide the breakdown of increased labor costs during the Third Quarter 2022 by supervisory, administrative, planning and contract labor categories and subprogram.	A comparison of the breakdown of overhead costs incurred on the Program during the second and third quarters of 2022 has been added to the report in new <b>Table 7 – Q2 and Q3 2022 Overhead Cost Comparison.</b>		<b>Table 7</b>
RCR-IM-11	With reference to page 16 of the Independent Monitor's Draft Third Quarter 2022 Report, concerning communications provided by PSE&G's switchgear vendor, Powercon, please indicate if Powercon has provided the "more detailed and frequent status updates" referred to in the Draft Second and Third Quarter 2022 Reports regarding remaining major equipment deliveries.	Concerning the additional information from Powercon, PSE&G requested and has received details in Powercon's production schedules and information from the sub-vendors/suppliers.		No change
RCR-IM-12	With reference to page 16, Table 10 ES 2 Electric Substation Flood Mitigation Switchgear Deliveries as of September 30, 2022, please explain if the revised delivery dates for 4 kV switchgear for Clay Street, Front Street, Lakeside Avenue, Orange Valley, Waverly and Woodlynne are based on communications from Powercon, or estimates by PSE&G.	The noted switchgear delivery dates are provided by the vendor.		No change
RCR-IM-13	With reference to pages 17 through 18, Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of September 30, 2022, the risk and contingency subprogram total is \$29.3 million, a reduction of \$12.5 million from the \$41.8	The changes to R&C on the Electric Station Flood Mitigation during the third quarter of 2022 resulted in the R&C balance in the Electric Station Flood		No change

ID #	Question/Comment	IM Response	Report Changes
	million risk and contingency subprogram total reported by the IM in the Second Quarter 2022 Report, Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of June 30, 2022, pages 16 through 17. Please specify how the \$12.5 million in risk and contingency funds were applied to which Electric Station Flood Mitigation projects.	Mitigation subprogram decreasing by \$12.5 million. The overall estimate for the subprograms remained unchanged as the drawdown in R&C matched an increase in the base estimate for projects that had updated estimates in the quarter (Electric Station Flood Mitigation projects: Clay Street, Meadow Road, Kingsland, Ridgefield 4kV (decreased \$100K as part of the project closeout), Waverly, and Woodlynne. Details of these estimate changes are provided in the specific subsection for the project.	
RCR-IM-14	With reference to page 19 of the Third Quarter 2022 Report, the IM states that “there is adequate R&C remaining in the subprogram.” Please confirm that there is adequate risk and contingency remaining in the subprogram given in-service date slippage driven by switchgear delivery delays.	Based on the current risk profile and work remaining in the subprogram, the total subprogram forecast is approximately \$356.9 million, the \$29.3 million in R&C represents approximately 8% of that forecast. With three projects currently complete and an additional four projects forecasted to reach in-service by the end of 2022, it appears the contingency is adequate based on the remaining work particularly as the current forecasts are based on the currently forecasted in-service dates. However, R&C is ultimately an estimate based on the information known or expected to be known at the time of the estimate.	No change
RCR-IM-15	With reference to Table 11 ES 2 Electric Substation Flood Mitigation Project Cost Status as of September 30, 2022, on page 17 and the Findings and Observations on pages 17 and 18, for the \$1.35 million increased forecast for Front Street from \$26.15 million (Second Quarter 2022 Report) to \$27.50 million please specify the costs for “bringing six circuits from [outside plant] to [inside plant], additional handling of contingency feeder rows, and additional costs for contingency wire checker and contingency disassembly.”	Regarding the details associated with the increased forecast for the Front Street project: <ul style="list-style-type: none"> <li>• \$0.3 million: updated forecast for brining in six circuits from OP to IP and additional handling of contingency feeder rows;</li> <li>• \$0.9 million: civil construction additional scope, relay tech direct project charges, added contingency wire checker, and additional contingency switchgear disassembly costs; and,</li> <li>• \$0.2 million: late charges for Division material and handling of contingency feeder rows.</li> </ul>	No change
RCR-IM-16	With reference to page 19 of the Independent Monitor’s Draft Third Quarter 2022 Report, please explain for which projects the primary risk is “resource availability to support schedule requirements.”	The resource risk is primarily in the Metro and Southern Division and potentially impacting these projects for the Metro Division: Lakeside, Clay Street, Waverly, Orange Valley, and Toney’s Brook; and for	<b>Section III.A.</b>

ID #	Question/Comment	IM Response	Report Changes
		the Southern Division: State Street, Woodlynne, and Woodbury.	
RCR-IM-17	With reference to page 19 of the Independent Monitor’s Draft Third Quarter 2022 Report, please explain for which projects the primary risk is weather-related impacts.	The weather-related impacts have the potential to impact any of the remaining projects depending on the nature of the impacts, which may involve such specific risks localized flooding or resources being pulled from project work to support recovery efforts.	No change
RCR-IM-18	With reference to page 20 of the Independent Monitor’s Draft Third Quarter 2022 Report, please explain the safety incidents and what is the estimated cost of the 52 day slippage in the forecasted in-service date for the Clay Street project.	<p>The forecasted in-service date slipped due to a construction safety incident on the OP Civil work, local flooding that impacted installation of the switchgear building foundation, and additional test pits required to confirm OP MH&amp;C underground design.</p> <p>The safety incident involved an excavator excavating a new duct bank that scraped the top of the concrete and shifted it. The machine was used to lift the concrete with the bucket, which exposed four conduits. The bucket never touched the conduits, however the top of two conduits came off with the concrete. Construction at the site was paused for an incident investigation and to make sure all appropriate safety procedures were reviewed and followed.</p> <p>The costs associated with this delay consist of flood cleanup costs of approximately \$56K and schedule acceleration of approximately \$100K.</p>	No change
RCR-IM-19	With reference to page 20 of the Independent Monitor’s Draft Third Quarter 2022 Report, please explain how the Clay Street “[p]roject schedule recovery” cost of \$600,000 was calculated, what exactly does it include, and was this based on the 52 slippage of the in-service date to March 23, 2023 noted at the end of the third quarter of 2022 or other factors? If other factors are involved, please describe how they impact the project schedule recovery cost.	The \$600K in costs associated with “project schedule recovery” are comprised of roughly \$100K in additional Civil and Electrical supervision and roughly \$475K in construction contractor increases. The total delay from the late receipt of construction permits was determined to be approximately six months, with three months recovered through these efforts.	<b>Section III.A.2.</b>
RCR-IM-20	With reference to page 22 of the Independent Monitor’s Draft Third Quarter 2022 Report, please explain how the Kingsland project cost of \$0.4 million for the “[e]xtended project duration: shift from Q2 2023 to Q4 2023 in-service” date was calculated and what components are included in that calculation (labor, borrowing costs, equipment storage, site costs, etc.). Please explain why delay costs have not	The \$400K cost increases on Kingsland associated with the extended project duration was based on the in-service date being revised to December 2023 based on the decision to utilize the contingency switchgear on Ridgefield 13kV as the permanent Kingsland	<b>Section III.A.5.</b>

ID #	Question/Comment	IM Response	Report Changes
	<p>been calculated and reported for all project delays affecting the ES 2 Electric Station Flood Mitigation Project subprogram and all other programs.</p>	<p>switchgear (representing a cost savings vs. ordering new switchgear). However, this resulted in the carrying costs extended by a full year at a rate of \$25K/month for 2023 and an additional five months in 2024 added for post in-service closeout at \$20K/month, representing a total of \$400K in additional costs.</p> <p>The carrying costs include typical project management activities and resources (e.g. project manager, staff engineer, cost engineer, scheduler, etc.).</p>	
RCR-IM-21	<p>With reference to page 29 of the Independent Monitor’s Draft Third Quarter 2022 Report, please explain how “there is no significant cost impact expected from this shift in installations” of the remaining 874 to be installed Fuse Savers from the first half of 2022 to the second half of 2022.</p>	<p>This is a shift in the timing of when the Fuse Saver installations are targeted, but there is no cost impact from installing in the fall of 2022 instead of the spring of 2022.</p>	No change
RCR-IM-22	<p>With reference to page 31 of the Independent Monitor’s Draft Third Quarter 2022 Report, please detail the “higher observed costs per unit on the Fuse Savers testing and installation labor,” that contributed to the third quarter of 2022 \$2.0 million increase above the \$145 million stipulated budget for the Contingency Reconfiguration subprogram.</p>	<p>In the ES 2 filing, PSE&amp;G estimated installation of these devices would range between \$11,721 for single-phase devices and \$18,262 for two-phase devices. The Black &amp; Veatch “Electric Cost-Benefit Analysis” study attached to PSE&amp;G’s ES 2 filing noted that “<i>PSE&amp;G currently does not have any of these devices installed; therefore, some work is required to develop a construction standard and training to ensure the workforce is familiar with the construction and operation of the reclosing devices.</i>” The construction standard and training were developed through implementation of the Fuse Saver pilot program that commenced in November 2020 and was primarily completed in January 2021 (PSE&amp;G installed 80 devices in this initial period, then opted to install the remaining units in inventory to capture additional cost and performance data, resulting in a total of 113 units installed as of the end of 2021).</p> <p>The actual costs observed through the Fuse Saver pilot program actuals saw single phase devices average \$35,216 and two-phase devices average \$48,031, significantly higher than the estimate at the time of the ES 2 filing. The cost increases were primarily driven by:</p>	<b>Section III.B.</b>

ID #	Question/Comment	IM Response	Report Changes
		<ul style="list-style-type: none"> <li>• The ES 2 filing estimate not including management costs, tree trimming, storage, or traffic control costs;</li> <li>• Higher material costs than estimated, including pole replacements at multiple locations (pole replacement costs not included in the initial estimate assumptions, adds approximately \$10,000 in costs per unit); and,</li> <li>• Average labor hours 4x higher than the ES 2 filing estimate and increased labor rates since filing.</li> </ul> <p>PSE&amp;G's approach on forecasting the Fuse Saver scope during its execution is based on a quarterly review of the actual cost data and related installation status information to inform and update the installation plan. PSE&amp;G continues seeking to optimize the number of Fuse Savers installed in alignment with the overall budget for the subprogram. For example, given the added costs of the pole replacements, PSE&amp;G considered attempting to avoid such locations, but in many cases the existing equipment and height/spacing requirements on the pole required installation of a new pole.</p>	
RCR-IM-23	With reference the findings and observations on page 31 of the Independent Monitor's Draft Third Quarter 2022 Report, please explain what accounted for the Contingency Reconfiguration subprogram forecast increasing by \$2.0 million, to a total of \$147.6 million, above the Stipulation budget of \$145.0 million.	Higher Fuse Savers cost per unit in installation and testing/commissioning were the primary drivers to the increased forecast.	<b>Section III.B.</b>
RCR-IM-24	With reference to page 37 of the Independent Monitor's Draft Third Quarter 2022 Report, please provide costs details on the \$7.4 million increase in the Grid Modernization ADMS subprogram budget, involving changes in the Outage Management System from one to two production releases, at an increased cost of \$7.4 million, increasing total ADMS subprogram budget from \$53.47 million to \$60.90 million. Please provide breakdown of increased costs by project category (supervisory, administrative, planning and contract labor, equipment).	Regarding this \$7.4 million increase, it was comprised of the following costs: <ul style="list-style-type: none"> <li>• PSE&amp;G Employees: +\$4.13 million, comprised of:                             <ul style="list-style-type: none"> <li>○ Supervisory: \$0.8 million;</li> <li>○ Labor: \$3.2 million; and,</li> <li>○ IT resources: \$0.14 million.</li> </ul> </li> <li>• Staff Augmentation: +\$3.32 million, comprised of:                             <ul style="list-style-type: none"> <li>○ Supervisory: \$0.14 million;</li> <li>○ Testing: \$0.74 million;</li> </ul> </li> </ul>	<b>Section III.D.</b>

ID #	Question/Comment	IM Response	Report Changes
		<ul style="list-style-type: none"> <li>○ Direct Labor: \$2.41 million; and,</li> <li>○ Materials: \$0.03 million.</li> </ul>	
RCR-IM-25	With reference to page 38, Table 21 ES 2 Life Cycle Station Upgrade Project Status as of September 30, 2022, please explain the disposition of the subprogram risk and contingency total of \$2.3 million for Hamilton, Paramus, Plainfield, Woodbury and State Street substation projects compared to the risk and contingency total in Table 23 ES 2 Life Cycle Station Upgrade Project Status as of June 30, 2022 in the Independent Monitor’s Draft Second Quarter 2022 Report on page 38.	The R&C balance for the Electric Stipulated Base projects is \$1.4 million, which is effectively the amount that remains between the Stipulation budget (\$100 million) and the current base estimates for the Life Cycle Station Upgrades projects (\$98.6 million).	No change
RCR-IM-26	With reference to pages 42 and 43, Table 23 – ES 2 Gas M&R Summary Status as of September 30, 2022, please confirm the remaining risk and contingency allocation of \$200,000 is adequate for the Camden project after the transfer to base of \$3.1 million given ongoing exceedances affecting the Project.	The \$200K remaining R&C balance on Camden reflects the realization of certain risks that resulted in R&C funds being transferred to the Base estimate. The remaining balance is relatively low compared to the overall project costs, however, with this project forecasted to go in-service in December 2022 the work is fairly well advanced and there is less remaining risk. Ultimately the R&C and the overall estimate represent an estimate based on the information known at the time on what the expected risks and overall project costs will be, however, actual conditions can and do change that can increase or decrease the actual costs compared to the estimate.	No change
RCR-IM-27	With reference to page 44, for the Camden Gas M&R Project, please explain how the “\$9.9 million of actuals will be journaled out in October 2022 to reflect the split of the LPA scope of the Camden project that removes the LPA scope from the ES 2 project[.]” will affect the \$26.7 million actuals to date and how will that change affect the Gas M&R subprogram stipulated budget of \$101 million and accounting for the \$27.8 million increase over the stipulated budget by PSE&G to \$128.8 million and how will that be reconciled with \$24.6 million for Gas M&R risk and contingency (refer back to page 2, Table 1 – ES 2 Subprograms & Stipulated Base Status as of September 30, 2022).	<p>The removal of the LPA scope from the project costs is expected to reduce the \$26.7 million in current actual costs on the Camden project by approximately \$9.9 million (though the project will also continue to incur actual costs related to the ES 2 project scope).</p> <p>The \$128.8 million current estimate for the Gas M&amp;R subprogram does not include LPA-related costs, however, the R&amp;C balance decreased by \$5.5 million reflecting updated estimates in the third quarter of 2022 on the Camden and East Rutherford projects that saw a collective \$5.5 million Base estimate increase. This leaves the current R&amp;C balance for the Gas M&amp;R subprogram at \$19.1 million.</p>	<b>Table 1</b>

ID #	Question/Comment	IM Response	Report Changes
RCR-IM-28	<p>With reference to page 45, for the East Rutherford Gas M&amp;R Project, please provide additional details on how project costs are allocated between PSE&amp;G and Transco and whether that contributed to the “delay in finalizing the Transco pipeline agreement addendum that pushed a forecasted payment.” Please provide details on the costs and payment schedule for the pipeline agreement and how these are accounted for in the East Rutherford Gas M&amp;R Project.</p>	<p>During the preliminary design phase, PSE&amp;G Asset Management and the Project Team reviewed the overall general construction scope and duration with Transco. Based on that review, Transco provided an estimate of the scope and costs for its support. The estimated Transco support cost is included in the Interconnection Agreement.</p> <p>Within 6-10 weeks of execution of the Interconnection Agreement, the full amount of estimated support cost is paid by PSE&amp;G to Transco as a deposit to be drawn against periodically as the support scope is executed. Transco periodic updates of scope/estimates, actual and forecast costs are discussed during the project review meetings between PSE&amp;G and Transco. If Transco increases its forecast for its support cost, due to scope changes or other reasons, they notify PSE&amp;G accordingly for discussion, negotiation, and agreement. The Interconnection Agreement is then amended as agreed between Transco and PSE&amp;G. If the total cost incurred by Transco for the complete scope of the support is less than the total amount of deposit paid by PSE&amp;G, Transco is obligated to return the difference.</p> <p>The Transco support costs are captured by PSE&amp;G as an ES 2 capital investment cost on a separate project WBS.</p>	No change

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2022 FOURTH QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

JANUARY 2, 2024



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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Advanced Metering Interface.....	AMI
Allowance for Funds Used During Construction .....	AFUDC
Architect and Engineer.....	A/E
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System .....	DERMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Gas Metering & Regulating .....	Gas M&R
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Bid.....	IFB
Issued for Construction .....	IFC
Mobile Work Management System.....	MWMS
New Jersey Department of Environmental Protection .....	NJDEP
New Jersey Sports and Exposition Authority.....	NJSEA
Open Systems International Inc. ....	OSII
Outage Management System.....	OMS
Outside Plant.....	OP
Pipeline and Hazardous Materials Safety Administration .....	PHMSA
Public Service Electric & Gas .....	PSE&G
Purchase Order.....	PO
Record of Decision .....	ROD
Remote Control Unit.....	RCU
Remote Terminal Unit .....	RTU
Risk and Contingency .....	R&C

Supervisory Control and Data Acquisition..... SCADA  
System Average Interruption Duration Index ..... SAIDI  
Utility Review Board ..... URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades) and a gas component (overlapping with the Gas M&R subprogram). This report contains the Independent Monitor's (IM's) findings and observations on the ES 2 Program elements and other information on the Program's status as of the fourth quarter of 2022.

During the fourth quarter of 2022, the bulk of the spend within the ES 2 Program continued to be within the Electric Station Flood Mitigation, which accounted for over half the Program spend during the quarter and reflective of both the size of this subprogram and having the majority of its projects in construction. Within the Contingency Reconfiguration subprogram, Fuse Saver installations continued with 264 devices installed during the quarter against a target of 252 units, bringing the total number of Fuse Savers installed in the Program to 677 units. In the Grid Modernization – Communication System subprogram, four additional fiber installation projects were completed, bringing the total to 33 out of 34 fiber projects now completed (in addition all 12 fiber cutover projects were previously completed). The Grid Modernization – ADMS subprogram performed additional testing in the Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS) and Outage Management System (OMS) scopes. Within the Gas M&R subprogram, the Camden and East Rutherford projects were placed in-service during the fourth quarter of 2022 while pre-construction activities continued on the final three projects (Central, Mount Laurel, and Paramus). Under the Electric Stipulated Base scope, four of the five life cycle station upgrade projects (Hamilton, Paramus, Plainfield, and part of State Street Outside Plant (OP)) were placed in-service during the fourth quarter of 2022.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of December 31, 2022** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

*Table 1 – ES 2 Subprogram & Stipulated Base Status as of December 31, 2022*

Subprogram	2022 Q4 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Electric Station Flood Mitigation	\$32,035,123	\$219,339,351	\$362,003,445	61%	May 2024	\$389M
Contingency Reconfiguration	\$8,085,921	\$125,888,410	\$147,256,087	85%	Dec 2023	\$145M
Grid Modernization – Communications	\$2,046,359	\$63,224,662	\$66,219,762	95%	Dec 2023	\$64.3M
Grid Modernization – ADMS	\$5,517,418	\$46,478,871	\$66,344,727	76%	Jun 2023	\$42.7M^
Electric Stipulated Base	\$8,150,608	\$67,223,343	\$101,538,769	67%	Dec 2023	\$100M

Subprogram	2022 Q4 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Gas M&R Station Upgrades^^	\$4,319,510	\$80,696,447	\$115,587,414	70%	Feb 2024	\$101M^^^
<b>Total*</b>	<b>\$60,154,938</b>	<b>\$602,851,083</b>	<b>\$858,950,204</b>	<b>70%</b>	<b>May 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 11** and **Table 20** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\* -Final in-service date.

\*\*\*-Following the \$7.7 million transfer in July 2021 from the Grid Modernization – Communications subprogram to the Grid Modernization – ADMS subprogram.

^-PSE&G has increased the funding for the Grid Modernization – ADMS subprogram by \$13.6 million over the Stipulation amount to a total of \$56.3 million (including \$2.8 million in R&C).

^^-Includes both the ES 2 projects and the Stipulated Base gas projects.

^^^ -PSE&G has increased the funding for the Gas M&R subprogram by \$27.8 million over the Stipulation amount to a total of \$128.8 million (including \$24.6 million in R&C). This R&C balance is currently at \$19.1 million as of the end of 2022.

As shown in **Table 1**, the total ES 2 Program forecast as of the end of 2022 is approximately \$859 million, representing an increase of approximately \$16 million from the prior quarter and also now \$16 million over the Stipulation budget. The bulk of the forecast increase was realized in the Electric Station Flood Mitigation (+\$5.1 million), Grid Modernization – ADMS (+\$5.4 million), and Gas M&R subprograms (+\$5.3 million) with details of these forecast increases discussed in the respective subsection for each subprogram.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of December 31, 2022**.

**Table 2 – ES 2 Electric Station Flood Mitigation Status as of December 31, 2022**

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$9,300,000	\$7,230,725	78%	<b>10/19/2021</b>
2. Clay Street	\$33,600,000	\$21,519,813	64%	4/20/2023 (↓+28)
3. Front Street^	\$27,300,000	\$11,840,987	43%	1/26/2024 (↓+17)
4. Hasbrouck Heights	\$19,300,000	\$16,110,052	84%	<b>11/21/2022</b>
5. Kingsland	\$8,700,000	\$4,332,806	50%	10/4/2023 (↑-33)
6. Lakeside Avenue	\$33,500,000	\$4,587,643	14%	2/28/2024
7. Leonia	\$24,900,000	\$23,866,055	96%	<b>11/15/2022</b>
8. Market Street	\$29,100,000	\$28,169,888	97%	<b>6/25/2021</b>
9. Meadow Road	\$8,800,000	\$3,676,560	42%	9/28/2023
10. Orange Valley	\$15,000,000	\$2,536,767	17%	2/16/2024 (↓+14)
11. Ridgefield 13kV	\$26,100,000	\$27,110,169	104%	<b>12/12/2022</b>
12. Ridgefield 4kV	\$20,800,000	\$20,703,809	100%	<b>5/16/2021</b>
13. State Street	\$19,600,000	\$13,821,016	71%	<b>12/29/2022</b>
14. Toney’s Brook	\$16,000,000	\$7,391,999	46%	5/10/2023 (↑-16)
15. Waverly	\$39,900,000	\$20,074,529	50%	5/7/2024 (↓+7)
16. Woodlynne	\$24,000,000	\$6,366,604	27%	10/27/2023 (↓+17)

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
<p>*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). <b>Bold</b> dates indicate the actual in-service date.</p> <p>(↑)-Indicates the forecasted in-service date advanced from the prior quarter.</p> <p>(↓)-Indicates the forecasted in-service date slipped from the prior quarter.</p> <p>^- The Front Street project was proposed by PSE&amp;G during the second quarter of 2021 to replace the cancelled Constable Hook project.</p>				

As indicated in **Table 2**, four additional projects were placed in-service during the fourth quarter of 2022 (Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street), bringing the total stations in-service to seven of the 16 projects. Additionally, five of the stations (Front Street, Lakeside Avenue, Meadow Road, Orange Valley, and Toney’s Brook) had new estimates approved by the PSE&G’s Utility Review Board (URB) during the fourth quarter of 2022. **Table 2** also shows that the majority of the remaining projects had some movement to their respective forecasted in-service dates during the fourth quarter of 2022, ranging from Clay Street being extended 28 days to Kingsland advancing 33 days. The Front Street, Lakeside Avenue, Orange Valley, and Waverly projects continue to be forecasted to be in-service in 2024, primarily the result of the switchgear delivery delays previously discussed.

As per N.J.A.C. Section 14:3-2A.5(c)2, the IM reports are to address:

- i. *The effectiveness of Infrastructure Investment Program investments in meeting project objectives;*
- ii. *The cost-effectiveness and efficiency of investments;*
- iii. *The appropriateness of cost assignments; and*
- iv. *Any other information required by the Board.*

The IM focuses the majority of the discussion within each report on these primary objectives, after introducing summarized the findings on these areas in the IM 2022 Fourth Quarter Report, the IM will continue to provide a summary on these areas for each report with an emphasis on new information relative to the current reporting period. These summarized findings are as follows:

- **Effectiveness of ES 2 investments in meeting project objectives:** The objectives for each subprogram within the ES 2 were defined within PSE&G’s ES 2 filing and confirmed by the Stipulation. The overall objectives focused on improving system resiliency, reliability, and hardening through rebuilding or replacing selected substations, installing smart control and monitoring devices on distribution circuits (reclosers, fuse savers, etc.), installing ADMS and a new communication system, and rebuilding selected Gas M&R stations. Within **Section III** of this report, the IM provides a review of the status of the efforts performed to meet these objectives for each subprogram. During the fourth quarter of 2022, the following projects/scopes were placed in-service and/or completed:
  - Electric Station Flood Mitigation: Academy Street, Market Street, and Ridgefield 4kV were previously placed in-service, during the fourth quarter of 2022, Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street were also placed in-service, leaving nine projects remaining in the subprogram.

- Contingency Reconfiguration: Following the completion of the recloser scope in early 2022, the Fuse Saver installations continued with 265 units installed during the quarter (677 units installed on the Program in total out of a currently planned scope of 1,574 units).
  - Grid Modernization – Communication System: 218 substations previously received RTU retrofits in the Program and 12 out of 12 fiber cutover projects were previously completed. During the fourth quarter of 2022, four additional fiber installation projects were completed, bringing the total number of projects completed to 33 out of a total scope of 34 projects.
  - Electric Stipulated Base: Four of the five life cycle station upgrade projects were placed in-service during the fourth quarter of 2022.
  - Gas M&R: Westampton previously placed in-service in October 2021, during the fourth quarter of 2022, the Camden and East Rutherford projects were placed in-service.
- **Cost-effectiveness and efficiency of investments:** To assess the cost effectiveness and efficiency of ES 2 investments, the IM began with a review of the initial scope, estimate, and related planning documents for each project to establish a baseline to monitor progress against as the work advances. As the Program execution advances, the IM continues to evaluate actual costs against the initial estimates and current forecasts, including seeking additional information relating to any variances identified. The overall Program's current cost forecast now above the Stipulation amount, reflecting the cost increases that as observed by the IM have largely stemmed from scope evolution and/or more detailed estimates from the time of the ES 2 filing, as well as changes in general market conditions (e.g. Covid-19 impacts, supply chain issues, etc.). The updated subprogram forecasts as of the end of 2022 compared to the end of the third quarter of 2022 were as follows:
    - Electric Station Flood Mitigation: subprogram forecast increased approximately \$5.1 million (or 1.4%) to approximately \$362.0 million. This increase was predominantly from forecast increases on the Kingsland and Lakeside Avenue projects.
    - Contingency Reconfiguration: subprogram forecast decreased approximately \$360K (or -0.2%) to approximately \$147.3 million.
    - Grid Modernization – Communication System: subprogram forecast decreased approximately \$345K (or -0.5%) to approximately \$66.2 million.
    - Grid Modernization – ADMS: subprogram forecast increased approximately \$5.4 million (or 8.9%) to approximately \$66.3 million. This increase was almost entirely within the OMS scope of the subprogram.
    - Electric Stipulated Base: subprogram forecast increased approximately \$1.0 million (or 1.0%) to approximately \$101.5 million. This increase was almost entirely from the Hamilton and Plainfield projects.
    - Gas M&R: subprogram forecast increased approximately \$5.3 million (or 2.2%) to approximately \$115.6 million. This increase was almost entirely from the Camden and East Rutherford projects.

- **Appropriateness of cost assignments:** The IM receives and reviews recurring data concerning the accumulation of costs within the Program. Based on that review, the IM submits follow-up questions to the Company regarding that data for the reporting period. Such follow-up questions generally focus on the following aspects:
  - Review of any unusual changes in cost elements from period-to-period, including but not limited to allowance for funds used during construction (AFUDC), cost of removal (COR), and the allocation of overheads.
  - Review spend on capital accounts, such as Construction Work in Progress (CWIP) as it relates to overall spend, AFUDC, and COR.
  - Verify cost accumulations and classifications appear to be in accordance with Generally Accepted Accounting Principles (GAAP), to the extent the IM has access to such information.
  - Review and investigation of prior period adjustments and/or corrections to capital accounts.
  - Engage the Company’s Internal Audit group on specific areas to audit, review, and assess – particularly for areas in which the IM has limited or no visibility (proprietary data, accounting systems, etc.).

Through the above steps, the IM tracks and monitors how the Company is recording costs to support the finding that the cost assignments appear to be appropriately applied. These cost items are discussed further within **Section II.C** of this IM report.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2022 Fourth Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )



<b>Subprogram</b>	<b>Record of Decision</b>	<b>IM Comments</b>
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report</i> )
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1. in the IM 2021 Second Quarter Report</i> )
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2. the IM 2021 Second Quarter Report</i> )

During the fourth quarter of 2022, there were no additional RODs issued.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

## **C. Cost Assignments**

### **1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized

and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Program Costs of Removal as of December 31, 2022**, below itemizes the charges to COR for each quarter of 2022, total COR for the years 2022, 2021, 2020, 2019, and total Energy Strong COR to date. These amounts do not reflect any salvage value reductions, which have been de minimis (about \$0.4 million) in the Energy Strong program through December 31, 2022.

*Table 4 – ES 2 Program Costs of Removal as of December 31, 2022*

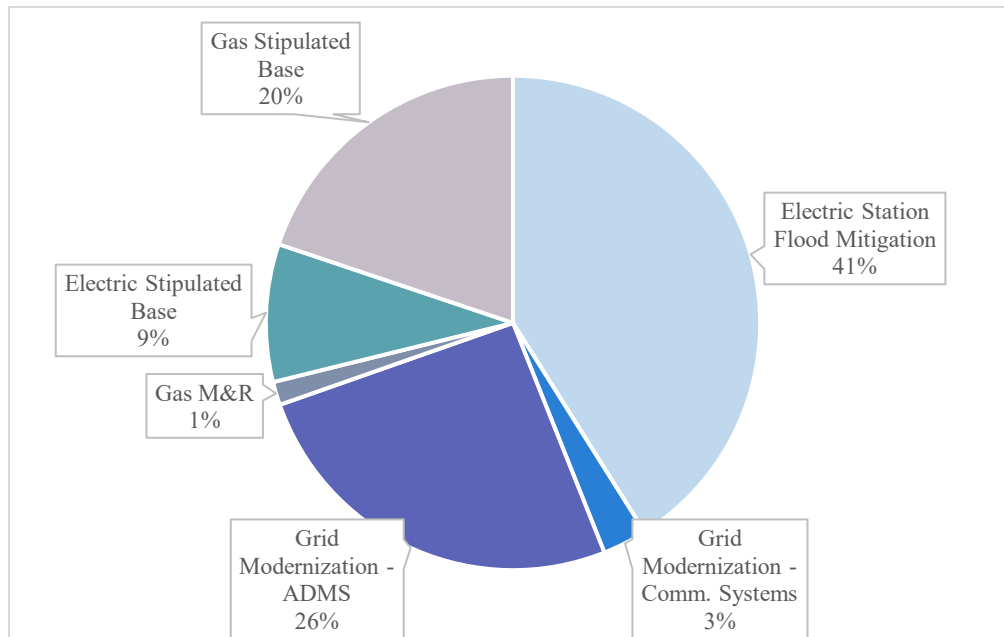
Subprogram	Q4 2022	Q3 2022	Q2 2022	Q1 2022	Total 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total COR
	<i>(in \$ thousands)</i>								
<b>Electric Station Flood Mitigation</b>	\$1,037.5	\$397.2	\$595.7	\$873.4	\$2,903.8	\$5,558.7	\$1,021.1	\$0	<b>\$9,483.6</b>
<b>Contingency Reconfiguration</b>	\$367.1	\$213.5	\$35.7	\$229.3	\$845.6	\$2,250.2	\$2,198.9	\$431.0	<b>\$5,725.7</b>
<b>Grid Modernization – Communications</b>	\$0.0	\$5.3	\$14.0	\$11.0	\$30.3	\$137.8	\$24.4	\$0	<b>\$192.5</b>
<b>Grid Modernization – ADMS</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	<b>\$0.0</b>
<b>Electric Stipulated Base</b>	\$467.7	\$183.1	\$340.5	\$370.0	\$1,361.3	\$150.0	\$0.0	\$0.0	<b>\$1,511.3</b>
<b>Gas M&amp;R Station Upgrades</b>	\$0.1	\$763.0	\$0.0	(\$0.4)	\$762.7	\$148.9	\$0.0	\$0.0	<b>\$911.6</b>
<b>Gas Stipulated Base</b>	(\$0.1)	\$0.0	\$0.1	\$431.5	\$431.5	\$0.0	\$0.0	\$0.0	<b>\$431.5</b>
<b>Total</b>	<b>\$1,872.3</b>	<b>\$1,562.1</b>	<b>\$986.0</b>	<b>\$1,914.8</b>	<b>\$6,335.2</b>	<b>\$8,245.6</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$18,256.2</b>

The COR charges for the fourth quarter of 2022 primarily reflect approximately \$0.7 million of demolition activities at the Academy Street substation project, approximately \$0.3 million for removal of poles and fixtures in Southern District Fuse Savers scope, and \$0.2 million of costs associated with the removal of the old 4kV bus and related equipment at the Paramus Electric Stipulated Base project.

## 2. Construction Work-in-Progress (CWIP) & In-Service Transfers

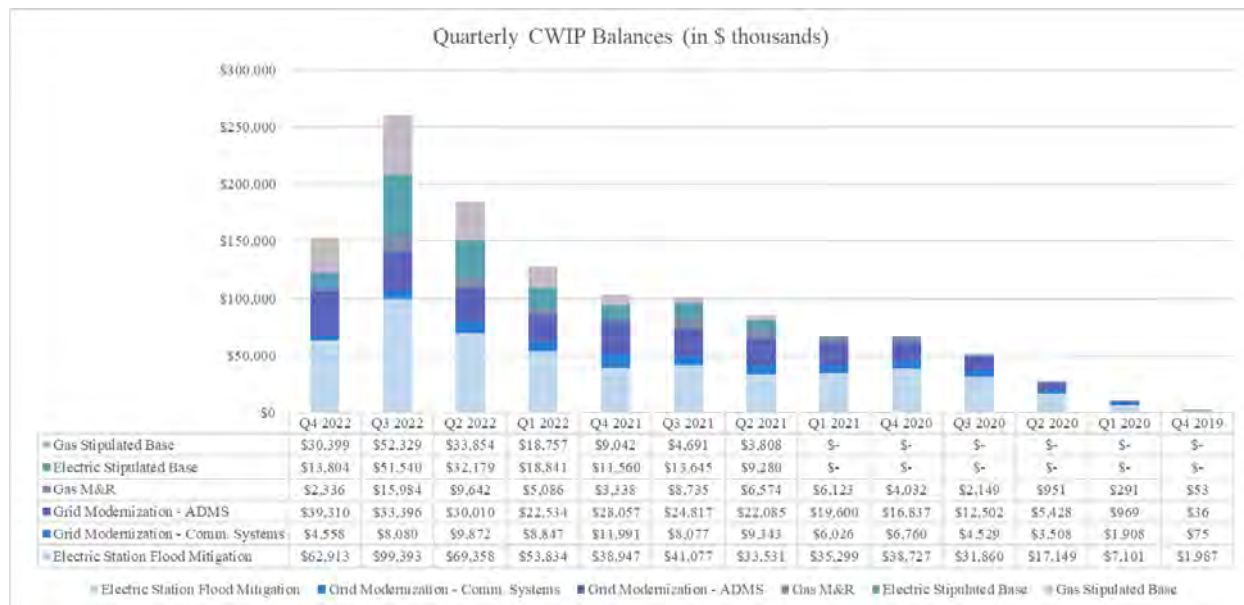
As of December 31, 2022, the Energy Strong CWIP balance was \$153.2 million, compared to \$260.7 million as of September 30, 2022. The largest components of CWIP as of the end of 2022 were the Clay Street (\$22.7 million), Waverly (\$8.4 million), and Toney’s Brook (\$7.7 million) Electric Station Flood Mitigation projects, the Central (\$26.3 million) Gas Stipulated Base M&R project, the Woodbury (\$12.0 million) Electric Stipulated Base Substation Lifecycle project, and work associated with the ADMS subprogram (\$39.3 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of December 31, 2022** below.

