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October 11, 2018

IN THE MATTER OF THE PETITION OF
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
FOR APPROVAL OF ITS CLEAN ENERGY FUTURE-ENERGY
EFFICIENCY (“CEF-EE”) PROGRAM ON A REGULATED BASIS

BPU Docket No. _____

VIA BPU E-FILING SYSTEM & HARD COPY

Aida Camacho-Welch, Secretary of the Board
Board of Public Utilities
44 South Clinton Avenue, 9th Floor
Trenton, New Jersey 08625

Dear Secretary Camacho-Welch:

Enclosed for filing are the original and two copies of the Verified Petition of Public Service Electric and Gas Company (“PSE&G” or the “Company”) in the above-entitled matter, along with the attachments and appendix thereto. PSE&G originally filed this matter with the Board of Public Utilities (“BPU” or the “Board”) on September 26, 2018, along with its Clean Energy Future – Electric Vehicle and Energy Storage (“CEF-EVES”) and Clean Energy Future – Energy Cloud (“CEF-EC”) Programs. However, per the BPU’s request, PSE&G is now filing these three Clean Energy Future Programs separately, with their own petitions and docket numbers.

PSE&G’s Clean Energy Future filings in the aggregate will: (1) make New Jersey a national leader in energy efficiency; (2) seed a market to support electric vehicle adoption; (3) begin exploring the potential of energy storage applications; and (4) enable a number of customer, community, and company smart energy capabilities, including advanced metering infrastructure in PSE&G’s electric service territory that will, among other customer benefits, improve outage response. These programs support the State’s vision for achieving 100% clean energy by 2050 by proposing a new clean energy paradigm where the utilities and the State, through the Board, work together to reduce customers’ energy bills, create “green” jobs, and lower greenhouse gas emissions, while also modernizing the electric grid, increasing its resiliency, and enhancing the overall utility experience for PSE&G customers.

While energy efficiency is regularly recognized as the lowest cost energy resource, New Jersey has recently not fared well, ranking 29th in electric savings achieved according to the 2018

American Council for an Energy-Efficient Economy Scorecard, and achieving less than one-seventh the energy savings being achieved in states like Massachusetts. However, the State is poised to change New Jersey's ranking amongst its peers, with a strong commitment to energy efficiency that was most recently reflected in the recently enacted Clean Energy Law (P.L. 2018, c. 17) and its requirement that utilities reduce gas and electric usage by their customers. The CEF-EE Program is consistent with this new law, achieving much of the 2% annual electric usage savings and 0.75% annual gas usage savings targeted therein. The CEF-EE Program is filed pursuant to *N.J.S.A. 48:3-98.1* (referred to as the "RGGI Law").

Consideration of the CEF-EE Program at this time, at the outset of the Board's implementation of the Clean Energy Law, is appropriate because that implementation will be more efficient and informed through review, with input from all interested stakeholders, of the practical energy efficiency measures and programmatic approach set forth in the CEF-EE filing. Moreover, while PSE&G through its CEF-EE filing proposes that following a transition period, it will be the exclusive provider of regulated energy efficiency programs in its service territory, the Office of Clean Energy must continue to play a critical role in oversight, standard setting, and ensuring consistency in implementation of energy efficiency programs throughout the State, where appropriate

Regarding the other elements of PSE&G's Clean Energy Future initiative, New Jersey also has an opportunity to jumpstart the electric vehicle industry in the state, in accordance with its goals. In New Jersey, every electrically "fueled" mile is 70% cleaner than an average mile fueled by gasoline. Electric vehicles offer a unique opportunity to improve local air quality and reduce greenhouse gas emissions in the transportation sector. The separately docketed CEF-EVES Program supports the installation of 40,000 charging stations, which will help reduce customer concern regarding lack of electric vehicle charging options in the state, thereby supporting increased electric vehicle adoption while also supporting efficient grid operations. The CEF-EVES Program also supports electric school buses for our local school districts and vehicle electrification in ports and other environmental justice regions.

Energy storage is another emerging market that also offers tremendous potential to change the way the distribution system operates and is managed. However, the cost and space necessary to support energy storage have always been limiting factors. As the industry gradually removes these barriers, utilities need to be ready to install energy storage. The CEF-EVES Program supports the deployment of 35 MW of energy storage projects, which will help the state begin to reach the energy storage goals set forth in the new Clean Energy Law.

Finally, all of these clean energy investments, and PSE&G's customers' ability to take full advantage of these technologies, require a firm foundation of support. Therefore, PSE&G is also including, in a separate filing, an advanced electric metering infrastructure proposal -- contained within its CEF-EC Program -- to support outage management in storms, but also to provide the Company with the "eyes and ears" it needs to optimize the distribution system and ensure effective integration of solar and other renewable energy technologies. A total of approximately 2.2 million electric smart meters will be deployed to all customers across our service territory under an accelerated roll-out. The data and two-way communication network

associated with these advanced meters will also support a new customer experience, which will include smart home and energy solutions for customers. The CEF-EC Program is being filed pursuant to the Board's Infrastructure Investment Program regulations, and in accordance with Recommendation #12 of BPU Staff's July 25, 2018 report following the March 2018 Nor'easters.

The energy industry is at a crossroads. Increased storm intensity, changing customer demands associated with the information and digital era in which we live, and the continued threat of climate change are some of the serious challenges facing the industry. In New Jersey, these challenges are even more pronounced as the state is behind many of its peers in terms of its energy efficiency activity, electric vehicle charging infrastructure, advanced meter infrastructure deployment, and even its outdated regulatory model that keeps utility earnings aligned with energy sales. The Clean Energy Future filings offer an opportunity for New Jersey to turn the page, and establish itself as a global leader in addressing the challenges facing our industry and the state.

In support of PSE&G's CEF-EE Petition, attached and filed herewith are the Direct Testimonies and Schedules of the following witnesses.

<u>Attachment</u>	<u>Witness</u>	<u>Area of Responsibility</u>
1	Karen Reif, Vice President, Renewables and Energy Solutions, PSE&G	Energy efficiency
2	Stephen Swetz, Senior Director, Corporate Rates and Revenue Requirements, PSEG Services Corporation	Revenue requirements, cost recovery methodology, and rate design
3	Daniel Hansen, Vice President, Christensen Associates Energy Consulting, LLC	A proposal to address recovery of lost revenues

PSE&G respectfully requests that the Board retain jurisdiction over this CEF-EE filing. Attached to the testimony of Karen Reif (Attachment 1) concerning the CEF-EE Program is a workpaper that contains confidential information. This workpaper will be furnished to BPU Staff and the Division of Rate Counsel upon execution of a Confidentiality Agreement, which is provided herewith for execution. Copies of the Petition and supporting documentation will be served upon all entities legally required to be noticed.

We look forward to the opportunity to actively participate in these upcoming proceedings and putting New Jersey on a path to a Clean Energy Future.

Respectfully submitted,



Matthew M. Weissman

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C Attached Service List (E-Mail Only)

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STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF)
PUBLIC SERVICE ELECTRIC AND GAS) **PETITION**
COMPANY FOR APPROVAL OF ITS)
CLEAN ENERGY FUTURE-ENERGY EFFICIENCY) BPU Docket No. _____
PROGRAM ON A REGULATED BASIS)

I. INTRODUCTION

Public Service Electric and Gas Company (“PSE&G” or the “Company”), a corporation of the State of New Jersey, having its principal offices at 80 Park Plaza, Newark, New Jersey, respectfully petitions the New Jersey Board of Public Utilities (“Board” or “BPU”) pursuant to N.J.S.A. 48:2-21, N.J.S.A. 48:2-21.1, N.J.S.A. 48:3-98.1, and any other statute or regulation the Board deems applicable, as follows:

1. Petitioner is a public utility engaged in the distribution of electricity and the provision of electric Basic Generation Service (“BGS”), and the distribution of gas and the provision of Basic Gas Supply Service (“BGSS”), for residential, commercial, and industrial purposes within New Jersey. PSE&G provides service to approximately 2.2 million electric and 1.8 million gas customers in an area having a population of approximately six million people, which extends from the Hudson River opposite New York City, southwest to the Delaware River at Trenton and south to Camden, New Jersey.

2. PSE&G is subject to regulation by the Board for the purposes of setting its retail distribution rates and to assure safe, adequate, and reliable electric distribution and natural gas distribution service pursuant to N.J.S.A. 48:2-21 et seq.

3. Through this Petition and the accompanying schedules and testimonies, PSE&G seeks BPU approval for the Clean Energy Future – Energy Efficiency Program (“CEF-EE

Program”) which, along with two other programs being filed at this time by PSE&G under separate petitions and docket numbers, forms the basis for a clean and resilient energy future. The CEF-EE Program will significantly expand PSE&G’s energy efficiency deployment in its service territory beyond current levels, in order for the State to meet its clean energy objectives.

4. This Program, along with the other programs, will form a Clean Energy Future for New Jersey. This CEF-EE Program in particular will further the State’s goals by, among other benefits: (a) lowering energy consumption and customer bills; (b) reducing greenhouse gas emissions; and (c) creating “green jobs.” Taken together, these programs will allow New Jersey to take the first steps toward becoming a leader in the development of a Clean Energy Future. Consideration of these Programs at this time, at the outset of the Board’s implementation of the Clean Energy Law, P.L. 2018, c. 17, is appropriate because that implementation will be more efficient and informed through review, with input from all interested stakeholders, of the practical energy efficiency measures and programmatic approach set forth in this filing. Moreover, while PSE&G through this filing proposes that following a transition period, it will be the exclusive provider of regulated energy efficiency programs in its service territory, the Office of Clean Energy must continue to play a critical role in oversight, standard setting, and ensuring consistency in implementation of energy efficiency programs throughout the State, where appropriate.

II. THE CEF – EE PROGRAM

A. CEF-EE Background

5. Pursuant to Section 13 of P.L. 2007, c. 340 (the “RGGI Law”), codified in part as N.J.S.A. 48:3-98.1(a)(1), an electric or gas public utility may, among other things, provide and invest in energy efficiency and conservation programs in its service territory on a regulated basis. An electric or gas public utility’s investment in energy efficiency and conservation programs is

eligible for rate treatment approved by the Board, including a return on equity, or other incentives or rate mechanisms. N.J.S.A. 48:3-98.1(b). In addition, the Clean Energy Law, which Governor Murphy signed into law on May 23, 2018, requires each utility to implement energy efficiency measures to reduce electricity usage by 2% and natural gas usage by 0.75%, and requires that a utility shall include in an annual petition for cost recovery the revenue impact of sales losses resulting from the implementation of those measures.¹

6. PSE&G has made several energy efficiency filings pursuant to Section 13 of the RGGI Law, including:

- On June 23, 2008, PSE&G filed a petition with the Board seeking approval of its Carbon Abatement Program, which the BPU approved by Order dated December 16, 2008;²
- On January 21, 2009, PSE&G filed a petition with the Board seeking approval of its Energy Efficiency Economic Stimulus Program (“EEE Program”), which the BPU approved by Order dated July 16, 2009;³
- On January 24, 2011, PSE&G filed a petition with the Board seeking approval to extend three of the EEE subprograms (*i.e.*, Multifamily Housing, Government/Municipal/Non-Profit Direct Install, and Hospital Efficiency), which the BPU approved on July 14, 2011;⁴
- On August 8, 2014, PSE&G filed a petition with the Board seeking a further extension of the three EEE subprograms with certain modifications, which the BPU approved on April 15, 2015;⁵ and

¹ P.L. 2018, c. 17, § 3(a) and (e)(1).

² *In the Matter of the Petition of Public Service Electric and Gas Company Offering a Carbon Abatement Program in its Service Territory on a Regulated Basis and Associated Cost Recovery Mechanism Pursuant to N.J.S.A. 48:3-98.1*, BPU Docket No. EO08060426, Order (Dec. 16, 2008).

³ *In the Matter of the Petition of Public Service Electric and Gas Company Offering an Energy Efficiency Economic Stimulus Program in its Service Territory on a Regulated Basis and Associated Cost Recovery Mechanism Pursuant to N.J.S.A. 48:3-98.1*, BPU Docket No. EO09010058, Decision (July 16, 2009).

⁴ *In the Matter of the Petition of Public Service Electric and Gas Company for an Extension of Three Sub-Components of its Energy Efficiency Economic Stimulus Program in its Service Territory on a Regulated Basis and Associated Cost Recovery and for Changes in the Tariff for Electric Service, B.P.U.N.J. No. 15 Electric and the Tariff for Gas Service, B.P.U.N.J. No. 15 Gas, Pursuant to N.J.S.A. 48:2-21, 48:2-21.1, and 48:3-98.1*, BPU Docket No. EO11010030, Decision and Order (July 14, 2011).

⁵ *In the Matter of the Petition of Public Service Electric and Gas Company to Continue its Energy Efficiency Economic Extension Program on a Regulated Basis (“EEE Extension II”)*, BPU Docket No. EO14080897, Order Adopting Stipulation

- On March 3, 2017, PSE&G filed a petition with the Board seeking a further extension of the three EEE subprograms with certain modifications, along with a request for two new subprograms (*i.e.*, smart thermostats and a data analytics pilot). The Board approved this filing on August 23, 2017.⁶

7. As with the Company's Carbon Abatement Program, as well as the original EEE Program filing and its three extensions, the CEF-EE Program is being filed pursuant to Section 13 of the RGGI Law. The RGGI Law sets forth the New Jersey Legislature's findings that energy efficiency and conservation measures must be essential elements of the state's energy future, and that greater reliance on energy efficiency and conservation will provide significant benefits to New Jersey citizens. The Legislature has also found and declared that public utility involvement and competition in the conservation and energy efficiency industries are essential to maximize efficiencies. *See* N.J.S.A. 26:2C-45.

B. CEF-EE Procedural Matters

8. Pursuant to the legislative authority set forth in the RGGI Law, on May 8, 2008, the Board issued an Order (the "May 2008 Order") that allows electric and gas public utilities to offer energy efficiency and conservation programs on a regulated basis, provided that the utility files a petition and obtains BPU approval for such programs and the associated mechanism for program cost recovery.⁷ In the May 2008 Order, the Board also established minimum filing requirements ("MFRs") that require the submission of certain information with the petition, as

(Apr. 15, 2015).

⁶ *In the Matter of the Petition of Public Service Gas and Electric Company for Approval of its Energy Efficiency 2017 Program and Recovery of Associated Costs ("17 EE Program")*, BPU Docket No. EO17030196, Order Adopting Stipulation (Aug. 23, 2017).

⁷ *Decision, I/M/O Electric Public Utilities and Gas Public Utilities Offering Energy Efficiency and Conservation Programs, Investing in Class I Renewable Energy Resources, And Offering Class I Renewable Energy Programs In Their Respective Service Territories on a Regulated Basis Pursuant to N.J.S.A. 48:3-98.1*, BPU Docket No. EO08030164, Order Pursuant to N.J.S.A. 48:3-98.1(c) (May 8, 2008).

revised by the Board's October 20, 2017 Order in BPU Docket No. QO17091004. In this case, please see Appendix A for the location of all CEF-EE MFRs attached to this Petition.

9. The May 2008 Order also requires a utility to meet with BPU Staff and Rate Counsel at least 30 days prior to filing its energy efficiency petition to discuss: (a) the nature of the energy efficiency program; (b) the program cost recovery mechanism to be proposed in the petition; and (c) the MFRs to be submitted along with the petition. *See* May 2008 Order, at p. 6.

10. On May 3, 2018, a 30-day pre-filing meeting was conducted with BPU Staff and Rate Counsel in connection with this matter and in accordance with the May 2008 Order. For informational purposes the proposed CEF-EVES Program, which is being filed at this time under a separate petition and docket number, was also discussed at that meeting.

11. Under the RGGI Law, once a petition has been filed with the Board, Board Staff shall have 30 days, commencing on the date the petition was filed, to determine whether the petition is administratively complete and to so advise the utility in writing. If BPU Staff determines that the petition is not administratively complete, it shall set forth the deficiencies and the items required to remedy the deficiencies. *See* May 2008 Order, at p. 6. PSE&G respectfully requests that BPU Staff conduct its administrative completeness assessment of the CEF-EE portion of this Petition at this time.

12. PSE&G's CEF-EE filing is being submitted pursuant to Section 13 of the RGGI Law and the Board's May 2008 Order (as modified by the October 20, 2017 Order), which allot the BPU 180 days from the date of an energy efficiency filing to review and approve any such filing submitted thereunder once the Board determines that the filing has met the MFRs. *See* N.J.S.A. 48:3-98.1(b); May 2008 Order, at p. 6.

13. Consistent with prior reviews of PSE&G's energy efficiency and renewable energy offerings, as well as reviews of similar N.J.S.A. 48:3-98.1 offerings by other electric and gas utilities, the Company also requests that the Board retain jurisdiction of this matter and not transfer the filing to the Office of Administrative Law once Board Staff determines that the CEF-EE Program is in compliance with the MFRs. PSE&G looks forward to the opportunity to work with all parties to arrive at a mutually acceptable resolution of any issues that may arise in this proceeding. As stated in the May 2008 Order, "[t]he Board encourages all interested parties to work toward a settlement for the Board's consideration before expiration of the 180 day period." *See* May 2008 Order, at p. 5.

C. CEF-EE Program Description

14. The CEF-EE Program consists of 22 subprograms, including seven residential subprograms, seven commercial and industrial ("C&I") subprograms, and eight pilot subprograms. The various pilot subprograms consist of PSE&G implementing and managing select, highly advanced approaches to energy efficiency that after the pilot phase may support future energy efficiency programs in New Jersey. Customers in PSE&G's electric and/or gas service territory who meet the criteria for the respective CEF-EE subprogram offerings will be eligible to participate in them. The CEF-EE Program has an emphasis on the following hardest to reach sectors: low income, multi-family, small business, and local government.

15. The proposed residential subprograms will work together to significantly upgrade efficiency in homes throughout PSE&G's service territory. All sub-segments are addressed, from new construction and refurbishments; to promoting and incentivizing new equipment and providing easily accessible channels for such purposes; to direct installation and other support

for multi-family and low income customers. Where needed, additional customer support is provided through on-bill repayment and other incentives. To change the culture of energy use and efficiency in its territory, PSE&G will sponsor programs in schools and through education and behavioral programs.

16. A detailed description of the 22 subprograms is set forth in the Direct Testimony of Karen Reif, Vice President, Renewables and Energy Solutions (Attachment 1 to this Petition), and Schedule KR-CEF-EE-2. A summary of the CEF-EE subprograms is as follows:

Subprogram	Description
Residential Efficient Products	Rebates and on-bill repayment for HVAC, smart thermostats, appliances, lighting, and other equipment
Residential Existing Homes	Rebates and on-bill repayment for energy audit, direct install of efficient equipment, and broader weatherization / appliance replacement services
Residential Behavioral	Data analytics, home energy reports, and online energy audits
Residential K-12 Education	Curriculum to teach energy efficiency and a take-home kit with efficient products
Residential New Construction	Rebates to builders and owners for new construction meeting energy efficiency standards
Residential Multi-Family	Energy audit and direct install of efficient equipment at no charge to tenants
Residential Income Eligible	Energy audit, direct install of efficient equipment, and broader weatherization / appliance replacement services at no charge
C&I Prescriptive	Rebates and on-bill repayment for HVAC, lighting, motors & drives, refrigeration, water heaters, air compressors, and food service equipment
C&I Custom	Custom incentives for large energy efficiency projects, including on-bill repayment
C&I Small Non-Residential Efficiency	Rebates & on-bill repayment for direct-installed EE measures to small non-residential customers of lighting, controls, refrigeration, heating and air conditioning upgrades, and similar measures
C&I New Construction	Rebates to builders and owners for new construction meeting energy efficiency standards

Subprogram	Description
C&I Energy Management	Retro-commissioning and Strategic Energy Management: optimizing existing systems with little to no equipment upgrades
C&I Engineered Solutions	Whole-building engineered energy saving solutions to hospitals, school districts, universities, municipalities, apartment buildings and other non-profit and public entities
C&I Streetlight	Replacement of HPS with LED luminaires and smart cities pilot
Emerging Technologies & Approaches	Funding and support to identify, demonstrate, and deploy the next generation of energy efficiency technologies
Energy Efficiency as a Service Pilot	Monthly service contracts, incentives, and extensive guidance on energy efficient building equipment and software
Smart Homes Pilot	Automated and personalized savings measures using an ecosystem of energy efficient devices and technologies working in coordination
Non-Wires Alternative Pilot	Defer or replace the need for electric infrastructure upgrades through the extensive deployment of energy efficiency and demand response resources
Non-Pipes Solution Pilot	Defer or replace the need for gas infrastructure upgrades through the extensive deployment of energy efficiency and demand response resources
Volt Var Pilot	Smart-grid technology to automate control of the electric power distribution grid to reduce energy consumption, peak demand, and system losses, and enable more solar
Business Energy Reports Pilot	Data analytics, home energy reports and online energy audits for businesses
Building Operator Certification Pilot	Training program for building operations staff responsible for energy-using equipment

17. PSE&G engaged Gabel Associates to complete a cost-benefit analysis and analyze the cost effectiveness of the CEF-EE Program using all five cost-benefit analysis tests required by the MFRs, where applicable. This analysis demonstrates that the CEF-EE Program is valuable and should be approved by the Board. Overall, the CEF-EE Program is cost effective with a Societal Cost Test (“SCT”) result of 3.7, with all subprograms resulting in benefits that exceed costs. The SCT provides the most comprehensive approach to determining cost effectiveness and should be the primary measure used to determine the cost effectiveness of the

CEF-EE Program. As explained further by Ms. Reif, the SCT quantifies a broader range of societal impact factors such as environmental and economic benefits. In addition, the CEF-EE Program results in a TRC test result of 1.0, although this should not be the ultimate governing test by which to measure the costs and benefits of the CEF-EE Program. The Clean Energy Law emphasizes the importance of measuring cost benefit by reference to environmental and economic benefits (*see* N.J.S.A. 48:3-87(g)-(h)), as does the Offshore Wind Economic Development Act of 2010 (*see* N.J.S.A. 48:3-87.1(a)(10)). The results of the cost-benefit analysis are reflected in Attachment 1, Schedule KR-CEF-EE-2, Appendix E.

18. A cost-benefit analysis was not conducted for the pilot subprograms in accordance with MFR Section I.e. Pursuant to MFR Section I.e., compliance with Part V of the MFRs was not feasible for these subprograms. The pilot subprograms represent novel ideas and are consistent with the types of programs that historically were excluded from the requirement to perform a cost-benefit analysis. These programs are designed to test new technologies and processes of attaining energy savings, and therefore the quantifiable savings of the pilot subprograms cannot be ascertained. Section 3.3 of Schedule KR-CEF-EE-2 further demonstrates why a cost-benefit analysis was not feasible for the pilot programs. Accordingly, to the extent necessary, in accordance with MFR Section I.e., PSE&G seeks a waiver of compliance with Part V of the MFRs for the pilot subprograms.

D. CEF-EE Program Benefits

19. The CEF-EE Program supports the State's objectives, including those reflected in the New Jersey Energy Master Plan ("NJEMP"), the Clean Energy Law, and the New Jersey Global Warming Response Act ("NJGWRA"), by: (a) reducing energy consumption, thereby

lowering participating customers' utility bills; (b) producing environmental benefits; and (c) creating "green jobs" and bolstering New Jersey's clean energy economy.

20. With respect to reducing energy consumption and lowering customers' bills: in total, the proposed CEF-EE Program is expected to reduce energy consumption by approximately 40.6 billion kWh and 675 million therms, resulting in a net reduction in participating customers' energy bills by \$5.7 billion over the life of energy efficiency measures. Once fully implemented, the CEF-EE Program will produce electric savings as a percentage of retail sales in PSE&G's service territory of approximately 1.8% per year, and 6.6% cumulatively by 2025. Gas savings as a percentage of retail sales in PSE&G's service territory will reach 0.8% annually, resulting in a cumulative total reduction of 2.0% by 2025. This more than triples New Jersey's statewide current electric energy efficiency savings of 0.44% and gas energy efficiency savings of 0.26% in 2016.⁸

21. The NJEMP recognizes and supports utility efforts in energy efficiency:

We continue to recognize the value of the EDCs in delivering EE and conservation programs. The EDCs already have access to the potential consumers of these resources through the monthly billing statements, call centers, field offices, and field activities. Billing statements as well as online tools can highlight conservation and EE programs when customers are paying closest attention to the cost of energy in their homes or places of business. With the appropriate education and training, EDC employees can convert routine customer interactions into effective outreach for these programsThe LDCs and EDCs have experience developing and implementing EE programs for their customers.⁹

⁸ New Jersey's 2016 net incremental electricity savings as reported in the 2017 State Energy Efficiency Scorecard report issued by the American Council for an Energy-Efficient Economy: <http://aceee.org/sites/default/files/publications/researchreports/u1710.pdf>.

⁹ 2011 New Jersey Energy Master Plan (Dec. 6, 2011), at p. 119.

22. With respect to environmental benefits: the CEF-EE Program is expected to reduce carbon dioxide emissions by 24 million tons; sulfur dioxide emissions by 43,000 tons; and nitrogen oxide emissions by 18,000 tons over the life of the measures installed. The emissions savings are the equivalent of removing up to 320,000 cars from New Jersey roads per year. The CEF-EE Program environmental benefits also include:

- helping New Jersey meet its clean energy goals in a manner consistent with the Clean Energy Law’s usage reduction requirements; and
- putting New Jersey back on the path to meeting the mandates of the NJGWRA, which requires by 2020 a level of greenhouse gas emissions (“GHG”) equal to the 1990 level of GHGs, and further reduction to 80 percent below 2006 levels by 2050.¹⁰

23. With respect to creating “green jobs:” the CEF-EE Program is expected to increase employment through the creation of approximately 30,000 direct, indirect, and induced job-years.¹¹ As reflected in Attachment 1, Schedule KR-CEF-EE-2, PSE&G expects the creation of 7.91 direct job-years for every \$1 million spent in energy efficiency in the state.

24. The CEF-EE Program will result in a meaningful reduction in customers’ electric and gas usage. Because PSE&G’s revenues are based on sales volumes (like most New Jersey utilities’ revenues), the CEF-EE Program will cause a meaningful reduction in the Company’s revenues.

25. The recovery of lost revenues due to programs like the CEF-EE is standard practice across the country. New Jersey policy has repeatedly supported the recovery of lost revenues caused by energy efficiency programs. Specifically, the RGGI Law states:

¹⁰ New Jersey Global Warming Response Act, *N.J.S.A. 26:2c-37 et seq.*

¹¹ The value of job-years is based on the Rutgers report “Analysis for the 2011 Draft New Jersey Energy Master Plan Update” using the factor 7.91 direct jobs per one million dollars in program spend. (https://nj.gov/emp/docs/pdf/emp_creeep_report20110412.pdf) and the National Renewable Energy Laboratory Jobs and Economic Development Impact Model (<https://www.nrel.gov/analysis/jedi/>).

“[I]nvestment in energy efficiency and conservation programs or Class I renewable energy resources may be eligible for rate treatment approved by the [BPU], including a return on equity, or other incentives or rate mechanisms that decouple utility revenue from sales of electricity and gas.”¹² The Clean Energy Law recognizes that a utility must include as part of its cost recovery “the revenue impact of sales losses resulting from implementation of energy efficiency [programs]”, which the Board shall determine.¹³ The Board has approved decoupling mechanisms for two New Jersey gas utilities.¹⁴

26. The mechanics of lost revenue recovery can be accomplished in more than one manner. The Company designed a decoupling mechanism, called the Green Enabling Mechanism (“GEM”), which would address the issue of lost revenues consistent with the RGGI Law and the Clean Energy Law. PSE&G proposed the GEM in the base rate case it filed on January 12, 2018 (“2018 Rate Case”),¹⁵ and is reintroducing it here for consideration. The Company’s decoupling proposal is discussed further in the testimonies of PSE&G witnesses Daniel Hansen, Ms. Reif, and Stephen Swetz. In the event that the Company’s decoupling proposal is not approved, PSE&G would be open to discussing with the parties another form of decoupling or an annual lost revenue adjustment mechanism.

¹² See *N.J.S.A.* 48:3-98.1(b).

¹³ P.L. 2018, C. 17, *supra*, at §3(e)(1).

¹⁴ See, e.g., *In the Matter of the Petition of South Jersey Gas Company for Authority to Implement a Conservation and Usage Adjustment and In the Matter of the Petition of New Jersey Natural Gas Company for Authority to Implement a Conservation and Usage Adjustment*, BPU Dkt. Nos. GR05121019 (South Jersey Gas) and GR05121020 (New Jersey Natural Gas), Decision and Order Approving Stipulation (Jan. 21, 2010).

¹⁵ *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 Tariffs for Electric and Gas Service, B.P.U.N.J. No. 16 Electric and B.P.U.N.J. No. 16 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 Dkt. Nos. ER18010029 and GR18010030; OAL Dkt. No. PUC 01151-2018N.

27. Furthermore, following a transition period, the establishment of PSE&G as the exclusive provider of regulated energy efficiency programs that are offered in the Company's service territory is a prerequisite to implementing the CEF-EE Program and satisfying the mandatory usage reduction targets imposed on utilities in the Clean Energy Law. Utilities should not on one hand be required to meet these reduction targets, with penalties if they do not achieve them, and on the other hand be faced with competition in satisfying them from other regulated programs. Amongst other factors, PSE&G's established customer relationships and expertise make it well positioned to implement a program the size and scope of the CEF-EE Program.

E. CEF-EE Program Expenditures

28. PSE&G proposes to commit up to \$2.5 billion in CEF-EE Program investment, and proposes a \$283 million expense budget over the six-year term of the program. The projected CEF-EE Program investment and expense budgets, by subprogram where applicable, are reflected in Schedule KR-CEF-EE-2, Appendix B and Schedule KR-CEF-EE-3.

29. The overall CEF-EE Program budget includes all identified costs necessary to deliver the CEF-EE Program including customer incentives, information technology ("IT"), administration, marketing, training, program management, inspections, evaluations, and quality assurance/quality control efforts.

30. PSE&G proposes to commit the aforementioned investment over a period of approximately six years towards the delivery of the 22 subprograms contained in the CEF-EE Program. The six-year period will commence upon Board approval of the CEF-EE Program. Investments related to committed CEF-EE Program participants may occur beyond the

approximate six-year period as a result of long project lead and construction times for certain subprograms. The CEF-EE Program also anticipates expenses related to repayments and program evaluation to extend beyond the six-year period. The proposed extended period for the CEF-EE Program is necessary to provide continuity in the program to facilitate a continuous flow of benefits to participating customers and the state, without the hard starts and stops of shorter term programs. It will allow the Company to efficiently utilize experienced contractors who are already working on existing energy efficiency programs and provide greater certainty and stability for contractors to invest in the labor and resources necessary to support the CEF-EE Program. Furthermore, a long-term energy efficiency program is necessary to comply with the ongoing energy usage reduction targets set forth in the Clean Energy Law.

31. PSE&G proposes the flexibility to transfer funds between CEF-EE subprograms and across program years to respond to market conditions and participant demands to optimize energy savings and program resources. The Company proposes to provide reports to Board Staff and Rate Counsel regarding the CEF-EE Program consistent with the agreed upon way it currently reports on its energy efficiency programs.

F. CEF-EE Cost Recovery

32. The Company requests for purposes of the CEF-EE Program that the Board grant approval of recovery of the revenue requirements associated with all CEF-EE Program costs. Cost recovery would be made and tracked via a new CEF-EE Program component (“CEF-EEC”) of the Company’s electric and gas Green Programs Recovery Charge (“GPRC”), which would be filed annually after the proposed initial period. The testimony of Mr. Swetz (Attachment 2 to this Petition) contains the revenue requirement methodology, cost recovery mechanism, and bill impact analysis associated with the CEF-EE Program.

33. PSE&G proposes to earn a return on its net investment in the CEF-EE Program based upon an authorized return on equity (“ROE”) and capital structure including income tax effects. The Company proposes to utilize the latest cost of capital authorized by the Board in a base rate case proceeding. Since the CEF-EE Program is anticipated to commence after Board approval of the Company’s pending 2018 Rate Case, PSE&G is utilizing for forecasting purposes the weighted average cost of capital (“WACC”) submitted in that base rate case. *See* Attachment 2, Schedule SS-CEF-EE-1 for the calculation of the current Pre-Tax WACC utilized in the revenue requirement calculation. Any change in the WACC authorized by the Board in the pending or any subsequent electric, gas or combined base rate case would be reflected in the subsequent monthly revenue requirement calculations. Any changes to current tax rates would also be reflected in an adjustment to the After-Tax WACC. To the extent there are impacts associated with the resolution of the 2018 Rate Case, PSE&G will update the schedules and related information contained in this Petition and supporting testimony.

34. As set forth in more detail in Mr. Swetz’s testimony, the depreciation or amortization of the CEF-EE Program assets will vary depending on the type of asset. The table below summarizes the proposed book recovery and associated tax depreciation and tax treatment applied to the corresponding CEF-EE Program asset classes. PSE&G proposes a 15-year amortization period to align with the weighted average useful life of the measures being installed, with the exception of IT capital expenditures and assets associated with the Street Lighting subprogram. This amortization timeframe also has the benefit of reducing the annual rate impact of the subprograms on ratepayers.

Asset Class	Book Recovery	Tax Amortization / Depreciation	Tax Treatment
Residential and C&I Investment	15 years amort.	100% expense	Flow-Thru
HPS Regulatory Assets	5 years amort.	N/A	Normalization
LED Installation	22 years dep.	7yr MACRS	Proration
Smart Controller	10 years dep.	5yr MACRS	Proration
Smart Cities	7 years dep.	5yr MACRS	Proration
IT Software Investment	5 years amort.	3 yrs. SL	Flow-Thru

35. The expected increase from the electric CEF-EEC for the initial recovery period would be \$0.000514 per kWh without New Jersey Sales and Use Tax (“SUT”) (\$0.000548 per kWh with SUT), with an expected maximum increase occurring in the period from October 1, 2029 through September 30, 2030 with a rate of \$0.005626 per kWh without SUT (\$0.005999 per kWh with SUT).

36. PSE&G’s typical residential electric customer using 750 kWh in a summer month and 7,200 kWh annually would experience an initial increase in their annual bill of \$4.00, from \$1,233.72 to \$1,237.72, or approximately 0.32% (based upon Delivery Rates and BGS-RSCP charges in effect September 8, 2018, and assuming the customer receives BGS-RSCP service from PSE&G). The expected maximum increase of \$43.20, or approximately 3.50%, is projected to occur in the period from October 2029 to September 2030, based on rates in effect September 8, 2018.

37. The expected increase from the gas CEF-EEC for the initial recovery period would be \$0.000403 per therm without SUT (\$0.000430 per therm with SUT) with an expected

maximum increase occurring in the period from October 1, 2031 through September 30, 2032, with a rate of \$0.018665 per therm without SUT (\$0.019902 per therm with SUT).

38. PSE&G's typical residential gas heating customers using 165 therms in a winter month and 1,010 therms annually would experience an initial increase in their annual bill of \$0.42 from \$879.22 to \$879.64, or approximately 0.05% (based upon current Delivery Rates and BGSS-RSG charges in effect September 8, 2018, and assuming the customer receives BGSS service from PSE&G and not including any BGSS-RSG Bill Credits). The expected maximum increase of \$20.04, or approximately 2.28%, will occur in the period from October 2031 to September 2032, based on rates in effect September 8, 2018.

39. PSE&G has submitted proposed tariff sheets as Attachment 5 (redlined and clean), effective upon issuance of a BPU order, designed to recover the CEF-EE Program costs, which includes carrying charges on the Company's expenditures.

40. The residential customer bill impacts comparing the current and proposed delivery charges are stated in the Typical Residential Bill Impacts and draft CEF-EE Form of Notice of Filing and of Public Hearings set forth in Attachments 6 and 7, respectively.

41. In calculating the monthly interest on net over- and under-recoveries, the interest rate shall be based upon the Company's interest rate obtained on its commercial paper and/or bank credit lines utilized in the preceding month. If both commercial paper and bank credit lines have been utilized, the weighted average of both sources of capital shall be used. In the event that neither commercial paper nor bank credit lines was utilized in the preceding month, the last calculated rate will be used. The interest rate shall not exceed PSE&G's overall rate of return as authorized by the Board in PSE&G's pre-tax WACC. The interest amount charged to the CEF-EE Program balances will be computed using the methodology described in Attachment 2, and is the same as the Board-

approved methodology that was specified in the Board's August 23, 2017 Order authorizing the Company's Energy Efficiency 2017 Program.

42. The eligibility and performance rules for the PJM capacity market ("Reliability Pricing Model" or "RPM") continue to evolve and may change over the life of this filing. Given current performance rules and the performance risk to customers, the Company has not assumed any capacity revenues with respect to the CEF-EE Program. To the extent that CEF-EE subprogram measures are eligible to bid, represent an acceptable performance risk to customers, and are cost-effective when considering the costs for measurement and verification ("M&V"), PSE&G will bid these measures in the RPM auctions. All auction proceeds net of M&V and other administrative costs will be credited to ratepayers.

43. The electric CEF-EEC will be applicable to all electric rate schedules on an equal dollar per kilowatt-hour basis for recovery of costs associated with the electric allocation of the CEF-EE Program. The gas CEF-EEC will be applicable to all gas rate schedules on an equal dollar per therm basis for recovery of costs associated with the gas allocation of the CEF-EE Program. The initial CEF-EECs will be based on estimated CEF-EE Program revenue requirements from April 1, 2019 through September 30, 2020. Thereafter, the CEF-EE electric and gas components of the GPRC will be changed as part of the BPU's annual review of the GPRC, incorporating a true-up for actuals and an estimate of the revenue requirements for the upcoming year.

44. PSE&G requests that the rates to be charged to recover all of the CEF-EE Program costs be approved by the Board along with the CEF-EE Program cost recovery mechanism and GEM proposed herein. PSE&G also requests that the Board authorize the Company to implement the rates proposed herein, upon issuance of a written BPU order.

V. SUPPORTING TESTIMONY AND PUBLIC NOTICE

45. Below is a table listing the supporting testimony for this Petition and other attachments:

Appendix Letter or Attachment No.	Document Description
A	Location of MFRs – CEF-EE Program
1	Testimony of Karen Reif in support of the CEF-EE Program
2	Testimony of Stephen Swetz describing revenue requirement methodologies, cost recovery mechanisms, and bill impact analysis for the CEF-EE Program
3	Testimony of Daniel Hansen in support of the GEM proposal
4	Accounting Schedules
5	Clean and Redlined Tariff Sheets – GPRC and GEM
6	Typical Residential Customer Bill Impacts – CEF-EE Program
7	Form of Notice of Filing and of Public Hearings – CEF-EE Program

46. The Form of Notice set forth the requested changes to electric and gas rates, where applicable, and will be placed in newspapers having a circulation within the Company’s service territory upon receipt, scheduling, and publication of public hearing dates. Public hearings will be held in each geographic area within the Company’s service territory, *i.e.*, Northern, Central, and Southern. The Form of Notice will be served on the County Executives and Clerks of all municipalities within the Company’s electric and gas service territories upon receipt, scheduling, and publication of public hearing dates.

47. Notice of this filing and two copies of the Petition will be served upon the Department of Law and Public Safety, 124 Halsey Street, P.O. Box 45029, Newark, New Jersey

07101 and upon the Director, Division of Rate Counsel, 140 East Front Street, 4th Floor, Trenton, New Jersey 08625. The Petition and supporting testimony and attachments will also be e-mailed to the persons identified on the service list provided with this filing.

VI. COMMUNICATIONS

Communications and correspondence related to the Petition should be sent as follows:

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VII. CONCLUSION AND REQUESTS FOR APPROVAL

For all the foregoing reasons, PSE&G respectfully requests that the Board retain jurisdiction of this matter and review and expeditiously issue an order approving the CEF-EE Program, specifically finding that:

1. The CEF-EE Program is in the public interest;
2. The CEF-EE Program, as described herein, is reasonable and prudent;
3. PSE&G is authorized to implement and administer the CEF-EE Program under the terms set forth in this Petition and accompanying Attachments;
4. The cost recovery proposal and mechanism for the CEF-EE Program set forth in this Petition will provide for implementation of just and reasonable rates, and are approved;
5. PSE&G may recover all prudently-incurred costs associated with the CEF-EE Program, on a full and timely basis, under the cost recovery mechanism set forth herein; and
6. PSE&G is authorized to implement the GEM, as described herein, or an alternative form of decoupling or an annual lost revenue adjustment mechanism.

Respectfully submitted,

PUBLIC SERVICE ELECTRIC AND GAS COMPANY



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DATED: October 11, 2018
Newark, New Jersey

APPENDIX A

Minimum Filing Requirements

MIMIMUM FILING REQUIREMENTS FOR PETITIONS UNDER N.J.S.A. 48:3-98.1	Location in Filing	Page Number or Specific Location
I. General Filing Requirements		
<p>a. The utility shall provide with all filings, information and data pertaining to the specific program proposed, as set forth in applicable sections of <u>N.J.A.C. 14:1-5.11</u> and <u>N.J.A.C. 14:1-5.12</u>.</p>	<p>1) Attachment 5 - Proposed GPRC Tariff Attachment 7 - CEF-EE - Public Notice</p> <p>2) Financial Statements: Attachment 4A - Balance Sheet 2015-2017 Attachment 4B - Income Statement 2015-2017 Attachment 4C - Balance sheet - June 2018 Attachment 4D - Electric & Gas Revenue By Class Attachment 4E - Payments or Accruals to Affiliates 2015-2017</p> <p>3) Petition</p>	<p>3) Paragraphs 5-44</p>
<p>b. All filings shall contain information and financial statements for the proposed program(s) in accordance with the applicable Uniform System of Accounts that is set forth in <u>N.J.A.C. 14:1-5.12</u>. The utility shall provide the Accounts and Account numbers that will be utilized in booking the revenues, costs, expenses, and assets pertaining to each proposed program so that they can be properly separated and allocated from other regulated and/or other programs.</p>	<p>1) Attachment 2- Schedule SS-CEF-EE-7E and SS-CEF-EE-7G (Income Statement & Balance Sheet)</p> <p>2) Attachment 4F - Journal entries</p>	
<p>c. The utility shall provide supporting explanations, assumptions, calculations, and work papers for each proposed program and cost recovery mechanism petition filed under <u>N.J.S.A. 48:3-98.1</u>, including the rationale for selecting the approach included in its proposed program(s), and for all qualitative and quantitative analyses therein. The utility shall provide electronic copies of all materials and supporting schedules, with all inputs and formulae intact.</p>	<p>1) Attachment 2 - Schedules SS-CEF-EE-1 thru SS-CEF-EE-6G (Cost Recovery Mechanism)</p> <p>2) Workpapers: WP-KR-CEF-EE-1.xlsx WP-SS-CEF-EE-1.xlsx</p> <p>3) Petition</p>	<p>3) Paragraphs 14-44</p>
<p>d. The filing shall include testimony supporting the petition.</p>	<p>1) Attachment 1 – Direct Testimony of Karen Reif</p>	
<p>e. For any proposed program, the utility shall be subject to the requirements in this and all subsequent Sections. If compliance with Part V of these requirements would not be feasible for a particular program or sub-program, the utility may request an exemption but must demonstrate why such exemption should be granted. Examples of historical situations that have qualified for exemption include programs that had an educational rather than equipment-based focus and programs that introduced novel ideas where documentation supporting estimated costs/benefits may not be easily produced.</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3.3</p> <p>2) Petition</p>	<p>1) 69-70, 71, 77, 81, 85, 88, 93, 96, 99</p> <p>2) Paragraph 18</p>
<p>f. If the utility is filing for an increase in rates, charges, etc. or for approval of a program that may increase rates/changes to ratepayers in the future, the utility shall include a draft public notice with the petition and proposed publication dates.</p>	<p>1) Attachment 7 - CEF-EE-Public Notice</p>	
II. Program Description		
<p>a. The utility shall provide a detailed description of each proposed program for which the utility seeks approval, including, if applicable:</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3</p> <p>2) Petition</p>	<p>1) 7, 13, 17, 20, 23, 26, 30, 34, 38, 42, 46, 51, 56, 60, 64, 70, 73, 78, 82, 86, 89, 92</p> <p>2) Paragraphs 14-44</p>
<p>1. Description of program</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3</p> <p>2) Petition</p>	<p>1) 7, 13, 17, 20, 23, 26, 30, 34, 38, 42, 46, 51, 56, 60, 64, 70, 73, 78, 82, 86, 89, 92</p> <p>2) Paragraph 16</p>
<p>2. Market segment/efficiency targeted</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3</p> <p>2) Petition</p>	<p>1) 8, 14, 18, 20, 23, 27, 30, 34, 38, 43, 47, 51, 56, 61, 65, 71, 75, 79, 83, 87, 90, 93</p> <p>2) Paragraph 16</p>
<p>3. Delivery method</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3</p>	<p>1) 8, 14, 18, 21, 24, 27, 31, 35, 39, 43, 47, 52, 56, 61, 65, 71, 76, 79, 83, 87, 90, 93</p>

MIMIMUM FILING REQUIREMENTS FOR PETITIONS UNDER N.J.S.A. 48:3-98.1	Location in Filing	Page Number or Specific Location
4. Estimated program participants	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix B	1) 9, 14, 18, 21, 24, 27, 31, 36, 39, 43, 48, 53, 57, 61, 68, 72, 76, 79, 83, 88, 91, 93 2) 132
5. Total projected annual kWh/therms and peak reduction	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix B 3) Petition	1) 9, 14, 18, 21, 24, 27, 31, 36, 39, 43, 48, 53, 57, 61, 68, 72, 76, 79, 83, 88, 91, 93 2) 133, 134, 135 3) Paragraph 20
6. Relationship to existing programs	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix C	1) 10, 15, 19, 21, 24, 28, 31, 39, 44, 54, 57, 62, 68, 72, 76, 80, 83, 88, 91, 93 2) 163
7. Existing incentives	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix C	1) 10, 15, 19, 21, 24, 28, 31, 39, 44, 54, 57, 62, 68, 72, 76, 80, 83, 88, 91, 93 2) 163
8. Proposed incentives	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix A	1) 10, 15, 19, 21, 24, 28, 32, 36, 40, 44, 48, 53, 58, 62, 68, 72, 76, 80, 83, 88, 91, 94 2) 119
9. Anticipated job creation	1) Schedule KR-CEF-EE-2 (Program Plan) Section 4.7 2) Petition	1) 107 2) Paragraph 23
10. Environmental emissions savings	1) Schedule KR-CEF-EE-2 (Program Plan) Section 4.8 2) Petition	1) 108 2) Paragraph 22
11. Budget information	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix B 3) Petition	1) 19, 23, 26, 30, 33, 38, 42, 45, 50, 55, 59, 63, 69, 73, 78, 81, 85, 89, 92, 95 2) 131 3) Paragraphs 28-31
12. Marketing approach (as defined in section II(g))	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3	1) 11, 15, 19, 22, 25, 28, 32, 36, 40, 44, 49, 54, 58, 62, 68, 72, 77, 80, 84, 88, 91, 94
13. Contractor role (as defined in section II(e))	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Section 4.9 3) Petition	1) 12, 16, 19, 22, 25, 28, 33, 37, 40, 44, 49, 54, 58, 62, 68, 72, 77, 81, 84, 88, 91, 94 2) 109 3) Paragraph 30
14. Market barriers (as defined in section II(h))	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3	1) 12, 16, 19, 22, 25, 29, 33, 37, 41, 45, 49, 55, 59, 62, 69, 72, 77, 81, 85, 88, 92, 94
15. Program costs, broken down into the following categories: administration; marketing and sales; contractor training; incentives (including rebates and low- or no-interest loans); inspections and quality control; and evaluation. To the extent that the Board directs the New Jersey Clean Energy Program ("NJCEP") to report additional categories, the utility shall provide additional categories, as applicable.	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix B	1) 19, 23, 26, 30, 33, 38, 42, 45, 50, 55, 59, 63, 69, 73, 78, 81, 85, 89, 92, 95 2) 131
b. Comparison to in-state programs: The utility shall provide a detailed explanation of how the proposed program(s) are consistent with and/or different from existing or proposed New Jersey Clean Energy Program or utility programs (to the extent proposed program descriptions are available) targeting the same market segment, including how the proposed program(s) will complement, supplement, compete with, and/or impact existing programs being offered in-state.	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Section 4.12 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix C	1) 10, 15, 19, 21, 24, 28, 31, 39, 44, 53, 57, 62, 68, 72, 76, 80, 83, 88, 91, 93 2) 111 3) 163
c. Comparison to out-of-state programs: The utility shall provide a detailed description of how the proposed program(s) are similar to and/or different from a sampling of/examples of existing or proposed utility programs or pilots in other states that were used to form the basis of the proposed program(s), with all supporting documentation.	1) Schedule KR-CEF-EE-2 (Program Plan) Section 4.13 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix D	1) 111 2) 224

MIMIMUM FILING REQUIREMENTS FOR PETITIONS UNDER N.J.S.A. 48:3-98.1	Location in Filing	Page Number or Specific Location
<p>d. The utility shall provide a detailed description of how the proposed program(s) comport with New Jersey State energy policy as reflected in reports, including but not limited to the prevailing New Jersey Energy Master Plan and the greenhouse gas emissions reports issued by the New Jersey Department of Environmental Protection pursuant to <u>N.J.S.A. 26:2C- 42(b)</u> and (c) and <u>N.J.S.A. 26:2C-43</u> of the New Jersey Global Warming Response Act, <u>N.J.S.A. 26:2C-37 et seq.</u></p>	<p>1) Attachment 1 – Direct Testimony of Karen Reif 2) Schedule KR-CEF-EE-2 (Program Plan) Section 1 3) Petition</p>	<p>1) Section II A 2) 6 3) Paragraph 21</p>
<p>e. The utility shall provide the extent to which the utility intends to utilize employees, contractors, or both to deliver the program(s) and, to the extent applicable, the criteria the utility will use for contractor selection.</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Section 4.9</p>	<p>1) 12, 16, 19, 22, 25, 28, 33, 37, 40, 44, 49, 54, 58, 62, 68, 72, 77, 81, 84, 88, 91, 94 2) 109</p>
<p>f. The utility shall provide a detailed description of the process for resolving any customer complaints related to the program(s).</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 4.6</p>	<p>1) 107</p>
<p>g. Marketing: The utility shall provide a description of where and how the proposed program(s)/project(s) will be marketed or promoted throughout the demographic segments of the utility’s customer base. This shall include an explanation of how the specific service, along with prices, incentives, and energy bill savings for each proposed program/project, will be conveyed to customers, where available and applicable.</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3 2) Schedule KR-CEF-EE-2 (Program Plan) Section 4.3</p>	<p>1) 11, 15, 19, 22, 25, 28, 32, 36, 40, 44, 49, 54, 58, 62, 68, 72, 77, 80, 84, 88, 91, 94 2) 104</p>
<p>h. The utility shall provide a description of any known market barriers that may impact the program(s) and address the potential impact on such known market barriers for each proposed program with all supporting documentation. This analysis shall include barriers across the various markets, including residential (both single and multi-family), commercial and industrial (both privately owned and leased buildings), as well as between small, medium, and large commercial and industrial markets.</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 3</p>	<p>1) 12, 16, 19, 22, 25, 29, 33, 37, 41, 45, 49, 55, 59, 62, 69, 72, 77, 81, 85, 88, 92, 94</p>
III. Additional Filing Information		
<p>a. The utility shall describe whether the proposed program(s) will generate incremental activity in the energy efficiency/ conservation/ renewable energy marketplace and what, if any, impact on competition may be created, including any impact on employment, economic development, and the development of new business, with all supporting documentation. This shall include a breakdown of the impact on the employment within this marketplace as follows: marketing/sales, training, program implementation, installation, equipment, manufacturing, evaluation, and other applicable markets. With respect to the impact on competition the analysis should include the competition between utilities and other entities already currently delivering the service in the market or new markets that may be created, where applicable. The analysis should also address competition with other entities already currently delivering the service in the market and new markets that may be created, where applicable.</p>	<p>1) Attachment 1 – Direct Testimony of Karen Reif 2) Schedule KR-CEF-EE-2 (Program Plan) Section 3 3) Schedule KR-CEF-EE-2 (Program Plan) Section 4.7, 4.8, 4.9 4) Petition</p>	<p>1) Section II A 2) 12, 16, 19, 22, 25, 28, 33, 37, 40, 44, 49, 54, 58, 62, 68, 72, 77, 81, 84, 88, 91, 94 3) 107 4) Paragraphs 20, 22, 23</p>
<p>b. The utility shall propose the method for treatment of Renewable Energy Certificates (“RECs”), including solar RECs (“SRECs”) or any other certificate developed by the Board of Public Utilities (“BPU” or “Board”), including Greenhouse Gas Emissions Portfolio and Energy Efficiency Portfolio Standards including ownership and use of the certificate revenue stream(s).</p>	<p>not applicable</p>	<p>not applicable</p>

MIMIMUM FILING REQUIREMENTS FOR PETITIONS UNDER N.J.S.A. 48:3-98.1	Location in Filing	Page Number or Specific Location
<p>The utility shall also propose the method for treatment of any air emission credits and offsets, including Regional Greenhouse Gas Initiative carbon dioxide allowances and offsets, including ownership and use of the certificate revenue stream(s). For programs that are anticipated to reduce electricity sales in its service territory, the utility shall quantify the expected associated annual savings in REC and SREC costs.</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Section 6.0 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix E</p>	<p>1) 116-117 2) 228</p>
IV. Cost Recovery Mechanism		
<p>a. The utility shall provide appropriate financial data for the proposed program(s), including estimated revenues, expenses, and capitalized investments for each of the first three years of operations and at the beginning and end of each year of the three-year period. The utility shall include pro forma income statements for the proposed program(s) for each of the first three years of operations and actual or estimated balance sheets at the beginning and end of each year of the three year period.</p>	<p>1) Schedule KR-CEF-EE-2 (Program Plan) Appendix B 2) Attachment 2 - Schedules SS-CEF-EE-7E and SS-CEF-EE-7G (Income Statement and Balance Sheet) 3) Petition</p>	<p>1)161 3) Paragraph 32-34</p>
<p>b. The utility shall provide detailed spreadsheets of the accounting treatment of the proposed cost recovery, including describing how costs will be amortized, which accounts will be debited or credited each month, and how the costs will flow through the proposed method of recovery of program costs.</p>	<p>1) Direct Testimony of Stephen Swetz 2) Attachment 2 - Schedules SS-CEF-EE-1 - SS-CEF-EE-6G Attachment 4F</p>	<p>1) 3 - 17</p>
<p>c. The utility shall provide a detailed explanation, with all supporting documentation, of the recovery mechanism it proposes to utilize for cost recovery of the proposed program(s), including proposed recovery through the Societal Benefits Charge, a separate clause established for these programs, base rate revenue requirements, government funding reimbursement, retail margin, and/or other mechanisms.</p>	<p>1) Direct Testimony of Stephen Swetz - Section 2E 2) Petition</p>	<p>1) 13 - 14 2) Paragraphs 32-44</p>
<p>d. The utility's petition for approval, including proposed tariff sheets and other required information, shall be verified as to its accuracy and shall be accompanied by a certification of service demonstrating that the petition was served on the Department of the Public Advocate, Division of Rate Counsel simultaneous to its submission to the Board.</p>	<p>1) Attachment 5 - Proposed GPRC Clean and Red-Lined Tariffs 2) Petition</p>	<p>2) Verification of Karen Reif</p>
<p>e. The utility shall provide a-rate impact summary by year for the proposed program(s) and a cumulative rate impact summary by year for all approved and proposed programs showing the impact of individual programs, based upon a revenue requirement analysis that identifies all estimated program costs and revenues for each proposed program on an annual basis. Such rate impacts shall be calculated for each customer class. The utility shall also provide an annual bill impact summary by year for each program, and an annual cumulative bill impact summary by year for all approved and proposed programs showing bill impacts on a typical customer for each class.</p>	<p>1)Initial Rate Impact and Cumulative GPRC Rate Impacts: Attachment 2 - Schedule SS-CEF-EE-3 Attachment 2 - Schedules SS-CEF-EE-4E and SS-CEF- EE-4G Attachment 2 - Schedules SS-CEF-EE-5E and SS-CEF-EE-5G 2) Petition</p>	<p>2) Paragraphs 35-40</p>
<p>f. The utility shall provide, with supporting documentation, a detailed breakdown of the total costs for the proposed program(s), identified by cost segment (capitalized costs, operating expenses, administrative expenses, etc.). This shall also include a detailed analysis and breakdown and separation of the embedded and incremental costs that will be incurred to provide the services under the proposed program(s), with all supporting documentation. Embedded costs are costs that are provided for in the utility's base rates or through another rate mechanism. Incremental costs are costs associated with or created by the proposed program that are not provided for in base rates or another rate mechanism.</p>	<p>1) Attachment 2 - Schedules SS-CEF-EE-7E and SS CEF-EE-7G 2) Petition</p>	<p>2) Paragraphs 28-32</p>
<p>g. The utility shall provide a detailed revenue requirement analysis that clearly identifies all estimated annual program costs and revenues for the proposed program(s), including effects upon rate base and pro forma income calculations.</p>	<p>1) Attachment 2 - Schedules SS-CEF-EE-2E and SS CEF-EE-2G 2) Petition</p>	<p>2) Paragraphs 32-33</p>

MIMIMUM FILING REQUIREMENTS FOR PETITIONS UNDER N.J.S.A. 48:3-98.1	Location in Filing	Page Number or Specific Location
h. The utility shall provide, with supporting documentation: (i) a calculation of its current capital structure, as well as its calculation of the capital structure approved by the Board in its most recent electric and/or gas base rate cases, and (ii) a statement as to its allowed overall rate of return approved by the Board in its most recent electric and/or gas base rate cases.	1) Direct Testimony of Stephen Swetz 2) Attachment 2 - Schedule SS-CEF-EE-1 (WACC) 3) Petition	1) 18, 19 3) Paragraph 33
i. If the utility is seeking carrying costs for a proposed program, the filing shall include a description of the methodology, capital structure, and capital cost rates used by the utility.	1) Attachment 2 - Schedule SS-CEF-EE-1 (WACC)	
j. A utility seeking incentives shall provide all supporting justifications and rationales for incentives, along with supporting documentation, assumptions, and calculations. Utilities that have approved rate mechanisms or incentive treatment from previous cases and are not seeking a modification of such treatment through the current filing are not subject to this requirement.	Not Applicable	
V. Cost Benefit Analysis		
a. The utility shall provide a detailed analysis with supporting documentation of the net benefits associated with the proposed program(s), including, if appropriate, an estimate of its projected avoided costs study, with supporting documentation and work papers. This estimate shall include avoided costs associated with, at a minimum, avoided fuel use, generation, losses, capacity requirements, transmission and distribution costs, emissions allowances, RECs and SRECs, and any savings associated with energy and capacity market impacts (i.e., DRIPE) of the program. This cost-benefit analysis should include consideration of seasonal savings and energy prices, and shall be performed on a Net Present Value (“NPV”) basis specifying all financial assumptions, including inflation rate and discount rate. The value of the avoided environmental impacts and the environmental benefits and the value of any avoided or deferred energy infrastructure should be stated separately.	1) Schedule KR-CEF-EE-2 (Program Plan) Section 6 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix E 3) Petition	1) 115 2) 228 3) Paragraphs 17-23
b. The utility shall calculate a cost/benefit analysis using the Participant Cost Test, Program Administrator Cost Test, Ratepayer Impact Measure Test, Total Resource Cost Test, and Societal Cost Test that assesses all program costs and benefits from a societal perspective i.e., that includes the combined financial costs and benefits realized by the utility and the customer. The utility may also provide any cost benefit analysis that it believes appropriate with supporting rationales and documentation.	1) Schedule KR-CEF-EE-2 (Program Plan) Section 6 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix E 3) Petition	1) 115 2) 228 3) Paragraphs 17-18
c. The utility must demonstrate how the results of the tests in section V(b) support Board approval of the proposed program(s).	1) Schedule KR-CEF-EE-2 (Program Plan) Section 6 2) Schedule KR-CEF-EE-2 (Program Plan) Appendix E 3) Attachment 1 – Direct Testimony of Karen Reif	1) 115 2) 228 3) Section II A
d. Renewable energy programs shall not be subject to a cost/benefit test but the utility must quantify all direct and indirect benefits resulting from such a proposed program as well as provide the projected costs. The utility must also demonstrate how such a proposed program will support energy and environmental statewide planning objectives, such as attainment of the Renewable Portfolio Standard and any emission requirements.	Not Applicable	
e. The level of energy and capacity savings utilized in these calculations shall be based upon the most recent protocols approved by the Board to measure energy savings for the NJCEP. To the extent that a protocol does not exist or an alternative protocol is proposed for a filed program, the utility must submit a measurement methodology for the program or contemplated measure for approval by the Board.	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3.4	1) 101
f. For cost effectiveness calculations, the utility shall also estimate and reflect in the energy and capacity savings any free rider and free driver effects, i.e., savings associated with participating customers who would have implemented energy efficiency or renewable energy measures without <u>N.J.S.A. 48:3-98.1</u> benefits or incentives.	1) Schedule KR-CEF-EE-2 (Program Plan) Section 3.4	1) 101

MIMIMUM FILING REQUIREMENTS FOR PETITIONS UNDER N.J.S.A. 48:3-98.1	Location in Filing	Page Number or Specific Location
VI. Evaluation, Measurement and Verification ("EM&V")		
<p>a. The utility shall provide a quantitative analysis and projections of both the total and percentage reduction in its annual kWh and/or therm sales as a result of the proposed programs, as well as of the projected total in peak load reduction expected from the proposed program(s), over the lifetime of the measures included in the program(s). The utility shall also provide this information expressed as a percentage reduction relative to its current annual peak load.</p>	<p>1)Schedule KR-CEF-EE-2 (Program Plan) Section 2, Section 3 2)Schedule KR-CEF-EE-2 (Program Plan) Appendix B 3) Petition 4) WP-KR-CEF-EE-1.xlsx</p>	<p>1) 9, 14, 18, 21, 24, 27, 31, 36, 39, 43, 48, 53, 57, 61, 68, 72, 76, 79, 83, 88, 91, 93 2) 133-135 3) Paragraph 20</p>
<p>b. For renewable energy programs, the utility shall provide the anticipated contribution to annual KWh and peak load on an annual basis and for the service life of the renewable energy measure.</p>	<p>Not Applicable</p>	
<p>c. An EM&V Plan for each program will include:</p>	<p>1)Schedule KR-CEF-EE-2 (Program Plan) Section 5</p>	<p>1) 113</p>
<p>1. Methodology for monitoring program progress on program areas 4–15 as described in Section II(a)</p>	<p>1)Schedule KR-CEF-EE-2 (Program Plan) Section 5</p>	<p>1) 113</p>
<p>2. Program progress results for each of the 12 program areas as compared to projections</p>	<p>1)Schedule KR-CEF-EE-2 (Program Plan) Section 5</p>	<p>1) 113</p>
<p>3. Lessons learned in implementing the program with a focus on those related to exceeding or not reaching anticipated goals</p>	<p>1)Schedule KR-CEF-EE-2 (Program Plan) Section 5</p>	<p>1) 113</p>
<p>4. Recommended program enhancements</p>	<p>1)Schedule KR-CEF-EE-2 (Program Plan) Section 5</p>	<p>1) 113</p>

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

**IN THE MATTER OF THE PETITION OF PUBLIC
SERVICE ELECTRIC AND GAS COMPANY
FOR APPROVAL OF ITS CLEAN ENERGY FUTURE-
ENERGY EFFICIENCY PROGRAM ON A
REGULATED BASIS**

BPU Docket No. _____

**PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
KAREN REIF
VICE PRESIDENT RENEWABLES & ENERGY
SOLUTIONS**

October 11, 2018

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1 **PUBLIC SERVICE ELECTRIC AND GAS COMPANY**
2 **DIRECT TESTIMONY**
3 **OF**
4 **KAREN REIF**
5 **VICE PRESIDENT OF RENEWABLES & ENERGY SOLUTIONS**
6

7 **Q. Please state your name and professional title.**

8 A. My name is Karen Reif. I am the Vice President of Renewables & Energy Solutions
9 at Public Service Electric and Gas Company (“PSE&G” or “the Company”). My
10 professional credentials are set forth in the attached Schedule KR-CEF-EE-1.