**Figure 1 – ES 2 CWIP as of December 31, 2022**



In addition, **Figure 2 – ES 2 CWIP Balances by Subprogram as of December 31, 2022** below depicts the composition of end-of-quarter CWIP balances by subprogram for each quarter of 2022, 2021 and 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of March 31, 2022**



Transfers from CWIP to plant in service were \$149.4 million during the fourth quarter of 2022, including the Camden (\$19.5 million) and East Rutherford (\$21.2 million) Gas M&R projects, the Plainfield (\$17.0 million) and Hamilton (\$14.6 million) Electric Stipulated Base projects, and the Hasbrouck (\$14.3 million) and State Street (\$13.2 million) Electric Station Flood Mitigation projects. Total ES 2 transfers from CWIP were \$238 million through December 31, 2022. It should be noted that work related to certain

assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no AFUDC is recorded on these expenditures. This accounting treatment is in accord with generally accepted accounting principles and the Company's accounting policies.

### **3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each Energy Strong subprogram during each quarter of 2022, and total AFUDC for the years 2022, 2021, 2020 and 2019, and total Energy Strong AFUDC accrued to date, is shown below in **Table 5 – ES 2 Program AFUDC as of December 31, 2022**.

**Table 5 – ES 2 Program AFUDC as of December 31, 2022**

Subprogram	Q4 2022	Q3 2022	Q2 2022	Q1 2022	Total 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
<i>(in \$ thousands)</i>									
<b>Electric Station Flood Mitigation</b>	\$1,365.6	\$1,285.1	\$944.5	\$759.0	\$4,354.2	\$2,281.2	\$936.5	\$9.9	<b>\$7,581.8</b>
<b>Contingency Reconfiguration</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	<b>\$0.0</b>
<b>Grid Modernization – Communications</b>	\$56.6	\$98.5	\$123.1	\$115.6	\$393.8	\$386.9	\$184.3	\$0.2	<b>\$965.2</b>
<b>Grid Modernization – ADMS</b>	\$614.8	\$536.9	\$438.9	\$385.7	\$1,976.3	\$1,365.6	\$352.7	\$0.1	<b>\$3,694.7</b>
<b>Electric Stipulated Base</b>	\$589.1	\$645.0	\$383.9	\$230.0	\$1,848.0	\$524.6	\$44.0	\$0.0	<b>\$798.6</b>
<b>Gas M&amp;R Station Upgrades (incl. Stip. Base)</b>	\$850.9	\$733.8	\$395.6	\$208.3	\$2,188.6	\$470.0	\$70.0	\$0.2	<b>\$2,728.8</b>
<b>Total</b>	<b>\$3,477.0</b>	<b>\$3,299.3</b>	<b>\$2,286.0</b>	<b>\$1,698.6</b>	<b>\$10,760.9</b>	<b>\$5,028.3</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$17,387.1</b>

AFUDC accrued for ES 2 projects during the fourth quarter of 2022 increased slightly over AFUDC accrued during the third quarter of 2022 as the result of increases in the average CWIP balances in the early months of the fourth quarter. While the total fourth quarter end-of-period CWIP balances decreased from the previous quarter's end-of-period balances, the higher intra-period balances are reflected in higher total AFUDC accrued during the fourth quarter (the Company uses a mid-month convention for calculating AFUDC).

During the first quarter of each year, the AFUDC rate is reviewed for possible reset as it applies to the current year based on updated capital structure and component cost data. For the year 2022, the new AFUDC rate was calculated to be 6.92%, using the capital structure and component costs as of January 31, 2022. This rate is higher than the 2021 rate of 6.81%, primarily due to a zero balance of short-term in the 2022 calculation (vs. a \$44 million balance of short-term debt in 2021), and also to an 8% reduction in the Company's amount of long-term debt outstanding (lowering the debt component of the capital structure from 45.5% to 44.8%), and a reduction in the embedded cost of long-term debt, both as used in the AFUDC calculation. In calculating the 2022 AFUDC rate, the Company used (i) a 3.63% embedded cost of long-term debt (vs. 3.85% in 2021), (ii) no short-term debt, and (iii) a cost of equity of 9.60% (unchanged from 2021).

Subsequent to the annual reset calculation referred to above, and during the course of each year, the AFUDC rate is also recalculated as it applies to each fiscal quarter. If the recalculated rate changes by 25 basis points from the rate then in effect, the rate is reset and retroactively applied to January 1 of that year. For the fourth quarter of 2022, based on data as of December 31, 2022, the recalculated weighted average AFUDC accrual rate (6.92%) did not meet this criterion to warrant changing from the annual rate (6.92%) in effect. Therefore, AFUDC was accrued during the fourth quarter of 2022 at the calculated rate of 6.92%.

The IM observes that the Company’s calculation of the AFUDC rate and its application is in accordance with both PSE&G’s accounting policy and Plant Instruction 3(17) of the Federal Regulatory Commission’s Uniform Systems of Accounts prescribed for public utilities.

The IM also notes that the relevant AFUDC information as it relates to fourth quarter 2022 ES 2 project costs is consistent with the applicable dictates of the Stipulation entered into with respect to these Energy Strong projects. The IM will continue to review future ES 2 AFUDC accruals for consistency with relevant provisions of the Stipulation for accounting and reporting purposes only, and not as a party to, or in expressing an opinion concerning, any rate proceedings.

#### 4. Allocated Overheads

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. This Order was amended by a BPU Order dated June 8, 2022, allowing the company to transfer certain employees to the PSE&G Service Company in an effort to better support transmission growth opportunities and projects. This action had no impact on existing overhead allocations. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Program Overhead Allocations as of December 31, 2022** are the allocated overhead costs charged to ES 2 projects for each quarter of 2022, total allocated overheads for the years 2022, 2021, 2020, 2019 and total Energy Strong allocated overheads to date.

**Table 6 – ES 2 Program Overhead Allocations as of December 31, 2022**

Subprogram	Q4 2022	Q3 2022	Q2 2022	Q1 2022	Tota 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
	<i>(in \$ thousands)</i>								
<b>Electric Station Flood Mitigation</b>	\$5,882	\$3,324	\$2,208	\$2,185	\$13,599	\$14,368	\$14,023	\$287	<b>\$42,277</b>
<b>Contingency Reconfiguration</b>	\$3,282	\$3,037	\$795	\$843	\$7,957	\$14,420	\$17,109	\$3,415	<b>\$42,901</b>
<b>Grid Modernization – Communications</b>	\$106	\$553	\$717	\$1,802	\$3,178	\$9,171	\$3,625	\$12	<b>\$15,986</b>

Subprogram	Q4 2022	Q3 2022	Q2 2022	Q1 2022	Tota 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
	<i>(in \$ thousands)</i>								
<b>Grid Modernization – ADMS</b>	\$128	\$50	\$124	\$76	\$378	\$501	\$426	\$11	<b>\$1,316</b>
<b>Electric Stipulated Base</b>	\$2,457	\$2,751	\$1,275	\$1,449	\$7,932	\$2,123	\$259	\$0	<b>\$10,314</b>
<b>Gas M&amp;R Station Upgrades (incl. Stip. Base)</b>	\$236	\$435	\$339	\$197	\$1,207	\$735	\$291	\$15	<b>\$2,248</b>
<b>Total</b>	<b>\$12,091</b>	<b>\$10,149</b>	<b>\$5,458</b>	<b>\$6,552</b>	<b>\$34,250</b>	<b>\$41,318</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$115,041</b>

The overwhelming majority of overhead costs allocated to ES 2 projects during the fourth quarter of 2022 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most (approximately 78%) of the fourth quarter allocated costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The increase in overhead costs for the fourth quarter of 2022 over the third quarter of 2022 primarily reflects an increase in construction activities at a number of Electric Station Flood Mitigation projects, which resulted in increased labor costs and surchargable outside services.

#### D. System Performance

In the ongoing monitoring of the performance of its completed investments, PSE&G recently assessed the performance of the reclosers installed during the ES 2 Program by measuring the number of customers experiencing an outage for each recloser operation incident that resulted in extended supply interruptions and comparing this data from before (2018-2019) and after the ES 2 investments were made (2022). This analysis concluded that the new reclosers contributed to an approximately 12% improvement in the overall SAIFI compared to the earlier pre-recloser period examined.

##### 1. Current Reporting Quarter Major Events

During the fourth quarter of 2022, there were no Major Events reported in PSE&G’s service territory.

### **III. Project Status**

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of 2022 compared to the status as of the end of 2019, end of 2020, and end of 2021 is provided below in **Table 7 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of December 31, 2022**. Note that the Academy, Market Street, and Ridgefield 4kV projects were previously placed in-service and closed out, thus there are no further updates to these projects (which have been further called out in italics in **Table 9**).

**Table 7 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of December 31, 2022**

Project	Plan Status Point	2019		2020				2021				2022				2023				2024		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS	CO								
	Dec. 2020		<u>KO</u>		<u>C</u>									CO								
	Dec. 2021		<u>KO</u>		<u>C</u>						IS							CO				
	Dec. 2022		<u>KO</u>		<u>C</u>						IS		<u>CO</u>									
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																				
	Dec. 2020			<u>KO</u>								C					IS				CO (Q2)	
	Dec. 2021			<u>KO</u>								<u>C</u>				IS					CO (Q1)	
	Dec. 2022			<u>KO</u>								<u>C</u>						IS			CO (Q2)	
3. Front Street^	Dec. 2019	<i>Not in ES 2 Program</i>																				
	Dec. 2020	<i>Not in ES 2 Program</i>																				
	Dec. 2021									<u>KO</u>				C							IS	CO (Q2)
	Dec. 2022									<u>KO</u>				<u>C</u>								IS (Q1); CO (Q3)
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>					C							IS		CO					
	Dec. 2020		<u>KO</u>									C					IS		CO			
	Dec. 2021		<u>KO</u>									C					IS	CO				
	Dec. 2022		<u>KO</u>									<u>C</u>			IS			CO				
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS		CO									
	Dec. 2020			<u>KO</u>									C							IS	CO (Q2)	
	Dec. 2021			<u>KO</u>										C		IS		CO				
	Dec. 2022			<u>KO</u>										<u>C</u>						IS	CO (Q2)	
6. Lakeside Avenue	Dec. 2019*				KO			C												IS	CO (Q2)	
	Dec. 2020					<u>KO</u>							C							IS	CO (Q2)	
	Dec. 2021					<u>KO</u>							C							IS	CO (Q2)	
	Dec. 2022					<u>KO</u>							<u>C</u>								IS (Q1); CO (Q3)	
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																				
	Dec. 2020			<u>KO</u>		<u>C</u>									IS		CO					
	Dec. 2021			<u>KO</u>		<u>C</u>									IS		CO					
	Dec. 2022			<u>KO</u>		<u>C</u>									IS		CO					
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO											
	Dec. 2020			<u>KO</u>				C	OS		CO											
	Dec. 2021			<u>KO</u>						<u>C/OS</u>	<u>CO</u>											
9. Meadow Road	Dec. 2019	<i>Schedule Under Development</i>																				
	Dec. 2020			<u>KO</u>											C					IS	CO (Q2)	
	Dec. 2021			<u>KO</u>										C					IS		CO (Q1)	
	Dec. 2022			<u>KO</u>										<u>C</u>					IS		CO (Q1)	
10. Orange Valley	Dec. 2019	<i>Schedule Under Development</i>																				
	Dec. 2020				<u>KO</u>												C				IS (Q1); CO (Q3)	
	Dec. 2021				<u>KO</u>												C				IS (Q1); CO (Q3)	
	Dec. 2022				<u>KO</u>									<u>C</u>							IS (Q1); CO (Q2)	
11. Ridgfield 13kV	Dec. 2019			<u>KO</u>	C										IS		CO					
	Dec. 2020			<u>KO</u>	<u>C</u>										IS		CO					
	Dec. 2021			<u>KO</u>	<u>C</u>										IS		CO					
	Dec. 2022			<u>KO</u>	<u>C</u>										IS		CO					

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>						C	OS			CO						
	Dec. 2020			<u>KO</u>	<u>C</u>					OS		CO								
	Dec. 2021			<u>KO</u>	<u>C</u>					<u>OS</u>		<u>CO</u>								
13. State Street	Dec. 2019		<u>KO</u>					C								IS				
	Dec. 2020		<u>KO</u>						C				IS							
	Dec. 2021		<u>KO</u>						<u>C</u>					IS				CO		
	Dec. 2022		<u>KO</u>						<u>C</u>						<u>IS</u>		CO			
14. Toney's Brook	Dec. 2019			<u>KO</u>						C									IS	
	Dec. 2020			<u>KO</u>										C			IS			
	Dec. 2021			<u>KO</u>											C			IS		
	Dec. 2022			<u>KO</u>											<u>C</u>			IS	CO	
15. Waverly	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>			<u>C</u>													IS
	Dec. 2021			<u>KO</u>			<u>C</u>													
	Dec. 2022			<u>KO</u>			<u>C</u>													
16. Woodlynne	Dec. 2019		<u>KO</u>												C				IS	
	Dec. 2020		<u>KO</u>													C				IS
	Dec. 2021		<u>KO</u>													C				IS
	Dec. 2022		<u>KO</u>									<u>C</u>								IS

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.  
 ^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of 2022 is provided below **Table 8 – ES 2 Electric Station Flood Mitigation Summary Status as of December 31, 2022.**

**Table 8 – ES 2 Electric Station Flood Mitigation Summary Status as of December 31, 2022**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynne
Key Drawing Review	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney's Brook; Waverly; Woodlynne
Scope Locked	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlynne
Major Equipment Purchase Orders (POs)	18*	Academy Street; Clay Street; Front Street*; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley;



Activity	Total # of Projects	Specific Projects
		Ridgefield 13kV*; State Street; Toney's Brook; Waverly*; Woodlynn
Architect/ Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney's Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynn <sup>1</sup>
Construction Start**	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney's Brook; Waverly; Woodlynn
In-Service	7	Academy Street; Hasbrouck Heights; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; State Street
Partial In-Service	2	Front Street (contingency); Waverly (26kV switchgear)
*-Three of the listed projects (Front Street, Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 18 switchgears at 14 substations.		
<sup>1</sup> -Indicates Burns & McDonnell is serving as the A/E.		
<sup>2</sup> -Indicates PSE&G internal resources are serving as the A/E.		
<sup>3</sup> -Indicates Black & Veatch is serving as the A/E.		
**-Includes projects that have commenced inside plant (IP) and/or outside plant (OP) construction; also maintains identification of projects that have since completed construction (generally those that are shown as in-service).		

Beyond the key activities summarized in **Table 8** above, **Table 9 – ES 2 Electric Station Flood Mitigation Planned Activities for Q1 2023** summarizes the activities planned for each project during the first quarter of 2023, including noted carryover of activities from earlier periods.

**Table 9 – ES 2 Electric Station Flood Mitigation Planned Activities for Q1 2023**

Station	Planned Activities for Q1 2023	Carryover Activities from Q4 2022
1. Academy Street	<ul style="list-style-type: none"> <li>Continued demolition of old station</li> </ul>	<ul style="list-style-type: none"> <li>Demolition of old station</li> </ul>
2. Clay Street	<ul style="list-style-type: none"> <li>Start underground Division cold work</li> <li>Start demolition of existing equipment</li> </ul>	<ul style="list-style-type: none"> <li>Continue civil and electrical construction</li> </ul>
3. Front Street	<ul style="list-style-type: none"> <li>Start demolition of existing equipment</li> </ul>	<ul style="list-style-type: none"> <li>Commission and energize contingency switchgear (completion of circuit cutovers)</li> </ul>
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Start electrical and civil demolition</li> </ul>	<ul style="list-style-type: none"> <li>Completion of circuit cutovers</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Start manhole modifications</li> <li>Received 13kV switchgear (from Ridgefield 13kV)</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil and electrical construction</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Install cable trench</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil construction (elevated switchgear foundation)</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Start disassembly of contingency switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Continued electrical construction</li> </ul>
8. Market Street	<i>Project complete</i>	
9. Meadow Road	<ul style="list-style-type: none"> <li>Complete manhole modifications</li> <li>Start electrical construction</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil construction</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Install duct banks, platform steel for switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil construction (switchgear foundations)</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Disassembly of contingency switchgear</li> </ul>	<ul style="list-style-type: none"> <li>Complete circuit cutovers to new switchgear</li> </ul>
12. Ridgefield 4kV	<i>Project complete</i>	

Station	Planned Activities for Q1 2023	Carryover Activities from Q4 2022
13. State Street	<ul style="list-style-type: none"> <li>Demolition of existing equipment</li> </ul>	<ul style="list-style-type: none"> <li>Complete circuit cutovers to new switchgear</li> </ul>
14. Toney’s Brook	<ul style="list-style-type: none"> <li>Set regulators/reactors</li> <li>Start switchgear commissioning</li> </ul>	<ul style="list-style-type: none"> <li>Continued electrical construction</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Start civil construction phase 3 (new station)</li> </ul>	<ul style="list-style-type: none"> <li>Continued demolition (existing station)</li> </ul>
16. Woodlynn	<ul style="list-style-type: none"> <li>Start electrical construction</li> <li>26kV circuit reconfiguration (prerequisite work)</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil construction</li> </ul>

As discussed in the IM 2022 First Quarter Report, PSE&G’s switchgear vendor, Powercon, informed PSE&G that due to various material and sub-supplier delays, the remaining major equipment deliveries may continue to see impacts. Powercon continues to explore options to improve its production floor efficiencies and ordering supplies earlier to potentially alleviate further impacts. PSE&G has requested more detailed and frequent status updates from Powercon to better inform its project planning. The status of the major equipment deliveries for the Electric Station Flood Mitigation projects is presented in **Table 10 – Electric Station Flood Mitigation Major Switchgear Deliveries as of December 31, 2022.**

**Table 10 – Electric Station Flood Mitigation Switchgear Deliveries as of December 31, 2022**

Station	Description	Delivery Status as of Q3 2022	Delivery Status as of Q4 2022
1. Academy Street	13kV switchgear	<b><i>11/7/2020</i></b>	<b><i>11/7/2020</i></b>
2. Clay Street	4kV switchgear	10/3/2022	<b><i>12/5/2022</i></b>
3. Front Street	4kV switchgear	8/15/2023	8/14/2023
	4kV cont. switchgear	<b><i>8/25/2022</i></b>	<b><i>8/25/2022</i></b>
4. Hasbrouck Heights	4kV switchgear	<b><i>11/30/2021</i></b>	<b><i>11/30/2021</i></b>
5. Kingsland	13kV switchgear <sup>1</sup>	<b><i>9/30/2020</i></b>	<b><i>9/30/2020</i></b>
6. Lakeside Avenue	4kV switchgear	6/30/2023	6/30/2023
7. Leonia	13kV switchgear #1	<b><i>5/24/2021</i></b>	<b><i>5/24/2021</i></b>
	13kV switchgear #2	<b><i>6/16/2022</i></b>	<b><i>6/16/2022</i></b>
	13kV cont. switchgear <sup>2</sup>	<b><i>10/16/2020</i></b>	<b><i>10/16/2020</i></b>
8. Market Street	Elimination project		
9. Meadow Road	13kV switchgear <sup>2</sup>	2/14/2023	2/14/2023
10. Orange Valley	4kV switchgear	8/15/2023	8/31/2023
11. Ridgefield 13kV	13kV switchgear #1	<b><i>8/24/2022</i></b>	<b><i>8/24/2022</i></b>
	13kV switchgear #2	<b><i>4/27/2021</i></b>	<b><i>4/27/2021</i></b>
	13kV cont. switchgear <sup>1</sup>	<b><i>9/30/2020</i></b>	<b><i>9/30/2020</i></b>
12. Ridgefield 4kV	Elimination project		
13. State Street	4kV switchgear	<b><i>12/15/2021</i></b>	<b><i>12/15/2021</i></b>
14. Toney’s Brook	4kV switchgear	12/20/2022	1/5/2023
15. Waverly	26kV switchgear	<b><i>4/30/2021</i></b>	<b><i>4/30/2021</i></b>
	4kV switchgear	10/31/2022	<b><i>11/1/2022</i></b>
16. Woodlynn	4kV switchgear	2/6/2023	3/27/2023
<p>Note: bold/italicized dates indicate actual delivery dates.  <sup>1</sup>The Kingsland 13kV switchgear was delivered to the Ridgefield 13kV site where it is being used as the contingency/temporary switchgear for that project before its permanent installation on the Kingsland project. Delivery of the switchgear to the Kingsland site will follow the Ridgefield 13kV project being placed in-service, which was achieved in December 2022 with the disassembly of the contingency/temporary switchgear and delivery to Kingsland expected in the first quarter of 2023.  <sup>2</sup>The Meadow Road project will use the Leonia project’s 13kV contingency switchgear as its permanent switchgear.</p>			

As indicated in **Table 10**, during the fourth quarter of 2022, there were two additional switchgear deliveries received (4kV switchgears for Clay Street and Waverly), leaving six deliveries remaining for the subprogram. Of the remaining six deliveries, three had the forecasted delivery date unchanged from the prior quarter (or a change of one day for Front Street), while two of the other three each slipped approximately two weeks (Orange Valley and Toney’s Brook) and Woodlynne’s forecasted delivery slipped approximately seven weeks, continuing to reflect the challenges Powercon is experiencing.

The current project estimates are shown below in **Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2022**. As discussed in the IM 2022 First Quarter Report, PSE&G decided to consolidate the R&C on the individual projects into one R&C balance for the entire subprogram, thus there is no estimated R&C amount at the project level. **Table 11** also shows the current estimate level based on PSE&G’s estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of 2022. In addition, while the current placeholder/R&C balance for the subprogram is \$33.2 million, PSE&G has identified the Hamilton lifecycle upgrade project under Electric Stipulated Base as a candidate to receive funding through the Electric Station Flood Mitigation subprogram (and thus via Accelerated Recovery) should funds remain in accordance with the Stipulation.<sup>1</sup>

**Table 11 – ES 2 Electric Station Flood Mitigation Project Cost Status as of December 31, 2022**

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,300,000	\$-	\$9,300,000	\$8,231,026	\$7,230,725	78%
2. Clay Street	Definitive	\$33,600,000	\$-	\$33,600,000	\$33,613,927	\$21,519,813	64%
3. Front Street**	Conceptual	\$27,300,000	\$-	\$27,300,000	\$27,735,408	\$11,840,987	43%
4. Hasbrouck Heights	Definitive	\$19,300,000	\$-	\$19,300,000	\$19,094,923	\$16,110,052	84%
5. Kingsland	Conceptual	\$8,700,000	\$-	\$8,700,000	\$10,578,839	\$4,332,806	50%
6. Lakeside Avenue	Conceptual	\$33,500,000	\$-	\$33,500,000	\$34,133,083	\$4,587,643	14%
7. Leonia	Definitive	\$24,900,000	\$-	\$24,900,000	\$25,899,588	\$23,866,055	96%
8. Market Street	Definitive	\$29,100,000	\$-	\$29,100,000	\$28,272,387	\$28,169,888	97%
9. Meadow Road	Definitive	\$7,200,000	\$-	\$8,800,000	\$8,897,000	\$3,676,560	42%
10. Orange Valley	Conceptual	\$15,000,000	\$-	\$15,000,000	\$15,014,505	\$2,536,767	17%

<sup>1</sup> Paragraph 25 of the Stipulation indicated “If the Company determines the work on the 16 aforementioned substations identified in the flood mitigation subprogram can be completed under the \$389 million investment ceiling associated with substations, PSE&G may reallocate any funds to those stations identified in the life cycle station upgrade portion of the June 8, 2018 filing for accelerated recovery.”

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
11. Ridgefield 13kV	Conceptual	\$26,100,000	\$-	\$26,100,000	\$28,308,468	\$27,110,169	104%
12. Ridgefield 4kV	Definitive	\$20,700,000	\$-	\$20,700,000	\$20,703,808	\$20,703,809	100%
13. State Street	Definitive	\$19,600,000	\$-	\$19,600,000	\$20,287,142	\$13,821,016	71%
14. Toney's Brook	Definitive	\$16,000,000	\$-	\$16,000,000	\$16,228,831	\$7,391,999	46%
15. Waverly	Conceptual	\$39,900,000	\$-	\$39,900,000	\$40,921,572	\$20,074,529	50%
16. Woodlynne	Definitive	\$24,000,000	\$-	\$24,000,000	\$24,083,009	\$6,366,604	27%
ES 2 Station Placeholder	N/A	\$-	\$33,200,000	\$33,200,000	\$-	\$-	-
<b>Subprogram Total</b>		<b>\$355,800,000</b>	<b>\$33,200,000</b>	<b>\$389,000,000</b>	<b>\$362,003,445</b>	<b>\$219,339,352</b>	<b>56%</b>
<p>*-As discussed in Section II.B. of the IM 2022 First Quarter Report, PSE&amp;G made the decision to hold risk and contingency at the subprogram level, which resulted in updated estimates being prepared for each project to reflect this change and other project-specific updates as warranted.</p> <p>** -The Front Street project was proposed by PSE&amp;G during the second quarter of 2021 to replace the cancelled Constable Hook project.</p>							

### Findings & Observations

- Four projects were placed in-service during the fourth quarter of 2022 (Hasbrouck Heights, Leonia, Ridgefield 13kV, and State Street). As shown in **Table 7**, execution of these projects closely followed the original plans developed earlier in the Program. This brings the total projects placed in-service on the subprogram to seven out of the 16 projects as of the end of 2022. The next projects forecasted to go in-service are Clay Street and Toney's Brook, both forecasted for the second quarter of 2023.
- Of the nine remaining Electric Station Flood Mitigation projects, seven had movement in the forecasted in-service date during the fourth quarter of 2022, with two advancing and five slipping. For most of the projects the shift was roughly two weeks or less with the biggest changes involving the following projects:
  - Kingsland (advancing 33 days to October 4, 2023); and,
  - Clay Street (slipping 28 days to April 20, 2023).

For Kingsland, the improvement in the forecasted in-service date was driven by the delivery of the 13kV switchgear from the Ridgefield 13kV project advancing from April to March 2023, while on Clay Street the delay was driven by the switchgear controls IFC drawings not being up

to date with Powercon's as-builts, which required drawing revisions and resulted in a delay to commissioning activities.

- The overall subprogram forecast as of the end of 2022 increased approximately \$5.1 million (or 1.4%) to \$362.0 million from the status as of the third quarter of 2022. The forecast continues to remain under the current subprogram estimate and Stipulation amount of \$389.0 million (which includes \$33.2 million in R&C). The Kingsland and Lakeside Avenue projects accounted for the majority of this forecast increase, as detailed below:
  - Kingsland (increased \$1.6 million to \$10.6 million): due to required manhole modifications, site investigations, and detailed material take-offs.
  - Lakeside Avenue (increased \$1.4 million to \$34.1 million): due to the extended project schedule and circuit reconfigurations and re-labeling of circuits.
- With 61% of the subprogram forecast now spent (56% of the Stipulation amount), the IM continues to find that even with some cost pressures on certain projects, there is adequate R&C remaining in the subprogram for it to be completed under budget. However, the schedule status of the later projects in this subprogram, and in particular those with open switchgear deliveries currently forecasted for 2023 will have to continue to be closely followed to monitor if the projects can be completed within the ES 2 Program window. At this time, the primary risk to the project schedule is those major equipment deliveries, followed by resource availability to support schedule requirements and weather-related impacts (e.g. resources diverted to assist with recovery efforts or less activity performed than planned due to inclement weather). Prior delays to switchgear deliveries caused the forecasted in-service dates for Front Street, Lakeside Avenue, Orange Valley, and Waverly to slip into 2024.
- Regarding the projects with remaining switchgear deliveries, PSE&G continues to meet regularly with its vendor to receive updated information as to the status of these deliveries. PSE&G has also worked with the vendor to re-prioritize certain deliveries to optimize the project schedules and advanced the in-service date if possible. During the fourth quarter of 2022 the 4kV switchgears were received at Clay Street and Waverly. Of the remaining five switchgear deliveries, two had their forecasted delivery dates essentially unchanged from the prior quarter, while three slipped from two weeks to five weeks (Orange Valley, Toney's Brook, and Woodlynne). For the Meadow Row project, which is using the contingency switchgear from Leonia as its permanent switchgear, the Leonia project was placed in-service during the fourth quarter of 2022 with disassembly of the contingency switchgear planned for the first quarter of 2023 in line with the current schedule requirements on Meadow Road.

### 1. Academy Street

During the fourth quarter of 2022, \$710,827 was spent on the Academy Street project compared to a forecast of approximately \$879,000, which brought the total spend to approximately \$7.2 million. The variance in forecasted to actual spend during the quarter was primarily the result of the demolition work starting slower than forecasted.

This project was placed in-service on October 19, 2021, and in the third quarter of 2022 the final circuit was cutover to the switchgear. The demolition of the old substation commenced in October 2022 and is expected to be completed early in 2023.

The actual spend by period for Academy Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$150,398	\$4,224,550	\$1,754,789	\$131,061	\$144,172	\$114,926	\$710,827	\$1,000,301

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$9,300,000	\$7,230,725	78%
<b>Forecast</b>	\$8,231,026		88%

## 2. Clay Street

During the fourth quarter of 2022, \$8,497,943 was spent on the Clay Street project compared to a forecast of approximately \$8.6 million, which brought the total spend to approximately \$21.5 million. The forecasted in-service date for the Clay Street project as of the end of 2022 slipped 28 days from the status as of the end of the prior quarter to April 20, 2023. This shift in the in-service date was driven by the switchgear controls IFC drawings not being up to date with Powercon’s as-builts, which required drawing revisions and delayed commissioning activities.

The primary activities on the Clay Street project during the fourth quarter of 2022 included:

- Commencement of electrical construction;
- Completion of structural steel installation;
- Delivery of reactors/regulators;
- Setting the switchgear in place;
- Start of switchgear commissioning; and,
- Completion of the switchgear building roof and panels.

The actual spend by period for Clay Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$116,409	\$879,339	\$2,806,593	\$5,044,642	\$1,936,258	\$2,238,630	\$8,497,943	\$12,094,114

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$33,600,000	\$21,519,813	64%
<b>Forecast</b>	\$33,613,927		64%

## 3. Front Street

During the fourth quarter of 2022, \$2,282,477 was spent on the Front Street project compared to a forecast of approximately \$2.2 million, which brought total spend to approximately \$11.8 million. The

forecasted in-service date for the Front Street project as of the end of 2022 slipped 17 days from the status as of the end of the prior quarter to January 26, 2024.

The primary activities on the Front Street project during the fourth quarter of 2022 included:

- Start and completion of commissioning for the contingency switchgear;
- Setting regulators/reactors;
- Civil and electrical work out for bid;

The actual spend by period for Front Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the fourth quarter of 2022, the Front Street project transitioned to the Conceptual level estimate, which resulted in the base estimate increasing from \$25.9 million to \$27.3 million. This \$1.4 million estimate increase was driven by:

- Higher than estimated contingency construction costs (\$0.7 million);
- Higher than estimated construction costs based on revised IFC drawings and revised wire checker estimate (\$0.4 million); and,
- Addition of Human-Machine Interface (HMI) to Switchgear – based on new PSE&G requirement initiated in early 2020 (\$0.3 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$-	\$-	\$2,351,832	\$429,607	\$889,533	\$5,887,539	\$2,282,477	\$15,894,421

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$27,300,000	\$11,840,987	43%
Forecast	\$27,500,832		43%

#### 4. Hasbrouck Heights

During the fourth quarter of 2022, \$2,183,946 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$2.1 million, which brought the total spend to approximately \$16.1 million. The Hasbrouck Heights project was placed in-service as of November 21, 2022.

Notable activities completed on the Hasbrouck Heights project during the fourth quarter of 2022 included:

- Continued switchgear commissioning;
- Switchgear energization and placed in-service; and,
- Warranty work performed on regulators (no cost/schedule impact to the project).

The actual spend by period for Hasbrouck Heights as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$149,848	\$1,129,934	\$4,176,249	\$4,323,599	\$2,187,907	\$1,958,570	\$2,183,946	\$2,984,870

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$19,300,000	\$16,110,169	84%
Forecast	\$19,094,923		84%

## 5. Kingsland

During the fourth quarter of 2022, \$2,113,012 was spent on the Kingsland project compared to a forecast of approximately \$2.0 million, which brought the total spend to approximately \$4.3 million. The forecasted in-service date for the Kingsland project as of the end of 2022 advanced 33 days from the status as of the end of the prior quarter (also reversing the 35-day slip during the third quarter of 2022) to October 4, 2023. This improvement in the forecasted in-service date was driven by the delivery of the 13kV switchgear delivery (from the Ridgely 13kV project), which advanced from April 2023 to March 2023.

The primary activities on the Kingsland project during the fourth quarter of 2022 included:

- Start of electrical construction, including prepping cables and conducting test pits for underground runs; and,
- Pile driving for new switchgear, duct bank, and other foundations.

The actual spend by period for Kingsland as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. As of the end of 2022, the forecast for the Kingsland project increased approximately \$1.6 million from the forecast at the end of the prior quarter. This increase was the result of required manhole modifications, detailed material takeoffs, and site investigations.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$104,112	\$209,667	\$510,943	\$301,463	\$538,906	\$554,703	\$2,113,012	\$6,246,034

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$8,700,000	\$4,332,806	50%
Forecast	\$10,578,839		41%

## 6. Lakeside Avenue

During the fourth quarter of 2022, \$1,295,033 was spent on the Lakeside Avenue project compared to a forecast of approximately \$1.7 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was attributed to delays in manhole work and delays in receiving permits for test pits. However, despite those delays, there was no critical path impact at this time and the forecasted in-service date for the Lakeside Avenue project as of the end of 2022 remain unchanged from the status as of the end of the third quarter of 2022 at February 28, 2024 (which as previously discussed was the result of the switchgear delivery slipping).

Notable activities completed on the Lakeside Avenue project during the fourth quarter of 2022 included:

- Civil/electrical demolition package out for bid (old station);



- Installation of 4kV bus support foundations;
- Continued duct bank installations; and,
- Start of switchgear foundations.

The actual spend by period for Lakeside Avenue as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the fourth quarter of 2022, the Lakeside Avenue project transitioned to the Conceptual level estimate, which resulted in the base estimate decreasing from \$39.4 million to \$33.5 million. This \$5.9 million estimate decrease was driven by:

- T&D surcharge methodology – based on 2022 surcharge methodology (\$0.6 million);
- Based on the site assessment, planned dewatering is not required (-\$0.4 million);
- Updated material requirements based on detailed design – decrease in linear footage of underground cable (65,300 lf to 55,250 lf) and removal of the contingency that is no longer required (-\$0.7 million);
- Lower than estimated costs for soil disposal and abatement based on updated site survey (-\$1.0 million); and,
- Final design no longer requires piles and raised foundation for the switchgear, resulting in lower than estimated construction awards (-\$4.4 million).

While the estimate was approved at \$33.5 million, after the estimate was approved the forecast increased an additional \$0.6 million to \$34.1 million. This forecast increase was driven by the need to re-label all 4kV circuits with a new station name (North Park Street, where the Lakeside Avenue substation is being relocated to), which requires updates to the associated engineering drawings and underground crews to physically replace the old labels with new labels on all circuits and tie feeders.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2025
<i>Actuals</i>							<i>Forecast</i>
\$148,943	\$453,994	\$570,713	\$351,720	\$230,836	\$1,536,403	\$1,295,033	\$25,545,440

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$33,500,000	\$4,587,643	14%
<b>Forecast</b>	\$34,133,083		13%

## 7. Leonia

During the fourth quarter of 2022, \$1,561,839 was spent on the Leonia project compared to a forecast of approximately \$1.4 million, which brought the total spend to approximately \$23.9 million. The Leonia substation was placed in-service as of November 15, 2022.

Notable activities completed on the Leonia project during the fourth quarter of 2022 included:

- Completion of commissioning the new switchgear #2 and cutting over circuits; and,
- Installation of the station’s lightning mast.

Remaining activities for Leonia relate to final site restoration and disconnecting/disassembling the contingency switchgear used during construction.

The actual spend by period for Leonia as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$44,792	\$6,033,379	\$9,112,257	\$1,789,112	\$3,968,355	\$1,356,322	\$1,561,839	\$2,033,532

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$24,900,000	\$23,866,055	96%
Forecast	\$25,899,588		92%

### 8. Market Street

During the fourth quarter of 2022, \$29,055 was spent on the Market Street project compared to a forecast of approximately \$86K, which brought the total spend to approximately \$28.2 million. The Market Street substation was taken out of service as of June 25, 2021.

The final punch list items and site cleanup activities were completed at the end of the second quarter of 2022, remaining costs including those incurred during the fourth quarter of 2022 relate to final and trailing costs related to this closeout work.

The actual spend by period for Market Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$251,193	\$16,079,601	\$10,681,487	\$808,096	\$202,619	\$117,836	\$29,055	\$102,500

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$29,100,000	\$28,169,888	97%
Forecast	\$28,272,387		100%

### 9. Meadow Road

During the fourth quarter of 2022, \$1,641,509 was spent on the Meadow Road project compared to a forecast of approximately \$1.6 million, which brought the total spend to approximately \$3.7 million. The forecasted in-service date for the Meadow Road project as of the end of 2022 remained unchanged from the status as of the end of the third quarter of 2022 at September 28, 2023.

The primary activities conducted on the Meadow Road project during the fourth quarter of 2022 included:

- Continued manhole work;
- Installation of station light & power foundations; and,
- Installation of conduit.

The actual spend by period for Meadow Road as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the

fourth quarter of 2022, the Meadow Road project transitioned to the Definitive level estimate, which resulted in the base estimate increasing from \$8.3 million to \$8.8 million. This \$0.5 million estimate increase was driven by:

- Revised estimate for construction supervisions and commissioning and additional costs for trailer rentals (\$0.3 million);
- Division estimate updated to include required fiber line relocation (\$0.1 million); and,
- Higher than estimated cost for structural steel (\$0.1 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$63,128	\$535,081	\$445,234	\$288,050	\$321,098	\$382,461	\$1,641,509	\$5,220,440

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$8,800,000	\$3,676,560	42%
Forecast	\$8,897,000		41%

### 10. Orange Valley

During the fourth quarter of 2022, \$308,858 was spent on the Orange Valley project compared to a forecast of approximately \$419K, which brought the total spend to approximately \$2.5 million. The variance in forecasted to actual spend in the fourth quarter of 2022 was primarily attributed to less environmental work performed than estimated. The forecasted in-service date for the Orange Valley project as of the end of 2022 slipped 14 days from the status as of the end of the third quarter of 2022 to February 16, 2024.

During the fourth quarter of 2022, major activities on the Orange Valley project included:

- Controls drawings IFC;
- Continued duct bank installations; and,
- Commencement of installing switchgear foundations.

The actual spend by period for Orange Valley as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the fourth quarter of 2022, the Orange Valley project transitioned to the Conceptual level estimate, which resulted in the base estimate increasing from \$14.7 million to \$15.0 million. This \$0.3 million estimate increase was driven by:

- Higher than estimated PO awards (labor and equipment prices, NJDEP green infrastructure requirements) (\$0.9 million);
- Lower carrying costs based on updated project staffing plan (-\$0.2 million); and,
- Reduced 4kV equipment demolition estimate (-\$0.4 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$77,029	\$362,895	\$358,052	\$111,565	\$276,614	\$1,041,753	\$308,858	\$12,477,738

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$15,000,000	\$2,536,767	17%
Forecast	\$15,014,505		17%

### 11. Ridgefield 13kV

During the fourth quarter of 2022, \$1,585,414 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$1.7 million, which brought the total spend to approximately \$27.1 million. The Ridgefield 13kV project was placed in-service as of December 12, 2022.

Notable activities performed on the Ridgefield 13kV project during the fourth quarter of 2022 included:

- Completion of conduit/ducts and cable pulls to station light & power;
- Continued commissioning of the new switchgear #1;
- Switchgear energization and placed in-service;

The actual spend by period for Ridgefield 13kV as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$205,982	\$6,232,692	\$10,849,681	\$2,111,096	\$2,557,679	\$3,567,625	\$1,585,414	\$1,198,298

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$26,100,000	\$27,110,169	104%
Forecast	\$28,308,468		96%

### 12. Ridgefield 4kV

During the fourth quarter of 2022, there was no spend the Ridgefield, with the total spend remaining at approximately \$20.7 million. The project was placed in-service on May 16, 2021.

The project was closed out during the third quarter of 2022 after the final closeout activities were performed during the first quarter of 2022, which included some trailing costs in the second quarter of 2022.

The actual spend by period for Ridgefield 4kV as compared to the final forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$143,414	\$11,239,534	\$9,263,852	\$42,604	\$14,405	-	-	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$20,700,000	\$20,703,808	100%
Forecast	\$20,703,808		100%

**13. State Street**

During the fourth quarter of 2022, \$2,211,115 was spent on the State Street project compared to a forecast of approximately \$1.8 million, which brought the total spend to approximately \$13.8 million. The State Street project was placed in-service on December 29, 2022.

Notable activities performed on the State Street project during the fourth quarter of 2022 included:

- Continued commissioning of the new switchgear #1; and,
- Switchgear energization and placed in-service.

The actual spend by period for State Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$77,590	\$662,148	\$8,093,227	\$751,849	\$1,046,814	\$978,273	\$2,211,115	\$6,466,125

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$19,600,000	\$13,821,016	71%
Forecast	\$20,287,142		68%

**14. Toney’s Brook**

During the fourth quarter of 2022, \$4,357,007 was spent on the Toney’s Brook project compared to a forecast of approximately \$5.1 million, which brought the total spend to approximately \$7.4 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was primarily attributed to less civil progress made than planned in September and a partial delivery of feeder rows not received in December as planned.

The forecasted in-service date for the Toney’s Brook project as of the end of 2022 advanced 10 days from the status as of the end of the third quarter of 2022 to May 20, 2023.

The notable activities on the Toney’s Brook project during the fourth quarter of 2022 included:

- Commencement of electrical construction;
- Manhole and duct bank installations;
- Grounding grid installation;
- Steel platform installation; and,
- Commencement of switchgear assembly.

The actual spend by period for Toney’s Brook as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the fourth quarter of 2022, the Toney’s Brook project transitioned to the Definitive level estimate, which resulted in the base estimate decreasing from \$16.2 million to \$16.0 million. This \$0.2 million estimate decrease was driven by:

- Higher than estimated procurement – steel platforms and structural steel (\$0.4 million); and,

- Lower than estimated electrical construction award – driven by contingency plan no longer being required (-\$0.6 million).

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$211,940	\$373,096	\$941,519	\$138,270	\$629,773	\$740,393	\$4,357,007	\$8,836,833

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$16,000,000	\$7,391,999	46%
<b>Forecast</b>	\$16,228,831		46%

### 15. Waverly

During the fourth quarter of 2022, \$2,877,081 was spent on the Waverly project compared to a forecast of approximately \$2.5 million, which brought the total spend to approximately \$20.1 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was largely the result additional dewatering required during the manhole rebuild. The forecasted in-service date for the Waverly project as of the end of 2022 slipped seven days from the status as of the end of the third quarter of 2022 to May 7, 2024.

The primary activities performed on the Waverly project during the fourth quarter of 2022 included:

- Cutting over circuits to the new 26kV switchgear; and,
- Completion of manhole rebuild.
- The actual spend by period for Waverly as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$103,748	\$2,460,815	\$4,415,223	\$432,853	\$1,536,375	\$8,248,435	\$2,877,081	\$20,847,043

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$39,900,000	\$20,074,529	50%
<b>Forecast</b>	\$40,921,572		49%

### 16. Woodlynne

During the fourth quarter of 2022, \$380,008 was spent on the Woodlynne project compared to a forecast of approximately \$644K, which brought the total spend to approximately \$6.4 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was primarily the result of the December invoice for A/E procured material coming in lower than the November accrual and IP electrical work shifting into 2023 to allow the focus to be on placing the 69kV project in-service. The forecasted in-service date for the Woodlynne project as of the end of 2022 slipped 17 days from the status as of the end of the third quarter of 2022 to October 27, 2023.

The primary activities performed on the Woodlynne project during the fourth quarter of 2022 included the completion of the 4kV duct bank and manhole installations.

The actual spend by period for Woodlynn as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$110,982	\$993,298	\$991,630	\$1,639,443	\$1,347,345	\$903,898	\$380,008	\$17,716,405

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$24,000,000	\$6,366,604	27%
Forecast	\$24,083,009		26%

## **B. Contingency Reconfiguration**

During the fourth quarter of 2022, the efforts in the Contingency Reconfiguration subprogram continued to focus on the installation of additional Fuse Savers, following the completion of the recloser scope in the first quarter of 2022. **Table 12 – ES 2 Program Fuse Saver Status as of December 31, 2022** provides a summary of the Fuse Saver scope of the Contingency Reconfiguration subprogram, indicating the number of units completed during the fourth quarter of 2022 and for the total program, showing the status of engineering, installation, and commissioning out of a forecasted scope of 1,574 units.<sup>2</sup> The forecasted units is based on the actual cost per unit of installations to date and is updated quarterly based on the current data.

*Table 12 – ES 2 Program Fuse Saver Status as of December 31, 2022*

Type	Engineering Packages Completed (1 Fuse Saver ea.)	Fuse Savers Installed	Fuse Savers Commissioned
Q4 Qty.	336	265	389
Program Total to Date	1,036	677	674
Remaining	538	897	900

Following the recommencement of the Fuse Saver installations in May 2022, PSE&G has continued to advance the installations towards its forecasted scope of 1,574 Fuse Savers with 265 installed in the fourth quarter of 2022. This followed the 286 units installed during the third quarter of 2022 and leaves 900 units to be installed during 2023. PSE&G continues to establish its installation targets on a quarterly basis, which are then split into monthly targets for each Division with the forecasts updated on a bi-weekly basis.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 13 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of December 31, 2022**. This table also shows the forecasted final in-service dates as of the end of the third quarter of 2022 to compare the status to the forecast as of the end of 2022.

<sup>2</sup> Note: this is the forecasted scope as of the end of the fourth quarter of 2022. PSE&G continues to assess the forecasted units in line with the budget for the subprogram and as of the August 2023 this resulted in an updated forecast of 1,344 units.

**Table 13 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of December 31 2022**

Scope & Division		Q3 2022 Forecasted Completion Date	Q4 2022 Forecasted Completion Date
Reclosers	Central	1/31/2022 (Actual)	1/31/2022 (Actual)
	Metro	12/31/2021 (Actual)	12/31/2021 (Actual)
	Palisades	1/31/2022 (Actual)	1/31/2022 (Actual)
	Southern	1/31/2022 (Actual)	1/31/2022 (Actual)
Fuse Savers	Central	12/30/2023	11/30/2023
	Metro	12/30/2023	12/30/2023
	Palisades	12/30/2023	11/30/2023
	Southern	12/30/2023	11/30/2023

As shown in **Table 13**, the forecasted in-service dates for the Fuse Saver scope of each Division continues to be the end of 2023, though for each Division, aside from the Metro Division, the forecasted in-service date advanced 30 days to the end of November 2023.

The Contingency Reconfiguration subprogram costs through the end of 2022 are presented in **Table 14 – ES 2 Contingency Reconfiguration Actual Costs as of December 31, 2022**.

**Table 14 – Contingency Reconfiguration Actual Costs as of December 31, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Total to Date
<i>Actuals</i>									
Reclosers	Central	\$2,737,167	\$12,050,820	\$9,852,812	\$880,537	\$45,064	\$46,364	\$28,410	\$25,641,174
	Metro	\$2,231,431	\$10,726,610	\$11,368,409	\$150,325	(\$31,771)	(\$8,856)	\$276	\$24,436,424
	Palisades	\$2,515,569	\$12,119,436	\$8,280,522	(\$66,771)	\$2,816	\$500	\$10,753	\$22,862,826
	Southern	\$2,081,220	\$12,405,684	\$14,038,043	\$530,051	\$4,112	\$1,476	\$0	\$29,060,585
Fuse Savers	Central	\$9,970	\$789,937	\$854,118	\$249,268	\$433,473	\$2,097,168	\$1,846,734	\$6,280,668
	Metro	\$7,557	\$561,915	\$507,742	\$160,801	\$298,329	\$1,889,794	\$2,089,940	\$5,516,078
	Palisades	\$7,468	\$522,454	\$577,113	\$127,207	\$656,533	\$2,059,075	\$1,646,817	\$5,596,667
	Southern	\$9,792	\$859,014	\$578,217	\$245,990	\$714,570	\$1,623,412	\$2,462,992	\$6,493,988
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$46,056,977</b>	<b>\$2,277,408</b>	<b>\$1,824,151</b>	<b>\$7,708,933</b>	<b>\$8,085,921</b>	<b>\$125,888,410</b>

**Table 15 – Contingency Reconfiguration Forecasted Costs as of December 31, 2022** examines the forecast as of the end of 2022 for each Division’s Fuse Saver scope compared to the total actual costs incurred through the end of 2022.

**Table 15 – Contingency Reconfiguration Forecasted Costs as of December 31, 2022**

Scope & Division		Total to Date	Forecast	Remaining Forecast	% of Actuals to Forecast
Reclosers	Central	\$25,641,174	\$25,641,174	\$0	100%
	Metro	\$24,436,424	\$24,436,424	\$0	100%
	Palisades	\$22,862,826	\$22,862,826	\$0	100%
	Southern	\$29,060,585	\$29,060,585	\$0	100%
Fuse Savers	Central	\$6,280,668	\$10,989,832	\$4,709,163	57%
	Metro	\$5,516,078	\$11,825,778	\$6,309,700	47%
	Palisades	\$5,596,667	\$10,167,971	\$4,571,305	55%
	Southern	\$6,493,988	\$12,271,497	\$5,777,509	53%



Scope & Division	Total to Date	Forecast	Remaining Forecast	% of Actuals to Forecast
<i>Total</i>	\$125,888,410	\$147,256,087	\$21,367,677	85%

As shown in **Table 15**, the overall Contingency Reconfiguration subprogram has spent 85% of its current forecast. With the total forecast as of the end of 2022 remaining relatively static since the end of the prior quarter, decreasing by approximately \$360,000.

Findings & Observations:

- Progress on the Fuse Savers scope of the subprogram continued to advance in the second full quarter of installations (which partially commenced in the second quarter of 2022 ahead of fully commencing in the third quarter of 2022) on the Program with 265 units installed during the fourth quarter of 2022 for a total of 677 installed during the Program. Equipment deliveries have continued to keep pace with Program needs, with inventory averaging around six to eight weeks ahead of installations.
- Based on the progress to date and the current projections, the forecasted final in-service dates for the Fuse Savers scope advanced one month in the Central, Palisades, and Southern Divisions to November 30, 2023, while the Metro Division remained at December 30, 2023.
- The Divisions are conducting inspections of the circuits targeted for the remaining Fuse Savers to confirm viability and inform the planning efforts for 2023.
- The Contingency Reconfiguration subprogram forecast continued to remain relatively static as of the end of 2022, with the total forecast decreasing by approximately \$360K (or less than 0.0%) to \$147.3 million. This remains slightly above the Stipulation budget of \$145.0 million.

**C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system. The primary scopes within the Grid Modernization – Communication System include installation of the wireless network, fiber installations at selected stations, fiber cutovers at selected station with existing fiber to the PSE&G fiber network, and retrofitting existing reclosers and RTUs with updated routers. A summary of the status of these primary scopes of work as of the end of 2022 is as follows:

- Wireless network: placed in-service as of December 16, 2021, final coverage testing to be conducted in early 2023; other remaining work involves providing radios to support the installation of Fuse Savers in the Contingency Reconfiguration subprogram.
- Fiber installations and cutovers: 33 out of 34 fiber installation projects completed and 12 out of 12 fiber cutover projects completed.
- Retrofitting existing reclosers: completed as of the fourth quarter of 2021 with a total of 2,318 retrofit reclosers installed.

- Retrofitting RTUs: completed as of the third quarter of 2022 with a total scope of 218 substations.

The list of currently approved fiber installation and cutover projects is presented in **Table 16 – Fiber Projects by Division as of December 31, 2022**.

*Table 16 – Fiber Projects by Division as of December 31, 2022*

Division	Fiber Installation*	Fiber Cutover*
Central	<u>Cranford</u> ; <u>Elizabeth Sub HQ</u> ; <u>Rahway</u> ; <u>Hadley Road HQ</u> ; <u>Roselle</u> ; <u>Central HQ</u> ; <u>Carteret</u> ; <u>Edison</u> ; <u>Keasby</u> ; <u>Mechanic Street</u> ; <u>First Street</u>	<u>Elizabeth</u> ; <u>Henry Street</u>
Metro	<u>East Orange</u> ; <u>Metro HQ</u> ; <u>Bloomfield</u> ; <u>Central Avenue</u> ; <u>Haldeon</u> ; <u>Irvington</u> ; <u>Irvington Sub HQ</u> ; <u>Montclair</u> ; <u>South Orange</u> ; <u>Norfolk Street</u>	-
Palisades	<u>Bergen Point</u> ; <u>Hackensack Sub HQ</u> ; <u>Fort Lee</u> ; <u>Harrison</u> ; <u>Ridgewood</u> ; <u>West New York</u> ; <u>Palisades HQ</u> ; <u>Culver Avenue</u> ; <u>Morgan Street</u>	<u>Tonnelle Avenue</u> ; <u>Spring Valley Road</u> ; <u>Union City</u> ; <u>Fairview</u> ; <u>Polk Street</u> ; <u>West Orange</u>
Southern	<u>Southern HQ</u> ; <u>Princeton</u> ; <u>Chauncey Street</u> ; <u>Bordentown</u>	<u>Delair</u> ; <u>East Riverton</u> ; <u>Riverside</u> ; <u>Mount Holly</u>
<b>Total</b>	<b>34 projects</b>	<b>12 projects</b>

\*-Projects underlined have been placed in-service.

During the fourth quarter of 2022 four additional fiber installation projects (Bloomfield, Carteret, Keasbey, and Mechanic Street) were placed in-service. Thus, the total fiber projects in-service as of the end of 2022 was 33 for the fiber installation projects and 12 for the fiber cutover projects. **Table 17 – ES 2 Program Fiber Projects Status as of December 31, 2022** provides a summary of the status of the fiber installation and cutover projects within the subprogram as of the end of the third quarter of 2022 with the projects in italics representing those placed in-service.

*Table 17 – ES 2 Program Fiber Projects Status as of December 31, 2022*

Project Name	Q4 2022 Status
<i>Fiber Installation Projects</i>	
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>
<i>Bloomfield</i>	<i>In-Service (Q4 2022)</i>
<i>Bordentown</i>	<i>In-Service (Q3 2021)</i>
<i>Carteret</i>	<i>In-Service (Q4 2022)</i>
<i>Central Ave</i>	<i>In-Service (Q3 2021)</i>
<i>Central HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Chauncey Street</i>	<i>In-Service (Q3 2021)</i>
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>
<i>Culver Ave</i>	<i>In-Service (Q1 2022)</i>
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>
Edison	In securing railroad permits, it was identified that this particular rail section requires its own outage within Amtrak (powerline for the trains), which will not be available to be scheduled by Amtrak until the spring of 2023.
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>
<i>First Street</i>	<i>In-Service (Q3 2021)</i>
<i>Fort Lee</i>	<i>In-Service (Q1 2022)</i>
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>
<i>Hadley Rd HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Haledon</i>	<i>In-Service (Q1 2022)</i>

Project Name	Q4 2022 Status
Harrison	In-Service (Q3 2021)
Irvington	In-Service (Q4 2021)
Irvington Sub HQ	In-Service (Q4 2021)
Keasbey	In-Service (Q4 2022)
Mechanic Street	In-Service (Q4 2022)
Metro HQ	In-Service (Q1 2021)
Montclair	In-Service (Q3 2022)
Morgan Street	In-Service (Q4 2021)
Norfolk St	In-Service (Q3 2021)
Palisades HQ	In-Service (Q3 2022)
Princeton	In-Service (Q3 2021)
Rahway	In-Service (Q1 2021)
Ridgewood	In-Service (Q1 2022)
Roselle	In-Service (Q2 2021)
So Orange	In-Service (Q3 2021)
Southern HQ	In-Service (Q4 2020)
West New York	In-Service (Q1 2022)
<b>Fiber Cutover Projects</b>	
Delair	In-Service (Q4 2020)
East Riverton	In-Service (Q4 2020)
Elizabeth	In-Service (Q1 2021)
Fairview	In-Service (Q1 2022)
Henry St	In-Service (Q3 2021)
Mount Holly	In-Service (Q4 2020)
Polk Street	In-Service (Q1 2022)
Riverside	In-Service (Q4 2020)
Spring Valley Rd	In-Service (Q1 2021)
Tonnelle Ave	In-Service (Q4 2020)
Union City	In-Service (Q1 2021)
West Orange	In-Service (Q3 2022)
<b>Substation Remote Terminal Unit (RTU) Cutovers</b>	
Scope: 218 units	218 cutovers completed

During the fourth quarter of 2022, PSE&G’s URB approved updated Definitive estimates for the wireless network & retrofit project and the fiber projects, which are presented in **Table 16 – Grid Modernization – Communication System Updated Definitive Estimate** that also shows the progression from the original Office level estimates.

**Table 18 – Grid Modernization – Communication System Updated Definitive Estimate**

Scope	Item	Description	Cost
Fiber Installations & Cutovers	<b>Office Estimate</b>		<b>\$23,400,000</b>
	New Fiber Scope Refinement	Substation and Operation Center fiber installation scope and estimates modified to align with current communication needs	\$7,900,000
	Project Management, Licensing & Permitting, Engineering	Reduction in scope of Distribution Stations with existing fiber that still required communications to be cutover	(\$3,800,000)
	<b>Study Estimate</b>		<b>\$27,500,000</b>
	Outside Plant Estimates	Actual costs higher than estimated for contracted work (\$1.6 million) and work performed with internal resources (\$0.9 million) based on scope and estimate refinement	\$2,500,000
	Inside Plant Estimates	Office level estimates further refined	\$2,200,000

Scope	Item	Description	Cost
	Changed Routes	Route changed in order to provide simplified design and avoid extensive inspections and permitting associated with original OP routes for Montclair (+\$1.3 million) and Bloomfield (-\$0.4 million).	\$900,000
	Fiber Cutovers	Increase due to scope and estimate refinement	\$300,000
	Scope Reduction	32 <sup>nd</sup> Street, Howell Street, Waverly, Haddon Heights, and Lehigh Avenue stations removed from ES 2 Program	(\$2,900,000)
	<b>Original Definitive Estimate</b>		<b>\$30,500,000</b>
	OP/IP Construction	Contract awards higher than estimated	\$1,000,000
	Substation RTU Overrun	Based on actual costs	\$500,000
	Fiber Installation	Additional labor costs incurred	\$400,000
	Fiber Installation	Unforeseen field conditions	\$300,000
	<b>Updated Definitive Estimate</b>		<b>\$32,700,000</b>
Wireless Network & Retrofits	<b>Office Estimate</b>		<b>\$48,600,000</b>
	FirstNet Wireless Network Solution	Selection of FirstNet as the wireless network solution in lieu of original plan to build a solely owned and operated private network	(\$13,500,000)
	<b>Conceptual Estimate</b>		<b>\$35,100,000</b>
	Radio Reduction	387-unit reduction related to Fuse Savers, Retrofits, and Reclosers – including material and labor	(\$1,300,000)
	<b>Original Definitive Estimate</b>		<b>\$33,800,000</b>
	Scope Refinement	Reduction in Program Management and staffing for Fuse Savers	(\$400,000)
	Scope Refinement	Remove implementation of Network Operations Center (NOC)	(\$200,000)
	<b>Updated Definitive Estimate</b>		<b>\$33,200,000</b>
<b>Total Grid Modernization – Communication System Definitive Estimate</b>			<b>\$65,900,000</b>

Among the items detailed in the Updated Definitive Estimate in **Table 18**, PSE&G removed the Wireless Network Operations Center (NOC) from the subprogram scope. This Wireless NOC was intended to establish a dedicated operating center to monitor the health of the wireless network and operation of devices in the field. After PSE&G assessed the detailed scope and requirements, it identified an the process of combining monitoring and alerting from both the existing D-SCADA and the IT NOC was a viable alternative that allowed the Wireless NOC to be removed from the subprogram while still achieving the desired benefits.

The Grid Modernization – Communication System subprogram actual costs by major period through the end of 2022 are presented in **Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of December 31, 2022**, while **Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of December 31, 2022** provides the current forecasts as of the end of 2022 compared to the actual costs.

**Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of December 31, 2022**

Scope & Division		2019	2020	2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Total to Date
<i>Actuals</i>									
Retrofit Reclosers	Central	\$0	\$884,278	\$3,304,797	\$215,275	\$186,505	\$359,309	\$304,632	\$5,254,796
	Metro	\$0	\$818,620	\$2,362,797	\$135,374	\$192,271	\$315,543	\$308,409	\$4,132,996
	Palisades	\$0	\$825,174	\$3,115,474	\$186,059	\$184,718	\$349,531	\$306,521	\$4,967,477
	Southern	\$0	\$929,058	\$3,862,816	\$194,826	\$193,249	\$292,884	\$304,632	\$5,777,466

Scope & Division		2019	2020	2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Total to Date
<i>Actuals</i>									
Fiber	Central	\$1,691	\$2,418,851	\$5,973,655	\$1,581,263	\$681,857	\$446,818	\$334,822	\$11,438,957
	Metro	\$1,457	\$1,866,697	\$3,086,096	\$1,576,328	\$347,002	\$245,110	\$160,978	\$7,283,668
	Palisades	\$1,582	\$2,046,762	\$3,603,134	\$656,307	\$93,875	\$213,474	\$86,148	\$6,701,283
	Southern	\$4,731	\$910,483	\$2,466,477	\$96,721	\$33,229	\$24,153	\$30,995	\$3,566,789
	Cutovers	\$0	\$876,502	\$607,056	\$49,907	\$8,735	\$0	\$0	\$1,416,980
<b>Wireless Network</b>		\$74,306	\$6,035,441	\$1,282,986	\$61,558	\$99,655	\$39,482	\$33,807	\$7,627,235
<b>Substation RTU Cutovers</b>		\$0	\$0	\$127,129	\$801,385	\$920,534	\$462,707	(\$14,739)	\$2,297,017
<b>Bulk Purchase*</b>		\$0	\$1,524,874	(\$520,766)	\$641,029	\$283,929	\$642,690	\$188,244	\$2,759,999
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$29,144,503</b>	<b>\$6,196,033</b>	<b>\$3,225,559</b>	<b>\$3,391,702</b>	<b>\$2,046,359</b>	<b>\$63,224,662</b>

*\*-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.*

**Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of December 31, 2022**

Scope & Division		Total to Date	Total Forecast	% of Actuals to Forecast
		<i>Actuals</i>		
Retrofit Reclosers	Central	\$5,254,796	\$11,598,833	79%
	Metro	\$4,132,996	\$7,301,550	75%
	Palisades	\$4,967,477	\$6,711,283	78%
	Southern	\$5,777,466	\$3,456,530	80%
Fiber	Central	\$11,438,957	\$11,598,833	99%
	Metro	\$7,283,668	\$7,301,550	100%
	Palisades	\$6,701,283	\$6,711,283	100%
	Southern	\$3,566,789	\$3,456,530	103%
	Cutovers*	\$1,416,980	\$1,416,980	100%
<b>Substation RTU Cutovers</b>		\$2,297,017	\$2,297,017	100%
<b>Wireless Network</b>		\$7,627,235	\$7,627,235	100%
<b>Bulk Purchase*</b>		\$2,759,999	\$0	-
<b>Total</b>		<b>\$63,224,662</b>	<b>\$66,219,762</b>	<b>95%</b>

*\*-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.*

As shown in **Table 19**, actual costs incurred in the fourth quarter of 2022 was primarily in the retrofit reclosers scope that relates to the radio kits that are prepared for the Fuse Saver installations. The forecasts shown in **Table 20** remained relatively unchanged from the status as of the end of the second quarter of 2022, with an overall forecast decrease of approximately \$345,000 (or a 0.1% decrease) driven by the forecast reflecting a cost transfer of engineering hours spent on the Lehigh Avenue and Haddon Heights fiber projects that were previously removed from the ES 2 Program.

Findings & Observations:

- Four additional fiber installation projects were completed during the fourth quarter of 2022, bringing the total number of fiber installation projects in-service to 33. The remaining fiber installation project, Edison, was initially planned to be completed by the end of 2022, but in

securing the railroad permit it was identified that the required outage could not be scheduled until the spring of 2023.

- The forecast for the Grid Modernization – Communication system subprogram remained relatively unchanged from the status as of the end of the third quarter of 2022, with an overall forecast decrease of approximately \$345K (or a 0.5% decrease) to \$66.2 million.
- PSE&G updated its Definitive estimate for the primary scopes generated for the subprogram (fiber installation & cutovers and wireless network & retrofits), which resulted in the overall subprogram estimate increasing by \$1.6 million to \$65.9 million. The fiber scope estimate increased by \$2.2 million from the prior estimate, continuing to be driven primarily by higher than estimated construction costs. While the wireless network & retrofits scope estimate decreased by \$0.6 million from the prior estimate due scope refinement. As this represents an expected overrun of the \$64.3 million Stipulation budget, PSE&G intends to fund the balance via its distribution base capital.
- While cost pressures have been encountered throughout the execution of the Grid Modernization – Communication system subprogram, PSE&G has continued to balance the delivery of the planned scope of the subprogram with the approved budget. This includes adjustment to the number of fiber projects included in the subprogram and the removal of the Wireless NOC scope from the subprogram via identification of an alternative approach.

#### **D. Grid Modernization – ADMS**

The Grid Modernization – ADMS scope is split between three primary sections: DMS/DERMS, the OMS, and ADMS platform upgrades. The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities conducted during the fourth quarter of 2022 are presented as follows:

##### **DMS/DERMS**

- Scope: Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- Q4 2022 Activities:
  - Completed technical team training.
  - Completed initial data verification and all uploads.
  - Received test procedure and created test logs.
  - Resolved mismatches in GIS.
  - Started end-to-end testing (six of nine modules completed) and submitted first round of variances to OSI.
- Forecasted Completion as of the end of 2022: 1/29/2023 (slipped 43 days from the status as of the end of the prior quarter). This change in forecasted in-service date reflects the net impact of the delay in achieving stabilization of the system environment, which is required for installation and testing ahead of promotion to production (in-service).

**OMS**

- **Scope:** Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G’s network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years’ worth of existing OMS data will be migrated into the new system as well.
- **Q4 2022 Activities:**
  - Completed Compass setup in the Quality Assurance System (QAS) environments.
  - Established iPad connectivity to Compass.
  - Completed system integration testing (SIT) rounds 1-3; completed remediation for rounds 1-2 and started remediation for round 3.
  - Finalized Kubra interface design.
- **Forecasted Completion as of the end of 2022:** 6/15/2023 (unchanged from prior quarter)

**ADMS Platform**

- **Scope:** Replace, enhance, and expand the existing Distribution Supervisory Control and Data acquisition (DSCADA) platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- **Q4 2022 Activities:**
  - Installed configuration and patch changes in Platform QAS for testing preparation.
  - Completed production readiness stage gate requirements.
  - Tested patch and configuration changes.
- **Actual In-Service Date:** 1/28/2022.

The Grid Modernization – ADMS subprogram costs through the end of 2022 are presented in **Table 21 – ES 2 Grid Modernization – ADMS Costs as of December 31, 2022**. The OMS scope forecast increased from \$44.1 million as of the prior quarter to \$49.4 million as of the end of 2022, which was driven by additional schedule durations and additional resources required.

**Table 21 – ES 2 Grid Modernization – ADMS Costs as of December 31, 2022**

Scope	Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
	Actuals							Forecast
<b>OMS</b>	\$33,891	\$8,375,966	\$7,140,445	\$2,010,781	\$6,360,390	\$2,267,867	\$4,336,646	\$18,865,044
<b>DMS/ DERMS</b>	\$1,498	\$1,858,969	\$1,185,863	\$510,094	\$676,889	\$581,013	\$962,859	\$850,713
<b>Platform</b>	\$824	\$1,998,769	\$1,411,403	\$646,982	\$934,541	\$310,094	\$214,084	\$150,099

Scope	Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
	Actuals							Forecast
ADMS Hardware	-	\$4,213,920	\$116,732	\$30,020	\$259,042	\$35,462	\$3,829	\$0
<b>Total ADMS</b>	<b>\$36,213</b>	<b>\$16,447,624</b>	<b>\$9,854,442</b>	<b>\$3,197,877</b>	<b>\$8,230,861</b>	<b>\$3,194,435</b>	<b>\$5,517,418</b>	<b>\$19,865,856</b>

Scope	Actuals to Date	Forecast	% of Actuals to Forecast
OMS	\$30,525,986	\$49,391,030	62%
DMS/DERMS	\$5,777,184	\$6,627,897	87%
Platform	\$5,516,697	\$5,666,796	97%
ADMS Hardware	\$4,659,004	\$4,659,004	100%
<b>Total ADMS</b>	<b>\$46,478,871</b>	<b>\$66,344,727</b>	<b>70%</b>

Findings & Observations:

- The forecast for the Grid Modernization – ADMS subprogram increased by approximately \$5.4 million from the status as of the end of the prior quarter, with a total current forecast of \$66.3 million. This increase was almost entirely with the OMS scope of the subprogram and was driven by an extended execution schedule and additional resources required, reflecting the challenges encountered with the development of the OMS.
- Following the transition of the subprogram estimate to the Definitive stage at \$56.3 million in the second quarter of 2022, there have been no further updates to the subprogram estimate. PSE&G’s URB approved \$13.6 million in additional funding for the subprogram to be covered by distribution base capital.
- The first of three primary ADMS components (the ADMS Platform) was placed in-service during the first quarter of 2022. The remaining DMS/DERMS and OMS scopes are forecasted to be placed in-service in January 2023 and June 2023, respectively. OSI (vendor) and PSE&G resources continue to collaboratively continue the ADMS development and are addressing issues as they are identified.