11 **I. SCOPE OF TESTIMONY**

12 **Q. What is the purpose of your testimony?**

13 A. I am testifying in support of the Company’s proposed Clean Energy Future Energy
14 Efficiency Program (“CEF-EE Program”) that consists of twenty-two (22) subprograms,
15 including: seven (7) residential subprograms, seven (7) commercial and industrial (“C&I”)
16 subprograms, and eight (8) pilot subprograms. These subprograms are designed to provide
17 opportunities across PSE&G’s entire customer base, including residential customers (with a
18 specific focus on low and moderate income customers), C&I customers, and public sector
19 customers. The CEF-EE Program will significantly expand PSE&G’s current energy
20 efficiency programs. The history of the Company’s energy efficiency programs since 2009 is
21 set forth in the accompanying Petition.

22 At this time, I am also testifying on behalf of PSE&G in a separate docketed
23 proceeding, in support of the Company’s separate petition for authority to implement a Clean
24 Energy Future Electric Vehicle and Energy Storage Program (“CEF-EVES Program”).

1 **Q. How is your testimony organized?**

2 A. My testimony first provides an overview of the proposed CEF-EE Program, including
3 a description of each of the twenty-two subprograms, associated Program benefits, and cost-
4 effectiveness. I also describe the CEF-EE Program’s proposed investment and expense
5 budgets, the expected program term, and amortization/depreciation periods. In addition, I
6 address certain regulatory considerations that are vital to the CEF-EE Program’s successful
7 implementation and are necessary components of the CEF-EE Program as proposed. Finally,
8 I address credits, program evaluation and reporting. Compliance with the Minimum Filing
9 Requirements (“MFRs”) is presented in part in my testimony and more fully in Schedule KR-
10 CEF-EE-2 and Appendix A to the Petition that accompanies this filing. The electronic
11 version of this filing contains the CEF-EE Program assumptions, including investments,
12 costs, number of expected participants, and impacts. This information is located in the
13 electronic workpapers labeled WP-KR-CEF-EE-1.xlsx that will be provided to the parties
14 upon the execution of a nondisclosure agreement.

15 **Q. Do you sponsor any schedules as part of your direct testimony?**

16 A. Yes. I sponsor the following schedules that were prepared by me and/or under my
17 supervision and direction:

- 18 Schedule KR-CEF-EE-1 describes my professional credentials;
- 19
- 20 Schedule KR-CEF-EE-2 contains The CEF-EE Program Plan; and
- 21
- 22 Schedule KR-CEF-EE-3 contains a breakdown of annual investment,
- 23 expenses, participants, savings, and emissions data.

1 **Q. Is PSE&G submitting any other testimony in support of the CEF-EE Program?**

2 A. Yes, Mr. Stephen Swetz is filing testimony in this matter addressing revenue
3 requirements, cost recovery, and rate impacts for the CEF-EE Program. Also submitted with
4 this filing is the testimony of Daniel Hansen of Christensen Associates Energy Consulting,
5 LLC. Mr. Hansen's testimony supports the Company's proposed Green Enabling
6 Mechanism ("GEM").

7 **II. CEF-EE Program**

8 **A. *Program Overview, Benefits, and Cost-Effectiveness***

9 **Q. Please describe the proposed CEF-EE Program.**

10 A. To support the CEF-EE Program, PSE&G is proposing up to \$2.5 billion in
11 investment and approximately \$283 million in expenses over a six-year period and beyond,
12 as described further below. The CEF-EE Program consists of twenty-two subprograms that
13 are designed to increase energy efficiency in all sectors of the economy and offer savings
14 opportunities across PSE&G's customer base. The CEF-EE Program has a special emphasis
15 on hard to reach customers, such as low income, multi-family, small business, and local
16 government customers. It also includes various pilot subprograms whereby PSE&G will
17 implement and manage select, highly advanced measures and approaches to energy
18 efficiency that may support future subprograms. The knowledge gained through these pilot
19 subprograms can also be used to support future energy efficiency development outside of
20 PSE&G's service territory to benefit all residents of New Jersey. Further CEF-EE Program
21 details are contained in Schedule KR-CEF-EE-2.

1 **Q. What conclusions regarding the CEF-EE Program are supported by your**
2 **testimony?**

3 A. To help meet New Jersey's clean energy goals and bolster the State's clean energy
4 economy in a manner consistent with the Clean Energy Law, it is critical that PSE&G
5 significantly expand energy efficiency deployment in its service territory beyond current
6 levels and commit the capital and financial resources necessary to support this expansion.
7 The CEF-EE Program derives largely from PSE&G's broader vision for a Clean Energy
8 Future and aims to position New Jersey as a national leader in energy efficiency. The Clean
9 Energy Law requires each utility to implement energy efficiency programs to reduce
10 electricity usage by 2% and natural gas usage by 0.75%. The CEF-EE Program represents a
11 clear pathway to achieving these energy goals and providing considerable benefits to
12 customers and the State, including:

- 13 • **Lower bills** – the CEF-EE Program is designed to provide universal access to energy
14 efficiency and the opportunity for participating customers to reduce energy
15 consumption by approximately 40.6 billion kWh and 675 million therms, and reduce
16 their energy bills by approximately \$5.7 billion over the life of the energy efficiency
17 measures. As explained more fully below, the energy savings achieved in PSE&G's
18 service territory are expected to be more than three times the statewide average of
19 0.44% for electric and 0.26% for gas.
- 20 • **Environmental improvements** – the CEF-EE Program will result in the reduction of
21 carbon dioxide emissions by 24 million tons, sulfur dioxide emissions by 43,000 tons,

1 and nitrogen oxide emissions by 18,000 tons. The emissions savings are the
2 equivalent of removing up to 320,000 cars from New Jersey roads per year.¹

3 • **Job creation** – the CEF-EE Program is expected to increase employment through the
4 creation of approximately 30,000 job-years and facilitate associated economic
5 activity.²

6 At the same time, there are a number of key regulatory components of the CEF-EE
7 Program that are critical to ensuring that these benefits are fully achieved. Among them
8 would be Board approval of a decoupling or lost revenue adjustment mechanism to remove
9 the disincentive for utilities to invest in energy efficiency, as well as the establishment of
10 PSE&G as the exclusive provider of regulated energy efficiency programs in PSE&G's
11 service territory, following a transition of these responsibilities from the BPU's Office of
12 Clean Energy to the utility. These benefits, the regulatory treatment needed to achieve them,
13 and the details of the CEF-EE Program are described further below and in Schedule KR-
14 CEF-EE-2.

15 **Q. Please identify the twenty-two subprograms that comprise the CEF-EE**
16 **Program.**

17 A. As noted earlier in my testimony, the proposed CEF-EE Program consists of
18 residential, C&I, and pilot subprograms. An overview of the subprograms is set forth in

¹ Based upon the Greenhouse Gas Equivalencies Calculator developed by the U.S. Environmental Protection Agency (<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>).

² The value of job-years is based on the Rutgers report "Analysis for the 2011 Draft New Jersey Energy Master Plan Update" using the factor 7.91 direct jobs per one million dollars in program spend. (https://nj.gov/emp/docs/pdf/emp_creeep_report20110412.pdf) and the National Renewable Energy Laboratory Jobs and Economic Development Impact Model (<https://www.nrel.gov/analysis/jedi/>).

1 Table 1 below, with complete subprogram descriptions, target sectors, projected
 2 participation, and budgets set forth in Schedule KR-CEF-EE-2. The subprogram names
 3 provided throughout are preliminary and the ultimate “go-to-market” names of these
 4 subprograms may change.

5 **Q. Can you briefly describe each of the subprograms identified above?**

6 A. Table 1 below provides a brief description of each of the twenty-two subprograms,
 7 with full details on each subprogram contained in Schedule KR-CEF-EE-2. It also provides
 8 total estimated expenditures for each of the twenty-two subprograms, as well as other
 9 Program-wide spending categories that comprise the total program costs. Complete
 10 investment and expense level detail is provided in Schedule KR-CEF-EE-2, Appendix B; see
 11 also Schedule KR-CEF-EE-3.

12 **Table 1 (\$M)**

Subprogram	Description	Total Estimated Investment	Total Estimated Expenses	Total Estimated Expenditures
Residential Efficient Products	Rebates and on-bill repayment for HVAC, smart thermostats, appliances, lighting, and other equipment	\$267.8	\$12.2	\$280.0
Residential Existing Homes	Rebates and on-bill repayment for energy audit, direct install of efficient equipment, and broader weatherization / appliance replacement services	\$79.8	\$11.1	\$91.0
Residential Behavioral	Data analytics, home energy reports, and online energy audits	\$45.1	\$3.8	\$48.8

ATTACHMENT 1

Subprogram	Description	Total Estimated Investment	Total Estimated Expenses	Total Estimated Expenditures
Residential K-12 Education	Curriculum to teach energy efficiency and a take-home kit with efficient products	\$4.6	\$2.1	\$6.7
Residential New Construction	Rebates to builders and owners for new construction meeting energy efficiency standards	\$24.5	\$4.6	\$29.1
Residential Multi-Family	Energy audit and direct install of efficient equipment at no charge to tenants	\$11.9	\$6.2	\$18.1
Residential Income Eligible	Energy audit, direct install of efficient equipment, and broader weatherization / appliance replacement services at no charge	\$99.6	\$11.5	\$111.1
C&I Prescriptive	Rebates and on-bill repayment for HVAC, Lighting, Motors & Drives, Refrigeration, Water heaters, Air Compressors, and Food Service Equipment	\$611.2	\$6.3	\$617.5
C&I Custom	Custom incentives for large energy efficiency projects, including on-bill repayment	\$244.4	\$5.1	\$249.6
C&I Small Non-Residential Efficiency	Rebates & on-bill repayment for direct-installed EE measures to small non-residential customers of lighting, controls, refrigeration, heating and air conditioning upgrades, etc.	\$343.5	\$6.3	\$349.9
C&I New Construction	Rebates to builders and owners for new construction meeting energy efficiency standards	\$23.7	\$2.9	\$26.7

ATTACHMENT 1

Subprogram	Description	Total Estimated Investment	Total Estimated Expenses	Total Estimated Expenditures
C&I Energy Management	Retro-commissioning and Strategic Energy Management: optimizing existing systems with little to no equipment upgrades	\$9.7	\$4.4	\$14.1
C&I Engineered Solutions	Whole-building engineered energy saving solutions to hospitals, school districts, universities, municipalities, apartment buildings and other non-profit and public entities	\$346.6	\$12.5	\$359.1
C&I Streetlight	Replacement of HPS with LED luminaires and smart cities pilot	\$145.5	\$6.5	\$152.0
Emerging Technologies & Approaches	Funding and support to identify, demonstrate, and deploy the next generation of energy efficiency technologies	\$25.0	\$1.3	\$26.3
Energy Efficiency as a Service Pilot	Monthly service contracts, incentives, and extensive guidance on energy efficient building equipment and software	\$25.0	\$1.3	\$26.3
Smart Homes Pilot	Automated and personalized savings measures using an ecosystem of energy efficient devices and technologies working in coordination	\$25.0	\$1.3	\$26.3
Non-Wires Alternative Pilot	Defer or replace the need for electric infrastructure upgrades through the extensive deployment of energy efficiency and demand response resources	\$25.0	\$1.3	\$26.3

Subprogram	Description	Total Estimated Investment	Total Estimated Expenses	Total Estimated Expenditures
Non-Pipes Solution Pilot	Defer or replace the need for gas infrastructure upgrades through the extensive deployment of energy efficiency and demand response resources	\$25.0	\$1.3	\$26.3
Volt Var Pilot	Smart-grid technology to automate control of the electric power distribution grid to reduce energy consumption, peak demand, system losses and enable more solar	\$15.0	\$1.3	\$16.3
Business Energy Reports Pilot	Data analytics, home energy reports & online energy audits for businesses	\$10.0	\$2.1	\$12.1
Building Operator Certification Pilot	Training program for building operations staff responsible for energy-using equipment	\$7.5	\$2.1	\$9.6
	Program Design and Development	\$0.0	\$12.0	\$12.0
	Program Management	\$0.0	\$39.3	\$39.3
	Education and Outreach	\$0.0	\$95.7	\$95.7
	IT Build	\$82.4	\$0.0	\$82.4
	IT Run	\$0.0	\$28.9	\$28.9
	Total	\$2,498.0	\$283.4	\$2,781.4

1 **Q. Please describe the expected benefits associated with the proposed CEF-EE**
 2 **Program.**

3 A. The CEF-EE Program represents a significant expansion of the energy efficiency
 4 efforts in the Company’s service territory and is expected to result in considerable benefits
 5 including reduced energy usage resulting in lower participant energy bills with an emphasis
 6 on hard to reach customers that are often not met by existing programs, such as low income

1 customers, meaningful environmental improvements, and significant job creation. In doing
2 so, the CEF-EE Program is consistent with State and Federal policies and New Jersey's
3 Global Warming Response Act and Clean Energy Law. The CEF-EE Program benefits are
4 discussed briefly below and detailed in Schedule KR-CEF-EE-2.

5 **Q. Please describe the energy consumption and bill reductions anticipated to result**
6 **from the proposed CEF-EE Program.**

7 A. In total, the proposed CEF-EE Program is expected to reduce energy consumption by
8 approximately 40.6 billion kWh and 675 million therms, resulting in a net reduction in
9 participating customers' energy bills by \$5.7 billion over the life of energy efficiency
10 measures. Once fully implemented, this program will reduce electric consumption as a
11 percentage of retail sales in PSE&G's service territory by up to 1.8% per year, and a
12 cumulative total of 6.6% by 2025. This program will also reduce gas consumption as a
13 percentage of retail sales in PSE&G's service territory by up to 0.8% per year, and a
14 cumulative total of 2.0% by 2025. This more than triples New Jersey's statewide current
15 electric energy efficiency savings of 0.44% and gas energy efficiency savings of 0.26% in
16 2016.

17 **Q. Please describe the environmental benefits anticipated to result from the CEF-**
18 **EE Program.**

19 A. The proposed CEF-EE Program will result in significant environmental benefits,
20 including putting New Jersey back on the path to meet the mandates of New Jersey's Global
21 Warming Act, while also reducing air pollution and smog that disproportionately impact the
22 State's urban centers and low income residents. Specifically, this program will result in the
23 reduction of carbon dioxide emissions by 24 million tons, sulfur dioxide emissions by 43,000

1 tons, and nitrogen oxide emissions by 18,000 tons. The emissions savings are the equivalent
2 of removing up to 320,000 cars from New Jersey roads per year.

3 **Q. Please describe the job creation benefits associated with the CEF-EE Program.**

4 A. The CEF-EE Program is expected to increase employment through the creation of
5 approximately 30,000 direct, indirect, and induced job-years. As reflected in Schedule KR-
6 CEF-EE-2, we expect the creation of 7.91 direct job-years for every one-million dollars spent
7 in energy efficiency in New Jersey. These direct job years include employment opportunities
8 for the Company's trade allies. Indirect and induced jobs were estimated using the National
9 Renewable Energy Laboratories ("NREL") Jobs and Economic Development Impact
10 ("JEDI") model. The CEF-EE Program's expenditures will also have a "multiplier effect" on
11 New Jersey's economy in that the people employed through the CEF-EE Program will spend
12 part of their wages on other goods and services in New Jersey, creating additional economic
13 value. Anticipated job creation is discussed further in Schedule KR-CEF-EE-2, Section 4.7.

14 **Q. Is the CEF-EE Program cost effective?**

15 A. Yes. PSE&G engaged Gabel Associates to complete a cost benefit analysis and
16 analyze the cost effectiveness of the CEF-EE Program³ using all five (5) cost benefit analysis
17 tests required in the MFRs, where applicable.⁴ This analysis demonstrates that the CEF-EE
18 Program generates benefits that exceed costs, is valuable, and should be approved by the

³ Gabel Associates also assisted with the calculations of costs, cost savings, emissions reductions, and job creation for use in calculating the result of the cost benefit tests. Gabel Associates further advised on and assisted with program development.

⁴ Per MFR Section I.e, compliance with Part V of the MFRs would not be feasible for certain subprograms. PSE&G is requesting an exemption as reflected in the Company's petition. Section 3.3 of Schedule KR-CEF-EE-2 demonstrates why such exemption should be granted.

1 Board. Overall, the CEF-EE Program is cost effective with a Societal Cost Test (“SCT”)
2 result of 3.7, with all of the subprograms resulting in benefits that exceed costs.

3 The SCT provides the most comprehensive approach to determining cost
4 effectiveness and should be the primary measure used to determine the merit of the CEF-EE
5 Program. In contrast to the more narrowly focused Total Resource Cost (“TRC”) (that
6 nonetheless results in a total CEF-EE Program TRC of 1.0), the SCT quantifies a broader
7 range of societal impact factors, including environmental benefits and economic impacts.
8 Indeed, the Clean Energy Law emphasizes the importance of measuring cost benefit by
9 reference to environmental and economic benefits.

10 The SCT quantifies and discloses a fuller range of benefits to the State so that real
11 benefits created by the CEF-EE Program are recognized and taken into consideration. Use of
12 the SCT is consistent with the approach applied in many states to recognize the full range of
13 benefits from energy efficiency. The SCT is the only test that recognizes carbon reduction
14 and other environmental benefits, and therefore is the only test that considers the positive
15 impact of energy efficiency programs on climate change and the environment, consistent
16 with the State’s environmental and energy policy goals. The full range of benefits used for
17 the SCT are also statutorily required for evaluating offshore wind projects under New
18 Jersey’s Offshore Wind Economic Development Act⁵ and should be equally applicable when
19 measuring the cost and benefits associated with energy efficiency programs. All in all, the
20 SCT recognizes a broader range of factors, including environmental benefits and other
21 important societal impacts such as emission reductions, economic and employment benefits,

⁵ N.J.S.A. 48:3-87.1(a)(10)

1 enhanced ability for low income bill payment and reduced health costs, amongst others, and
2 should be the primary test used to evaluate the cost-effectiveness of the CEF-EE Program.

3 The results of the cost benefit analysis are reflected in Schedule KR-CEF-EE-2
4 Appendix E.

5 **Q. Why is PSE&G proposing such a considerable expansion of its energy efficiency**
6 **offerings as reflected in the CEF-EE Program?**

7 A. The CEF-EE Program was designed after studying programs from utilities around the
8 country with specific focus on, and benchmarking of, twenty-two other utilities outside of
9 New Jersey that have well-regarded programs. The trajectory and level of energy efficiency
10 savings was also evaluated, recognizing New Jersey's current position among states relative
11 to its energy efficiency performance. Based on this review, PSE&G developed the CEF-EE
12 Program to move the PSE&G service territory (and New Jersey as a whole) to a national
13 leadership position with respect to energy efficiency. Consistent with the goals of the Clean
14 Energy Law, it is the Company's expectation that the CEF-EE Program will provide an
15 important step towards establishing New Jersey as a leader in the development of a clean
16 energy future.

17 New Jersey has a tremendously underutilized resource at its disposal that can help to
18 lower energy bills for its customers. Energy efficiency is regularly recognized as the least
19 cost energy resource option.⁶ However, in the 2018 State Energy Efficiency Scorecard, the
20 American Council for an Energy-Efficient Economy ("ACEEE") ranked New Jersey 18th
21 overall for its energy efficiency programs, and 29th overall in the level of energy savings that

⁶ The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs, <https://aceee.org/research-report/u1808>.

1 are achieved annually. More locally, New Jersey ranked last among its peer northeastern
2 states. The proposed CEF-EE Program will utilize PSE&G's unique position in the market
3 and its relationship with its customers to help lead a transformation in the energy efficiency
4 economy that will aid in making New Jersey a national leader in energy efficiency. The
5 considerable benefits that the CEF-EE Program is expected to deliver to our customers and
6 the State would not be attainable without the CEF-EE Program as proposed.

7 ***B. Investment and Expense Budgets; Program Term, and Amortization Periods***

8 **Q. Please summarize the proposed amount of investment, level of expenses and**
9 **Program term.**

10 A. PSE&G proposes to commit up to \$2.5 billion in CEF-EE Program investment and
11 forecasted expenses of approximately \$283 million. The overall CEF-EE Program budget
12 includes all identified costs necessary to deliver the Program including customer incentives,
13 information technology ("IT"), administration, marketing, training, program management,
14 inspections, evaluations, and quality assurance/quality control efforts. See Schedule KR-
15 CEF-EE-2, Appendix B for further details.

16 **Q. What is the proposed budget breakdown for the CEF-EE Program?**

17 A. A breakdown of the costs is reflected in Table 1 above. Further detail on the cost
18 categories prescribed by the MFRs is set forth in full in Schedule KR-CEF-EE-2, Appendix

19 B. *See* also Schedule KR-CEF-EE-3.

20 **Q. Please explain the need for the IT expenditures listed above.**

21 A. PSE&G cannot deliver these subprograms as structured without the proposed IT
22 expenditures associated with the CEF-EE Program. The scale and scope of the proposed

1 CEF-EE Program are significantly larger and more complex than any program previously
2 considered; as such, the technology required to enable the CEF-EE Program exceeds the
3 capabilities of PSE&G's current technology systems and platforms. The CEF-EE Program
4 requires the proposed investment in technology systems and services to ensure PSE&G's
5 customers can access the CEF-EE Program's energy efficiency products and incentives in a
6 seamless, efficient, and secure manner. Customers today transact with businesses very
7 differently than they did a decade ago. An integrated approach is needed to ensure numerous
8 program participants, vendors, trade allies, and the Company's call center and workforce can
9 be coordinated to support the planning, marketing, order processing, delivery, and
10 billing/payment services across the twenty-two energy efficiency subprograms. These IT
11 expenditures provide a platform that is expected to support PSE&G's future energy
12 efficiency programs.

13 In many cases, information exists in small, discrete systems, and data is managed and
14 transferred manually. The CEF-EE Program envisions a comprehensive energy efficiency
15 services platform that integrates PSE&G's information with customers, suppliers, vendors,
16 trade allies, and other market participants in a manner that provides a seamless customer
17 experience, while protecting the privacy of customer data. The proposed investment also
18 enables PSE&G to offer a significantly scaled up on-bill repayment offering that is expected
19 to be a major factor in subprogram adoption. PSE&G's existing billing solution technology
20 was designed to support utility revenue billing and not on-bill repayment solutions of the
21 magnitude proposed in this filing. The on-bill repayment solution will enable PSE&G to
22 qualify and enroll participants; manage payments, balances, and collectible amounts; and

1 post information to the customer's bill at the scale anticipated by the CEF-EE Program. Key
2 additional elements of the solution include the development of new web functionality,
3 enhancements to PSE&G's customer and work management systems, and advanced reporting
4 and analytics systems tied specifically to the proposed energy efficiency subprograms.
5 Details of the IT solution and estimated costs are provided in Section 4.5 of Schedule KR-
6 CEF-EE-2.

7 **Q. Will the IT systems help protect the privacy and security of customer**
8 **information?**

9 A. Yes. The Company intends to implement important customer protections to the CEF-
10 EE Program proposed here, which will require additional IT investment, especially as it
11 relates to third party energy efficiency partners. This integrated system approach will enable
12 the Company to offer its customers a unique energy efficiency experience while seeking to
13 protect information privacy and security.

14 **Q. Please summarize the time period over which the CEF-EE expenditures will be**
15 **made.**

16 A. PSE&G anticipates committing up to approximately \$2.5 billion in investment over a
17 period of approximately six years towards the delivery of the twenty-two subprograms
18 contained in the CEF-EE Program. The six year period will commence upon Board approval
19 of the CEF-EE Program. Investments related to committed CEF-EE Program participants
20 may occur beyond the approximate six year period as a result of long project lead and
21 construction times for certain subprograms. The program plan also anticipates expenses
22 related to repayments and program evaluation to extend beyond the approximate six year
23 period. The CEF-EE Program requires the flexibility to transfer funds between subprograms

1 and across program years to respond to market conditions and participant demands to further
2 maximize energy savings and program resources.

3 **Q. Why is PSE&G proposing a six year period for the CEF-EE Program?**

4 A. A six year period is necessary to provide continuity in the CEF-EE Program to
5 facilitate a continuous flow of benefits to participating customers and the State, without the
6 hard starts and stops of shorter term programs. It will allow the Company to efficiently
7 utilize experienced contractors, who are already working on existing energy efficiency
8 programs, and provide greater certainty and stability for contractors to invest in the labor and
9 resources necessary to support the CEF-EE Program.

10 **Q. What is the proposed amortization period?**

11 A. PSE&G is proposing a 15-year amortization period for the CEF-EE Program's
12 regulatory assets to align with the weighted average useful life of the measures being
13 installed. This amortization timeframe aligns the timing of the program costs with the
14 corresponding benefits and also reduces the annual rate impact of the subprograms on
15 ratepayers. IT capital expenditures will be amortized over a five year period. Assets
16 associated with the street lighting subprogram will be depreciated as discussed in the
17 testimony of Stephen Swetz.

18 **C. *Regulatory Considerations Related to CEF-EE Program***

19 **Q. Are there any regulatory factors that are critical to the CEF-EE Program as**
20 **proposed?**

21 A. Yes, necessary actions to support the CEF-EE Program include: (i) the establishment
22 of PSE&G, following a transition period, as the exclusive provider of regulated energy

1 efficiency programs in PSE&G's service territory; and (ii) approval of a decoupling or lost
2 revenue adjustment mechanism. I discuss the issue of PSE&G as the exclusive provider of
3 regulated energy efficiency programs in the Company's service territory immediately below.
4 I address the decoupling/lost revenue adjustment mechanism in Section III. below.

5 **Q. Please explain why PSE&G should be the exclusive provider of regulated energy**
6 **efficiency programs in PSE&G's service territory.**

7 A. As established in the Energy Efficiency Portfolio Standard embodied in the Clean
8 Energy Law, the State's objective is to implement energy efficiency measures, ensure
9 universal access to energy efficiency measures, and serve the needs of low-income
10 communities. In order to achieve these goals, the Office of Clean Energy must continue to
11 play a critical role in oversight, standard setting, and ensuring consistency in implementation
12 of EE programs throughout the State where appropriate. In terms of actual program
13 implementation, however, this role is appropriately assumed by PSE&G. There are many
14 factors that make PSE&G uniquely positioned to effectively implement the proposed CEF-
15 EE Program, including:

16 • ***Established Customer Relationship:*** PSE&G has the ability to leverage its existing
17 relationship with its customers and its position as the State's largest electric and gas
18 delivery company. PSE&G has access to all potential CEF-EE Program participants
19 through its monthly billing relationships, social media platforms, website, e-mail
20 distribution lists, customer call centers, numerous walk-in customer service centers
21 across its service territory (located in urban environments, including the State's
22 largest cities), and field activities. Regular interactions between customer, and the

1 utility will help to encourage customer participation in the energy efficiency
2 programs.

- 3 • **Expertise:** In partnership with its existing network of third party service providers,
4 PSE&G has been implementing Board-approved energy efficiency programs since
5 the late 2000s, beginning with the approval of its Carbon Abatement pilot program.⁷
6 The Company’s energy efficiency programs since that time have garnered multiple
7 awards and recognition, including: (1) in 2018, PSE&G’s Hospital and Multi-Family
8 subprograms were both recognized by the ACEEE as Exemplary Programs; (2) in
9 2018, the Association of Energy Engineers Region 1 Energy Project of the Year for
10 the Hospital subprogram’s Hackensack Meridian Health University Medical Center;
11 (3) in 2016, the Association of Energy Service Professionals Energy Award for
12 Outstanding Achievement in Residential Program Design & Implementation for
13 PSE&G’s Multifamily Housing subprogram; (4) in 2015, the Alliance to Save
14 Energy’s Power Generation & Supply Star of Energy Efficiency Award for PSE&G’s
15 Hospital Efficiency and Multifamily Housing subprograms; (5) in 2014, the
16 Association of Energy Engineers Local Chapter Award for Energy Project of the Year
17 for PSE&G’s Hospital Efficiency subprogram and Trinitas Regional Medical Center;
18 (6) in 2013, PSE&G’s Multifamily Housing subprogram recognized by the ACEEE
19 Third National Review of Exemplary Energy Efficiency Programs; and (7) in 2012,
20 the NJ Biz Healthcare Heroes Award for PSE&G’s Hospital Efficiency subprogram.

⁷ *I/M/O The Petition of Public Service Electric and Gas Company’s Offering a Carbon Abatement Program in its Service Territory on a Regulated Basis and Associated Cost Recovery Mechanism Pursuant to N.J.S.A. 48:3-98.1, BPU Docket No. 008060426 (Dec. 16, 2008).*

1 • **On-bill Repayments:** The ability to efficiently support and administer on-bill
2 repayments over an extended period of time at zero percent rates in a manner that is
3 accessible and easy for all customers, which will reduce the up-front cost burden of
4 energy efficiency improvements.

5 • **Usage Data:** Access to customer usage data to identify energy savings opportunities
6 and monitor the impact of completed energy efficiency projects.

7 **Q. Can the CEF-EE Program impact the State’s Societal Benefit Charge budget?**

8 A. The CEF-EE provides the Board with an opportunity to make significant changes to
9 how the Societal Benefit Charge (“SBC”) funds are utilized or collected. The commitment
10 of SBC funding for energy efficiency programs in PSE&G’s service territory can be reduced
11 and/or freed up for other uses, to be determined by the Board.

12 **D. Credits**

13 **Q. How will the proposed subprograms participate in the PJM markets?**

14 A. The eligibility and performance rules for the PJM Interconnection capacity market
15 (“Reliability Pricing Model” or “RPM”) continue to evolve and may change over the life of
16 the proposed subprograms. Given current performance rules and performance risk to
17 customers, the Company has not assumed any capacity revenues for the CEF-EE Program.
18 To the extent that CEF-EE Program measures are eligible to offer or bid, represent an
19 acceptable performance risk to customers, and are cost-effective when considering the costs for
20 measurement and verification (“M&V”), PSE&G will offer or bid measures in the RPM
21 auctions. All auction proceeds net of M&V and other administrative costs will be credited to
22 ratepayers.

1 ***E. Program Evaluation and Reporting***

2 **Q. Is PSE&G proposing a change in the way it currently reports on its energy**
3 **efficiency programs to Board Staff and Rate Counsel?**

4 A. No. The Company proposes to provide reports to Board Staff and Rate Counsel
5 regarding the CEF-EE Program consistent with the agreed upon ongoing method of reporting
6 or some other form of reporting as may otherwise be mutually agreed upon. These reports,
7 which are provided quarterly, include information related to the energy efficiency programs
8 such as investment, expense, participation and energy savings. The pilot subprograms will
9 report on investments and expenses, but participation and energy savings will be reported at
10 the completion of the testing, experimentation, and analysis, or as otherwise agreed upon.

11 **Q. How is PSE&G proposing to report CEF-EE Program impact and process**
12 **evaluations?**

13 A. PSE&G will contract with independent, third-party evaluation contractor(s) to
14 provide evaluation, measurement, and verification of the subprograms. PSE&G will conduct
15 annual impact and process evaluation reports for all subprograms, with the exception of the
16 C&I Streetlight subprogram and the pilot subprograms. Reports shall reflect results from the
17 prior calendar year and shall be provided to the Board by July 1 of each year. Evaluation
18 reports will support PSE&G's continuous improvement process by identifying the
19 subprogram's actual performance, indicating how this performance differs from the planned
20 performance, and identifying opportunities for future performance improvement.

21 For the C&I Streetlight subprogram, the Company proposes to avoid the expense of
22 evaluation because the new LED luminaires will simply become a new streetlight product.

1 As such, the energy consumption and savings compared to the existing luminaires will be
2 dictated by the existing formulas in the applicable tariff.

3 Evaluation reports for each pilot subprogram, including the Smart Cities pilot within
4 the C&I Streetlight program, will be uniquely designed to address the goals of each pilot.
5 Timing of evaluation reports will align with completion of key milestones of the respective
6 pilots and may not be conducted on a calendar year basis. All reports will be submitted to
7 the Board upon completion.

8 See Section 5 of Schedule KR-CEF-EE-2 for further information.

9 **III. DECOUPLING/LOST REVENUE MECHANISM**

10 **Q. Are there challenges associated with the proposed CEF-EE subprograms that**
11 **warrant approval of a lost revenue recovery mechanism?**

12 A. Yes. These programs will generate meaningful reductions in energy usage, which
13 will lower revenues. The Company needs to recover those lost revenues to be kept whole for
14 managing these programs.

15 **Q. How is the Company seeking to address lost revenues?**

16 A. PSE&G is requesting permission to “decouple” revenues from sales volumes.
17 Historically, PSE&G has been incented to increase sales volumes, as that increases revenues
18 and therefore earnings. This economic incentive, however, is directly contrary to the Clean
19 Energy Law’s mandate to reduce usage, which in turn reduces overall emissions and
20 customers’ bills. Moreover, two of the five overarching goals of New Jersey’s Energy
21 Master Plan are to “drive down the cost of energy for all customers” and “reward energy

1 efficiency and energy conservation/reduce peak demand,” with one of the stated benefits of
2 the latter being reduced emissions.

3 There is more than one way to address the recovery of lost revenues. The Company
4 is reintroducing its decoupling proposal from the pending base rate case and believes that it
5 directly addresses the above conflict by revising our rate design and aligning the interests and
6 objectives of the State, customers, and the Company to pursue conservation and green energy
7 goals. Over the past decade, decoupling has become commonplace, and decoupling
8 mechanisms are in effect in the majority of states in the country, including in New Jersey
9 with the Conservation Incentive Programs (“CIPs”) in place at South Jersey Gas and New
10 Jersey Natural Gas. Furthermore, the Company believes that its decoupling proposal is
11 consistent with the Clean Energy Law and its provision that permits utilities to recover “the
12 revenue impact of sales losses resulting from implementation of the energy efficiency and
13 peak demand reduction. . . .” In the event that the Company’s decoupling proposal is not
14 approved, the Company would be open to considering another form of decoupling or an
15 annual lost revenue adjustment mechanism.

16 **Q. But hasn’t the Company been making energy efficiency investments, and**
17 **earning a return on those investments, for several years without a revenue**
18 **decoupling mechanism?**

19 A. While the Company has been approved to implement energy efficiency programs
20 without decoupling, those programs are small and had certain features that provided the
21 Company with the opportunity to earn its allowed return even when taking into account the
22 lost revenues caused by the program by successfully managing its expenses. This, however,
23 is not a sustainable methodology for the larger energy efficiency investment programs

1 mandated by the Clean Energy Law and that are proposed in this filing. Therefore, a broader
2 approach is required and the Company's decoupling proposal is a means to meet that for the
3 CEF-EE Program. It will appropriately remove barriers to expanding the Company's energy
4 efficiency offerings to its customers and allow the Company to make a substantial
5 contribution toward helping New Jersey meet its clean energy goals. The Company's
6 decoupling proposal is addressed further by Mr. Hansen.

7 **IV. CONCLUSION**

8 **Q. Do you have any concluding statements?**

9 A. Yes, the proposed CEF-EE Program represents a meaningful first step towards
10 achieving the State's energy efficiency goals and will enable a significant increase in energy
11 efficiency investment, which is regularly recognized as the lowest cost energy resource. The
12 Program currently proposed by PSE&G will help to establish New Jersey as a market leader
13 and make it competitive with its peer northeastern states, while providing universal access to
14 energy efficiency investments that lower energy bills, environmental benefits, and
15 incremental jobs. At the same time, a critical foundational element of this CEF-EE Program
16 filing is Board approval of a decoupling or lost revenue adjustment mechanism. Approval of
17 such a mechanism will appropriately remove barriers to expanding the Company's energy
18 efficiency offerings to its customers, allow the Company to make a substantial contribution
19 towards helping New Jersey meet its clean energy goals, and appropriately align the
20 Company's business interests with lower energy bills for its customers. If approved, this
21 CEF-EE Program will help to position New Jersey as a national leader in energy efficiency.

1 **Q. Does this conclude your testimony at this time?**

2 **A. Yes.**

1 system implementation, business relationship management and project management /
2 quality support. Prior to becoming Vice President of Renewables and Energy
3 Solutions, I served as the Senior Director of Continuous Improvement for PSEG
4 Services Corporation. I established this function for PSEG, which is responsible for
5 developing sustainable and quantifiable business improvements based on industry
6 best practices. In July of 2018, I was named Vice President of Renewables and
7 Energy Solutions. My professional experience includes finance, strategy, business
8 relationships, application implementation, quality assurance, process management and
9 program management.

10 I have the following certifications: Project Management Professional,
11 Lean Six Sigma, and Information Technology Infrastructure Library Foundation.

October 11, 2018

CLEAN ENERGY FUTURE

Energy Efficiency Program Plan

Prepared by:
Public Service Electric & Gas Company



PSE&G

We make things work for you.

Intent

The Clean Energy Filing Energy Efficiency Program Plan was developed in support of Public Service Electric & Gas Company's effort to promote increased access to and installation of energy efficiency and conservation measures within its electric and natural gas service territories. The plan represents the current expectations for administration and implementation of the Program, and is subject to change.

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1. INTRODUCTION

Public Service Electric and Gas Company (PSE&G) is New Jersey's largest provider of electric and natural gas service, delivering energy to 2.2 million electric customers and 1.8 million natural gas customers. Formed in 1903, PSE&G has been building relationships with these customers for over 115 years, uniquely positioning PSE&G to sponsor the needed growth in energy efficiency that will keep New Jersey healthy, safe, and affordable.

PSE&G will use its, customer relationships, employees, partners, financial resources, brand and its facilities to meet New Jersey's goals.

In order to achieve the energy goals of the State, PSE&G developed this Clean Energy Future (CEF) Energy Efficiency (EE) Program Plan to dramatically increase the level of energy efficiency savings for PSE&G customers.

PSE&G is proposing a substantial expansion of energy efficiency deployment in its service territory, consistent with State and federal policy, including but not limited to the prevailing New Jersey Energy Master Plan and the greenhouse gas emissions reports issued by the New Jersey Department of Environmental Protection.¹ This effort, accompanied by substantial financial resources will enhance the way PSE&G delivers services, reducing energy costs and making energy efficiency the number one energy resource for customers.

This effort is directed to all customer groups, including those most in need of support or most challenging to reach, including low income, small businesses, and local government customers. In a changing energy world based on distributed energy resources, advancing technologies and new methods of customer engagement and control, greater involvement from utilities is needed to integrate these services onto the grid. The PSE&G CEF-EE Program Plan is intended to make New Jersey a leading energy efficiency state in the nation.

This EE Program Plan encompasses twenty-two (22) subprograms, inclusive of pilots and Emerging Technologies and Approaches (ETA) initiatives which will incentivize investment in energy efficiency throughout PSE&G's service territory, and will result in benefits throughout the entire State. The proposed subprograms will align with State policy, and reduce customer electric and natural gas bills in a manner consistent with the recently enacted Clean Energy Law, reduce greenhouse gases in furtherance of New Jersey's Global Warming Response Act, increase employment and associated economic activity, reduce local pollution, and drive economic activity.

In particular, this EE Program Plan contains the following:

- An overview of the CEF-EE Program at large
- Descriptions of all twenty-two subprograms contained within the CEF-EE Program
- Quantitative analysis and projections of the costs and savings associated with proposed subprograms
- Details on CEF-EE Program and subprogram management, as well as the subprograms interaction with the market
- Discussion of evaluation, measurement, and verification methodology
- Overview of cost effectiveness of the CEF-EE Program and its component programs

¹ Pursuant to N.J.S.A. 26:2C- 42(b) and (c); N.J.S.A. 26:2C-43 of the New Jersey Global Warming Response Act, N.J.S.A. 26:2C-37 et seq.; and the policies of the State.

Overall, the CEF-EE Program Plan represents a significant expansion of New Jersey’s energy efficiency efforts by harnessing PSE&G’s delivery business and its unique relationship with its customers. The Plan provides a pathway for New Jersey to achieve the energy goals of the Governor, as well as realize reduced energy costs and benefits for our environment and economy.

2. PROGRAM OVERVIEW

The CEF-EE Program consists of twenty-two subprograms which aim to increase energy efficiency in all sectors of the economy. PSE&G anticipates committing approximately \$2.5 billion in investment over a period of approximately six years towards the delivery of the subprograms contained in the CEF-EE Program. Investments related to committed participants may occur beyond the approximate six year period as a result of long project lead and construction times for certain subprograms. The program plan also anticipates expenses related to repayments and program evaluation to extend beyond the approximate six year period. The CEF-EE Program requires the flexibility to transfer funds between subprograms and across program years to respond to market conditions and participant demands to further maximize energy savings and Program resources. The subprograms contained herein were designed and evaluated after studying program designs from utilities around the country with specific focus on, and benchmarking of, twenty-two other utilities outside of New Jersey that have well-regarded programs. The trajectory and level of energy efficiency savings was also evaluated, recognizing New Jersey’s current position among states relative to its energy efficiency performance. Based on this review, the CEF-EE Program is designed to move the PSE&G service territory (and New Jersey) to a leadership position nationally with respect to energy efficiency, as shown in Figures 1 and 2.

Figure 1. Incremental Annual Energy Savings (MWh) and Percent of Electric Sales

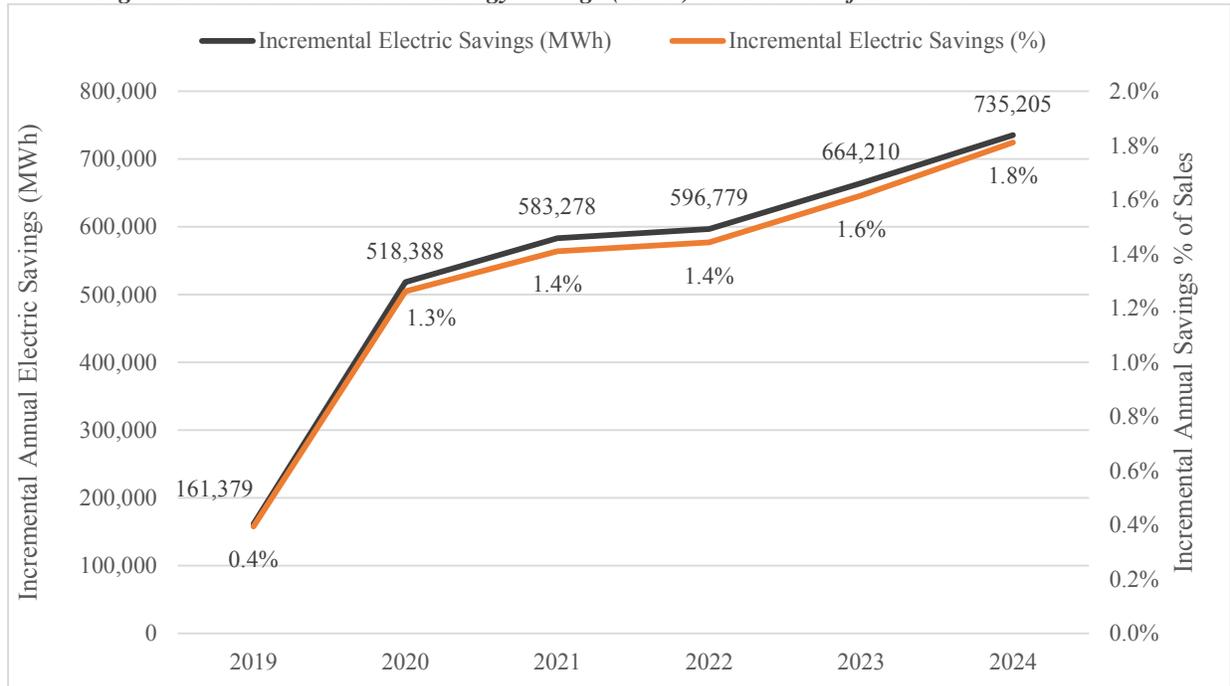
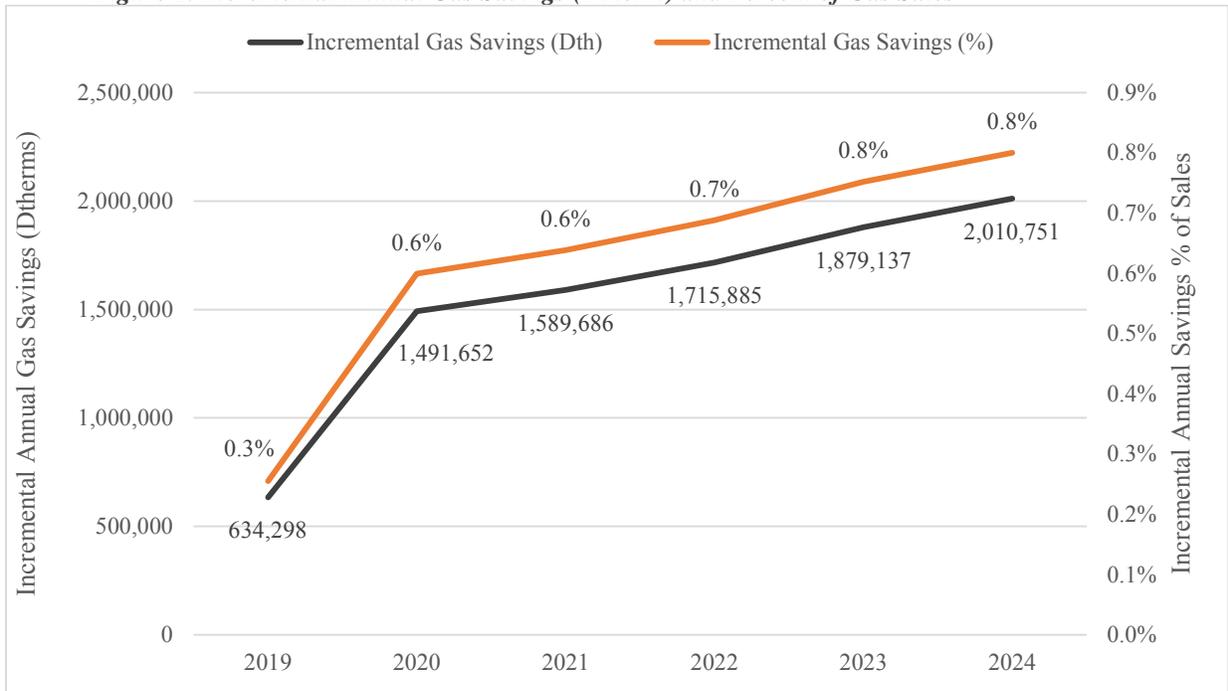


Figure 2. Incremental Annual Gas Savings (Dtherm) and Percent of Gas Sales



In addition to the wide reach of this Program – addressing the needs of all customer groups – the Program is designed to change the way in which energy efficiency is marketed and delivered to customers. It puts PSE&G at the heart of promoting and delivering energy efficiency to customers. As detailed in this filing, PSE&G will use its full range of human and physical resources to advance energy efficiency to the forefront in its territory. The CEF-EE Program Plan uses the latest advances in technology and customer engagement to achieve this goal.

This CEF-EE Program offers savings opportunities across PSE&G's customer base, with special emphasis on the hardest to reach sectors: low income and multi-family residential customers, and small business, local government, and not-for-profit commercial customers. Subprograms are structured with dynamic designs that promote sufficient flexibility in budgets, incentive levels, and other factors to address current market conditions and allow PSE&G to successfully market subprograms and place resources to their effective and best use. In addition, the program was developed to create more opportunities for other businesses in the energy sector, and does not lead to PSE&G “crowding out” the competitive energy services market.

Finally, the CEF-EE Program includes a series of pilot subprograms in which PSE&G will implement and manage select, highly advanced approaches to energy efficiency. After the pilot phase is complete, successful pilots could be expanded throughout the territory. The pilot subprograms also explore several initiatives that hold the potential to replace future distribution investments with active and creative energy efficiency actions.