**E. Electric Stipulated Base**

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric Outside Plant-Higher Design Standards (OP-HDS) and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>3</sup> As mentioned in the IM’s 2022 Third Quarter Report, PSE&G commenced the OP-HDS in July 2022, but with the current forecasts for the life cycle station upgrade projects consuming the entire Stipulated Base funding (\$101.5 million forecast compared to the \$100.0 million Electric Stipulated Base budget), this work is presently being executed outside of the ES 2 Program. If the forecasts for the substation projects lower and additional funding becomes available, PSE&G may include some of the OP-HDS through the Program

<sup>3</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.



funding. The IM intends to continue to follow the status of this work, but will only report on it should PSE&G include these costs under the ES 2 Program.

In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs. While this shift in funding from stipulated base to accelerated recovery will not be determined until closer to the Program completion, PSE&G identified the Hamilton project as a candidate to be funded through the accelerated recovery mechanism.

As reported in the IM 2020 Second Quarter Report, the initial four stations PSE&G selected for life cycle station upgrades went before the URB in June 2020 for Study level estimate approval and received approval for full funding. In the second quarter of 2021 a fifth station, State Street, was approved by the URB for its outside plant scope to be transferred from the related Electric Station Flood Mitigation project to the life cycle scope. The five life cycle station upgrade projects and their current estimate compared to the actuals to date are provided in **Table 22 – ES 2 Life Cycle Station Upgrade Project Status as of December 31, 2022**.

**Table 22 – ES 2 Life Cycle Station Upgrade Project Status as of December 31, 2022**

Project	Estimate Level	Base	Risk & Contingency*	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date**
<b>1. Hamilton</b>	Definitive	\$17,500,000	-	\$17,500,000	\$14,656,732	84%	10/22/2022 (actual)
<b>2. Paramus</b>	Definitive	\$21,400,000	-	\$21,400,000	\$18,158,600	85%	11/9/2022 (actual)
<b>3. Plainfield</b>	Definitive	\$22,600,000	-	\$22,600,000	\$19,749,610	87%	12/14/2022 (actual)
<b>4. Woodbury</b>	Definitive	\$18,100,000	-	\$18,100,000	\$11,595,702	64%	10/17/2023 (↓ +112)
<b>5. State Street (OP)</b>	Study	\$19,700,000	-	\$19,700,000	\$3,062,699	16%	12/29/2022 (actual)
<b>Total Elec. Stip. Base</b>	-	<b>\$99,300,000</b>	<b>\$700,000</b>	<b>\$100,000,000</b>	<b>\$67,223,343</b>	<b>67%</b>	-

\*-As discussed in the IM 2022 First Quarter Report, during the first quarter of 2022, PSE&G made the decision to hold risk and contingency at the subprogram level.

\*\*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 22**, four of the five life cycle station upgrade projects were placed in-service during the fourth quarter of 2022. This included the State Street (OP) project that had been forecasted to go in-service in April 2023 as of the end of the third quarter of 2022, with the advancement of the in-service date driven by first circuit energization moved into December 2022 to support the State Street project within the Electric Station Flood Mitigation subprogram (essentially the IP scope), with remaining cutovers still planned for 2023. The Woodbury forecasted in-service date slipped 112 days from the status

of the prior quarter, driven by a switchgear foundation installation error that requires rework and results in pushing the initial circuit cutover past the summer outage period. Additional details on each of these life cycle station upgrade projects are provided in the individual subsections that follow.

Findings & Observations:

- Four of the five Life Cycle Station Upgrade projects were placed in-service during the fourth quarter of 2022 (all but Woodbury). Construction continued on the Hamilton, Paramus, Plainfield, and Woodbury projects, while construction started on the State Street OP project with the first circuit placed in-service.
- The cost forecasts for the five life cycle upgrade projects collectively increased by approximately \$1.0 million (or 1.0%) from the status as of the end of the third quarter of 2022 to a total forecast of \$101.5 million at the end of 2022. This increase was predominantly accounted for within the Hamilton and Plainfield projects, while the Woodbury project had a very minor forecast increase (approximately \$3K) and Paramus and State Street OP both had slight decreases to their respective forecasts (collectively an approximately \$123K decrease). For Hamilton and Plainfield, the forecast increases related to higher than estimated Division and commissioning costs for completing the cutovers.
- Updated estimates were approved during the second quarter of 2022 on the Hamilton, Plainfield, and Woodbury projects, each of which advanced to the Definitive estimate stage and each saw the base estimate increase by \$100K to \$600K, with the primary drivers relating to higher than estimated construction costs.

**1. Hamilton**

During the fourth quarter of 2022, \$1,755,731 was spent on the Hamilton project against a forecast of approximately \$1.2 million, which brought total spend on the project to approximately \$14.7 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was primarily attributed to higher than forecasted costs for underground cable installation, additional civil contractor work, and additional traffic control hours to support circuit cutovers. The Hamilton project was placed in-service on October 22, 2022.

Notable activities performed on the Hamilton during the fourth quarter of 2022 included energizing the switchgear, placing it in-service, and cutting over all circuits.

The actual spend by quarter for Hamilton as compared to the current forecast and URB approved estimate is provided below. During the fourth quarter of 2022, the Hamilton project submitted a revised Definitive level estimate for URB approval, which resulted in the base estimate increasing from \$16.8 million to \$17.5 million. This \$0.7 million estimate increase was driven by:

- IP electrical subcontract labor and material higher than estimated (\$0.4 million);
- Additional Relay hours (\$0.2 million); and,
- Higher switchgear procurement costs (\$0.1 million).

Following development and approval of the updated estimate, PSE&G increased the forecast for the Hamilton project by approximately \$500K, which was driven by higher than estimated Division and commissioning costs for completing the cutovers.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$0	\$362,372	\$3,141,022	\$3,770,758	\$3,089,239	\$2,537,609	\$1,755,731	\$3,317,944

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$17,500,000	\$14,656,732	84%
<b>Forecast</b>	\$17,974,676		82%

## 2. Paramus

During the fourth quarter of 2022, \$1,301,265 was spent on the Paramus project against a forecast of approximately \$1.4 million. This brought total spend on the project to approximately \$18.2 million through the end of 2022. The Paramus project was placed in-service on November 9, 2022.

Notable activities conducted during the fourth quarter of 2022 on the Paramus project included the completion of switchgear commissioning and placing it in-service.

The actual spend by quarter for Paramus as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$0	\$840,200	\$7,068,765	\$952,513	\$5,942,564	\$2,053,294	\$1,301,265	\$3,531,644

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$21,400,000	\$18,158,600	85%
<b>Forecast</b>	\$21,690,245		84%

## 3. Plainfield

During the fourth quarter of 2022, \$2,697,705 was spent on the Plainfield project against a forecast of approximately \$2.3 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was driven by a combination of higher than estimated traffic control and material costs, additional engineering hours, and higher actual hours for cutovers. This brought total spend on the project to approximately \$19.7 million through the end of 2022. The Plainfield project was placed in-service as of December 14, 2022.

Notable activities conducted on the Plainfield project during the fourth quarter of 2022 included:

- Completion of switchgear commissioning; and,
- 1<sup>st</sup> circuit cutover and station placed in-service.

The actual spend by quarter for Plainfield as compared to the current forecast and URB approved estimate is provided below. The forecast for the Plainfield project increased by approximately \$578K from the prior quarter, which was driven by higher than estimated Division and commissioning costs for completing the cutovers.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$0	\$682,325	\$3,584,101	\$1,682,480	\$2,682,840	\$8,420,160	\$2,697,705	\$4,042,689

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$22,600,000	\$17,051,906	87%
<b>Forecast</b>	\$23,792,299		83%

#### 4. Woodbury

During the fourth quarter of 2022, \$1,024,742 was spent on the Woodbury project against a forecast of approximately \$1.1 million. This brought the total spend on the project to approximately \$11.6 million through the end of 2022.

The forecasted in-service date for the Woodbury project slipped 112 days from the status as of the end of the prior quarter to October 17, 2023. This slip was due to an error in the switchgear foundation that required rework to correct and resulted in the initial circuit cutover being pushed into the summer outage period. The corrective work on the switchgear foundation was completed later in the fourth quarter of 2022, with the direct construction and additional rigging costs paid for by the contractor. Costs for the foundation redesign were charged back to the contractor and internal PSE&G costs related to this issue are being assessed and will also be back charged.

Notable activities conducted on the Woodbury project during the fourth quarter of 2022 included:

- Start of electrical construction;
- Switchgear delivered; and,
- Switchgear foundation repaired and switchgear set on foundation.

The actual spend by quarter for Woodbury as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$0	\$551,165	\$1,613,823	\$1,460,525	\$1,776,838	\$5,168,609	\$1,024,742	\$6,506,929

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$18,100,000	\$11,622,472	64%
<b>Forecast</b>	\$18,102,631		64%

#### 5. State Street (Outside Plant)

During the fourth quarter of 2022, \$1,371,165 was spent on the State Street (OP) project against a forecast of approximately \$1.3 million, which brought total spend on the project to approximately \$3.1 million. As of the prior quarter, the forecasted in-service date for the State Street OP project was April 21, 2023, which was driven a redesign of the manhole and conduit exits from the substation. During the fourth quarter of 2022, PSE&G was able to move the first circuit energization back into 2022, with the first

circuit in-service as of December 29, 2022. This aligned with the State Street IP energization for the companion project within the Electric Station Flood Mitigation subprogram.

Notable activities conducted during the fourth quarter of 2022 included the start of civil and electrical construction and the energization of circuit 4005.

The actual spend by quarter for State Street (OP) as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$0	\$0	\$211,247	\$395,903	\$100,527	\$983,856	\$1,371,165	\$16,916,220

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$19,700,000	\$3,062,699	16%
Forecast	\$19,978,918		15%

## F. Gas M&R Station Upgrades

During the fourth quarter of 2022, the Camden and East Rutherford projects were placed in-service, while construction continued to advance on Paramus and the Central and Mount Laurel projects continued pre-construction activities. **Table 23 – ES 2 Gas M&R Summary Status as of December 31, 2022** below provides these newly approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

**Table 23 – ES 2 Gas M&R Summary Status as of December 31, 2022**

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
<b>1. Camden*</b>	Definitive	\$21,600,000	\$1,200,000	\$22,800,000	\$19,773,551	87%	<i>Dec 2022 (actual)</i>
<b>2. Central*</b>	Conceptual	\$31,400,000	\$5,500,000	\$36,900,000	\$25,817,651	70%	Nov 2023
<b>3. East Rutherford</b>	Definitive	\$24,100,000	\$1,900,000	\$26,000,000	\$22,817,102	88%	<i>Dec 2022 (actual)</i>
<b>4. Mount Laurel</b>	Conceptual	\$12,700,000	\$3,100,000	\$15,800,000	\$2,085,475	13%	Nov 2023
<b>5. Paramus*</b>	Study	\$11,500,000	\$7,400,000	\$18,900,000	\$1,725,954	9%	Feb 2024 (↓)
<b>6. Westampton</b>	Definitive	\$8,400,000	\$-	\$8,400,000	\$8,476,715	101%	<i>Oct 2021 (actual)</i>
<b>Subprogram Total</b>		<b>\$109,700,000</b>	<b>\$19,100,000</b>	<b>\$128,800,000</b>	<b>\$80,696,447</b>	<b>63%</b>	<b>Dec 2023</b>
*Included in the Stipulated Base.							
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.							
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.							

During the fourth quarter of 2022, there were no updated estimates approved for any of the Gas M&R projects. The cost forecasts were also unchanged for three of the projects (Central, Mount Laurel, and Paramus), while the Camden and East Rutherford projects saw forecast increases of approximately \$2.9

million and \$2.4 million, respectively, and the Westampton project forecast increased approximately \$31K. Collectively, the subprogram forecast increased from approximately \$110.3 million as of the end of the third quarter of 2022 to approximately \$115.6 million as of the end of 2022. Details of the individual forecast changes are discussed within the individual project discussions that follow.

Relative to the forecasted in-service dates shown in **Table 23**, as of the end of 2022, the forecasted in-service dates for the three remaining Gas M&R projects was unchanged from the prior quarter for Mount Laurel and Central (both remaining at November 2023), while the Paramus project's forecasted in-service date slipped from December 2023 to February 2024 later than planned deliver of the heater building, which pushes out other construction activities.

#### Findings & Observations:

- During the fourth quarter of 2022, the Camden and East Rutherford projects were placed in-service, joining the previously completed Westampton project and leaving three projects remaining in the Gas M&R subprogram (Central, Mount Laurel, and Paramus).
- The three remaining projects continued to advance at various stages of development, with Central actively in construction and Mount Laurel and Paramus continuing pre-construction activities with construction planned to commence in the second quarter of 2023 for both projects.
- The only change to the forecasted in-service dates from the status as of the end of the prior quarter was to the Paramus project, which encountered a forecasted delay to the delivery of the heater building, resulting in a shift of all related construction activities. PSE&G and its contractor are evaluating opportunities to re-sequence work to mitigate the impacts and are continuing discussions with the heater building vendor to expedite delivery if possible.
- With the Paramus project encountering a forecasted equipment delay, this project is currently forecasted to be completed in February 2024, after the December 2023 Program end date. The status of PSE&G efforts to regain the schedule will be monitored and reported on in future reports.
- The overall Gas M&R subprogram forecast increased by approximately \$5.3 million from the end of the prior quarter, which was virtually entirely driven by forecast increases for the Camden and East Rutherford projects. In both projects the forecast increase was largely driven by additional construction work and support, including higher than estimated water disposal costs. The overall Gas M&R subprogram forecast is now at approximately \$115.6 million, above the Stipulation amount of \$101.0 million, but under PSE&G's current \$128.8 million funding for the subprogram.

#### 1. Camden

During the fourth quarter of 2022, the recorded spend on the Camden project was -\$6,934,318 compared to a forecast of approximately -\$6.8 million, which reflected the LPA-associated costs being removed from the ES 2 project costs and as a result reduced the total spend to approximately \$19.8 million. The Camden project was placed in-service as of December 30, 2022.

Notable activities on the Camden project during the fourth quarter of 2022 included:

- Received and set in place the regulating control skids;
- Completed Transco tie-in;

- Completed temporary power connections and energized;
- Completed hydrotest of station inlet piping and made final connections;
- Completed distribution system tie-ins;
- Continued control building fit out; and,
- Gassed in all piping and placed pressure regulating system in-service.

Remaining work on Camden includes the completion of storm sewer tie-ins, final fit out of the control room, delivery, installation and startup of the electrical switchgear, switchover to site permanent power, demolition of existing buildings, security improvements, and final grading and paving of the site.

The actual spend by quarter for Camden as compared to the current forecast and URB approved estimate is provided below. The forecast for the Camden project increased by approximately \$2.9 million from the status as of the end of the third quarter of 2022 to a current forecast of approximately \$24.5 million as of the end of 2022. This increase was driven by construction change orders and additional environmental costs for water and soil disposal.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$13,326	\$859,350	\$2,147,696	\$2,791,701	\$7,655,276	\$13,240,520	(\$6,822,220)	\$4,710,072

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$22,800,000		
<b>Forecast</b>	\$24,483,623	81%	

## 2. Central

During the fourth quarter of 2022, \$2,164,525 was spent on the Central project compared to a forecast of slightly under \$1.0 million, which brought the total spend to approximately \$25.8 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was attributed to material invoices coming in higher than what was accrued, more piping being installed than forecasted, and additional environmental costs incurred. The forecasted in-service date for the Central project as of the end of 2022 remains at November 30, 2023, unchanged from the status as of the end of the prior quarter.

Notable activities on the Central project during the fourth quarter of 2022 included:

- Completed foundations for piers and pipe supports;
- Completed erection of regulator and heater buildings;
- Received large control valves;
- Began pipe rack installation;
- Completed partial hydro testing of piping sections;
- Set heaters and circulating pumps; and,
- Continued electrical and plumbing rough in.

The actual spend by quarter for Central as compared to the current forecast and URB approved estimate is provided below. The forecast of \$31.4 million for the Central project remains unchanged from the status as of the end of the prior quarter.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$6,869	\$670,582	\$4,226,277	\$7,112,617	\$7,029,778	\$4,607,003	\$2,164,525	\$5,582,350

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$36,900,000	\$25,817,650	70%
<b>Forecast</b>	\$31,400,000		82%

### 3. East Rutherford

During the fourth quarter of 2022, \$8,212,614 was spent on the East Rutherford project compared to a forecast of approximately \$9.9 million, which brought the total spend to approximately \$22.8 million. The variance in forecasted to actual spend during the fourth quarter of 2022 was driven by delays in completion of the building flooring that impacted construction sequencing and resulted in delaying receipt of material due to limited space in the laydown area and electrical work and site restoration activities forecasted for December that were pushed into 2023 to maintain the in-service date. The East Rutherford project was placed in-service as of December 23, 2022.

Notable activities on the East Rutherford project during the fourth quarter of 2022 included:

- Installed 20” inlet header, 24” and 30” outlet headers;
- Completing pressure testing of piping;
- Made final tie-ins of inlet piping and header;
- Placed regulator runs in-service (two in November, the remaining five in December);
- Placed new heaters in-service; and,
- Continued wire pulling and terminations.

Remaining work on East Rutherford involves completion of the regulator building walls and lighting, refurbishment of the scrubber pads, final fit out of the control room, installation and commissioning of the MEG unit, fencing and security, and final grading and site paving.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the East Rutherford project increased by \$2.4 million from the status as of the end of the third quarter of 2022 to a current forecast of \$26.5 million as of the end of 2022. This increase was driven by a combination of construction change orders, additional M&R support for commissioning activities, additional Transco fees, additional water disposal following significant rain events, and additional construction support.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>						<i>Forecast</i>	
\$9,010	\$521,865	\$1,783,623	\$1,551,290	\$4,413,835	\$6,324,865	\$9,010,011	\$485,502

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$26,000,000	\$22,817,102	88%
<b>Forecast</b>	\$26,500,000		86%



#### 4. Mount Laurel

During the fourth quarter of 2022, \$404,693 was spent on the Mount Laurel project compared to a forecast of approximately \$526K, which brought the total spend to approximately \$2.1 million. The forecasted in-service date for the Mount Laurel project as of the end of 2022 remained unchanged from the status as of the end of the prior quarter at November 30, 2023.

Notable activities on the Mount Laurel project during the fourth quarter of 2022 included:

- Completed final reviews and issued IFC drawings;
- Submitted site plan application to the Mount Laurel planning board and received approval;
- Finalized lease agreement for laydown area; and,
- Continued discussions with Transco for coordination with their project.

Construction activities on Mount Laurel remain planned to commence in the second quarter of 2023.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Mount Laurel project remained unchanged from the status as of the prior quarter at \$12.7 million.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$5,965	\$362,167	\$527,341	\$135,639	\$42,260	\$607,409	\$404,693	\$10,614,525

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$15,800,000	\$2,085,475	13%
<b>Forecast</b>	\$12,700,000		16%

#### 5. Paramus

During the fourth quarter of 2022, \$408,342 was spent on the Paramus project compared to a forecast of approximately \$453K, which brought the total spend to approximately \$1.7 million. The forecasted in-service date for the Paramus project as of the end of 2022 slipped 55 days from the status as of the end of the prior quarter to February 22, 2024 a forecasted delay to the delivery of the heater building, which shifts out other construction activities. PSE&G and its contractor are evaluating opportunities to re-sequence work to improve the in-service date and are continuing discussion with the heater building vendor to expedite delivery if possible.

Notable activities on the Paramus project during the fourth quarter of 2022 included:

- Received construction bids and commenced evaluation; and,
- Received interconnection agreement from Transco for review.

Construction activities on the Paramus project remain planned to commence in the second quarter of 2023.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Paramus project as of the end of 2022 remained unchanged from the prior quarter at \$12.0 million.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023-2024
<i>Actuals</i>							<i>Forecast</i>
\$8,842	\$462,452	\$568,344	\$94,755	\$115,998	\$67,221	\$408,342	\$10,274,047

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$18,900,000	\$1,725,953	9%
<b>Forecast</b>	\$12,000,000		14%

**6. Westampton**

During the fourth quarter of 2022, \$63,654 was spent on the Westampton project compared to a forecast of approximately \$56K, which brought the total spend to approximately \$8.5 million. The Westampton was placed in-service as of October 22, 2021, final punch list items were worked down and completed during the fourth quarter of 2022 and a final inspection was scheduled with the township. This effectively concludes the Westampton project.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2023
<i>Actuals</i>							<i>Forecast</i>
\$8,395	\$1,032,670	\$6,961,216	\$178,124	\$132,517	\$100,140	\$56,123	\$27,075

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$8,400,000	\$8,476,715	101%
<b>Forecast</b>	\$8,503,790		100%

ENERGY STRONG 2 PROGRAM  
INDEPENDENT MONITOR  
2023 FIRST QUARTER REPORT



PREPARED AND SUBMITTED BY  
PEGASUS GLOBAL HOLDINGS, INC.®

**CONFIDENTIAL**

JUNE 26, 2024

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### List of Acronyms and Abbreviations

Advanced Distribution Management Systems .....	ADMS
Allowance for Funds Used During Construction .....	AFUDC
Architect and Engineer.....	A/E
Asset Management & Centralized Services .....	AMCS
Board of Public Utilities .....	BPU
Construction Work In Progress.....	CWIP
Costs of Removal.....	COR
Distribution Management System.....	DMS
Distributed Energy Resource Management System .....	DERMS
Distribution Supervisory Control and Data Acquisition.....	DSCADA
Energy Strong 2 .....	ES 2
Gas Metering & Regulating .....	Gas M&R
Generally Accepted Accounting Principles.....	GAAP
Independent Monitor.....	IM
Inside Plant .....	IP
Issued for Bid.....	IFB
Issued for Construction .....	IFC
Liquid Propane Air .....	LPA
Open Systems International Inc. ....	OSI
Operations & Maintenance .....	O&M
Outage Management System.....	OMS
Outside Plant.....	OP
Outside Plant-Higher Design Standards.....	OP-HDS
Public Service Electric & Gas .....	PSE&G
Purchase Order.....	PO
Quality Assurance System .....	QAS
Record of Decision .....	ROD
Remote Terminal Unit .....	RTU
Risk and Contingency .....	R&C

Supervisory Control and Data Acquisition..... SCADA  
System Integration Testing .....SIT  
Transmission & Distribution..... T&D  
Utility Review Board..... URB

## I. Executive Summary

Public Service Electric & Gas's (PSE&G's) Energy Strong 2 (ES 2) Program was established from a Stipulation that the involved parties agreed to in August 2019, as approved by a Board of Public Utilities (BPU) Order dated September 11, 2019, with an effective date of September 21, 2019. The Stipulation provided the ES 2 Program would be comprised of five primary subprograms: Electric Station Flood Mitigation; Contingency Reconfiguration; Grid Modernization – Communications; Grid Modernization – Advanced Distribution Management Systems (ADMS); and Gas Metering & Regulating (Gas M&R) Station Upgrades. In addition, a Stipulated Base spend was established that includes both an electric component (higher outside plant design standards and station life cycle upgrades)<sup>1</sup> and a gas component (overlapping with the Gas M&R subprogram). This report contains the Independent Monitor's (IM's) findings and observations on the ES 2 Program elements and other information on the Program's status as of the first quarter of 2023.

During the first quarter of 2023, the bulk of the spend within the ES 2 Program continued to be within the Electric Station Flood Mitigation, which accounts for approximately 46% of the total Program budget and saw approximately 43% of the overall Program spend during the first quarter of 2023. As of the end of the first quarter of 2023, 14 of the 16 Electric Station Flood Mitigation projects were in various stages of construction and seven of the 16 projects had been placed in-service. Within the Contingency Reconfiguration subprogram, the Fuse Saver installations continued to advance, with an additional 284 units installed during the first quarter of 2023, bringing the total units installed to date on the Program to 961 out of a current scope of 1,338 units. The Grid Modernization – Communication System subprogram continued to have one remaining fiber project to complete, the completion of which is dependent upon securing an outage from Amtrak. Within the Grid Modernization – ADMS subprogram, the Distribution Management System (DMS)/Distributed Energy Resource Management System (DERMS) scope was placed in-service in January 2023 and PSE&G commenced its 1,000-hour availability testing. The Outage Management System (OMS) scope continues to advance, although the forecasted in-service date slipped from June to October 2023, with issues and defects from the System Integration Testing (SIT) being actively worked through. Three of the four life cycle station upgrade projects that are part of the Electric Stipulated Base projects were placed in-service during the fourth quarter of 2022. Additionally, one of the outside plant distribution circuits associated with the State Street Outside Plant (OP) project was likewise placed in-service during the fourth quarter of 2022.<sup>2</sup> With the advancement of those scopes of work, PSE&G has higher confidence to target the use of the remaining funds within the Electric Stipulate Base budget to perform Outside Plant-Higher Design Standards (OP-HDS) work on selected circuits. Within the Gas M&R subprogram, work continued to advance on the three projects yet to go in-service, with Paramus currently forecasted for a January 2024 in-service date after encountering delays with delivery of its heater building.

<sup>1</sup> In accordance with an Agreement made by and between PSE&G, Rate Counsel, and BPU Staff, the Company would also recover the overage for the State Street project within the Electric Station Flood Mitigation subprogram (difference between the original estimate for the State Street project and the updated estimate following the change in mitigation method) in a following rate case.

<sup>2</sup> Note: prior IM reports erroneously referred to the State Street OP project as a life cycle project, however this project is not a life cycle station, nor is the work being performed under this project associated with any life cycle station work. This project consists of the outside plant work associated with the State Street Electric Flood Mitigation Station project.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of March 31, 2023** below provides the spend to date on the subprograms within the ES 2 Program and Stipulated Base compared to the total forecast and forecasted completion for each.

**Table 1 – ES 2 Subprogram & Stipulated Base Status as of March 31, 2023**

Subprogram	2023 Q1 Spend	Total Spend to Date*	Total Forecast*	% of Actuals to Forecast	Forecasted Completion**	Stipulation Funding Amount***
Electric Station Flood Mitigation	\$22,588,632	\$241,927,983	\$370,679,548	65%	May 2024	\$389M
Contingency Reconfiguration	\$8,812,837	\$134,701,247	\$145,468,003	93%	Sep 2023	\$145M
Grid Modernization – Communications	\$779,310	\$64,003,971	\$66,073,965	97%	Dec 2023	\$64.3M
Grid Modernization – ADMS	\$4,996,793	\$51,475,663	\$68,455,367	75%	Oct 2023	\$42.7M^
Electric Stipulated Base	\$8,989,429	\$76,212,773	\$110,459,512	69%	Dec 2023	\$100M
Gas M&R Station Upgrades^^	\$6,611,412	\$87,307,859	\$135,238,833	65%	Jan 2024	\$101M^^^
<b>Total*</b>	<b>\$52,778,413</b>	<b>\$655,629,496</b>	<b>\$896,375,157</b>	<b>73%</b>	<b>May 2024</b>	<b>\$842M</b>

\*-Note: total figures may not fully align due to rounding. Additionally, the total forecast includes only the base cost for the Electric Station Flood Mitigation and Gas M&R subprograms as PSE&G does not include risk and contingency (R&C) in its forecasts for these projects. See **Table 12** and **Table 23** for the Electric Station Flood Mitigation and Gas M&R project estimates, respectively, with base costs and R&C shown.

\*\*-Final in-service date.

\*\*\*-Following the \$7.7 million transfer in July 2021 from the Grid Modernization – Communications subprogram to the Grid Modernization – ADMS subprogram.

^-PSE&G has increased the funding for the Grid Modernization – ADMS subprogram by \$13.6 million over the Stipulation amount to a total of \$56.3 million (including \$2.8 million in R&C).

^^-Includes both the ES 2 projects and the Stipulated Base gas projects.

^^^PSE&G has increased the funding for the Gas M&R subprogram by \$27.8 million over the Stipulation amount to a total of \$128.8 million (including \$24.6 million in R&C). This R&C balance is currently at \$19.1 million as of the end of 2022.

Given the prominence of the Electric Station Flood Mitigation subprogram, which represents over half of the total ES 2 Program spending, a summary of the projects within this subprogram is provided below in **Table 2 – ES 2 Electric Station Flood Mitigation Status as of March 31, 2023.**

**Table 2 – ES 2 Electric Station Flood Mitigation Status as of March 31, 2023**

Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
1. Academy Street	\$9,300,000	\$7,629,986	82%	<b>10/19/2021</b>
2. Clay Street	\$33,600,000	\$26,165,376	78%	4/25/2023 (↓+5)
3. Front Street^	\$27,700,000	\$13,978,195	51%	12/26/2023 (↑-31)
4. Hasbrouck Heights	\$19,300,000	\$17,854,688	93%	<b>11/21/2022</b>
5. Kingsland	\$8,700,000	\$5,490,647	63%	10/4/2023
6. Lakeside Avenue	\$33,500,000	\$6,132,366	18%	4/9/2024 (↓+41)
7. Leonia	\$24,900,000	\$25,520,740	103%	<b>11/15/2022</b>
8. Market Street	\$29,100,000	\$28,193,933	97%	<b>6/25/2021</b>
9. Meadow Road	\$8,800,000	\$4,943,759	56%	9/28/2023
10. Orange Valley	\$15,000,000	\$3,111,698	21%	12/22/2023 (↑-56)



Project	Total Estimate (rounded)	Actuals	% of Actuals to Estimate	Forecasted In-Service Date*
11. Ridgefield 13kV	\$26,100,000	\$28,465,903	109%	<b>12/12/2022</b>
12. Ridgefield 4kV	\$20,700,000	\$20,703,808	100%	<b>5/16/2021</b>
13. State Street	\$19,600,000	\$14,576,043	74%	<b>12/29/2022</b>
14. Toney's Brook	\$16,000,000	\$9,656,954	60%	5/8/2023 (↑-2)
15. Waverly	\$39,900,000	\$22,005,935	55%	5/10/2024 (↓+3)
16. Woodlynne	\$24,000,000	\$7,498,020	31%	11/9/2023 (↓+13)
<p>*-Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover). <b>Bold</b> dates indicate the actual in-service date.</p> <p>(↑)-Indicates the forecasted in-service date advanced from the prior quarter.</p> <p>(↓)-Indicates the forecasted in-service date slipped from the prior quarter.</p> <p>^ - The Front Street project was proposed by PSE&amp;G during the second quarter of 2021 to replace the cancelled Constable Hook project.</p>				

As indicated in **Table 2**, no additional Electric Station Flood Mitigation projects were placed in-service during the first quarter of 2023, leaving the total projects in-service in this subprogram at seven out of 16 projects. Clay Street and Toney's Brook are the next projects forecasted to be placed in-service, each projected within the second quarter of 2023. **Table 2** also shows that three of remaining projects had moderate movement of more than two weeks to their respective forecasted in-service dates during the first quarter of 2023, including Front Street, Lakeside Avenue, and Orange Valley, with Front Street notably returning to a forecasted in-service date by the end of 2023. Additionally, two of the stations (Front Street and Kingsland) had a new estimate approved by the PSE&G's Utility Review Board (URB) during the first quarter of 2023.

As per N.J.A.C. Section 14:3-2A.5(c)2, the IM reports are to address:

- i. *The effectiveness of Infrastructure Investment Program investments in meeting project objectives;*
- ii. *The cost-effectiveness and efficiency of investments;*
- iii. *The appropriateness of cost assignments; and*
- iv. *Any other information required by the Board.*

The IM focuses the majority of the discussion within each report on these primary objectives, after introducing summarized the findings on these areas in the IM 2023 First Quarter Report, the IM will continue to provide a summary on these areas for each report with an emphasis on new information relative to the current reporting period. These summarized findings are as follows:

- **Effectiveness of ES 2 investments in meeting project objectives:** The objectives for each subprogram within the ES 2 were defined within PSE&G's ES 2 filing and confirmed by the Stipulation. The overall objectives focused on improving system resiliency, reliability, and hardening through rebuilding or replacing selected substations, installing smart control and monitoring devices on distribution circuits (reclosers, fuse savers, etc.), installing ADMS and a new communication system, and rebuilding selected Gas M&R stations. Within **Section III** of this report, the IM provides a review of the status of the efforts performed to meet these

objectives for each subprogram. During the first quarter of 2023, the following projects/scopes were placed in-service and/or completed:

- Electric Station Flood Mitigation: Academy Street, Hasbrouck Heights, Leonia, Market Street, Ridgefield 4kV, Ridgefield 13kV, and State Street were previously placed in-service. During the first quarter of 2023, no additional projects were placed in-service, with Clay Street and Toney's Brook the next projects forecasted to go in-service, each projected for the second quarter of 2023.
  - Contingency Reconfiguration: Following the completion of the recloser scope in early 2022, the Fuse Saver installations continued with 284 units installed during the quarter (961 units installed on the Program in total out of a currently planned scope of 1,338 units). The overall number of Fuse Savers planned for the Program continues to be adjusted based on the actual cost per unit observed to maintain alignment with the budget.
  - Grid Modernization – Communication System: 218 substations previously received Remote Terminal Unit (RTU) retrofits in the Program, 12 out of 12 fiber cutover projects, and 33 out of 34 fiber installation projects were previously completed. The final fiber installation project (Edison) is awaiting to be scheduled pending alignment with Amtrak to secure a required outage.
  - Grid Modernization – ADMS: ADMS Platform previously placed in-service and completed decommissioning of legacy production. DMS/DERMS scope placed in-service in January 2023 and commenced 1,000-hour availability testing.
  - Electric Stipulated Base: Three of the four life cycle station upgrade projects were previously placed in-service during the fourth quarter of 2022, along with the State Street OP project (associated with the outside plant scope of the State Street Electric Station Flood Mitigation project). The final life cycle station upgrade project (Woodbury) continues to be forecasted for an October 2023 in-service date. PSE&G has also continued to assess the remaining Stipulate Base funds to determine and plan selected circuits eligible for OP-HDS that may be included the ES 2 Program subject to funding availability.
  - Gas M&R: Westampton was previously placed in-service in October 2021 and the Camden and East Rutherford projects were placed in-service during the fourth quarter of 2022. This leaves three projects remaining (Central, Mount Laurel, and Paramus), which are forecasted to go in-service during the fourth quarter of 2023, with the exception of Paramus, which continues to be forecasted with an early 2024 in-service date following prior delays to the delivery of the heater building.
- **Cost-effectiveness and efficiency of investments:** To assess the cost effectiveness and efficiency of ES 2 investments, the IM began with a review of the initial scope, estimate, and related planning documents for each project to establish a baseline to monitor progress against as the work advances. As the Program execution advances, the IM continues to evaluate actual costs against the initial estimates and current forecasts, including seeking additional information relating to any variances identified. The overall Program's current cost forecast now above the Stipulation amount, reflecting the cost increases that as observed by the IM have largely stemmed from scope evolution and/or more detailed estimates from the time of the ES 2 filing, as well as

changes in general market conditions (e.g. Covid-19 impacts, supply chain issues, etc.). The updated subprogram forecasts as of the end of the first quarter of 2023 compared to the end of the prior quarter were as follows:

- Electric Station Flood Mitigation: subprogram forecast increased approximately \$8.7 million (or 2.4%) to approximately \$370.7 million. The Waverly project accounted for approximately \$2.5 million of this forecast increase and was driven by a combination of additional manhole work, updated resource requirements, construction schedule recovery efforts, and higher than estimated award for steel and cable.
  - Contingency Reconfiguration: subprogram forecast decreased approximately \$1.8 million (or -1.2%) to approximately \$145.5 million and driven by a reduction in the planned number of Fuse Savers for the Program (reduced from 1,574 units to 1,338 units) due to the highest cost per unit experienced.
  - Grid Modernization – Communication System: subprogram forecast decreased approximately \$146K (or -0.2%) to approximately \$66.1 million.
  - Grid Modernization – ADMS: subprogram forecast increased approximately \$2.1 million (or 3.2%) to approximately \$68.5 million. This increase was almost entirely within the OMS scope of the subprogram that continues to challenge PSE&G.
  - Electric Stipulated Base: subprogram forecast increased approximately \$8.9 million (or 8.8%) to approximately \$110.5 million. This increase was almost entirely from the State Street Outside Plant (OP) project and driven by a revised overhead configuration, additional underground engineering and test pits, and underground permitting requirements.
  - Gas M&R: subprogram forecast increased approximately \$19.7 million (or 17.0%) to approximately \$135.2 million. This increase was largely due to an updated forecast on the Paramus project (increasing from \$12.0 million to \$27.6 million) that followed the similar cost pressures experienced on the earlier Gas M&R projects.
- **Appropriateness of cost assignments:** The IM receives and reviews recurring data concerning the accumulation of costs within the Program. Based on that review, the IM submits follow-up questions to the Company regarding that data for the reporting period. Such follow-up questions generally focus on the following aspects:
    - Review of any unusual changes in cost elements from period-to-period, including but not limited to allowance for funds used during construction (AFUDC), cost of removal (COR), and the allocation of overheads.
    - Review spend on capital accounts, such as Construction Work in Progress (CWIP) as it relates to overall spend, AFUDC, and COR.
    - Verify cost accumulations and classifications appear to be in accordance with Generally Accepted Accounting Principles (GAAP), to the extent the IM has access to such information.
    - Review and investigation of prior period adjustments and/or corrections to capital accounts.