The CEF-EE Program consists of the following subprograms:

Table 1: Overview of Subprograms

Residential Subprograms	Commercial & Industrial Subprograms	Pilot Subprograms
Residential Efficient Products	C&I Prescriptive	Emerging Technologies and Approaches
Residential Existing Homes	C&I Custom	Efficiency as a Service Pilot
Residential Behavioral	C&I Small Non-Residential Efficiency	Smart Homes Pilot
Residential K-12 Education	C&I New Construction	Non-Wires Alternative Pilot
Residential New Construction	C&I Energy Management	Non-Pipes Solution Pilot
Residential Multi-Family	C&I Engineered Solutions	Volt Var Pilot
Residential Income Eligible	C&I Streetlight	Business Energy Reports Pilot
		Building Operator Certification Pilot

To accomplish the goals set forth in the CEF-EE Program, PSE&G anticipates the following subprogram related spending:

Table 2. Total Subprogram Expenditures (\$ Millions)

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$1.5	\$41.0	\$53.4	\$52.4	\$56.7	\$63.0	\$12.0	\$280.0
Residential Existing Homes	\$0.9	\$10.9	\$15.1	\$17.4	\$21.3	\$20.9	\$4.5	\$91.0
Residential Behavioral	\$5.9	\$8.0	\$8.1	\$8.2	\$8.2	\$8.2	\$2.3	\$48.8
Residential K-12 Education	\$0.2	\$1.0	\$1.3	\$1.3	\$1.3	\$1.3	\$0.5	\$6.7
Residential New Construction	\$0.5	\$3.8	\$5.2	\$5.6	\$6.0	\$6.4	\$1.5	\$29.1
Residential Multi-Family	\$0.5	\$2.8	\$3.4	\$3.4	\$3.5	\$3.5	\$1.0	\$18.1
Residential Income Eligible	\$1.1	\$18.1	\$21.4	\$21.4	\$21.3	\$23.3	\$4.6	\$111.1
C&I Prescriptive	\$2.0	\$62.6	\$101.3	\$123.9	\$143.7	\$157.4	\$26.7	\$617.5
C&I Custom	\$0.8	\$25.8	\$40.1	\$48.9	\$57.2	\$65.4	\$11.4	\$249.6
C&I Small Non-Residential Efficiency	\$0.6	\$36.3	\$56.5	\$68.9	\$80.5	\$92.1	\$15.0	\$349.9
C&I New Construction	\$0.3	\$2.8	\$4.3	\$5.1	\$5.9	\$6.7	\$1.5	\$26.7
C&I Energy Management	\$0.3	\$1.6	\$2.3	\$2.6	\$3.0	\$3.3	\$1.0	\$14.1
C&I Engineered Solutions	\$2.1	\$13.0	\$61.6	\$67.5	\$71.3	\$73.5	\$70.0	\$359.1
C&I Streetlight	\$80.0	\$64.2	\$2.1	\$0.4	\$0.4	\$0.4	\$4.6	\$152.0
ETA Pilot	\$0.1	\$4.1	\$5.2	\$5.2	\$5.2	\$5.2	\$1.2	\$26.3
Energy Efficiency as a Service Pilot	\$0.1	\$4.1	\$5.2	\$5.2	\$5.2	\$5.2	\$1.2	\$26.3
Smart Homes Pilot	\$0.1	\$4.1	\$5.2	\$5.2	\$5.2	\$5.2	\$1.2	\$26.3
Non-Wires Alternative Pilot	\$0.1	\$4.1	\$5.2	\$5.2	\$5.2	\$5.2	\$1.2	\$26.3

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Non-Pipes Solution Pilot	\$0.1	\$4.1	\$5.2	\$5.2	\$5.2	\$5.2	\$1.2	\$26.3
Volt Var Pilot	\$0.1	\$4.1	\$5.2	\$5.2	\$1.3	\$0.2	\$0.1	\$16.3
Business Energy Reports Pilot	\$0.1	\$1.9	\$2.4	\$2.4	\$2.4	\$2.4	\$0.6	\$12.1
Building Operator Certification Pilot	\$0.1	\$1.5	\$1.9	\$1.9	\$1.9	\$1.9	\$0.5	\$9.6
Program Design and Development	\$1.5	\$2.0	\$2.0	\$2.0	\$2.0	\$2.0	\$0.5	\$12.0
Program Management	\$2.4	\$3.9	\$4.3	\$4.6	\$4.9	\$5.2	\$14.0	\$39.3
Education and Outreach	\$7.7	\$14.5	\$15.6	\$16.4	\$17.7	\$19.0	\$4.8	\$95.7
IT Build	\$30.3	\$47.0	\$1.9	\$1.8	\$1.1	\$0.3	\$0.0	\$82.4
IT Run	\$0.0	\$2.9	\$5.7	\$6.2	\$6.2	\$6.2	\$1.6	\$28.9
Total	\$139.3	\$390.5	\$440.9	\$493.6	\$543.8	\$588.7	\$184.6	\$2,781.4

The overall impact of the savings and spending summarized above is a significant benefit to participants, customers, and society as a whole. In its entirety, PSE&G's CEF-EE Program results in approximately \$5.7 billion in participant savings and nearly 24 million tons of avoided CO₂ emissions. From a cost benefit perspective, PSE&G's CEF-EE Program results in a Societal Cost Test score of 3.7 and a Total Resource Cost score of 1.0.

3. SUBPROGRAM DESCRIPTIONS

This section contains detailed design descriptions and budget information for each subprogram. While there are twenty-two discrete subprograms, it should be recognized that these subprograms were designed on an integrated basis and many subprograms provide a stepping stone (through greater education, customer engagement, or installation of easier-to-implement measures) that can lead to more advanced energy measures, technologies, and opportunities for savings.

Each subprogram description is organized to provide the following information:

- Overview
- Market Segment/Efficiency Targeted
- Delivery Method
- Projected Participants and Energy Savings
- Relationship to Existing Programs
- Proposed Incentives
- Marketing Approach
- Contractor Role
- Market Barriers
- Subprogram Costs

The subprogram costs are segmented based on the requirements set forth in MFR II.a.15. These costs are inclusive of investments (comprised of customer rebates, on-bill repayments, and third-party implementation investment) as well as PSE&G oversight and management.

In addition, it is expected that PSE&G will have the ability to adjust subprogram delivery, marketing, implementation, incentive levels, and budgets periodically in order to keep pace with the ever-changing energy efficiency marketplace.

Many of these subprograms include PSE&G utilizing third-party implementation contractors to assist with subprogram implementation. These third-party implementation contractors will act as an extension of PSE&G in administering and carrying out subprogram related activities. As such, roles discussed herein which may ultimately be executed by PSE&G internal staff or third-party implementation contractors are referred to simply as completed by ‘PSE&G’. It is envisioned that PSE&G’s third-party implementation contractor(s) will facilitate subprogram delivery through multiple subprogram vendors as well as PSE&G’s workforce.

3.1. Residential Sector Subprograms

The proposed residential subprograms will work together to significantly upgrade efficiency in homes throughout PSE&G’s service territory. All sub-segments are addressed, from new construction and refurbishments, to existing homes, to an online marketplace for installation service, with additional dedicated support for multi-family and low income customers. Where needed, additional customer support is provided through on-bill repayments and other incentives. To further improve the culture of energy efficiency use in its territory, PSE&G will sponsor subprograms in schools, and through education and behavioral subprograms.

3.1.1. Residential Efficient Products

The Residential Efficient Products Subprogram will promote the installation of ENERGY STAR and other high-efficiency electric and natural gas equipment by residential customers by offering a broad range of energy efficient equipment and appliances through a variety of channels, including an online

marketplace, in-store rebates, reduced point of sale costs, and a network of trade allies. The subprogram will provide incentives for energy efficient lighting, appliances, smart thermostats, electronics, and heating and cooling equipment. Installation services may also be offered for some equipment. Measures range in type and price, but include both electric and natural gas technologies that improve energy efficiency in the home. Up-front rebates will be offered on all technologies to reduce initial costs, and some purchases will qualify for on-bill repayments to further reduce first cost barriers. The subprogram is designed to provide easy and cost-effective access to energy efficient measures through customers' preferred channels.

The subprogram is designed to:

- Provide incentives to customers for the installation of products to reduce energy use in the home and information about other subprograms that encourage the installation of high efficiency equipment, such as lighting, room air conditioners, HVAC units, electronics and appliances.
- Provide midstream incentives to retailers to increase sales of ENERGY STAR products.
- Provide a marketing mechanism for retailer and high efficiency product suppliers to promote energy efficient equipment and products to end users.
- Ensure the participation process is clear, easy to understand and simple for the customer and contractor.
- Provide online channels for customers to acquire select ENERGY STAR products.

This subprogram will significantly increase adoption of energy efficient equipment by harnessing PSE&G's unique customer relationship to positively impact the entire sales process surrounding efficient equipment, from education and awareness of customers, engagement with trade ally contractors and equipment distributors, to on-bill repayments and final installation and commissioning of the high efficiency equipment.

Market Segment/Efficiency Targeted

The Residential Efficient Products Subprogram will be available to all residential electric and/or natural gas customers in the PSE&G service territory. The subprogram is focused on promoting the sale and installation of efficient electric and natural gas equipment across all major residential end-use categories, and can be easily promoted to trade allies and customers via straightforward prescriptive rebates. Technologies incentivized through this subprogram include lighting, HVAC, other heating/cooling equipment, smart thermostats, and other efficient products. The subprogram will also promote the retirement, recycling, and replacement of old refrigerators, freezers, and other inefficient appliances.

Delivery Method

PSE&G will use its brand, its customer outreach infrastructure, and its marketplace relationships to increase the availability, awareness, and customer uptake of energy efficient products. On-bill repayments will be available to customers to cover the remaining cost (after applying the rebate discount) for the balance of the efficient product cost for select products and services.

A third-party implementation contractor(s) will be selected to assist with the administration, oversight, and delivery of the subprogram. This contractor will assist in the expansion of the PSE&G branded online marketplace, will work to promote the subprogram through word-of-mouth, advertising, and awareness, and will work with PSE&G to review and adjust the product and service list. These activities will occur prior to commercial operation and during the delivery of the subprogram. The third-party implementation contractor will also assist in securing partnerships with retailers, wholesalers, and trade allies to assure all PSE&G customers are able to easily purchase energy efficient products and equipment through the subprogram. Customer engagement and sales channels may include:

- **Point of Sale Rebates:** Prescriptive rebate applications will be made available at the point of sale. PSE&G will explore the viability of using a digital, smartphone-based application platform, to enable customers to purchase efficient equipment at traditional consumer retail outlets and instantly redeem rebates at point-of-sale in both physical stores and online. Allowing easy access to rebates encourages customers to purchase qualifying efficient products. Appliance recycling will also be available to customers whereby they may schedule a pick-up to have eligible inefficient appliances (e.g. old refrigerators) removed and a rebate issued.
- **Post Purchase Rebates:** Rebates will also be made available to customers after they have made their purchase. Applications will be available online to submit either electronically or in hard copy with proof-of-purchase.
- **Online Marketplace:** PSE&G will expand the self-branded online marketplace currently being deployed for the EE2017 Smart Thermostat Program to incorporate other products and services in this direct-to-customer platform. This online marketplace is a branded, easy to use source for the online purchase of efficient products and services. Participants will be able to browse energy efficient equipment and appliances and purchase through the marketplace which will offer instant rebates and the option for on-bill repayments on purchases above a certain threshold. PSE&G will validate customer eligibility prior to applying rebates.
- **Midstream Rebates:** PSE&G will promote a midstream rebate component to encourage purchase of efficient equipment via directly marking down the price of the efficient equipment at the point of sale. PSE&G will work with retail partners (such as Home Depot, Lowes, etc.) to assure that marked down measures are available throughout the PSE&G service territory. Midstream rebates encourage market transformation and wider availability of efficient equipment. Efficient products that are rebated via a midstream approach will not be eligible for retail channel rebates.
- **Trade Allies:** PSE&G will establish a network of trade allies to promote and deliver the subprogram with a consistent experience to the customer. The trade ally network will consist of qualified installation contractors, plumbers, electricians, and other trade service professionals. Trade allies will be able to leverage the subprogram and offer customers rebates through their normal course of business. In addition, PSE&G will refer customers to a list of qualified trade allies. By allowing participants to select a trade ally they are comfortable with (either through an existing relationship or by reference from PSE&G), the subprogram reduces barriers to entry related to knowledge of energy efficiency, confidence in assessments, and measure installation. PSE&G will qualify entities to participate in the trade ally network and oversee trade ally performance to verify quality standards are met.

By developing relationships with trade allies, the subprogram will develop a broad reach across the marketplace, and also solicit feedback from the marketplace to ensure incentives and measures are impacting the market as designed. Targeted trade ally firms may include:

- HVAC & appliance distributors, contractors, and retail providers
- General contractors, plumbers, electricians, and other trade service professionals

Regardless of the delivery mechanism, PSE&G will take steps to ensure customers are made aware of PSE&G's engagement in helping to off-set up-front costs of the efficient products.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of

participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 3: Residential Efficient Products Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	2,697,014	2,362,092	545,411	274,923	303,098	46,094
Electric Savings (MWh)	0	99,130	101,015	51,918	47,414	51,595	7,833
Electric Savings (MW)	0	31.4	36.2	29.7	30.2	32.0	4.8
Natural Gas Savings (Dth)	0	204,248	271,767	292,454	317,527	335,937	50,773

Relationship to Existing Programs

PSE&G currently delivers a subprogram that offers smart thermostats to customers; however, this new subprogram will greatly expand the array of efficient products eligible for rebates, as well as the sales channels to effectuate their delivery to the marketplace.

The NJCEP currently offers an Energy Efficiency Products Program for lighting, clothes washers and dryers, freezers, refrigerators, a refrigerator and freezer recycling program, and a Residential Gas & Electric HVAC Program (through the COOLAdvantage and WARMAdvantage Programs). The NJCEP Energy Efficiency Products Program is intended to promote the sale and purchase of ENERGY STAR certified and other energy efficiency products including lighting, appliances, and consumer electronics, while also supporting the retirement of existing inefficient appliances in NJ households. The Residential Gas & Electric HVAC Program is intended to increase the selection and quality installation of high efficiency residential HVAC equipment in the New Jersey market through the use of incentives, supply chain support, and customer outreach and education.

Elizabethtown Gas, South Jersey Gas, New Jersey Natural Gas (NJNG), Orange & Rockland, and Jersey Central Power & Light offer programs with similar mechanisms and incentives to the NJCEP Programs and/or this PSE&G subprogram. The New Jersey Natural Gas SAVEGREEN Project, Elizabethtown Gas energySmart Program and South Jersey Gas Rebate Program provide rebates in addition to the NJCEP Program incentives on high efficiency equipment including furnaces, boilers, and natural gas water heaters. NJNG offers special financing terms for the remaining costs through their On-Bill Repayment Program. Orange & Rockland has limited incentives on air conditioning equipment available to New Jersey customers. The Jersey Central Power & Light Energy Efficiency Products online store is similar to the online marketplace included in this subprogram. This subprogram will complement the peer utility subprograms and expands to include additional sales channels and rebate opportunities to the same market segment, residential customers.

PSE&G’s use of its customer relationships, on-bill repayment capabilities, and its commitment to aggressively pursue and promote activity with the rest of the delivery eco-system will realize wider and deeper participation than the existing programs. In addition, investment in the development of the trade ally network and commitment to fund subprograms to match demand will assure that all interested eligible customers are able to participate, and no energy efficiency savings are lost due to lack of contractor availability or funding.

Proposed Incentives

PSE&G proposes to provide a range of incentives depending on the measure type, subject to changes based upon customer response and marketplace changes over the plan period. Incentives will vary depending on the specific product, the incremental cost of the high-efficiency technology, and the product

maturity in the marketplace. Incentive levels will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings across offered measures, while minimizing any potential free ridership.

Incentives will be available in several ways and are adapted to the retail partner needs and market response. The strategies that might be used include:

- Mail-in applications available from the retailer and the subprogram website
- Online rebate forms
- In-store “Instant Reward” coupons that are redeemed in-store at the time of purchase.
- Special sale events in retail stores
- Manufacturer buy down to Retailer
- Midstream incentives to retailers to encourage them to carry and stock efficient products

Incentives may change based on market prices, as well as manufacturer and distributor co-funding. Other incentive alternatives may be used as the market evolves and new and innovative customer and trade ally engagement opportunities become apparent.

Marketing Approach

PSE&G will implement a multi-pronged direct and indirect marketing campaign to promote this subprogram. Customers will be exposed to broad-based energy efficiency awareness campaigns, web-based engagement and information, digital advertising, and hard-copy materials to promote awareness, as well as tie-ins with other PSE&G subprograms. Retailers, wholesalers, and trade allies will be contacted directly and through trade associations to develop networks and promote involvement in the subprogram. PSE&G will also look to leverage the behavior subprogram for ‘warm leads’ into the subprogram through both the home energy reports and online audit tool. In addition, the kits provided in the K-12 Education Subprogram will include pamphlets and literature recommending customers visit PSE&G’s online portal and marketplace, further increasing engagement. Finally, appliance recycling will provide customers with rebates that can be redeemed in the online marketplace, further driving customer incentive and participation in the subprogram.

Targeting and promotion within the subprogram will be enabled through intelligence gained through other residential subprograms, primarily Behavioral, Existing Homes, and other activity in the Efficient Products Subprogram. Integrated IT solutions will enable PSE&G to provide customized information to customers with prioritized action items, to maximize availability and uptake.

A combination of strategies will be used to train and support retailers, including media advertising, outreach community forums, events, and direct outreach to customers and retailers. Marketing activities include:

- Point of purchase displays and materials, joint advertising with retailers, coupons, and special “instant sales events”
- Public relations materials
- Brochures that describe the benefits and features of the subprogram including application forms and processes. The brochures will be available for various public awareness events (presentations, seminars etc.)
- Bill inserts, bill messages, email messages, Facebook and Twitter, pop-up stores.
- Company website content providing subprogram information resources, contact information, online application forms, online retail store and links to other relevant service and information resources

- Customer representatives trained to promote the subprogram to their customers
- Presence at conferences and public events used to increase general awareness of the subprogram and distribute subprogram promotional materials

Contractor Role

PSE&G will oversee the build-out of the online marketplace as well as the retail and Trade Ally network, which will be administered by third-party implementation contractors. A third-party implementation contractor will be responsible for identifying and engaging retail and wholesale entities dealing in energy efficient equipment to on-board them with the PSE&G subprogram vision, eligible efficient products, rebates, and ways to participate. Additionally, the third-party implementation contractor will engage trade allies, including local construction, electrical, plumbing, and other contractors to educate them on subprogram benefits and build an approved trade ally network which will reliably install energy efficient equipment for participating customers. The third-party implementation contractor will also monitor participation to assess the effectiveness of outreach efforts, incentive levels, delivery methods, and trade ally availability to provide suggestions to assure that the subprogram is continually providing PSE&G customers with their needs. A third-party implementation contractor will be responsible for the management of the online marketplace. This third-party implementation contractor will also process the online instant rebates, verify eligibility of customers and manage the delivery of items purchased on the website.

To select qualified third-party implementation contractors, PSE&G will prioritize criteria including but not limited to:

- Experience delivering similar subprograms or initiatives
- Resources and marketing strength
- Cost effectiveness

Market Barriers

The primary market barriers that impact this subprogram include:

- **Initial Cost of Efficient Equipment:** Relative to the market baseline, efficient equipment often carries a higher upfront cost but a lower lifetime operating cost. Customers often may not fully value the lifetime operating cost advantage of efficient equipment and, as a result, higher upfront cost is a barrier to purchasing efficient equipment. To address this barrier, incentives are provided to the customer to reduce the initial cost. On-bill repayment will also help mitigate the up-front cost barrier.
- **Customer Awareness and Engagement:** Residential customers may not be aware of the benefits of installing efficient equipment and/or lack the time and resources to pursue efficient equipment when replacing existing equipment. To address this barrier, PSE&G will educate customers on the benefits of installing efficient equipment through targeted marketing, ensure that incentives are easily accessible, and encourage market transformation and stocking of efficient equipment through midstream incentives. Through outreach efforts, PSE&G will seek to partner with retail and wholesale entities to promote subprogram offerings, and also focus marketing, education, and outreach efforts on the trade ally community to ensure that trade allies are aware of available incentives and prepared to serve customers.
- **Landlord/Tenant Arrangements:** Split incentives between landlord/tenants with respect to who pays for energy use vs. who owns the energy-using equipment challenge investment decisions. To address this barrier, the subprogram will be marketed to both landlords and tenants to assure that those exposed to energy costs are able to participate in the subprogram.

- **Sufficient Stocking and Availability of Efficient Products:** PSE&G will promote a midstream component for specific equipment types to encourage high levels of participation via directly marking down the cost of the efficient equipment at the point of sale.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice programs that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 4: Residential Efficient Products Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$1,056,848	\$3,487,474	\$4,319,255	\$4,005,201	\$4,152,009	\$5,591,854	\$2,604,440
Sales, Call Centers, Marketing and Website	\$0	\$331,756	\$458,239	\$413,304	\$429,229	\$616,085	\$168,685
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$35,133,393	\$46,046,620	\$45,475,589	\$49,508,925	\$53,740,866	\$8,153,155
Rebate Processing, Inspections, and Other Quality Control	\$352,835	\$1,149,958	\$1,415,994	\$1,373,972	\$1,420,268	\$1,713,407	\$665,301
Evaluation and Related Research	\$103,576	\$911,403	\$1,207,366	\$1,126,224	\$1,167,062	\$1,297,005	\$415,526
Total	\$1,513,259	\$41,013,983	\$53,447,474	\$52,394,291	\$56,677,493	\$62,959,217	\$12,007,107

3.1.2. Residential Existing Homes

The Residential Existing Homes Subprogram provides a holistic approach for customers to explore and invest in the efficiency and comfort of their homes. Under the Residential Existing Homes Subprogram, participants undergo an energy audit and receive free installation of low-cost direct install energy efficiency measures, as well as an energy efficiency action-plan that includes recommendations for potential upgrades and available incentives. The audit will be incentivized, while the work to complete recommended energy efficiency measures will receive rebates with the ability for customers to use on-bill repayments for the balance of the costs. Home energy audits will be conducted by PSE&G and/or local trade allies (including, e.g. home improvement contractors) that are qualified to perform comprehensive home assessments, and a follow-up audit may be conducted after completing home energy improvements to verify proper installation and function of home efficiency improvements.

This subprogram is designed to review the entire status of a home, including equipment and envelope to achieve deeper energy savings than the Residential Efficient Products Subprogram. The subprogram will follow guidelines and qualifying criteria associated with the U.S. Environmental Protection Agency

Home Performance with ENERGY STAR (HPwES) program subject to as-needed enhancements to maximize participation and cost-effective energy savings opportunities.

Market Segment/Efficiency Targeted

The Residential Existing Homes Subprogram will be available to all single-family and single-family attached electric and/or natural gas customers in the PSE&G service territory. PSE&G may also consider segmenting out a portion of the budget to address low-to-middle income customers (up to 400% of federal poverty level) to assure that the subprogram reaches all customer types. Potential measures incentivized through this subprogram include but are not limited to insulation, air sealing, lighting, smart thermostats, low-flow devices, smart strips, and HVAC. This subprogram will drive deeper levels of activity and investment in homes than the Residential Efficient Products Subprogram by including a suite of home performance measures and the advice of PSE&G and/or qualified trade ally professionals that can identify efficiency opportunities in residential homes.

Delivery Method

The subprogram will be managed by a third-party implementation contractor as outlined in detail in the Contractor Role:

- **In-Home Energy Audit:** In-home energy audits are conducted by PSE&G and/or local trade allies. During the audit, customers will receive free installation of low-cost measures, such as LED lighting, low-flow devices, and smart strips at no additional cost, in addition to behavioral suggestions to improve efficiency of the home and a review of thermostat set points. Smart thermostats may be made available while the auditors are on premises through the Residential Efficient Products Subprogram. Following the in-home audit, the participant will be provided an energy efficiency action-plan that summarizes the findings of the audit and recommends technology and building performance improvements that will maximize the efficiency of the home. This report will also include detail regarding estimated cost, available rebates, and availability of on-bill repayment.
- **In-Home Efficiency Improvements:** If the customer chooses to pursue some or all of the recommended home efficiency measures, a second appointment will be scheduled to implement the measures. At the completion of the work, PSE&G and/or the trade ally will test the home to validate the energy savings and to ensure that all mechanical equipment is operating safely. Subprogram management staff, including the third-party implementation contractor, may spot check installations as needed.
- **Local Trade Ally Network:** The local trade ally network will be qualified, trained, and managed by the third-party implementation contractor, and may deliver audits and/or energy efficiency services.

Measures from the Residential Efficient Products Subprogram, such as home appliances (e.g. clothes washers) may be installed by PSE&G and/or the trade ally if requested by the participant and if within the scope of services. These measures are not typically addressed in a home performance subprogram because they are generally only replaced at end-of-life.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 5: Residential Existing Homes Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	148,100	187,180	210,242	236,980	240,068	35,984
Electric Savings (MWh)	0	6,288	8,208	9,122	10,165	10,319	1,548
Electric Savings (MW)	0	1.3	1.7	2.0	2.4	2.4	0.4
Natural Gas Savings (Dth)	0	35,849	52,896	63,722	82,486	79,544	11,773

Relationship to Existing Programs

This subprogram is designed to provide whole-home energy efficiency upgrades to homes within PSE&G’s territory. PSE&G does not currently offer any programs similar to this subprogram.

The NJCEP currently offers a similar program in its Home Performance with Energy Star Program (HPwES), and it is anticipated that PSE&G customers will participate in PSE&G’s subprogram.

New Jersey Natural Gas and South Jersey Gas both support the NJCEP’s HPwES Program by providing financing to customers within their territories. PSE&G will utilize its brand, its unique relationships with customers, trade allies and contractors to expand subprogram participation in PSE&G territory.

Proposed Incentives

PSE&G will provide a subsidized in-home audit, as well as a suite of low-cost direct-install measures. Home performance measures recommended by PSE&G and/or the trade ally carry incentives that will be available individually but may also be offered as part of bundled performance incentives depending on customer interest and budget. If utilized, home performance incentives will be structured on the basis of estimated total energy reduction in the home and the total cost of installed measures, such that customers can receive an overall, packaged incentive that is subject to a maximum of either a specific cap, to be evaluated and modified periodically, or a percentage of total installation cost. On-bill repayment will also be available to qualified customers to reduce upfront cost barriers.

Marketing Approach

PSE&G will utilize many marketing avenues to assure subprogram awareness and participation is maximized. These include traditional marketing avenues, such as web-based engagement and information, digital advertising, media advertising, and hard-copy materials to promote awareness among trade allies and customers. An additional marketing pathway PSE&G plans to utilize is through the network of other subprograms being offered in the CEF-EE Program. The integration of all subprograms will allow for direct marketing to customers through the Residential Behavioral, Residential K-12 Education, and Residential Efficient Products Subprograms. The connections with these subprograms also provides two-way marketing potential, in that customers engaged in the Residential Behavioral, Residential K-12 Education, and Residential Efficient Products Subprograms will be provided with information and literature about the opportunity to participate in the Residential Existing Homes Subprogram. Information garnered from subprograms, such as the Residential Behavioral and Residential Efficient Products could be used to identify prime candidates for participation in the Residential Existing Homes Subprogram. For example, a review of usage data contained in HERs from the Residential Behavioral Subprogram could allow PSE&G to identify customers who are particularly susceptible to changes in weather, and would be ideal candidates for an audit. Likewise, the Residential Efficient Products Subprogram could provide leads to customers interested in energy efficiency.

Contractor Role

PSE&G will supervise the subprogram, as well as select a third-party implementation contractor to manage the subprogram.

The third-party implementation contractor will oversee all aspects of the subprogram, including training and engagement, QA/QC, and rebate processing (including measures installed during audits). A large part of the third-party implementation contractor will focus on developing, training, and growing a qualified trade ally network. This will include trade ally training sessions, workshops, and market development events to grow and develop the trade ally network, with a priority placed on encouraging them to integrate home efficiency performance into their business and become Building Performance Institute (BPI) and ENERGY STAR certified contractors. The third-party implementation contractor will maintain a close relationship with entities delivering the audits and efficiency measures to ensure consistent subprogram delivery experience and high customer satisfaction. The third-party implementation contractor will also take on the responsibility of providing an additional layer of customer support as needed and conducting selective verification of trade ally installation work.

The trade ally marketplace may consist of companies in the fields of residential HVAC, home improvement, weatherization and insulation, and other relevant areas. In order to facilitate trade ally access to participants, PSE&G or the third-party implementation contractor will administer a web portal where customers can find local trade allies based on geography and other criteria.

To select a qualified third-party implementation contractor PSE&G will prioritize criteria including but not limited to:

- Experience delivering similar subprograms or initiatives, especially ENERGY STAR certified programs
- Knowledge of the current marketplace
- Ability to educate and train contractors
- Local presence
- Cost

Market Barriers

The primary market barriers that impact this subprogram include:

- **Customer Awareness and Engagement:** This subprogram requires customers to schedule a visit for an auditor to visit their home. PSE&G's web portal will provide customers the ability to schedule the in-home audit and installation of efficiency measures to make participation as easy as possible. PSE&G may further highlight high-performing, high-satisfaction contractors in the web portal to encourage delivery excellence in the contractor marketplace. By utilizing a 'managed' contractor approach PSE&G can ensure that local trade allies deliver quality services in as streamlined and consistent a fashion as possible.
- **Initial Cost of Home Retrofits:** Home retrofits may be more expensive and involved than purchasing efficient equipment and therefore require more participant investment and commitment. Customers must be willing and able to invest in more expensive energy efficiency projects. In addition to incentives, on-bill repayment will be available to customers to reduce upfront cost barriers.
- **Trade Ally Awareness and Training:** To meet the participation goals set forth for this subprogram trade allies must be available to undertake the work. A lack of viable trade allies could result in customers not installing energy efficiency measures. PSE&G will continuously work to train and develop the local contractor network to ensure a high-quality network of contractors is available to serve subprogram participants.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice programs that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 6: Residential Existing Homes Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$426,755	\$1,308,694	\$1,747,237	\$1,976,736	\$2,340,630	\$2,345,904	\$1,152,516
Sales, Call Centers, Marketing and Website	\$0	\$105,790	\$166,306	\$196,202	\$244,928	\$243,141	\$59,482
Training	\$0	\$52,895	\$83,153	\$98,101	\$122,464	\$121,571	\$29,741
Rebates, Grants, and Other Direct Incentives	\$0	\$8,076,089	\$11,415,513	\$13,312,072	\$16,523,848	\$16,106,480	\$2,391,206
Rebate Processing, Inspections, and Other Quality Control	\$406,216	\$1,067,609	\$1,301,595	\$1,375,262	\$1,476,068	\$1,507,653	\$680,650
Evaluation and Related Research	\$59,998	\$302,280	\$417,962	\$467,860	\$546,155	\$548,839	\$183,352
Total	\$892,969	\$10,913,356	\$15,131,767	\$17,426,232	\$21,254,092	\$20,873,587	\$4,496,947

3.1.3. Residential Behavioral

The Residential Behavior Subprogram will provide customers with granular and easy-to-understand information about their energy use, a comparison of their usage against other similar customers, and suggested action steps to generate awareness and motivate customers to produce energy savings through behavioral changes and engagement with other efficiency subprograms.

Direct mailed and/or electronic home energy reports (HERs) will be the cornerstone of the subprogram and will provide participants with customized, easy-to-implement action steps and recommendations to reduce energy consumption and support behavior modification for improved energy efficiency. The HERs will present participants with a view of their historical energy consumption compared to peer group customers. High usage alerts will also be issued by email to customers when weather patterns and other data indicate their next bill is trending higher, and provide the customer with tips to manage their usage.

The subprogram will also offer an internet-based home energy self-audit to all residential customers. This audit will allow customers to better understand their energy usage and their opportunities for energy savings.

An online portal will be used to provide customers with usage information, recommendations, tips, and links to energy efficiency subprograms provided by PSE&G, including the online marketplace with access to the Residential Efficient Products Subprogram and the Residential Existing Homes Subprogram. The online customer portal will integrate the information from the HERs and online audit to further assist customers as they look to realize deeper equipment and appliance-based savings. PSE&G will utilize the information gathered from the HERs and online audits to not only better understand the residential customer base, but also assist in making smart decisions moving forward with the energy efficiency subprograms.

Information on customers participating in other subprograms such as the Residential Efficient Products and Residential Existing Homes Programs will be linked into the HERs as to provide up-to-date information and recommendations to participants.

Market Segment/Efficiency Targeted

The subprogram will provide HERs to approximately 650,000 residential customers. This quantity will be reviewed periodically and modified as needed to maximize cost-effective energy savings. The online energy audit will be available to all PSE&G electric and/or natural gas residential customers. The HERs and online audit will offer tailored recommendations to reduce electric and/or natural gas consumption.

The subprogram may also provide HERs to participants of other residential subprograms, such as Residential Efficient Products and Residential Existing Homes. The subprogram will primarily target single family homes; however, PSE&G may also evaluate potential in the multi-family and income eligible markets.

Delivery Method

PSE&G will extend its current Data Analytics Subprogram to additional customers using a selected HER vendor.

PSE&G's HER vendor will identify and distribute HERs to residential customers at no charge to the participant. The online audit will be available for all PSE&G residential customers free of charge. High usage alerts will be provided to customers receiving HERs via email to customers for whom PSE&G has a valid email address.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 7: Residential Behavioral Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	487,500	650,000	650,000	650,000	650,000	650,000	162,500
Electric Savings (MWh)	71,502	95,336	95,336	95,336	95,336	95,336	23,834
Electric Savings (MW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Savings (Dth)	487,500	650,000	650,000	650,000	650,000	650,000	162,500

Relationship to Existing Programs

The Residential Behavioral Subprogram has similar components to the Data Analytics Subprogram approved in the EE 2017 program. However, this subprogram provides access to more customers and provides a linkage to enable customers to realize greater energy savings through the suite of PSE&G energy efficiency subprograms.

Some peer utilities within the state, including New Jersey Natural Gas, South Jersey Gas, and Elizabethtown Gas are also running home energy reporting programs for residential customers. Atlantic City Electric and Jersey Central Power & Light provide online audit tools similar to one of the services provided by this subprogram. This subprogram will complement the peer utility programs and include additional direction to next steps for residential customers within PSE&G's service territory. The NJCEP does not offer any similar programs.

Proposed Incentives

All services under this subprogram will be provided at no cost to the customer.

Marketing Approach

The recipients of the HERs will be selected by PSE&G, its selected HER vendor, and its evaluation contractor. The online audit will be marketed through bill-insert mailers, digital advertising, and other means to assure that all customers are aware of the availability of these resources. Participants in other PSE&G energy efficiency subprograms will be referred to the online audit tool and online portal as appropriate.

Contractor Role

PSE&G will utilize a third-party implementation contractor to provide the services under this subprogram including HERs, the portal, the online audit, and high usage alerts.

Market Barriers

The primary market barriers that impact this subprogram include:

- **Report Readership:** Participants with little to negative energy savings are less likely to read HERs, and their utility bill, than those that are generating energy savings. This barrier will be addressed by ensuring information provided by HERs is provided in a simple and user-friendly format.
- **Prioritization of and Interest in Energy Efficiency:** Participants with little to negative energy savings may have dissatisfaction with receiving suggestion to save energy, or an unfavorable view of messaging that includes environmental motivations. This barrier will be addressed by ensuring customer motivations are addressed by successful messaging.
- **Information Asymmetry:** All residents of the home impact energy use through their behavior, but not all may receive the HER messaging if not shared by primary account holder. This barrier will be addressed by ensuring HERs are compelling, easy to understand, and shareable, such that they are more likely to incite discussion within a household.
- **Customer Awareness and Engagement:** The online audit and portal can help steer customers to greater energy savings; however, not all HER participants will utilize these tools. This barrier will be addressed by ensuring these tools are as easy to access as possible, and HERs will underscore their potential benefits.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G's established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver

best-practice subprograms that identify and confront market barriers on an ongoing basis. PSE&G will utilize the behavioral subprogram to cross-promote other efficiency offerings as a means of spreading awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 8: Residential Behavioral Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$178,170	\$322,016	\$355,092	\$361,805	\$368,719	\$375,841	\$181,225
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$5,362,500	\$7,150,000	\$7,150,000	\$7,150,000	\$7,150,000	\$7,150,000	\$1,787,500
Rebate Processing, Inspections, and Other Quality Control	\$129,555	\$298,468	\$347,707	\$357,701	\$367,994	\$378,596	\$189,735
Evaluation and Related Research	\$189,271	\$278,981	\$289,406	\$291,522	\$293,701	\$295,946	\$94,118
Total	\$5,859,496	\$8,049,464	\$8,142,205	\$8,161,027	\$8,180,414	\$8,200,382	\$2,252,578

3.1.4. Residential K-12 Education

The Residential K-12 Education Subprogram is designed to engage with students in grades kindergarten through twelfth grade with targeted classroom energy efficiency and awareness education and take-home energy efficiency kits, as well as engage with students and school facility managers to highlight and identify recently completed efficiency upgrades and remaining opportunities. The objective of the subprogram is to raise awareness of energy issues and engage the schools, students, and their families in a conversation about energy efficiency and direct actions they can take at their homes and in the school directly. The subprogram has a behavioral component in which an instructor informs students of conservation opportunities for saving electricity and natural gas (e.g. turning off the lights, thermostat setback) as well as a measure-component in which students are provided with a ‘take-home’ kit that contains instructional materials and a set of easy-to-deploy energy efficiency technologies that may be brought home for installation with the aid of a student’s parents. The PSE&G energy efficiency marketplace may also be leveraged to deliver take-home kits to interested students and teachers. Direct in-school energy efficiency education may also be a subprogram component, whereby students are able to experience technologies, such as light meters and thermal cameras to evaluate the building performance of their own school.

Market Segment/Efficiency Targeted

The subprogram targets children in grades kindergarten through twelfth grade in schools within PSE&G’s service territory via classroom instruction and distribution of energy efficiency kits and information to students. Children in these grades are at an appropriate age level for this form of engagement and can build enthusiasm regarding energy and sustainability.

Subprogram ‘take-home’ kits may include an assortment of technologies, including: LED fixtures, LED night lights, low flow shower heads, faucet aerators, kitchen aerators, literature to reinforce behavior changes to decrease energy usage, and information about other PSE&G energy efficiency subprograms.

Delivery Method

This subprogram will be delivered by a qualified third-party implementation contractor with experience delivering similar subprograms. The third-party implementation contractor will arrange visits to schools in the service territory to conduct on-site classroom instruction with students and faculty as well as to distribute energy efficiency kits. The third party contractor may also work with the school’s facility management team to identify remaining efficiency opportunities, with or without students present, and refer schools to PSEG’s other efficiency subprograms. School recruitment will be conducted through various means including presentations at state and regional school administrator meetings and conferences, as well as through mailers and direct phone/email solicitation.

The third-party implementation contractor will also be responsible for data tracking, including subprogram expenditures and savings levels, reporting, and managing participants.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 9: Residential K-12 Education Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	71,540	102,200	102,060	102,000	102,000	30,600
Electric Savings (MWh)	0	1,847	2,639	2,632	2,629	2,629	789
Electric Savings (MW)	0	0.2	0.2	0.2	0.2	0.2	0.1
Natural Gas Savings (Dth)	0	12,600	18,000	18,000	18,000	18,000	5,400

Relationship to Existing Programs

Neither PSE&G nor NJCEP are currently offering a similar program. New Jersey Natural Gas currently offers a PowerSave Schools Program that includes some of the components proposed for this subprogram. The PowerSave Schools Program is administered by the Alliance to Save Energy and provides students and faculty the opportunity to turn the school building into a learning tool for science, technology, engineering and math. PSE&G will explore coordination with New Jersey Natural Gas and other New Jersey utilities on common offerings.

Proposed Incentives

Education materials, classroom instruction, and take-home kits shall be provided free-of-charge to participating schools and students. Teachers may be provided a small non-cash incentive, for example, teaching supplies valued at \$100 for returning and collecting subprogram data from students after installation of home efficiency measures. Also, students may benefit from a classroom achievement award (e.g. pizza party), depending on the level of reported measure installations or parent conversations. Teachers will be encouraged to participate again the following year.

Marketing Approach

This subprogram will be marketed to school administrators and teachers. The subprogram will cause residential customers to be more aware of other PSE&G energy efficiency subprograms and drive participation in those subprograms as well, including referrals to PSE&G's online marketplace where additional efficient products can be purchased.

PSE&G and the third-party implementation contractor will use an array of outlets to promote the subprogram to schools, including mailers, advertising, state and local school administrator meetings and conferences (e.g. NJ School Board Association), and direct outreach through existing relationships.

Contractor Role

PSE&G will supervise the selected third-party implementation contractor in execution of the subprogram. The third party contractor will be responsible for final design and delivery of the subprogram, including recruiting schools to participate, providing curriculum, providing guest presenters, distributing take-home energy kits to students, and leading efficiency walking tours around the school to highlight previously completed efficiency improvements and demonstrate to the students remaining opportunities. To select a qualified third-party implementation contractor, PSE&G will prioritize criteria including but not limited to:

- Experience & qualification for delivering similar subprograms or initiatives in schools
- Cost

Market Barriers

The primary market barriers that impact this subprogram include:

- **Efficiency in School Curriculum:** School curriculum typically does not emphasize energy efficiency or provide actionable information to students about efficiency opportunities. To overcome this barrier PSE&G will provide a turn-key solution.
- **Installation of Direct-Install Measure Kits:** Direct-install kits provided to students contain educational materials and easy-to-install efficiency measures; however, not all measures will be installed by students. To overcome this barrier, PSE&G will employ a subprogram design that encourages teachers to collect take-home forms that 'verify' installation.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G will utilize the education subprogram to cross-promote other efficiency offerings through take-home materials as a means of spreading awareness of the range of efficiency opportunities proposed in this plan. The subprogram is designed to address common market barriers across the entire energy efficiency sector, such as a lack of efficiency literacy among students and families, and encourage uptake of low-cost savings measures among residential families, many of whom do not have the time or knowledge to prioritize home energy efficiency.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 10: Residential K-12 Education Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$94,529	\$271,736	\$323,936	\$328,755	\$333,812	\$339,068	\$155,295
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$494,060	\$705,800	\$705,240	\$705,000	\$705,000	\$211,500
Rebate Processing, Inspections, and Other Quality Control	\$50,621	\$126,207	\$148,661	\$152,577	\$156,620	\$160,790	\$77,595
Evaluation and Related Research	\$20,227	\$68,259	\$83,273	\$84,955	\$86,702	\$88,510	\$38,342
Total	\$165,376	\$960,263	\$1,261,670	\$1,271,526	\$1,282,135	\$1,293,368	\$482,733

3.1.5. Residential New Construction

The Residential New Construction Subprogram will significantly improve the energy efficiency of newly constructed single-family and single-family attached homes in the PSE&G service territory. The subprogram will educate residential new construction market stakeholders on energy efficient home design and construction, and provide incentives to them for utilizing high efficiency building practices and materials. Participating builders will work with subprogram-enrolled Residential Energy Services Network (RESNET) certified Home Energy Rating System (HERS) raters, who will inspect the home, verify subprogram requirements, calculate the home's energy performance, and submit required documentation. The subprogram will follow guidelines and qualifying criteria associated with the U.S. Environmental Protection Agency ENERGY STAR Homes program subject to as-needed enhancements to align with other programs, as well as maximize participation and cost-effective energy savings opportunities. PSE&G's Residential New Construction Subprogram will also include promotion and incentives to builders for "electric vehicle ready" and "solar photovoltaic ready" wiring, such that pre-wiring and electrical panel capacity is designed to facilitate installation of these systems in the future, if not at the time of the initial construction.

Market Segment/Efficiency Targeted

The subprogram targets trade allies including architects, developers, builders, contractors, and home energy raters who are responsible for new home design, construction, and equipment decisions. All new construction in the residentially metered single-family or single-family attached home or low-rise (three stories or less) multifamily segment that receive electric and/or natural gas service from PSE&G are eligible to participate. Multifamily buildings over three stories will be eligible to participate in the C&I New Construction Subprogram. The subprogram will increase the efficiency of newly constructed homes by comprehensively improving the building shell and efficiency of the mechanical systems in the home.

Delivery Method

The delivery strategy for the Residential New Construction Subprogram will involve: 1) offering education, financial incentives, and cooperative advertising efforts to participating home builders; 2) offering technical training to home builders and trade allies; and 3) educating industry professionals and homebuyers on the benefits of energy efficiency construction.

This subprogram will be delivered by a qualified third-party implementation contractor with experience delivering similar subprograms. The third-party implementation contractor will be responsible for activities including, but not limited to, the following:

- Builder and energy rater outreach, recruitment, education, and ongoing relationship management
- Marketing collateral development and deployment
- Reviewing, approving, and tracking incentive applications for completed homes, including all necessary supporting documentation
- Processing incentives, including fund management, issuing checks, and reporting
- Quality assurance of technical and procedural subprogram requirements
- Budgeting, goal tracking, and reporting

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of the projected number of housing units. Savings estimates are based on projected participation during each year of the forecast period.

Table 11: Residential New Construction Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	1,700	2,340	2,570	2,770	2,970	450
Electric Savings (MWh)	0	1,870	2,574	2,827	3,047	3,267	495
Electric Savings (MW)	0	1.1	1.5	1.7	1.8	1.9	0.3
Natural Gas Savings (Dth)	0	23,800	32,760	35,980	38,780	41,580	6,300

Relationship to Existing Programs

PSE&G does not currently offer a program to this segment. The NJCEP offers an ENERGY STAR Homes and ENERGY STAR Zero Energy Homes program. The NJCEP programs offer performance incentives based on the HERS rating of a newly constructed home and a predetermined performance tier. This structure results in nearly 70 different incentive levels, depending on the HERS score, though each incremental improvement in the HERS score may not result in energy savings.

The other in-State utilities do not currently offer a program to this segment.

The Residential New Construction Subprogram will streamline the performance incentive structure based on actual modeled energy savings, rather than HERS score. This new incentive structure is easier to understand and more directly aligns incentives with energy savings.

Proposed Incentives

PSE&G proposes to offer a performance incentive paid either to the builder or homeowner (in instances where the homeowner is directly responsible for construction) based upon modeled savings rather than HERS rating. This incentive design will simplify the offering and allow builders to easily assess the

incentives available for adhering to energy efficiency building standards. Additionally, the subprogram will include a supplemental incentive for electric vehicle charging station electrical panel wiring and preparation (EV Ready), as well as an incentive for solar photovoltaic roof-top electrical wiring (PV Ready). The incentive levels and design may be evaluated and revised periodically to maximize uptake and cost-effective energy savings. The subprogram may also introduce additional building performance standards or prescriptive requirements as the market matures to increase energy savings per home and maintain the subprogram's cost effectiveness.

Marketing Approach

The subprogram's marketing strategy will primarily focus on builder/design sector outreach, recruitment, and orientation through face-to-face meetings with relevant market participants at events and through one-on-one meetings. All builders approaching PSE&G for line and main extension requests will also be exposed to the benefits of the subprogram. Subprogram staff will develop materials and presentations that educate builders on energy efficient building practices and subprogram requirements.

Contractor Role

PSE&G will administer and manage the overall subprogram with the support of a third-party implementation contractor(s). The third-party implementation contractor will have responsibility for delivery tasks and customer outreach on behalf of PSE&G. It is anticipated that this contractor will work closely with PSE&G to optimize the subprogram's strategic direction including, but not limited to, conducting the following tasks:

- Participant outreach/subprogram delivery strategy
- Architect and builder education, awareness, and subprogram enrollment
- Training and subprogram enrollment of home energy raters
- System/efficiency measures and efficiency levels
- Promotion of emerging technology
- Incentive levels and strategies
- Marketing
- Participant satisfaction and quality control
- Equipment installation and subprogram data tracking
- Rebate processing

To select a qualified third-party implementation contractor, PSE&G will prioritize criteria including but not limited to:

- Experience delivering similar subprograms or initiatives,
- Third-Party staff qualification for delivering new residential construction subprograms.
- Cost

Market Barriers

The primary market barriers that impact this subprogram include:

- **Initial Cost of Efficient Equipment:** Builders tend to be primarily concerned with first cost considerations as they must build the house at a competitive price. As such, they may be reluctant to consider higher cost equipment or practices that would require a home price premium that may not be fully valued by prospective homebuyers. To address this barrier, incentives are provided to the builder/contractor to reduce initial cost.
- **Risk Aversion:** The construction industry can be slow to adopt new technologies or solutions. Designers prefer to install systems and buildings using familiar technologies, and liability issues

can be a concern. To address this barrier, this subprogram is designed to engage with the design/build community to encourage changes in the culture of how builders view more efficient technologies and reduce their cost.

- **Limited Technical Information:** Designers, builders and buyers have limited information about advanced building methods and their associated cost and benefits, especially those that extend beyond energy savings (e.g. comfort, durability, health, productivity and maintenance). To address this barrier, PSE&G will provide builder training and education seminars and offer recruitment, training, and maintenance of a robust home energy rating network.
- **Inadequate Operational Procedures:** Building systems are usually not tested to ensure that they perform as designed, and owners fail to implement an ongoing maintenance and quality assurance procedure to properly operate the equipment. To address this barrier, PSE&G will ensure ongoing quality assurance and customer satisfaction through site visits and identification of continuous improvement opportunities for both subprogram participating builders and home energy raters.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 12: Residential New Construction Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$278,320	\$905,761	\$1,215,023	\$1,327,175	\$1,418,642	\$1,510,344	\$478,447
Sales, Call Centers, Marketing and Website	\$0	\$88,235	\$135,294	\$150,000	\$161,765	\$173,529	\$44,118
Training	\$0	\$44,118	\$67,647	\$75,000	\$80,882	\$86,765	\$22,059
Rebates, Grants, and Other Direct Incentives	\$0	\$2,125,000	\$2,925,000	\$3,212,500	\$3,462,500	\$3,712,500	\$562,500
Rebate Processing, Inspections, and Other Quality Control	\$175,503	\$499,607	\$622,224	\$655,690	\$685,459	\$715,630	\$303,860
Evaluation and Related Research	\$27,556	\$148,671	\$204,228	\$220,336	\$233,757	\$247,250	\$84,592
Total	\$481,379	\$3,811,392	\$5,169,416	\$5,640,701	\$6,043,005	\$6,446,017	\$1,495,576

3.1.6. Residential Multi-Family

The Residential Multi-Family Subprogram provides a turnkey service for multi-family property owners, managers, and the residents of multi-family facilities to help improve the energy efficiency of their facilities and reduce their operating costs. This service provides direct installation of energy-efficient measures in individual living units. The primary measures to be installed include LED lighting, low-flow

showerheads and faucet aerators, and smart power strips. The subprogram will also provide literature on energy saving tips achieved through other behavioral actions (e.g. thermostat settings, maximizing dishwasher and clothes washer loads, etc.).

Market Segment/Efficiency Targeted

The subprogram targets multi-family property owners, property managers, and residents. All multi-family buildings with three or more units in PSE&G’s electric or natural gas service territory are eligible to participate, although it is anticipated that the majority of participating units will be from low income or moderate income multi-family units, and will have 12 or more units.

The subprogram will look to achieve direct, easy to install, energy savings through the provision of measures such as LED lighting, low-flow showerheads and faucet aerators, and smart power strips.

Delivery Method

The Multi-Family Subprogram will be delivered by PSE&G and/or a qualified third-party implementation contractor with experience delivering similar subprograms. The subprogram manager will recruit multi-family property owners and oversee the direct installation of free low-cost measures (e.g. lighting, showerheads) in individual units. The service is provided at no cost to property owners or occupants. This subprogram design (including the provision of no cost services) is intended to overcome market barriers and assure that benefits are provided to tenants.

PSE&G and/or the implementation contractor will be responsible for activities including, but not limited to, the following:

- Developing relationships with property management companies, owners, associations, and their members to recruit participants
- Training, education, and coordination with direct-install staff and/or contractors
- Marketing collateral development and deployment
- Procuring energy efficiency equipment and materials
- Reviewing, approving, and tracking of documentation for completed projects
- Quality assurance of technical and procedural subprogram guidelines
- Budgeting, goal tracking, and reporting
- Customer satisfaction and problem resolution
- Provide notice to tenants and property owners prior to conducting work

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 13: Residential Multi-Family Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	182,920	215,200	216,050	217,050	218,050	32,730
Electric Savings (MWh)	0	5,865	6,899	6,899	6,899	6,899	1,035
Electric Savings (MW)	0	1.0	1.1	1.1	1.1	1.1	0.2
Natural Gas Savings (Dth)	0	2,856	3,360	4,329	5,138	5,888	900

Relationship to Existing Programs

Neither PSE&G nor NJCEP currently offer a similar program design for this market segment. The NJCEP Comfort Partners program (jointly administered by the NJ utilities) offers in-home energy assessments, energy education, and low- or no- cost measures to improve energy efficiency in low income homes. NJCEP Home Performance with Energy Star includes specific requirements for eligible, small multifamily buildings. PSE&G's EE2017 Multifamily Subprogram may include direct installation of energy efficiency measures in tenant spaces, but only as part of a broader and more comprehensive approach.

This subprogram will be coordinated with PSE&G's other CEF-EE subprograms, in that it will provide for direct installation of measures when a more comprehensive approach (such as the C&I Engineered Solutions Subprogram) cannot be used.

Proposed Incentives

Equipment and installation costs for all measures directly installed in tenant units will be provided free to eligible properties.

Marketing Approach

The marketing strategy will focus on informing property owners, managers, associations, tenant groups, municipalities, and community organizations about the availability and benefits of the subprogram and how to participate. Marketing activities will be focused on serving the lower income multi-family sector. Key elements of the marketing strategy include:

- Targeted outreach through direct mailings and presentations to inform property owners, managers, apartment associations, tenant groups, municipalities and community organizations about the benefits of the subprogram and participation processes
- Brochures highlighting the benefits and features of the subprogram as well as the participation processes
- Website content providing subprogram information resources and contact information
- In-person visits by subprogram representatives to properties with three or more units
- Walk-through energy assessments of properties to encourage the building owners or facility managers to allow participation in the direct installation component of the subprogram as well as encourage participation in the other PSE&G efficiency subprograms

Contractor Role

PSE&G will administer and manage the overall subprogram. Depending on the final design of the delivery process, PSE&G may utilize the support of a third-party implementation contractor(s). In this event, the third-party implementation contractor will have responsibility for delivery tasks and customer outreach on behalf of PSE&G.

Key elements of the implementation strategy and core responsibilities of the implementation contractor may include:

- **Targeted Outreach to Property Owners:** Subprogram representatives will build relationships with property management companies, owners, associations and their members to recruit participation in the subprogram. The subprogram team will assist customers as necessary to coordinate direct installations and complete rebate application requirements. In addition, property owners will be reached through direct mail, participation in association events, one-on-one meetings with subprogram staff, and other channels. Special emphasis will be placed on

properties with as little as three units and greater. This has been traditionally an over-looked segment in other utility-run subprograms around the country.

- **In-Unit Direct Installs:** Subprogram representatives will identify interested property owners and schedule appointments for the free installation of energy saving devices in the individual living units and common areas. In-unit HVAC tune-ups will be offered at no cost to the property owner or tenant. The installation crews are trained on the technical and educational aspects of the energy saving devices installed and leave educational materials in each unit describing the work performed and explaining the energy-saving benefits.
- **Subprogram Operations:** The third-party implementation contractor handles implementation related administrative requirements, including the following:
 - Marketing and educational materials
 - Field services
 - Product ordering and inventory
 - Data tracking and reporting
 - Investment tracking and reporting
 - Prescriptive, custom and comprehensive application processing
 - Trade ally and customer outreach/training
 - Customer satisfaction/problem resolution

To select a qualified third-party contractor, PSE&G will prioritize criteria including but not limited to:

- Experience delivering similar subprograms or initiatives
- Third-party staff qualifications
- Cost

In the event PSE&G delivers the program with its own workforce, contractor role would be minimal, limited to customer acquisition and alignment with other subprograms.

Market Barriers

The primary market barriers that impact this subprogram include:

- **Customer Awareness and Engagement:** Multi-family property owners and building managers may not prioritize energy efficiency and thus neglect to participate in the Residential Multi-Family Subprogram. Through targeted marketing and outreach to the multi-family segment PSE&G will seek to ensure that customers are alerted to opportunities and make an educated decision when investing in energy efficiency.
- **Landlord/Tenant Arrangements:** Split incentives between landlord/tenants with respect to who pays for energy use versus who owns the energy-using equipment challenge the incentive to participate in the subprogram. To address this barrier, the subprogram will be marketed to both landlords and tenants to assure those exposed to energy costs are able to participate in subprogram.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G's established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 14: Residential Multi-Family Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$201,732	\$598,353	\$715,005	\$726,195	\$737,692	\$749,284	\$299,796
Sales, Call Centers, Marketing and Website	\$0	\$3,395	\$4,526	\$4,547	\$4,568	\$4,587	\$1,148
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$1,538,925	\$1,810,500	\$1,819,850	\$1,827,875	\$1,835,375	\$275,475
Rebate Processing, Inspections, and Other Quality Control	\$236,634	\$579,183	\$681,074	\$700,366	\$720,234	\$740,670	\$366,797
Evaluation and Related Research	\$32,442	\$128,565	\$159,006	\$162,049	\$165,178	\$168,360	\$68,115
Total	\$470,808	\$2,848,421	\$3,370,112	\$3,413,007	\$3,455,548	\$3,498,275	\$1,011,331

3.1.7. Residential Income Eligible

The Residential Income Eligible Subprogram is targeted at customers whose household income is less than or equal to 400 percent of the Federal Poverty Level (FPL). The Residential Income Eligible Subprogram provides free direct installation of energy efficient technologies and weatherization services to qualifying PSE&G customers with limited income. The subprogram generates energy savings for residential low-income customers through an in-home energy audit and the direct installation of a wide range of energy efficiency measures such as efficient lighting, efficient refrigerators, HVAC, as well as weatherization upgrades for air-sealing and attic and wall insulation. The subprogram also provides for the installation of health and safety measures as appropriate, and may also include actions to address building shell issues that prevent the installation of energy efficiency measures, such as moisture/mold remediation, roof repairs, electrical repairs, lead, and asbestos remediation.

In addition to the core subprogram attributes described above, the subprogram will also provide for the distribution of free LED light bulbs via food banks/pantries or other distribution venues that serve income eligible customers, along with educational information on energy efficiency. The subprogram will coordinate low-income services with local, state and federal agencies to provide comprehensive assistance. The subprogram may also seek to work with workforce development organizations, in order to provide a sufficient pool of qualified workforce that will be required to support a significant growth in energy efficiency services.

Market Segment/Efficiency Targeted

The Residential Income Eligible Subprogram targets residential customers in PSE&G's electric and/or gas service territory whose household income is less than or equal to 400 percent of the Federal Poverty Level (FPL). Customers who receive Federal Supplemental Security Income ("SSI"), Home Energy Assistance ("HEAP"), Universal Service Fund ("USF"), Lifeline, Pharmaceutical Assistance to the Aged

and Disabled (“PAAD”), Temporary Assistance to Needy Families (“TANF”), or Section 8 Housing will also be eligible.

Delivery Method

This subprogram will be managed by PSE&G with the support of a qualified third-party implementation contractor with experience delivering services in similar subprograms. It is envisioned that PSE&G’s third-party implementation contractor will facilitate subprogram delivery across the multiple subprogram vendors as well as PSE&G’s workforce. Eligible customers will receive an in-home energy assessment from PSE&G. The applicable measures and services will be installed either by subprogram vendors, or by PSE&G’s workforce. PSE&G, with its third-party implementation contractor will be responsible for activities including, but not limited to, the following:

- Ensuring customers meet eligibility requirements
- Marketing collateral development and deployment
- Reviewing, approving, and tracking of documentation for completed projects
- Payment processing, fund management, and reporting
- Quality assurance of technical and procedural subprogram guidelines
- Budgeting, goal tracking, and reporting
- Call center services
- Customer satisfaction and problem resolution
- Provide technical training to workforce

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 15: Residential Income Eligible Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	171,354	201,593	201,593	79,404	63,493	9,674
Electric Savings (MWh)	0	5,367	6,314	6,314	2,779	2,394	365
Electric Savings (MW)	0	0.8	1.0	1.0	0.4	0.3	0.1
Natural Gas Savings (Dth)	0	52,628	61,915	61,915	65,834	73,367	11,186

Relationship to Existing Programs

Currently, NJ’s Residential Low-Income Program (known as Comfort Partners) is jointly administered by NJ’s electric and gas utilities. PSE&G’s income eligible subprogram will be similar in structure and approach, by providing for the direct installation of energy efficiency improvements to low income customers. This subprogram builds upon the success of the existing program, and enhances the current program in the following ways:

- Increased ability to serve vulnerable populations by increasing spending and eligibility limits to address building shell, energy efficiency measures, and health/safety issues as needed to provide energy efficiency services
- Identify opportunities to offer shared costs for landlord/tenant HVAC equipment upgrades

- Increased focus on outreach and education through partnerships in subprogram delivery, including the offering of free LEDs and education through various community agencies and organizations
- Development of a qualified workforce through coordination with workforce development programs to support subprogram growth
- Generation of leads through PSE&G's day-to-day operations, including other PSE&G energy efficiency subprograms (e.g. the Behavioral Subprogram, K-12 Education Subprogram)
- Additional focus on multi-family segment, integrating with other CEF subprograms, Residential Existing Homes, Residential Efficient Products, Residential Behavioral, Residential Education, and Residential Multifamily
- Expanded opportunities for lead abatement, radon testing/abatement, and oil-to-gas conversions
- Directly supplementing and developing the available workforce through use of PSE&G employees for subprogram delivery

PSE&G intends to run the Residential Income Eligible Subprogram, while continuing to coordinate with the NJ Utilities on program design and delivery to low income customers. This enables PSE&G to leverage the other subprograms in its suite of energy efficiency subprograms to drive more savings and benefits. To drive operational and customer service synergies, the Residential Income Eligible Subprogram will be operated in coordination with the Residential Existing Homes Subprogram.

Proposed Incentives

Equipment and installation costs for all eligible measures will be provided free to eligible customers, subject to subprogram terms and conditions.

Among the measures to be considered for each home are efficient lighting products; hot water conservation measures (water heater replacement and tank temperature turn-down); replacement of inefficient refrigerators and freezers; installation of programmable and smart thermostats; insulation upgrades (attic, wall, basement, etc.); blower-door guided air sealing; duct sealing and repair; heating/cooling equipment maintenance, repair and/or replacement; and other measures as may be needed to enable the installation of energy efficiency measures (e.g. repair or replacement of a broken window, repair of a hole in the wall and/or roof, mold remediation, or the installation of rain gutters).

Failed or failing heating or cooling systems can be replaced for efficiency and/or health and safety reasons, on a case-by-case basis, as subprogram funds permit. For customer homes that require treatment beyond the scope of the subprogram, such services may be coordinated with other agencies.

Marketing Approach

Marketing efforts will be focused toward property owners, non-profit organizations, churches, and community organizations to bring awareness to the subprogram and initiate effective participation. Key elements of the marketing strategy include:

- Targeted outreach through local agencies
- Websites and newsletters
- Press releases
- Posters in municipal buildings
- Neighborhood canvassing

Contractor Role

PSE&G will administer and manage the overall subprogram with the support of a third-party implementation contractor(s). The third-party implementation contractor will have responsibility for delivery tasks and customer outreach on behalf of PSE&G. To select a qualified third-party implementation contractor, PSE&G will prioritize criteria including, but not limited to:

- Experience delivering similar subprograms or initiatives
- Third-party staff qualification for delivering low-income energy efficiency subprograms
- Cost

Market Barriers

The primary market barriers that impact this subprogram include:

- **Customer Awareness and Engagement:** Low-income customers may be unaware of the existence of the subprogram. This barrier will be addressed through targeted marketing and outreach.
- **Landlord/Tenant Arrangements:** Split incentives between landlord/tenants with respect to who pays for energy use vs. who owns the energy-using equipment challenge the incentive to participate in the subprogram. To address this barrier, the subprogram will be marketed to both landlords and tenants to assure that those exposed to energy costs are able to participate in subprogram.
- **Health/Safety Issues:** In some cases, efficiency upgrades may be infeasible or impractical due to existing health and safety concerns. This barrier will be not be directly managed by PSE&G, but will be a consideration during visits to participant premises.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G's established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 16: Residential Income Eligible Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$568,145	\$1,807,534	\$2,170,915	\$2,189,155	\$2,193,505	\$2,349,058	\$819,352
Sales, Call Centers, Marketing and Website	\$0	\$70,784	\$94,379	\$94,379	\$93,507	\$101,732	\$26,142
Training	\$0	\$42,470	\$56,627	\$56,627	\$56,104	\$61,039	\$15,685
Rebates, Grants, and Other Direct Incentives	\$0	\$14,439,928	\$16,988,150	\$16,988,150	\$16,810,299	\$18,516,042	\$2,823,389
Rebate Processing, Inspections, and Other Quality Control	\$446,255	\$1,117,789	\$1,317,214	\$1,351,520	\$1,385,252	\$1,436,782	\$686,924
Evaluation and Related Research	\$62,178	\$573,517	\$740,897	\$746,136	\$746,301	\$801,207	\$254,405

Metric	2019	2020	2021	2022	2023	2024	2025+
Total	\$1,076,578	\$18,052,021	\$21,368,182	\$21,425,967	\$21,284,968	\$23,265,858	\$4,625,898

3.2. Commercial & Industrial Sector Programs

PSE&G’s commercial and industrial customers are very diverse. These subprograms address each segment, including those with limited time and resources to make efficiency improvements. The subprogram designs are intended to enable PSE&G to address the unique needs of each sub-sector. For example, if a large customer has ready access to financing and more advanced approaches to energy management, PSE&G will offer customized financial support to reduce paybacks on investments and bring about increased installation of measures. For small businesses or municipal customers, PSE&G will provide more substantial management, financial support, and on-bill repayment.

3.2.1. C&I Prescriptive

The C&I Prescriptive Subprogram will promote the installation of high-efficiency electric and natural gas equipment by C&I customers. The subprogram is designed to:

- Provide incentives to facility owners and operators for the installation of high efficiency equipment and controls
- Provide the knowledge necessary and market demand to justify the marketing of high efficiency measures by participating trade allies such as electrical contractors, mechanical contractors, and their distributors
- Ensure the participation process is clear and simple

The subprogram will offer a broad range of energy efficient equipment and appliances through a variety of channels, including reduced point of sale costs, and a network of trade allies. The subprogram will incent energy efficient lighting, appliances, heating and cooling equipment, and food service equipment, among other efficiency measures. These measures will range in type and price but include both electric and natural gas technologies that improve energy efficiency. Up-front rebates will be offered on all technologies to reduce initial costs and some purchases will qualify for on-bill repayments to further reduce first cost barriers. The subprogram is designed to provide easy and cost-effective access to energy efficient measures through customers' preferred channels.

This subprogram will significantly increase adoption of energy efficient equipment by harnessing PSE&G’s unique customer relationships to positively impact the entire sales process surrounding efficient equipment, from education and awareness with customers, engagement with trade ally contractors and equipment distributors, to on-bill repayments and final installation and commissioning of the high efficiency equipment.

Market Segment/Efficiency Targeted

The C&I Prescriptive Subprogram will be available to all commercial, industrial, and other non-residential electric and natural gas customers located within PSE&G’s service territory. The subprogram is focused on promoting the sale and installation of efficient electric and natural gas equipment across all major end-use categories and can be easily promoted to trade allies and customers via straightforward prescriptive rebates. Potential technologies incentivized through this subprogram include energy efficient lighting, appliances, heating and cooling equipment, and food service equipment, among other efficiency measures.

Delivery Method

To maximize customer participation and streamline the customer experience, PSE&G will use its strong customer and marketplace relationships to support multiple implementation strategies to achieve subprogram goals.

- **Trade Allies:** PSE&G will establish a network of trade allies (e.g. electricians, HVAC contractors, lighting retailers and distributors, building energy managers, etc.) to promote the efficiency opportunities and incentives to their clients, and deliver the subprogram with a consistent experience to the customer. Trade allies will be able to leverage the subprogram and offer customers rebates through their normal course of business. In addition, PSE&G or the third-party implementation contractor can refer customers to a list of qualified trade allies to perform more intricate work. By allowing participants to select a partner they are comfortable with (either through an existing relationship or by reference from PSE&G or the third-party implementation contractor), the subprogram reduces barriers to entry related to knowledge of energy efficiency, confidence in assessments, and measure installation. PSE&G will oversee trade ally performance to verify quality standards are met and qualify contractors to participate in the Trade Ally network. By developing relationships with trade allies, the subprogram will develop a broad reach across the marketplace, and also solicit feedback from the marketplace to ensure incentives and measures are impacting the market as designed. Examples of targeted trade ally firms include:
 - Design, engineering, and controls firms
 - HVAC distributors, contractors, and retail providers
 - Food service retailers and service providers
 - Commercial lighting distributors and wholesalers
- **Retail:** PSE&G subprogram staff, third-party implementation contractors, and field representatives will work with retailers and distributors that directly target C&I customers so they are aware of the participation process and available equipment incentives. This will include training and instruction to participating retailers and distributors about the PSE&G prescriptive rebate forms as well as enrollment of distributors to participate in midstream subprogram offerings.
- **Midstream:** PSE&G will aggressively promote a midstream component for specific equipment types to encourage purchase of efficient equipment via directly marking down the cost of the efficient equipment at the point of sale. Midstream rebates encourage market transformation and wider availability of efficient equipment. PSE&G anticipates offering midstream point of sale discounts across numerous equipment types, including, but not limited to: LED lighting, HVAC, and food service equipment. Efficient products that are rebated via a midstream subprogram approach will not be eligible for rebates in any other PSE&G rebate subprogram.
- **Digital:** The subprogram will be marketed directly to C&I customers on the PSE&G website, where customers will have easy access to information regarding eligible equipment and savings opportunities, how to participate, and incentives across all efficient equipment types and end-uses. In addition, the website will offer information on qualified local trade allies to enable easy access to equipment retailers for customers.
- **Rebate-as-a-Service:** PSE&G will evaluate the viability of using a digital, smartphone based application platform, where business customers purchasing efficient equipment for commercial use at traditional consumer retail outlets can instantly redeem rebates at point-of-sale in both physical stores and online. This channel will help PSE&G offer rebates to very small commercial customers and local businesses outside of the C&I Small Non-Residential Efficiency Subprogram.
- **Targeted Customer Outreach:** In select cases, PSE&G staff and its third-party implementation contractor may choose to reach out directly to large business and commercial customers to develop relationships with energy and facilities managers, operations staff, and procurement

personnel. Subprogram staff can help facilitate completion of rebate applications and serve as a direct resource to these customers.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 17: C&I Prescriptive Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	249,978	390,240	471,100	543,765	615,052	93,858
Electric Savings (MWh)	0	120,127	187,571	228,175	265,863	303,470	46,367
Electric Savings (MW)	0	17.0	26.4	31.9	36.8	41.8	6.4
Natural Gas Savings (Dth)	0	242,751	305,182	359,706	435,803	514,631	78,968

Relationship to Existing Programs

PSE&G currently does not offer a subprogram similar to this program.

NJCEP currently offers prescriptive rebates for a variety of commercial measures under their C&I New Construction and Retrofit (SmartStart) program. Other NJ utilities offer either no or limited incentive programs for their commercial customers, which are more similar to the NJCEP Direct Install program than SmartStart or this proposed subprogram. The PSE&G C&I Prescriptive Subprogram will address many of the same measures and is targeted at a similar market segment within PSE&G’s service territory as the SmartStart program. Both programs provide prescriptive incentives on energy efficient HVAC equipment, lighting, and certain appliances to commercial customers.

However, PSE&G’s use of its customer relationships, communication channels, on-bill repayment capabilities, and its commitment to aggressively pursue and promote activity with the rest of the delivery eco-system will realize wider and deeper participation. PSE&G’s proposed use of a midstream incentive component, rebates-as-a-service, and ability to leverage existing customer relationships and communication channels are key differentiating factors for this subprogram.

Proposed Incentives

Incentive levels and the list of eligible equipment will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings across offered measures. Incentive levels will vary depending on the efficient measure, and the unit level being rebated (e.g. incentives for equipment, and/or incentive based on the system size or square footage where the system is being applied).

Marketing Approach

The C&I Prescriptive Subprogram will engage with customers and trade allies at multiple levels, including broad-based energy efficiency awareness campaigns, direct outreach by subprogram staff and representatives, web-based engagement and information, digital advertising, and hard-copy materials to promote awareness among trade allies and customers. In some cases, subprogram staff and representatives will reach out directly to large commercial customers. Use of appropriate types of media are anticipated to be included in the marketing plan, such as direct mail, email, print, and digital media.

Engagement with trade associations (e.g. builders, architects, equipment distributors, professional contractor associations, etc.) will all be important venues for PSE&G to present information about the subprogram, raise awareness and encourage participation.

Contractor Role

PSE&G will administer and manage the overall subprogram, including implementation of an on-bill repayment offering, with the support of third-party implementation contractor(s). The third-party implementation contractor will have responsibility for the majority of delivery tasks and customer outreach on behalf of PSE&G. It is anticipated that this third-party implementation contractor will assist with optimizing the subprogram's strategic direction, including but not limited to:

- Customer outreach/subprogram delivery strategy
- Offered efficiency measures and efficiency levels
- Promotion of emerging technologies
- Incentive levels and strategies
- Customer/trade ally/retailer engagement and enrollment in the subprogram
- Marketing
- Customer satisfaction
- Equipment installation and subprogram data tracking
- Rebate processing

Market Barriers

The primary market barriers that impact this subprogram include:

- **Initial Cost of Efficient Equipment:** Relative to the market baseline, efficient equipment often carries a higher upfront premium but a lower lifetime operating cost. Purchasers often may not fully value the lifetime operating cost advantage of efficient equipment and as a result higher upfront cost is a barrier to purchasing efficient equipment. To address this barrier, incentives are provided to the customer to reduce the initial cost through a variety of channels including at midstream and downstream points.
- **Customer Awareness and Engagement:** Commercial customers may not be aware of the benefits of installing efficient equipment and/or lack the time and resources to pursue efficient equipment when replacing existing equipment. To address this barrier, PSE&G will educate customers on the benefits of installing efficient equipment through targeted marketing, ensure that incentives are easily accessible, and encourage market transformation and stocking of efficient equipment through midstream incentives. Through outreach efforts, PSE&G will seek to partner with retail and wholesale entities to promote subprogram offerings, and also focus marketing, education, and outreach efforts on the trade ally community to ensure that trade allies are aware of available incentives and prepared to serve customers.
- **Landlord/Tenant Arrangements:** Split incentives between landlord/tenants with respect to who pays for energy use versus who owns the energy-using equipment challenge the incentive to participate in the subprogram. This subprogram will be marketed to both landlords and tenants to assure those exposed to energy costs are able to participate in subprogram.
- **Sufficient Stocking and Availability of Efficient Products:** To support a robust marketplace for efficient equipment, PSE&G will promote midstream incentives for specific equipment types to encourage high levels of participation via directly marking down the cost of the efficient equipment at the point of sale

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G's established customer communication channels, data, and brand in the marketplace will all be

leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 18: C&I Prescriptive Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$1,568,930	\$5,612,858	\$11,448,580	\$14,833,484	\$17,246,657	\$15,258,018	\$3,893,200
Sales, Call Centers, Marketing and Website	\$0	\$651,081	\$1,491,305	\$1,943,199	\$2,264,971	\$1,997,440	\$470,388
Training	\$0	\$65,108	\$149,130	\$194,320	\$226,497	\$199,744	\$47,039
Rebates, Grants, and Other Direct Incentives	\$0	\$53,352,752	\$83,023,390	\$100,495,203	\$116,563,827	\$132,577,069	\$20,246,835
Rebate Processing, Inspections, and Other Quality Control	\$385,609	\$1,519,970	\$2,760,229	\$3,425,267	\$3,904,797	\$3,542,204	\$1,023,285
Evaluation and Related Research	\$32,221	\$1,379,278	\$2,435,963	\$3,008,005	\$3,493,460	\$3,800,626	\$991,328
Total	\$1,986,760	\$62,581,048	\$101,308,598	\$123,899,478	\$143,700,209	\$157,375,100	\$26,672,076

3.2.2. C&I Custom

The Commercial and Industrial (C&I) Custom Subprogram will offer incentives for electric and natural gas efficiency opportunities for commercial, industrial, and other non-residential customers that are non-standard and not captured by the C&I Prescriptive Subprogram, or any other proposed custom subprogram offering including the C&I Engineered Solutions Subprogram. Typical measures incentivized by the C&I Custom Subprogram are either less common measures or efficiency opportunities in specialized applications that may include specialized manufacturing processes or non-traditional use cases. In many cases, custom efficiency projects are more complex than prescriptive equipment replacement.

Large customers with facilities and engineering teams will develop and submit custom efficiency project rebate applications for review. A third-party implementation contractor will also play an active role in supporting project identification, developing energy savings calculations, and assessing project economics as required. Potential participants are required to submit an application for pre-approval to reserve funding, and if accepted by PSE&G, a timeline is established for project completion to qualify for a rebate. The typical lead time for completing a custom project is 90 to 120 days. Large projects, or subsets of projects, may be required to undergo pre-and post-inspection to validate project energy savings. Approved projects will also be eligible for on-bill repayment support to further reduce first-cost barriers.

Market Segment/Efficiency Targeted

The C&I Custom Subprogram targets all C&I customers in PSE&G's electric and/or natural gas service territory with cost effective savings opportunities that are not covered by the C&I Prescriptive or Small

Non-Residential Efficiency Programs, and in building types not eligible for participating in the C&I Engineered Solutions Subprogram (non-MUSH/multifamily common areas/non-profit). However, customers participating in the C&I Custom Subprogram will generally be larger energy users with more complex needs and non-standard efficiency opportunities. Customers targeted for participation typically include building types such as light/heavy industrial, manufacturing, data centers, and distribution centers, among others.

Delivery Method

The C&I Custom Subprogram will be supervised by PSE&G and delivered by a qualified third-party implementation contractor. The following delivery strategies will be pursued:

- **Targeted Customer Outreach:** High-use customers will be targeted by subprogram staff to develop relationships with facilities and energy managers, operations staff, and procurement personnel to inform them of the benefits of participating in the custom subprogram. Subprogram staff will provide technical support, assist customers in identifying efficiency opportunities, and assist with review and preparation of their rebate application.
- **Technical Customer Assistance:** An important element of the C&I Custom Subprogram is the availability of technical support from qualified subprogram staff. PSE&G subprogram management staff and their representatives will be available to support customers with project identification and analysis, including assistance with targeted energy audits and savings estimates.
- **Trade Allies:** Developing relationships in the trade ally community will spread broader awareness of the existence of the custom subprogram option and obtain referrals for potential projects.

Measurement & Verification (M&V) for projects above a certain estimated incentive size, or projects that do not have reliable information to accurately forecast energy savings may require energy monitoring before and after project implementation to determine savings and incentive levels.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of expected number of customers participating in the subprogram. Savings estimates are based on projected participation during each year of the forecast period.

Table 19: C&I Custom Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	80	126	154	180	207	32
Electric Savings (MWh)	0	35,986	56,331	68,796	80,556	92,316	14,112
Electric Savings (MW)	0	3.6	5.6	6.9	8.1	9.2	1.4
Natural Gas Savings (Dth)	0	23,837	37,314	45,572	53,362	61,152	9,348

Relationship to Existing Programs

PSE&G currently offers other efficiency subprograms that cater to custom efficiency projects in addition to the C&I Custom Subprogram. For instance, PSE&G offers a Hospital Subprogram that caters to custom projects specific to that market, and is also proposing a new C&I Engineered Solutions Subprogram targeting efficiency projects primarily for municipalities, universities, schools, and hospitals

(MUSH), as well as non-profits. The C&I Custom Subprogram differs from these subprograms because it does not include the upfront engineering and all commercial customers are eligible to participate.

The NJCEP currently offers rebates for custom efficiency projects in a similar manner as the C&I Custom program under their SmartStart buildings program. In both, incentive values are calculated based on estimated and actual energy savings values. This subprogram differs from the NJCEP Pay for Performance (P4P) program because it does not include the energy reduction plan required in the P4P program. The incentive payout will occur once under this subprogram, while P4P has three (3) incentive payout milestones. This subprogram will include M&V site visits and documentation of savings after construction, as opposed to the P4P benchmarking report. PSE&G peer utilities currently do not offer a custom, performance-based incentive program similar to the C&I Custom Subprogram.

The PSE&G C&I Custom Subprogram will address many of the same efficiency opportunities and is targeted at a similar market within PSE&G's service territory. However, PSE&G's use of its customer relationships, communication channels, on-bill repayments capabilities, and its commitment to aggressively pursue and promote activity with the rest of the delivery eco-system will realize wider and deeper participation.

Proposed Incentives

The C&I Custom Subprogram incentives will be set based on an incentive level per first year kWh or therm saved. These incentive levels will be reviewed and updated periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings across a full spectrum of market opportunities. Incentive level design may change over time based on the specific end-use where the savings are being acquired. Additionally, incentive level restrictions may be established that could include limits to total incentives as a percentage of project costs or minimum project payback periods. Overall total facility and customer level incentive limits may also be established to ensure funding is available to as many C&I customers as possible, while also still providing robust incentives to capture the full suite of energy savings from large projects. Approved projects will also be eligible for on-bill repayment support to further reduce first-cost barriers.

Marketing Approach

The C&I Custom Subprogram will engage with customers and trade allies at multiple levels, including a combination of direct customer, trade ally, and local organization outreach, promotion through key industry events and conferences, and digital marketing, including an informational/engagement web platform to educate and reach relevant contractors and customers. Use of all types of media are anticipated to be included in the marketing plan, including, but not limited to, online and targeted print advertising. Engagement with trade associations (e.g. builders, architects, equipment distributors, professional contractor associations, etc.) will all be important venues for PSE&G to present information about the subprogram and raise awareness and encourage participation. The subprogram will leverage PSE&G's existing relationships and communication channels with customers through subprogram staff and account management team.

Contractor Role

PSE&G will administer and manage the overall subprogram, including implementation of an on-bill repayment offering, with the support of third-party implementation contractor(s). The third-party implementation contractor will have responsibility for the majority of delivery tasks and customer outreach on behalf of PSE&G. It is anticipated that this third-party implementation contractor will work closely with PSE&G to optimize the subprogram's strategic direction, including, but not limited to, the following activities:

- Offered incentive levels and strategies
- Customer satisfaction
- Measurement and verification during on-site visits
- Subprogram data tracking
- Rebate payments

PSE&G will select a qualified third-party implementation contractor (or contractors) based on, but not limited to, the following factors:

- Technical Approach
- Organizational and Management Capability
- Experience
- Cost

Market Barriers

The primary market barriers that impact this subprogram include:

- **Business/Operational Constraints:** Custom efficiency projects are often implemented by large business customers that may have more complex mechanical equipment supporting facility operations and manufacturing processes. As a result, many barriers prevent efficiency projects from being implemented, with interruption of business activity a primary concern. This barrier will be addressed by ensuring the subprogram operates cooperatively with participants, provides technical assistance, and offers timely incentives and on-bill repayment financing support.
- **Customer Awareness and Engagement:** Custom efficiency projects are non-standard and customers may not be aware that PSE&G offers incentives for unique projects that provide permanent efficiency improvement. This barrier will be addressed through leveraging existing relationships and communication channels. PSE&G is well positioned to offer targeted marketing and outreach to ensure that eligible customers are aware of subprogram opportunities. Eventually, the subprogram will prepare and distribute successful case studies of prior participants that highlight their experiences and energy savings.
- **Initial Cost of Feasibility Study:** Potential participants may not have the available time or resources to conduct technical analysis of likely custom efficiency projects. To address this barrier, PSE&G will provide project identification and analysis, including assistance with targeted energy audits and savings estimates.
- **Initial Cost of Efficiency Investment:** Custom efficiency upgrades require an initial investment that is recovered by lower long-run operating costs and non-energy benefits. Nonetheless, customers may be reluctant to engage in custom efficiency projects due to initial cost barriers. To address this barrier, incentives and on-bill repayment is provided to the customer to reduce the initial cost.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G's established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

PSE&G staff and the selected contractor will seek to manage these barriers through effective design, delivery, outreach, and marketing plans. The subprogram will prepare and distribute successful case studies of prior participants and their experiences and energy savings. The subprogram will also provide

technical support to C&I customers to assist with project identification, scoping, and application preparation. Financial incentives will reduce the first-time costs and the balance of the efficiency project costs can be covered via PSE&G’s on-bill repayment offer.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 20: C&I Custom Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$598,237	\$2,035,576	\$3,070,571	\$3,724,979	\$4,321,159	\$4,917,662	\$1,779,540
Sales, Call Centers, Marketing and Website	\$0	\$94,422	\$162,615	\$201,083	\$236,054	\$271,025	\$69,942
Training	\$0	\$18,884	\$32,523	\$40,217	\$47,211	\$54,205	\$13,988
Rebates, Grants, and Other Direct Incentives	\$0	\$22,764,223	\$35,634,192	\$43,519,838	\$50,959,126	\$58,398,415	\$8,927,146
Rebate Processing, Inspections, and Other Quality Control	\$168,614	\$489,522	\$660,563	\$749,575	\$831,676	\$914,078	\$325,956
Evaluation and Related Research	\$41,984	\$357,995	\$561,406	\$669,856	\$768,875	\$868,003	\$256,618
Total	\$808,834	\$25,760,622	\$40,121,870	\$48,905,547	\$57,164,101	\$65,423,388	\$11,373,191

3.2.3. C&I Small Non-Residential Efficiency

The C&I Small Non-Residential Efficiency Subprogram is focused on installation of efficiency measures in small non-residential customers that typically lack the time, knowledge, or financial resources necessary to pursue energy efficiency. The subprogram is designed to provide non-residential owners with easy investment decisions for the direct installation of energy efficiency projects. The subprogram will pay the up-front cost to install the recommended energy efficiency measures with the participating customer repaying 30% either in a lump sum or interest-free on their PSE&G bill. The reduced overall costs and on-bill repayments mitigate up-front cost barriers and assist participants in making decisions, which otherwise would be time-consuming and difficult to justify. The C&I Small Non-Residential Efficiency Subprogram plays an important role in the marketplace because private providers of energy efficiency services typically do not target small non-residential customers due to the lower overall profit for their services when compared with larger non-residential customers. For these reasons, small non-residential customers are often hard to reach, and the subprogram fills an important gap by delivering efficiency services to these customers directly.

The audit will be provided to customers free of charge and will offer recommendations on energy efficiency projects to reduce energy usage and costs. The aggregation of this data will allow PSE&G to better understand its customers and can be used to inform other subprograms and future subprogram designs, such as the C&I Prescriptive Subprogram, the C&I New Construction Subprogram, and the Business Energy Reports Pilot Subprogram.

The subprogram will also focus on the smallest customers within the small business segment. PSE&G anticipates portions of the subprogram to be directed at restaurants, small offices, and other small businesses that often are left behind in less-comprehensive energy efficiency subprograms. Through a number of delivery mechanisms, PSE&G will assure that all business types are able to participate in this subprogram.

Market Segment/Efficiency Targeted

PSE&G expects small non-residential customers with an average 12-month individual facility annual electricity peak demand usage of less than 200 kW to be the eligibility threshold; however, this figure may be adjusted by PSE&G up to 500 kW, to ensure the subprogram is properly addressing the market in PSE&G's service territory. The subprogram will also be structured to focus on and secure participants especially in the lower-usage tiers.

The subprogram seeks to address high-return, relatively low-cost measures (e.g. LED lighting retrofits), but customers may choose to pursue further retrofits that are eligible for additional incentives. Example end-use categories covered by the subprogram include lighting, HVAC, controls, refrigeration, motors, low-flow devices, pipe wrap and domestic hot water equipment.

Delivery Method

The C&I Small Non-Residential Efficiency Subprogram interfaces with customers via either direct solicitation or upon customer request. All participants receive a site visit, including a free on-site audit to identify energy efficiency retrofit opportunities. Following the audit, participants are provided with a report assessing the site and recommending investments that could further improve the energy efficiency of the facility.

Based on the results of the audit report, the subprogram will offer to initially pay 100% of the project cost to install the recommended energy efficiency measures with the participating customer (or landlord) repaying 30% either in a lump sum or interest free on their PSE&G bill. PSE&G may adjust the incentive structure to encourage deeper retrofits, as well as to encourage participation by micro-customers. PSE&G will provide for the installation of all work and assure it is completed on time and to specifications. This approach frees up the participant, which, as a small non-residential customer, may not have the time or resources to focus on implementation issues.

The subprogram budget will be split into tranches based upon customer consumption size, or other designated factors, to focus contractors to complete work on specific tranches. This will assure that non-residential customers, even those that are the smallest and often overlooked, receive ample focus. Contractors will be limited to specific tranches to assure minimum volumes and scale can be reached while also providing for adequate cost effectiveness. PSE&G may also elect to provide additional contractor-focused bonus incentives to further encourage contractor emphasis on specific sectors. The tranche divisions will be implemented to combat contractors' inherent focus on larger customer facilities. The subprogram may also be marketed and structured into customer types. For example, one element of the subprogram structure may focus on restaurants, while another is focused on convenience stores and bodegas.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of expected number of small businesses participating in the subprogram. Savings estimates are based on projected participation during each year of the forecast period.

Table 21: C&I Small Non-Residential Efficiency Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	4,486	7,023	8,577	10,043	11,509	1,759
Electric Savings (MWh)	0	40,219	62,958	76,890	90,033	103,177	15,772
Electric Savings (MW)	0	4.0	6.3	7.7	9.0	10.3	1.6
Natural Gas Savings (Dth)	0	15,892	24,876	30,381	35,574	40,768	6,232

Relationship to Existing Programs

The C&I Small Non-Residential Efficiency Subprogram is designed to address the needs of all small non-residential customers. This subprogram has similar design features to PSE&G’s current Direct Install Program offering, as well as to the NJCEP Direct Install program offering (of which some utilities in the state provide financing for customers). However, as compared to the previous PSE&G and NJCEP offerings, this subprogram will greatly expand the diversity of participants, and will increase the focus on the smallest of non-residential customers, which previously had limited participation. While many of the incentive levels may be similar to the existing programs, the C&I Small Non-Residential Efficiency Subprogram's focus on underserved customers differentiates this offer from that provided by the NJCEP. This subprogram will also use PSE&G’s brand, customer relationship base, resources and the above focus and incentive methods, all of which differentiate it from the Direct Install Program. Finally, the relationship of this subprogram with the balance of subprograms provided throughout this program offer a synergistic approach to customers that is unavailable elsewhere.

Proposed Incentives

One of the key benefits of the subprogram is that it is a simple, turnkey solution for small non-residential customers that requires no up-front customer investment. The initial site visit, energy audit, and installation of recommended efficiency measures are provided at no initial cost to participants. This up-front incentive value will be evaluated periodically to assure that the subprogram incentive is adequate and provides the correct signal to the marketplace regarding energy efficiency. Participants will reimburse PSE&G 30% of total project cost interest-free through on-bill repayments, thereby eliminating the up-front cost burden of installing energy efficiency measures. PSE&G may adjust the incentive structure to encourage deeper retrofits, as well as to encourage participation by micro-customers.

Marketing Approach

The C&I Small Non-Residential Efficiency Subprogram will be marketed to customers through a combination of direct outreach by subprogram staff and a third-party implementation contractor, web-based engagement and customer information analytics, digital advertising, and hard-copy materials to promote awareness among trade allies and customers. Direct outreach from a third-party implementation contractor may include unsolicited visits to customer premises to distribute hard-copy subprogram materials, inform customers about the subprogram directly, and solicit participation. This strategy is useful for enrolling small non-residential customers that may be interested in participating, but have not heard of the subprogram and do not have resources to prioritize reaching out to PSE&G.

PSE&G will evaluate the potential to utilize Business Energy Reports or customer information analytics to identify and target customers best suited for participation in the subprogram.

Contractor Role

PSE&G will administer and manage the subprogram with the support of third-party implementation contractor(s). The third-party implementation contractor will have responsibility for the majority of

delivery tasks and customer outreach on behalf of PSE&G. It is anticipated that this third-party implementation contractor will work closely with PSE&G to optimize the subprogram's management and strategic direction, including, but not limited to:

- Initial participant recruitment, audit, and equipment installation
- Subprogram data tracking
- Direct customer outreach/subprogram delivery strategy
- Development of measure mix
- Marketing
- Promotion of emerging technology
- Customer satisfaction

The third-party implementation contractor will take on the responsibility of managing the subprogram, directing the qualification of contractors, and will work to assure that ample contractors are available to complete all work derived from the subprogram.

A group of selected vendors will perform the audits and installations, working with PSE&G and the third-party implementation contractor's oversight to undertake all construction and installation work identified in the audit process.

Market Barriers

The primary market barriers that impact this subprogram include:

- **Customer Awareness and Engagement:** Small business customers typically have limited resources and time to consider or prioritize energy efficiency, and may have efficiency needs not well aligned with traditional commercial demand side management (DSM) subprograms targeted at larger customers. This subprogram is by design intended to confront that market barrier by providing turnkey, direct installation of efficiency measures tailored to the small business segment at no cost to the customer while identifying additional efficiency opportunities directly on-site, and through directly soliciting small business customers for participation. This personalized approach builds trust and achieves results while increasing the likelihood of further participation referrals.
- **Initial Cost of Efficiency Investments:** Recommended small business efficiency projects that go beyond direct-install measures will require more participant investment and commitment. This barrier will be addressed through offering incentives and on-bill repayment, as well as through operating a subprogram that is flexible and easy for small business customers to utilize.
- **Landlord/Tenant Arrangements:** Split incentives between landlord/tenants with respect to who pays for energy use versus who owns the energy-using equipment challenge investment decisions. Subprogram will be marketed to both landlords and tenants to assure that those exposed to energy costs are able to participate in the subprogram.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G's established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 22: C&I Small Non-Residential Efficiency Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$313,748	\$1,010,522	\$1,479,009	\$1,765,152	\$2,026,400	\$2,287,935	\$882,830
Sales, Call Centers, Marketing and Website	\$0	\$40,599	\$69,921	\$86,461	\$101,498	\$116,535	\$30,073
Training	\$0	\$8,120	\$13,984	\$17,292	\$20,300	\$23,307	\$6,015
Rebates, Grants, and Other Direct Incentives	\$0	\$34,287,851	\$53,672,813	\$65,550,304	\$76,755,484	\$87,960,665	\$13,446,216
Rebate Processing, Inspections, and Other Quality Control	\$246,144	\$626,071	\$771,700	\$824,604	\$874,974	\$925,926	\$412,581
Evaluation and Related Research	\$32,221	\$320,711	\$510,017	\$611,975	\$704,991	\$798,092	\$230,992
Total	\$592,113	\$36,293,875	\$56,517,445	\$68,855,787	\$80,483,648	\$92,112,460	\$15,008,708

3.2.4. C&I New Construction

The C&I New Construction Subprogram will advance efficient building design and equipment installation that captures long-term energy savings opportunities that are available only during the design and construction of new buildings (or during periods of major additions and renovations). Energy savings opportunities that exist during the design and construction phase are uniquely valuable to capture because the marginal cost of these savings opportunities is at its lowest during design/construction, and some savings opportunities may not be reasonably achievable after construction is complete.

Through comprehensive efforts to influence design, engineering, and construction practices, the subprogram will incentivize stakeholders including architects, engineers, contractors, prospective building owners, and developers such that energy saving opportunities are achieved through better design, equipment specification, and construction practices.

The C&I New Construction Subprogram will have multiple participation pathways to procure energy savings based on the interest of the developer/builder and the timing of PSE&G involvement. These pathways may include:

- **System/Equipment Pathway:** Incentives are provided for high-efficiency equipment. Use of this approach is available at nearly any stage of development. Incentives may also be available in this pathway for non-standard efficient equipment.
- **High Performance/Whole Building Pathway:** Subprogram staff are involved early in the design/construction phase so that developers can maximize available energy savings at minimal cost. Incentives are based on modeled savings relative to existing building code. To encourage participation, some projects may be eligible for an early design incentive.
- **Net Zero Buildings Pathway:** Net Zero buildings are highly efficient buildings that save at least 30% to 40% versus code baseline, and generate renewable energy on-site to achieve ‘net-zero’ energy consumption. PSE&G will work with customers early in the design phase to maximize energy savings and available incentives for developers pursuing a net-zero design.

Market Segment/Efficiency Targeted

All new commercial construction and major renovation² projects located within PSE&G's electric and/or natural gas service territory will be eligible to participate. Commercial buildings (e.g. office, retail, light industrial) are expected to be among the most common building-types influenced; however, all new construction and major renovation projects that produce energy savings above code will be encouraged to participate. Multi-family high-rise buildings above three stories are also eligible to participate.

This subprogram will capture energy efficiency opportunities through comprehensive efforts to influence building design and construction practices. The subprogram will work with design professionals and construction contractors to incentivize prospective building owners and developers to construct high-performance buildings that provide improved energy efficiency, systems performance, and comfort. Energy savings targets will be achieved by stimulating incremental improvements of efficiency in lighting, HVAC, and other building systems. The subprogram seeks to capture synergistic energy savings by incentivizing the design and construction of buildings as integrated systems.

Delivery Method

The C&I New Construction Subprogram will be administered by PSE&G and delivered by a third-party implementation contractor. The C&I New Construction Subprogram will benefit from developing strong relationships with the local design/build community, as participation pathways such as the high performance/whole building approach require early involvement of technical subprogram staff based upon the limited development timeline of many of these projects. To support the marketplace and develop a project pipeline, the following are potential delivery strategies that may be utilized by PSE&G and the third-party implementation contractor:

- **Design/Build Sector Outreach:** To develop awareness of the C&I New Construction Subprogram in the design/build and developer community, subprogram staff and their representatives will reach out to known firms developing projects in PSE&G's service territory. In addition, subprogram staff will work to build awareness with important technical and trade groups represented in New Jersey, which will include participation at local conferences and events.
- **Targeted Customer Outreach:** Subprogram staff and their representatives will make outreach directly to PSE&G customers that are planning or currently developing large new construction or major renovation projects to inform them of available incentives and build awareness early in the design phase.
- **Technical Customer Assistance:** An important element of the C&I New Construction subprogram is the availability of technical support from qualified subprogram staff. Subprogram staff and their representatives will be available to assist customers and developers with early-design support including whole building energy modeling, LEED certification level planning, and above-code measures and equipment procurement.

² Exact definition of major renovation is established by the enacted building code in New Jersey at time of the code's effective date. Major renovation is defined by the U.S. Green Building Council based on LEEDv4 BD+C (except Homes and Multifamily Midrise), ID+C, and O+M as: "extensive alteration work in addition to work on the exterior shell of the building and/or primary structural components and/or the core and peripheral mechanical, electrical, plumbing, and service systems and/or site work. Typically, the extent and nature of the work is such that the primary function space cannot be used for its intended purpose while the work is in progress and where a new certificate of occupancy is required before the work area can be reoccupied." (USGBC 2018)

- **Extension of Service Requests:** PSE&G gets informed of construction projects when a developer or customer requests information on the cost and process for extending gas or electric service to a potential site. This information will be harnessed to support the subprogram.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of expected number of new construction facilities participating in the subprogram. Savings estimates are based on projected participation during each year of the forecast period.

Table 23: C&I New Construction Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	16	25	31	36	41	6
Electric Savings (MWh)	0	6,350	9,941	12,141	14,216	16,291	2,490
Electric Savings (MW)	0	0.6	1.0	1.2	1.4	1.6	0.2
Natural Gas Savings (Dth)	0	31,783	49,752	60,762	71,149	81,536	12,464

Relationship to Existing Programs

None of the other in-State utilities currently offer any incentives for commercial new construction projects. The NJCEP currently offers incentives for new construction efficiency projects under their C&I New Construction and Retrofit Programs (SmartStart), as well as through a Pay for Performance offering. As compared with current NJCEP incentives, the proposed subprogram is designed to build deeper relationships with the design/build community and offer more flexibility through multiple paths to incentives. When a customer applies through the high-performance pathway, PSE&G will work with design/build contractors and provide incentives to encourage above-code design, and may offer early design incentives to encourage incorporation of energy efficiency early in the design process, similar to the NJCEP Pay for Performance program.

This proposed subprogram also offers a systems/equipment pathway, whereby new construction and major renovation projects can receive incentives for efficient equipment. It also allows less complex projects and projects that do not consider efficiency until later in design/build phases to receive an incentive. For customers seeking to achieve a net zero designation, PSE&G is also proposing a net zero pathway where incentives and support will be available to customers seeking to achieve the highest levels of building performance. PSE&G will build on its brand, existing resources, line extension inquiries, and customer relationships to drive this subprogram and increase the depth of participation compared to existing NJCEP programs.

Proposed Incentives

The incentive design for the C&I New Construction Subprogram will vary depending on the participation pathway. For the Systems/Equipment pathway, prescriptive incentives will be offered. For the High Performance/Whole Building and Net Zero Building Pathway, incentives are based on modeled savings relative to existing building code. Incentive amounts will increase as the buildings become more efficient and incorporate more aggressive energy saving measures and designs. Incentives will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings across offered measures, and varying participation pathways.

Marketing Approach

The C&I New Construction Subprogram will engage with the design/build community and customers at multiple levels, including through a combination of direct outreach by subprogram staff and representatives, web-based engagement and information, digital advertising, and hard-copy materials to promote awareness among builders, developers, architects and engineers. Subprogram staff and representatives will reach out directly to known commercial customers building or developing new construction projects. The marketing plan will include various types of media, such as direct mail, email, print, and digital. Engagement with trade associations (e.g. builders/construction contractors, architects/designers, developers, professional associations, etc.) will all be important channels for PSE&G to present information about the subprogram, raise awareness, and encourage participation. Builders approaching PSE&G for line and main extension information will also be exposed to the subprogram.

Contractor Role

PSE&G will administer and manage the overall subprogram with the support of third-party implementation contractor(s). The third-party implementation contractor will have responsibility for the majority of delivery tasks and customer outreach on behalf of PSE&G. It is anticipated that this third-party implementation contractor will work closely with PSE&G to optimize the subprogram's strategic direction, including, but not limited to, conducting the following tasks:

- Participant outreach/subprogram delivery strategy
- Whole-building energy modeling
- System/efficiency measures and efficiency levels
- Promotion of emerging technology
- Incentive levels and strategies
- Customer and design/build community engagement and enrollment in the subprogram
- Marketing
- Participant satisfaction
- Equipment installation and subprogram data tracking
- Rebate processing

To select a qualified third-party implementation contractor, PSE&G will prioritize criteria such as:

- Experience delivering similar subprograms or initiatives
- Third-party staff qualification for delivering new construction subprograms
- Cost

Market Barriers

The primary market barriers that impact this subprogram include:

- **Initial Cost of Efficient Equipment:** Builders tend to be primarily concerned with first cost considerations as they must build at a competitive price. As such, they may be reluctant to consider higher cost equipment or practices that would require a price premium that may not be fully valued by the marketplace. To address this barrier, incentives are provided to the builder/contractor to reduce initial cost.
- **Risk Aversion:** The building industry can be slow to adopt new technologies or solutions. Designers prefer to install systems and build buildings using familiar technologies and liability issues can be a concern. To address this barrier, this subprogram is designed to engage with the design/build community to encourage changes in the culture of how builders view more efficient technologies and reduce their cost.

- **Limited Technical Information:** Designers, builders and buyers have limited information about advanced building methods and their associated cost and benefits, especially those that extend beyond energy savings (e.g. comfort, durability, health, productivity and maintenance). To address this barrier, PSE&G will provide training and education seminars and develop relationships within the design/build community.
- **Decision-Making Window:** Integration of above-code building performance modifications is most cost-effective in the design phase, and building design modifications (outside of efficient equipment) may become impractical beyond this stage. To address this barrier, PSE&G may provide an early design incentive within the high-performance/whole-building pathway to encourage early integration of energy efficiency. Where energy efficiency is not considered until later in the design/build phase, the subprogram offers a system/equipment pathway to encourage installation of efficient equipment.
- **Inadequate Operational Procedures:** Building systems are usually not tested to ensure that they perform as designed and owners fail to implement an ongoing maintenance and quality assurance procedure to properly operate the equipment. To address this barrier, PSE&G will ensure ongoing quality assurance and customer satisfaction through site visits and identification of continuous improvement opportunities for subprogram participating builders.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. Known market barriers increase the challenge of successfully procuring savings from new construction projects, and underscores the value of building long-standing relationships with the design/build community to develop awareness of the subprogram and a broader culture of energy efficiency. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 24: C&I New Construction Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$225,697	\$739,875	\$1,093,755	\$1,312,547	\$1,512,150	\$1,711,932	\$518,678
Sales, Call Centers, Marketing and Website	\$0	\$31,230	\$53,785	\$66,509	\$78,076	\$89,642	\$23,134
Training	\$0	\$6,246	\$10,757	\$13,302	\$15,615	\$17,928	\$4,627
Rebates, Grants, and Other Direct Incentives	\$0	\$1,651,733	\$2,585,556	\$3,157,724	\$3,697,506	\$4,237,288	\$647,738
Rebate Processing, Inspections, and Other Quality Control	\$99,036	\$265,463	\$339,997	\$373,083	\$403,993	\$435,115	\$175,692
Evaluation and Related Research	\$22,596	\$116,540	\$171,031	\$198,382	\$223,476	\$248,629	\$81,718
Total	\$347,329	\$2,811,088	\$4,254,881	\$5,121,547	\$5,930,816	\$6,740,536	\$1,451,586

3.2.5. C&I Energy Management

The C&I Energy Management Subprogram includes two major subprogram initiatives: Retro-commissioning and Strategic Energy Management. Both subprograms are designed to optimize energy consumption in existing C&I buildings through management of major energy using systems, user behavior, and low-cost, easy-to-install efficiency measures at the time of an initial site visit or a follow-up. In many cases, revised building management processes can produce meaningful energy savings without capital investment in new equipment or controls; however, recommended investment areas may also be identified through this subprogram. Details of the subprogram initiatives are as follows:

- **Retro-commissioning (RCx):** Also known as ‘existing building commissioning’, retro-commissioning focuses on identifying operations and maintenance improvements in existing commercial buildings to ensure optimal performance of building systems and system interactions. Retro-commissioning applies the same systematic process to buildings as is applied during initial building commissioning, and may be performed every three to five years to ensure optimal building performance. Retro-commissioning is typically among the most cost-effective energy savings strategies applied in commercial buildings and may produce other non-energy benefits, including extending the life of existing equipment and improving thermal comfort and indoor air quality.
- **Strategic Energy Management (SEM):** This subprogram is primarily geared toward industrial and manufacturing buildings and is a holistic approach to managing energy usage focused on management of existing systems and processes (including behavior), as well as tracking and benchmarking performance to identify and evaluate energy optimization efforts. SEM is a long-term effort typically led by an external instructor focused on developing and executing an energy management strategy via workshops, webinars, and group/individual training sessions with cohorts of facility managers. SEM applies continuous improvement principles to energy management to encourage and enable a culture of energy efficiency within an organization to develop measurable long-term savings.

Market Segment/Efficiency Targeted

All commercial, industrial, and other non-residential customers located within PSE&G’s electric and/or natural gas territory are eligible to participate in this subprogram.

RCx targets the existing commercial building stock, and is particularly relevant for medium to large non-industrial building types including office, lodging, education, healthcare, laboratory, warehouse/storage, supermarkets, and more. The primary target market for the RCx subprogram will be C&I customers utilizing a building management system.

SEM targets existing large and very large commercial and industrial customers and building types, and is particularly relevant to large energy users engaged in manufacturing processes. For SEM to be successful, the subprogram will invest significant resources upfront to focus on recruiting and pre-qualifying customers to participate in the subprogram. SEM's objective is to change a company’s focus and engagement with energy management over the long-term, in a continuous manner. A core goal is to recruit customers who demonstrate genuine and committed interest in working with PSE&G over a long period of time. These “energy champions” will ideally include multiple staff at each company, placed in different departments and various levels of seniority and decision making in the company.

Eligible measures will vary depending on the business segment served, but are likely to include at least the following:

- Optimizing chiller and boiler operations to better match building load conditions
- Reducing ventilation in over-ventilated areas
- Fixing ventilation dampers that are open when they should be closed, or vice versa
- System rebalancing and decreasing supply air pressure set-point
- Reducing supply air temperature and fan speed in air handling units
- Aligning zone temperature set-points to match the building's occupancy patterns
- Operating equipment only when building is occupied or when equipment is needed
- Lighting controls including occupancy/vacancy controls, photo-sensors, and timer controls

Delivery Method

The RCx and SEM Programs will be delivered by a third-party implementation contractor(s). Both subprograms require customer and trade ally involvement in the form of on-site access to existing equipment, management protocols, and energy management/facilities staff.

To support the marketplace and develop a project pipeline, the following delivery strategies, among others, will be pursued:

- **Targeted Customer Outreach:** Subprogram staff and their representatives will make outreach efforts directly to PSE&G customers that own or operate facilities identified by internal screening activity as potential participants. Factors considered in initial screening may include building age/size/type and historical energy use patterns.
- **Technical Customer Assistance:** An important element of the C&I Energy Management Subprogram is the availability of technical support, guidance, training and orientation from PSE&G's third-party implementation contractor(s). Subprogram staff will be available to support customers and determine if they may qualify for participation for either RCx or SEM. Depending on the customer's goals and likely energy savings potential, significant customer engagement may be undertaken for the SEM subprogram.
- **On-Site Implementation:** Both the RCx and SEM subprograms require subprogram staff to visit customer premises to identify energy savings opportunities (including through the logging and analysis of energy consumption data) and develop strategies and solutions for acquiring these savings.

The RCx subprogram will be delivered through a network of approved retro-commissioning service providers (RSPs) operating in PSE&G's service territory that have been trained in subprogram protocols and participation processes. Once an application has been accepted, one of the expert engineering RSPs conducts a detailed energy assessment to investigate and identify low-cost energy-saving operational improvements through a systematic evaluation of energy using systems. RCx involves a series of steps to qualify appropriate customers for participation and to ensure the subprogram will produce meaningful energy savings. These steps may include:

- **Initial Customer Screening:** Customer-submitted applications are reviewed to assess the likelihood of energy savings. Customers may also be identified through a data analytics engine using PSE&G data and through data acquired via the Business Energy Reports Pilot or other methods.
- **Project Scoping:** The building owner or primary representative will be contacted by PSE&G subprogram staff or their representatives to schedule a time for an on-site visit. This visit will entail inspecting the building and major energy using equipment, reviewing past energy consumption, and identifying preliminary opportunities for energy-use reduction.

- **Agreement and Implementation:** A rigorous evaluation of building systems is conducted and an incentive agreement is finalized with the customer regarding project measures, implementation strategy, and incentives.
- **Follow-up:** Additional training may be provided to building owners/operators after completion of an RCx project to ensure savings persistence.

Example SEM implementation efforts also include the following:

- **Onsite Energy Management Assessment:** Identify current strengths and weaknesses in existing energy management practices.
- **Metering Training:** Instruction on the use of metering equipment to identify energy saving opportunities and an introduction to energy modelling.
- **Coach-led Training Sessions:** Targeted at any combination of building operations/facilities staff, management personnel, and other company staff, training sessions are used to build awareness and detect inefficient operating practices.
- **Benchmarking:** Energy consumption benchmarking is a key aspect of SEM, and both baseline and ongoing energy use monitoring strategies are employed to encourage data-driven energy management and short-term feedback.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of expected number of entities participating in the subprogram. Savings estimates are based on projected participation during each year of the forecast period.

Table 25: C&I Energy Management Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	22	34	41	48	55	8
Electric Savings (MWh)	0	3,175	4,970	6,070	7,108	8,146	1,245
Electric Savings (MW)	0	0.3	0.5	0.6	0.7	0.8	0.1
Natural Gas Savings (Dth)	0	5,959	9,329	11,393	13,340	15,288	2,337

Relationship to Existing Programs

The Energy Management Subprogram is designed to support optimal management of existing equipment and processes. During the implementation of both processes, additional retrofit or equipment replacement opportunities may be identified for the customer that could drive participation for other commercial subprograms such as the C&I Prescriptive Subprogram.