- Engage the Company’s Internal Audit group on specific areas to audit, review, and assess – particularly for areas in which the IM has limited or no visibility (proprietary data, accounting systems, etc.).

Through the above steps, the IM tracks and monitors how the Company is recording costs to support the finding that the cost assignments appear to be appropriately applied. These cost items are discussed further within **Section II.C** of this IM report.

## II. Program Status

### A. Key Decisions

In order to capture formalized key decisions regarding the ES 2 Program, PSE&G completes a “Record of Decision” (ROD) that includes a description of the decision; alternatives considered; the decision made; and rationale for the decision. The RODs are assessed by the IM as they are completed to review their impact to the Program. In addition, the IM may request PSE&G complete a ROD to formalize a decision if such a decision has not yet been formalized through the ROD process.

The current and pending RODs as of the date of this IM 2023 First Quarter Report are presented below in **Table 3 – ES 2 Records of Decisions**.

*Table 3 – ES 2 Records of Decisions*

Subprogram	Record of Decision	IM Comments
Electric Station Flood Mitigation	Academy Street & State Street Change in Mitigation Method	Reasonable and appropriate ( <i>See Section B.1. in the IM 2020 First Quarter Report</i> )
Electric Station Flood Mitigation	Engineering Support for Energy Strong Program Projects	Reasonable and appropriate ( <i>See Section B.2. in the IM 2020 First Quarter Report</i> )
Grid Modernization – Communication System	Wireless Communication Network	Reasonable and appropriate ( <i>See Section II.A.1. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Substation Communication Center	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Third Quarter Report</i> )
Grid Modernization – Communication System	Fiber Scope	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Third Quarter Report</i> )
Electric Station Flood Mitigation	Constable Hook, Lakeside, & Orange Valley Change in Mitigation Method	Reasonable and appropriate ( <i>See Sections II.A.3. and IV.B. in the IM 2020 Third Quarter Report and additional discussion in Section II.A.1. and Section IV.B. of the IM 2020 Fourth Quarter Report</i> )
Grid Modernization – Communication System	Communication Retrofit of Replacement and non-ES-II Units	Reasonable and appropriate ( <i>See Section II.A.2. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Market Street Radioactive Soil Testing and Handling	Reasonable and appropriate ( <i>See Section II.A.3. in the IM 2020 Fourth Quarter Report</i> )
Electric Station Flood Mitigation	Transfer of Clay Street Wastewater Wall Scope from ES2FM to Clay Street 69kV Project	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2020 Fourth Quarter Report</i> )

Subprogram	Record of Decision	IM Comments
Contingency Reconfiguration	Energy Strong II Electric Program – Contingency Reconfiguration Subprogram, 13kV and 4kV Reclosers	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.1. in the IM 2021 Second Quarter Report</i> )
Grid Modernization – ADMS	Outage Management System (OMS) Implementation	Reasonable and appropriate ( <i>See Section IV.A. in the IM 2021 First Quarter Report and Section II.A.2. the IM 2021 Second Quarter Report</i> )

During the first quarter of 2023, there were no additional RODs issued.

## **B. Program Management**

Beginning in July 2020, the IM began participating in a bi-weekly call with PSE&G to review its bi-weekly ES 2 Program Dashboard. As with the original Energy Strong Program, the Dashboard provides a mechanism for PSE&G to monitor and control activities to be completed in order to achieve key near-term milestones, including a focus on recently completed activities, any key issues, and other key metrics (e.g. installation targets) as appropriate. These calls have proven to be an effective way for the IM to stay informed on current and upcoming activities and to allow a venue for discussions between the IM and PSE&G on these activities and status updates and continue to be held on a recurring basis.

## **C. Cost Assignments**

### **1. Costs of Removal (COR)**

Costs of Removal (COR) generally include costs for such activities as environmental removal, removal of inside station equipment, structures, foundations, towers and fixtures, conductors and other electrical devices, poles and fixtures, transformers, plant demolition, foundations, and removal of underground conduit and other wiring. Generally, COR are charged to Accumulated Depreciation and are amortized and recovered through a component of depreciation expense. The specific method and amount of recovery is determined in gas and electric rate cases before the BPU.

**Table 4 – ES 2 Program Costs of Removal as of March 31, 2023** below itemizes the charges to COR for the first quarter of 2023, total COR for the years 2022, 2021, 2020, 2019 (from when COR charges were initially reported in the fourth quarter), and total ES 2 COR to date. These amounts do not reflect any salvage value reductions, which have been *de minimis* (about \$0.5 million) in the ES 2 program through March 31, 2023.

**Table 4 – ES 2 Program Costs of Removal as of March 31, 2023**

Subprogram	Q1 2023	Total 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total COR
	<i>(in \$ thousands)</i>					
Electric Station Flood Mitigation	\$2,317.5	\$2,304.8	\$5,558.7	\$1,021.1	\$0	\$11,202.2
Contingency Reconfiguration	\$434.9	\$577.0	\$2,250.2	\$2,198.9	\$431.0	\$5,892.0
Grid Modernization – Communications	\$0.0	\$30.3	\$137.8	\$24.4	\$0	\$192.5

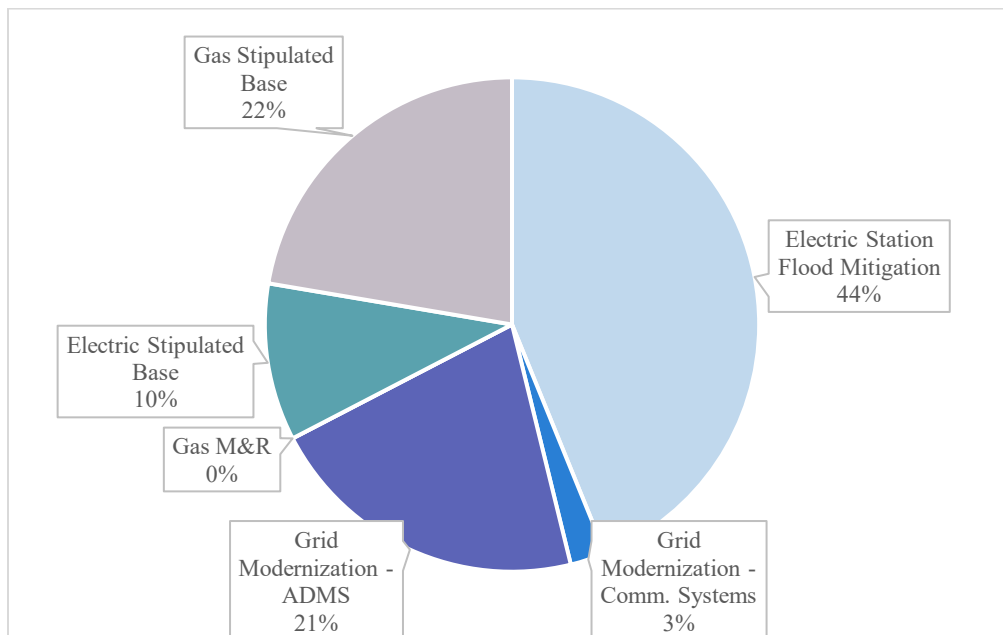
Subprogram	Q1 2023	Total 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total COR
<i>(in \$ thousands)</i>						
Grid Modernization – ADMS	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Electric Stipulated Base	\$375.2	\$1,104.1	\$150.0	\$0.0	\$0.0	\$1,629.3
Gas M&R Station Upgrades	(\$1.7)	\$795.4	\$149.0	\$0.0	\$0.0	\$882.9
Gas Stipulated Base	(\$1.1)	\$369.5	\$196.1	\$0.0	\$0.0	\$625.3
<b>Total</b>	<b>\$3,124.8</b>	<b>\$5,181.1</b>	<b>\$8,441.8</b>	<b>\$3,244.4</b>	<b>\$431.0</b>	<b>\$20,424.2</b>

The COR charges for the first quarter of 2023 were predominantly incurred in the Electric Station Flood Mitigation subprogram and primarily reflect removal of old 4kV feeder rows at the Hasbrouck Heights (approximately \$0.5 million) and Front Street (approximately \$0.4 million) projects; approximately \$0.4 million for removal of old cables at the Ridgefield 13kV project; and \$0.4 million of costs associated with the removal of the old 26kV bus system and related equipment at the Waverly project.

**2. Construction Work-in-Progress (CWIP) & In-Service Transfers**

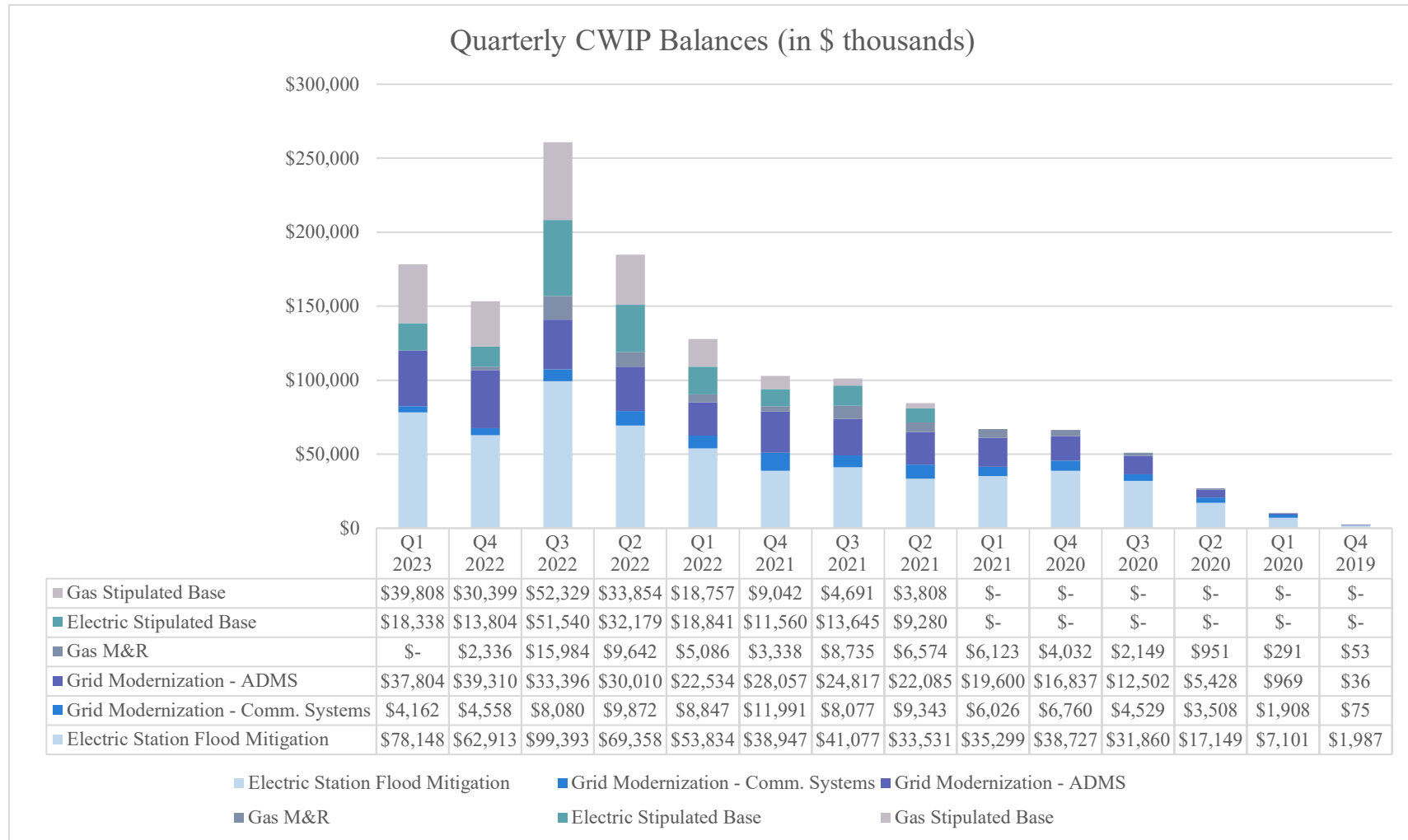
As of March 31, 2023, the ES 2 CWIP balance was \$178.3 million, compared to \$153.2 million as of December 31, 2022. The largest components of CWIP as of the end of the first quarter of 2023 were the Clay Street (\$27.2 million), Toney’s Brook (\$9.9 million), and Waverly (\$9.5 million) projects within the Electric Station Flood Mitigation subprogram; the Central (\$29.6 million) Gas Stipulated Base M&R project; the Woodbury (\$13.1 million) lifecycle station upgrade project under the Electric Stipulated Base; and work associated with the ADMS subprogram (\$37.8 million). The Electric Station Flood Mitigation subprogram comprises the largest component of total end of period CWIP outstanding, as depicted in **Figure 1 – ES 2 CWIP as of March 31, 2023** below.

**Figure 1 – ES 2 CWIP as of March 31, 2023**



In addition, **Figure 2 – ES 2 CWIP Balances by Subprogram as of March 31, 2023** below depicts the composition of end-of-quarter CWIP balances by subprogram for the first quarter of 2023, each quarter of 2022, 2021 and 2020, and the fourth quarter of 2019.

**Figure 2 – ES 2 CWIP Balances by Subprogram as of March 31, 2023**



Transfers from CWIP to plant-in-service during the first quarter of 2023 were \$6.6 million. Total ES 2 transfers from CWIP to plant-in-service have been \$245 million through March 31, 2023. It should be noted that work related to certain assets, such as the reclosers under the Contingency Reconfiguration subprogram, generally can be completed without being recorded through CWIP. As such, no AFUDC is recorded on these expenditures. This accounting treatment is in accord with generally accepted accounting principles and the Company's accounting policies.

### **3. Allowance for Funds Used During Construction (AFUDC)**

The amount of quarterly AFUDC recorded by the Company for each ES 2 subprogram during the first quarter of 2023, the fourth quarter of 2022 (for comparative purposes), total AFUDC for the years for the years 2022, 2021, 2020 and 2019, and total ES 2 AFUDC accrued to date, is shown below in **Table 5 – ES 2 Program AFUDC as of March 31, 2023**.

**Table 5 – ES 2 Program AFUDC as of March 31, 2023**

Subprogram	Q1 2023	Q4 2022	Total 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total AFUDC
	<i>(in \$ thousands)</i>						
<b>Electric Station Flood Mitigation</b>	\$1,120.8	\$1,365.6	\$4,354.2	\$2,281.2	\$936.5	\$9.9	<b>\$8,702.6</b>
<b>Contingency Reconfiguration</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	<b>\$0.0</b>
<b>Grid Modernization – Communications</b>	\$25.5	\$56.6	\$393.8	\$386.9	\$184.3	\$0.2	<b>\$990.7</b>
<b>Grid Modernization – ADMS</b>	\$631.5	\$614.8	\$1,976.3	\$1,365.6	\$352.7	\$0.1	<b>\$4,326.2</b>
<b>Electric Stipulated Base</b>	\$268.5	\$589.1	\$1,848.0	\$524.6	\$44.0	\$0.0	<b>\$2,685.1</b>
<b>Gas M&amp;R Station Upgrades (incl. Stip. Base)</b>	\$512.7	\$850.9	\$2,188.6	\$470.0	\$70.0	\$0.2	<b>\$3,241.5</b>
<b>Total</b>	<b>\$2,559.0</b>	<b>\$3,477.0</b>	<b>\$10,760.9</b>	<b>\$5,028.3</b>	<b>\$1,587.5</b>	<b>\$10.4</b>	<b>\$19,946.1</b>

AFUDC accrued for ES 2 projects during the first quarter of 2023 decreased from AFUDC accrued during the fourth quarter of 2022 as the result of decreases in average total intraperiod gas and electric CWIP balances. The Company uses a mid-month convention for calculating AFUDC.

### **4. Allocated Overheads**

PSE&G follows a philosophy of allocating overhead costs, whether at the Service Company or from utility support organizations, to the operating company or unit receiving the benefit, and ultimately, if appropriate, settling costs to individual assets. Where possible, services are charged directly to the entity receiving the benefit, but where direct charging of costs is not feasible, cost allocations from the Service Company to operating companies are prescribed in a BPU-approved schedule issued pursuant to a BPU order in July 2003. This Order was amended by a BPU Order dated June 8, 2022, allowing the company to transfer certain employees to the PSE&G Service Company in an effort to better support transmission growth opportunities and projects. This action had no impact on existing overhead allocations. The Stipulation requires the Company to follow its current practices with regard to capitalized overheads.

For ES 2 electric and gas distribution projects, allocated overhead costs should primarily come from utility-related labor costs associated with administrative and supervisory personnel, labor and other costs associated with bargaining unit personnel, fringe benefits, materials handling costs, payroll taxes and depreciation expense. Shown below in **Table 6 – ES 2 Program Overhead Allocations as of March 31, 2023** are the allocated overhead costs charged to ES 2 projects for the first quarter of 2023, the fourth



quarter of 2022 (for comparative purposes), total allocated overheads for the years 2022, 2021, 2020, 2019 and total ES 2 allocated overheads to date.

**Table 6 – ES 2 Program Overhead Allocations as of March 31, 2023**

Subprogram	Q1 2023	Q4 2022	Total 2022	Total 2021	Total 2020	Total 2019 (Q4)	Total Overhead Allocations
<i>(in \$ thousands)</i>							
Electric Station Flood Mitigation	\$4,964	\$5,882	\$13,599	\$14,368	\$14,023	\$287	\$47,241
Contingency Reconfiguration	\$3,327	\$3,282	\$7,957	\$14,420	\$17,109	\$3,415	\$46,228
Grid Modernization – Communications	\$59	\$106	\$3,178	\$9,171	\$3,625	\$12	\$16,045
Grid Modernization – ADMS	\$90	\$128	\$378	\$501	\$426	\$11	\$1,406
Electric Stipulated Base	\$2,157	\$2,457	\$7,932	\$2,123	\$259	\$0	\$12,471
Gas M&R Station Upgrades (incl. Stip. Base)	\$250	\$236	\$1,207	\$735	\$291	\$15	\$2,498
<b>Total</b>	<b>\$10,847</b>	<b>\$12,091</b>	<b>\$34,250</b>	<b>\$41,318</b>	<b>\$35,733</b>	<b>\$3,740</b>	<b>\$125,889</b>

Table 7 – Q4 2022 and Q1 2023 Overhead Cost Comparison shows the breakdown of allocated overheads by major categories for the first quarter of 2023 and the fourth quarter of 2022.

**Table 7 – Q4 2022 and Q1 2023 Overhead Cost Comparison**

Overhead Category*	Electric Station Flood Mitigation	Contingency Reconfiguration	Grid Modernization – Communications	Grid Modernization – ADMS	Electric Stipulated Base	Gas M&R (incl Stip. Base)	Total
<b>Q4 2022 (in \$ thousands)</b>							
AMCS	\$273	\$68	\$7	\$0	\$76	\$3	\$428
Fleet	\$271	\$301	\$1	\$0	\$171	\$8	\$753
Fringe	\$738	\$471	\$12	\$93	\$391	\$37	\$1,741
Labor & Outside Services	\$2,965	\$714	\$76	\$0	\$837	\$114	\$4,706
Labor Only	\$1,089	\$1,153	\$5	\$0	\$682	\$32	\$2,960
Material Handling	\$63	\$197	\$0.1	\$0	\$52	\$2	\$315
Payroll Tax	\$143	\$89	\$2	\$19	\$75	\$2	\$329
Toolkit and Other Services	\$184	\$89	\$3	\$17	\$77	\$32	\$402
Vehicle Depreciation	\$156	\$199	\$0.8	\$0	\$95	\$6	\$456
Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$5,882</b>	<b>\$3,282</b>	<b>\$106</b>	<b>\$128</b>	<b>\$2,457</b>	<b>\$236</b>	<b>\$12,091</b>
<b>Q1 2023 (in \$ thousands)</b>							
AMCS	\$265	\$77	\$4	\$0	\$109	\$11	\$466

Overhead Category*	Electric Station Flood Mitigation	Contingency Reconfiguration	Grid Modernization – Communications	Grid Modernization – ADMS	Electric Stipulated Base	Gas M&R (incl Stip. Base)	Total
Fleet	\$206	\$302	\$0.7	\$0	\$87	\$0.9	\$596
Fringe	\$564	\$381	\$8	\$55	\$202	\$91	\$1,302
Labor & Outside Services	\$2,606	\$771	\$39	\$0	\$1,205	\$68	\$4,690
Labor Only	\$809	\$1,161	\$3	\$0	\$336	\$4	\$2,313
Material Handling	\$40	\$214	\$0	\$0	\$34	\$7	\$294
Payroll Tax	\$217	\$110	\$3	\$22	\$85	\$38	\$474
Toolkit and Other Services	\$135	\$95	\$2	\$12	\$55	\$28	\$328
Vehicle Depreciation	\$122	\$216	\$0.5	\$0	\$42	\$3	\$383
Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$4,964</b>	<b>\$3,327</b>	<b>\$59</b>	<b>\$90</b>	<b>\$2,156</b>	<b>\$250</b>	<b>\$10,847</b>

\*Asset Management & Centralized Services (AMCS): labor and fringes, material, contractor, consultant or other business expenses from several areas within AMCS that provide general support to Electric, Transmission, and Gas’s O&M, Capital, Third Party, and Affiliate work.  
Fleet: Bargaining unit personnel that maintain the vehicles for each Division.  
Fringe: Costs associated with other fringe costs, pensions, and other post-employment benefits.  
Labor & Outside Services: Labor and fringes, material, other business expenses associated with administrative and general costs.  
Labor Only: Travel, fuel, personal protection equipment and troubleshooter labor costs specifically related to the support of the T&D Bargaining Unit work force allocated over all T&D work.  
Material Handling: Costs associated with the materials handling process.  
Payroll Tax: Costs associated with payroll tax.  
Toolkit and Other Services: Costs associated with purchase of personal protective equipment and personal hand tools for Bargaining Unit employees and are utilized to perform O&M, Capital, Third Party, Affiliate, and deferred work activities.  
Vehicle Depreciation: Depreciation expense associated with vehicle usage in each Division.

The overwhelming majority of overhead costs allocated to ES 2 projects during the first quarter of 2023 are costs allocated from areas that support all utility distribution and transmission projects, including ES 2 projects. More specifically, most (approximately 77%) of the 2023 first quarter allocated overhead costs reflect labor costs of supervisory, administrative and operations planning personnel, labor and other costs from bargaining unit personnel, and fringe benefits associated with these labor costs. The decrease in overhead costs for the first quarter of 2023 from the fourth quarter of 2022 primarily reflects lower quarterly spend in Electric Station Flood Mitigation projects that attracts surcharges, specifically, surchargeable labor costs.

## D. System Performance

### 1. Current Reporting Quarter Major Events

During the first quarter of 2023, there were no Major Events reported in PSE&G’s service territory.

### III. Project Status

#### A. Electric Station Flood Mitigation

A summary of the subprogram plan as of the end of the first quarter of 2023 compared to the status as of the end of 2019, end of 2020, end of 2021, and end of 2022 is provided below in **Table 8 – ES 2 Electric Station Flood Mitigation Subprogram Milestone Schedule as of March 31, 2023**. Note that the projects that were previously placed in-service and closed out will have no further updates (which have been further called out in italics in **Table 8**).

**Table 8 – ES 2 Electric Station Flood Mitigation Milestone Schedule as of March 31, 2023**

Project	Plan Status Point	2019		2020				2021				2022				2023				2024		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
1. Academy Street	Dec. 2019		<u>KO</u>					C					IS		CO							
	Dec. 2020		<u>KO</u>		<u>C</u>									CO								
	Dec. 2021		<u>KO</u>		<u>C</u>						IS							CO				
	Dec. 2022		<u>KO</u>		<u>C</u>						IS		<u>CO</u>									
2. Clay Street	Dec. 2019	<i>Schedule Under Development</i>																				
	Dec. 2020			<u>KO</u>							C						IS				CO (Q2)	
	Dec. 2021			<u>KO</u>							<u>C</u>					IS					CO (Q1)	
	Dec. 2022			<u>KO</u>							<u>C</u>							IS			CO (Q2)	
	Mar. 2023			<u>KO</u>							<u>C</u>							IS			CO (Q1)	
3. Front Street^	Dec. 2019	<i>Not in ES 2 Program</i>																				
	Dec. 2020	<i>Not in ES 2 Program</i>																				
	Dec. 2021								<u>KO</u>				C								IS	CO (Q2)
	Dec. 2022								<u>KO</u>				<u>C</u>									IS (Q1); CO (Q3)
	Mar. 2023								<u>KO</u>				<u>C</u>								IS	CO (Q2)
4. Hasbrouck Heights	Dec. 2019		<u>KO</u>					C							IS		CO					
	Dec. 2020		<u>KO</u>									C					IS			CO		
	Dec. 2021		<u>KO</u>									C					IS		CO			
	Dec. 2022		<u>KO</u>									<u>C</u>			IS			CO				
	Mar. 2023		<u>KO</u>									<u>C</u>			IS			CO				
5. Kingsland	Dec. 2019			<u>KO</u>				C			IS	CO										
	Dec. 2020			<u>KO</u>									C							IS	CO (Q2)	
	Dec. 2021			<u>KO</u>										C			IS		CO			
	Dec. 2022			<u>KO</u>									<u>C</u>							IS	CO (Q2)	
	Mar. 2023			<u>KO</u>									<u>C</u>							IS	CO (Q2)	
6. Lakeside Avenue	Dec. 2019*				KO			C												IS	CO (Q2)	
	Dec. 2020					<u>KO</u>							C							IS	CO (Q2)	
	Dec. 2021					<u>KO</u>							C							IS	CO (Q2)	
	Dec. 2022					<u>KO</u>							<u>C</u>							IS (Q1); CO (Q3)		
	Mar. 2023					<u>KO</u>							<u>C</u>							IS (Q2); CO (Q4)		
7. Leonia	Dec. 2019	<i>Schedule Under Development</i>																				
	Dec. 2020			<u>KO</u>		<u>C</u>									IS		CO					
	Dec. 2021			<u>KO</u>		<u>C</u>									IS		CO					
	Dec. 2022			<u>KO</u>		<u>C</u>									IS		CO					
	Mar. 2023			<u>KO</u>		<u>C</u>									IS		CO					

December 31, 2023 - ES 2 Program End Date

Project	Plan Status Point	2019		2020				2021				2022				2023				2024
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
8. Market Street	Dec. 2019			<u>KO</u>				C	OS		CO									
	Dec. 2020			<u>KO</u>					C	OS		CO								
	Dec. 2021			<u>KO</u>							<u>C/OS</u>	<u>CO</u>								
9. Meadow Road	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>												C			IS	
	Dec. 2021			<u>KO</u>											C				IS	
	Dec. 2022			<u>KO</u>											<u>C</u>				IS	
	Mar. 2023			<u>KO</u>											<u>C</u>				IS	
10. Orange Valley	Dec. 2019	Schedule Under Development																		
	Dec. 2020					<u>KO</u>												C		
	Dec. 2021					<u>KO</u>												C		
	Dec. 2022					<u>KO</u>										<u>C</u>				
	Mar. 2023					<u>KO</u>										<u>C</u>			IS	
11. Ridgefield 13kV	Dec. 2019			<u>KO</u>	C											IS		CO		
	Dec. 2020			<u>KO</u>	<u>C</u>											IS		CO		
	Dec. 2021			<u>KO</u>	<u>C</u>											IS		CO		
	Dec. 2022			<u>KO</u>	<u>C</u>											<u>IS</u>		CO		
	Mar. 2023			<u>KO</u>	<u>C</u>											<u>IS</u>		CO		
12. Ridgefield 4kV	Dec. 2019			<u>KO</u>					C	OS			CO							
	Dec. 2020			<u>KO</u>	<u>C</u>				OS		CO									
	Dec. 2021			<u>KO</u>	<u>C</u>				<u>OS</u>		<u>CO</u>									
13. State Street	Dec. 2019		<u>KO</u>					C								IS				
	Dec. 2020		<u>KO</u>						C				IS							
	Dec. 2021		<u>KO</u>						<u>C</u>				IS					CO		
	Dec. 2022		<u>KO</u>						<u>C</u>				<u>IS</u>				CO			
	Mar. 2023		<u>KO</u>						C				<u>IS</u>			CO				
14. Toney's Brook	Dec. 2019			<u>KO</u>						C									IS	
	Dec. 2020			<u>KO</u>									C			IS				
	Dec. 2021			<u>KO</u>									C			IS				
	Dec. 2022			<u>KO</u>									<u>C</u>			IS		CO		
	Mar. 2023			<u>KO</u>									<u>C</u>			IS		CO		
15. Waverly	Dec. 2019	Schedule Under Development																		
	Dec. 2020			<u>KO</u>			<u>C</u>												IS	
	Dec. 2021			<u>KO</u>			<u>C</u>													
	Dec. 2022			<u>KO</u>			<u>C</u>													
	Mar. 2023			<u>KO</u>			<u>C</u>													
16. Woodlynne	Dec. 2019		<u>KO</u>												C				IS	
	Dec. 2020		<u>KO</u>												C				IS	
	Dec. 2021		<u>KO</u>												C				IS	
	Dec. 2022		<u>KO</u>									<u>C</u>							IS	
	Mar. 2023		<u>KO</u>									<u>C</u>							IS	

December 31, 2023 - ES 2 Program End Date

**Legend:** KO = Kickoff; C = Construction; IS = Fully In-Service (major assets in-service); OS = Out-of-Service (if eliminated); CO = Closeout  
 -Actuals are indicated with an underline (Note: for the Market Street and Ridgefield 4kV projects, outside plant construction began in the first quarter of 2020, the construction milestone indicated on this chart reflects inside plant construction).  
 \*-The Dec. 2019 Lakeside Avenue project schedule was based on the original raise and rebuild mitigation strategy; the current schedule reflects the proposed mitigation method change that contemplates relocating the substation.  
 ^-The Front Street project was proposed by PSE&G during the second quarter of 2021 to replace the cancelled Constable Hook project.

A summary of the subprogram status as of the end of the first quarter of 2023 is provided below **Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2023.**

**Table 9 – ES 2 Electric Station Flood Mitigation Summary Status as of March 31, 2023**

Activity	Total # of Projects	Specific Projects
Kickoff Meeting	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Key Drawing Review	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 13kV; Ridgefield 4kV; State Street; Toney’s Brook; Waverly; Woodlynn
Scope Locked	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney’s Brook; Waverly; Woodlynn
Major Equipment Purchase Orders (POs)	18*	Academy Street; Clay Street; Front Street*; Hasbrouck Heights; Kingsland; Lakeside; Leonia*; Meadow Road; Orange Valley; Ridgefield 13kV*; State Street; Toney’s Brook; Waverly*; Woodlynn
Architect/ Engineer (A/E) Contract Award (or selection of PSE&G internal engineering)	16	Academy Street <sup>1</sup> ; Clay Street <sup>1</sup> ; Front Street <sup>3</sup> ; Hasbrouck Heights <sup>1</sup> ; Kingsland <sup>2</sup> ; Lakeside Avenue <sup>3</sup> ; Leonia <sup>2</sup> ; Market Street <sup>2</sup> ; Meadow Road <sup>2</sup> ; Orange Valley <sup>1</sup> ; Ridgefield 13kV <sup>2</sup> ; Ridgefield 4kV <sup>2</sup> ; State Street <sup>2</sup> ; Toney’s Brook <sup>3</sup> ; Waverly <sup>3</sup> ; Woodlynn <sup>1</sup>
Construction Start**	16	Academy Street; Clay Street; Front Street; Hasbrouck Heights; Kingsland; Lakeside Avenue; Leonia; Market Street; Meadow Road; Orange Valley; Ridgefield 4kV; Ridgefield 13kV; State Street; Toney’s Brook; Waverly; Woodlynn
In-Service	7	Academy Street; Hasbrouck Heights; Leonia; Market Street; Ridgefield 4kV; Ridgefield 13kV; State Street
Partial In-Service	2	Front Street (contingency); Waverly (26kV switchgear)
<p>*-Three of the listed projects (Front Street, Leonia, Ridgefield 13kV, and Waverly) have two switchgears, thus the current count reflects 18 switchgears at 14 substations.  <sup>1</sup>-Indicates Burns &amp; McDonnell is serving as the A/E.  <sup>2</sup>-Indicates PSE&amp;G internal resources are serving as the A/E.  <sup>3</sup>-Indicates Black &amp; Veatch is serving as the A/E.                      **-Includes projects that have commenced inside plant (IP) and/or outside plant (OP) construction; also maintains identification of projects that have since completed construction (generally those that are shown as in-service).</p>		

Beyond the key activities summarized in **Table 9** above, **Table 10 – ES 2 Electric Station Flood Mitigation Planned Activities for Q2 2023** summarizes the activities planned for each project during the first quarter of 2023, including noted carryover of activities from earlier periods.

**Table 10 – ES 2 Electric Station Flood Mitigation Planned Activities for Q2 2023**

Station	Planned Activities for Q2 2023	Carryover Activities from Prior Periods
1. Academy Street	• Close project permits.	• Continued demolition of old station.
2. Clay Street	• Complete switchgear energization and place station in-service.	• Electrical construction (wire pulling and terminations)
3. Front Street	• Start civil foundations.	• Continued demolition.

Station	Planned Activities for Q2 2023	Carryover Activities from Prior Periods
4. Hasbrouck Heights	<ul style="list-style-type: none"> <li>Complete electrical construction.</li> <li>Continue storm water basin construction.</li> </ul>	<ul style="list-style-type: none"> <li>Continued electrical construction.</li> </ul>
5. Kingsland	<ul style="list-style-type: none"> <li>Commission switchgear.</li> <li>Continued civil construction.</li> </ul>	<ul style="list-style-type: none"> <li>Continued manhole modifications.</li> <li>Set permanent switchgear (received from Ridgefield 13kV where it was used as the contingency switchgear).</li> </ul>
6. Lakeside Avenue	<ul style="list-style-type: none"> <li>Complete civil construction.</li> <li>Start electrical construction.</li> </ul>	<ul style="list-style-type: none"> <li>Continued civil construction.</li> </ul>
7. Leonia	<ul style="list-style-type: none"> <li>Complete electrical and civil construction.</li> <li>Civil demolition work (contingency switchgear foundation).</li> </ul>	<ul style="list-style-type: none"> <li>Continued disassembly of contingency switchgear.</li> </ul>
8. Market Street	<i>Project Complete</i>	
9. Meadow Road	<ul style="list-style-type: none"> <li>Continued electrical construction.</li> <li>Start switchgear commissioning.</li> </ul>	<ul style="list-style-type: none"> <li>Complete manhole modifications.</li> </ul>
10. Orange Valley	<ul style="list-style-type: none"> <li>Continued platform steel installation.</li> </ul>	<ul style="list-style-type: none"> <li>Continued installation of duct banks, platform steel for switchgear</li> </ul>
11. Ridgefield 13kV	<ul style="list-style-type: none"> <li>Completion of civil construction.</li> </ul>	<ul style="list-style-type: none"> <li>Completion of circuit cutovers.</li> </ul>
12. Ridgefield 4kV	<i>Project Complete</i>	
13. State Street	<ul style="list-style-type: none"> <li>Continued circuit cutovers.</li> </ul>	<ul style="list-style-type: none"> <li>Continued circuit cutovers.</li> </ul>
14. Toney's Brook	<ul style="list-style-type: none"> <li>Completion of switchgear commissioning.</li> <li>Switchgear energization and station in-service.</li> <li>Start of demolition.</li> </ul>	<ul style="list-style-type: none"> <li>Continued electrical construction.</li> </ul>
15. Waverly	<ul style="list-style-type: none"> <li>Continued civil construction.</li> <li>Division underground cold work.</li> </ul>	<ul style="list-style-type: none"> <li>Completion of existing station demolition.</li> </ul>
16. Woodlynne	<ul style="list-style-type: none"> <li>Start civil construction.</li> <li>Continued electrical construction.</li> </ul>	<ul style="list-style-type: none"> <li>Continued electrical construction.</li> <li>26kV circuit reconfiguration (prerequisite work).</li> </ul>

As discussed in the IM 2022 First Quarter Report, PSE&G's switchgear vendor, Powercon, informed PSE&G that due to various material and sub-supplier delays, the remaining major equipment deliveries may continue to see impacts. Powercon continues to explore options to improve its production floor efficiencies and ordering supplies earlier to potentially alleviate further impacts. PSE&G has requested more detailed and frequent status updates from Powercon to better inform its project planning. The status of the major equipment deliveries for the Electric Station Flood Mitigation projects is presented in **Table 11 – Electric Station Flood Mitigation Major Switchgear Deliveries as of March 31, 2023**.

**Table 11 – Electric Station Flood Mitigation Switchgear Deliveries as of March 31, 2023**

Station	Description	Delivery Status as of Q4 2022	Delivery Status as of Q1 2023
1. Academy Street	13kV switchgear	11/7/2020	11/7/2020
2. Clay Street	4kV switchgear	12/5/2022	12/5/2022
3. Front Street	4kV switchgear	8/14/2023	7/14/2023
	4kV cont. switchgear	8/25/2022	8/25/2022
4. Hasbrouck Heights	4kV switchgear	11/30/2021	11/30/2021
5. Kingsland	13kV switchgear <sup>1</sup>	9/30/2020	9/30/2020
6. Lakeside Avenue	4kV switchgear	6/30/2023	9/5/2023

Station	Description	Delivery Status as of Q4 2022	Delivery Status as of Q1 2023
7. Leonia	13kV switchgear #1	<i>5/24/2021</i>	<i>5/24/2021</i>
	13kV switchgear #2	<i>6/16/2022</i>	<i>6/16/2022</i>
	13kV cont. switchgear <sup>2</sup>	<i>10/16/2020</i>	<i>10/16/2020</i>
8. Market Street	Elimination project		
9. Meadow Road	13kV switchgear <sup>2</sup>	2/14/2023	<i>2/23/2023</i>
10. Orange Valley	4kV switchgear	8/31/2023	6/5/2023
11. Ridgefield 13kV	13kV switchgear #1	<i>8/24/2022</i>	<i>8/24/2022</i>
	13kV switchgear #2	<i>4/27/2021</i>	<i>4/27/2021</i>
	13kV cont. switchgear <sup>1</sup>	<i>9/30/2020</i>	<i>9/30/2020</i>
12. Ridgefield 4kV	Elimination project		
13. State Street	4kV switchgear	<i>12/15/2021</i>	<i>12/15/2021</i>
14. Toney's Brook	4kV switchgear	1/5/2023	<i>1/5/2023</i>
15. Waverly	26kV switchgear	<i>4/30/2021</i>	<i>4/30/2021</i>
	4kV switchgear	<i>11/1/2022</i>	<i>11/1/2022</i>
16. Woodlynne	4kV switchgear	3/27/2023	5/5/2023
Note: bold/italicized dates indicate actual delivery dates. <sup>1</sup> The Kingsland 13kV switchgear was delivered to the Ridgefield 13kV site where it is being used as the contingency/temporary switchgear for that project before its permanent installation on the Kingsland project. <sup>2</sup> The Meadow Road project will use the Leonia project's 13kV contingency switchgear as its permanent switchgear.			

As indicated in **Table 11**, during the first quarter of 2023, there was one additional switchgear deliveries received (Toney's Brook), plus the contingency switchgear from Leonia was received at Meadow Road, leaving four switchgear deliveries remaining for the subprogram. Of these remaining deliveries, two advanced in their projected delivery dates and two slipped, which reflects Powercon responding to PSE&G's request to reprioritize the remaining deliveries in alignment with the construction needs (this current shift resulted in the forecasted in-service dates for Front Street and Orange Valley improving from the prior quarter, while it also saw the forecasted in-service dates for Lakeside Avenue and Woodlynne slipped from the prior quarter).

The current project estimates are shown below in **Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2023**. As discussed in the IM 2022 First Quarter Report, PSE&G decided to consolidate the R&C on the individual projects into one R&C balance for the entire subprogram, thus there is no estimated R&C amount at the project level. **Table 12** also shows the current estimate level based on PSE&G's estimating processes and as approved by the URB, the actual spend, and percentage of actuals to estimate as of the end of the first quarter of 2023.

**Table 12 – ES 2 Electric Station Flood Mitigation Project Cost Status as of March 31, 2023**

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
1. Academy Street	Definitive	\$9,300,000	\$-	\$9,300,000	\$8,317,099	\$7,629,986	92%
2. Clay Street	Definitive	\$33,600,000	\$-	\$33,600,000	\$34,713,917	\$26,165,376	75%
3. Front Street**	Definitive	\$27,700,00	\$-	\$27,700,00	\$27,735,407	\$13,978,195	50%

Project	Estimate Level	Base	Risk & Contingency*	Total	Current Forecast	Actuals to Date	% of Actuals to Estimate
4. Hasbrouck Heights	Definitive	\$19,300,000	\$-	\$19,300,000	\$18,601,999	\$17,854,687	96%
5. Kingsland	Definitive	\$8,700,000	\$-	\$8,700,000	\$11,508,465	\$5,490,648	48%
6. Lakeside Avenue	Conceptual	\$33,500,000	\$-	\$33,500,000	\$35,419,130	\$6,132,366	17%
7. Leonia	Definitive	\$24,900,000	\$-	\$24,900,000	\$26,993,094	\$25,520,739	95%
8. Market Street	Definitive	\$29,100,000	\$-	\$29,100,000	\$28,205,933	\$28,193,934	100%
9. Meadow Road	Definitive	\$8,800,000	\$-	\$8,800,000	\$9,707,482	\$4,943,760	51%
10. Orange Valley	Conceptual	\$15,000,000	\$-	\$15,000,000	\$15,800,000	\$3,111,698	20%
11. Ridgefield 13kV	Definitive	\$26,100,000	\$-	\$26,100,000	\$28,986,462	\$28,465,902	98%
12. Ridgefield 4kV	Definitive	\$20,700,000	\$-	\$20,700,000	\$20,703,808	\$20,703,809	100%
13. State Street	Definitive	\$19,600,000	\$-	\$19,600,000	\$20,287,142	\$14,576,043	72%
14. Toney's Brook	Definitive	\$16,000,000	\$-	\$16,000,000	\$16,211,300	\$9,656,954	60%
15. Waverly	Conceptual	\$39,900,000	\$-	\$39,900,000	\$43,405,301	\$22,005,934	51%
16. Woodlynne	Definitive	\$24,000,000	\$-	\$24,000,000	\$24,083,009	\$7,498,020	31%
ES 2 Station Placeholder^	N/A	\$-	\$32,800,000	\$32,800,000	\$-	\$-	-
<b>Subprogram Total</b>		<b>\$356,200,000</b>	<b>\$32,800,000</b>	<b>\$389,000,000</b>	<b>\$370,679,548</b>	<b>\$241,927,984</b>	<b>65%</b>
<p>*-As discussed in Section II.B. of the IM 2022 First Quarter Report, PSE&amp;G made the decision to hold risk and contingency at the subprogram level, which resulted in updated estimates being prepared for each project to reflect this change and other project-specific updates as warranted.</p> <p>** -The Front Street project was proposed by PSE&amp;G during the second quarter of 2021 to replace the cancelled Constable Hook project.</p> <p>^-PSE&amp;G intends to fund the Hamilton life cycle station upgrade project through the accelerated recovery provided to the ES 2 Program (outside the Stipulated Base), subject to the availability of funds within the Electric Station Flood Mitigation subprogram.</p>							

Findings & Observations

- During the first quarter of 2023, no additional projects were placed in-service, leaving the total projects in-service at seven of the 16 Electric Station Flood Mitigation projects. The next projects forecasted to be placed in-service are the Clay Street and Toney's Brook projects, each forecasted to go in-service during the second quarter of 2023.



- Of the remaining Electric Station Flood Mitigation projects, the biggest change to the forecasted in-service dates during the first quarter of 2023 was at the Orange Valley (advancing 56 days), Lakeside Avenue (slipping 41 days), and Front Street (advancing 31 days) projects. Each of these three projects saw movement in the forecasted in-service date driven by the current forecast of the switchgear deliveries, which was reprioritized by PSE&G and its vendor to better align with the construction need dates to mitigate the impacts of the delivery delays already experienced.
- Concerning the remaining switchgear deliveries, as of the end of the first quarter of 2023, four deliveries remained (Front Street, Lakeside Avenue, Orange Valley, and Woodlynne. For Front Street and Orange Valley, the forecasted delivery dates improved from the prior quarter driven by the reprioritization noted above. Orange Valley and Woodlynne are expected to receive their switchgear deliveries in the second quarter of 2023, with Front Street and Lakeside Avenue forecasted for the third quarter of 2023.
- The overall subprogram forecast as of the end of the first quarter of 2023 increased \$8.7 million (or 2.4%) to \$370.7 million from the status as of the prior quarter. The forecast continues to remain under the current subprogram estimate and Stipulation amount of \$389.0 million (which includes \$32.8 million in R&C). The change in the subprogram forecast was predominantly driven by changes to the project forecasts on seven of the projects, including:
  - Waverly (increased \$2.5 million to \$43.4 million): driven by additional civil construction required; revised Division estimate based on current resource requirements; schedule recovery; and award higher than estimated for steel and cable.
  - Lakeside Avenue (increased \$1.3 million to \$35.4 million): driven by a change order on the voltage regulator replacement; award higher than estimated for electrical demolition work; and additional work required on the 4kV duct banks.
  - Clay Street (increased \$1.1 million to \$34.7 million): driven by change orders associated with redesigns to the switchgear building fire protection; additional civil construction scope; and IP electrical installation change orders.
  - Leonia (increased \$1.1 million to \$27.0 million): driven by additional scope for motorized gate/security and disassembly of contingency switchgear; additional costs for reduced outage duration (more resources required).
  - Kingsland (increased \$930K to \$11.5 million): driven by a revised accounting determination that considers the switchgear installation a capital cost.
  - Meadow Road (increased \$810K to \$9.7 million): driven by a revised accounting determination that considers the switchgear installation a capital cost.
  - Orange Valley (increased \$785K to \$15.8 million): driven by increased soil disposal costs.
- With 65% of the subprogram forecast now spent (62% of the Stipulation amount), the IM has found nothing to date that would jeopardize the subprogram being completed on budget as even with some cost pressures on certain projects, there is adequate R&C remaining in the subprogram. However, the schedule status of the later projects in this subprogram, and in particular Lakeside Avenue and Waverly, continues to be a risk to being completed within the Program window, with both currently showing a forecasted in-service date in 2024. At this time, the primary risk to the

project schedule is the remaining major equipment deliveries and the availability of resources to support schedule requirements, particularly as multiple projects approach commissioning around the same period. Other projects currently forecasted to be in-service in the final quarter of the Program (fourth quarter of 2023) include: Front Street, Kingsland, Orange Valley, and Woodlynne.

- Relative to the Lakeside Avenue and Waverly projects that are currently forecasted to go in-service in 2024, the Lakeside Avenue project’s in-service date continues to be driven by the switchgear delivery. For the Waverly project, it has multiple major asset in-service dates for the 26kV switchgear (achieved in October 2022), 4kV switchgear (forecasted for December 2023), and three transformers (T1 and T2 forecasted for December 2023, T3 forecasted for May 2024). PSE&G will continue to assess the project schedule for potential opportunities to shorten durations and/or work activities concurrently to pull the final in-service date back into 2023.

**1. Academy Street**

During the first quarter of 2023, \$339,261 was spent on the Academy Street project compared to a forecast of approximately \$721,866, which brought the total spend to approximately \$7.6 million. The variance in forecasted to actual spend during the quarter was primarily attributed to environmental and civil activities pausing in February to allow additional soil sampling, classification, and determination of the remediation method needed.

This project was placed in-service on October 19, 2021, and in the third quarter of 2022 the final circuit was cutover to the switchgear. The demolition of the old substation commenced in October 2022 and is expected to be completed early in 2023.

The actual spend by period for Academy Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$150,398	\$4,224,550	\$1,754,789	\$1,100,987	\$399,261

Q2 2023	Q3 2023	Q4 2023
<i>Forecast</i>		
\$659,113	\$28,000	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$9,300,000	\$7,629,986	82%
Forecast	\$8,317,099		92%

**2. Clay Street**

During the first quarter of 2023, \$4,645,563 was spent on the Clay Street project compared to a forecast of approximately \$5.3 million, which brought the total spend to approximately \$26.2 million. The forecasted in-service date for the Clay Street project as of the end of the first quarter of 2023 slipped five days from the status as of the end of the prior quarter to April 25, 2023.

The primary activities on the Clay Street project during the first quarter of 2023 included:

- Wiring and terminations to the 4kV switchgear;
- Connecting 1<sup>st</sup> half regulators to the breaker cabinets; and,
- Commissioning the new 4kV switchgear.

The actual spend by period for Clay Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for Clay Street increased approximately \$1.1 million from the prior quarter to approximately \$34.7 million, which was driven by:

- Engineering change order associated with the redesign of the switchgear building fire protection revision of the Issued for Construction (IFC) package to reflect updated Powercon drawings (\$0.1 million).
- Civil construction change order associated with scaffolding, fireproofing structural steel, price for roll-up doors and faux windows, roof protection in 4kV vault, and installation of additional helical piles for duct bank (\$0.7 million).
- IP electrical installation change order (\$0.3 million).

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$116,409	\$879,339	\$2,806,593	\$17,717,472	\$4,645,563

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$3,312,089	\$1,657,873	\$1,153,895	\$2,424,683

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$33,600,000	\$26,165,376	78%
Forecast	\$34,713,917		75%

### 3. Front Street

During the first quarter of 2023, \$2,137,208 was spent on the Front Street project compared to a forecast of approximately \$2.3 million, which brought total spend to approximately \$14.0 million. The forecasted in-service date for the Front Street project as of the end of the first quarter of 2023 improved 31 days from the status as of the end of the prior quarter to December 26, 2023 (returning to a forecasted in-service date within the approved Program window). This improvement in the forecasted in-service date was driven by a reprioritization of the remaining switchgear deliveries.

The primary activities on the Front Street project during the first quarter of 2023 included:

- Issuance of the civil and electrical POs;
- Completion of circuit cutovers for the contingency switchgear; and,
- Demolition of the existing feeder rows.

The actual spend by period for Front Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Front Street project was virtually unchanged from the prior quarter. During the first quarter of 2023, PSE&G transitioned the Front Street project to a Definitive level estimate, which resulted in the

base estimate increasing \$0.4 million from \$27.3 million to \$27.7 million. This \$0.4 million increase was driven by:

- Increased carrying cost due to extended project duration (\$0.2 million);
- Additional Division labor to place contingency switchgear in-service (\$0.2 million);
- COR award higher than estimated (\$0.2 million); and slightly offset by,
- No need for site security (-\$0.2 million).

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
-	-	\$2,351,832	\$9,489,155	\$2,137,208

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$2,309,234	\$7,183,807	\$2,516,814	\$1,747,357

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$27,700,000	\$13,978,195	51%
<b>Forecast</b>	\$27,735,407		50%

#### 4. Hasbrouck Heights

During the first quarter of 2023, \$1,744,635 was spent on the Hasbrouck Heights project compared to a forecast of approximately \$1.9 million, which brought the total spend to approximately \$17.9 million. The Hasbrouck Heights project was placed in-service as of November 21, 2022.

The primary activities on the Hasbrouck Heights project during the first quarter of 2023 included:

- Completion of circuit cutovers;
- Start of demolition of existing equipment; and,
- Capacitor bank cutover and placed in-service.

The actual spend by period for Hasbrouck Heights as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Hasbrouck Heights project decreased approximately \$500k from the forecast as of the prior quarter.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$149,848	\$1,129,934	\$4,176,249	\$10,654,021	\$1,744,635

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$504,007	\$164,915	\$78,930	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$19,300,000	\$17,854,687	93%
<b>Forecast</b>	\$18,601,999		96%

## 5. Kingsland

During the first quarter of 2023, \$1,157,842 was spent on the Kingsland project compared to a forecast of approximately \$1.2 million, which brought the total spend to approximately \$5.5 million. The forecasted in-service date for the Kingsland project as of the end of the first quarter of 2023 remained unchanged from the status as of the prior quarter at October 4, 2023.

The primary activities on the Kingsland project during the first quarter of 2023 included:

- First phase of contingency work completed;
- Manhole modifications; and,
- Received switchgear (from the Ridgefield 13kV project) and set in place.

The actual spend by period for Kingsland as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. During the first quarter of 2023, PSE&G transitioned the Kingsland project to a Definitive level estimate, which resulted in the base estimate increasing from \$8.7 million to \$11.4 million. This \$2.7 million increase was driven by:

- Larger manholes required during redesign (\$1.2 million);
- Switchgear installation considered capital expense based on revised capital determination (\$0.9 million);
- Revised Division estimate based on detailed takeoffs and site investigation (\$0.5 million); and,
- Increased quantities of soil removal (\$0.1 million)

The forecast for the Kingsland project increased by approximately \$930k from the prior quarter, which was driven by a revised accounting determination that the installation of the switchgear is considered a capital cost and brings the forecast in close alignment with the updated estimate.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$104,112	\$209,667	\$510,943	\$3,508,084	\$1,157,842

Q2 2023	Q3 2023	Q4 2023
<i>Forecast</i>		
\$2,582,593	\$1,103,527	\$1,605,576

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$11,400,000	\$5,490,648	48%
Forecast	\$11,508,465		48%

## 6. Lakeside Avenue

During the first quarter of 2023, \$1,544,724 was spent on the Lakeside Avenue project compared to a forecast of approximately \$1.7 million. The forecasted in-service date for the Lakeside Avenue project as of the end of the first quarter of 2023 slipped 41 days from the status as of the end of the prior quarter to April 9, 2024. This was the result of the forecasted switchgear delivery slipping from July to August 2023 and the reprioritization of the remaining switchgear deliveries such that Front Street and Orange Valley

were rescheduled to be delivered ahead of Lakeside Avenue to minimize the overall impact to the Program.

The primary activities completed on the Lakeside Avenue project during the first quarter of 2023 included:

- Installation of capacitor bank foundations;
- Award of demolition work at the old Lakeside Avenue station and,
- Underground manhole and conduit work.

The actual spend by period for Lakeside Avenue as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Lakeside Avenue project increased approximately \$1.3 million from the prior quarter to approximately \$34.7 million, which was driven by:

- Change order for the replacement of 81 voltage regulators from 100kVa to 167kVa (\$0.7 million).
- Additional work related to the 4kV duct banks (\$0.1 million).
- Higher PO award than estimated for electrical demolition at the old Lakeside Avenue station (\$0.5 million).

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$148,943	\$453,994	\$570,713	\$3,413,992	\$1,544,724

Q2 2023	Q3 2023	Q4 2023	2024	2025
<i>Forecast</i>				
\$1,983,633	\$13,330,867	\$3,291,527	\$7,849,917	\$2,830,820

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$33,500,000		
<b>Forecast</b>	\$35,419,130	18%	

## 7. *Leonia*

During the first quarter of 2023, \$1,654,684 was spent on the Leonia project compared to a forecast of approximately \$1.3 million, which brought the total spend to approximately \$25.5 million. The Leonia substation was placed in-service as of November 15, 2022.

The primary activities on the Leonia project during the first quarter of 2023 included:

- Disconnecting Transformer 4 from the contingency 13kV switchgear;
- Installation of batteries and racks; and,
- Demolition of the contingency switchgear.

The actual spend by period for Leonia as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Leonia project increased approximately \$1.1 million from the prior quarter to approximately \$27.0 million, which was driven by:

- Additional IP construction scope for motorized gate control and security system and disassembly of the contingency switchgear (\$0.3 million).
- Electrical costs higher than forecasted, additional hours for relay support, and gate installation (\$0.3 million).
- Additional electrical costs for reduced duration of outage (requiring increased manpower) (\$0.5 million).

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$44,792	\$6,033,379	\$9,112,257	\$8,675,628	\$1,654,684

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$1,310,225	\$93,525	\$68,604	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$24,900,000	\$25,520,739	103%
Forecast	\$26,993,094		95%

## 8. Market Street

During the first quarter of 2023, \$24,046 was spent on the Market Street project compared to a forecast of \$31.5K, which kept the total spend at approximately \$28.2 million. The Market Street substation was taken out of service as of June 25, 2021.

The final punch list items and site cleanup activities were completed at the end of the second quarter of 2022, remaining costs including those incurred during the first quarter of 2023 relating to final and trailing costs related to this closeout work.

The actual spend by period for Market Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$251,193	\$16,079,601	\$10,681,487	\$1,157,606	\$24,046

Q2 2023	Q3 2023
<i>Forecast</i>	
\$12,000	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$29,100,000	\$28,193,934	97%
Forecast	\$28,205,933		100%

## 9. Meadow Road

During the first quarter of 2023, \$1,267,199 was spent on the Meadow Road project compared to a forecast of approximately \$1.5 million, which brought the total spend to approximately \$4.9 million. The forecasted in-service date for the Meadow Road project as of the end of the first quarter of 2023 continued to remain unchanged from the status as of the last couple quarters at September 28, 2023.

The primary activities on the Meadow Road project during the first quarter of 2023 included:

- Completion of the required manhole modifications;
- Switchgear delivered to site (from Leonia); and,
- Start of IP electrical construction.

The actual spend by period for Meadow Road as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Meadow Road project increased approximately \$810K from the prior quarter, which was driven by on a revised accounting determination that the installation of switchgear is considered a capital cost.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$63,128	\$535,081	\$445,234	\$2,633,116	\$1,267,199

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$1,557,721	\$1,426,358	\$923,960	\$855,684

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$8,800,000	\$4,943,760	56%
Forecast	\$9,707,482		51%

## 10. Orange Valley

During the first quarter of 2023, \$574,932 was spent on the Orange Valley project compared to a forecast of approximately \$738K, which brought the total spend to approximately \$3.1 million. The forecasted in-service date for the Orange Valley project as of the end of the first quarter of 2023 advanced 56 days from the status as of the prior quarter to December 22, 2023, returning to a forecasted in-service date within the defined ES 2 Program window. This improvement in the forecasted in-service date was driven by a reprioritization of the remaining switchgear deliveries.

The primary activities on the Orange Valley project during the first quarter of 2023 included:

- Continued installation of switchgear foundations; and,
- Continued duct bank installations.

Electrical construction at Orange Valley is expected to commence late in the second quarter of 2023.

The actual spend by period for Orange Valley as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Orange Valley project increased approximately \$786K from the prior quarter, which was primarily driven by increased soil disposal costs.



Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$77,029	\$362,895	\$358,052	\$1,738,791	\$574,932

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$7,868,816	\$2,267,745	\$1,615,729	\$936,011

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$15,000,000	\$3,111,698	21%
<b>Forecast</b>	\$15,800,000		20%

### 11. Ridgefield 13kV

During the first quarter of 2023, \$1,355,733 was spent on the Ridgefield 13kV project compared to a forecast of approximately \$1.2 million, which brought the total spend to approximately \$28.5 million. The Ridgefield 13kV project was placed in-service as of December 12, 2022.

Notable activities performed on the Ridgefield 13kV project during the first quarter of 2023 included:

- Completion of circuit cutovers;
- Disassembly of contingency switchgear; and,
- Completion of electrical construction.

The actual spend by period for Ridgefield 13kV as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Ridgefield 13kV project as of the end of the second quarter of 2023 increased approximately \$678K from the prior quarter, which was driven by more demolition work required than estimated.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$205,982	\$6,232,692	\$10,849,681	\$9,821,814	\$1,355,733

Q2 2023	Q3 2023	Q4 2023
<i>Forecast</i>		
\$493,893	\$26,666	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$26,100,000	\$28,465,902	109%
<b>Forecast</b>	\$28,986,462		98%

### 12. Ridgefield 4kV

During the first quarter of 2023, there was no spend on the Ridgefield 4kV project, with the total spend remaining at approximately \$20.7 million. The project was placed in-service on May 16, 2021.

The project was closed out during the third quarter of 2022 after the final closeout activities were performed during the first quarter of 2022, which included some trailing costs in the second quarter of 2022.

The actual spend by period for Ridgefield 4kV as compared to the final forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$143,414	\$11,239,534	\$9,263,852	\$57,009	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$20,700,000	\$20,703,809	100%
<b>Forecast</b>	\$20,703,808		100%

### 13. State Street

During the first quarter of 2023, \$755,027 was spent on the State Street project compared to a forecast of approximately \$719K, which brought the total spend to approximately \$14.6 million. The State Street project was placed in-service on December 29, 2022.

Notable activities performed on the State Street project during the first quarter of 2023 included the issuance of the layout/control demolition engineering package.

The actual spend by period for State Street as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the State Street project as of the end of the first quarter of 2023 was unchanged from the prior quarter, remaining at approximately \$20.3 million.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$77,590	\$662,148	\$8,093,227	\$4,988,051	\$755,027

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$988,113	\$783,809	\$3,939,177	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$19,600,000	\$14,576,043	72%
<b>Forecast</b>	\$20,287,412		72%

### 14. Toney's Brook

During the first quarter of 2023, \$2,264,955 was spent on the Toney's Brook project compared to a forecast of approximately \$2.3 million, which brought the total spend to approximately \$9.7 million.

The forecasted in-service date for the Toney's Brook project as of the end of the first quarter of 2023 advanced two days from the status as of the end of the prior quarter to May 8, 2023.

The notable activities on the Toney’s Brook project during the first quarter of 2023 included:

- Installation of 4kV bus support, bus, and cable tray;
- Regulators/reactors delivered and partially set; and,
- Start of switchgear commissioning.

The actual spend by period for Toney’s Brook as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Toney’s Brook project as of the end of the first quarter of 2023 remained relatively unchanged, experiencing a slight decrease of approximately \$18K with a current forecast of approximately \$16.2 million.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$211,940	\$373,096	\$941,519	\$5,865,443	\$2,264,955

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$2,063,429	\$2,089,209	\$2,049,775	\$351,934

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$16,000,000	\$9,656,954	60%
<b>Forecast</b>	\$16,211,300		60%

### 15. Waverly

During the first quarter of 2023, \$1,931,405 was spent on the Waverly project compared to a forecast of approximately \$2.1 million, which brought the total spend to approximately \$22.0 million.

The forecasted in-service date for the Waverly project as of the end of the first quarter of 2023 slipped three days from the status as of the end of the prior quarter to May 10, 2024.

The primary activities performed on the Waverly project during the first quarter of 2023 included:

- Completion of demolition at the existing Waverly station; and,
- Commencement of phase 3 civil construction.

The actual spend by period for Waverly as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Waverly project as of the end of the first quarter of 2023 increased approximately \$2.5 million from the status as of the end of the prior quarter to a current forecast of approximately \$43.4 million. This forecast increase was driven by:

- Additional civil construction required for manhole G rebuild (\$1.1 million).
- Revised Division estimate based on current resource requirements (\$0.5 million).
- Construction schedule recovery to mitigate delays in site plan approval (\$0.5 million).
- PO awarded higher than estimated for steel and cable (\$0.3 million).

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$103,748	\$2,460,815	\$4,415,223	\$13,094,743	\$1,931,405

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$4,975,288	\$5,724,274	\$4,161,033	\$6,538,771

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$39,900,000	\$22,005,934	55%
<b>Forecast</b>	\$43,405,301		51%

## 16. Woodlynne

During the first quarter of 2023, \$1,131,416 was spent on the Woodlynne project compared to a forecast of approximately \$1.6 million, which brought the total spend to approximately \$7.5 million. The variance in forecasted to actual spend during the first quarter of 2023 was largely due to weather impacts that delayed progress and delays to the test pit work packages due to engineering resource constraints.

The forecasted in-service date for the Woodlynne project as of the end of the first quarter of 2023 slipped 13 days from the status as of the end of the prior quarter to November 9, 2023.

The primary activities performed on the Woodlynne project during the fourth quarter of 2022 included 69kV electrical work (cutting into existing 4kV).

The actual spend by period for Woodlynne as compared to the current forecast and URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Woodlynne project as of the end of the first quarter of 2023 was unchanged from the status as of the end of the prior quarter at approximately \$24.1 million.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$110,982	\$993,298	\$991,630	\$4,270,694	\$1,131,416

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$6,329,605	\$6,010,316	\$3,218,629	\$1,026,439

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$24,000,000	\$7,498,020	31%
<b>Forecast</b>	\$24,083,009		41%

## B. Contingency Reconfiguration

During the first quarter of 2023, the efforts in the Contingency Reconfiguration subprogram continued to focus on the installation of additional Fuse Savers, following the completion of the recloser scope in the first quarter of 2022. **Table 13 – ES 2 Program Fuse Saver Status as of March 31, 2023** provides a summary of the Fuse Saver scope of the Contingency Reconfiguration subprogram, indicating the number

of units completed during the first quarter of 2023 and for the total program, showing the status of engineering, installation, and commissioning out of a currently forecasted scope of 1,338 units. The forecasted units as of the end of the first quarter of 2023 was reduced from 1,574 units forecasted as of the end of 2022 and continues to be updated on a quarterly basis as driven by the actual costs per unit observed on the installations to date.

**Table 13 – ES 2 Program Fuse Saver Status as of March 31, 2023**

Type	Engineering Packages Completed (1 Fuse Saver ea.)	Fuse Savers Installed	Fuse Savers Commissioned
Q1 2023 Qty.	279	284	283
Program Total to Date	1,315	961	957
Remaining	23	377	381

Following the recommencement of the Fuse Saver installations in May 2022, PSE&G has continued to advance the Fuse Saver installations with 284 installed in the first quarter of 2023. Since the first full quarter of Fuse Saver installations (third quarter 2022), PSE&G has averaged 278 units installed per quarter. With 377 units left to be installed against the current forecast, PSE&G’s plans as of the end of the first quarter of 2023 reflect a gradual ramp-down of the number of units installed per month, with the final installations currently forecasted for September 2023. PSE&G continues to establish its installation targets on a quarterly basis, which are then split into monthly targets for each Division with the forecasts updated on a bi-weekly basis.

The current forecasted completion date for the primary components that make up the Contingency Reconfiguration subprogram are provided in **Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of March 31, 2023**. This table also shows the forecasted final in-service dates as of the end of 2022 to show movement to the forecast as of the end of the first quarter of 2023.

**Table 14 – ES 2 Contingency Reconfiguration Forecasted Completion Dates as of March 31, 2023**

Scope & Division		Q4 2022 Forecasted Completion Date	Q1 2023 Forecasted Completion Date
Reclosers	Central	1/31/2022 (Actual)	1/31/2022 (Actual)
	Metro	12/31/2021 (Actual)	12/31/2021 (Actual)
	Palisades	1/31/2022 (Actual)	1/31/2022 (Actual)
	Southern	1/31/2022 (Actual)	1/31/2022 (Actual)
Fuse Savers	Central	11/30/2023	9/30/2023
	Metro	12/30/2023	9/30/2023
	Palisades	11/30/2023	8/30/2023
	Southern	11/30/2023	9/30/2023

As shown in **Table 14**, the forecasted in-service dates for the Fuse Saver scope of each Division advanced two to three months, largely reflective of the reduction in overall number of devices planned to be installed during the Program.

The Contingency Reconfiguration subprogram costs through the end of the first quarter of 2023 are presented in **Table 15 – ES 2 Contingency Reconfiguration Actual Costs as of March 31, 2023**. While the reclosers scope completed installations as of the end of the first quarter of 2022, trailing and closeout costs are still being recorded. For example, in the first quarter of 2023 the Central Division incurred

approximately \$45.5K in chargers to the recloser scope that were associated with traffic control invoices that were received late.