The NJCEP does not currently offer an RCx initiative; however, improvements identified as part of an RCx process can qualify as measures, and could qualify for an incentive under the NJCEP’s Pay for Performance Program. RCx may also be an energy conservation measure as part of an Energy Savings Improvement Program (ESIP).

Proposed Incentives

Incentives will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure the incentive design is optimally driving energy savings and participation. The incentive design structure and payment per first year kWh and therm saved may be different between the RCx and SEM subprogram participants. Additionally, incentive levels may vary depending on the end-

use where the savings are achieved, and the overall comprehensiveness and estimated longevity of the energy savings. These incentives are subject to change based on final subprogram design and the go-to-market implementation plan.

Marketing Approach

The C&I Energy Management Subprogram will engage with customers at multiple levels, including through a combination of direct outreach by subprogram staff and representatives, web-based engagement and information, digital advertising, and hard-copy materials to promote awareness among trade allies and customers. Engagement with building and facilities managers for large commercial and industrial customers will all be an important pathway for PSE&G to present information about the subprogram, raise awareness, and encourage participation. PSE&G's brand and its relationships with these customer types will drive participation. The subprogram will leverage PSE&G's existing relationships with customers through subprogram staff and account management team.

Education and promotional materials will be developed for building owners and operators to reinforce the benefits of energy efficiency improvements and improved systems performance, including educational brochures, customer and market provider seminars, subprogram promotional material, and website content.

The marketing strategy will identify key customer segments and vertical markets for targeting, and will prepare specific outreach activities for these customers. The strategy will be designed to inform customers of the availability and benefits of the subprogram and how they can participate in the RCx or SEM subprograms.

The marketing and communications plan will include:

- Creating and updating Subprogram Fact Sheets, Case Studies
- Hosting an annual Subprogram product knowledge workshop
- Participating in local conferences and industry events to promote the RCx and SEM programs

Contractor Role

PSE&G will administer and manage the overall subprogram with the support of third-party implementation contractor(s). The third-party implementation contractor will have responsibility for the majority of delivery tasks and customer outreach on behalf of PSE&G. It is anticipated that this third-party implementation contractor will work closely with PSE&G to optimize the subprogram's strategic direction including, but not limited to, conducting the following tasks:

- Customer outreach/subprogram delivery strategy
- Select, train and manage network of RCx trade ally contractors
- Energy modeling and equipment metering
- Leading SEM coaching and engagement sessions
- Incentive levels and strategies
- Marketing
- Customer satisfaction
- Subprogram data tracking
- Rebate processing

PSE&G will select a qualified third-party implementation contractor (or contractors) based on, but not limited to, the following factors:

- Technical Approach
- Organizational and Management Capability
- Experience
- Cost

Market Barriers

The primary market barriers that impact this subprogram include:

Businesses often have competing priorities that make it difficult to focus on energy efficiency. This is especially true for behavioral and process changes that are not tangible like investments in new equipment. In addition, many business owners and operators are reluctant to change, which restricts the ability to recognize opportunities to achieve energy efficient practices. Customers may also be unwilling or unable to devote personnel time to energy efficiency when it could interrupt the processes of the business.

- **Customer Awareness and Engagement:** Commercial and large commercial customers have valuable and sensitive business operations and may be reluctant to alter behavioral practices or implement new energy management strategies. To address this barrier, PSE&G intends to actively pursue effective communication and marketing strategies that address the key concerns of typical subprogram participants.
- **Limited Technical Information:** Business owners may possess limited capacity to identify buildings that are good candidates for retrocommissioning or strategic energy management initiatives. To address this barrier, PSE&G will provide technical assistance and targeted customer outreach to directly identify, support, and communicate with likely participants. PSE&G will leverage its existing communications channels, data, and brand to most effectively identify and support potential participants.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 26: C&I Energy Management Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$133,853	\$341,539	\$424,704	\$457,172	\$487,883	\$518,899	\$455,414
Sales, Call Centers, Marketing and Website	\$0	\$1,270	\$2,188	\$2,706	\$3,176	\$3,647	\$941
Training	\$0	\$635	\$1,094	\$1,353	\$1,588	\$1,823	\$471
Rebates, Grants, and Other Direct Incentives	\$0	\$914,704	\$1,431,840	\$1,748,698	\$2,047,621	\$2,346,543	\$358,707
Rebate Processing, Inspections, and Other Quality Control	\$94,128	\$227,634	\$269,777	\$280,062	\$290,352	\$300,883	\$149,341

Metric	2019	2020	2021	2022	2023	2024	2025+
Evaluation and Related Research	\$40,379	\$104,264	\$126,532	\$133,039	\$139,367	\$145,799	\$68,997
Total	\$268,361	\$1,590,046	\$2,256,134	\$2,623,030	\$2,969,987	\$3,317,594	\$1,033,870

3.2.6. C&I Engineered Solutions

The C&I Engineered Solutions Subprogram will provide tailored energy efficiency assistance to public service entities, such as municipalities, universities, schools, hospitals (MUSH), non-profit entities and multi-family facilities. The subprogram will provide expert-guided service throughout delivery to assist customers in identifying and undertaking large energy efficiency projects on-site, while requiring no up-front funding from the customer.

Through this subprogram, customers will be provided with an in-depth audit of their facilities, as well as a detailed assessment and recommendation of energy efficiency measures that could be economically installed. Customer incentives are determined on a project-by-project basis, and participants may select their preferred installation providers. In addition to the calculated project-by-project incentive, participants will have the option to pay back the non-incentive portion of the project costs through interest free on-bill repayments over a period of five years (and ten years for HMFA qualified multi-family facilities). Through this subprogram design, participants in market segments that have typically been underserved are able to achieve greater energy savings.

The subprogram also includes a combined heat and power (CHP) component, which will provide incentives to customers with adequate thermal and electric loads to benefit from CHP technology. The CHP component of this subprogram will also assign incentives on a project-by-project basis, with the balance of costs eligible for on-bill repayments over a ten-year period.

Market Segment/Efficiency Targeted

C&I public service (MUSH), non-profit, and multi-family entities located within PSE&G’s electric and/or natural gas service territory are eligible to participate in this subprogram. The subprogram will provide energy audits and incentives to entities that directly serve the public, but often have difficulty investing in energy efficiency. The measures included in this subprogram may include HVAC, building envelope, motors, lighting, controls, energy storage, and other energy consuming equipment. In addition, the CHP segment will address customers with required heating and cooling loads to balance a CHP application.

Delivery Method

PSE&G will retain qualified vendors to undertake the audit and engineering services required to deliver this subprogram. Participants will contract with their preferred installation providers to install the measures included in projects.

The subprogram delivery will typically occur in four steps:

- **Audit:** PSE&G shall assess the required level of American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) audit to perform, based on the complexity of the facility and the potential energy efficiency measures; an investment grade audit may not be required for all facilities. The selected PSE&G vendor will then perform the appropriate level energy audit and prepare a customized audit report that includes a list of recommended energy efficiency

upgrades. PSE&G and its representatives will then review the recommended energy efficiency upgrades with the customer to determine whether to proceed with a project.

- **Engineering Analysis of Project:** Based on the audit results, an engineering analysis may be required. PSE&G will conduct a screening of the payback and project cost effectiveness and select a set of approved energy efficiency measures for the project. The subprogram engineering vendor will prepare bid-ready documents and work with the participant to prepare a project scope of work, which will be used by the customer to obtain installation cost estimates for the project.
- **Scope of Work/Contractor Bids:** The participant will issue a scope of work to obtain bids to complete the identified project. PSE&G, the subprogram engineering vendor and the participant will review and evaluate the bids/costs received, with the participant making the final decision on bid selection. Following bid selection, the proposed project is again screened for cost effectiveness and the participant is presented the funding commitment proposal from PSE&G. Once (i) the participant and PSE&G have executed the funding commitment and (ii) the installation provider and the participant have executed applicable agreements and contracts, the first progress payment equal to approximately 30% of the installation cost can be issued to the customer to initiate the project (Stage 1 Progress Payment).
- **Measures Installation and Inspections:** PSE&G and the energy engineering vendor, acting as construction administration agent, will monitor project progress. Upon verification of satisfactory project progress, a series of Stage 2 progress payments up to 50% of total project commitment can be issued. When the project is 100% complete, a final project true-up, and final inspection are undertaken. The final payment based on the results of project true-up is determined and issued only if the final inspection is successfully completed and approved. If the final costs are less than the estimated project commitment, the final payment will be adjusted down to reflect the actual costs. If the final costs are greater than the estimated project commitment, the final payment will not be adjusted and will be paid according to the executed agreements and contracts specifying original costs.

The progress payment schedule described above is designed to ensure that building owners can pay their contractors on a timely basis. Project progress and the project cash flow will be monitored and verified by PSE&G or a designated third-party implementation contractor.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of expected number of participating customers committed to the subprogram. Savings estimates are based on projected participation during each year of the forecast period.

Table 27: C&I Engineered Solutions Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	0	2	31	33	35	36	38
Electric Savings (MWh)	0	6,130	20,895	27,025	27,745	28,104	28,824
Electric Savings (MW)	0	0.9	4.1	5.0	5.2	5.3	5.5
Natural Gas Savings (Dth)	0	-15,702	71,177	55,475	64,023	68,298	76,846

Relationship to Existing Programs

The C&I Engineered Solution Subprogram extends PSE&G's existing Hospital and Healthcare subprogram and Multi-Family subprogram into new sectors including municipalities, universities, non-

profits, and schools, while continuing to offer services to the hospital, healthcare, and multi-family segments previously covered. This subprogram is different than the proposed C&I Custom Subprogram in that it provides an audit and funding for whole-building energy efficiency projects accompanied by a more hands-on approach from PSE&G and a different incentive structure. While the C&I Custom Subprogram is designed to incent energy efficiency for facilities with non-standard usage or unique equipment, the C&I Engineered Solutions Subprogram is designed to reach segments of the market that have difficulty accomplishing projects through the other pathways (including C&I Prescriptive and C&I Custom).

Neither NJCEP nor any other utility within the State is offering a similar program at this time. With respect to public school districts this subprogram may operate in a complementary manner with the existing NJ ESIP financing mechanism, while also providing an optional, alternative financing mechanism.

Proposed Incentives

The subprogram will provide a 100% incentive for an up-front ASHRAE Level I, II, or III audit. The specific audit level will be determined based upon the type, size, and age of the facility. In addition, PSE&G will buy-down the simple payback of the recommended energy efficiency project cost for approved measures by up to six years, with the resulting payback not less than three years. After the project incentive buy-down, the remaining project costs may be funded by the subprogram with participants repaying the balance of the project costs on-bill.

PSE&G will retain the option and flexibility to adjust the incentive offered to participants to enable a whole-building approach that will include additional ECMs in the project.

The full cost of the energy efficiency projects (including engineering, transaction costs and cost of construction) will be covered through a combination of subprogram incentive and customer repayments.

Marketing Approach

PSE&G will leverage existing relationships with municipalities, universities, schools, and other public agencies to promote the subprogram and will conduct further outreach through school, university, and municipal associations. In addition, PSE&G will generate a marketing campaign to hospitals, healthcare facilities, non-profits, and multi-family agencies to increase awareness of the subprogram. The subprogram will leverage PSE&G's existing relationships and communication channels with customers through subprogram staff and account management team.

Contractor Role

PSE&G will select qualified subprogram participating vendors to undertake all auditing and engineering work associated with the subprogram. Participants are permitted to select their preferred installation providers to complete work on-site. PSE&G may also utilize a third-party implementation contractor to assist in the outreach, marketing, and trade ally coordination, to support the large number of municipalities and schools within the PSE&G service territory. The installation provider will adhere to the project specifications set forth by PSE&G and the engineering vendor and approved by the participant. The third-party implementation contractor will also monitor participation to assess the effectiveness of outreach efforts, incentive levels, delivery methods, and vendor availability and provide suggestions for improvement.

To select a qualified third-party implementation contractor, PSE&G will prioritize criteria such as:

- Experience delivering similar subprograms or initiatives

- Resources and marketing strength
- Cost effectiveness

Market Barriers

The primary market barriers that impact this subprogram include:

- **Business/Operational Constraints:** MUSH facilities often have unique operational constraints that act as a barrier to efficiency projects from being implemented. This barrier will be addressed by ensuring that the subprogram operates cooperatively with participants, provides technical assistance, and offers timely incentives and financing support.
- **Customer Awareness and Engagement:** Eligible participants in the MUSH market may be unaware of the Engineered Solutions Subprogram because the segment has historically not been well served by traditional DSM programs. To address this barrier, this subprogram was designed specifically to support the MUSH segment. PSE&G will execute a targeted marketing and outreach strategy to ensure that relevant customers are aware of subprogram opportunities and consider energy efficiency in equipment investments and long-term planning. The subprogram will also prepare and distribute successful case studies of prior participants and their experiences and energy savings.
- **Cost Effectiveness:** Efficiency upgrades require an initial investment that is recovered by lower long-run operating costs and non-energy benefits. MUSH projects often carry longer payback periods than traditional DSM projects due to the unique needs of the segment (e.g. hospital & health buildings). To address this barrier, incentives and on-bill repayment is provided to the customer to reduce the initial cost, and PSE&G will communicate the non-energy benefits offered by many efficiency upgrades that are not well captured in traditional cost/benefit analysis.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice subprograms that identify and confront market barriers on an ongoing basis. To the extent possible, PSE&G will cross-promote subprograms to spread awareness of the range of efficiency opportunities proposed in this plan.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 28: C&I Engineered Solutions Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$1,437,153	\$4,998,489	\$6,402,310	\$6,820,860	\$7,072,281	\$7,417,434	\$2,869,703
Sales, Call Centers, Marketing and Website	\$21,699	\$251,014	\$346,740	\$370,672	\$384,587	\$404,069	\$102,409
Training	\$4,340	\$50,203	\$69,348	\$74,134	\$76,917	\$80,814	\$20,482
Rebates, Grants, and Other Direct Incentives	\$0	\$5,394,756	\$51,826,579	\$57,221,335	\$60,641,090	\$62,350,968	\$65,770,724

Metric	2019	2020	2021	2022	2023	2024	2025+
Rebate Processing, Inspections, and Other Quality Control	\$563,702	\$1,562,156	\$1,903,201	\$1,988,168	\$2,053,571	\$2,131,543	\$875,122
Evaluation and Related Research	\$114,915	\$752,827	\$1,008,656	\$1,071,386	\$1,110,237	\$1,162,610	\$344,367
Total	\$2,141,809	\$13,009,445	\$61,556,834	\$67,546,555	\$71,338,684	\$73,547,438	\$69,982,807

3.2.7. C&I Streetlight

The C&I Streetlight Subprogram is designed to upgrade all existing high-pressure sodium (HPS) cobra head streetlight luminaires to light emitting diode (LED) streetlight technologies of equivalent luminance in PSE&G electric service territory. This subprogram will apply to all streetlights owned by PSE&G with service provided under the Body Politic Lighting Service (BPL) tariff rate. Customers currently receiving HPS service can voluntarily upgrade to LED streetlights at no cost to them. Such customers will pay a new LED streetlight tariff rate, along with all other charges identified in the BPL tariff pursuant to a separate agreement between the Company and the customer. A copy of the separate agreement will be provided when available. Participants are expected to save roughly 5% as compared to their current streetlighting bill as well as reduce their electric usage.

This subprogram includes the recycling and proper disposal of the HPS and will address the recovery of stranded costs for the old streetlights being removed.

The C&I Streetlight Subprogram will also include “smart controllers,” which will allow PSE&G to monitor streetlight activity in real-time, and potentially provide additional functionality such as streetlight dimming in the future. The smart controllers will be installed on all new LED streetlights, as well as existing induction streetlights.

There will be an additional pilot component of the C&I Streetlight Subprogram that will encourage the adoption of a “smart cities” concept, which will be offered to a limited number of municipalities that wish to enhance their services beyond LED lighting upgrades. The subprogram also includes a Smart Cities Pilot for local governments that participate in the initial LED phase of the subprogram and meet the pilot’s participation criteria. A subprogram will be offered that utilizes PSE&G’s street light assets to provide additional “smart cities” services to the participating municipality. The Smart Cities services will be developed by a selected Smart Cities partner. The enhanced services could include the addition of environmental sensors for monitoring air quality, temperature and humidity, local parking and traffic sensors to direct drivers to less congested areas, LED lighting banners for more efficient lighting use, and a communications backbone with sensors mounted on utility poles that allows the local government to deploy Internet of Things (IoT) to support public safety and public Wi-Fi networks.

The Smart Cites pilot component of the subprogram will be in three phases.

- **Phase 1:** PSE&G will select a Smart Cites partner through a formal vetting process and provide the Smart Cities Partner with up to \$2 million to initiate development.
- **Phase 2:** Invitations to participate in a Smart Cities Pilot Grant will be sent to cities that are in PSE&G territory and that have completed the LED conversion. PSE&G will provide a grant to municipalities to perform a mandatory, upfront “Smart Cities Study”, which will inform the viability of the municipality for participation in the pilot component of the subprogram. This

grant will be in two tier categories. The tier 1 is for larger cities, which are capped at \$100,000. The tier 2 grants are for smaller cities which are capped at \$50,000. The total budget for this study grant is \$1.5 million.

- **Phase 3:** Cities will apply to work with PSE&G and the Smart Cities partner to develop and agree upon best use cases for that area. PSE&G will evaluate and award customers up to \$2 million with the best concepts and innovations for their Smart City. The total budget for implementation is \$10 million.

In order to qualify for the upfront grant to perform the initial pilot Study, the municipality must have upgraded their streetlights to LED under the C&I Streetlight Subprogram; i.e. participation in the subprogram is a prerequisite for pilot participation. After the initial municipal studies have been performed, municipalities will be required to submit an application package to PSE&G inclusive of the study results for consideration in the pilot. Municipalities will be required to detail their proposed concepts, best practices and innovations. PSE&G will evaluate the missions, challenges, and feasibility of the proposed solutions and will provide funding for applications that are best in class. The selected municipalities must work with PSE&G’s prequalified Smart Cities partner to design and build their Smart City.

Market Segment/Efficiency Targeted

The C&I Streetlight Subprogram will target municipalities and county and state instrumentalities that reside in PSE&G’s electric service territory and take BPL tariff service. The subprogram will provide for the replacement of existing HPS lighting with nearly 150,000 LED streetlights. The LED replacements will save between 22 watts and 270 watts per bulb, and on average save 112 watts per replacement. The subprogram will install approximately 260,000 smart controllers on the 150,000 LED streetlights to be replaced as well as an additional 110,000 Induction street lights. The Smart Cities pilot will also target municipalities and state agencies that have completed a LED conversion. The targeted efficiency for this pilot isn’t applicable to this segment.

Delivery Method

PSE&G will provide subprogram administration and will manage all activities required to support the delivery of services to customers, including oversight of subprogram operations.

The HPS cobra-head lights to be replaced by the LED lighting will be installed by PSE&G personnel, as is currently the case for street lighting services. All Smart Cities installations will be completed by the pre-qualified Smart Cities partner.

Projected Participants and Energy Savings

The table below summarizes the projected participation and savings associated with this subprogram. All values are annual incremental totals, and do not incorporate savings achieved in prior years. Participation estimates are calculated as the sum of forecasted measure-level participation units, and each unit of participation is based on a measure-specific savings unit of measure. Savings estimates are based on projected participation during each year of the forecast period.

Table 29: C&I Streetlight Participation and Savings

Metric	2019	2020	2021	2022	2023	2024	2025+
Participants	723	642	0	0	0	0	0
Electric Savings (MWh)	41,240	36,574	0	0	0	0	0
Electric Savings (MW)	0	0	0	0	0	0	0

Metric	2019	2020	2021	2022	2023	2024	2025+
Natural Gas Savings (Dth)	0	0	0	0	0	0	0

Relationship to Existing Programs

The subprogram inclusive of the Smart Cities Pilot has no relationship to any existing PSE&G subprogram or any NJCEP Program.

Proposed Incentives

The LED Street Lighting Subprogram will offer free replacement of cobra head streetlights with cost effective LED lighting. The Smart Cities Pilot Subprogram will provide an upfront grant of up to \$100,000 to eligible municipalities to perform an assessment to determine the viability of their participation in the Smart Cities Pilot. Municipalities selected to participate in the Smart Cities Pilot will receive an incentive of up to \$2 million towards the development of their Smart City.

Marketing Approach

PSE&G will market directly to municipalities and other customers that currently have PSE&G-owned HPS cobra head streetlights. Marketing will be accomplished through existing relationships PSE&G has with the municipality including PSE&G representatives currently focused on municipal relationship management. This may include direct calls, emails, and direct mail discussing the benefits of LED streetlights, Smart Cities and the C&I Streetlight Subprogram. Additional marketing efforts may also include presentations to municipal and county groups including the New Jersey League of Municipalities, the New Jersey Conference of Mayors, the Association of Counties, and others.

Contractor Role

Subprogram services for the provision of the smart controller technology, communication equipment and related infrastructure will be retained by PSE&G and hired through a competitive bid process. The selected contractor is expected to provide an all-in price to provide 150,000 smart controllers, the communication equipment used to link the controllers to one another and to a control center, as well as access to an online platform to monitor and dispatch the smart controllers as needed.

Selection of this contractor will be based on, but not limited to, the following:

- Ability to provide large volume of smart controllers
- Experience working on large smart controller projects
- Knowledge of smart controller infrastructure

In addition, PSE&G anticipates hiring a Smart Cities partner to develop the \$10 million Smart Cities Pilot. The role of the partner will be to work with the selected municipalities to help design and build their Smart City. All Smart Cities warranties, maintenance and hardware installations will reside with the Smart Cities partner. It is anticipated that the partner will provide up to 200 nodes per city, as well as communication equipment and related infrastructure.

Market Barriers

This subprogram has been designed to address certain market barriers that impede the installation of high efficiency LED lighting. Barriers include:

- Customer opposition to LED technology
- Lack of response due to limited time/resources

- Lack of a PSE&G LED street light subprogram

To address these barriers, PSE&G staff will work with customers to explain the benefits of improved LED technology. The Smart Cities Pilot segment of the subprogram was designed to address common market barriers which would preclude a municipality from adopting technological advances. Smart City barriers include:

- **Community Engagement:** The subprogram will engage and motivate communities to focus on opportunities in conjunction with PSE&G incentives. This will include assisting communities in identifying their priorities, coordinating with other municipal departments, and getting clarity on the role and value of the proposed project.
- **Funding:** PSE&G will provide financial grants.
- **Awareness of Benefits:** The subprogram will provide technical support to assist communities with their grant applications to help ensure the approach is technically sound and that anticipated benefits will be realized.

To address these barriers, the subprogram will provide funding and a Smart Cities partner capable of promoting readiness and clarifying benefits, as well as coordinating all steps of the process.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 30: C&I Streetlight Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$79,062,853	\$63,417,070	\$1,620,150	\$0	\$0	\$0	\$0
Rebate Processing, Inspections, and Other Quality Control	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935
Evaluation and Related Research	\$832,160	\$525,977	\$82,864	\$0	\$0	\$0	\$0
Total	\$80,018,630	\$64,238,904	\$2,050,187	\$357,589	\$368,316	\$379,366	\$4,607,869

3.3. Pilot and Emerging Technologies and Approaches Subprograms

PSE&G, as the State’s largest utility and only utility serving both gas and electric customers, is well positioned to carry out a robust and diverse subprogram of pilots and emerging technologies and approaches projects. The pilot subprogram designs are intended to provide New Jersey with insight into the future of the energy efficiency space and assure that PSE&G customers are able to attain cutting edge measures and subprogram designs that will support growth and modernization.

These pilot subprograms are designed to test new technologies and methods of attaining energy savings. Therefore, the quantifiable savings of the pilot subprograms cannot be ascertained. In fact, the purpose of conducting these pilots is to gain knowledge of the operation and savings capabilities of many of these measures and platforms, information that in the future will underlie the savings estimates of subprograms in subsequent EE Program Plans. Because of the novelty of these pilot subprograms, compliance with the requirements of MFR Part V would not be feasible. The pilot subprograms are cutting-edge and lack easily-produced documentation supporting estimated costs/benefits. In addition, some of these pilot subprograms have an educational rather than equipment-based focus. Because of this, the pilot subprograms described below should be exempt from the requirements set forth in MFR Part V.

3.3.1. Emerging Technologies and Approaches Pilot

The purpose of the Emerging Technologies and Approaches (ETA Pilot) is to evaluate, demonstrate, and deploy the next generation of technologies and customer engagement approaches, promote economic development in New Jersey, and coordinate ETA Pilot activity and lessons learned with all utilities in New Jersey. The ETA Pilot is proposed as a pilot due to the experimental and supporting role it will play in PSEG's energy efficiency efforts. By supporting the development and widespread adoption of advanced energy efficiency technologies and customer engagement approaches, this pilot will support statewide goals for efficiency and greenhouse gas (GHG) reductions. The pilot accomplishes these tasks through a collaborative research, reporting, and review process with a committee of utility, government, trade ally, and other stakeholders. For the most promising new technologies and approaches, the ETA subprogram will create business plans (with associated growth) for their cost-effective deployment in future energy efficiency subprograms.

Primary objectives of the ETA Pilot include:

- Provide PSE&G and New Jersey field-tested insights into new energy efficiency subprograms and technologies that facilitate energy savings for residential, commercial, and industrial customers
- Provide support to innovators, researchers, and product developers by evaluating, demonstrating, and promoting their energy efficiency technologies
- Continually identify, evaluate, and support promising technologies that can then be added to future energy efficiency subprograms (and the market)
- Support the successful deployment of new technologies through case studies, marketing materials, contractor training events, contractor and customer recruitment, and other activities

The PSE&G ETA Pilot is designed to be an ongoing effort to identify and support emerging technologies that can provide large scale energy savings for PSE&G and other New Jersey utility customers in future years. Emerging technologies are those that meet some or all of the following criteria:

- Development phase
- Early commercial availability
- Unproven in commercial setting
- Low market penetration
- Require business model innovation

While there is significant energy efficiency potential for New Jersey with current technologies, PSE&G must continue to develop and deploy new technologies, approaches, and subprogram offerings to meet New Jersey's long-term clean energy goals. ETA must be used to determine how new technologies and emerging engagement strategies can be promoted on a large scale. Examples of previous technologies (and technologies currently in ETA) that have had major impacts on the energy efficiency industry

include: a) behavior subprograms; b) strategic energy management customer engagement; c) heat pump water heaters; d) HVAC and refrigeration monitoring sensors; d) cold climate heat pumps; e) commercial cooking equipment; f) new ways of engaging with trade allies and retailers related to marketing, sale, and services addressing efficient products; and many other technologies and market engagement approaches.

The ETA Pilot Subprogram will involve numerous activities to identify, evaluate, demonstrate, and deploy new energy efficiency technologies and implementation approaches for PSE&G's subprograms. These activities may include:

- Conducting measure scans to identify technologies under development by other utilities, national laboratories, ETA organizations, manufacturers, and others, and implementing a proof-of-concept pilot with PSE&G customers
- Developing business cases for promising technologies that include information, such as unit energy savings, installed cost, incremental cost, lifetime, cost-effectiveness, applicable market sizes, available manufacturers, potential incentive levels, subprogram design strategies, etc.
- Performing laboratory testing or field demonstrations to collect energy savings and other data to validate performance
- Conducting market research including surveys, focus groups, interviews, and due diligence reviews of potential new third-party implementation firms to understand the attractiveness and suitability of the new technology or service for customers, trade allies, and other New Jersey stakeholders
- Conducting subprogram pilots where the technologies or service delivery innovations are offered to select groups of customers to measure performance on a wider scale, in preparation for a full subprogram offering
- Educating contractors and other stakeholders by conducting online or in-person training events, and preparing marketing materials such as case studies, subprogram brochures, and frequently-asked-question (FAQ) documents

The PSE&G ETA Pilot Subprogram will operate with a rolling process of identifying and pre-qualifying pilot research activities and implementing and evaluating results. PSE&G will look to partner with peer utilities in New Jersey to achieve operational efficiency and improve the energy efficiency offerings of all subprograms across the State.

The ETA Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because it is experimental and is testing approaches that are proposed for commercialization. Thus, the costs, benefits and other elements cannot be estimated.

Market Segment/Efficiency Targeted

This subprogram will address promising efficiency technologies and delivery strategies that will impact PSE&G, and ultimately all customers in all sectors across New Jersey. The list of technologies and delivery approaches to be tested in the ETA subprogram will evolve over time and react to changes in the marketplace, and to advances in new technologies and customer engagement strategies that are determined to be potentially commercially viable and ready for testing.

Delivery Method

PSE&G will administer the ETA Pilot with third-party implementation contractors with support from various PSE&G departments (e.g., engineering, subprograms, marketing, strategy, IT, etc.), and other stakeholders (e.g., other New Jersey utilities, university researchers, technology developers, trade allies, PSE&G customers, and others). PSE&G will also consider universities, colleges and other utilities as key implementation partners.

The ETA pilot will involve collaboration between several groups: ETA Pilot Facilitator, Participating Utilities, and Stakeholder Advisory Committee (SAC). The table below describes the anticipated structure and roles for the ETA pilot.

Table 31: Key ETA Pilot Collaborators and Responsibilities

ETA Pilot Group	Member(s)	Key Responsibilities
ETA Pilot Facilitator	Third party implementation contractors	<ul style="list-style-type: none"> • Lead technical and market research, engineering analysis, subprogram design, and other activities which lead to identification of the ETA opportunities • Design the research project and contracting through a competitive process with vendors to finalize and propose an implementation plan that will test different ETA approaches to advancing the subprogram goals • Convene focused meetings for more in-depth review of particular subprograms or new technologies • Issue meeting agendas and supporting materials • Invite participation of subject matter experts (SME) as necessary, including manufacturer representatives, industry associations, and potentially DOE/EPA representatives • Serve as a central online repository for all ETA Pilot reports and SAC minutes • Help recruit additional SAC members if gaps identified • Leverage Clean Energy Learning Center for training
Participating Utilities	PSE&G staff and other participating New Jersey utilities	<ul style="list-style-type: none"> • Provide the initial proposals for ETA Pilot • Fund approved subprograms • Recruit customers and contractors for ETA pilot subprograms • Execute broader customer and contractor outreach strategies for ETA Pilot subprograms • Work with ETA Pilot Facilitator to develop agendas for all SAC meetings • Help recruit additional SAC members if gaps identified • Share insights from participation in national/regional organizations • Prepare Quarterly Progress Reports for subprograms in process to be reviewed with SAC • Prepare final ETA Pilot reports for subprograms and technologies that have completed testing and review • Draft annual budgets, subprogram activities and related milestones, in consultation with ETA Pilot Facilitator, for SAC review and discussions • Fund independent ETA Pilot evaluation
Stakeholder Advisory Committee (SAC)	Stakeholders	<ul style="list-style-type: none"> • Participate in meetings and provide feedback on materials • Give input on ETA Pilot training needs, outreach plans, likely market acceptance, potential market barriers, etc. • Share additional research about technologies and

		<p>subprogram approaches as identified</p> <ul style="list-style-type: none"> • SAC members may include representatives from utilities, researchers and other parties from New Jersey colleges and universities, NJCEP Program Administrator, Office of Clean Energy Staff, Rate Counsel, NJEDA and/or Heldrich Center, NJACCA, Eastern Heating & Cooling Council, NJBIA • Additional SMEs may be invited to participate for particular meetings, including contractors and customers participating in ETA Pilot projects
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The ETA Pilot Subprogram will regularly review new technologies and approaches for inclusion in the subprogram, and review progress through quarterly and annual reports. The following section outlines the review and reporting process:

- Utilities propose new technologies and approaches for consideration in the ETA Pilot Subprogram, including a characterization for its current status (e.g., early stage development, late stage testing, deployment support), and potential ETA Pilot Subprogram activities
- Each utility will work closely with the ETA Pilot Facilitator to schedule overview sessions for the SAC members to establish a baseline understanding of the initial subprograms
- Each participating utility shall prepare Quarterly Progress Reports for each subprogram. These reports are intended to serve as Executive Summaries of subprogram status to facilitate discussion with the SAC members. Each Quarterly Progress report will address:
 - Recap of subprogram objectives
 - Overview of relevant activities conducted in that quarter, which may include the following:
 - Updates on collaborative research funding
 - Updates on customer/contractor recruitment
 - Results from testing
 - Identification of market barriers
 - Efforts to address market barriers
 - Identification of training needs
 - Training Metrics – participation and feedback
 - Participation and performance metrics
 - Unforeseen challenges
 - Additional research/testing needs identified
 - Refinements in subprogram approach
 - Funds expended to date
 - Status of milestones

Each participating utility shall prepare a Final Reports for each subprogram. Final reports within the ETA Pilot Subprogram are intended to address whether the technology or approach should continue in the subprogram (e.g., move from lab testing to field testing), could move directly into existing approved EE Programs, or might not be worth further pursuit at this time (e.g. more promising technologies or subprograms identified or overwhelming market barriers). Each Final Report will address the same topics listed above for the Quarterly Progress Report, and other information as applicable.

Projected Participants and Energy Savings

Given the uncertainty regarding the measures to be developed and deployed and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time.

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of full-scale subprogram offerings.

Relationship to Existing Programs

To our knowledge, no other New Jersey utility or state-run program is offering an ETA program as proposed in this plan, but these organizations may be planning similar activities for future years. The goal of the ETA Pilot is to continually identify, evaluate, and support promising technologies or innovative implementation approaches to contribute to PSE&G's energy efficiency programs in future years. In this way, the final output of ETA Pilot is an information package that PSE&G's energy efficiency subprograms will use to design and implement new or enhanced subprograms for customers. Lessons learned and summary reports from the ETA subprogram will be made available to the public, such that all efficiency stakeholders (i.e. vendors, trade allies, other New Jersey utilities, and ultimately customers) can benefit from the experience of PSE&G.

Proposed Incentives

The ETA Pilot subprogram will target new technologies that offer natural gas and/or electricity savings for residential, commercial, and industrial customers in New Jersey. The ETA Pilot would not provide direct incentives to customers, with the possible exception for a technology demonstration at a customer site. In these situations, the ETA pilot subprogram may provide financial or in-kind support to the customer and/or demonstration partners, including:

- Energy efficiency rebate based on expected energy savings, similar to custom calculated measures
- Direct funding to a manufacturer, contractor, or host site to offset technology equipment or installation cost
- In-kind support, such as use of monitoring equipment, staff time for data collection and analysis, report preparation and promotion, etc.

Marketing Approach

The ETA Pilot is not intended as a customer-facing subprogram. Where necessary, the ETA Pilot may conduct demonstrations at customer sites and recruit participants through the following methods:

- Recruit PSE&G employees to volunteer
- Recruit customers to participate directly via social media, website, etc.
- Notice on PSE&G website, email marketing, or direct mail
- Coordination with PSE&G account executives
- Recruitment by pilot applicants
- Cooperation with trade allies who may already have a project in development at a customer site

Contractor Role

PSE&G will administer the ETA Pilot with a combination of dedicated PSE&G staff and a project management third-party implementation contractor, as the ETA Pilot Facilitator. PSE&G's role will be to ensure the major milestones are met and coordinate with various PSE&G departments (e.g., engineering, subprograms, marketing, strategy, IT, etc.) to gather their input during the process. As the ETA Pilot

Facilitator, the third-party implementation contractor will provide support through overarching subprogram management. This will include recruiting and developing a vibrant third-party stakeholder advisory committee (SAC, described above).

Market Barriers

The ETA Pilot is designed to identify and support emerging technologies and approaches that PSE&G could add to energy efficiency subprograms in future years. Emerging technologies face a large number of market barriers that inhibit wider adoption, including high upfront cost, long customer paybacks, lack of third party validation, unfamiliarity by trade allies and customers, uncertain installation, operation, and maintenance practices, conflicts with state and local building codes, limited market availability, and other challenges. The ETA Pilot will provide highly targeted support to emerging technologies to overcome these market barriers.

The primary market barriers that the ETA Pilot will address include:

- **Identifying New and Improved Products:** Efficiency subprograms need to continually find new and improved efficient products and service delivery approaches to improve program performance. As the market evolves, and technologies that require incentives become commonplace, PSE&G should focus on advancing efficiency gains in new product areas. The ETA Pilot will provide PSE&G the focused space and resources to systematically design and deploy a carefully structured process to continually identify, test, validate, and promote the adoption of new efficient products and service delivery approaches.
- **Sufficient Stocking and Availability of Efficient Products:** Emerging technologies are often unavailable, due to retailer/ distributor failure to stock and service the new products. The ETA Pilot will raise awareness and engage the New Jersey marketplace with information and case studies about the new technologies that are proven, by deployment test studies, to be high value additions to the efficiency program. The ETA Pilot will invest resources to familiarize trade ally partners of all types with the advantages of embracing and promoting to customers the new technologies.
- **Customer & Trade Ally Awareness and Engagement:** Customers and trade allies may not be aware of the benefits of installing new and relatively unknown efficient equipment and/or lack the time and resources to experiment themselves with emerging efficient equipment. To address this barrier, PSE&G’s ETA Pilot will do product testing in New Jersey homes and publish case study findings from customer experiences with the new technologies. Through outreach efforts, PSE&G will seek to partner with retail and wholesale entities to promote and deploy these new emerging technologies once they are proven to be highly reliable.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice ETA initiatives that identify and confront market barriers on an ongoing basis.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 32: ETA Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261

Metric	2019	2020	2021	2022	2023	2024	2025+
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667
Rebate Processing, Inspections, and Other Quality Control	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740
Evaluation and Related Research	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900
Total	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568

3.3.2. Efficiency as a Service Pilot

The Energy Efficiency as a Service (EEaaS) Pilot Subprogram will offer C&I customers a deeper, ongoing relationship with PSE&G through service contracts, incentives, and extensive guidance on executing service contracts for intelligent building equipment and software. This could include automation, controls, and information technologies for data collection and communication, as well as software analytics focused on equipment management, including remote monitoring, fault detection and diagnostics, and reporting. A key element of EEaaS is the use of service contracts with vendors through which customers pay a monthly fee for energy service, which enables them to avoid performance risk and up-front cost exposure.

PSE&G will function as a market facilitator to coordinate interactions and provide advice regarding the relationship between customers and independent EEaaS vendors. PSE&G will also provide incentives to promote customer engagement and business operations. PSE&G will be available to provide guidance to participants on a) the proposed approach offered by the independent EEaaS vendors, b) technology selection considerations, and c) proposed implementation actions and service contracts. The final EEaaS contract will ultimately be signed between the participant and the independent EEaaS vendor. These independent EEaaS vendors, who will be identified, vetted, and individually selected to participate in the subprogram's pilot, will utilize unique approaches and business models to explore various methods of delivering the EEaaS Pilot Subprogram. This pilot subprogram is designed with broad parameters to remain flexible and promote innovation within the EEaaS space.

By entering into service contracts to meet energy reduction goals, businesses can reduce risk exposure related to operating and maintaining complex and intricate equipment. This novel form of engagement between PSE&G and its customers has the potential to generate energy savings, transform the relationship between traditional energy efficiency subprograms and customers, and educate the market on the benefits of integrated technologies and services for energy management.

The EEaaS Pilot Subprogram is designed to be the initial test for EEaaS in New Jersey. PSE&G will test the Pilot Subprogram with C&I customers to measure the success of education and outreach, participation, and savings. The EEaaS Pilot Subprogram will help determine the willingness of customers to engage in EEaaS contracts, as well as the fitness of independent EEaaS vendors to provide service

contracts at this time. Through this pilot, PSE&G will evaluate the approaches and business models to inform future subprogram design.

The EEaaS Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because it involves a novel form of engagement between PSE&G and its customers, so there are no previously established outcomes by which to give the required information.

Market Segment/Efficiency Targeted

All C&I customers located within PSE&G's electric and/or natural gas service territory are eligible to participate in this pilot subprogram; however, it is expected that the offering will be most attractive to large C&I customers.

The participants in the EEaaS Pilot Subprogram will be well-positioned for deeper engagements that coordinate in-building system optimization, on-site distributed energy resources, and broader orchestration with other customer sites.

Delivery Method

PSE&G will provide coordination, oversight, and relationship support between participants and independent EEaaS vendors. The EEaaS Pilot Subprogram will be implemented through a network of independent EEaaS vendors which may consist of service and analytics partners.

PSE&G will encourage approved independent EEaaS vendors to offer participants multiple approaches to EEaaS to determine the most beneficial approach for both the participant and the independent EEaaS vendor. These approaches may include configurations such as on-site energy management, retrofit and installation of new equipment, or provision of a fixed-price energy bill to participants by assuming all costs related to energy bills and retrofit equipment installation. This Pilot Subprogram will engage PSE&G in supporting the emerging independent EEaaS vendors, allowing them to experiment while PSE&G provides support resources.

PSE&G activities to support the EEaaS Pilot Subprogram may include:

- Identification, pre-screening, approval, and organization of a pre-qualified independent EEaaS vendor network
- Subprogram outreach and lead generation, including development and distribution of subprogram materials, and referrals to independent EEaaS vendors
- Facilitating EEaaS project initiation, working with independent EEaaS vendors as they discuss the proposed EEaaS project with customers
- Provision of on-bill repayment capabilities, rebate processing for efficient equipment, and application processing, review, and verification
- Subprogram performance tracking through the analytics platform(s), including data extraction for meeting subprogram and regulatory reporting requirements

Independent EEaaS vendor activities may include:

- Engagement with participants on EEaaS strategies
- Development of EEaaS plans and contracts for use at facilities
- Procurement and installation of energy efficient equipment and services
- Contract negotiation and execution with participants
- Delivery of energy savings

It is expected that PSE&G will provide support and incentives to EEaaS agreements, but that the ultimate service contract will be executed between an independent EEaaS vendor and the participant. However, PSE&G will consider alternate approaches for this pilot subprogram to support innovative and creative EEaaS approaches, including direct contracting with customers should it support improved subprogram design and results.

Projected Participants and Energy Savings

Given the variability of potential EEaaS approaches and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time.

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of a full-scale EEaaS Pilot Subprogram offering.

Relationship to Existing Programs

There are no similar programs offered by the NJCEP or other utilities in New Jersey.

The EEaaS construct is an innovative divergence from the traditional measure-based design to incentive programs. It offers a pathway for ongoing communication, a structure for more comprehensive advisory services, and terms that enable more holistic retrofits that deliver greater energy savings, customer satisfaction, and business improvements.

Proposed Incentives

PSE&G will explore incentive levels and styles to determine the best overall method for customers such that they can maximize the value offering from different independent EEaaS vendors. This may include paying incentives to independent EEaaS vendors for efficient equipment installed, reduction of monthly service fees to participants, as well as offering customers the option of on-bill repayments for project related costs.

Marketing Approach

Marketing to customers will include mass and direct marketing strategies, web-based marketing, contractor, trade association and trade ally outreach, as well as referrals from other PSE&G energy efficiency subprograms. PSE&G will also facilitate introductions through account managers to large C&I customers. It is also anticipated that the independent EEaaS vendors will directly market their services to potential subprogram participants.

Contractor Role

PSE&G envisions hiring a single third-party implementation contractor to provide overall subprogram management support and administration, including identification, recruitment, and engagement with pre-qualified EEaaS vendors.

Independent EEaaS vendors will offer service contracts to and provide energy savings for participants of the pilot subprogram. All independent EEaaS vendors will be pre-qualified by PSE&G to participate in the subprogram and will utilize their unique entrepreneurial vision to deliver energy savings. We anticipate that the role and business model offerings to PSE&G customers will change over time as this is a new and emerging business opportunity.

Market Barriers

The primary market barriers that impact this subprogram include:

- **Initial Cost:** Investment in energy efficiency, especially at the scale required by large C&I customers, is often expensive and potentially cost prohibitive. This pilot removes the initial cost element from participants in favor of a service contract.
- **Achievement of Savings:** Investing in efficiency does not on its own guarantee energy savings if not implemented and maintained correctly. This pilot subprogram removes the risk of achieving savings from customers who are not in the business of energy efficiency.
- **Lack of Market Maturity:** Because the EEaaS space is new, businesses may be hesitant to sign up and commit to contracts with independent EEaaS vendors. Partnering with PSE&G will provide the business community with assurance as to the validity of the EEaaS contract and process.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to identify and confront market barriers on an ongoing basis.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 33: Efficiency as a Service Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667
Rebate Processing, Inspections, and Other Quality Control	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740
Evaluation and Related Research	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900
Total	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568

3.3.3. Smart Homes Pilot

A “Smart Home” is one whose mechanical systems and energy-using devices have functionality that act intuitively and intelligently through an ecosystem of communicating devices, software, and services. The smart home functionality can enrich customers’ lives by fostering increased comfort, awareness, convenience, and cost and energy savings. The automation and data stemming from smart technologies can enable the home to become a dynamic grid asset that will help PSE&G to shift and shed load, generate clean energy, and contribute to grid reliability.

Energy is a major value proposition for the adoption of smart home technologies, as customers can begin to receive an immediate return on investment from using these devices through reduced consumption,

increased energy savings, and lower energy bills. Utilities benefit from deploying smart home technologies through increased customer engagement, customer satisfaction, and higher rates of participation in energy efficiency subprograms. Utilities are integral in the smart home market, not only because they stand to benefit from connected energy devices, but also because they are vital to connecting homes to the grid.

The purpose of this pilot is to allow PSE&G to diverge from typical energy efficiency subprogram implementations and test new and innovative smart home concepts with customers and the emerging network of private sector firms active in this broad space. This requires branching outside of the deployment of smart thermostats, and including other connected devices, as well as supporting software and direct-to-consumer services.

Typical utility implementations of smart home solutions may involve providing rebates for energy efficient devices, analyzing consumer data, providing home energy reports and customer engagement apps, and offering demand response programs. While PSE&G is planning to address these components in the Smart Homes Pilot, the desired goal of the pilot is to go further and innovate in a more visionary way.

The pilot will test the concept of a truly intelligent and holistic smart home platform, where PSE&G can introduce more automated and personalized savings measures that go beyond utilizing individual connected devices, to using an ecosystem of devices in conjunction.

The breadth of smart home devices entering homes is expanding beyond thermostats, smart plugs, and lighting controls to include smart shared controls, appliances, water heaters, as well as connected PV inverters, residential storage batteries, and electric vehicles. All of these connected products can coordinate operation to optimize control to flatten the load profile of a home, minimizing demand charges while consuming power that is generated locally, maximizing return on investment in solar and storage solutions. While all of these products are available in the market today, and control algorithms have been developed to optimize control of a wide array of products, coordinated energy management capabilities have not been implemented by most smart home systems, creating an opportunity for PSE&G to drive the market forward with this Pilot Subprogram.

The control algorithms will have the capability to integrate control of many product categories. One of the key objectives of the pilot will be to understand the value of an integrated whole home energy management solution. Individual products optimize control for their individual category. However, the variables for optimization do not always factor in energy cost, and the local optimum solution that is determined by an individual device is often not as efficient as the global optimum solution that takes into account the energy consumption of the entire system.

Components of a comprehensive home energy management solution include:

- Data Sources for Optimization
 - Weather
 - External Air Quality
 - Energy Costs, Incentives
 - Building Performance
 - Interior Conditions
 - Home Safety Status
 - User Preferences
 - Occupancy
 - User Activity
- Control Algorithms

- Comfort
- Lighting
- Air Quality
- Energy Costs
- Control Devices
 - Automated Shades
 - Dynamic Window Glazing
 - Lighting Controls
 - Ceiling Fans
 - Exhaust Fans
 - HVAC Systems
 - HRV/ERV
 - EV Charging
 - PV Inverter, Battery Storage
 - Water Heater

PSE&G’s Smart Homes Pilot will test the marketplace for options to implement smart home systems for eligible PSE&G customers. The subprogram is offered as a pilot because it will serve to assess the functionality of the smart home products installed, the customer experience, the trade ally /implementation vendor business model and customer experience and analyze findings from the pilot to inform a potentially larger Subprogram deployment in the future.

PSE&G will benefit from the Smart Homes Pilot by learning how the interaction between customers, vendors, and the utility address desired features, such as increased customer engagement (more touchpoints and data stemming from the home) and customer satisfaction.

The Smart Homes Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because it is an unprecedented test of the marketplace, and benefits and other elements cannot be estimated at this time.

Market Segment/Efficiency Targeted

The target market for PSE&G’s Smart Homes Pilot includes residential electric and/or gas customers. The most likely customers to adopt these technologies are single-family homeowners. Because smart home technologies are still emerging, PSE&G’s Smart Homes Pilot will target early adopters, or customers that have already adopted and are using a smart device, such as a Wi-Fi thermostat, and customers who are willing to co-pay a portion of the cost for smart home system installations.

PSE&G anticipates that the Pilot will touch thousands of customers through the analysis of data associated with smart thermostats rebated through the Residential Efficient Products Subprogram, and in a narrower study, hundreds or thousands of customers who agree to participate in more comprehensive smart home technologies and engage in customer surveys and data analysis with PSE&G.

Given that home builders are including a greater diversity of smart home products in new homes, residential new construction will also be a key target. The pilot will add value to the builder solutions by integrating operation and coordinating operation to optimize control of the system of connected products.

It is believed that the deeper integration of these types of end-to-end solutions can result in higher levels of engagement, satisfaction, and energy savings. There have been projected savings for each separate piece of a full smart home solution. However, given this is a pilot subprogram, no specific pilot subprogram savings estimates are available now.

Delivery Method

PSE&G's Smart Home Pilot will facilitate customers engaging with third-party vendors that are providing comprehensive options for both efficiency and smart home technologies, combined in an overarching customer engagement package. While energy monitoring and energy management are key value propositions, safety and security are the leading drivers of smart home systems. This requires branching outside of the deployment of strictly energy-related products, such as lighting, smart thermostats, and smart plugs to include solutions with safety and security components, such as door locks, networked cameras, and digital assistants.

While a range of connected devices is important to create a framework of connectivity in the home, it's important to support this ecosystem with software and value-added services to achieve higher levels of savings and customer engagement. These include elevating software with home monitoring, automation, device disaggregation, renewable resource production tracking, and offering direct-to-consumer services. Examples of direct-to-consumer services include direct install, home equipment repair and monitoring, financing for the deployment of connected devices and renewable energy resources, and partnerships with other service providers such as telecommunications and security providers. Through this comprehensive smart home offering, combined with standard efficiency measures such as air-sealing and insulation, PSE&G can differentiate, innovate and provide lessons for the broader energy community.

Projected Participants and Energy Savings

Given the variability of potential smart home approaches and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time.

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of a full-scale Smart Homes Subprogram offering.

Relationship to Existing Programs

The Smart Homes Pilot is fundamentally different in design and approach than any other efficiency program in New Jersey today. However, the pilot will incorporate elements of the existing NJCEP programs, such as promotion and awareness of energy efficiency products and behaviors, and interrelate with PSE&G's proposed new subprograms addressing efficient lighting, HVAC, smart thermostats, appliances, home energy reports, and online audits. The difference is the Smart Homes Pilot will be more comprehensive and include a broader range of connected products and smart home system control capabilities that are new, innovative, and to our knowledge, have never been tested by utilities in New Jersey.

Proposed Incentives

PSE&G will include a variety of energy-related products as eligible measures, and will also include a variety of products with safety and security components that drive greater interest among consumers. Also, given that the occupancy status of a home is a significant control point, safety and security solutions that precisely define occupancy have the potential to improve energy savings. Therefore, any solution that includes a diverse mix of energy related products will be eligible; however, incentive levels are based only on the energy saving products, including occupancy sensing.

Costs to customers depend on PSE&G's rebate levels for platforms or individual devices, which will be set prior to pilot subprogram launch, and the terms and features of the customer offer will, by design, change over time as lessons learned from early stage pilot results become clear.

Marketing Approach

Because the smart home market is emerging, PSE&G will use social media, targeted direct-mail and other marketing channels to recruit pilot participants. PSE&G will educate customers on the benefits of smart home platforms, help customers choose the best smart home offerings, facilitate connection to the installation service vendor(s) engaged in the pilot to ensure devices are installed correctly, and provide support when the platform needs maintenance during the pilot period.

PSE&G will educate customers on the value of a comprehensive smart home system supported by software and services, rather than individual devices, and the role their home can play in the grid – in addition to the energy and cost savings, comfort, and convenience these solutions can bring to their lives.

PSE&G will specifically target customers with qualifying equipment, such as those with smart thermostats installed, leveraging data generated by past energy efficiency subprograms and newly proposed subprograms.

Contractor Role

PSE&G will administer the Smart Homes Pilot Subprogram with a combination of dedicated PSE&G staff and qualified third-party implementation contractors to provide subprogram implementation and coordination services, focused on recruiting and negotiating innovative go-to-market approaches, with subprogram incentive support, to test the Smart Homes pilot concept. PSE&G's role will be to ensure the major milestones are met and coordinate with various other PSE&G departments (e.g., engineering, subprograms, marketing, strategy, IT, etc.). The contractor will provide support through technical and market research, engineering analysis, subprogram design, and other activities.

Market Barriers

Though smart home technologies have the potential to result in higher savings, engagement, and satisfaction than typical utility deployments, there are risks associated with these solutions. The primary market barriers that impact this subprogram include:

- **Interoperability:** The smart home market is currently fragmented with various standards and communicating protocols. Because of this, not all devices work together. PSE&G's implementation strategy will focus on optimizing the number of devices that work together, and choosing a vendor that has overcome interoperability issues and integrations with third-party devices.
- **Privacy and Security:** Customers are increasingly wary about adopting technologies that can potentially compromise their personal information, privacy, and security. PSE&G will utilize industry best practices to protect customer data and privacy.
- **Premium Pricing:** Though prices are on the decline, smart home technologies are still costly. PSE&G will test different smart home platforms with a variety of connected technologies and business models to find out what combinations are most beneficial and cost-effective to the customer and PSE&G. To help offset overall pilot costs, PSE&G may require a customer cost contribution as part of participation in the pilot.
- **Device Utilization:** There is always the risk that PSE&G could deploy comprehensive smart home platforms and customers may not fully utilize them. While much of the pilot will evaluate the merits of control algorithms that work in the background with limited need for customer interaction, periods of extended vacancy or infrequent product use will impact results. It is important for PSE&G to target early adopters and educate its customers on the technologies to get the most out of these deployments.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to identify and confront market barriers on an ongoing basis.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 34: Smart Homes Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667
Rebate Processing, Inspections, and Other Quality Control	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740
Evaluation and Related Research	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900
Total	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568

3.3.4. Non-Wires Alternatives Pilot

The purpose of the PSE&G Non-Wires Alternatives (NWA) Pilot is to assess whether, with sufficient focus and level of customer engagement, certain targeted initiatives that use demand side solutions can cost-effectively defer or replace the need for and investment in new electric infrastructure and equipment upgrades, such as distribution lines or transformers, by reducing the electric load at a substation or circuit level. NWAs that can be employed to address congestion ‘hot-spots’ and potentially avoid or delay the need for infrastructure upgrades include: distributed generation (DG), energy storage, energy efficiency (EE), demand response (DR), and grid software and controls.

The NWA Pilot will include numerous electric energy efficiency measures for residential, commercial, and industrial customers, as well as demand response, energy storage in-front-of and behind-the-meter, and distribution voltage controls. The efficiency measures targeted for the NWA pilot will include those within PSE&G’s proposed program; however, the incentive design and customer engagement approach will be more aggressive in achieving the target levels of participation in designated NWA area. This more customized, aggressive approach is intended to reflect the potential additional benefit associated with relieving localized congestion and thereby deferring or avoiding new construction projects. Offering this subprogram as a pilot will allow PSE&G to determine if it is a successful and cost-effective strategy.

The pilot will have multiple determinants of success, including items such as:

- Lessons learned in NWA pilot area identification and subprogram design

- Lessons learned in targeted implementation of aggressive EE/DR and storage technologies in a focused area
- Assessment of the actual final results of the pilot to determine whether a combination of NWA alternatives can be combined cost-effectively, such that NWA proves to be sustainable and more cost-effective than an infrastructure upgrade

The NWA Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because it will assess the effectiveness of certain targeted initiatives in deferring or replacing the need for new electric infrastructure and upgrades.

Market Segment/Efficiency Targeted

This subprogram addresses targeted energy efficiency and demand response opportunities in all PSE&G customer segments in locations that are identified due to specific local system constraints.

Delivery Method

PSE&G will administer the NWA Pilot and select one or multiple third-party implementation contractors to manage both the NWA pilot design and the delivery of the services to be offered in this subprogram.

PSE&G will first initiate the pilot by conducting robust site identification and feasibility analysis to determine the location(s) that are most appropriate for testing the NWA pilot. This will include researching substations and circuits to identify those that are most congested, yet still have a long remaining useful life, and as such, would be the best candidate locations for NWA-provided congestion relief.

The design of the specific NWA pilot will depend upon the specific substations and circuits that are identified as the best prospects for the pilot. These designs will be customized to reflect the customer base in the area and will carefully consider which NWA tactics will be most cost-effective and successful with the specific mix of residential and C&I customers within the target zone. PSE&G will (1) define the NWA target zone(s); (2) define the necessary demand reductions required to defer infrastructure upgrades within the determined period; and, (3) design the most cost-effective and creative plan to achieve desired demand reductions within the target zone(s).

For energy efficiency, PSE&G will employ targeted local marketing campaigns, customer energy audits and installations, and more aggressive incentive designs (including potential free installation of efficient measures beyond simple low-cost items, for certain customers), to realize the desired savings from efficiency. Residential customers will receive Home Energy Reports (HERs) from the Residential Behavioral Subprogram as appropriate. For demand response in the residential sector, free or reduced-cost Wi-Fi thermostats with the ability to adjust use profile, or other control devices, may be offered. Enrollment and performance incentives will be offered for C&I customer participation in demand response. For energy storage, financing and leasing options will be offered to customers.

For commercial and industrial customers in the target NWA area, measures will be managed as a package through PSE&G account managers and the third-party implementation contractor.

Projected Participants and Energy Savings

Given the variability of potential NWA approaches and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time.

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of a full-scale NWA Subprogram offering.

Relationship to Existing Programs

Neither NJCEP, other NJ utilities, nor PSE&G are offering a similar NWA Subprogram. The NWA pilot and the promoted measures and EE/DR/Storage services will be both complementary and additive to PSE&G's proposed subprograms in this filing.

Proposed Incentives

Incentives to customers in the identified NWA target area are estimated to be equivalent to and/or higher than incentives for the same products outside of the NWA area. Final incentive design will be determined by project, dependent on the level of need to drive customer adoption, as well as the magnitude of identified benefits in the form of avoided infrastructure costs.

Marketing Approach

PSE&G will lead the marketing efforts for the NWA Pilot, in close coordination with the selected third-party implementation contractor(s). PSE&G will focus on ensuring that customers are channeled to the participation pathway that best fits their energy needs and that their participation experience is convenient, effective and minimizes lost opportunities. PSE&G will develop communication protocols that will seek to reach prospective customers in a cost-effective manner. This will require customer data analysis and segmentation; testing, tracking and multiple channel deployment strategies. PSE&G will use a variety of deployment strategies to meet the specific needs of each subprogram solution offering, which may include:

- Direct mail
- Email marketing
- Direct response digital
- Outbound calling
- Special sponsorships
- Direct neighborhood and business canvassing

Energy storage will be marketed in a more-targeted manner, using energy usage and demographic data to estimate which customers are better candidates and more likely to adopt. Customers that already have rooftop solar PV may be prioritized as higher-probability.

Where possible, EE and DR (and any other appropriate measures) will be targeted to customers jointly to avoid mixed messages, confusion, and over-saturation.

For commercial and industrial customers, NWA measures will be marketed as a package through PSE&G account managers. Direct communication will be used for large C&I customers, while smaller customers will be reached through mass marketing approaches.

PSE&G's marketing strategy will be designed and implemented to make participation in the NWA a convenient and smart choice for customers. PSE&G will, as necessary, make regular adjustments to communication protocols and deployment strategies to achieve the subprogram goals, recognizing subprogram participation and changes in market conditions.

Contractor Role

PSE&G will administer the NWA Pilot with the assistance of third-party implementation contractor(s). PSE&G's role will be to ensure that major milestones are met and that the subprogram is delivered according to the subprogram design. The third-party implementation contractor(s) will assist PSE&G with overall pilot subprogram design and delivery including:

- Assistance with final NWA pilot area identification and NWA pilot design and implementation strategy
- Development of targeted communications and marketing plans for the NWA target areas
- Design and finalization of energy efficiency and demand response incentives
- Subprogram outreach and lead generation, including development and distribution of subprogram materials, neighborhood canvassing, on-site visits with C&I customers, and managing inbound and outbound calls
- Management of in-home and business audits, including telephone customer screening, monitoring of auditors and contractors, direct-installation of measures, and customer reports
- Distribution of efficient measure giveaways or energy kits to residential and small commercial customers
- Coordination and referral to PSE&G's appliance recycling third-party contractor
- Management and oversight of supporting contractors engaged in the initiative, who may be providing targeted services such as energy efficiency direct install, demand response or storage
- Rebate/incentive processing, including receiving, reviewing, and verifying applications; and paying rebates/incentives
- Subprogram performance tracking and implementing continuous improvement
- Reporting subprogram activities to meet subprogram goals, tracking costs and benefits, as well as addressing subprogram and regulatory reporting requirements

Market Barriers

The primary market barriers that impact this subprogram include:

- **Initial Cost of NWAs:** NWAs may be expensive relative to less-concentrated initiatives. However, reducing constraints on the system and the potential additional benefits associated with infrastructure upgrade avoidance or deferral can justify increased incentives for demand reduction measures. Therefore, additional effort and equipment investment can be warranted to address potential market barriers to achieving the designated demand reductions in the NWA pilot area.
- **Targeted Deferral Areas:** NWA initiatives are most cost effective when applied to ideal deferral candidates. To address this barrier, PSE&G will seek to implement this pilot in an ideal location.
- **Customer Acceptance:** In the case of customer cited initiatives, such as energy efficiency measures, demand response, and small-scale energy storage, customer participation is required. NWAs may require high penetration levels to be successful, and thus incentives and customer outreach will be required at adequate levels to move the market. To address this barrier, PSE&G will seek to implement this pilot in an ideal case, and pursue additional targeted outreach efforts.

This pilot will focus on customer education, engagement, provision of technical support, and the offering of sufficient incentives to overcome anticipated market barriers.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 35: Non-Wires Alternative Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667
Rebate Processing, Inspections, and Other Quality Control	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740
Evaluation and Related Research	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900
Total	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568

3.3.5. Non-Pipes Solution Pilot

The PSE&G Non-Pipes Solution (NPS) Pilot is a pilot that will test whether, with sufficient focus and level of customer engagement, certain targeted initiatives that use demand side solutions to reduce gas load at the localized level during peak periods, can cost-effectively defer or replace new gas infrastructure construction. The “non-pipe” deferral options that can be employed to address localized gas pipeline congestion ‘hot-spots’ and potentially avoid or delay the need for new pipeline construction include an array of technologies and tactics within the NPS designated region, such as energy efficiency (EE), demand response (DR), measures to store natural gas or thermal energy, and electrification of space heating and/or hot water heating, supplemented potentially by renewable energy systems.

The pilot will include numerous natural gas energy efficiency measures for residential and commercial & industrial customers, as well as implementation of natural gas demand response. The efficiency measures targeted for the NPS pilot will include those within PSE&G’s proposed program; however, the incentive design and customer engagement approach to achieve the target levels of participation in designated NPS area will be more aggressive. This more customized approach is intended to reflect the potential additional benefit associated with relieving localized peak-period congestion and thereby deferring or avoiding new pipeline construction. Offering this subprogram as a pilot will allow PSE&G to determine if it is a successful and cost-effective strategy. There are multiple determinants of success for the pilot, including items such as:

- Lessons learned in NPS pilot area identification and subprogram design
- Lessons learned in targeted implementation of aggressive EE/DR areas
- Assessment of the actual final results of the pilot to determine if a combination of NPS alternatives can be combined cost-effectively, such that the NPS proves to be sustainable and more cost-effective than a new gas pipeline investment

The NPS Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because it will assess the effectiveness of certain targeted initiatives in deferring or replacing the need for new natural gas infrastructure and upgrades.

Market Segment/Efficiency Targeted

The eligible population and target markets for the PSE&G NPS Pilot are all PSE&G gas customers within the designated NPS areas.

Delivery Method

PSE&G will administer the NPS Pilot and select one or multiple third-party implementation contractors that have a proven record of service delivery and have demonstrated an innovative approach to implement this type of pilot. PSE&G will first initiate the pilot by conducting robust site identification and feasibility analysis to determine the location(s) that are most appropriate for testing the NPS pilot. This will include researching the gas distribution system to identify those localized areas that are most congested, yet still have a long remaining useful life, and as such, would be the best candidate locations for NPS-provided congestion relief. Depending on the specific areas identified for the NPS, consideration will next be given to the design of the specific NPS pilot, an understanding of the customer base in the area, and determining what types of NPS approaches are likely to be most cost-effective and successful with residential and C&I customers in the target zone. PSE&G will define the NPS target zone(s), the necessary gas demand reductions required to defer or delay distribution upgrades within a determined period of time and design the most cost-effective plan to achieve desired demand reductions within the target zone(s).

For energy efficiency, PSE&G will employ targeted local marketing campaigns, customer energy audits and direct install, and more aggressive incentive designs (including potential free direct install of efficient measures beyond the simple low-cost items for certain customers), such that the desired savings from efficiency can be realized. Residential customers in the targeted area will receive Home Energy Reports (HERs) from the Residential Behavioral Subprogram as appropriate. For demand response in the residential sector, free or reduced-cost Wi-Fi thermostats with the ability to adjust use profile, or other control devices, may be offered. Enrollment and performance incentives will be offered for C&I customer participation in demand response. In instances of fuel switching, from gas to electricity, customers will be offered sufficient incentives and, as needed, zero percent on-bill repayment.

For commercial and industrial customers in the target NPS area, measures will be managed as a package through PSE&G account managers and the third-party implementation contractor.

Projected Participants and Energy Savings

Given the variability of potential NPS approaches and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time.

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of a full-scale NPS Subprogram offering.

Relationship to Existing Programs

Neither NJCEP, other NJ utilities nor PSE&G are offering a similar NPS Subprogram at this time. However, technologies and incentives identical or similar to other existing programs may be offered for the NPS Pilot. The NPS pilot, the promoted measures and EE/DR will be complementary and additive to PSE&G's proposed programs in this filing.

Proposed Incentives

Incentives to customers in the identified NPS target area are estimated to be equivalent and/or higher than incentives for the same products outside of the NPS area. Final incentive design will be determined by

project, depending on the level of incentive needed to drive customer adoption, as well as the magnitude of identified benefits (in terms of avoided gas distribution infrastructure costs).

Marketing Approach

PSE&G will lead the marketing efforts for the NPS Pilot, in close coordination with the selected third-party implementation contractor(s). PSE&G will focus on ensuring customers are channeled to the participation pathway that best fits their energy needs and ensure their participation experience is convenient, effective and minimizes lost opportunities. PSE&G will develop communication protocols that will seek to reach prospective customers in a cost-effective manner. This will require customer data analysis and segmentation, testing, tracking and multiple channel deployment strategies. PSE&G will use a variety of deployment strategies to meet the specific needs of each subprogram solution offering, which may include:

- Direct mail
- Email marketing
- Direct response digital
- Outbound calling
- Special sponsorships
- Direct neighborhood and business canvassing

Where possible, EE and DR (and any other appropriate measures) will be targeted to customers jointly to avoid mixed messages, confusion, and over-saturation.

For commercial and industrial customers, NPS measures will be marketed as a package through PSE&G account managers that will be implementing the subprogram. Direct communication will be used for large C&I customers, while smaller customers will be reached through mass marketing approaches.

PSE&G's marketing strategy will be designed and implemented to make participation in the NPS a convenient and smart choice for customers. PSE&G will, as necessary, make regular adjustments to communication protocols and deployment strategies to achieve the subprogram goals, recognizing subprogram participation and changes in market conditions.

Contractor Role

PSE&G will administer the NPS Pilot with the assistance of a third-party implementation contractor. PSE&G's role will be to ensure that major milestones are met and that the subprogram is delivered according to the subprogram design.

The third-party implementation contractor(s) will assist PSE&G with overall pilot subprogram design and delivery including:

- Assist with final NPS pilot area identification and NPS pilot design and implementation strategy
- Development of targeted communications and marketing plan for the NPS target areas
- Design and finalization of energy efficiency and demand response incentives
- Subprogram outreach and lead generation, including development and distribution of subprogram materials, neighborhood canvassing, on-site visits with C&I customers, and managing inbound and outbound calls
- Management of in-home and business audits, including telephone customer screening, monitoring of auditors and contractors, direct-installation of measures, and customer reports
- Distribution of efficient measure giveaways or energy kits to residential and small commercial customers

- Management and oversight of supporting contractors engaged in the initiative, who may be providing targeted services, such as energy efficiency direct install, demand response or fuel switching
- Rebate/incentive processing including receiving, reviewing, and verifying applications; and pay rebates/incentives
- Subprogram performance tracking and implementing continuous improvement
- Reporting subprogram activities to meet subprogram goals, tracking costs and benefits, as well as addressing subprogram and regulatory reporting requirements

Market Barriers

The primary market barriers that impact this subprogram include:

- **Initial Cost of NPSs:** NPSs may be expensive relative to less-concentrated initiatives. However, reducing constraints on the gas distribution system and the potential additional benefits associated with system investment avoidance or deferral can justify increased incentives for demand reduction measures. Therefore, additional effort and equipment investment can be warranted to address potential market barriers to achieving the designated demand reductions in the NPS pilot area.
- **Targeted Deferral Areas:** NPS initiatives are most cost effective when applied to ideal deferral candidates. To address this barrier, PSE&G will seek to implement this pilot in an ideal location.
- **Customer Acceptance:** In the case of customer cited initiatives, such as energy efficiency measures, customer participation is required. NPSs may require high penetration levels to be successful, and thus incentives and customer outreach will be required at adequate levels to move the market. To address this barrier, PSE&G will seek to implement this pilot in an ideal case and pursue additional targeted outreach efforts.

This pilot will focus on customer education, engagement, provision of technical support, and the offering of sufficient incentives to overcome anticipated market barriers.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 36: Non-Pipes Solution Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667
Rebate Processing, Inspections, and Other Quality Control	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740
Evaluation and Related Research	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900

Metric	2019	2020	2021	2022	2023	2024	2025+
Total	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568

3.3.6. Volt Var Pilot

The PSE&G Voltage and Reactive Power Optimization Pilot (also-called Volt-Var-Optimization, or VVO) will test smart-grid technology that enhances the control of circuit voltage and reactive power controls on an electric power distribution grid to reduce energy consumption, peak demand, system losses and enable more solar. VVO uses distributed sensors, two-way communications infrastructure, remote controls on substation transformer load-tap changers and capacitor banks and integrating/optimizing software algorithms to flatten voltage profiles and lower the average voltage levels delivered to customers. Customers will still receive tariff-required voltage levels; those that previously received higher-than-required voltages should see modest reductions in their voltage and bills with possible savings due to reduced peaks, energy and system losses.

PSE&G is proposing this subprogram as a pilot because of VVO’s complexity, the need for specialized software and the need to evaluate the impact on customers and PSE&G equipment during normal and emergency situations before full scale deployment. PSE&G will engage a third-party implementation contractor to install and commission the necessary hardware and software upgrades.

The purpose of the VVO Pilot Subprogram is (1) to test the capabilities of VVO at a 13kV Class H substation (the type that serves the majority of PSE&G’s customers), (2) to deliver reliable, cost-effective energy and peak demand savings, all while avoiding unacceptable detriments to distribution circuit/transformer loadings, power factor, or power quality – either to affected customers or the pilot substation and associated feeder circuits and (3) solar enablement by measuring its impact on the grid voltage during normal and fast moving clouds days with and without the static VAR compensator electronic device that is proposed to be installed near the solar farms and by analyzing the impact of solar variation to nearby capacitor banks.

The objectives of the Volt-Var Optimization Pilot Subprogram include:

- Quantifying the energy savings and peak demand reductions obtained by deploying VVO at a prototypical PSE&G 13kV Class H substation
- Identifying and quantifying the impacts of factors affecting the magnitude of VVO savings on pilot feeders (e.g., season, time of day, day-type, predominant customer load type(s), feeder length, capacitor availability & performance, penetration of distributed solar PV generation, system contingencies)
- Measuring VVO impacts on reactive power/power factor/current flow on the circuits and substations
- Identifying and, where possible, mitigating detriments to circuit/transformer loadings, power factor, or power quality, if any, arising from VVO
- Quantifying interactions between VVO, capacitor banks and distributed solar PV generation on pilot feeders
- Developing greater understanding by PSE&G of VVO by working with the vendor system under field conditions
- Testing the proposed communication between the VVO Distribution Management System, capacitors, substation load tap changers and the large solar farms

- Testing the proposed static VAR compensator electronic device ability to smooth the solar output voltage during sunny and fast moving cloudy days to minimize the impact on other customers connected to the same circuit

The Volt Var Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because it represents a test of PSE&G's system capabilities prior to any determining whether full scale deployment is effective and applicable.

Market Segment/Efficiency Targeted

All PSE&G customers served by the designated substations where VVO is deployed will participate in this pilot. It is expected that no actions will be required by customers; however, there may be limited interaction with a few customers who have sensitive voltage settings to discuss the VVO pilot and appropriate voltage settings.

Electric utilities in the United States, including PSE&G, strive to adhere to ANSI standard C84.1, which stipulates that for power delivered to end-use customers with nominal voltages of between 120V and 600V, service voltage should be regulated to a range of plus or minus 5 percent of nominal.³ VVO achieves the bulk of its energy savings and demand reduction via conservation voltage reduction (CVR): reducing the average service voltage on a distribution circuit so that the voltage delivered to customers is maintained within the lower half of its ANSI-defined range to the extent feasible. For a wide range of electric load types, this maximizes operational efficiency. VVO reduces the average delivered voltage levels at customer service points on the pilot feeders by controlling substation transformer load tap changers (LTCs), and by flattening the voltage profiles on the feeders through the automated control of switched capacitor banks. Flattening the voltage profile between the substation and end-of-line service points permits larger voltage reductions to occur without low-voltage violations during peak demand periods and may expand the capacity to accommodate additional distributed generation resources.

Delivery Method

PSE&G will select an experienced third-party implementation contractor to execute the VVO Pilot Subprogram, with administration and oversight from PSE&G. Installation and commissioning of the required hardware and software upgrades is anticipated to take approximately one year. Following that, PSE&G plans to run the pilot for a minimum of two years to allow the collection of evaluation data during a full range of test conditions: all four seasons, workdays and weekends/holidays, and a broad range of weather conditions. PSE&G and the third-party implementation contractor will work with an evaluation consultant to develop a mutually acceptable measurement and verification (M&V) plan. The plan will adhere to industry standards of rigor, including following a pre-set schedule during the pilot phase whereby the transformer LTCs and capacitor banks will alternate between VVO and baseline (i.e., non-VVO) control states. The purpose of this alternating-days control strategy is to generate test data that the evaluation team will use to produce estimates of the energy and peak demand savings from VVO. Following a regular, pre-set schedule will ensure that an adequate number of data points are generated in each control state, and that the current control state is uncorrelated with load conditions, temperature, season, time of day, day of week, or any other possible confounding factor that might bias the evaluated performance.

³ I.e., voltage measured at the customer service point should generally fall within this range, and occurrences outside these limits should be limited in extent, frequency, and duration. See American National Standards Institute, "American National Standard for Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)," Range A.

Projected Participants and Energy Savings

Given the variability of potential Volt Var approaches and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time. However, based on indicative levels of energy savings achieved at other utilities, it is possible that the energy savings associated with the pilot, depending on final design, could be in the range of 0.75% to 2.0% of baseline energy.⁴

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of a full-scale Subprogram offering.

Relationship to Existing Programs

VVO represents a new initiative and is unrelated to any existing PSE&G or NJCEP programs.

Proposed Incentives

The VVO Pilot Subprogram will not offer incentives to customers.

Marketing Approach

There will be no marketing activities involved.

Contractor Role

PSE&G will administer the subprogram and coordinate the implementation of the VVO Pilot Subprogram in coordination with the selected third-party implementation contractor. PSE&G and the third-party implementation contractor will work closely with the independent evaluation consultant to develop a mutually agreeable evaluation, measurement and verification (EM&V) protocol for estimating the seasonal and annualized energy, peak demand, and power factor impacts of the VVO Pilot Subprogram. Regular meetings involving the PSE&G team and the evaluation contractor will occur at least quarterly following the evaluator's release of the seasonal impact memos, and otherwise as needed.

Market Barriers

Since the VVO Pilot Subprogram does not require any customer actions, there are no anticipated market barriers. Key risks for implementation include:

- **Benefits Fail to Meet Expectations:** VVO impacts are determined by the characteristics of the individual substations and feeders on which they are installed, as well as the characteristics of the dominant load type(s) they are serving. Thus, they are expected to vary across feeders, seasons, times of day, types of day (workdays vs. weekends/holidays), system contingencies, as well as weather conditions. PSE&G will deliver the interval test data from the pilot to the independent evaluator in regular (weekly or biweekly) tranches. The evaluator will promptly review the data received for quality issues and report back to PSE&G in the event problems are noticed. The evaluator will produce feeder-level and substation aggregate impact memos following each test season to keep PSE&G apprised of interim pilot results.
- **Equipment Costs:** Unanticipated equipment purchase, and installation costs may increase, reducing project economic benefits. PSE&G will monitor costs and adjust subprogram scope within the provided range to manage the comprehensive subprogram budget.

⁴ The expected savings range was derived using ranges of values for achieved voltage reduction and CVR factor values found in the literature. In practice, both values depend on many utility-specific factors, including feeder/substation characteristics, characteristics of the predominant end-user loads on the treated feeders, the vendor system used, as well as seasonal and weather factors: hence the value of a pilot program.

- **Customer Issues:** While VVO operates in a manner designed to ensure all affected customers receive power at voltages that conform to tariff-stipulated levels, it is possible that there may be an increase in customer low-voltage or flicker complaints. PSE&G will monitor and record all customer complaints received served by the selected substation and compare to the corresponding pre-VVO Pilot Subprogram complaint rates. PSE&G will be responsive to customer complaints and will adjust VVO algorithms accordingly to alleviate them.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 37: Volt Var Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$1,041,667	\$0	\$0
Rebate Processing, Inspections, and Other Quality Control	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740
Evaluation and Related Research	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900
Total	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$1,270,528	\$235,728	\$143,902

3.3.7. Business Energy Report Pilot

The PSE&G Business Energy Reports (BER) Pilot Subprogram will drive energy conservation behavior and generate referrals to other PSE&G efficiency programs by raising awareness and educating business owners and facility managers of their detailed energy usage profile and energy savings opportunities identified specifically for their facility. The subprogram will engage with customers in a new and more robust way, identifying energy savings opportunities and presenting customers with customized suggestions of where they can take specific actions to save energy by using C&I customer analytics on building type, business, and energy consumption history. The BER Pilot Subprogram will provide customized analysis based on actual facility meter data, including disaggregation by end-use and recommendations for efficiency improvements that might be eligible for other programs.

The BER Pilot Subprogram will employ a model of targeted outreach, focusing on buildings that are determined to be prime candidates for energy efficiency improvements. The models will analyze meter data of thousands of potential subprogram candidates and highlight those with high potential to save, based on actual consumption patterns and other customer-specific data. The targeting analysis would outline the type of business, where they use the most energy, and how they could be more efficient and save money on their energy bills.

The BER Pilot Subprogram is presented as a pilot because business energy reports programs are relatively new to the market, and PSE&G would like to evaluate at this stage how a BER subprogram can influence behavioral modification in the commercial and industrial segment most effectively.

Market Segment/Efficiency Targeted

This Pilot Subprogram will target all PSE&G electric and/or gas business customers and will offer varying levels of customer engagement from direct mail energy consumption information and awareness reports, to an online portal where customers can create an account and monitor their energy consumption history, to more in-depth engagements such as on-site visits to review and explain the identified savings opportunities for those customers found to have very large savings potential. This subprogram will provide businesses with behavioral optimizations that, if implemented, could reduce customer consumption and demand, and result in lower electric and/or natural gas costs to ultimately benefit business operations.

The BER Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because business energy reports are relatively untested. PSE&G would like to evaluate in a pilot setting how a BER pilot subprogram can influence behavioral modification in the commercial and industrial segment most effectively.

Delivery Method

PSE&G will administer the BER Pilot Subprogram and engage a third-party implementation contractor that has a proven record of providing the services to be offered in this subprogram.

Analytics will leverage the data that PSE&G currently has to provide tailored insights and recommendations. The subprogram will focus on relevant customers and streamline the customer process to create valuable customer interactions that increase customer satisfaction and subprogram conversion. Incorporating analytics into a subprogram process creates a customer-focused, customized approach that can result in reduced energy consumption.

PSE&G will begin by providing all participants with an analytics report, based on available meter data that identifies key energy savings opportunities and building energy use patterns (e.g. how consumption changes with the weather and business hours, what processes use the most energy, and more). Participants can understand how their energy usage changes, enabling them to recognize how business actions affect their bill. This report will also include cost savings from each energy efficiency improvement. This savings information can be leveraged to engage customers on an ongoing basis, as well as provide intelligence to drive specific subprogram participation and offerings.

For the largest customers, PSE&G will train its account managers to have an interactive, data-based discussion with customers. This may include focusing the effort through select account managers, and then scaling the effort further. Periodic meetings may be held to discuss best practices and revise strategies and documents as necessary.

PSE&G will hire and manage experienced third-party implementation contractors for data analytics and additional customer engagement. PSE&G will channel interested customers to participate in other C&I subprograms that align with their energy needs. The third-party implementation contractor(s) working for PSE&G will have representative roles and responsibilities, including, but not limited to:

- Subprogram outreach and lead generation, including development and distribution of subprogram materials, managing inbound and outbound calls

- Development of customized facility energy consumption analytical reports, along with detailed recommendations of the likely areas where customers can save energy
- Subprogram performance tracking and implementing
- Reporting subprogram activities to meet subprogram goals, as well as subprogram and regulatory reporting requirements

Projected Participants and Energy Savings

Given the variability of potential BER approaches and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time.

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of a full-scale BER subprogram offering.

Relationship to Existing Programs

Neither NJCEP, PSE&G nor other NJ utilities are offering a similar subprogram. The BER Pilot Subprogram is also intended to enable PSE&G's other business energy efficiency programs to more effectively achieve their goals and provide value to their customers.

Proposed Incentives

The Pilot Subprogram will offer analytical reports at no cost to the customer. Incentives will be paid after customers participate in the selected PSE&G energy efficiency subprogram that best meets their specific needs, such as the C&I Custom Subprogram and C&I Prescriptive Subprogram.

Marketing Approach

BER will be marketed through PSE&G account managers and the third-party implementation contractors that will be administering the subprogram. Direct communication will be used for large C&I customers, while smaller customers will be reached through mass marketing approaches. PSE&G will look at the entire sales process and use available analytics intelligence to optimize customer, trade ally, account manager, and overall subprogram value at each step.

The BER Pilot Subprogram will employ a model of targeted outreach, focusing on buildings that are determined to be prime candidates for energy efficiency improvements. Modeling efforts discussed above will give PSE&G a narrow list of customers to focus on for this Pilot Subprogram, so that it can selectively market to customers who would benefit from participating in PSE&G efficiency programs.

With customer permission, participating subprogram trade allies and/ or the customer's preferred contractor could be provided with the same analytics report that customers received, enabling them better communication with the customer and more accurate measure identification. Trade allies could use the analytics report to identify inefficient processes that are difficult to assess in a typical on-ground audit, such as simultaneous heating and cooling. Rather than spending time investigating every possible issue, trade allies can focus on specific areas that need further investigation and respond to customer questions.

Contractor Role

PSE&G will administer the BER Pilot Subprogram through one or more qualified third-party implementation contractors. PSE&G's role will be to ensure that major milestones are met and that the subprogram is delivered according to the subprogram design, such that the BER pilot directly advances direct energy savings as well as referrals to other PSE&G C&I programs. PSE&G account managers will be an active and important contributor to the pilot's launch and success.

Market Barriers

The primary market barriers that impact this subprogram include:

- **High Cost of Traditional Audits:** Where traditional comprehensive energy audits can be expensive, this market barrier is addressed by the design of the BER pilot, which is a more cost-effective communication channel and can serve as a remote energy audit.
- **Customer Awareness and Engagement:** Business owners are faced with a myriad of responsibilities and are often unable to focus on energy savings opportunities. This barrier will be addressed by producing BER information that is useful, easy-to-understand, and actionable.
- **Third-Party Implementation Support:** The marketplace for third-party implementation contractors for business energy reports is still developing. PSE&G will address this barrier by ensuring any third-party support is well qualified.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G's established customer communication channels, data, and brand in the marketplace will all be leveraged to identify and confront market barriers on an ongoing basis. In addition, PSE&G will leverage its experience with the Residential Behavioral Subprogram to assure this subprogram can provide customers with useful recommendations.

Subprogram Costs

Given this is a pilot subprogram, PSE&G is estimating only a total annual subprogram cost, not broken out by sub-cost category.

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 38: Business Energy Reports Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$58,609	\$140,270	\$164,600	\$169,538	\$174,624	\$179,863	\$115,342
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$1,583,333	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$416,667
Rebate Processing, Inspections, and Other Quality Control	\$46,140	\$110,428	\$129,583	\$133,470	\$137,474	\$141,598	\$72,388
Evaluation and Related Research	\$20,190	\$48,321	\$56,702	\$58,403	\$60,155	\$61,960	\$31,675
Total	\$124,938	\$1,882,352	\$2,350,885	\$2,361,412	\$2,372,254	\$2,383,422	\$636,073

3.3.8. Building Operator Certification Pilot

The PSE&G Building Operator Training and Certification (BOC) Pilot Subprogram will implement a training and certification subprogram for operations and maintenance staff working in commercial,

institutional, or industrial buildings. BOC achieves energy savings by training individuals directly responsible for the maintenance and control settings of energy-using building equipment and day-to-day building operations.

The BOC Pilot Subprogram is designed to improve job skills and lead to improved comfort and energy efficiency at the participant's facility or facilities. Certification can be earned by attending training sessions and completing project assignments in participants' facilities. The training series will offer an incentive to offset tuition costs during the pilot period to help recruit participants. PSE&G anticipates that after such training, BOC participants will be more proactive and engaged in other PSE&G efficiency programs.

The BOC Pilot Subprogram should be exempt from the requirements set forth in MFR Part V because the BOC pilot subprogram is education-based and untested in the PSE&G territory.

Market Segment/Efficiency Targeted

All C&I customers located within PSE&G's electric and/or natural gas service territory are eligible to participate in this Pilot Subprogram.

This Pilot Subprogram will target building operators and energy staff to improve the efficiency and functionality of facilities within PSE&G's service territory. Through this subprogram, energy savings will be realized as a result of behavioral and control setting changes at participating facilities.

Delivery Method

PSE&G will administer the BOC Pilot through third-party implementation contractor(s) that have a proven record of effectively providing the services to be offered in this subprogram. The third-party implementation contractor(s) working for PSE&G will have representative roles and responsibilities, including, but not limited to:

- Review and select a credible sponsoring organization and curriculum
- Coordinating with the sponsoring organization on training content and materials
- Conducting subprogram outreach and participant recruiting
- Coordinating the training series schedule, securing classrooms and conducting trainings
- Subprogram performance tracking and implementing continuous improvement
- Reporting subprogram activities to meet subprogram goals, as well as addressing subprogram and regulatory reporting requirements

The BOC Pilot Subprogram offers training and certification for building operations and maintenance professionals. These programs are designed to improve job skills and lead to improved comfort and energy efficiency at the participant's facility or facilities.

Projected Participants and Energy Savings

Given the variability of potential BOC approaches and the need to further study this innovative offering in a pilot setting, no specific participation or savings estimates are available at this time.

PSE&G will implement a robust EM&V process and impact evaluation to assess customer satisfaction, lessons learned, energy savings, and financial efficiencies that are realized. This process may ultimately contribute to the development and design of a full-scale BOC Subprogram offering.

Relationship to Existing Programs

Neither NJCEP, other New Jersey utilities, nor PSE&G are offering a similar program.

Proposed Incentives

The Pilot Subprogram will offer tuition reimbursement for facility operations and management staff that complete the course work and pass the examinations. No further direct incentives to subprogram participants are anticipated, as it is expected facilities will participate in the other PSE&G efficiency programs when implementing projects.

Marketing Approach

PSE&G's account management team will be utilized to identify prospective large customers that qualify for the subprogram and help recruit their participation. Subprogram marketing will also be made available through PSE&G's website, newsletter articles targeted to the key audiences, information and presentations distributed to trade associations (NJBIA, Chemistry Council of New Jersey, Building Owners and Managers Association International (BOMA), and others) and direct email invitations to prior PSE&G C&I efficiency subprogram participants. Key personnel targeted will include both operations staff and management.

Participants in the BOC Pilot Subprogram will be made aware of additional PSE&G energy efficiency programs.

Contractor Role

PSE&G will administer the BOC Pilot through a qualified third-party implementation contractor. PSE&G's role will be to ensure that major milestones are met and that the subprogram is delivered according to the subprogram design. PSE&G account managers will be an active and important contributor to the pilot's launch and success.

The third-party implementation contractor will be responsible for coordinating the training series schedule, processing reimbursements and (where applicable) paying tuition offset incentives to eligible customers, and generally managing subprogram delivery. The contractor will also coordinate registration for students, oversee the instructor recruitment process, provide classrooms and provide education materials for distribution to instructors and students. The third-party implementation contractor will also implement a structured process for following-up with BOC graduates over time to address questions and encourage implementation of energy management techniques reviewed in the classroom setting. This may include on-site visits to the C&I facility, emails, and phone calls. Alumni meetings of BOC graduates may be arranged to provide opportunities for peer-to-peer networking, group sharing of lessons learned, testimonials of how other PSE&G efficiency programs helped the facility achieve energy savings goals, and mutual encouragement of how energy management challenges can be addressed.

Market Barriers

The primary market barriers that impact this subprogram include:

- **Customer Awareness, Resource Availability, and Engagement:** C&I facility managers may not normally be provided the time, resources or internal encouragement to be able to stay current on energy system management. In short, facility managers may often be entirely focused on simply keeping the lights on, machines running and HVAC systems operating, and may not be aware of low-cost and inexpensive ways to reduce energy use through more attentive review and management of building operating systems. To overcome this barrier, this pilot subprogram is designed to orient and train C&I facility managers with tools and techniques to improve the operational efficiency of their facilities. Additionally, this pilot will communicate the benefits of a BOC to ensure that potential participants understand the value in training. Financial incentives will also be provided to offset the cost of participating. Potential participants may additionally

lack financial analysis supporting the business case for participating in training and evaluation of energy efficiency opportunities. PSE&G will address this barrier through developing successful case example of subprogram success during the pilot.

PSE&G will seek to manage all barriers to subprogram success through a commitment to applying best practices in subprogram design, delivery, outreach, and marketing/advertising. PSE&G’s established customer communication channels, data, and brand in the marketplace will all be leveraged to deliver best-practice ETA initiatives that identify and confront market barriers on an ongoing basis. Longer term, the BOC Pilot Subprogram will develop a schedule and process for touching base with BOC graduates to help ensure that lessons learned from the training continue to be implemented at the facilities, and cross-promote other efficiency programs.

Subprogram Costs

The table below illustrates the projected subprogram expenditures for the subprogram.

Table 39: Building Operator Certification Pilot Costs

Metric	2019	2020	2021	2022	2023	2024	2025+
Administration & Program Development	\$58,609	\$140,270	\$164,600	\$169,538	\$174,624	\$179,863	\$115,342
Sales, Call Centers, Marketing and Website	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rebates, Grants, and Other Direct Incentives	\$0	\$1,187,500	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$312,500
Rebate Processing, Inspections, and Other Quality Control	\$46,140	\$110,428	\$129,583	\$133,470	\$137,474	\$141,598	\$72,388
Evaluation and Related Research	\$20,190	\$48,321	\$56,702	\$58,403	\$60,155	\$61,960	\$31,675
Total	\$124,938	\$1,486,519	\$1,850,885	\$1,861,412	\$1,872,254	\$1,883,422	\$531,906

3.4. General Program Assumptions

The subprograms summarized above were developed in order to meet the needs of all PSE&G’s customer base. The following details some of the assumptions used in order to calculate the costs and savings associated with the proposed programs.

Measures Savings Estimate Methodology

Energy and capacity savings appearing in the PSE&G forecasting model considered input assumptions from the Protocols to Measure Resource Savings as approved by the Board on June 29, 2016, in addition to other relevant Technical Resource Manuals (TRMs) from jurisdictions including Massachusetts, New York, Michigan, Vermont, and the Northeast Energy Efficiency Partnership’s (NEEP) Mid-Atlantic TRM. Regional TRMs, in addition to the NJ Protocols TRM, were utilized to ensure a robust and complete measure program that includes measures not currently present in the Protocols document, and availability of granular measure cost data, which is not provided in the Protocols document, and is required for analysis. Where other TRMs were utilized for input data, measure savings values from these

protocols were adjusted, particularly for weather-sensitive measures, using inputs from the New Jersey Protocols document (e.g. equivalent full-load hours) to ensure that savings values were representative of New Jersey's climate.

Net-to-Gross

Net-to-gross is a term that refers to adjustments to reported energy savings after accounting for a) whether subprograms are influential in a customer's decision to undertake the measures, and b) whether additional customer participation in efficiency subprograms occurred beyond these anticipated by the subprogram design.

The American Council for An Energy Efficient Economy (ACEEE) states that "Gross savings impacts are changes in energy consumption that result directly from subprogram-related actions taken by participants in an energy efficiency subprogram, regardless of why they participated. Net savings impacts are changes in energy use attributable to a particular energy efficiency subprogram. These changes may implicitly or explicitly include the effects of factors such as free-ridership, participant and non-participant spillover, and induced market effects."⁵ ACEEE continues to explain that "Free-riders are participants who would have adopted energy efficiency measures in the absence of the subprogram. Spillover is when the subprogram inspires participants or nonparticipants to take other efficiency actions not directly targeted by the subprogram. Induced market effects occur as a result of changes in the market inspired by the subprogram (e.g. contractors change their previous equipment stocking and recommendation practices due to familiarity with a new technology promoted by the subprogram). While it is considered best practice for net savings evaluations to account for free-ridership and spillover (and occasionally induced market effects), in practice, many evaluators account for free-riders alone, thereby running the risk of undercounting total savings impacts."

PSE&G's energy efficiency subprograms will significantly influence customer purchasing decisions, retailer product stocking patterns, and the approach and quality of product installation and operational services provided by a wide array of trade allies and building energy management professionals. PSE&G believes that, while it would be possible to conduct substantial net-to-gross research to quantify estimates of net-to-gross influencing factors, to do so before the launch of its new subprograms would require significant expense and time, delaying the benefits of these new subprograms. Unfortunately, no New Jersey-specific analysis has been undertaken to provide net-to-gross estimates from which adjustments could be made.

Additionally, PSE&G has performed this analysis for its existing subprograms (Direct Install, Hospital Efficiency and Multifamily Efficiency). The results of this analysis show that the net-to-gross ratios for these subprograms are close to 1.0.⁶

In light of the above considerations and recognizing that a) the net-to-gross impacts can have both a negative and positive impact to subprogram efficiency (free rider impacts can reduce net to gross ratios below 1.0 while spillover effects can increase net to gross ratios to above 1.0); b) the results in studies performed with respect to this issue; c) the significant cost of conducting net-to-gross studies, PSE&G believes it is more appropriate to deem all subprograms at a net-to-gross ratio of 1.0.

Program evaluation activities will focus on robust measurement and verification of savings, and will include net-to-gross estimates for all subprograms. Results from these studies will be used to adjust

⁵ Evaluation, Measurement & Verification. American Council for an Energy Efficient Economy 2018.

<https://aceee.org/sector/state-policy/toolkit/emv>

⁶ PSE&G Impact Evaluation Study: Energy Efficiency Extension Program – Final Report, May 2015, page 2.

savings estimates for future years as needed. Additionally, evaluation activities will include process and market characterization studies to ensure PSE&G is continuously improving the design, delivery and customer satisfaction of proposed subprograms.

4. PROGRAM MANAGEMENT AND MARKET FACTORS

4.1. Program Administration

PSE&G's Program Administration budget will capture the costs internal to PSE&G that are associated with the utility role in delivering the subprograms including labor, benefits, expenses, materials, supplies, employee development and overhead costs such as HR onboarding and computer setup.

4.2. Program Design and Development

PSE&G's Program Design and Development support budget will focus on ensuring PSE&G is continuously improving the subprograms and pilot subprograms. PSE&G will contract with specialized third-parties to provide management and design support to assist with future energy planning activities and to optimize design of subprogram offerings on a year-to-year basis. Maintaining a design budget allows PSE&G to respond effectively to the changing marketplace and ensure delivery of cost-effective and equitable energy efficiency subprograms. This will include implementation support, customer research, subprogram design and re-design, and will leverage the output of EM&V and pilot subprograms to identify future opportunities.

4.3. Education and Outreach

Robust education and outreach, to promote not only awareness of PSE&G's energy efficiency subprogram offerings, but also to encourage a cultural shift to appreciate and engage in energy efficient practices and investments is crucial to the success of PSE&G's energy efficiency program. PSE&G is uniquely positioned to provide for the energy efficiency needs of its customers, and these funds will help customers of PSE&G understand the role of PSE&G, as well as the numerous outlets to achieve energy efficiency through the subprograms proposed within the CEF-EE Program.

PSE&G's education and outreach budget will support the growth and development of its energy efficiency subprograms in the form of customer outreach, workshops, and sponsored conferences. These funds are intended to support direct outreach to all, but in particular, hard-to-reach customer segments. Some key methods of education and outreach include, but are not limited to:

- **Customer Outreach:** PSE&G desires all customers to be fully aware of the importance of energy efficiency and clean energy priorities, and to be aware of all means of participation in PSE&G's diverse Program of energy efficiency subprograms. These funds will be used for broad-based education and outreach activities and will include promotional awareness messages and activities at conferences, events, meetings, and educational and awareness messages via television, print, radio, and online or social media channels.
- **Conferences:** Where directly relevant, PSE&G subprogram staff will participate in, sponsor, or host regional and New Jersey-based conferences to build awareness of subprogram offerings, develop relationships with key market participants, and ensure subprogram design reflects the cutting edge of the market.
- **Local Workshops and Events:** PSE&G or third-party implementation contractors may host or supplement in-person community weatherization and efficiency workshops to spread awareness of subprogram offerings, administer community-based efficiency 'challenges', and contribute to building a culture of efficiency.

- **Underserved Market Outreach:** Conventional advertising campaigns including digital outreach often do not adequately serve groups such as senior citizens, limited income, and non-English speaking customers. Focused and direct efforts to educate and serve these groups will be required to advance projects and inform subprogram design. PSE&G will also look to partner with existing community organizations and affinity groups which are able to leverage their connections to engage customers.

4.4. Program Management Costs

The Program Management Budget assures that all subprogram related costs are captured and covered over the duration of the subprogram period. These costs include:

- **Campaign Management:** This includes a small team of campaign / advertising associates responsible for developing, implementing and managing campaigns to increase awareness of the PSE&G's energy efficiency subprograms. In addition to direct mail, the campaign management team will increase awareness through email marketing, website, and social media channels. They will also be responsible for the development of brochures, presentations, and the identification of target audiences.
- **Account Management:** This function expands on the traditional role of the utility account management team to enable a deeper engagement with managed accounts on energy efficiency topics and drive awareness, consideration and participation in energy efficiency by managed accounts. In addition to directing customers to, and working with them to secure services for, the most beneficial subprograms for their facilities, the account manager will proactively identify and contact commercial and industrial customers that could benefit from these subprograms.
- **Legal:** Legal resources are required to support the development of customer contracts and vendor contracts. They will review subprogram documents, rules and processes to ensure compliance with applicable laws and regulations. They will also support subprogram administrative personnel in managing legal disputes with customers, vendors and contractors.
- **Procurement:** Significant procurement activities will be required to develop and conduct the solicitations needed to procure the services necessary to support the Program's energy efficiency subprograms. This includes development of a procurement strategy, and the identification and evaluation of vendors based on reliability, cost and ability to execute. Procurement personnel will work with subprogram administrative personnel to develop specifications, identify potential suppliers, issue solicitations, evaluate bids and negotiate contract terms.
- **Human Resources:** Due to the significant expansion of energy efficiency subprograms, Human Resources personnel will be needed to support the sourcing, identification, selection and on-boarding of subprogram staff with the requisite qualifications.
- **Contact Center:** PSE&G's contact center will handle customer contacts regarding energy efficiency subprograms, and direct customers to appropriate subprograms to meet their needs. The call center will also leverage, as appropriate, customer inbound contacts to engage customers in the consideration of energy efficiency actions.
- **Billing and Collection:** Billing and collection personnel will manage the account level detail of the on-bill repayment subprograms associated with the energy efficiency subprograms. This includes addressing customer inquiries, analyzing and reviewing account balances, and managing collection activities for delinquent accounts.

4.5. Information Technology Costs

The scale and scope of PSE&G's energy efficiency program requires significant investment in technology systems and services to ensure PSE&G customers have easy access to energy efficient products,

incentives, and repayments. The investment in Information Technology (IT) will also ensure that PSE&G is able to qualify, process, and fulfill orders in an efficient and timely manner while also understanding consumer behavior and marketplace trends in order to modify and enhance subprogram offerings. These systems will enhance current platforms and expand functionalities to allow for integration across all subprograms which increase efficiency, address market barriers, and will improve response to customer queries.

The anticipated IT budget consists of two components, IT Build and IT Run. IT Build contains funds to develop and construct the needed IT infrastructure which will allow the PSE&G EE CEF Program to flourish. The IT Run budget contains funds to assure that the IT infrastructure continues to function properly and is upgrade to avoided malfunctions. The IT Build and IT Run budgets are illustrated in the following table:

Table 40: Estimated IT Budget

IT Cost Category	2019	2020	2021	2022	2023	2024	2025	Total
IT Build	\$30,297,753	\$47,046,092	\$1,941,741	\$1,750,000	\$1,125,000	\$250,000	\$0	\$82,410,586
IT Run	\$16,875	\$2,900,850	\$5,650,100	\$6,246,700	\$6,246,700	\$6,246,700	\$1,561,675	\$28,869,600
Total IT	\$30,314,628	\$49,946,942	\$7,591,841	\$7,996,700	\$7,371,700	\$6,496,700	\$1,561,675	\$111,280,186

Investment in robust IT infrastructure is necessary to address market barriers impacting existing energy efficiency subprograms, as well as potential barriers limiting participation in PSE&G’s proposed program.

Energy Efficiency Services Platform

The energy efficiency (EE) services platform is a collection of seamlessly integrated and PSE&G-branded applications that will provide essential automation and support for the operation and management of PSE&G’s proposed energy efficiency subprograms. It will also provide a seamless, user-friendly, and easy-to-navigate interface for customers.

Integration Platform

The integration platform is an essential element to ensure accurate, timely, and secure information flows between customers, suppliers, vendors, trade allies, and PSE&G’s internal call center and workforce personnel so that customers can participate in the proposed program in a seamless and user-friendly way. The platform will support a wide variety of secure protocols and data/message delivery styles.

Security

Customer data security and privacy remains a key focus area for PSE&G and the proposed systems and services will include all prudent and reasonable customer and general data security protections, especially as it relates to 3rd party energy efficiency partners. Specific focus areas will include, for example, identity and access management, user access, data encryption, physical access security, certificate management, virus protection, change control, network monitoring, intrusion detection, and remote access control.

Streetlight – OMS/CAD Interface

The streetlight management system will provide the ability for PSE&G to monitor and control the operation of streetlights, including; operating health status, on/off schedule, and lamp brightness via the advanced controllers included in the subprogram. The system will also integrate with PSE&G’s work management system to automatically generate maintenance and repair work orders to respond to abnormal status conditions.

4.6. Customer Complaint Resolution

Customer complaints relating to the design, delivery, or administration of any PSE&G subprogram may be made through various PSE&G customer contact personnel/departments including the customer service toll free number or directly to the NJ BPU. In all instances, the immediate issue would be referred to the most appropriate PSE&G subprogram management personnel to investigate and resolve. PSE&G will utilize the same complaint resolution procedures as were approved by the Board for use in the Energy Efficiency 2017 Program.

PSE&G will attempt to resolve disputes with its customers informally in the first instance. Disputes that involve PSE&G’s administration of the subprogram that cannot be resolved informally will be resolved through the NJ BPU’s existing process for customer complaints within the appropriate Division or the Office of Administrative Law. Disputes between PSE&G and its vendors will be resolved in accordance with contract provisions. Disputes under the subprogram that involve monetary claims or civil damages that cannot be decided by the NJ BPU will be resolved in an appropriate court of law.

4.7. Anticipated Job Creation

Consistent with previous filings, direct job creation related to the subprograms proposed in this EE Program Plan was forecast with the Rutgers “Analysis for the 2011 Draft New Jersey Energy Master Plan Update.”⁷ This report specifies 7.91 direct jobs created for every one-million dollars invested in energy efficiency in New Jersey. This investment will also have a ‘multiplier effect’ on New Jersey’s economy in that the direct jobs will spend part of their wages on other goods and services in New Jersey, creating additional economic value. Induced and indirect economic activity was forecast using the National Renewable Energy Laboratory (NREL) Jobs and Economic Development Impact (JEDI) model. JEDI is an input-output economic impact model that has been accepted by the NJ BPU and uses state and industry specific economic multipliers that estimate the direct, indirect and induced economic impact of energy industry investments.

While JEDI does not have a model specifically for energy efficiency investments, the solar PV model has similar economic characteristics (e.g. both have a large up-front investment for the initial installation followed by very low maintenance costs going forward). Further, both utilize a similar level of skilled trade workers. The model assumed that no New Jersey in-state manufacturing activity would result from the PSE&G investments; to the extent manufacturing activity is induced, it would result in additional job and multiplier benefits to the State.

The following table illustrates the direct and indirect and induced jobs to be created as a result of PSE&G’s energy efficiency subprograms:

Table 41: Direct, Indirect, and Induced Job Creation

Subprogram	Direct Job Creation	Indirect and Induced Job Creation	Total Jobs Created
Residential Efficient Products	2,215	669	2,884
Residential Existing Homes	720	261	981
Residential Behavioral	386	110	497

⁷ http://nj.gov/emp/docs/pdf/emp_creeep_report20110412.pdf

Subprogram	Direct Job Creation	Indirect and Inducted Job Creation	Total Jobs Created
Residential K-12 Education	53	26	79
Residential New Construction	230	110	340
Residential Multi-Family	143	72	215
Residential Income Eligible	879	302	1,181
C&I Prescriptive	4,885	1,562	6,446
C&I Custom	1,974	559	2,533
C&I Small Non-Residential Efficiency	2,767	678	3,446
C&I New Construction	211	94	305
C&I Energy Management	111	48	159
C&I Engineered Solutions	2,841	868	3,708
C&I Streetlight	1,202	295	1,497
ETA Pilot	208	51	259
Energy Efficiency as a Service Pilot	208	51	259
Smart Homes Pilot	208	51	259
Non-Wires Alternative Pilot	208	51	259
Non-Pipes Solution Pilot	208	51	259
Volt Var Pilot	129	34	163
Business Energy Reports Pilot	96	30	126
Building Operator Certification Pilot	76	26	102
IT and Other Costs	2,042	1,248	3,290
Total	22,001	7,246	29,246

The indirect and induced job estimates above are based upon assumptions on equipment and supplies purchases, installation labor, and project administration expenditures. All purchases were assumed to be made in state while all materials would originate outside the state of New Jersey (i.e. 0% in-state manufacturing).

4.8. Environmental Emissions Savings

The impact of PSE&G's energy efficiency subprograms on power plant emissions was forecast using dispatch simulation results using the AURORAxmp modeling tool, an industry-leading software and data package that simulates the hourly commitment and dispatch of electric generators to serve load, recognizing utility-level peak demand, transmission constraints, operational characteristics of generators, delivered fuel prices, emissions prices, etc. To determine emissions savings, a base case simulation, which included current utility load forecasts, was compared against a PSE&G energy efficiency case, in which total energy and peak demand were reduced to reflect PSE&G's energy efficiency program. Because AURORA dispatches generation at the individual unit level, the simulation results provide marginal emissions rates for CO₂, SO₂, and NO_x. The difference between these two cases illustrates the total magnitude of emissions avoided as a result of the energy efficiency subprograms.

Emissions rates associated with residential natural gas use were based upon the US Environmental Protection Agency's (EPA) emissions factors for residential natural gas use. The following table displays the emissions savings resulting from the PSE&G EE CEF-EE Program Plan in U.S. tons.

Table 42: Total Emissions Reduction by Subprogram

Subprogram	CO2 Emissions Reduction (tons)	SO2 Emissions Reduction (tons)	NOx Emissions Reduction (tons)
Residential Efficient Products	3,095,396	4,782	2,365
Residential Existing Homes	716,741	802	555
Residential Behavioral	612,335	621	460
Residential K-12 Education	91,806	134	70
Residential New Construction	555,952	306	435
Residential Multi-Family	237,250	496	180
Residential Income Eligible	513,279	398	399
C&I Prescriptive	8,689,410	17,568	6,632
C&I Custom	2,556,417	5,191	1,951
C&I Small Non-Residential Efficiency	2,370,981	4,895	1,800
C&I New Construction	717,560	988	554
C&I Energy Management	89,816	142	67
C&I Engineered Solutions	2,655,073	5,127	2,046
C&I Streetlight	755,205	1,622	571
Total	23,657,219	43,071	18,085

4.9. Trade Allies

PSE&G will leverage the community of installation contractors, developers, plumbers, electricians, builders, retailers, and distributors other energy efficiency service businesses, collectively referred to as “trade allies”, as highly valued and critical partners in marketing and direct delivery of the energy efficiency products and services. Throughout this CEF-EE Program Plan, entities such as those listed above will be referred to as trade allies.

Trade allies, through the course of doing their jobs, will be highly influential in communicating to customers the value proposition of PSE&G’s incentives for energy efficient products and services. Without the support of the trade ally community, PSE&G will be unable to achieve its energy efficiency goals. Therefore, PSE&G has proposed to commit substantial resources to develop, educate, and grow the trade ally community, with focused trade ally working groups and communication channels developed, depending on the specific trade ally cohort. For example, PSE&G’s trade ally outreach, education and awareness, training, and / or certification requirements will vary depending if the trade ally cohort group is focused on the existing homes marketplace or C&I projects.

In certain cases, PSE&G will implement a qualified trade ally network, specific to certain PSE&G energy efficiency subprogram(s), as such, these trade allies will have demonstrated to PSE&G their professionalism, credentials, and will be highlighted as qualified trade allies to subprogram participants. PSE&G may assist qualified and subprogram participating trade allies as a “PSE&G Trade Ally”, and coordinate on the use of co-branded marketing and communications material to help advance PSE&G’s energy efficiency goals. This may include PSE&G co-sponsoring advertisements with trade allies in local

publications that co-promote the trade allies brand and the PSE&G brand, as joint partners in advancing energy efficiency for PSE&G customers.

PSE&G operates a competitive appliance service business, which may be one of the service providers or Trade Allies participating in the CEF-EE Program in accordance with BPU requirements and applicable law.

4.10. On Bill Repayments

PSE&G will be offering participants of most subprograms the option to repay equipment or project costs not covered by incentives or rebates on their utility bill interest free for a period of five to ten years depending on the subprogram.

In order to use on-bill repayments, participants will be evaluated to determine their risk and ability to repay. PSE&G will establish qualification minimums for on-bill repayments, which may include bill payment history or other factors. Participants will be required to accrue a minimum balance threshold in order to utilize on-bill repayments; however, the threshold will be evaluated periodically to assure that it properly incents customer participation in subprograms.

Individual measure lifetimes were analyzed to assure that no subprogram allowed for a repayment period shorter than the weighted-average lifetime of all proposed measures within a specific subprogram. The following chart details the current repayment periods proposed for each subprogram. PSE&G will periodically review the repayment period of each subprogram to assure that it properly incents customer participation in subprograms.