**Table 15 – Contingency Reconfiguration Actual Costs as of March 31, 2023**

Scope & Division		2019	2020	2021	2022	Q1 2023	Total to Date
<i>Actuals</i>							
Reclosers	Central	\$2,737,167	\$12,050,820	\$9,852,812	\$1,000,374	\$45,525	\$25,686,699
	Metro	\$2,231,431	\$10,726,610	\$11,368,409	\$109,974	\$2,864	\$24,439,288
	Palisades	\$2,515,569	\$12,119,436	\$8,280,522	(\$52,702)	\$2,509	\$22,865,335
	Southern	\$2,081,220	\$12,405,684	\$14,038,043	\$535,639	\$1,757	\$29,062,343
Fuse Savers	Central	\$9,970	\$789,937	\$854,118	\$4,626,643	\$1,986,368	\$8,267,037
	Metro	\$7,557	\$561,915	\$507,742	\$4,438,864	\$2,639,377	\$8,155,455
	Palisades	\$7,468	\$522,454	\$577,113	\$4,489,631	\$1,758,048	\$7,354,715
	Southern	\$9,792	\$859,014	\$578,217	\$5,046,965	\$2,376,389	\$8,870,376
<b>Total</b>		<b>\$9,600,174</b>	<b>\$50,035,871</b>	<b>\$46,056,977</b>	<b>\$20,195,389</b>	<b>\$8,812,837</b>	<b>\$134,701,247</b>

**Table 16 – Contingency Reconfiguration Forecasted Costs as of March 31, 2023** examines the forecast as of the end of first quarter of 2023 for each Division’s Fuse Saver scope compared to the total actual costs incurred through this period.

**Table 16 – Contingency Reconfiguration Forecasted Costs as of March 31, 2023**

Scope & Division		Total to Date	Forecast	Remaining Forecast	% of Actuals to Forecast
Reclosers	Central	\$25,686,699	\$25,686,699	\$0	100%
	Metro	\$24,439,288	\$24,439,288	\$0	100%
	Palisades	\$22,865,335	\$22,865,335	\$0	100%
	Southern	\$29,062,343	\$29,062,343	\$0	100%
Fuse Savers	Central	\$8,267,037	\$11,021,240	\$2,754,203	75%
	Metro	\$8,155,455	\$12,026,405	\$3,870,950	68%
	Palisades	\$7,354,715	\$9,875,604	\$2,520,889	74%
	Southern	\$8,870,376	\$10,491,091	\$1,620,714	85%
<b>Total</b>		<b>\$134,701,247</b>	<b>\$145,468,003</b>	<b>\$10,766,756</b>	<b>93%</b>

As shown in **Table 16**, the overall Contingency Reconfiguration subprogram has spent 93% of its current forecast. With the total forecast as of the end of the first quarter of 2023 decreasing by approximately \$1.8 million since the end of the prior quarter, largely reflecting the reduction in the number of Fuse Saver units planned for the Program.

Findings & Observations

- Progress on the Fuse Savers scope of the subprogram continued to advance with 284 units installed during the first quarter of 2023. Since the full commencement of Fuse Saver installations began in the third quarter of 2022 (following the earlier pilot program and limited installations in the second quarter of 2022), PSE&G is averaging 278 units installed per quarter. With 1,338 Fuse Savers currently forecasted for the Program, this leaves 381 units to be installed during the remainder of 2023.

- Based on the progress to date and the current projections, the forecasted final in-service dates for the Fuse Savers scope advanced two to three months per Division, with each Division currently forecasted to complete its remaining installations during the third quarter of 2023.
- The Contingency Reconfiguration subprogram forecast as of the end of the first quarter of 2023 decreased approximately \$1.8 million from the status as of the end of 2022. This forecast decrease was driven by a reduction in the planned number of Fuse Savers contemplated for the Program, which was reduced from 1,574 as of the end of 2022 to 1,338 as of the end of the first quarter of 2023.

### **C. Grid Modernization – Communication System**

The Stipulation identified the Grid Modernization – Communication System subprogram to include up to \$72 million invested in installing a private wireless communications network to eliminate the use of dedicated phone lines for remote communication for both PSE&G and customer equipment. The overall network will provide coverage using both wireless and fiber technologies to all switching devices on the PSE&G system. The primary scopes within the Grid Modernization – Communication System include installation of the wireless network, fiber installations at selected stations, fiber cutovers at selected station with existing fiber to the PSE&G fiber network, and retrofitting existing reclosers and RTUs with updated routers. A summary of the status of these primary scopes of work as of the end of the first quarter 2023 is provided as follows:

- Wireless network: placed in-service as of December 16, 2021, final coverage testing conducted in early 2023; other remaining work involves providing radios to support the installation of Fuse Savers in the Contingency Reconfiguration subprogram.
- Fiber installations and cutovers: 33 out of 34 fiber installation projects completed and 12 out of 12 fiber cutover projects completed.
- Retrofitting existing reclosers: completed as of the fourth quarter of 2021 with a total of 2,318 retrofit reclosers installed.
- Retrofitting RTUs: completed as of the third quarter of 2022 with a total scope of 218 substations.

The list of currently approved fiber installation and cutover projects is presented in **Table 17 – Fiber Projects by Division as of March 31, 2023**.

**Table 17 – Fiber Projects by Division as of March 31, 2023**

<b>Division</b>	<b>Fiber Installation*</b>	<b>Fiber Cutover*</b>
<b>Central</b>	Cranford; Elizabeth Sub HQ; Rahway; Hadley Road HQ; Roselle; Central HQ; Carteret; <b>Edison</b> ; Keasby; Mechanic Street; First Street	Elizabeth; Henry Street
<b>Metro</b>	East Orange; Metro HQ; Bloomfield; Central Avenue; Haldeon; Irvington; Irvington Sub HQ; Montclair; South Orange; Norfolk Street	-
<b>Palisades</b>	Bergen Point; Hackensack Sub HQ; Fort Lee; Harrison; Ridgewood; West New York; Palisades HQ; Culver Avenue; Morgan Street	Tonnelle Avenue; Spring Valley Road; Union City; Fairview; Polk Street; West Orange
<b>Southern</b>	Southern HQ; Princeton; Chauncey Street; Bordentown	Delair; East Riverton; Riverside; Mount Holly
<b>Total</b>	<b>34 projects</b>	<b>12 projects</b>

\*-All projects have been placed in-service except for Edison.

During the first quarter of 2023 there were no additional fiber installation placed in-service. Thus, the total fiber projects in-service remained at 33 out of 34 fiber installation projects and 12 out of 12 fiber cutover projects. **Table 18 – ES 2 Program Fiber Projects Status as of March 31, 2023** provides a summary of the status of the fiber installation and cutover projects indicating which quarter each project was placed in-service along with the current status of the final fiber project at Edison.

**Table 18 – ES 2 Program Fiber Projects Status as of March 31, 2023**

<b>Project Name</b>	<b>Status</b>
<b>Fiber Installation Projects</b>	
<i>Bergen Point</i>	<i>In-Service (Q1 2021)</i>
<i>Bloomfield</i>	<i>In-Service (Q4 2022)</i>
<i>Bordentown</i>	<i>In-Service (Q3 2021)</i>
<i>Carteret</i>	<i>In-Service (Q4 2022)</i>
<i>Central Ave</i>	<i>In-Service (Q3 2021)</i>
<i>Central HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Chauncey Street</i>	<i>In-Service (Q3 2021)</i>
<i>Cranford</i>	<i>In-Service (Q4 2020)</i>
<i>Culver Ave</i>	<i>In-Service (Q1 2022)</i>
<i>East Orange</i>	<i>In-Service (Q1 2021)</i>
Edison	In securing railroad permits, it was identified that this particular rail section requires its own outage within Amtrak (powerline for the trains), which will not be available to be scheduled by Amtrak until the spring of 2023.
<i>Elizabeth Sub HQ</i>	<i>In-Service (Q1 2021)</i>
<i>First Street</i>	<i>In-Service (Q3 2021)</i>
<i>Fort Lee</i>	<i>In-Service (Q1 2022)</i>
<i>Hackensack Sub HQ</i>	<i>In-Service (Q4 2020)</i>
<i>Hadley Rd HQ</i>	<i>In-Service (Q1 2022)</i>
<i>Haledon</i>	<i>In-Service (Q1 2022)</i>
<i>Harrison</i>	<i>In-Service (Q3 2021)</i>
<i>Irvington</i>	<i>In-Service (Q4 2021)</i>
<i>Irvington Sub HQ</i>	<i>In-Service (Q4 2021)</i>
<i>Keasbey</i>	<i>In-Service (Q4 2022)</i>
<i>Mechanic Street</i>	<i>In-Service (Q4 2022)</i>
<i>Metro HQ</i>	<i>In-Service (Q1 2021)</i>
<i>Montclair</i>	<i>In-Service (Q3 2022)</i>
<i>Morgan Street</i>	<i>In-Service (Q4 2021)</i>
<i>Norfolk St</i>	<i>In-Service (Q3 2021)</i>
<i>Palisades HQ</i>	<i>In-Service (Q3 2022)</i>
<i>Princeton</i>	<i>In-Service (Q3 2021)</i>
<i>Rahway</i>	<i>In-Service (Q1 2021)</i>
<i>Ridgewood</i>	<i>In-Service (Q1 2022)</i>
<i>Roselle</i>	<i>In-Service (Q2 2021)</i>
<i>So Orange</i>	<i>In-Service (Q3 2021)</i>
<i>Southern HQ</i>	<i>In-Service (Q4 2020)</i>
<i>West New York</i>	<i>In-Service (Q1 2022)</i>
<b>Fiber Cutover Projects</b>	
<i>Delair</i>	<i>In-Service (Q4 2020)</i>
<i>East Riverton</i>	<i>In-Service (Q4 2020)</i>
<i>Elizabeth</i>	<i>In-Service (Q1 2021)</i>
<i>Fairview</i>	<i>In-Service (Q1 2022)</i>
<i>Henry St</i>	<i>In-Service (Q3 2021)</i>



Project Name	Status
Mount Holly	In-Service (Q4 2020)
Polk Street	In-Service (Q1 2022)
Riverside	In-Service (Q4 2020)
Spring Valley Rd	In-Service (Q1 2021)
Tonnelle Ave	In-Service (Q4 2020)
Union City	In-Service (Q1 2021)
West Orange	In-Service (Q3 2022)
<b>Substation Remote Terminal Unit (RTU) Cutovers</b>	
Scope: 218 units	218 cutovers completed

The Grid Modernization – Communication System subprogram actual costs by scope through the end of the first quarter of 2023 are presented in **Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of March 31, 2023**, while **Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of March 31, 2023** provides the current forecasts as of the end of the first quarter of 2023 compared to the actual costs incurred. The negative actual spend for the Wireless Network scope incurred during the first quarter of 2023 reflected prior months accruals being less than the invoiced amount.

**Table 19 – ES 2 Grid Modernization – Communication System Actual Costs as of March 31, 2023**

Scope & Division		2019	2020	2021	2022	Q1 2023	Total to Date
		<i>Actuals</i>					
Retrofit Reclosers	Central	\$0	\$884,278	\$3,304,797	\$1,065,721	\$298,008	\$5,552,804
	Metro	\$0	\$818,620	\$2,362,779	\$951,597	\$301,815	\$4,434,811
	Palisades	\$0	\$825,174	\$3,115,474	\$1,026,829	\$265,295	\$5,232,772
	Southern	\$0	\$929,058	\$3,862,816	\$985,592	\$289,102	\$6,066,568
Fiber	Central	\$1,691	\$2,418,851	\$5,973,655	\$3,044,760	\$81,235	\$11,520,191
	Metro	\$1,457	\$1,866,697	\$3,086,096	\$2,329,418	\$26,613	\$7,310,282
	Palisades	\$1,582	\$2,046,762	\$3,603,134	\$1,049,805	\$47,805	\$6,749,088
	Southern	\$4,731	\$910,483	\$2,466,477	\$185,098	\$32,285	\$3,599,073
	Cutovers	\$0	\$876,502	\$479,927	\$60,551	\$5,422	\$1,422,402
<b>Wireless Network</b>		\$74,306	\$6,035,441	\$1,282,986	\$234,503	(\$116,474)	\$7,510,761
<b>Substation RTU Cutovers</b>		\$0	\$0	\$127,129	\$2,169,888	\$2,641	\$2,299,657
<b>Bulk Purchase*</b>		\$0	\$1,524,874	(\$520,766)	\$1,755,891	(\$454,438)	\$2,305,562
<b>Total</b>		<b>\$83,767</b>	<b>\$19,136,741</b>	<b>\$29,144,503</b>	<b>\$14,859,653</b>	<b>\$779,310</b>	<b>\$64,003,971</b>

*\*-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.*

**Table 20 – ES 2 Grid Modernization – Communication System Forecasts as of March 31, 2023**

Scope & Division		Total to Date	Total Forecast	% of Actuals to Forecast
		<i>Actuals</i>		
Retrofit Reclosers	Central	\$5,552,804	\$6,652,367	83%
	Metro	\$4,434,811	\$5,478,775	81%
	Palisades	\$5,232,772	\$6,292,657	83%
	Southern	\$6,066,568	\$7,090,114	86%
Fiber	Central	\$11,520,191	\$11,625,437	99%
	Metro	\$7,310,282	\$7,320,182	100%
	Palisades	\$6,749,088	\$6,728,061	100%
	Southern	\$3,599,073	\$3,478,226	103%

Scope & Division	Total to Date	Total Forecast	% of Actuals to Forecast
	Actuals		
Cutovers	\$1,422,402	\$1,422,402	100%
<b>Substation RTU Cutovers</b>	\$2,299,657	\$2,299,657	100%
<b>Wireless Network</b>	\$7,510,761	\$7,686,086	98%
<b>Bulk Purchase*</b>	\$2,305,562	\$0	-
<b>Total</b>	<b>\$64,003,971</b>	<b>\$66,073,965</b>	<b>97%</b>
<i>*-The Bulk Purchase account is used for the purchase of bulk equipment, which is then assigned to a specific Division when the equipment is released with a credit back to the Bulk Purchase account. Thus, this account is forecasted to have a \$0 balance at the end of the ES 2 Program.</i>			

With the majority of the scope of this subprogram now completed, the forecasts as of the end of the first quarter of 2023 shown in **Table 20** remained relatively unchanged from the status as of the end of 2022, with an overall forecast decrease of approximately \$146K (-0.2%).

Findings & Observations

- The final fiber installation project, Edison, was initially planned to be completed by the end of 2022, but in securing the railroad permit it was identified that the required outage could not be scheduled until the spring of 2023. During the first quarter of 2023, there was no change in the status of this project though PSE&G remains in communication with Amtrak.
- The forecast for the Grid Modernization – Communication system subprogram as of the end of the first quarter of 2023 remained relatively unchanged from the status as of 2022, with an overall forecast decrease of approximately \$146K (or a 0.2% decrease) to \$66.1 million. With actual spend currently at just over \$64.0 million, this continues to indicate that the subprogram spend will exceed the Stipulation budget of \$64.3 million. PSE&G intends to fund the overbudget balance via its distribution base capital.

D. Grid Modernization – ADMS

The Grid Modernization – ADMS scope is split between three primary sections: DMS/DERMS, the OMS, and ADMS platform upgrades. The scope for each primary component of the Grid Modernization – ADMS subprogram and notable activities during the first quarter of 2023 are summarized as follows:

DMS/DERMS

- Scope: Provide software and associated services to deploy a Smart Network in order to meet a subset of the ES 2 Program’s objectives and use cases.
- Q1 2023 Activities:
  - Completed end-to-end testing on the final three modules, submitted all variances to vendor.
  - Achieved “go live” (in-service) and began 1,000 hour availability testing.
  - Created Quality Assurance System (QAS) end user Phase 1 test environment and completed Phase 1 end user training.
- Actual In-Service: 1/26/2023.

## OMS

- Scope: Provide a single user interface for more efficient management of trouble orders and analysis of outage data through an integrated OMS, system interfaces, and geographic view of all integrated outage data and damage locations. OMS will include tools for dynamic visualization supporting incident management, damage location identification, dashboards, and the as-operated real-time view of PSE&G's network model. Field personnel also will have access to many of these tools as it relates to the incident(s) assigned to them via the Compass mobile crew application. 10 years' worth of existing OMS data will be migrated into the new system as well.
- Q1 2023 Activities:
  - Completed PSE&G/OSI Compass developer summit at Open System International Inc.'s (OSI's) headquarters.
  - Validated QAS firewall rules and load balances in place.
  - Completed OMS/Kubra interface work kickoff meeting with vendor team.
  - Completed Kubra test environment and OMS test file.
  - Completed geocode and premise overlays.
- Forecasted Completion as of the end of the first quarter of 2023: 10/30/2023 (slipped 137 days from prior quarter due to various delays during SITs rounds 1-4, all issues and defects are being worked to prepare for a go live date in October 2023).

## ADMS Platform

- Scope: Replace, enhance, and expand the existing Distribution Supervisory Control and Data acquisition (DSCADA) platform elements inclusive of infrastructure components (servers and workstations) and applications (Monarch, Spectra, and Integra) to create an integrated ADMS platform.
- Q1 2023 Activities:
  - Started availability test period and completed 1,000 hour availability period.
  - Completed decommissioning of legacy production.
  - Moved project into post-deployment (pre-closeout) stage.
- Actual In-Service Date: 1/28/2022.

The Grid Modernization – ADMS subprogram costs through the end of the first quarter of 2023 are presented in **Table 19 – ES 2 Grid Modernization – ADMS Costs as of March 31, 2023**. The overall Grid Modernization – ADMS forecast as of the end of the first quarter of 2023 increased approximately \$2.1 million from the forecast as of the end of 2022, with the increase primarily in the OMS scope that saw an approximate \$1.3 million forecast increase from the prior quarter. The increase to the OMS forecast was driven by additional vendor costs driven by a change in the Go Live date from the second quarter to fourth quarter of 2023 and additional hardware/software load balancers.

**Table 21 – ES 2 Grid Modernization – ADMS Costs as of March 31, 2023**

Scope	Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
	<i>Actuals</i>				
OMS	\$33,891	\$8,375,966	\$7,140,445	\$14,975,685	\$4,152,899
DMS/DERMS	\$1,498	\$1,858,969	\$1,185,863	\$2,730,854	\$412,175
Platform	\$824	\$1,998,769	\$1,411,403	\$2,105,701	\$431,719
ADMS Hardware	-	\$4,213,920	\$116,732	\$328,352	-
<b>Total ADMS</b>	<b>\$36,213</b>	<b>\$16,447,624</b>	<b>\$9,854,442</b>	<b>\$20,140,591</b>	<b>\$4,996,793</b>

Scope	Q2 2023	Q3 2023	Q4 2023	2024
	<i>Forecast</i>			
OMS	\$3,578,280	\$4,542,728	\$3,694,398	\$4,148,204
DMS/DERMS	\$438,538	-	-	-
Platform	\$7,556	-	-	-
ADMS Hardware	\$570,000	-	-	-
<b>Total ADMS</b>	<b>\$4,594,374</b>	<b>\$4,542,728</b>	<b>\$3,694,398</b>	<b>\$4,148,204</b>

Scope	Forecast	Actuals to Date	% of Actuals to Forecast
OMS	\$50,642,494	\$34,678,885	68%
DMS/DERMS	\$6,627,897	\$6,189,359	93%
Platform	\$5,955,972	\$5,948,416	100%
ADMS Hardware	\$5,229,004	\$4,659,004	89%
<b>Total ADMS</b>	<b>\$68,455,367</b>	<b>\$51,475,663</b>	<b>75%</b>

Findings & Observations

- The DMS/DERMS scope of the ADMS subprogram achieved its go live/in-service status during the first quarter of 2023, joining the previously completed ADMS platform (placed in-service during the first quarter of 2022). The remaining OMS scope saw its forecasted go live date slip during the first quarter of 2023, with the current forecast indicating an in-service date at the end of October 2023.
- Following the transition of the subprogram estimate to the Definitive stage in the second quarter of 2022, there have been no further updates to the subprogram estimate which remains at \$56.3 million. PSE&G’s URB approved \$13.6 million in additional funding above the Stipulation budget for the subprogram to be covered by distribution base capital.
- The forecast for the Grid Modernization – ADMS subprogram as of the end of the first quarter of 2023 increased by approximately \$2.1 million from the status as of the end of the prior quarter, with a total current forecast of \$68.5 million. This increase was almost entirely with the OMS scope of the subprogram and was driven by additional vendor costs forecasted in support of the go live/in-service schedule change to the fourth quarter of 2023 and additional load balancers provided for the QAS and DRQAS environments, reflecting the continuing challenges PSE&G has experienced in executing this scope of work.

## E. Electric Stipulated Base

The Stipulation identified that the electric portion of the Stipulated Base include \$100 million in investments at PSE&G’s discretion towards electric OP-HDS projects and/or electric stations life cycle subprograms described in the original ES 2 filing.<sup>3</sup> As noted in the IM’s 2022 Third Quarter Report, PSE&G commenced the OP-HDS in July 2022, but with the current forecasts for the life cycle station upgrade projects consuming the entire Stipulated Base funding (\$101.5 million forecast compared to the \$100.0 million Electric Stipulated Base budget), this work is presently being executed outside of the ES 2 Program. If the forecasts for the substation projects lower and additional funding becomes available, PSE&G may include some of the OP-HDS through the Program funding. The IM intends to continue to follow the status of this work, but will only report on it should PSE&G include these costs under the ES 2 Program.<sup>4</sup>

In accordance with what the Stipulation provides, PSE&G plans to fund some of the life cycle station upgrades from the electric program accelerated investment, subject to funds available, after all Electric Station Flood Mitigation projects are funded at their final costs. While this shift in funding from stipulated base to accelerated recovery will not be determined until closer to the Program completion, PSE&G identified the Hamilton project as a candidate to be funded through the accelerated recovery mechanism.

The four life cycle station upgrade projects and the State Street OP project with their respective current estimates compared to the actuals to date are provided in **Table 22 – ES 2 Stipulated Base Project Status as of March 31, 2023**.

*Table 20 – ES 2 Stipulated Base Project Status as of March 31, 2023*

Project	Estimate Level	Base	Risk & Contingency*	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date**
1. Hamilton^	Definitive	\$17,500,000	-	\$17,500,000	\$16,432,777	94%	10/22/2022 (actual)
2. Paramus	Definitive	\$21,400,000	-	\$21,400,000	\$18,918,751	88%	11/9/2022 (actual)
3. Plainfield	Definitive	\$22,600,000	-	\$22,600,000	\$21,548,888	95%	12/14/2022 (actual)
4. Woodbury	Definitive	\$18,100,000	-	\$18,100,000	\$12,641,889	70%	10/9/2023 (↑ -8)
5. State Street (OP)	Definitive	\$28,600,000	-	\$28,600,000	\$6,670,467	23%	12/29/2022 (actual)
<b>Life Cycle Station Upgrade &amp; State Street OP Subtotal</b>		<b>\$108,200,000</b>	<b>-</b>	<b>\$108,200,000</b>	<b>\$76,212,773</b>	<b>70%</b>	<b>-</b>

<sup>3</sup> As noted in the Stipulation, the electric life cycle upgrades are part of the electric Stipulated Base to be recovered in the Company’s next base rate case provided the investments are found to be prudent. The Stipulation also notes that should the 16 stations that comprise the Electric Station Flood Mitigation subprogram be completed for under the \$389 million allocated for that subprogram, PSE&G may reallocate such unused funds to stations identified in the life cycle station upgrade portion of PSE&G’s petition for accelerated recovery.

<sup>4</sup> Note: beginning in the fourth quarter of 2023, PSE&G commenced OP-HDS work within the ES 2 Program.

Project	Estimate Level	Base	Risk & Contingency*	Total	Actuals to Date	% of Actuals to Estimate	Forecasted In-Service Date**
Life Cycle Station Upgrade & State Street OP Subtotal (w/o Hamilton^)		\$90,700,000	-	\$90,700,000	\$59,779,996	66%	-
OP-HDS Placeholder				\$9,300,000	-	-	Dec 2023
<b>Total Elec. Stip. Base</b>				<b>\$100,000,000</b>	<b>\$76,212,773</b>	<b>76%</b>	<b>Dec 2023</b>

\*-As discussed in the IM 2022 First Quarter Report, during the first quarter of 2022, PSE&G made the decision to hold risk and contingency at the subprogram level. Based on the \$100 million funding amount for the Electric Stipulated Base projects, PSE&G is utilizing the balance of the of the funds after the base estimates of the Life Cycle Station Upgrades projects as the R&C for these projects with any remaining funding being allocated for OP-HDS projects.

\*\*--Reflects the in-service date of the last major asset (e.g. switchgear), certain activities may take place after this date to support the final in-service date (i.e. when all customers are cutover).

^-PSE&G intends to fund the Hamilton project through the accelerated recovery provided to the ES 2 Program (outside the Stipulated Base), subject to the availability of funds within the Electric Station Flood Mitigation subprogram.

(↑)-Indicates the forecasted in-service date advanced from the prior quarter.

(↓)-Indicates the forecasted in-service date slipped from the prior quarter.

As shown in **Table 20**, PSE&G is anticipating funding the Hamilton project through the accelerated recovery portion of the ES 2 Program, provided funds are available. As of the end of the first quarter of 2023, the Electric Station Flood Mitigation subprogram had a forecasted balance of approximately \$18.3 million, compared to the current forecast for the Hamilton project of \$18.1 million. The Woodbury project remains the final Life Cycle Station Upgrade project to be placed in-service, with a forecasted in-service date in October 2023. Additional details on each of these life cycle station upgrade projects is provided in the individual subsections that follow.

#### Findings & Observations:

- The State Street OP project transitioned to the Definitive level estimate, which resulted in a \$8.9 million increase to the project estimate due in large part to the revised overhead configuration needed to complete the scope and related efforts. These factors also contributed to the State Street OP forecast increasing approximately \$8.6 million from the prior quarter.
- The final Life Cycle Station Upgrade project to be placed in-service, Woodbury, continues to be forecasted to go in-service early in the fourth quarter of 2023. During the first quarter of 2023, switchgear commissioning commenced, which will continue in the upcoming months.
- The consideration to fund the Hamilton project through the accelerated recovery portion of the ES 2 funding, provided funds remain available, aligns with what paragraph 25 of the Stipulation provides and presents the opportunity for PSE&G to complete OP-HDS work through the Stipulated Base.

#### 1. Hamilton

During the first quarter of 2023, \$1,776,046 was spent on the Hamilton project against a forecast of approximately \$1.9 million, which brought total spend on the project to approximately \$16.4 million. The

variance in forecasted to actual spend during the first quarter of 2023 was primarily attributed to an accrual typo and lower than forecasted actuals for electrical supervision and Supervisory Control and Data Acquisition (SCADA). The Hamilton project was placed in-service on October 22, 2022.

Notable activities on the Hamilton during the first quarter of 2023 included commencing demolition of the existing 4kV equipment.

The actual spend by quarter for Hamilton as compared to the current forecast and URB approved estimate is provided below. During the first quarter of 2023, PSE&G's URB approved internal funding for the Hamilton project to be provided through the Electric Station Flood Mitigation funding as provided by the Stipulation (paragraph 25), subject to available funding at Program completion. The forecast for the Hamilton project increased approximately \$165k from the prior quarter to the current forecast of approximately \$18.1 million.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$0	\$362,372	\$3,141,022	\$11,153,337	\$1,776,046

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$1,320,624	\$317,304	\$68,662	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$17,500,000	\$16,432,777	94%
<b>Forecast</b>	\$18,139,368		91%

## 2. Paramus

During the first quarter of 2023, \$760,151 was spent on the Paramus project against a forecast of approximately \$738k, which brought the total spend on the project to approximately \$18.9 million. The Paramus project was placed in-service on November 9, 2022.

Notable activities during the first quarter of 2023 on the Paramus project included the completion of civil and electrical demolition at the site and delivery of the capacitor banks.

The actual spend by quarter for Paramus as compared to the current forecast and URB approved estimate is provided below. The forecast for the Paramus project is relatively unchanged from the prior quarter, with the total forecast decreasing approximately \$54k from the status as of the end of 2022.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$0	\$840,200	\$7,068,765	\$10,249,635	\$760,151

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$1,392,340	\$364,411	\$812,871	\$147,500

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$21,400,000	\$18,918,751	88%
Forecast	\$21,635,873		88%

### 3. Plainfield

During the first quarter of 2023, \$1,799,278 was spent on the Plainfield project against a forecast of approximately \$1.7 million, which brought the total spend on the project to approximately \$21.5 million. The Plainfield project was placed in-service as of December 14, 2022.

Notable activities on the Plainfield project during the first quarter of 2023 included the completion of the first set of circuit cutovers and the demolition of existing equipment.

The actual spend by quarter for Plainfield as compared to the current forecast and URB approved estimate is provided below. The forecast for the Plainfield project increased by approximately \$207k from the prior quarter.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$0	\$682,235	\$3,584,101	\$15,483,184	\$1,799,278

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$997,608	\$695,567	\$656,518	\$100,919

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$22,600,000	\$21,548,888	95%
Forecast	\$23,999,499		90%

### 4. Woodbury

During the first quarter of 2023, \$1,046,187 was spent on the Woodbury project against a forecast of approximately \$1.3 million, which brought the total spend on the project to approximately \$12.6 million. The forecasted in-service date for the Woodbury project advanced eight days from the status as of the end of the prior quarter to October 9, 2023.

Notable activities on the Woodbury project during the first quarter of 2023 included the start of switchgear commissioning.

The actual spend by quarter for Woodbury as compared to the current forecast and URB approved estimate is provided below.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$0	\$551,165	\$1,613,823	\$9,430,714	\$1,046,187



Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$1,132,931	\$2,232,870	\$2,074,905	\$19,636

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$18,100,000	\$12,641,889	70%
Forecast	\$18,102,230		70%

**5. State Street (Outside Plant)**

During the first quarter of 2023, \$3,607,768 was spent on the State Street OP project against a forecast of approximately \$5.0 million, which brought total spend on the project to approximately \$6.7 million. The variance in forecasted to actual spend during the first quarter of 2023 was primarily driven by the Phase 2 manhole and conduit work being delayed due to an inability to single source the contract to the same vendor that completed Phase 1 due to the high estimated value of the contract. Although, following the competitive bid process for the Phase 2 work, it was ultimately awarded to the same vendor that performed the Phase 1 work. The phased approach to this scope of work was utilized by PSE&G to follow the phased engineering approach used to manage and expedite this large project.

In alignment with the State Street IP project, PSE&G placed the State Street OP project in-service on December 29, 2022.

Notable activities on the State Street OP project during the first quarter of 2023 included the completion of Phase 1 civil work and the issuance of the Phase 2 civil bid package.

The actual spend by quarter for State Street (OP) as compared to the current forecast and URB approved estimate is provided below. During the first quarter of 2023, PSE&G transitioned the State Street OP project to a Definitive level estimate, which resulted in the base estimate for the project increasing by \$8.9 million, from \$19.7 million to \$28.6 million. This \$8.9 million increase was driven by:

- Revised overhead configuration (\$3.6 million);
- Underground permitting requirements (\$2.5 million);
- Additional underground engineering and associated test pits required (\$1.3 million);
- Revised underground manhole and conduit estimate (\$0.8 million); and,
- Project management costs not included in original project estimate when this project was split from the main State Street project (\$0.7 million).

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$0	\$0	\$211,247	\$2,851,452	\$3,607,768

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$6,303,231	\$6,543,133	\$8,373,071	\$692,640

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$28,600,000	\$6,670,467	23%

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Forecast	\$28,582,541		23%

## F. Gas M&R Station Upgrades

During the first quarter of 2023, construction was ongoing at the Camden, Central, and East Rutherford projects, including post-in-service work at Camden and East Rutherford after these projects were placed in-service at the end of 2022. The Paramus project continues to prepare for its construction phase, while the Westampton project continued to work through its closeout activities.

**Table 23 – ES 2 Gas M&R Summary Status as of March 31, 2023** below provides the current approved estimates for each project within the Gas M&R subprogram, along with the actuals to date and forecasted in-service dates.

*Table 23 – ES 2 Gas M&R Summary Status as of March 31, 2023*

Project	Estimate Level	Base	Risk & Contingency	Total Estimate	Actuals	% of Actuals to Estimate	Forecasted In-Service
1. Camden*	Definitive	\$21,600,000	\$1,200,000	\$22,800,000	\$19,934,710	87%	Dec 2022 (actual)
2. Central*	Conceptual	\$31,400,000	\$5,500,000	\$36,900,000	\$28,695,717	78%	Oct 2023 (↑)
3. East Rutherford	Definitive	\$24,100,000	\$1,900,000	\$26,000,000	\$24,660,432	95%	Dec 2022 (actual)
4. Mount Laurel	Conceptual	\$12,700,000	\$3,100,000	\$15,800,000	\$3,319,155	21%	Nov 2023
5. Paramus*	Study	\$11,500,000	\$7,400,000	\$18,900,000	\$2,166,746	12%	Jan 2024 (↑)
6. Westampton	Definitive	\$8,400,000	\$-	\$8,400,000	\$8,531,100	102%	Oct 2021 (actual)
<b>Subprogram Total</b>		<b>\$109,700,000</b>	<b>\$19,100,000</b>	<b>\$128,800,000</b>	<b>\$87,307,859</b>	<b>68%</b>	<b>Jan 2024</b>
*-Included in the Stipulated Base.							
(↑)-Indicates the forecasted in-service date advanced from the prior quarter.							
(↓)-Indicates the forecasted in-service date slipped from the prior quarter.							

During the first quarter of 2023, there were no updated estimates approved for any of the Gas M&R projects. The cost forecasts were also essentially unchanged for two of the projects (East Rutherford and Westampton), while the Central, Mount Laurel, and Paramus projects each saw significant forecast increases and the Camden project saw a large forecast decrease. Overall, the Gas M&R subprogram forecast increased by \$19.7 million from the status as of the end of the prior quarter (of which, \$15.6 million related to the Paramus project). Details of the individual forecast changes are discussed within the individual project discussions that follow.

Relative to the forecasted in-service dates shown in **Table 23**, as of the end of the first quarter of 2023, the remaining Gas M&R projects (Central, Mount Laurel, and Paramus) each experienced some advancement in their respective forecasted in-service dates, with Mount Laurel forecasted for 11/22/2023 (improved eight days), Central for 10/16/2023 (improved 45 days), and Paramus for 1/30/2024 (improved 23 days). The Paramus project, however, continues to be forecasted to go in-service after the Program end

date due to the later than planned delivery of the heater building, which pushes out other construction activities.

Findings & Observations:

- The six projects that comprise the Gas M&R subprogram continued to advance at various stages of development or delivery. As of the end of the first quarter of 2023, three of the projects have been placed in-service (Camden, East Rutherford, and Westampton). With construction activities during the quarter taking place on the Camden, Central, and East Rutherford projects, while pre-construction activities continued to advance at Paramus.
- For the Gas M&R projects remaining to be placed in-service (Central, Mount Laurel, and Paramus), each saw a varying amount of advancement in the forecasted in-service date from the status as of the prior quarter. Central and Mount Laurel are both forecasted to be in-service during the fourth quarter of 2023, while Paramus is currently forecasted for January 2024 following previous delays to the delivery of the heater building that shifted out construction activities.
- There were no updates to the estimates for the Gas M&R project during the first quarter of 2023, however, the forecasts for the Camden, Central, Mount Laurel, and Paramus projects saw substantial changes during the quarter. Overall, the Gas M&R projects saw the forecast increase by \$19.7 million from the status as of the end of the prior quarter, with most of the increase tied to the Paramus project (\$15.6 million) and appears to be reflective of the similar cost increases that previously impacted the earlier projects executed in this subprogram.
- With the current forecast for the overall Gas M&R subprogram at approximately \$135.2 million, it now exceeds the current \$128.8 million in PSE&G approved funding for the subprogram (in addition to being beyond the \$101 million budget established by the Stipulation).

1. Camden

During the first quarter of 2023, the actual spend on the Camden project was \$161,159 compared to a forecast of approximately \$890K. The variance in spend during the first quarter was attributed to fire alarm and gas system construction slipping out pending the design finalization in addition to much lower than accrued environmental costs. The Camden project was placed in-service as of December 30, 2022, with remaining work involving the fit out of the control room, gas detection system, security system, and final site restoration activities.

Notable activities on the Camden project during the first quarter of 2023 included:

- Continued control building fit out;
- Continued installation of cathodic protection system;
- Continued pulling electrical wiring and making terminations;
- Received and set electrical switchgear in place;
- Completed installation of storm and sanitary sewer lines;
- Completed installation of meters for generators/boilers; and,
- Commenced site grading.

The actual spend by quarter for Camden as compared to the current forecast and URB approved estimate is provided below. The forecast for the Camden project decreased by approximately \$2.5 million from the

status as of the end of 2022 to a current forecast of \$22.0 million as of the end of the first quarter of 2023. This forecast decrease was the result of the final carve out of the LPA-related costs from the ES 2 project.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$13,326	\$859,530	\$2,147,696	\$16,753,179	\$161,159

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$1,991,453	\$48,507	\$25,330	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$22,800,000	\$19,934,710	87%
Forecast	\$22,000,000		91%

## 2. Central

During the first quarter of 2023, \$2,878,066 was spent on the Central project compared to a forecast of approximately \$3.6 million, which brought the total spend on the project to approximately \$28.7 million. The variance in forecasted to actual spend during the first quarter was attributed to less than estimated project management and engineering support, material invoices lower than accruals, and lower than anticipated construction progress pending final building electrical design.

The forecasted in-service date for the Central project as of the end of the first quarter of 2023 improved 45 days from the status as of the end of 2022 to October 16, 2023. This advancement in the forecasted in-service date was driven by a reduction in the float within the schedule, which was reduced from three months to six weeks based on the higher confidence in the current construction schedule.

Notable activities on the Central project during the first quarter of 2023 included:

- Began installation of glycol piping for heaters and circulating pumps;
- Began installation of large control valves;
- Continued pipe rack installation;
- Continued electrical and plumbing rough in, wire pulling and terminations;
- Completed hydrotesting of 60psi and 35psi outlet piping tie in runs;
- Completed installation of pedestrian platforms in regulator building; and,
- Initiated discussions for tie-ins and tie-in procedures.

The actual spend by quarter for Central as compared to the current forecast and URB approved estimate is provided below. The forecast for the Central project increased \$4.5 million from the status as of the end of the prior quarter to \$35.9 million as of the end of the first quarter of 2023, which was driven by construction change orders and the construction schedule extending from the initial plan.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$6,869	\$670,582	\$4,226,277	\$20,913,923	\$2,878,066

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$2,800,668	\$4,266,228	\$99,025	\$38,362

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$36,900,000	\$28,695,717	78%
<b>Forecast</b>	\$35,900,000		80%

### 3. East Rutherford

During the first quarter of 2023, \$1,843,330 was spent on the East Rutherford project compared to a forecast of approximately \$2.2 million, which brought the total spend on the project to approximately \$24.7 million. The variance in forecasted to actual spend during the first quarter of 2023 was primarily attributed to weather delays that pushed out the erection of the regulator building later than planned.

The East Rutherford project was placed in-service as of December 23, 2022. Remaining work on the project includes the completion of the regulator building, site restoration, and punch list items.

Notable activities on the East Rutherford project during the first quarter of 2023 included:

- Began erection of regulator building;
- Continued fit out of SCADA building;
- Continued wire pulling and terminations; and,
- Completed installation of LNG boil off regulating run.

The actual spend by quarter for East Rutherford as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the East Rutherford project remained virtually unchanged from the status at the end of the prior quarter at \$26.5 million.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$9,010	\$521,865	\$1,783,623	\$20,502,604	\$1,843,330

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$1,371,939	\$362,322	\$105,308	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$26,000,000	\$24,660,432	95%
<b>Forecast</b>	\$26,500,001		93%

### 4. Mount Laurel

During the first quarter of 2023, \$1,233,680 was spent on the Mount Laurel project compared to a forecast of approximately \$714K, which brought the total spend to approximately \$3.3 million. The

variance in forecast to actual spend during the quarter was primarily attributed to the payment for the Transco interconnection agreement occurring in March 2023, earlier than forecasted.

The forecasted in-service date for the Mount Laurel project as of the end of the first quarter of 2023 advanced eight days from the status as of the end of the prior quarter to November 22, 2023.

Notable activities on the Mount Laurel project during the first quarter of 2023 included:

- Preparing for construction, including contractor development of construction schedule;
- Continued design of contingency bypass regulator skid;
- Identified building hazards for abatement;
- Coordinated with Verizon on temporary and permanent communication line at site; and,
- Contractor mobilized at laydown yard.

In addition, PSE&G continued to coordinate with Transco regarding Transco’s concurrent work at the site.

The actual spend by quarter for Mount Laurel as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Mount Laurel project increased \$2.0 million from the status as of the end of the prior quarter to \$14.7 million as of the end of the first quarter of 2023. This forecast increase was driven by additional construction oversight, costs associated with the contingency bypass regulator skid, and construction change orders.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$5,965	\$362,167	\$527,341	\$1,190,002	\$1,233,680

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$3,662,951	\$4,937,270	\$2,597,527	\$193,087

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$15,800,000	\$3,319,155	21%
<b>Forecast</b>	\$14,700,000		23%

## 5. Paramus

During the first quarter of 2023, \$440,792 was spent on the Paramus project compared to a forecast of approximately \$1.0 million, which brought the total spend on the project to approximately \$2.2 million. The variance in forecasted to actual spend during the quarter was primarily attributed to the finalization of the Transco interconnection agreement extending past the end of the quarter, which delayed the corresponding payment.

The forecasted in-service date for the Paramus project as of the end of the first quarter of 2023 improved 23 days from the status as of the end of 2022 to January 30, 2024. This reversed some of the delay forecasted from the delay of the heater building (which impacts other construction activities) and was driven by reductions in the construction durations based on the construction contractor’s schedule.

Notable activities on the Paramus project during the first quarter of 2023 included:

- Received IFC drawing package;
- Received contractor’s construction schedule; and,
- Returned comments on interconnection agreement back to Transco.

Construction activities on the Paramus project remain planned to commence in the second quarter of 2023.

The actual spend by quarter for Paramus as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project. The forecast for the Paramus project as of the end of the first quarter of 2023 increased approximately \$15.6 million from the prior quarter to \$27.6 million. This forecast increase was driven by:

- Construction bid pricing, including escalation, laydown yard, Issued for Bid (IFB) to IFC drawing revisions, general conditions, and hazardous materials abatement (\$10.8 million).
- Updated material costs based on actuals (\$2.4 million).
- Construction oversight, additional support from Environmental, M&R, and District (\$2.0 million).
- Additional Transco costs (\$400K).

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$8,842	\$462,452	\$568,344	\$686,316	\$440,792

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$4,074,651	\$10,191,357	\$10,577,926	\$589,320

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
Estimate	\$18,900,000	\$2,166,746	12%
Forecast	\$27,600,000		8%

## 6. Westampton

During the first quarter of 2023, \$54,385 was spent on the Westampton project compared to a forecast of approximately \$53K, which kept the total spend on the project at approximately \$8.5 million. The Westampton was placed in-service as of October 22, 2021, final punch list items were worked down and completed during the fourth quarter of 2022 and a final inspection was scheduled with the township. This effectively concludes the Westampton project.

The actual spend by quarter for Westampton as compared to the current URB approved estimate is provided below along with the forecasted spend through the end of the project.

Q4 2019	2020 Total	2021 Total	2022 Total	Q1 2023
<i>Actuals</i>				
\$8,395	\$1,032,670	\$6,961,216	\$474,434	\$54,385

Q2 2023	Q3 2023	Q4 2023	2024
<i>Forecast</i>			
\$7,732	-	-	-

Estimate & Forecast		Actuals to Date	% of Actuals to Estimate & Forecast
<b>Estimate</b>	\$8,400,000	\$8,531,100	102%
<b>Forecast</b>	\$8,538,832		99%



**Danielle Lopez**  
Associate Counsel-Regulatory

**Law Department**  
80 Park Plaza, T10, Newark, New Jersey 07102-4194  
Email: danielle.lopez@pseg.com



March 16, 2023

**VIA ELECTRONIC MAIL ONLY**

Carmen Diaz, Acting Secretary  
Board of Public Utilities  
44 South Clinton Avenue, 1<sup>st</sup> Flr.  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**Re: NEXT PHASE OF THE PSE&G GAS SYSTEM MODERNIZATION PROGRAM  
MONTHLY REPORT – FEBRUARY 2023**

Dear Acting Secretary Diaz:

Enclosed for filing is the letter and enclosures providing Public Service Electric & Gas Company's (PSE&G's) monthly report for February 2023 on its Next Phase of the Gas System Modernization Program (GSMP II or the Program).

The GSMP II was approved by a Board Order dated May 22, 2018 in BPU Docket No. GR17070776. That Order adopted a Stipulation pursuant to which PSE&G is operating the Program. This report is filed pursuant to paragraph 43 of that Stipulation and is designed to address the first four items contained in Attachment C to that Stipulation.

The first three items are addressed in the attached materials. With regard to item 4, there were no funds or credits received from the United States government, the State of New Jersey, a county or a municipality, for work related to any of the Program projects.

Consistent with the Order issued by the Board in connection with In the Matter of the New Jersey Board of Public Utilities' Response to the COVID-19 Pandemic for a Temporary Waiver of Requirements for Certain Non-Essential Obligations, BPU Docket No. EO20030254, Order dated March 19, 2020, this document is being filed electronically with the Secretary of the Board and the Division of Rate Counsel. No paper copies will follow.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Danielle Lopez", written over a light blue rectangular background.

Danielle Lopez

cc - E-Mail Only:  
Robert Brabston  
Malike Cummings

Mike Kammer  
Ilene Lampitt  
Brian Lipman  
Karen Forbes  
Matko Illic  
Maura Caroselli  
Loni Diaz  
Carol Artale  
Pamela Owen

1) PSE&G's overall approved GSMP II Rate Mechanism and Stipulated Base capital budget broken down by major categories, both budgeted and actual amounts.

GSMP II Major Project Categories	Overall Approved Program
Replacement Main	\$ 1,087,400,000
Replacement Service	\$ 482,000,000
Regulator Elimination	\$ 5,600,000
<b>Total</b>	<b>\$ 1,575,000,000</b>

Feb PTD Budget	Feb PTD Actual
\$ 1,087,400,000	\$ 1,174,382,233
\$ 482,000,000	\$ 403,567,244
\$ 5,600,000	\$ 5,287,825
<b>\$ 1,575,000,000</b>	<b>\$ 1,583,237,302</b>

Stipulated Base II Major Project Categories	Overall Approved Program
Replacement Main	\$ 217,200,000
Replacement Service	\$ 34,800,000
Large Diameter HP Joints	\$ 18,000,000
GSMP Meter Reconstruction	\$ 30,000,000
<b>Total</b>	<b>\$ 300,000,000</b>

Feb PTD Budget	Feb PTD Actual
\$ 217,200,000	\$ 191,408,375
\$ 34,800,000	\$ 45,947,312
	\$ -
\$ 48,000,000	\$ 68,146,528
<b>\$ 300,000,000</b>	<b>\$ 305,502,215</b>

2) b. Expenditures incurred to date and amounts transferred to plant in-service, by project. Expenditures broken down by internal labor, materials, and other costs. Internal labor hours broken down by regular hours and overtime hours.

Expenditures Incurred To Date GSMP II Projects	Feb PTD Actual Internal Labor \$	Feb PTD Actual Material \$	Feb PTD Actual Other \$	Feb PTD Actual Total \$
Replacement Main	\$ 209,490,466	\$ 74,780,643	\$ 890,111,124	\$ 1,174,382,233
Replacement Service	\$ 76,542,273	\$ 32,920,978	\$ 294,103,993	\$ 403,567,244
Regulator Elimination	\$ 1,180,725	\$ 193,248	\$ 5,094,577	\$ 5,287,825
<b>Total</b>	<b>\$ 287,213,464</b>	<b>\$ 107,894,868</b>	<b>\$ 1,189,309,694</b>	<b>\$ 1,583,237,302</b>
GSMP II Internal Labor Hours				
Internal Labor - Regular Hours	2,935,078			
Internal Labor - Overtime Hours	965,204			

Amount to Plant In-Service
\$ 1,122,729,271
\$ 403,397,947
\$ 2,242,714
<b>\$ 1,528,369,931</b>

Expenditures Incurred To Date Stipulated Base II Projects	Feb PTD Actual Internal Labor \$	Feb PTD Actual Material \$	Feb PTD Actual Other \$	Feb PTD Actual Total \$
Replacement Main	\$ 27,215,050	\$ 18,948,831	\$ 145,244,493	\$ 191,408,375
Replacement Service	\$ 8,498,426	\$ 872,286	\$ 36,576,600	\$ 45,947,312
Large Diameter HP Joints	\$ -	\$ -	\$ -	\$ -
GSMP Meter Reconstruction	\$ 22,302,357	\$ 5,832,690	\$ 40,011,481	\$ 68,146,528
<b>Total</b>	<b>\$ 58,015,834</b>	<b>\$ 25,653,808</b>	<b>\$ 221,832,574</b>	<b>\$ 305,502,215</b>
Stip Base II Internal Labor Hours				
Internal Labor - Regular Hours	581,910			
Internal Labor - Overtime Hours	216,054			

Amount to Plant In-Service
\$ 182,477,887
\$ 45,921,442
\$ -
\$ 68,146,528
<b>\$ 296,545,856</b>







March 28, 2024

**VIA ELECTRONIC MAIL ONLY**

Sherri Golden, Board Secretary  
Board of Public Utilities  
44 South Clinton Avenue, 1<sup>st</sup> Flr.  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**Re: NEXT PHASE OF THE PSE&G GAS SYSTEM MODERNIZATION PROGRAM  
("GSMP II EXTENSION") MONTHLY REPORT – JANUARY 2024**

Dear Secretary Golden:

Attached hereto is Public Service Electric and Gas Company's ("PSE&G") monthly report for January 2024 on its Next Phase of the Gas System Modernization Program ("GSMP II").

GSMP II was approved by the New Jersey Board of Public Utilities (the "Board") by Order dated May 22, 2018 in BPU Docket No. GR17070776. That Order adopted a Stipulation pursuant to which PSE&G executed GSMP II. Subsequently on October 11, 2023, the Board issued an Order adopting a Stipulation to extend GSMP II under the terms and conditions described in the Stipulation ("GSMP II Extension" or the "Program"). This report is being filed pursuant to paragraph 41 of this Stipulation and is designed to address the first four items contained in its Attachment C.

The first three items are addressed in the attached materials. With regard to item 4, there were no funds or credits received from the United States government, the State of New Jersey, a county or a municipality, for work related to any of the Program projects.

Consistent with the Order issued by the Board in connection with In the Matter of the New Jersey Board of Public Utilities' Response to the COVID-19 Pandemic for a Temporary Waiver of Requirements for Certain Non-Essential Obligations, BPU Docket No. EO20030254, Order dated March 19, 2020, this document is being filed electronically with the Secretary of the Board and the Division of Rate Counsel. No paper copies will follow.

Very truly yours,

A handwritten signature in black ink, appearing to read "Danielle Lopez", written over a light blue circular stamp.

Danielle Lopez

cc - E-Mail Only:  
Robert Brabston  
Stacy Peterson  
Ilene Lampitt  
Brian Lipman  
Karen Forbes  
Matko Illic  
Maura Caroselli  
Loni Diaz  
Carol Artale  
Pamela Owen

**PSE&G - GAS SYSTEM MODERNIZATION PROGRAM  
ATTACHMENT C - MONTHLY REPORT**

1) PSE&G's overall approved GSMP II Extension Rate Mechanism and Stipulated Base capital budget broken down by major categories, both budgeted and actual amounts.

GSMP II Extension Major Project Categories	Overall Approved Program
Replacement Main	\$ 599,808,000
Replacement Service	\$ 148,895,294
Regulator Elimination	\$ 3,296,705
<b>Total</b>	<b>\$ 752,000,000</b>

Jan PTD Budget	Jan PTD Actual
\$ 1,388,781	\$ 1,137
\$ 232,918	\$ -
\$ -	\$ -
<b>\$ 1,621,699</b>	<b>\$ 1,137</b>

Stipulated Base II Major Project Categories	Overall Approved Program
Replacement Main	\$ 108,500,000
Replacement Service	\$ 24,933,000
Large Diameter HP Joints	\$ -
GSMP Meter Reconstruction	\$ 16,967,000
<b>Total</b>	<b>\$ 150,400,000</b>

Jan PTD Budget	Jan PTD Actual
\$ 255,805	\$ -
\$ 105,754	\$ -
\$ -	\$ -
\$ 46,246	\$ -
<b>\$ 407,805</b>	<b>\$ -</b>

2) b. Expenditures incurred to date and amounts transferred to plant in-service, by project. Expenditures broken down by internal labor, materials, and other costs. Internal labor hours broken down by regular hours and overtime hours.

Expenditures Incurred To Date GSMP II Ext. Projects	Jan PTD Actual Internal Labor \$	Jan PTD Actual Material \$	Jan PTD Actual Other \$	Jan PTD Actual Total \$
Replacement Main	\$ 807	\$ -	\$ 330	\$ 1,137
Replacement Service	\$ -	\$ -	\$ -	\$ -
Regulator Elimination	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 807</b>	<b>\$ -</b>	<b>\$ 330</b>	<b>\$ 1,137</b>
GSMP II Internal Labor Hours				
Internal Labor - Regular Hours	12			
Internal Labor - Overtime Hours	-			

Amount to Plant In-Service
\$ 1,137
\$ -
\$ -
<b>\$ 1,137</b>

Expenditures Incurred To Date Stipulated Base II Ext. Projects	Jan PTD Actual Internal Labor \$	Jan PTD Actual Material \$	Jan PTD Actual Other \$	Jan PTD Actual Total \$
Replacement Main	\$ -	\$ -	\$ -	\$ -
Replacement Service	\$ -	\$ -	\$ -	\$ -
Large Diameter HP Joints	\$ -	\$ -	\$ -	\$ -
GSMP Meter Reconstruction	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
Stip Base II Internal Labor Hours				
Internal Labor - Regular Hours	-			
Internal Labor - Overtime Hours	-			

Amount to Plant In-Service
\$ -
\$ -
\$ -
\$ -
<b>\$ -</b>







**Danielle Lopez**  
Associate Counsel-Regulatory

**Law Department**  
80 Park Plaza, T10, Newark, New Jersey 07102-4194  
Email: danielle.lopez@pseg.com



April 30, 2024

**VIA ELECTRONIC MAIL ONLY**

Sherri Golden, Board Secretary  
Board of Public Utilities  
44 South Clinton Avenue, 1<sup>st</sup> Flr.  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**Re: NEXT PHASE OF THE PSE&G GAS SYSTEM MODERNIZATION PROGRAM  
("GSMP II EXTENSION") MONTHLY REPORT – FEBRUARY 2024**

Dear Secretary Golden:

Attached hereto is Public Service Electric and Gas Company's ("PSE&G") monthly report for February 2024 on its Next Phase of the Gas System Modernization Program ("GSMP II").

GSMP II was approved by the New Jersey Board of Public Utilities (the "Board") by Order dated May 22, 2018 in BPU Docket No. GR17070776. That Order adopted a Stipulation pursuant to which PSE&G executed GSMP II. Subsequently on October 11, 2023, the Board issued an Order adopting a Stipulation to extend GSMP II under the terms and conditions described in the Stipulation ("GSMP II Extension" or the "Program"). This report is being filed pursuant to paragraph 41 of this Stipulation and is designed to address the first four items contained in its Attachment C.

The first three items are addressed in the attached materials. With regard to item 4, there were no funds or credits received from the United States government, the State of New Jersey, a county or a municipality, for work related to any of the Program projects.

Consistent with the Order issued by the Board in connection with In the Matter of the New Jersey Board of Public Utilities' Response to the COVID-19 Pandemic for a Temporary Waiver of Requirements for Certain Non-Essential Obligations, BPU Docket No. EO20030254, Order dated March 19, 2020, this document is being filed electronically with the Secretary of the Board and the Division of Rate Counsel. No paper copies will follow.

Very truly yours,

A handwritten signature in black ink, appearing to read "Danielle Lopez", written over a light blue circular stamp.

Danielle Lopez

cc - E-Mail Only:  
Robert Brabston  
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Pamela Owen

**PSE&G - GAS SYSTEM MODERNIZATION PROGRAM  
 ATTACHMENT C - MONTHLY REPORT**

1) PSE&G's overall approved GSMP II Extension Rate Mechanism and Stipulated Base capital budget broken down by major categories, both budgeted and actual amounts.

GSMP II Extension Major Project Categories	Overall Approved Program	February PTD Budget	February PTD Actual
Replacement Main	\$ 599,808,000	\$ 2,883,563	\$ 614,071
Replacement Service	\$ 148,895,294	\$ 310,310	\$ -
Regulator Elimination	\$ 3,296,705	\$ 7,191	\$ -
<b>Total</b>	<b>\$ 752,000,000</b>	<b>\$ 3,201,064</b>	<b>\$ 614,071</b>

Stipulated Base II Major Project Categories	Overall Approved Program	February PTD Budget	February PTD Actual
Replacement Main	\$ 108,500,000	\$ 505,395	\$ -
Replacement Service	\$ 24,933,000	\$ 203,053	\$ -
Large Diameter HP Joints	\$ -	\$ -	\$ -
GSMP Meter Reconstruction	\$ 16,967,000	\$ 86,360	\$ -
<b>Total</b>	<b>\$ 150,400,000</b>	<b>\$ 794,808</b>	<b>\$ -</b>

2) b. Expenditures incurred to date and amounts transferred to plant in-service, by project. Expenditures broken down by internal labor, materials, and other costs. Internal labor hours broken down by regular hours and overtime hours.

Expenditures Incurred To Date GSMP II Ext. Projects	February PTD Actual Internal Labor \$	February PTD Actual Material \$	February PTD Actual Other \$	February PTD Actual Total \$	Amount to Plant In-Service
Replacement Main	\$ 16,026	\$ -	\$ 598,046	\$ 614,071	\$ 614,071
Replacement Service	\$ -	\$ -	\$ -	\$ -	\$ -
Regulator Elimination	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 16,026</b>	<b>\$ -</b>	<b>\$ 598,046</b>	<b>\$ 614,071</b>	<b>\$ 614,071</b>
GSMP II Internal Labor Hours					
Internal Labor - Regular Hours	133				
Internal Labor - Overtime Hours	61				

Expenditures Incurred To Date Stipulated Base II Ext. Projects	February PTD Actual Internal Labor \$	February PTD Actual Material \$	February PTD Actual Other \$	February PTD Actual Total \$	Amount to Plant In-Service
Replacement Main	\$ -	\$ -	\$ -	\$ -	\$ -
Replacement Service	\$ -	\$ -	\$ -	\$ -	\$ -
Large Diameter HP Joints	\$ -	\$ -	\$ -	\$ -	\$ -
GSMP Meter Reconstruction	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
Stip Base II Internal Labor Hours					
Internal Labor - Regular Hours	-				
Internal Labor - Overtime Hours	-				





**Danielle Lopez**  
Associate Counsel-Regulatory

**Law Department**  
80 Park Plaza, T10, Newark, New Jersey 07102-4194  
Email: danielle.lopez@pseg.com



May 21, 2024

**VIA ELECTRONIC MAIL ONLY**

Sherrri Golden, Board Secretary  
Board of Public Utilities  
44 South Clinton Avenue, 1<sup>st</sup> Flr.  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**Re: NEXT PHASE OF THE PSE&G GAS SYSTEM MODERNIZATION PROGRAM  
("GSMP II EXTENSION") MONTHLY REPORT – MARCH 2024**

Dear Secretary Golden:

Attached hereto is Public Service Electric and Gas Company's ("PSE&G") monthly report for March 2024 on its Next Phase of the Gas System Modernization Program ("GSMP II").

GSMP II was approved by the New Jersey Board of Public Utilities (the "Board") by Order dated May 22, 2018 in BPU Docket No. GR17070776. That Order adopted a Stipulation pursuant to which PSE&G executed GSMP II. Subsequently on October 11, 2023, the Board issued an Order adopting a Stipulation to extend GSMP II under the terms and conditions described in the Stipulation ("GSMP II Extension" or the "Program"). This report is being filed pursuant to paragraph 41 of this Stipulation and is designed to address the first four items contained in its Attachment C.

The first three items are addressed in the attached materials. With regard to item 4, there were no funds or credits received from the United States government, the State of New Jersey, a county or a municipality, for work related to any of the Program projects.

Consistent with the Order issued by the Board in connection with In the Matter of the New Jersey Board of Public Utilities' Response to the COVID-19 Pandemic for a Temporary Waiver of Requirements for Certain Non-Essential Obligations, BPU Docket No. EO20030254, Order dated March 19, 2020, this document is being filed electronically with the Secretary of the Board and the Division of Rate Counsel. No paper copies will follow.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Danielle Lopez", written over a light blue circular stamp.

Danielle Lopez



cc - E-Mail Only:  
Robert Brabston  
Stacy Peterson  
Ilene Lampitt  
Brian Lipman  
Karen Forbes  
Matko Illic  
Maura Caroselli  
Loni Diaz  
Carol Artale  
Pamela Owen

**PSE&G - GAS SYSTEM MODERNIZATION PROGRAM  
ATTACHMENT C - MONTHLY REPORT**

1) PSE&G's overall approved GSMP II Extension Rate Mechanism and Stipulated Base capital budget broken down by major categories, both budgeted and actual amounts.

GSMP II Extension Major Project Categories	Overall Approved Program
Replacement Main	\$ 599,808,000
Replacement Service	\$ 148,895,294
Regulator Elimination	\$ 3,296,705
<b>Total</b>	<b>\$ 752,000,000</b>

March PTD Budget	March PTD Actual
\$ 4,288,164	\$ 4,402,032
\$ 549,773	\$ 375,288
\$ 7,191	\$ -
<b>\$ 4,845,128</b>	<b>\$ 4,777,320</b>

Stipulated Base II Major Project Categories	Overall Approved Program
Replacement Main	\$ 108,500,000
Replacement Service	\$ 24,933,000
Large Diameter HP Joints	\$ -
GSMP Meter Reconstruction	\$ 16,967,000
<b>Total</b>	<b>\$ 150,400,000</b>

March PTD Budget	March PTD Actual
\$ 808,959	\$ 5,452
\$ 309,853	\$ -
\$ -	\$ -
\$ -	\$ -
<b>\$ 1,118,812</b>	<b>\$ 5,452</b>

2) b. Expenditures incurred to date and amounts transferred to plant in-service, by project. Expenditures broken down by internal labor, materials, and other costs. Internal labor hours broken down by regular hours and overtime hours.

Expenditures Incurred To Date GSMP II Ext. Projects	March PTD Actual Internal Labor \$	March PTD Actual Material \$	March PTD Actual Other \$	March PTD Actual Total \$
Replacement Main	\$ 598,617	\$ 188,287	\$ 3,615,128	\$ 4,402,032
Replacement Service	\$ 132,053	\$ -	\$ 243,235	\$ 375,288
Regulator Elimination	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 730,670</b>	<b>\$ 188,287</b>	<b>\$ 3,858,363</b>	<b>\$ 4,777,320</b>
GSMP II Internal Labor Hours				
Internal Labor - Regular Hours	5,560			
Internal Labor - Overtime Hours	1,923			

Amount to Plant In-Service
\$ 4,402,032
\$ 375,288
\$ -
<b>\$ 4,777,320</b>

Expenditures Incurred To Date Stipulated Base II Ext. Projects	March PTD Actual Internal Labor \$	March PTD Actual Material \$	March PTD Actual Other \$	March PTD Actual Total \$
Replacement Main	\$ -	\$ -	\$ 5,452	\$ 5,452
Replacement Service	\$ -	\$ -	\$ -	\$ -
Large Diameter HP Joints	\$ -	\$ -	\$ -	\$ -
GSMP Meter Reconstruction	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 5,452</b>	<b>\$ 5,452</b>
Stip Base II Internal Labor Hours				
Internal Labor - Regular Hours	-			
Internal Labor - Overtime Hours	-			

Amount to Plant In-Service
\$ 5,452
\$ -
\$ -
\$ -
<b>\$ 5,452</b>





**Danielle Lopez**  
Associate Counsel-Regulatory

**Law Department**  
80 Park Plaza, T10, Newark, New Jersey 07102-4194  
Email: danielle.lopez@pseg.com



June 27, 2024

**VIA ELECTRONIC MAIL ONLY**

Sherrri Golden, Board Secretary  
Board of Public Utilities  
44 South Clinton Avenue, 1<sup>st</sup> Flr.  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**Re: NEXT PHASE OF THE PSE&G GAS SYSTEM MODERNIZATION PROGRAM  
("GSMP II EXTENSION") MONTHLY REPORT – APRIL 2024**

Dear Secretary Golden:

Attached hereto is Public Service Electric and Gas Company's ("PSE&G") monthly report for April 2024 on its Next Phase of the Gas System Modernization Program ("GSMP II").

GSMP II was approved by the New Jersey Board of Public Utilities (the "Board") by Order dated May 22, 2018 in BPU Docket No. GR17070776. That Order adopted a Stipulation pursuant to which PSE&G executed GSMP II. Subsequently on October 11, 2023, the Board issued an Order adopting a Stipulation to extend GSMP II under the terms and conditions described in the Stipulation ("GSMP II Extension" or the "Program"). This report is being filed pursuant to paragraph 41 of this Stipulation and is designed to address the first four items contained in its Attachment C.

The first three items are addressed in the attached materials. With regard to item 4, there were no funds or credits received from the United States government, the State of New Jersey, a county or a municipality, for work related to any of the Program projects.

Consistent with the Order issued by the Board in connection with In the Matter of the New Jersey Board of Public Utilities' Response to the COVID-19 Pandemic for a Temporary Waiver of Requirements for Certain Non-Essential Obligations, BPU Docket No. EO20030254, Order dated March 19, 2020, this document is being filed electronically with the Secretary of the Board and the Division of Rate Counsel. No paper copies will follow.

Very truly yours,

A handwritten signature in black ink, appearing to read "Danielle Lopez", written over a light blue circular stamp.

Danielle Lopez

cc - E-Mail Only:  
Robert Brabston  
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Brian Lipman  
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Matko Illic  
Maura Caroselli  
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Pamela Owen

**PSE&G - GAS SYSTEM MODERNIZATION PROGRAM  
 ATTACHMENT C - MONTHLY REPORT**

1) PSE&G's overall approved GSMP II Extension Rate Mechanism and Stipulated Base capital budget broken down by major categories, both budgeted and actual amounts.

GSMP II Extension Major Project Categories	Overall Approved Program
Replacement Main \$	\$ 599,808,000
Replacement Service \$	\$ 148,895,294
Regulator Elimination \$	\$ 3,296,705
<b>Total</b>	<b>\$ 752,000,000</b>

April PTD Budget	April PTD Actual
\$ 8,238,322	\$ 15,119,235
\$ 1,922,534	\$ 1,810,670
\$ -	\$ 406,149
<b>\$ 10,160,856</b>	<b>\$ 17,336,054</b>

Stipulated Base II Major Project Categories	Overall Approved Program
Replacement Main \$	\$ 108,500,000
Replacement Service \$	\$ 24,933,000
Large Diameter HP Joints \$	-
GSMP Meter Reconstruction \$	\$ 16,967,000
<b>Total</b>	<b>\$ 150,400,000</b>

April PTD Budget	April PTD Actual
\$ 1,186,429	\$ 41,249
\$ 435,521	\$ 2,880
\$ -	\$ -
\$ -	\$ -
<b>\$ 1,621,950</b>	<b>\$ 44,128</b>

2) b. Expenditures incurred to date and amounts transferred to plant in-service, by project. Expenditures broken down by internal labor, materials, and other costs. Internal labor hours broken down by regular hours and overtime hours.

Expenditures Incurred To Date GSMP II Ext. Projects	April PTD Actual Internal Labor \$	April PTD Actual Material \$	April PTD Actual Other \$	April PTD Actual Total \$
Replacement Main	\$ 1,403,433	\$ 796,850	\$ 12,918,952	\$ 15,119,235
Replacement Service	\$ 352,943	\$ 7,224	\$ 1,450,503	\$ 1,810,670
Regulator Elimination	\$ 4,363	\$ 269,670	\$ 132,116	\$ 406,149
<b>Total</b>	<b>\$ 1,760,739</b>	<b>\$ 1,073,744</b>	<b>\$ 14,501,571</b>	<b>\$ 17,336,054</b>
GSMP II Internal Labor Hours				
Internal Labor - Regular Hours	13,712			
Internal Labor - Overtime Hours	5,399			

Amount to Plant In-Service Total \$
\$ 15,047,349
\$ 1,810,670
\$ 406,149
<b>\$ 17,264,168</b>

Expenditures Incurred To Date Stipulated Base II Ext. Projects	April PTD Actual Internal Labor \$	April PTD Actual Material \$	April PTD Actual Other \$	April PTD Actual Total \$
Replacement Main	\$ 19,355	\$ -	\$ 21,893	\$ 41,249
Replacement Service	\$ 1,604	\$ -	\$ 1,276	\$ 2,880
Large Diameter HP Joints	\$ -	\$ -	\$ -	\$ -
GSMP Meter Reconstruction	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 20,959</b>	<b>\$ -</b>	<b>\$ 23,169</b>	<b>\$ 44,128</b>
Stip Base II Internal Labor Hours				
Internal Labor - Regular Hours	184			
Internal Labor - Overtime Hours	104			

Amount to Plant In-Service Total \$
\$ 41,249
\$ 2,880
\$ -
\$ -
<b>\$ 44,128</b>







## Test Year Electric Operations and Maintenance

in \$000

Schedule - PANEL-5(a)

Test Year  
Total  
June 2023 - May 2024

Distribution Operations	\$	58,731
Distribution Maintenance	\$	152,998
<b>Total</b>	<b>\$</b>	<b>211,729</b>

### Major Categories

Corrective Maintenance	\$	80,101
Vegetation Management	\$	45,924
IT/Technology/SCADA	\$	15,898
Inspections	\$	14,558
Buildings & Grounds	\$	14,522
Training/Attend Meetings	\$	13,267
Meter Expense	\$	7,657

**Schedule 5(b)**

**Test Year Gas Operations and Maintenance  
in \$000**

**Test Year  
Total  
June 2023 - May 2024**

Distribution Operations	\$	112,351
Distribution Maintenance	\$	38,793
Gas Transmission	\$	4,977
	<b>\$</b>	<b>156,121</b>

**Major Categories**

Safety	\$	63,440
Measurement	\$	6,078
Gas Markouts	\$	13,473
Inspections and Surveys	\$	11,182
Main & Service Maintenance	\$	17,048