Table 43: Preliminary Repayment Periods by Subprogram

Programs	Proposed Repayment Period (yrs)
Residential Efficient Products	5
Residential Existing Homes	5
Residential Behavioral	0
Residential K-12 Education	0
Residential New Construction	0
Residential Multi-Family	0
Residential Income Eligible	0
C&I Prescriptive	5
C&I Custom	5
C&I Small Non-Residential Efficiency	5
C&I New Construction	0
C&I Energy Management	5
C&I Engineered Solutions*	5
C&I Streetlight	0

Multi-family facilities which are HMFA qualified and CHP applications will be permitted to utilize on-bill repayments for 10-years.

PSE&G assumed that a certain percentage of customers utilizing on-bill repayments would be unable to meet the payment obligations set forth in their agreement. For modeling purposes, PSE&G assumed an unrecoverable rate of 0.877%, consistent with the unrecoverable percentage realized by PSE&G's electric and/or natural gas customers participating in current PSE&G on-bill repayment efficiency subprograms.

4.11. Data Protection and Security

PSE&G will implement privacy and data handling policies and procedures that are consistent with PSE&G's customer data security protections and any applicable BPU regulations and statutory obligations. PSE&G will not sell or share any individual customer information or aggregated customer data except as specified. PSE&G may share customer information or aggregated customer data with outside third-party implementation contractors, vendors, or trade allies to implement and/or evaluate the CEF EE Program, and these companies shall use that information/data for the sole purpose of Program implementation and evaluation.

4.12. Comparison to In-State Programs

The CEF-EE Program Plan contains twenty-two subprogram offerings across an array of different market and efficiency segments. As such, there are common elements between the subprograms proposed in this plan, and those offered by the NJCEP. While some of the subprograms naturally target similar market segments, PSE&G is proposing to greatly increase the level of investment and savings goals by harnessing its unique customer relationships, its brand and goodwill, as well as its utility resources. As such, it is expected that the subprograms offered by PSE&G will be the exclusive ratepayer funded energy efficiency programs available in PSE&G's service territory, and that customers will be afforded greater and additional savings opportunities by participating in the subprograms offered by PSE&G in the CEF-EE Program Plan.

A summary providing a detailed explanation of how the proposed subprograms are consistent with and/or different from existing or proposed NJCEP or other utility programs can be found in Appendix C.

4.13. Comparison to Out-of-State Programs

The efficiency subprograms proposed by PSE&G are broadly comparable to programs offered by utilities across the United States. The proposed CEF-EE Program of efficiency subprograms combined with the option of PSE&G on-bill repayments for many of the subprograms will move New Jersey and PSE&G into a national leadership position with respect to energy efficiency results.

To inform the development of the proposed plan, PSE&G benchmarked twenty-two peer utilities to assess the spending and savings rates of industry leading out-of-state utilities.⁸ This review identified the historical cost of saved energy for 2015 and 2016 at the subprogram and sector level. PSE&G used the benchmarking analysis to inform its subprogram design, as well as to assess the reasonableness of projected energy savings and cost at the subprogram and overall program level.

Proposed pilot subprograms were developed based on industry knowledge and expertise, consideration of pilots being led by other subprogram administrators, and the likelihood of success and value to PSE&G customers.

⁸ Several of the utilities in the benchmarking sample are considered to be national leaders in energy efficiency by the American Council for an Energy Efficient Economy (ACEEE).

Table 44: Utilities Reviewed in Benchmarking Research

Utility	State	Electric	Natural Gas
AEP Ohio	OH	X	
ConEdison	NY	X	X
Connecticut Light & Power	CT	X	
Consumers Energy	MI	X	X
DTE Energy	MI	X	X
Duke Energy Progress	NC	X	
Efficiency Maine	ME	X	
Efficiency Vermont	VT	X	
Eversource Energy	MA	X	X
Interstate Power & Light	IA	X	X
MidAmerican Energy	IA	X	X
MN Power	MN	X	
National Grid	MA	X	X
National Grid	RI	X	X
NJCEP	NJ	X	X
PECO	PA	X	
PSE&G – LI	LI	X	X
PSE&G – NJ	NJ	X	X
Puget Sound Energy	WA	X	X
Southern California Edison	CA	X	
Southern California Gas	CA		X
Xcel Energy	MN		X

5. EVALUATION, MEASUREMENT & VERIFICATION

PSE&G will contract with independent, third-party evaluation contractor(s) to provide evaluation, measurement and verification of the subprograms with the exception of the C&I Streetlight subprogram. PSE&G will conduct annual impact and process evaluation reports for all non-pilot subprograms. Reports shall reflect results from the prior calendar year and shall be provided to the NJ BPU by July 1 of each year. Evaluation reports will support PSE&G's continuous improvement process by identifying the subprogram's actual performance, indicating how this performance differs from the planned performance, and identifying opportunities for future performance improvement.

Evaluation reports will be classified into the following categories:

- **Impact Studies:** used to determine the level of savings resulting from the subprograms, and an estimate of the cost effectiveness of the subprograms
- **Process Studies:** used to assess the subprogram design and delivery methods from multiple perspectives to determine how well the subprograms achieved their objectives, and provide recommendations for improvement
- **Research:** additional analysis that supports future subprogram potential, design, or performance

Impact Evaluation Methodology

Program impacts will be determined using a variety of data sources and tested techniques as applicable for specific subprograms. Wherever applicable, savings calculations will utilize New Jersey Protocols for Resource Measurements. Otherwise, savings calculations will be based on accepted engineering practices based on the International Performance Measurement and Verification Protocols and other widely accepted protocols. Energy baseline determinations will be subprogram specific; subprograms that reflect early replacement of existing equipment will use existing equipment or its equivalent as baseline; subprograms that reflect end-of-life replacement will use standard equipment as baseline.

Impact studies will report both gross and net savings. Gross savings represents the energy reduction calculated as a result of the measures installed or other accepted methods for determining energy savings. Net savings represents the level of savings that is directly attributable to the subprogram, taking into account two primary factors: free ridership and spillover. Impact studies will also include savings of fuels other than electricity and natural gas.

Process Evaluation Methodology

Assessment of subprogram design and subprogram implementation will be accomplished through multiple methods: surveys of subprogram participants, interviews with vendors, contractors, subprogram staff and other relevant stakeholders, review of outreach and other promotional efforts, and assessment of other subprogram specific features or characteristics. Satisfaction levels of subprogram participants will be measured; cycle time of each subprogram will be evaluated and compared against industry standards. Feedback and recommendations from this study will be used to improve all aspects of a subprogram; outreach plans, subprogram features or incentives, subprogram delivery methods or other parameters relevant to customer satisfaction and subprogram success.

Pilot Subprogram Evaluation Reports

Evaluation reports for each pilot subprogram will be uniquely designed to address the goals of each pilot. Timing of evaluation reports will align with the completion of key milestones of the respective pilots and may not be conducted on a calendar year basis. All reports will be submitted to the NJ BPU upon completion.

Other Studies

Other studies may be commissioned by PSE&G to be conducted by independent contractors. These may include; market characterization research, review of savings protocols, baseline studies to confirm existing conditions, and market potential studies to assist with continuous subprogram planning and program development.

6. COST EFFECTIVENESS

The five forms of cost benefits analysis (CBAs) required by the NJ BPU's Minimum Filing Requirements (the Participant Cost Test, Program Administrator Cost Test, Ratepayer Impact Measure Test, Total Resource Cost Test, and Societal Cost Test) were conducted using accepted methods and conservative assumptions.

6.1. Summary of Assumptions

The following is a description of the underlying assumptions used to calculate the results of the CBA tests.

Lifetime Avoided Electric Supply Costs

The lifetime avoided electric supply costs consist of savings that occur as a result of the reduction of electricity purchased and delivered through PJM in the PSEG zone. The value of these savings is computed as the cost of the avoided purchases – in other words, the market price for electricity. The market value of electricity was calculated based upon the congestion-adjusted current energy market forward trading price for PJM-Western Hub, the most liquidly traded zone in PJM. The congestion-adjustment was used to account for the difference between PJM Western Hub and PSEG zone. The congestion-adjusted forwards were then forecast using Energy Information Administration (EIA) 2018 Annual Energy Outlook reference case for the Reliability First Corporation – East region electricity generation escalations to determine the long-term wholesale electric forecast. Avoided electric supply costs were also adjusted to account for marginal line losses in the PSE&G and PJM systems.

Lifetime Avoided Electric Capacity Costs

Electric capacity savings consist of savings that occur as a result of reduced electric peak demand in the PSEG zone. Efficiency measures that reduce the overall capacity obligation of the PSEG zone have a direct impact on the amount of required wholesale capacity, and the value of these savings is computed as the cost of avoided purchases, equal to the market price for capacity. Capacity savings were delayed by two years to account for time to incorporate new load reductions into the load forecast. In addition, because capacity obligations are generally set during the five peak summer load hours, the capacity reduction for each subprogram was set every June equal to the minimum savings calculated during the preceding June through August period. Actual PJM EMAAC zone capacity clearing prices were used through delivery year 2021/2022, and were escalated by 3.0% per year thereafter. Avoided peak demand amounts were also adjusted to account for marginal line losses in the PSE&G and PJM systems as well as the capacity reserve margin used by PJM to assure the market has ample reserves available.

Lifetime Avoided Natural Gas Supply Costs

Wholesale natural gas savings occur as result of reduced natural gas purchases caused by the subprograms. The value of these savings is computed as the cost of the avoided purchases, in other words, the market price for natural gas. The market value of natural gas was calculated based upon current Henry Hub natural gas commodity prices, as well as current Transco Zone 6 NY basis differentials to determine the basis adder used for interstate transportation of natural gas. The summation of the Henry Hub natural gas commodity forwards with the interstate transport basis equals the cost of gas to PSE&G's city-gate. While PSE&G's gas delivery system receives interstate pipeline delivery at an estimated apportionment of 60% via Transco's pipeline at Z6 NY, and 40% via Tetco's pipeline at M3, we assumed the avoided natural gas supply cost would be based on the marginal delivered price, rather than the average. This means the avoided natural gas supply cost was based upon solely Transco Z6 NY delivery, as that would be the delivery point avoided should consumption within the system be reduced. These prices were then escalated based upon EIA's 2018 Annual Energy Outlook reference case escalation for

Henry Hub natural gas. Avoided electric supply costs were also adjusted to account for average line losses in the PSE&G system.

Lifetime Merit Order Price Suppression Benefits (DRIPE)

Merit order price suppression or Demand Reduction Induced Price Effects (DRIPE) represents the value of reduced electricity and natural prices to all customers. This value is generally derived from downward movement of the electricity or natural gas demand curve because of reduced usage stemming from the subprograms. For electricity, this value was computed by undertaking a North American power market simulation using AURORAxmp (AURORA), focusing on the Eastern Interconnect and in particular, the PJM interconnect. To determine the incremental change in electricity prices using AURORA, the model generated two separate market simulations: 1) a Base Case, using current fuel prices, and business-as-usual market assumptions and; 2) a PSEG Efficiency Case, in which total energy and peak demand were reduced to reflect PSE&G's energy efficiency plan. Each of these simulations produced long-term price forecast for the PSE&G zone. The comparison of the two different price forecasts results in the market price impact (merit order effect or DRIPE).

Lifetime REC Avoided Purchases

Renewable Portfolio Standard (RPS) requirements set the total volume of Renewable Energy Certificates (RECs) that must be purchased as a percentage of New Jersey's retail consumption load. Therefore, a reduction in load resulting from the subprograms will reduce the total number of RECs required to be purchased. Market prices for New Jersey Class I RECs, Class II RECs and SRECs were used based upon an internal supply-demand analysis and compliance costs for the three New Jersey REC markets.

Lifetime Wholesale Volatility Value

Exposure to volatility in electricity and natural gas prices is a risk that energy efficiency can help to avoid. In effect, expenditures on energy efficiency amount to a purchase of energy service which does not contain the price volatility implicit in the price of electricity and natural gas. By reducing the overall energy purchases of customers, those customers imply less risk to their electricity and natural gas bills. The risk avoidance benefit of energy efficiency can be calculated in the form of a price adder to the cost of electricity or natural gas. The price adder was determined based upon a review of past studies and regulatory decisions. Although there is some variation among the studies, a conservative premium based on these precedents equal to 10% of electric and natural gas supply costs was assumed.

Lifetime Avoided Replacement

Avoided replacement costs are accrued as a result of installing longer lasting LED streetlights in place of HPS streetlights. LED streetlights are assumed to last for twenty years, while the traditional HPS streetlights which they are replacing last an average of seven years; therefore, the cost of the bulb, as well as the labor to replace the bulb, are avoided twice over a twenty-year period.

Lifetime Avoided T&D Costs

Transmission & Distribution (T&D) savings occur as a result of diminished total costs of maintaining the transmission and distribution infrastructure used to serve its customers as a result of reduced or flattened load. The avoided electric T&D costs were based upon the precedent set in past filings, a value of \$30 per kW-year, sourced from the "Draft Energy Efficiency Cost-Benefit Analysis Avoided Cost Assumptions" produced by the Center for Energy, Economic and Environmental Policy (CEEP) of the Edward J. Bloustein School of Planning and Public Policy at Rutgers University. Natural gas energy efficiency provides transmission and distribution cost savings to all retail customers, regardless of their participation in the EE subprogram(s). Lower natural gas consumption leads to reduced operating costs, reduced maintenance costs for existing infrastructure and reduced capital costs resulting from reduced or delayed infrastructure upgrades.

Lifetime Environmental Benefits

Societal Benefits from reductions in CO₂, NO_x and SO₂ were calculated using methods accepted by the State and at USEPA and other recognized national sources, including the “Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866” produced by the Interagency Working Group on Social Cost of Greenhouse Gases, United States Government, as well as the Cross-State Air Pollution Rule (CSAPR) EPA cost-benefit analysis.

Economic Benefits

Benefits to the New Jersey economy were calculated using models accepted by the BPU that capture direct, indirect, and multiplier benefits. As discussed in the Jobs Creation section.

Discount Rate

The Total Resource Cost (TRC) test, the Participant Cost (PC) test, the Program Administrator Cost (PAC) test, and the Ratepayer Impact Measure (RIM) test all assumed a discount rate for purposes of determining the present value of the cost and benefit streams of 6.8%, equal to PSE&G’s weighted average cost of capital. The Societal Cost (SC) test assumed a discount rate of 2.77%, equal to the yield of a 30-year U.S. Treasury bond.

6.2. Results of Cost-Benefit Analysis

The results of the cost-benefit analysis can be seen in the chart below. These results demonstrate that these subprograms are beneficial and should be approved by the NJ BPU.

Table 45: Results of Cost Benefit Analysis

Programs	SCT	TRC	PC	PAC	RIM
Residential Efficient Products	4.5	1.3	13.3	1.8	0.8
Residential Existing Homes	2.6	0.6	5.2	1.0	0.6
Residential Behavioral	3.3	1.4	n/a	1.4	0.7
Residential K-12 Education	4.6	1.3	n/a	1.3	0.7
Residential New Construction	2.7	0.8	4.2	1.4	0.7
Residential Multi-Family	5.0	1.3	n/a	1.3	0.7
Residential Income Eligible	1.8	0.4	n/a	0.4	0.3
C&I Prescriptive	3.4	1.0	4.5	1.6	1.2
C&I Custom	5.1	1.3	5.4	2.3	1.5
C&I Small Non-Residential Efficiency	4.6	1.2	4.2	2.4	1.5
C&I New Construction	4.4	1.3	5.1	2.3	1.4
C&I Energy Management	4.0	1.1	7.0	1.4	1.1
C&I Engineered Solutions	4.1	1.1	5.1	1.8	1.3
C&I Streetlight	2.3	0.9	n/a	0.9	1.3
Residential Programs	3.8	1.1	12.0	1.5	0.7
Commercial & Industrial Programs	3.8	1.1	4.9	1.7	1.3
Low Income Programs	1.8	0.4	n/a	0.4	0.3
Total Program	3.7	1.0	6.3	1.6	1.1

Complete cost-benefit analysis tables for the five tests and the basis of these results are provided in Appendix E.

APPENDIX A – MEASURE-LEVEL DETAILS

The chart below contains preliminary measure-by-measure details used to develop the subprograms. It is anticipated that incentive levels may change prior to and during the implementation of each Subprogram.

Table 46. Measure Level Details

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
Res Eff Products	Storage WH, EF=0.82	GAS	per water heater	\$125.00
Res Eff Products	Instant WH, EF>=0.82	GAS	per water heater	\$150.00
Res Eff Products	Heat Pump WH	ELEC	per water heater	\$400.00
Res Eff Products	Circulator with demand control	GAS	per water heater	\$40.00
Res Eff Products	Indirect water heater with Energy Star hot water boiler	GAS	per water heater	\$400.00
Res Eff Products	Condensing Boiler 90-95%	GAS	Per Boiler	\$400.00
Res Eff Products	ENERGY STAR RAC	ELEC	Per Room AC	\$50.00
Res Eff Products	ENERGY STAR CAC (16 SEER 13 EER)	ELEC	Per Air Conditioner	\$400.00
Res Eff Products	ENERGY STAR Fan	ELEC	Per Fan	\$15.00
Res Eff Products	ENERGY STAR Mini Split HP	ELEC	Per Heat Pump	\$400.00
Res Eff Products	SEER 18 HSPF 8.5, installed according to specifications	ELEC	Per Heat Pump	\$450.00
Res Eff Products	ENERGY STAR heat pump	ELEC	Per System	\$450.00
Res Eff Products	WiFi thermostat	ELEC	Per Thermostat	\$100.00
Res Eff Products	WiFi thermostat	GAS	Per Thermostat	\$75.00
Res Eff Products	Condensing Furnace 95-97%	GAS	Per Furnace	\$400.00
Res Eff Products	VRF Heat Pump	ELEC	Per VRF System	\$400.00
Res Eff Products	Most efficient Direct Unit Heater available	GAS	Per Direct Heater	\$400.00
Res Eff Products	ECM circulator pump	ELEC	Per pump	\$75.00
Res Eff Products	ECM Motor	ELEC	Per HVAC system	\$100.00
Res Eff Products	Condensing boiler combo	GAS	Per Water Heating System	\$350.00
Res Eff Products	Properly maintained CAC, 2.6 ton	ELEC	Per AC System	\$25.00
Res Eff Products	ENERGY STAR Freezer	ELEC	per Freezer	\$75.00
Res Eff Products	ENERGY STAR Most Efficient Refrigerator	ELEC	per Refrigerator	\$75.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
Res Eff Products	Heat Pump Clothes Dryer	ELEC	per dryer	\$75.00
Res Eff Products	EnergyStar Side-Loading Clothes Washer	GAS	Per Clothes Washer	\$75.00
Res Eff Products	EnergyStar Side-Loading Clothes Washer	ELEC	Per Clothes Washer	\$75.00
Res Eff Products	EnergyStar Ceiling Fan, no light	ELEC	per Ceiling Fan	\$15.00
Res Eff Products	EnergyStar Portable Dehumidifier	ELEC	per Dehumidifier	\$35.00
Res Eff Products	Energy Star Dryer	ELEC	per Dryer	\$50.00
Res Eff Products	Energy Star Dryer	GAS	PER DRYER	\$50.00
Res Eff Products	Energy Star Air Cleaner	ELEC	per Air Cleaner	\$50.00
Res Eff Products	Energy Star Television	ELEC	per Television	\$10.00
Res Eff Products	Energy Star 5.0 TV Set Top Box	ELEC	per TV Set Top Box	\$1.50
Res Eff Products	Energy Star 7.0 LCD Monitor	ELEC	Per Monitor	\$2.50
Res Eff Products	ECM Whole Home Fan	ELEC	per Fan	\$15.00
Res Eff Products	Induction Cooktop Stove	ELEC	per stove	\$25.00
Res Eff Products	Variable Speed Pool Pump	ELEC	per in-ground pool	\$250.00
Res Eff Products	Above ground pool with pump timer	ELEC	per above-ground pool	\$10.00
Res Eff Products	LED Screw-in General Service Lamp	ELEC	Per Bulb	\$3.00
Res Eff Products	Networked/ Connected - Indoor LED Lamp	ELEC	Per Bulb	\$5.00
Res Eff Products	LED Replacement Lamp (Tube)	ELEC	Per Bulb	\$3.00
Res Eff Products	LED ENERGY STAR Fixture	ELEC	Per Fixture	\$10.00
Res Eff Products	Networked/ Connected - Indoor LED Luminaire	ELEC	Per Fixture	\$10.00
Res Eff Products	LED Outdoor Flood Light Fixture	ELEC	Per Fixture	\$5.00
Res Eff Products	LED Nightlight	ELEC	Per Bulb	\$1.59
Res Eff Products	Manual Dimming Control All Types	ELEC	Per Bulb	\$2.21
Res Eff Products	Occupancy Sensor	ELEC	Per Bulb	\$5.33
Res Eff Products	Daylighting Control	ELEC	Per Bulb	\$5.00
Res Eff Products	Low flow aerator	ELEC	per faucet	\$6.00
Res Eff Products	Low flow aerator	GAS	per faucet	\$7.00
Res Eff Products	Low flow showerhead	GAS	per shower	\$8.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
Res Eff Products	Low flow showerhead	ELEC	per shower	\$9.00
Res Eff Products	Pipe wrap (hot water)	GAS	per house	\$10.00
Res Eff Products	Pipe wrap (hot water)	ELEC	per house	\$10.00
Res Eff Products	Secondary Freezer Not Replaced	ELEC	per Freezer	\$75.00
Res Eff Products	Secondary Refrigerator Not Replaced	ELEC	per Refrigerator	\$75.00
Res Eff Products	Smart (Tier 1) Power Strip	ELEC	per smart power strip	\$15.00
Res Eff Products	Advanced Smart (Tier 2) Power Strip	ELEC	per advanced power strip	\$25.00
Res Existing Homes	Sealed duct in unconditioned spaces	ELEC	Per Household	\$150.00
Res Existing Homes	Ground Source Heat Pump	ELEC	Per GSHP	\$450.00
Res Existing Homes	ENERGY STAR RAC	ELEC	Per Room AC	\$35.00
Res Existing Homes	ENERGY STAR CAC (16 SEER 13 EER)	ELEC	Per Air Conditioner	\$450.00
Res Existing Homes	ENERGY STAR heat pump	ELEC	Per System	\$350.00
Res Existing Homes	VRF Heat Pump	ELEC	Per VRF System	\$350.00
Res Existing Homes	Fan system with heat recovery	GAS	Per Fan System	\$300.00
Res Existing Homes	Properly installed CAC	ELEC	Per Air Conditioner	\$50.00
Res Existing Homes	Added Desuperheater	ELEC	per GSHP	\$250.00
Res Existing Homes	Drainwater Heat Exchanger	ELEC	per house	\$300.00
Res Existing Homes	LED Screw-in General Service Lamp	ELEC	Per Bulb	\$10.00
Res Existing Homes	Networked/ Connected - Indoor LED Lamp	ELEC	Per Bulb	\$10.00
Res Existing Homes	LED Replacement Lamp (Tube)	ELEC	Per Bulb	\$5.00
Res Existing Homes	LED ENERGY STAR Fixture	ELEC	Per Fixture	\$8.00
Res Existing Homes	Networked/ Connected - Indoor LED Luminaire	ELEC	Per Fixture	\$10.00
Res Existing Homes	LED Outdoor Flood Light Fixture	ELEC	Per Fixture	\$5.00
Res Existing Homes	LED Nightlight	ELEC	Per Bulb	\$2.00
Res Existing Homes	Manual Dimming Control All Types	ELEC	Per Bulb	\$2.00
Res Existing Homes	Occupancy Sensor	ELEC	Per Bulb	\$5.00
Res Existing Homes	Daylighting Control	ELEC	Per Bulb	\$5.00
Res Existing Homes	Condensing Boiler 90-95%	GAS	Per Boiler	\$400.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
Res Existing Homes	Condensing Furnace 95-97%	GAS	Per Furnace	\$400.00
Res Existing Homes	Low flow aerator	ELEC	per faucet	\$4.00
Res Existing Homes	Low flow aerator	GAS	per faucet	\$4.00
Res Existing Homes	Low flow showerhead	ELEC	per shower	\$11.00
Res Existing Homes	Low flow showerhead	GAS	per shower	\$11.00
Res Existing Homes	Pipe wrap (hot water)	GAS	per house	\$22.00
Res Existing Homes	Pipe wrap (hot water)	ELEC	per house	\$22.48
Res Existing Homes	Standard flow showerhead with TSV	ELEC	per shower	\$34.00
Res Existing Homes	Water Heater set to 120F	ELEC	per water heater	\$5.00
Res Existing Homes	Instant WH, EF>=0.82	GAS	per water heater	\$300.00
Res Existing Homes	WH timer	ELEC	per water heater	\$5.00
Res Existing Homes	Single-Pane window with low-E film	ELEC	per living unit	\$138.60
Res Existing Homes	Home that has air sealing performed	ELEC	per house	\$350.00
Res Existing Homes	Home that has air sealing performed	GAS	per house	\$350.00
Res Existing Homes	Insulated ductwork	GAS	per living unit	\$300.00
Res Existing Homes	Home with insulated basement	GAS	per house	\$500.00
Res Existing Homes	Home with insulated ceiling roof	GAS	per house	\$500.00
Res Existing Homes	Home with insulated knee walls	GAS	per house	\$400.00
Res Existing Homes	Home with insulated rim joists	GAS	per house	\$350.00
Res Existing Homes	Home with insulated walls	GAS	per house	\$350.00
Res Existing Homes	Insulated ductwork	ELEC	per living unit	\$500.00
Res Existing Homes	Home with insulated basement	ELEC	per house	\$500.00
Res Existing Homes	Home with insulated ceiling roof	ELEC	per house	\$500.00
Res Existing Homes	Home with insulated knee walls	ELEC	per house	\$350.00
Res Existing Homes	Home with insulated rim joists	ELEC	per house	\$350.00
Res Existing Homes	Home with insulated walls	ELEC	per house	\$500.00
Res Existing Homes	Boiler with reset controls	GAS	Per Boiler	\$200.00
Res Existing Homes	Insulated piping	GAS	Per Household	\$11.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
Res Existing Homes	HVAC system sized according to Manual J	ELEC	Per System	\$125.00
Res Existing Homes	Heat Pump operating according to specifications	ELEC	Per Heat Pump	\$75.00
Res Existing Homes	Properly maintained furnace	GAS	Per Furnace	\$25.00
Res Existing Homes	Steam heating system with properly adjusted vents	GAS	Per household	\$40.00
Res Existing Homes	Secondary Freezer Not Replaced	ELEC	per Freezer	\$50.00
Res Existing Homes	Secondary Refrigerator Not Replaced	ELEC	per Refrigerator	\$50.00
Res Existing Homes	Smart (Tier 1) Power Strip	ELEC	per smart power strip	\$20.00
Res Existing Homes	Advanced Smart (Tier 2) Power Strip	ELEC	per advanced power strip	\$30.00
Res Behavior	Home Energy Reports	ELEC	per report	\$11.00
Res K-12 Education	K-12 Education Behavior (HER)	GAS	per report	\$0.00
Res K-12 Education	K-12 Education Behavior (HER)	ELEC	per report	\$0.00
Res K-12 Education	Low flow aerator	ELEC	per faucet	\$4.00
Res K-12 Education	Low flow aerator	GAS	per faucet	\$4.00
Res K-12 Education	Low flow showerhead	GAS	per shower	\$11.00
Res K-12 Education	Low flow showerhead	ELEC	per shower	\$11.00
Res K-12 Education	LED Screw-in General Service Lamp	ELEC	Per Bulb	\$9.00
Res K-12 Education	Networked/ Connected - Indoor LED Lamp	ELEC	Per Bulb	\$41.00
Res K-12 Education	LED Nightlight	ELEC	Per Bulb	\$9.00
Res New Construction	Res New Construction - Per Home Gas Component	GAS	per living unit	\$1,250.00
Res New Construction	Res New Construction - Per Home Elec Component	ELEC	per living unit	\$1,250.00
Res MF	Home Energy Reports	ELEC	per report	\$6.00
Res MF	Home Energy Reports	GAS	per report	\$6.00
Res MF	Low flow aerator	ELEC	per faucet	\$4.00
Res MF	Low flow aerator	GAS	per faucet	\$4.00
Res MF	Low flow showerhead	GAS	per shower	\$11.00
Res MF	Low flow showerhead	ELEC	per shower	\$11.00
Res MF	Standard flow showerhead with TSV	ELEC	per shower	\$34.00
Res MF	Smart (Tier 1) Power Strip	ELEC	per smart power strip	\$33.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
Res MF	Advanced Smart (Tier 2) Power Strip	ELEC	per advanced power strip	\$45.00
Res MF	LED Screw-in General Service Lamp	ELEC	Per Bulb	\$9.00
Res MF	LED Nightlight	ELEC	Per Bulb	\$0.00
Income Eligible	Condensing Furnace 95-97%	GAS	Per Furnace	\$2,637.98
Income Eligible	Condensing Boiler 90-95%	GAS	Per Boiler	\$3,754.57
Income Eligible	LED Outdoor Flood Light Fixture	ELEC	Per Fixture	\$60.30
Income Eligible	LED Screw-in General Service Lamp	ELEC	Per Bulb	\$8.76
Income Eligible	LED ENERGY STAR Fixture	ELEC	Per Fixture	\$43.17
Income Eligible	LED Nightlight	ELEC	Per Bulb	\$9.17
Income Eligible	Low flow aerator	ELEC	per faucet	\$4.00
Income Eligible	Low flow aerator	GAS	per faucet	\$4.00
Income Eligible	Low flow showerhead	GAS	per shower	\$11.00
Income Eligible	Low flow showerhead	ELEC	per shower	\$11.00
Income Eligible	Pipe wrap (hot water)	GAS	per house	\$22.48
Income Eligible	Pipe wrap (hot water)	ELEC	per house	\$22.48
Income Eligible	Standard flow showerhead with TSV	ELEC	per shower	\$34.00
Income Eligible	Water Heater set to 120F	GAS	per water heater	\$5.00
Income Eligible	Instant WH, EF>=0.82	GAS	per water heater	\$1,828.65
Income Eligible	WH timer	GAS	per water heater	\$136.00
Income Eligible	Single-Pane window with low-E film	ELEC	per living unit	\$789.60
Income Eligible	Home that has air sealing performed	ELEC	per house	\$1,007.40
Income Eligible	Home that has air sealing performed	GAS	per house	\$1,007.40
Income Eligible	Insulated ductwork	ELEC	per living unit	\$667.00
Income Eligible	Home with insulated basement	ELEC	per house	\$1,500.00
Income Eligible	Home with insulated ceiling roof	ELEC	per house	\$1,800.00
Income Eligible	Home with insulated knee walls	ELEC	per house	\$900.00
Income Eligible	Home with insulated rim joists	ELEC	per house	\$500.00
Income Eligible	Home with insulated walls	ELEC	per house	\$1,500.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
Income Eligible	Boiler with reset controls	GAS	Per Boiler	\$300.00
Income Eligible	Insulated ductwork	GAS	per living unit	\$667.00
Income Eligible	Home with insulated basement	GAS	per house	\$1,500.00
Income Eligible	Home with insulated ceiling roof	GAS	per house	\$1,800.00
Income Eligible	Home with insulated knee walls	GAS	per house	\$900.00
Income Eligible	Home with insulated rim joists	GAS	per house	\$500.00
Income Eligible	Home with insulated walls	GAS	per house	\$1,500.00
Income Eligible	Insulated piping	GAS	Per Household	\$22.48
Income Eligible	HVAC system sized according to Manual J	ELEC	Per System	\$250.00
Income Eligible	Heat Pump operating according to specifications	ELEC	Per Heat Pump	\$130.00
Income Eligible	Properly maintained furnace	GAS	Per Furnace	\$125.00
Income Eligible	Steam heating system with properly adjusted vents	GAS	Per household	\$125.02
Income Eligible	Smart (Tier 1) Power Strip	ELEC	per smart power strip	\$33.00
Income Eligible	Advanced Smart (Tier 2) Power Strip	ELEC	per advanced power strip	\$50.00
C&I Prescriptive	Instant WH 0.82 or 0.94 TE (Gas)	GAS	per kBtu/hr	\$2.00
C&I Prescriptive	Comm Storage WH Et=0.8, with heat recovery (Gas)	GAS	per kBtu/hr	\$200.00
C&I Prescriptive	HW Recirc System w Demand control (Gas)	GAS	per recirculation system	\$1,000.00
C&I Prescriptive	Insulated HW pipe in unconditioned space (Gas)	GAS	per linear foot pipe	\$8.00
C&I Prescriptive	Advanced Smart (Tier 2) Power Strip (Electric)	ELEC	per Power Strip	\$20.00
C&I Prescriptive	Boiler with reset controls (Gas)	GAS	Per kBtu/h	\$0.24
C&I Prescriptive	HVAC with WiFi thermostat (Gas)	GAS	per thermostat	\$75.00
C&I Prescriptive	HVAC with WiFi thermostat (Electric)	ELEC	per thermostat	\$75.00
C&I Prescriptive	HVAC system with EMS (Gas)	GAS	Per 1000 sqft	\$500.00
C&I Prescriptive	HVAC with CO2-based control (Gas)	GAS	Per 1000 sqft	\$30.00
C&I Prescriptive	HVAC with CO2-based control (Electric)	ELEC	Per 1000 sqft	\$40.00
C&I Prescriptive	Boiler Tune-Up	GAS	kbtu/hr input	\$0.33
C&I Prescriptive	Furnace Tune-Up	GAS	kbtu/hr input	\$0.33
C&I Prescriptive	Furnace with ECM Fan Motor (Electric)	ELEC	Per kBtu/h	\$1.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
C&I Prescriptive	VFD-Controlled Motor (Electric)	ELEC	per HP	\$100.00
C&I Prescriptive	ECM Circulator Pump (Electric)	ELEC	Per HP	\$635.00
C&I Prescriptive	Insulated pipe (Gas)	GAS	per linear foot pipe	\$8.00
C&I Prescriptive	Chilled Water Pump with VFD (Electric)	ELEC	per HP	\$150.00
C&I Prescriptive	Variable Air Volume HVAC (Electric)	ELEC	Per ton	\$200.00
C&I Prescriptive	Cooling Tower Fan with VFD (Electric)	ELEC	per HP	\$100.00
C&I Prescriptive	PTAC/PTHP with occupancy sensor (Electric)	ELEC	Per ton	\$100.00
C&I Prescriptive	Air Handler with DOAS (Gas)	GAS	Per ton	\$275.00
C&I Prescriptive	Ventilation with heat recovery (Gas)	GAS	Per ventilator	\$375.00
C&I Prescriptive	Hotel Guest Room Occupancy Sensor (Electric)	ELEC	per 1000 sq ft	\$150.00
C&I Prescriptive	Interior Occupancy Sensor (Electric)	ELEC	per 1000 sq ft	\$100.00
C&I Prescriptive	LED Outdoor Building Exterior (Electric)	ELEC	per 1000 sq ft	\$25.00
C&I Prescriptive	Exterior Occupancy Sensor (Electric)	ELEC	per 1000 sq ft	\$10.00
C&I Prescriptive	LED Track Lighting (Electric)	ELEC	per 1000 sq ft	\$7.50
C&I Prescriptive	Solid State (LED) Recessed Downlight (Electric)	ELEC	per 1000 sq ft	\$30.00
C&I Prescriptive	LED Refrigerator/Freezer Case (Electric)	ELEC	per 1000 sq ft	\$0.10
C&I Prescriptive	Refrigerator Case Light Sensor (Electric)	ELEC	per 1000 sq ft	\$1.50
C&I Prescriptive	Freezer Case Light Sensor (Electric)	ELEC	per 1000 sq ft	\$0.50
C&I Prescriptive	LED Exit Sign (Electric)	ELEC	per 1000 sq ft	\$25.00
C&I Prescriptive	Bi-Level Stairway Lighting (Electric)	ELEC	per 1000 sq ft	\$15.00
C&I Prescriptive	LED Bollard (Electric)	ELEC	per 1000 sq ft	\$0.50
C&I Prescriptive	Daylight Dimming Control (Electric)	ELEC	per 1000 sq ft	\$200.00
C&I Prescriptive	LED Troffer/Surface/Suspended (Electric)	ELEC	per 1000 sq ft	\$300.00
C&I Prescriptive	LED Display Case Lighting (Electric)	ELEC	per 1000 sq ft	\$1.50
C&I Prescriptive	LED Replacement Lamp (Tube) (Electric)	ELEC	per 1000 sq ft	\$50.00
C&I Prescriptive	LED Other Linear Fixture (Electric)	ELEC	per 1000 sq ft	\$50.00
C&I Prescriptive	LED Low/High Bay (Electric)	ELEC	per 1000 sq ft	\$250.00
C&I Prescriptive	LED Pole/Arm Mounted (Electric)	ELEC	per 1000 sq ft	\$50.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
C&I Prescriptive	LLLC - Low Impact Application (Electric)	ELEC	per 1000 sq ft	\$400.00
C&I Prescriptive	LED Channel Signage (Electric)	ELEC	per 1000 sq ft	\$3.00
C&I Prescriptive	LED Parking Garage and Canopy (Electric)	ELEC	per 1000 sq ft	\$50.00
C&I Prescriptive	Market Avg Eff Spray Valve (1.16 GPM) (Gas)	GAS	per Spray Valve	\$25.00
C&I Prescriptive	ENERGY STAR Commercial Refrigerator (Electric)	ELEC	per Refrigerator	\$300.00
C&I Prescriptive	ENERGY STAR Commercial Freezer (Electric)	ELEC	per Freezer	\$300.00
C&I Prescriptive	Pool with Cover (Gas)	GAS	per sqft of pool surface	\$1.00
C&I Prescriptive	Demand Controlled Ventilation (DCV) Exhaust Hood (Electric)	ELEC	per HP	\$800.00
C&I Prescriptive	Refrigerated Vending Machine with control system (Electric)	ELEC	Vending Machine	\$100.00
C&I Prescriptive	Non-Refrigerated Vending Machine with control system (Electric)	ELEC	Vending Machine	\$100.00
C&I Prescriptive	Refrigeration – Cooler Night Covers LT (Electric)	ELEC	Per foot	\$6.00
C&I Prescriptive	Refrigeration – Cooler Night Covers MT (Electric)	ELEC	Per foot	\$6.00
C&I Prescriptive	Refrigeration – Cooler Night Covers HT (Electric)	ELEC	Per foot	\$6.00
C&I Prescriptive	Evaporator Fan Control (Electric)	ELEC	Per Compressor HP	\$30.00
C&I Prescriptive	Add Door to Open Display Case (Electric)	ELEC	Per foot	\$200.00
C&I Prescriptive	electronically commutated motors Motor (Electric)	ELEC	Motor	\$75.00
C&I Prescriptive	Automatic door Closer (Electric)	ELEC	autocloser	\$75.00
C&I Prescriptive	Freezer and Cooler Door Strip Curtians (Electric)	ELEC	Per square foot	\$2.00
C&I Prescriptive	Insulated Lines (Electric)	ELEC	Per foot	\$1.00
C&I Prescriptive	Anti sweat heat control (Electric)	ELEC	Per foot	\$20.00
C&I Prescriptive	Defrost Controls (Electric)	ELEC	Per evap Fan	\$125.00
C&I Prescriptive	Floating Head- Air Cooled (Electric)	ELEC	Per Ton	\$100.00
C&I Prescriptive	Floating Head- Evap Cooled (Electric)	ELEC	Per Ton	\$40.00
C&I Prescriptive	Freezer and Cooler Door Gaskets (Electric)	ELEC	Per foot	\$20.00
C&I Prescriptive	Condensing Storage WH 90% TE (Gas)	GAS	per kBtu/hr	\$5.00
C&I Prescriptive	Indirect WH 85% CAE (Gas)	GAS	per kBtu/hr	\$4.00
C&I Prescriptive	Elec Storage WH 2.30 Et (Electric)	ELEC	per kBtu/hr	\$2.00
C&I Prescriptive	Volume Water Heater 92% TE (Gas)	GAS	per kBtu/hr	\$5.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
C&I Prescriptive	High performance hood (Gas)	GAS	Hood	\$500.00
C&I Prescriptive	hood controls (Gas)	GAS	Hood	\$1,000.00
C&I Prescriptive	High Pressure Steam Trap, Greater than 75 PSIG, Tested	GAS	PER UNIT	\$300.00
C&I Prescriptive	Medium Pressure Steam Trap, 15 PSIG to 75 PSIG, Tested	GAS	PER UNIT	\$200.00
C&I Prescriptive	95% or 97% AFUE and ECM motor (Gas)	GAS	Per kBtu/h	\$2.76
C&I Prescriptive	ENERGY STAR RAC (Electric)	ELEC	per kBtu/hr	\$1.47
C&I Prescriptive	90% Et Condensing Boiler (Gas)	GAS	Per kBtu/h	\$7.92
C&I Prescriptive	CEE-compliant heat pump (Electric)	ELEC	per ton cooling	\$100.00
C&I Prescriptive	ENERGY STAR Minisplit (Electric)	ELEC	per ton cooling	\$100.00
C&I Prescriptive	VRF HP (Electric)	ELEC	per ton cooling	\$1,250.00
C&I Prescriptive	15.0 EER Ground-Source HP (Electric)	ELEC	Per Ton	\$80.00
C&I Prescriptive	ROB DX Packaged System, EER=10.8, 30 tons (Electric)	ELEC	Per Ton	\$24.93
C&I Prescriptive	ROB DX Packaged System, EER=10.8, 30 tons, AFUE 95% (Gas)	GAS	Per Ton	\$90.00
C&I Prescriptive	Condensing integrated boiler and water heater (Gas)	GAS	Per kbtuhr	\$1.36
C&I Prescriptive	Variable Speed Centrifugal Chiller (Electric)	ELEC	Per ton	\$100.00
C&I Prescriptive	95 AFUE make-up air unit (Gas)	GAS	Per kBtu/h	\$2.61
C&I Prescriptive	HVLS fan (Electric)	ELEC	Per 1000 sqft	\$100.00
C&I Prescriptive	High-efficiency PTHP (Electric)	ELEC	Per ton	\$40.00
C&I Prescriptive	High-efficiency PTAC (Electric)	ELEC	Per ton	\$40.00
C&I Prescriptive	Condensing unit heater, 90% AFUE (Gas)	GAS	per kBtu/h	\$5.32
C&I Prescriptive	Gas-fired low-intensity infrared heating unit (Gas)	GAS	per kBtu/h	\$1.10
C&I Prescriptive	HVAC system with high-efficiency air-cooled chiller (Electric)	ELEC	Per ton cooling	\$100.00
C&I Prescriptive	HVAC system with high-efficiency water-cooled chiller (Electric)	ELEC	Per ton cooling	\$100.00
C&I Prescriptive	HVAC system with dual enthalpy sensor outside air economizer (Electric)	ELEC	Per tons cooling	\$80.00
C&I Prescriptive	Heat Pump Multi-Family Laundromat Dryer (Electric)	ELEC	per Dryer	\$300.00
C&I Prescriptive	Variable Speed Pool Pump (Electric)	ELEC	per in-ground pool	\$300.00
C&I Prescriptive	ENERGY STAR Refrigerator-Freezer (Electric)	ELEC	per Refrigerator	\$61.00
C&I Prescriptive	ES 3.0 Beverage Vending Machine (Electric)	ELEC	per Beverage Vending Machine	\$100.00

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
C&I Prescriptive	Electric Clothes Dryer - High Efficiency- Electric (Electric)	ELEC	per Dryer	\$100.00
C&I Prescriptive	Electric Clothes Dryer - High Efficiency- Gas (Gas)	GAS	per Dryer	\$200.00
C&I Prescriptive	HE Commercial Cloths Washer (Gas)	GAS	Per Washer	\$100.00
C&I Prescriptive	Ozone Laundry Washing Machine (Gas)	GAS	Per Washer	\$2,500.00
C&I Prescriptive	ENERGY STAR Electric Convection Oven (Electric)	ELEC	per oven	\$750.00
C&I Prescriptive	ENERGY STAR Electric Combination Oven (Electric)	ELEC	per oven	\$750.00
C&I Prescriptive	ENERGY STAR Gas Convection Oven (Gas)	GAS	per oven	\$600.00
C&I Prescriptive	ENERGY STAR Gas Combination Oven (Gas)	GAS	per oven	\$1,250.00
C&I Prescriptive	ENERGY STAR Hot Food Holding Cabinet (Electric)	ELEC	per hot food holding cabinet	\$750.00
C&I Prescriptive	ENERGY STAR Ice Machine or CEE Tier 2 (Electric)	ELEC	per ice machine	\$100.00
C&I Prescriptive	ENERGY STAR High Temperature Commercial Dishwasher, Conveyor - Electric (Electric)	ELEC	per dishwasher	\$300.00
C&I Prescriptive	ENERGY STAR High Temperature Commercial Dishwasher, Conveyor - Gas (Gas)	GAS	per dishwasher	\$300.00
C&I Prescriptive	ENERGY STAR High Temperature Commercial Dishwasher, Non-conveyor - electric (Electric)	ELEC	per dishwasher	\$300.00
C&I Prescriptive	ENERGY STAR High Temperature Commercial Dishwasher, Non-conveyor - gas (Gas)	GAS	per dishwasher	\$300.00
C&I Prescriptive	ENERGY STAR Low Temperature Commercial Dishwasher - Electric (Electric)	ELEC	per dishwasher	\$300.00
C&I Prescriptive	ENERGY STAR Low Temperature Commercial Dishwasher - Gas (Gas)	GAS	per dishwasher	\$300.00
C&I Prescriptive	Existing Compressor (Electric)	ELEC	Per compressor	\$275.00
C&I Prescriptive	High Efficiency Compressor (Electric)	ELEC	Per compressor	\$125.00
C&I Prescriptive	Oversized Condenser- Air Cooled (Electric)	ELEC	Per Ton	\$125.00
C&I Prescriptive	Oversized Condenser- Evap Cooled (Electric)	ELEC	Per Ton	\$125.00
C&I Prescriptive	Refrigeration/Freezer Door Heater Controls	ELEC	per door	\$20.00
C&I Prescriptive	ENERGY STAR Commercial Fryers	ELEC	per fryer	\$300.00
C&I Custom	C&I Custom - Elec	ELEC	per kWh	\$0.20
C&I Custom	C&I Custom - Gas	GAS	per therm	\$1.64
C&I Small Non-Residential Efficiency	C&I Small Non-Residential Efficiency Electric	ELEC	per kWh	\$0.20
C&I Small Non-Residential Efficiency	C&I Small Non-Residential Efficiency Gas	GAS	per therm	\$1.50
C&I New Construction	C&I NC Electric	ELEC	per kWh	\$0.16

Subprogram Name	Measure	Primary Fuel Type	Unit Basis	Modeled AVG Incentive
C&I New Construction	C&I NC Gas	GAS	per therm	\$2.00
C&I Energy Management	RCX Electric	ELEC	per kWh	\$0.05
C&I Energy Management	RCX Gas	GAS	per therm	\$0.96
C&I Energy Management	Strategic Energy Mgmt Electric	ELEC	per kWh	\$0.05
C&I Energy Management	Strategic Energy Mgmt Gas	GAS	per therm	\$0.96
C&I Engineered Solutions	MUSH Engineered Solution - Audit	ELEC	PROGRAM	\$21,223.14
C&I Engineered Solutions	MUSH Engineered Solution - Audit	GAS	PROGRAM	\$9,987.36
C&I Engineered Solutions	MUSH Engineered Solution - Engineering	ELEC	PROGRAM	\$43,889.46
C&I Engineered Solutions	MUSH Engineered Solution - Engineering	GAS	PROGRAM	\$20,653.86
C&I Engineered Solutions	MUSH Engineered Solution - Construction Begins (1st Pay)	ELEC	PROGRAM	\$129,696.98
C&I Engineered Solutions	MUSH Engineered Solution - Construction Begins (1st Pay)	GAS	PROGRAM	\$61,033.87
C&I Engineered Solutions	MUSH Engineered Solution - 50% Complete (2nd Pay)	ELEC	PROGRAM	\$129,696.98
C&I Engineered Solutions	MUSH Engineered Solution - 50% Complete (2nd Pay)	GAS	PROGRAM	\$61,033.87
C&I Engineered Solutions	MUSH Engineered Solution - Construction Finished (3rd Pay)	ELEC	PROGRAM	\$129,696.98
C&I Engineered Solutions	MUSH Engineered Solution - Construction Finished (3rd Pay)	GAS	PROGRAM	\$61,033.87
C&I Engineered Solutions	CHP - DRAFT	ELEC	per MW	\$400,000.00
C&I Streetlight	STREETLIGHTING - HPS 58 TO LED 36	ELEC	PER FIXTURE	\$305.83
C&I Streetlight	STREETLIGHTING - HPS 117 TO LED 56	ELEC	PER FIXTURE	\$309.23
C&I Streetlight	STREETLIGHTING - HPS 171 TO LED 73	ELEC	PER FIXTURE	\$353.44
C&I Streetlight	STREETLIGHTING - HPS 300 TO LED 107	ELEC	PER FIXTURE	\$353.41
C&I Streetlight	STREETLIGHTING - HPS 450 TO LED 180	ELEC	PER FIXTURE	\$473.49
C&I Streetlight	LED CONTROLLER	ELEC	PER FIXTURE	\$124.74
C&I Streetlight	LED CONTROLLER INSTALL	ELEC	PER FIXTURE	\$0.00
C&I Streetlight	INDUCTION CONTROLLER	ELEC	PER FIXTURE	\$124.74
C&I Streetlight	INDUCTION CONTROLLER INSTALL	ELEC	PER FIXTURE	\$61.43
C&I Streetlight	Smart City Pilot	ELEC	Per Controller	\$90.33

APPENDIX B – PROGRAM PARTICIPATION, SAVINGS, AND COST DETAILS

Participation and Savings Estimates

Table 47. Subprogram Participants

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	0	2,697,014	2,362,092	545,411	274,923	303,098	46,094	6,228,633
Residential Existing Homes	0	148,100	187,180	210,242	236,980	240,068	35,984	1,058,554
Residential Behavioral	487,500	650,000	650,000	650,000	650,000	650,000	162,500	3,900,000
Residential K-12 Education	0	71,540	102,200	102,060	102,000	102,000	30,600	510,400
Residential New Construction	0	1,700	2,340	2,570	2,770	2,970	450	12,800
Residential Multi-Family	0	182,920	215,200	216,050	217,050	218,050	32,730	1,082,000
Residential Income Eligible	0	171,354	201,593	201,593	79,404	63,493	9,674	727,109
C&I Prescriptive	0	249,978	390,240	471,100	543,765	615,052	93,858	2,363,992
C&I Custom	0	80	126	154	180	207	32	779
C&I Small Non-Residential Efficiency	0	4,486	7,023	8,577	10,043	11,509	1,759	43,399
C&I New Construction	0	16	25	31	36	41	6	155
C&I Energy Management	0	22	34	41	48	55	8	209
C&I Engineered Solutions	0	2	31	33	35	36	38	175
C&I Streetlight	723	642	0	0	0	0	0	1,365
Total	488,223	4,177,854	4,118,083	2,407,861	2,117,234	2,206,580	413,734	15,929,569

Table 48. Incremental Subprogram Energy Savings (MWh)

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	0	99,130	101,015	51,918	47,414	51,595	7,833	358,903
Residential Existing Homes	0	6,288	8,208	9,122	10,165	10,319	1,548	45,649
Residential Behavioral	71,502	95,336	95,336	95,336	95,336	95,336	23,834	572,014
Residential K-12 Education	0	1,847	2,639	2,632	2,629	2,629	789	13,165
Residential New Construction	0	1,870	2,574	2,827	3,047	3,267	495	14,080
Residential Multi-Family	0	5,865	6,899	6,899	6,899	6,899	1,035	34,497
Residential Income Eligible	0	5,367	6,314	6,314	2,779	2,394	365	23,533
C&I Prescriptive	0	120,127	187,571	228,175	265,863	303,470	46,367	1,151,572
C&I Custom	0	35,986	56,331	68,796	80,556	92,316	14,112	348,097
C&I Small Non-Residential Efficiency	0	40,219	62,958	76,890	90,033	103,177	15,772	389,050
C&I New Construction	0	6,350	9,941	12,141	14,216	16,291	2,490	61,429
C&I Energy Management	0	3,175	4,970	6,070	7,108	8,146	1,245	30,714
C&I Engineered Solutions	0	6,130	20,895	27,025	27,745	28,104	28,824	138,723
C&I Streetlight	41,240	36,574	0	0	0	0	0	77,814
Total	112,742	464,262	565,650	594,144	653,789	723,944	144,709	3,259,240

Table 49. Incremental Subprogram Demand Savings (MW) and Percentage of PSE&G Peak Load

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	0.0	31.4	36.2	29.7	30.2	32.0	4.8	164
Residential Existing Homes	0.0	1.3	1.7	2.0	2.4	2.4	0.4	10
Residential Behavioral	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Residential K-12 Education	0.0	0.2	0.2	0.2	0.2	0.2	0.1	1
Residential New Construction	0.0	1.1	1.5	1.7	1.8	1.9	0.3	8
Residential Multi-Family	0.0	1.0	1.1	1.1	1.1	1.1	0.2	6
Residential Income Eligible	0.0	0.8	1.0	1.0	0.4	0.3	0.1	4
C&I Prescriptive	0.0	17.0	26.4	31.9	36.8	41.8	6.4	160
C&I Custom	0.0	3.6	5.6	6.9	8.1	9.2	1.4	35
C&I Small Non-Residential Efficiency	0.0	4.0	6.3	7.7	9.0	10.3	1.6	39
C&I New Construction	0.0	0.6	1.0	1.2	1.4	1.6	0.2	6
C&I Energy Management	0.0	0.3	0.5	0.6	0.7	0.8	0.1	3
C&I Engineered Solutions	0.0	0.9	4.1	5.0	5.2	5.3	5.5	26
C&I Streetlight	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Total	0.0	62.3	85.7	89.0	97.4	107.1	21.0	462
PSE&G Peak Load	9,567							
Demand Savings as % of PSE&G Peak Load	0.0%	0.7%	0.9%	0.9%	1.0%	1.1%	0.2%	

Table 50. Incremental Subprogram Gas Savings (Dth)

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	0	204,248	271,767	292,454	317,527	335,937	50,773	1,472,706
Residential Existing Homes	0	35,849	52,896	63,722	82,486	79,544	11,773	326,270
Residential Behavioral	487,500	650,000	650,000	650,000	650,000	650,000	162,500	3,900,000
Residential K-12 Education	0	12,600	18,000	18,000	18,000	18,000	5,400	90,000
Residential New Construction	0	23,800	32,760	35,980	38,780	41,580	6,300	179,200
Residential Multi-Family	0	2,856	3,360	4,329	5,138	5,888	900	22,470
Residential Income Eligible	0	52,628	61,915	61,915	65,834	73,367	11,186	326,845
C&I Prescriptive	0	242,751	305,182	359,706	435,803	514,631	78,968	1,937,040
C&I Custom	0	23,837	37,314	45,572	53,362	61,152	9,348	230,585
C&I Small Non-Residential Efficiency	0	15,892	24,876	30,381	35,574	40,768	6,232	153,723
C&I New Construction	0	31,783	49,752	60,762	71,149	81,536	12,464	307,446
C&I Energy Management	0	5,959	9,329	11,393	13,340	15,288	2,337	57,646
C&I Engineered Solutions	0	-15,702	71,177	55,475	64,023	68,298	76,846	320,117
C&I Streetlight	0	0	0	0	0	0	0	0
Total	487,500	1,286,502	1,588,327	1,689,689	1,851,016	1,985,987	435,028	9,324,049

Cost Estimates – Electric and Natural Gas

Table 51. Administration and Subprogram Development – Electric + Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$1,056,848	\$3,487,474	\$4,319,255	\$4,005,201	\$4,152,009	\$5,591,854	\$2,604,440	\$25,217,081
Residential Existing Homes	\$426,755	\$1,308,694	\$1,747,237	\$1,976,736	\$2,340,630	\$2,345,904	\$1,152,516	\$11,298,472
Residential Behavioral	\$178,170	\$322,016	\$355,092	\$361,805	\$368,719	\$375,841	\$181,225	\$2,142,867
Residential K-12 Education	\$94,529	\$271,736	\$323,936	\$328,755	\$333,812	\$339,068	\$155,295	\$1,847,130
Residential New Construction	\$278,320	\$905,761	\$1,215,023	\$1,327,175	\$1,418,642	\$1,510,344	\$478,447	\$7,133,712
Residential Multi-Family	\$201,732	\$598,353	\$715,005	\$726,195	\$737,692	\$749,284	\$299,796	\$4,028,057
Residential Income Eligible	\$568,145	\$1,807,534	\$2,170,915	\$2,189,155	\$2,193,505	\$2,349,058	\$819,352	\$12,097,665
C&I Prescriptive	\$1,568,930	\$5,612,858	\$11,448,580	\$14,833,484	\$17,246,657	\$15,258,018	\$3,893,200	\$69,861,729
C&I Custom	\$598,237	\$2,035,576	\$3,070,571	\$3,724,979	\$4,321,159	\$4,917,662	\$1,779,540	\$20,447,722
C&I Small Non-Residential Efficiency	\$313,748	\$1,010,522	\$1,479,009	\$1,765,152	\$2,026,400	\$2,287,935	\$882,830	\$9,765,595
C&I New Construction	\$225,697	\$739,875	\$1,093,755	\$1,312,547	\$1,512,150	\$1,711,932	\$518,678	\$7,114,635
C&I Energy Management	\$133,853	\$341,539	\$424,704	\$457,172	\$487,883	\$518,899	\$455,414	\$2,819,464
C&I Engineered Solutions	\$1,437,153	\$4,998,489	\$6,402,310	\$6,820,860	\$7,072,281	\$7,417,434	\$2,869,703	\$37,018,229
C&I Streetlight	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935	\$3,239,893
ETA Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Energy Efficiency as a Service Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Smart Homes Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Non-Wires Alternative Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Non-Pipes Solution Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Volt Var Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Business Energy Reports Pilot	\$58,609	\$140,270	\$164,600	\$169,538	\$174,624	\$179,863	\$115,342	\$1,002,847
Building Operator Certification Pilot	\$58,609	\$140,270	\$164,600	\$169,538	\$174,624	\$179,863	\$115,342	\$1,002,847
Program Design and Development	\$1,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$500,000.00	\$12,000,000
Total	\$9,051,293	\$26,563,325	\$38,083,061	\$43,186,412	\$47,609,454	\$48,813,085	\$19,720,623	\$233,027,253

Table 52. Sales, Call Centers, Marketing, and Website – Electric + Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$331,756	\$458,239	\$413,304	\$429,229	\$616,085	\$168,685	\$2,417,298
Residential Existing Homes	\$0	\$105,790	\$166,306	\$196,202	\$244,928	\$243,141	\$59,482	\$1,015,848
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$88,235	\$135,294	\$150,000	\$161,765	\$173,529	\$44,118	\$752,941
Residential Multi-Family	\$0	\$3,395	\$4,526	\$4,547	\$4,568	\$4,587	\$1,148	\$22,770
Residential Income Eligible	\$0	\$70,784	\$94,379	\$94,379	\$93,507	\$101,732	\$26,142	\$480,922
C&I Prescriptive	\$0	\$651,081	\$1,491,305	\$1,943,199	\$2,264,971	\$1,997,440	\$470,388	\$8,818,383
C&I Custom	\$0	\$94,422	\$162,615	\$201,083	\$236,054	\$271,025	\$69,942	\$1,035,142
C&I Small Non-Residential Efficiency	\$0	\$40,599	\$69,921	\$86,461	\$101,498	\$116,535	\$30,073	\$445,088
C&I New Construction	\$0	\$31,230	\$53,785	\$66,509	\$78,076	\$89,642	\$23,134	\$342,376
C&I Energy Management	\$0	\$1,270	\$2,188	\$2,706	\$3,176	\$3,647	\$941	\$13,928
C&I Engineered Solutions	\$21,699	\$251,014	\$346,740	\$370,672	\$384,587	\$404,069	\$102,409	\$1,881,190
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Program Management	\$2,446,981	\$3,893,533	\$4,277,509	\$4,608,754	\$4,891,976	\$5,156,469	\$13,978,984.09	\$39,254,205
Education and Outreach	\$7,693,013	\$14,494,454	\$15,580,166	\$16,380,223	\$17,707,953	\$18,978,451	\$4,822,022.45	\$95,656,284
Total	\$10,161,693	\$20,057,563	\$22,842,973	\$24,518,038	\$26,602,287	\$28,156,352	\$19,797,469	\$152,136,375

Table 53. Training – Electric + Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Existing Homes	\$0	\$52,895	\$83,153	\$98,101	\$122,464	\$121,571	\$29,741	\$507,924
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$44,118	\$67,647	\$75,000	\$80,882	\$86,765	\$22,059	\$376,471
Residential Multi-Family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Income Eligible	\$0	\$42,470	\$56,627	\$56,627	\$56,104	\$61,039	\$15,685	\$288,553
C&I Prescriptive	\$0	\$65,108	\$149,130	\$194,320	\$226,497	\$199,744	\$47,039	\$881,838
C&I Custom	\$0	\$18,884	\$32,523	\$40,217	\$47,211	\$54,205	\$13,988	\$207,028
C&I Small Non-Residential Efficiency	\$0	\$8,120	\$13,984	\$17,292	\$20,300	\$23,307	\$6,015	\$89,018
C&I New Construction	\$0	\$6,246	\$10,757	\$13,302	\$15,615	\$17,928	\$4,627	\$68,475
C&I Energy Management	\$0	\$635	\$1,094	\$1,353	\$1,588	\$1,823	\$471	\$6,964
C&I Engineered Solutions	\$4,340	\$50,203	\$69,348	\$74,134	\$76,917	\$80,814	\$20,482	\$376,238
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$4,340	\$288,679	\$484,264	\$570,346	\$647,578	\$647,196	\$160,106	\$2,802,509

Table 54. Rebates, Grants, and Other Direct Incentives – Electric + Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$35,133,393	\$46,046,620	\$45,475,589	\$49,508,925	\$53,740,866	\$8,153,154.60	\$238,058,548
Residential Existing Homes	\$0	\$8,076,089	\$11,415,513	\$13,312,072	\$16,523,848	\$16,106,480	\$2,391,206	\$67,825,208
Residential Behavioral	\$5,362,500	\$7,150,000	\$7,150,000	\$7,150,000	\$7,150,000	\$7,150,000	\$1,787,500	\$42,900,000
Residential K-12 Education	\$0	\$494,060	\$705,800	\$705,240	\$705,000	\$705,000	\$211,500	\$3,526,600
Residential New Construction	\$0	\$2,125,000	\$2,925,000	\$3,212,500	\$3,462,500	\$3,712,500	\$562,500	\$16,000,000
Residential Multi-Family	\$0	\$1,538,925	\$1,810,500	\$1,819,850	\$1,827,875	\$1,835,375	\$275,475	\$9,108,000
Residential Income Eligible	\$0	\$14,439,928	\$16,988,150	\$16,988,150	\$16,810,299	\$18,516,042	\$2,823,389	\$86,565,958
C&I Prescriptive	\$0	\$53,352,752	\$83,023,390	\$100,495,203	\$116,563,827	\$132,577,069	\$20,246,835	\$506,259,077
C&I Custom	\$0	\$22,764,223	\$35,634,192	\$43,519,838	\$50,959,126	\$58,398,415	\$8,927,146	\$220,202,940
C&I Small Non-Residential Efficiency	\$0	\$34,287,851	\$53,672,813	\$65,550,304	\$76,755,484	\$87,960,665	\$13,446,216	\$331,673,334
C&I New Construction	\$0	\$1,651,733	\$2,585,556	\$3,157,724	\$3,697,506	\$4,237,288	\$647,738	\$15,977,546
C&I Energy Management	\$0	\$914,704	\$1,431,840	\$1,748,698	\$2,047,621	\$2,346,543	\$358,707	\$8,848,113
C&I Engineered Solutions	\$0	\$5,394,756	\$51,826,579	\$57,221,335	\$60,641,090	\$62,350,968	\$65,770,724	\$303,205,452
C&I Streetlight	\$79,062,853	\$63,417,070	\$1,620,150	\$0	\$0	\$0	\$0	\$144,100,073
ETA Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Energy Efficiency as a Service Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Smart Homes Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Wires Alternative Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Pipes Solution Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Volt Var Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$1,041,667	\$0	\$0	\$15,000,000
Business Energy Reports Pilot	\$0	\$1,583,333	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$416,667	\$10,000,000
Building Operator Certification Pilot	\$0	\$1,187,500	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$312,500	\$7,500,000
Total	\$84,425,353	\$277,261,318	\$350,336,104	\$393,856,504	\$436,194,769	\$478,137,211	\$131,539,592	\$2,151,750,850

Table 55. Rebate Processing, Inspections, and Other Quality Control – Electric + Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$352,835	\$1,149,958	\$1,415,994	\$1,373,972	\$1,420,268	\$1,713,407	\$665,301	\$8,091,735
Residential Existing Homes	\$406,216	\$1,067,609	\$1,301,595	\$1,375,262	\$1,476,068	\$1,507,653	\$680,650	\$7,815,053
Residential Behavioral	\$129,555	\$298,468	\$347,707	\$357,701	\$367,994	\$378,596	\$189,735	\$2,069,756
Residential K-12 Education	\$50,621	\$126,207	\$148,661	\$152,577	\$156,620	\$160,790	\$77,595	\$873,070
Residential New Construction	\$175,503	\$499,607	\$622,224	\$655,690	\$685,459	\$715,630	\$303,860	\$3,657,971
Residential Multi-Family	\$236,634	\$579,183	\$681,074	\$700,366	\$720,234	\$740,670	\$366,797	\$4,024,959
Residential Income Eligible	\$446,255	\$1,117,789	\$1,317,214	\$1,351,520	\$1,385,252	\$1,436,782	\$686,924	\$7,741,735
C&I Prescriptive	\$385,609	\$1,519,970	\$2,760,229	\$3,425,267	\$3,904,797	\$3,542,204	\$1,023,285	\$16,561,361
C&I Custom	\$168,614	\$489,522	\$660,563	\$749,575	\$831,676	\$914,078	\$325,956	\$4,139,984
C&I Small Non-Residential Efficiency	\$246,144	\$626,071	\$771,700	\$824,604	\$874,974	\$925,926	\$412,581	\$4,682,000
C&I New Construction	\$99,036	\$265,463	\$339,997	\$373,083	\$403,993	\$435,115	\$175,692	\$2,092,378
C&I Energy Management	\$94,128	\$227,634	\$269,777	\$280,062	\$290,352	\$300,883	\$149,341	\$1,612,177
C&I Engineered Solutions	\$563,702	\$1,562,156	\$1,903,201	\$1,988,168	\$2,053,571	\$2,131,543	\$875,122	\$11,077,463
C&I Streetlight	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935	\$3,239,893
ETA Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Energy Efficiency as a Service Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Smart Homes Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Non-Wires Alternative Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Non-Pipes Solution Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Volt Var Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Business Energy Reports Pilot	\$46,140	\$110,428	\$129,583	\$133,470	\$137,474	\$141,598	\$72,388	\$771,082
Building Operator Certification Pilot	\$46,140	\$110,428	\$129,583	\$133,470	\$137,474	\$141,598	\$72,388	\$771,082
Total	\$3,572,961	\$10,051,644	\$13,152,487	\$14,238,774	\$15,221,112	\$15,572,626	\$8,481,990	\$80,291,593

Table 56. Evaluation and Other Research – Electric + Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$103,576	\$911,403	\$1,207,366	\$1,126,224	\$1,167,062	\$1,297,005	\$415,526	\$6,228,162
Residential Existing Homes	\$59,998	\$302,280	\$417,962	\$467,860	\$546,155	\$548,839	\$183,352	\$2,526,446
Residential Behavioral	\$189,271	\$278,981	\$289,406	\$291,522	\$293,701	\$295,946	\$94,118	\$1,732,944
Residential K-12 Education	\$20,227	\$68,259	\$83,273	\$84,955	\$86,702	\$88,510	\$38,342	\$470,269
Residential New Construction	\$27,556	\$148,671	\$204,228	\$220,336	\$233,757	\$247,250	\$84,592	\$1,166,390
Residential Multi-Family	\$32,442	\$128,565	\$159,006	\$162,049	\$165,178	\$168,360	\$68,115	\$883,716
Residential Income Eligible	\$62,178	\$573,517	\$740,897	\$746,136	\$746,301	\$801,207	\$254,405	\$3,924,640
C&I Prescriptive	\$32,221	\$1,379,278	\$2,435,963	\$3,008,005	\$3,493,460	\$3,800,626	\$991,328	\$15,140,880
C&I Custom	\$41,984	\$357,995	\$561,406	\$669,856	\$768,875	\$868,003	\$256,618	\$3,524,737
C&I Small Non-Residential Efficiency	\$32,221	\$320,711	\$510,017	\$611,975	\$704,991	\$798,092	\$230,992	\$3,209,000
C&I New Construction	\$22,596	\$116,540	\$171,031	\$198,382	\$223,476	\$248,629	\$81,718	\$1,062,372
C&I Energy Management	\$40,379	\$104,264	\$126,532	\$133,039	\$139,367	\$145,799	\$68,997	\$758,378
C&I Engineered Solutions	\$114,915	\$752,827	\$1,008,656	\$1,071,386	\$1,110,237	\$1,162,610	\$344,367	\$5,564,998
C&I Streetlight	\$832,160	\$525,977	\$82,864	\$0	\$0	\$0	\$0	\$1,441,001
ETA Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Energy Efficiency as a Service Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Smart Homes Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Non-Wires Alternative Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Non-Pipes Solution Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Volt Var Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Business Energy Reports Pilot	\$20,190	\$48,321	\$56,702	\$58,403	\$60,155	\$61,960	\$31,675	\$337,406
Building Operator Certification Pilot	\$20,190	\$48,321	\$56,702	\$58,403	\$60,155	\$61,960	\$31,675	\$337,406
Total	\$1,758,804	\$6,321,279	\$8,411,676	\$9,217,186	\$10,117,488	\$10,922,246	\$3,343,224	\$50,091,901

Table 57. Total Estimated Expenditures – Electric + Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$1,513,259	\$41,013,983	\$53,447,474	\$52,394,291	\$56,677,493	\$62,959,217	\$12,007,107	\$280,012,824
Residential Existing Homes	\$892,969	\$10,913,356	\$15,131,767	\$17,426,232	\$21,254,092	\$20,873,587	\$4,496,947	\$90,988,950
Residential Behavioral	\$5,859,496	\$8,049,464	\$8,142,205	\$8,161,027	\$8,180,414	\$8,200,382	\$2,252,578	\$48,845,567
Residential K-12 Education	\$165,376	\$960,263	\$1,261,670	\$1,271,526	\$1,282,135	\$1,293,368	\$482,733	\$6,717,069
Residential New Construction	\$481,379	\$3,811,392	\$5,169,416	\$5,640,701	\$6,043,005	\$6,446,017	\$1,495,576	\$29,087,486
Residential Multi-Family	\$470,808	\$2,848,421	\$3,370,112	\$3,413,007	\$3,455,548	\$3,498,275	\$1,011,331	\$18,067,502
Residential Income Eligible	\$1,076,578	\$18,052,021	\$21,368,182	\$21,425,967	\$21,284,968	\$23,265,858	\$4,625,898	\$111,099,473
C&I Prescriptive	\$1,986,760	\$62,581,048	\$101,308,598	\$123,899,478	\$143,700,209	\$157,375,100	\$26,672,076	\$617,523,268
C&I Custom	\$808,834	\$25,760,622	\$40,121,870	\$48,905,547	\$57,164,101	\$65,423,388	\$11,373,191	\$249,557,553
C&I Small Non-Residential Efficiency	\$592,113	\$36,293,875	\$56,517,445	\$68,855,787	\$80,483,648	\$92,112,460	\$15,008,708	\$349,864,035
C&I New Construction	\$347,329	\$2,811,088	\$4,254,881	\$5,121,547	\$5,930,816	\$6,740,536	\$1,451,586	\$26,657,782
C&I Energy Management	\$268,361	\$1,590,046	\$2,256,134	\$2,623,030	\$2,969,987	\$3,317,594	\$1,033,870	\$14,059,023
C&I Engineered Solutions	\$2,141,809	\$13,009,445	\$61,556,834	\$67,546,555	\$71,338,684	\$73,547,438	\$69,982,807	\$359,123,572
C&I Streetlight	\$80,018,630	\$64,238,904	\$2,050,187	\$357,589	\$368,316	\$379,366	\$4,607,869	\$152,020,861
ETA Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Energy Efficiency as a Service Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Smart Homes Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Non-Wires Alternative Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Non-Pipes Solution Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Volt Var Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$1,270,528	\$235,728	\$143,902	\$16,307,060
Business Energy Reports Pilot	\$124,938	\$1,882,352	\$2,350,885	\$2,361,412	\$2,372,254	\$2,383,422	\$636,073	\$12,111,336
Building Operator Certification Pilot	\$124,938	\$1,486,519	\$1,850,885	\$1,861,412	\$1,872,254	\$1,883,422	\$531,906	\$9,611,336
Program Design and Development	\$1,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$500,000	\$12,000,000
Program Management	\$2,446,981	\$3,893,533	\$4,277,509	\$4,608,754	\$4,891,976	\$5,156,469	\$13,978,984	\$39,254,205
Education and Outreach	\$7,693,013	\$14,494,454	\$15,580,166	\$16,380,223	\$17,707,953	\$18,978,451	\$4,822,022	\$95,656,284
IT Build	\$30,297,753	\$47,046,092	\$1,941,741	\$1,750,000	\$1,125,000	\$250,000	\$0	\$82,410,586
IT Run	\$16,875	\$2,900,850	\$5,650,100	\$6,246,700	\$6,246,700	\$6,246,700	\$1,561,675	\$28,869,600
Total	\$139,289,072	\$390,490,749	\$440,902,405	\$493,583,959	\$543,764,389	\$588,745,416	\$184,604,678	\$2,781,380,668

Cost Estimates – Electric

Table 58. Administration and Subprogram Development – Electric

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$724,516.93	\$2,390,820	\$2,961,044	\$2,745,745	\$2,846,389	\$3,833,468	\$1,785,461	\$17,287,444
Residential Existing Homes	\$209,544	\$642,591	\$857,923	\$970,611	\$1,149,289	\$1,151,878	\$565,905	\$5,547,741
Residential Behavioral	\$89,085	\$161,008	\$177,546	\$180,902	\$184,359	\$187,920	\$90,613	\$1,071,433
Residential K-12 Education	\$74,425	\$213,946	\$255,045	\$258,839	\$262,821	\$266,958	\$122,268	\$1,454,302
Residential New Construction	\$139,160	\$452,881	\$607,512	\$663,587	\$709,321	\$755,172	\$239,224	\$3,566,856
Residential Multi-Family	\$196,737	\$583,539	\$697,303	\$708,215	\$719,428	\$730,733	\$292,373	\$3,928,328
Residential Income Eligible	\$123,849	\$394,021	\$473,234	\$477,211	\$478,159	\$512,067	\$178,609	\$2,637,151
C&I Prescriptive	\$1,550,477	\$5,546,840	\$11,313,924	\$14,659,014	\$17,043,804	\$15,078,555	\$3,847,409	\$69,040,024
C&I Custom	\$567,416	\$1,930,704	\$2,912,376	\$3,533,069	\$4,098,534	\$4,664,306	\$1,687,858	\$19,394,263
C&I Small Non-Residential Efficiency	\$305,459	\$983,826	\$1,439,936	\$1,718,519	\$1,972,866	\$2,227,492	\$859,507	\$9,507,605
C&I New Construction	\$138,838	\$455,136	\$672,826	\$807,416	\$930,202	\$1,053,099	\$319,066	\$4,376,582
C&I Energy Management	\$97,575	\$248,972	\$309,598	\$333,266	\$355,653	\$378,263	\$331,984	\$2,055,312
C&I Engineered Solutions	\$1,022,198	\$3,555,255	\$4,553,745	\$4,851,445	\$5,030,272	\$5,275,768	\$2,041,122	\$26,329,805
C&I Streetlight	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935	\$3,239,893
ETA Pilot	\$24,179	\$57,869	\$67,907	\$69,944	\$72,042	\$74,204	\$49,631	\$415,776
Energy Efficiency as a Service Pilot	\$24,179	\$57,869	\$67,907	\$69,944	\$72,042	\$74,204	\$49,631	\$415,776
Smart Homes Pilot	\$24,179	\$57,869	\$67,907	\$69,944	\$72,042	\$74,204	\$49,631	\$415,776
Non-Wires Alternative Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Business Energy Reports Pilot	\$29,304	\$70,135	\$82,300	\$84,769	\$87,312	\$89,932	\$57,671	\$501,424
Building Operator Certification Pilot	\$29,304	\$70,135	\$82,300	\$84,769	\$87,312	\$89,932	\$57,671	\$501,424
Program Design and Development	\$1,268,179	\$1,690,906	\$1,690,906	\$1,690,906	\$1,690,906	\$1,690,906	\$422,726	\$10,145,433
Total	\$6,797,131	\$19,943,727	\$29,736,450	\$34,436,686	\$38,335,083	\$38,695,557	\$15,550,817	\$183,495,450

Table 59. Sales, Call Centers, Marketing, and Website – Electric

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$227,433	\$314,143	\$283,339	\$294,256	\$422,354	\$115,641	\$1,657,167
Residential Existing Homes	\$0	\$51,945	\$81,659	\$96,338	\$120,264	\$119,386	\$29,207	\$498,799
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$44,118	\$67,647	\$75,000	\$80,882	\$86,765	\$22,059	\$376,471
Residential Multi-Family	\$0	\$3,311	\$4,414	\$4,434	\$4,455	\$4,473	\$1,119	\$22,206
Residential Income Eligible	\$0	\$15,430	\$20,573	\$20,573	\$20,383	\$22,176	\$5,699	\$104,835
C&I Prescriptive	\$0	\$643,423	\$1,473,764	\$1,920,343	\$2,238,331	\$1,973,946	\$464,856	\$8,714,662
C&I Custom	\$0	\$89,557	\$154,237	\$190,724	\$223,893	\$257,062	\$66,339	\$981,812
C&I Small Non-Residential Efficiency	\$0	\$39,527	\$68,074	\$84,177	\$98,817	\$113,456	\$29,279	\$433,329
C&I New Construction	\$0	\$19,211	\$33,086	\$40,913	\$48,028	\$55,144	\$14,231	\$210,613
C&I Energy Management	\$0	\$926	\$1,595	\$1,972	\$2,315	\$2,658	\$686	\$10,153
C&I Engineered Solutions	\$15,434	\$178,538	\$246,625	\$263,646	\$273,544	\$287,401	\$72,840	\$1,338,027
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Program Management	\$2,068,807	\$3,291,799	\$3,616,431	\$3,896,483	\$4,135,934	\$4,359,551	\$11,818,571	\$33,187,576
Education and Outreach	\$6,504,079	\$12,254,376	\$13,172,294	\$13,848,705	\$14,971,238	\$16,045,384	\$4,076,792	\$80,872,869
Total	\$8,588,320	\$16,859,593	\$19,254,544	\$20,726,648	\$22,512,340	\$23,749,757	\$16,717,318	\$128,408,519

Table 60. Training – Electric

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Existing Homes	\$0	\$25,972	\$40,830	\$48,169	\$60,132	\$59,693	\$14,603	\$249,399
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$22,059	\$33,824	\$37,500	\$40,441	\$43,382	\$11,029	\$188,235
Residential Multi-Family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Income Eligible	\$0	\$9,258	\$12,344	\$12,344	\$12,230	\$13,306	\$3,419	\$62,901
C&I Prescriptive	\$0	\$64,342	\$147,376	\$192,034	\$223,833	\$197,395	\$46,486	\$871,466
C&I Custom	\$0	\$17,911	\$30,847	\$38,145	\$44,779	\$51,412	\$13,268	\$196,362
C&I Small Non-Residential Efficiency	\$0	\$7,905	\$13,615	\$16,835	\$19,763	\$22,691	\$5,856	\$86,666
C&I New Construction	\$0	\$3,842	\$6,617	\$8,183	\$9,606	\$11,029	\$2,846	\$42,123
C&I Energy Management	\$0	\$463	\$797	\$986	\$1,158	\$1,329	\$343	\$5,076
C&I Engineered Solutions	\$3,087	\$35,708	\$49,325	\$52,729	\$54,709	\$57,480	\$14,568	\$267,605
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$3,087	\$187,461	\$335,575	\$406,926	\$466,650	\$457,718	\$112,418	\$1,969,835

Table 61. Rebates, Grants, and Other Direct Incentives – Electric

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$24,085,522	\$31,567,030	\$31,175,563	\$33,940,596	\$36,841,782	\$5,589,354	\$163,199,848
Residential Existing Homes	\$0	\$3,965,496	\$5,605,210	\$6,536,452	\$8,113,489	\$7,908,554	\$1,174,123	\$33,303,324
Residential Behavioral	\$2,681,250	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$893,750	\$21,450,000
Residential K-12 Education	\$0	\$388,989	\$555,698	\$555,257	\$555,068	\$555,068	\$166,520	\$2,776,600
Residential New Construction	\$0	\$1,062,500	\$1,462,500	\$1,606,250	\$1,731,250	\$1,856,250	\$281,250	\$8,000,000
Residential Multi-Family	\$0	\$1,500,824	\$1,765,675	\$1,774,793	\$1,782,620	\$1,789,934	\$268,655	\$8,882,500
Residential Income Eligible	\$0	\$3,147,737	\$3,703,220	\$3,703,220	\$3,664,451	\$4,036,283	\$615,466	\$18,870,378
C&I Prescriptive	\$0	\$52,725,224	\$82,046,879	\$99,313,191	\$115,192,817	\$131,017,713	\$20,008,695	\$500,304,519
C&I Custom	\$0	\$21,591,419	\$33,798,333	\$41,277,713	\$48,333,732	\$55,389,752	\$8,467,223	\$208,858,172
C&I Small Non-Residential Efficiency	\$0	\$33,382,027	\$52,254,873	\$63,818,582	\$74,727,741	\$85,636,900	\$13,090,991	\$322,911,115
C&I New Construction	\$0	\$1,016,067	\$1,590,510	\$1,942,481	\$2,274,529	\$2,606,577	\$398,458	\$9,828,620
C&I Energy Management	\$0	\$666,794	\$1,043,772	\$1,274,753	\$1,492,659	\$1,710,566	\$261,488	\$6,450,032
C&I Engineered Solutions	\$0	\$3,837,106	\$36,862,480	\$40,699,586	\$43,131,942	\$44,348,119	\$46,780,475	\$215,659,708
C&I Streetlight	\$79,062,853	\$63,417,070	\$1,620,150	\$0	\$0	\$0	\$0	\$144,100,073
ETA Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Energy Efficiency as a Service Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Smart Homes Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Non-Wires Alternative Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$1,041,667	\$0	\$0	\$15,000,000
Business Energy Reports Pilot	\$0	\$791,667	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$208,333	\$5,000,000
Building Operator Certification Pilot	\$0	\$593,750	\$750,000	\$750,000	\$750,000	\$750,000	\$156,250	\$3,750,000
Total	\$81,744,103	\$229,601,358	\$276,701,330	\$316,502,841	\$353,807,560	\$391,522,498	\$100,965,197	\$1,750,844,887

Table 62. Rebate Processing, Inspections, and Other Quality Control – Electric

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$241,884.12	\$788,348	\$970,727	\$941,920	\$973,658	\$1,174,617	\$456,094	\$5,547,248
Residential Existing Homes	\$199,459	\$524,214	\$639,105	\$675,277	\$724,774	\$740,283	\$334,211	\$3,837,323
Residential Behavioral	\$64,777	\$149,234	\$173,854	\$178,850	\$183,997	\$189,298	\$94,868	\$1,034,878
Residential K-12 Education	\$39,855	\$99,367	\$117,045	\$120,128	\$123,312	\$126,595	\$61,093	\$687,395
Residential New Construction	\$87,752	\$249,803	\$311,112	\$327,845	\$342,729	\$357,815	\$151,930	\$1,828,986
Residential Multi-Family	\$230,776	\$564,843	\$664,212	\$683,026	\$702,402	\$722,332	\$357,716	\$3,925,308
Residential Income Eligible	\$97,278	\$243,665	\$287,137	\$294,616	\$301,969	\$313,202	\$149,741	\$1,687,609
C&I Prescriptive	\$381,073	\$1,502,093	\$2,727,764	\$3,384,980	\$3,858,869	\$3,500,541	\$1,011,249	\$16,366,568
C&I Custom	\$159,927	\$464,302	\$626,531	\$710,957	\$788,828	\$866,985	\$309,163	\$3,926,694
C&I Small Non-Residential Efficiency	\$239,641	\$609,531	\$751,313	\$802,819	\$851,859	\$901,465	\$401,681	\$4,558,310
C&I New Construction	\$60,922	\$163,300	\$209,150	\$229,503	\$248,517	\$267,662	\$108,077	\$1,287,131
C&I Energy Management	\$68,617	\$165,939	\$196,660	\$204,157	\$211,659	\$219,335	\$108,865	\$1,175,233
C&I Engineered Solutions	\$400,942	\$1,111,108	\$1,353,682	\$1,414,116	\$1,460,635	\$1,516,094	\$622,445	\$7,879,022
C&I Streetlight	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935	\$3,239,893
ETA Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Energy Efficiency as a Service Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Smart Homes Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Non-Wires Alternative Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Business Energy Reports Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Building Operator Certification Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Total	\$2,418,198	\$6,983,484	\$9,436,345	\$10,388,488	\$11,206,110	\$11,342,113	\$6,602,046	\$58,376,784

Table 63. Evaluation and Other Research – Electric

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$71,005.81	\$624,807	\$827,704	\$772,077	\$800,073	\$889,155	\$284,862	\$4,269,685
Residential Existing Homes	\$29,460	\$148,424	\$205,226	\$229,727	\$268,172	\$269,489	\$90,029	\$1,240,528
Residential Behavioral	\$94,635	\$139,490	\$144,703	\$145,761	\$146,851	\$147,973	\$47,059	\$866,472
Residential K-12 Education	\$15,925	\$53,743	\$65,563	\$66,887	\$68,263	\$69,687	\$30,188	\$370,257
Residential New Construction	\$13,778	\$74,335	\$102,114	\$110,168	\$116,879	\$123,625	\$42,296	\$583,195
Residential Multi-Family	\$31,639	\$125,382	\$155,070	\$158,037	\$161,089	\$164,191	\$66,429	\$861,836
Residential Income Eligible	\$13,554	\$125,020	\$161,507	\$162,649	\$162,685	\$174,654	\$55,457	\$855,526
C&I Prescriptive	\$31,842	\$1,363,055	\$2,407,311	\$2,972,625	\$3,452,370	\$3,755,923	\$979,668	\$14,962,795
C&I Custom	\$39,821	\$339,551	\$532,482	\$635,345	\$729,263	\$823,284	\$243,398	\$3,343,144
C&I Small Non-Residential Efficiency	\$31,370	\$312,239	\$496,544	\$595,807	\$686,367	\$777,008	\$224,890	\$3,124,224
C&I New Construction	\$13,900	\$71,690	\$105,210	\$122,035	\$137,472	\$152,945	\$50,269	\$653,520
C&I Energy Management	\$29,435	\$76,006	\$92,238	\$96,982	\$101,595	\$106,284	\$50,297	\$552,837
C&I Engineered Solutions	\$81,735	\$535,460	\$717,423	\$762,041	\$789,674	\$826,925	\$244,937	\$3,958,194
C&I Streetlight	\$832,160	\$525,977	\$82,864	\$0	\$0	\$0	\$0	\$1,441,001
ETA Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Energy Efficiency as a Service Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Smart Homes Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Non-Wires Alternative Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Business Energy Reports Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Building Operator Certification Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Total	\$1,412,692	\$4,712,466	\$6,327,466	\$7,068,594	\$7,866,356	\$8,534,115	\$2,539,104	\$38,460,795

Table 64. Total Estimated Expenditures – Electric

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$1,037,406.86	\$28,116,931	\$36,640,648	\$35,918,644	\$38,854,972	\$43,161,376	\$8,231,412	\$191,961,391
Residential Existing Homes	\$438,463	\$5,358,642	\$7,429,954	\$8,556,574	\$10,436,119	\$10,249,284	\$2,208,077	\$44,677,113
Residential Behavioral	\$2,929,748	\$4,024,732	\$4,071,102	\$4,080,513	\$4,090,207	\$4,100,191	\$1,126,289	\$24,422,783
Residential K-12 Education	\$130,205	\$756,044	\$993,351	\$1,001,111	\$1,009,464	\$1,018,308	\$380,070	\$5,288,554
Residential New Construction	\$240,690	\$1,905,696	\$2,584,708	\$2,820,351	\$3,021,502	\$3,223,009	\$747,788	\$14,543,743
Residential Multi-Family	\$459,152	\$2,777,899	\$3,286,673	\$3,328,506	\$3,369,994	\$3,411,663	\$986,292	\$17,620,178
Residential Income Eligible	\$234,681	\$3,935,132	\$4,658,017	\$4,670,613	\$4,639,877	\$5,071,688	\$1,008,392	\$24,218,400
C&I Prescriptive	\$1,963,392	\$61,844,977	\$100,117,018	\$122,442,187	\$142,010,024	\$155,524,073	\$26,358,362	\$610,260,034
C&I Custom	\$767,163	\$24,433,445	\$38,054,807	\$46,385,953	\$54,219,029	\$62,052,801	\$10,787,248	\$236,700,446
C&I Small Non-Residential Efficiency	\$576,470	\$35,335,055	\$55,024,355	\$67,036,740	\$78,357,413	\$89,679,012	\$14,612,204	\$340,621,250
C&I New Construction	\$213,660	\$1,729,246	\$2,617,399	\$3,150,530	\$3,648,353	\$4,146,454	\$892,946	\$16,398,589
C&I Energy Management	\$195,628	\$1,159,100	\$1,644,660	\$1,912,117	\$2,165,039	\$2,418,435	\$753,663	\$10,248,642
C&I Engineered Solutions	\$1,523,396	\$9,253,175	\$43,783,279	\$48,043,563	\$50,740,775	\$52,311,787	\$49,776,386	\$255,432,361
C&I Streetlight	\$80,018,630	\$64,238,904	\$2,050,187	\$357,589	\$368,316	\$379,366	\$4,607,869	\$152,020,861
ETA Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Energy Efficiency as a Service Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Smart Homes Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Non-Wires Alternative Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$1,270,528	\$235,728	\$143,902	\$16,307,060
Business Energy Reports Pilot	\$62,469	\$941,176	\$1,175,443	\$1,180,706	\$1,186,127	\$1,191,711	\$318,036	\$6,055,668
Building Operator Certification Pilot	\$62,469	\$743,260	\$925,443	\$930,706	\$936,127	\$941,711	\$265,953	\$4,805,668
Program Design and Development	\$1,268,179	\$1,690,906	\$1,690,906	\$1,690,906	\$1,690,906	\$1,690,906	\$422,726	\$10,145,433
Program Management	\$2,068,807	\$3,291,799	\$3,616,431	\$3,896,483	\$4,135,934	\$4,359,551	\$11,818,571	\$33,187,576
Education and Outreach	\$6,504,079	\$12,254,376	\$13,172,294	\$13,848,705	\$14,971,238	\$16,045,384	\$4,076,792	\$80,872,869
IT Build	\$25,615,318.82	\$39,775,248	\$1,641,650	\$1,479,542	\$951,134	\$211,363	\$0	\$69,674,257
IT Run	\$14,267	\$2,452,532	\$4,776,893	\$5,281,290	\$5,281,290	\$5,281,290	\$1,320,322	\$24,407,883
Total	\$126,593,117	\$320,515,870	\$348,210,252	\$396,291,015	\$440,426,523	\$479,794,410	\$143,807,223	\$2,255,638,410

Cost Estimates – Natural Gas

Table 65. Administration and Subprogram Development – Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$332,331	\$1,096,654	\$1,358,211	\$1,259,455	\$1,305,620	\$1,758,387	\$818,979	\$7,929,637
Residential Existing Homes	\$217,211	\$666,103	\$889,314	\$1,006,125	\$1,191,341	\$1,194,025	\$586,611	\$5,750,731
Residential Behavioral	\$89,085	\$161,008	\$177,546	\$180,902	\$184,359	\$187,920	\$90,613	\$1,071,433
Residential K-12 Education	\$20,103	\$57,790	\$68,891	\$69,916	\$70,992	\$72,109	\$33,026	\$392,828
Residential New Construction	\$139,160	\$452,881	\$607,512	\$663,587	\$709,321	\$755,172	\$239,224	\$3,566,856
Residential Multi-Family	\$4,995	\$14,814	\$17,702	\$17,979	\$18,264	\$18,551	\$7,422	\$99,728
Residential Income Eligible	\$444,296	\$1,413,512	\$1,697,681	\$1,711,945	\$1,715,347	\$1,836,990	\$640,743	\$9,460,514
C&I Prescriptive	\$18,454	\$66,018	\$134,657	\$174,470	\$202,853	\$179,463	\$45,791	\$821,705
C&I Custom	\$30,821	\$104,872	\$158,195	\$191,909	\$222,624	\$253,356	\$91,681	\$1,053,459
C&I Small Non-Residential Efficiency	\$8,289	\$26,696	\$39,073	\$46,632	\$53,534	\$60,443	\$23,323	\$257,990
C&I New Construction	\$86,859	\$284,739	\$420,929	\$505,131	\$581,948	\$658,834	\$199,612	\$2,738,053
C&I Energy Management	\$36,278	\$92,566	\$115,106	\$123,906	\$132,230	\$140,636	\$123,430	\$764,152
C&I Engineered Solutions	\$414,955	\$1,443,234	\$1,848,565	\$1,969,415	\$2,042,008	\$2,141,666	\$828,581	\$10,688,424
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$24,179	\$57,869	\$67,907	\$69,944	\$72,042	\$74,204	\$49,631	\$415,776
Energy Efficiency as a Service Pilot	\$24,179	\$57,869	\$67,907	\$69,944	\$72,042	\$74,204	\$49,631	\$415,776
Smart Homes Pilot	\$24,179	\$57,869	\$67,907	\$69,944	\$72,042	\$74,204	\$49,631	\$415,776
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$48,359	\$115,738	\$135,814	\$139,888	\$144,085	\$148,407	\$99,261	\$831,552
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$29,304	\$70,135	\$82,300	\$84,769	\$87,312	\$89,932	\$57,671	\$501,424
Building Operator Certification Pilot	\$29,304	\$70,135	\$82,300	\$84,769	\$87,312	\$89,932	\$57,671	\$501,424
Program Design and Development	\$231,821	\$309,094	\$309,094	\$309,094	\$309,094	\$309,094	\$77,274	\$1,854,567
Total	\$2,254,162	\$6,619,598	\$8,346,611	\$8,749,726	\$9,274,372	\$10,117,528	\$4,169,806	\$49,531,803

Table 66. Sales, Call Centers, Marketing, and Website – Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$104,322	\$144,095	\$129,966	\$134,973	\$193,731	\$53,044	\$760,131
Residential Existing Homes	\$0	\$53,845	\$84,647	\$99,863	\$124,664	\$123,755	\$30,275	\$517,049
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$44,118	\$67,647	\$75,000	\$80,882	\$86,765	\$22,059	\$376,471
Residential Multi-Family	\$0	\$84	\$112	\$113	\$113	\$114	\$28	\$564
Residential Income Eligible	\$0	\$55,354	\$73,805	\$73,805	\$73,123	\$79,555	\$20,444	\$376,087
C&I Prescriptive	\$0	\$7,658	\$17,541	\$22,856	\$26,640	\$23,494	\$5,533	\$103,721
C&I Custom	\$0	\$4,865	\$8,378	\$10,360	\$12,161	\$13,963	\$3,603	\$53,330
C&I Small Non-Residential Efficiency	\$0	\$1,073	\$1,847	\$2,284	\$2,681	\$3,079	\$794	\$11,758
C&I New Construction	\$0	\$12,019	\$20,699	\$25,596	\$30,047	\$34,499	\$8,903	\$131,763
C&I Energy Management	\$0	\$344	\$593	\$733	\$861	\$988	\$255	\$3,775
C&I Engineered Solutions	\$6,265	\$72,476	\$100,116	\$107,026	\$111,043	\$116,669	\$29,569	\$543,164
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Program Management	\$378,174	\$601,735	\$661,077	\$712,270	\$756,041	\$796,918	\$2,160,413	\$6,066,629
Education and Outreach	\$1,188,934	\$2,240,078	\$2,407,872	\$2,531,518	\$2,736,715	\$2,933,067	\$745,230	\$14,783,415
Total	\$1,573,373	\$3,197,970	\$3,588,429	\$3,791,389	\$4,089,947	\$4,406,596	\$3,080,151	\$23,727,856

Table 67. Training – Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Existing Homes	\$0	\$26,923	\$42,324	\$49,932	\$62,332	\$61,877	\$15,138	\$258,525
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$22,059	\$33,824	\$37,500	\$40,441	\$43,382	\$11,029	\$188,235
Residential Multi-Family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Income Eligible	\$0	\$33,212	\$44,283	\$44,283	\$43,874	\$47,733	\$12,266	\$225,652
C&I Prescriptive	\$0	\$766	\$1,754	\$2,286	\$2,664	\$2,349	\$553	\$10,372
C&I Custom	\$0	\$973	\$1,676	\$2,072	\$2,432	\$2,793	\$721	\$10,666
C&I Small Non-Residential Efficiency	\$0	\$215	\$369	\$457	\$536	\$616	\$159	\$2,352
C&I New Construction	\$0	\$2,404	\$4,140	\$5,119	\$6,009	\$6,900	\$1,781	\$26,353
C&I Energy Management	\$0	\$172	\$296	\$367	\$430	\$494	\$128	\$1,887
C&I Engineered Solutions	\$1,253	\$14,495	\$20,023	\$21,405	\$22,209	\$23,334	\$5,914	\$108,633
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$1,253	\$101,218	\$148,689	\$163,420	\$180,928	\$189,478	\$47,688	\$832,674

Table 68. Rebates, Grants, and Other Direct Incentives – Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$11,047,871	\$14,479,590	\$14,300,026	\$15,568,329	\$16,899,084	\$2,563,800	\$74,858,701
Residential Existing Homes	\$0	\$4,110,593	\$5,810,303	\$6,775,620	\$8,410,359	\$8,197,926	\$1,217,083	\$34,521,884
Residential Behavioral	\$2,681,250	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$893,750	\$21,450,000
Residential K-12 Education	\$0	\$105,071	\$150,102	\$149,983	\$149,932	\$149,932	\$44,980	\$750,000
Residential New Construction	\$0	\$1,062,500	\$1,462,500	\$1,606,250	\$1,731,250	\$1,856,250	\$281,250	\$8,000,000
Residential Multi-Family	\$0	\$38,101	\$44,825	\$45,057	\$45,255	\$45,441	\$6,820	\$225,500
Residential Income Eligible	\$0	\$11,292,190	\$13,284,930	\$13,284,930	\$13,145,848	\$14,479,759	\$2,207,923	\$67,695,580
C&I Prescriptive	\$0	\$627,529	\$976,511	\$1,182,012	\$1,371,010	\$1,559,355	\$238,141	\$5,954,558
C&I Custom	\$0	\$1,172,804	\$1,835,860	\$2,242,125	\$2,625,394	\$3,008,663	\$459,923	\$11,344,769
C&I Small Non-Residential Efficiency	\$0	\$905,824	\$1,417,940	\$1,731,722	\$2,027,743	\$2,323,764	\$355,225	\$8,762,220
C&I New Construction	\$0	\$635,666	\$995,046	\$1,215,244	\$1,422,978	\$1,630,712	\$249,281	\$6,148,926
C&I Energy Management	\$0	\$247,910	\$388,068	\$473,945	\$554,961	\$635,978	\$97,220	\$2,398,081
C&I Engineered Solutions	\$0	\$1,557,650	\$14,964,099	\$16,521,749	\$17,509,149	\$18,002,849	\$18,990,249	\$87,545,745
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Energy Efficiency as a Service Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Smart Homes Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$791,667	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$208,333	\$5,000,000
Building Operator Certification Pilot	\$0	\$593,750	\$750,000	\$750,000	\$750,000	\$750,000	\$156,250	\$3,750,000
Total	\$2,681,250	\$47,659,959	\$73,634,774	\$77,353,663	\$82,387,209	\$86,614,713	\$30,574,395	\$400,905,963

Table 69. Rebate Processing, Inspections, and Other Quality Control – Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$110,951	\$361,610	\$445,266	\$432,052	\$446,610	\$538,789	\$209,207	\$2,544,486
Residential Existing Homes	\$206,757	\$543,395	\$662,490	\$699,985	\$751,293	\$767,370	\$346,439	\$3,977,730
Residential Behavioral	\$64,777	\$149,234	\$173,854	\$178,850	\$183,997	\$189,298	\$94,868	\$1,034,878
Residential K-12 Education	\$10,765	\$26,840	\$31,616	\$32,448	\$33,308	\$34,195	\$16,502	\$185,675
Residential New Construction	\$87,752	\$249,803	\$311,112	\$327,845	\$342,729	\$357,815	\$151,930	\$1,828,986
Residential Multi-Family	\$5,859	\$14,340	\$16,862	\$17,340	\$17,832	\$18,338	\$9,081	\$99,652
Residential Income Eligible	\$348,976	\$874,124	\$1,030,076	\$1,056,905	\$1,083,283	\$1,123,580	\$537,182	\$6,054,126
C&I Prescriptive	\$4,535	\$17,878	\$32,465	\$40,288	\$45,928	\$41,663	\$12,036	\$194,793
C&I Custom	\$8,687	\$25,220	\$34,032	\$38,618	\$42,848	\$47,093	\$16,793	\$213,290
C&I Small Non-Residential Efficiency	\$6,503	\$16,540	\$20,387	\$21,785	\$23,115	\$24,461	\$10,900	\$123,690
C&I New Construction	\$38,114	\$102,163	\$130,847	\$143,580	\$155,476	\$167,453	\$67,615	\$805,248
C&I Energy Management	\$25,511	\$61,695	\$73,117	\$75,904	\$78,693	\$81,547	\$40,475	\$436,944
C&I Engineered Solutions	\$162,760	\$451,048	\$549,519	\$574,052	\$592,936	\$615,449	\$252,678	\$3,198,441
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Energy Efficiency as a Service Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Smart Homes Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Building Operator Certification Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Total	\$1,154,763	\$3,068,160	\$3,716,142	\$3,850,286	\$4,015,002	\$4,230,513	\$1,879,944	\$21,914,810

Table 70. Evaluation and Other Research – Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$32,570	\$286,595	\$379,662	\$354,147	\$366,988	\$407,850	\$130,664	\$1,958,477
Residential Existing Homes	\$30,538	\$153,855	\$212,736	\$238,133	\$277,984	\$279,350	\$93,323	\$1,285,918
Residential Behavioral	\$94,635	\$139,490	\$144,703	\$145,761	\$146,851	\$147,973	\$47,059	\$866,472
Residential K-12 Education	\$4,302	\$14,517	\$17,710	\$18,067	\$18,439	\$18,823	\$8,154	\$100,012
Residential New Construction	\$13,778	\$74,335	\$102,114	\$110,168	\$116,879	\$123,625	\$42,296	\$583,195
Residential Multi-Family	\$803	\$3,183	\$3,937	\$4,012	\$4,090	\$4,168	\$1,686	\$21,879
Residential Income Eligible	\$48,624	\$448,497	\$579,390	\$583,487	\$583,616	\$626,553	\$198,948	\$3,069,114
C&I Prescriptive	\$379	\$16,223	\$28,652	\$35,380	\$41,090	\$44,702	\$11,660	\$178,085
C&I Custom	\$2,163	\$18,444	\$28,923	\$34,511	\$39,612	\$44,719	\$13,221	\$181,593
C&I Small Non-Residential Efficiency	\$851	\$8,473	\$13,474	\$16,167	\$18,625	\$21,084	\$6,102	\$84,776
C&I New Construction	\$8,696	\$44,850	\$65,821	\$76,347	\$86,004	\$95,685	\$31,449	\$408,852
C&I Energy Management	\$10,944	\$28,258	\$34,294	\$36,057	\$37,772	\$39,516	\$18,700	\$205,541
C&I Engineered Solutions	\$33,180	\$217,367	\$291,233	\$309,346	\$320,563	\$335,685	\$99,431	\$1,606,805
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Energy Efficiency as a Service Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Smart Homes Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Building Operator Certification Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Total	\$346,111	\$1,608,812	\$2,084,210	\$2,148,592	\$2,251,131	\$2,388,131	\$804,120	\$11,631,107

Table 71. Total Estimated Expenditures – Natural Gas

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$475,852	\$12,897,052	\$16,806,825	\$16,475,647	\$17,822,521	\$19,797,840	\$3,775,695	\$88,051,432
Residential Existing Homes	\$454,506	\$5,554,714	\$7,701,814	\$8,869,657	\$10,817,974	\$10,624,303	\$2,288,870	\$46,311,837
Residential Behavioral	\$2,929,748	\$4,024,732	\$4,071,102	\$4,080,513	\$4,090,207	\$4,100,191	\$1,126,289	\$24,422,783
Residential K-12 Education	\$35,170	\$204,218	\$268,319	\$270,415	\$272,671	\$275,060	\$102,662	\$1,428,515
Residential New Construction	\$240,690	\$1,905,696	\$2,584,708	\$2,820,351	\$3,021,502	\$3,223,009	\$747,788	\$14,543,743
Residential Multi-Family	\$11,656	\$70,523	\$83,439	\$84,501	\$85,554	\$86,612	\$25,039	\$447,323
Residential Income Eligible	\$841,896	\$14,116,889	\$16,710,165	\$16,755,354	\$16,645,091	\$18,194,170	\$3,617,506	\$86,881,072
C&I Prescriptive	\$23,368	\$736,071	\$1,191,579	\$1,457,291	\$1,690,184	\$1,851,027	\$313,714	\$7,263,234
C&I Custom	\$41,671	\$1,327,177	\$2,067,063	\$2,519,594	\$2,945,072	\$3,370,587	\$585,942	\$12,857,107
C&I Small Non-Residential Efficiency	\$15,643	\$958,820	\$1,493,090	\$1,819,047	\$2,126,235	\$2,433,447	\$396,503	\$9,242,786
C&I New Construction	\$133,669	\$1,081,841	\$1,637,482	\$1,971,017	\$2,282,462	\$2,594,082	\$558,640	\$10,259,193
C&I Energy Management	\$72,733	\$430,946	\$611,474	\$710,913	\$804,948	\$899,159	\$280,207	\$3,810,381
C&I Engineered Solutions	\$618,413	\$3,756,270	\$17,773,555	\$19,502,992	\$20,597,909	\$21,235,651	\$20,206,421	\$103,691,211
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Energy Efficiency as a Service Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Smart Homes Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$62,469	\$941,176	\$1,175,443	\$1,180,706	\$1,186,127	\$1,191,711	\$318,036	\$6,055,668
Building Operator Certification Pilot	\$62,469	\$743,260	\$925,443	\$930,706	\$936,127	\$941,711	\$265,953	\$4,805,668
Program Design and Development	\$231,821	\$309,094	\$309,094	\$309,094	\$309,094	\$309,094	\$77,274	\$1,854,567
Program Management	\$378,174	\$601,735	\$661,077	\$712,270	\$756,041	\$796,918	\$2,160,413	\$6,066,629
Education and Outreach	\$1,188,934	\$2,240,078	\$2,407,872	\$2,531,518	\$2,736,715	\$2,933,067	\$745,230	\$14,783,415
IT Build	\$4,682,434	\$7,270,844	\$300,091	\$270,458	\$173,866	\$38,637	\$0	\$12,736,329
IT Run	\$2,608	\$448,318	\$873,207	\$965,410	\$965,410	\$965,410	\$241,353	\$4,461,717
Total	\$12,695,955	\$69,974,879	\$92,692,153	\$97,292,944	\$103,337,865	\$108,951,006	\$40,797,456	\$525,742,258

Cost Estimates – Investment and Expenses

Table 72. Total Estimated Investment

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	836,024	\$39,393,136	\$51,545,484	\$50,435,241	\$54,659,672	\$60,880,861	\$10,093,034	\$267,843,453
Residential Existing Homes	\$250,721	\$9,376,244	\$13,328,037	\$15,568,390	\$19,340,515	\$18,902,602	\$3,075,246	\$79,841,755
Residential Behavioral	\$5,636,097	\$7,514,796	\$7,514,796	\$7,514,796	\$7,514,796	\$7,514,796	\$1,878,699	\$45,088,776
Residential K-12 Education	\$39,701	\$659,482	\$908,718	\$907,985	\$907,688	\$907,688	\$262,172	\$4,593,433
Residential New Construction	\$209,118	\$3,159,779	\$4,404,779	\$4,853,125	\$5,231,801	\$5,610,478	\$1,045,037	\$24,514,118
Residential Multi-Family	\$100,822	\$1,962,921	\$2,331,019	\$2,342,741	\$2,353,173	\$2,362,830	\$407,473	\$11,860,980
Residential Income Eligible	\$390,727	\$16,410,553	\$19,441,994	\$19,441,994	\$19,241,476	\$21,161,061	\$3,503,094	\$99,590,900
C&I Prescriptive	\$1,621,191	\$61,706,118	\$100,281,908	\$122,841,987	\$142,610,994	\$156,253,208	\$25,891,495	\$611,206,901
C&I Custom	\$526,873	\$25,085,796	\$39,329,992	\$48,089,914	\$56,323,998	\$64,558,082	\$10,516,738	\$244,431,393
C&I Small Non-Residential Efficiency	\$226,544	\$35,418,945	\$55,490,755	\$67,798,297	\$79,394,432	\$90,990,568	\$14,228,127	\$343,547,668
C&I New Construction	\$174,265	\$2,396,886	\$3,768,835	\$4,620,919	\$5,415,170	\$6,209,420	\$1,156,676	\$23,742,171
C&I Energy Management	\$18,485	\$992,008	\$1,554,364	\$1,900,207	\$2,225,479	\$2,550,751	\$411,406	\$9,652,699
C&I Engineered Solutions	\$1,442,754	\$11,336,373	\$59,593,562	\$65,524,384	\$69,255,848	\$71,402,118	\$68,064,682	\$346,619,722
C&I Streetlight	\$79,895,013	\$63,943,047	\$1,703,014	\$0	\$0	\$0	\$0	\$145,541,074
ETA Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Energy Efficiency as a Service Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Smart Homes Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Wires Alternative Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Pipes Solution Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Volt Var Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$1,041,667	\$0	\$0	\$15,000,000
Business Energy Reports Pilot	\$0	\$1,583,333	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$416,667	\$10,000,000
Building Operator Certification Pilot	\$0	\$1,187,500	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$312,500	\$7,500,000
IT Build	\$30,297,753	\$47,046,092	\$1,941,741	\$1,750,000	\$1,125,000	\$250,000	\$0	\$82,410,586
Total	\$121,666,088	\$352,923,012	\$396,638,998	\$447,089,980	\$495,141,708	\$538,054,463	\$146,471,379	\$2,497,985,628

Table 73. Total Estimated Expenses

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$677,234	\$1,620,847	\$1,901,990	\$1,959,050	\$2,017,821	\$2,078,356	\$1,914,073	\$12,169,370
Residential Existing Homes	\$642,247	\$1,537,112	\$1,803,730	\$1,857,842	\$1,913,577	\$1,970,985	\$1,421,701	\$11,147,195
Residential Behavioral	\$223,399	\$534,668	\$627,409	\$646,231	\$665,618	\$685,586	\$373,879	\$3,756,791
Residential K-12 Education	\$125,674	\$300,781	\$352,952	\$363,541	\$374,447	\$385,681	\$220,561	\$2,123,637
Residential New Construction	\$272,261	\$651,612	\$764,637	\$787,576	\$811,203	\$835,539	\$450,539	\$4,573,368
Residential Multi-Family	\$369,986	\$885,500	\$1,039,093	\$1,070,266	\$1,102,374	\$1,135,445	\$603,857	\$6,206,522
Residential Income Eligible	\$685,850	\$1,641,468	\$1,926,187	\$1,983,973	\$2,043,492	\$2,104,797	\$1,122,804	\$11,508,572
C&I Prescriptive	\$365,570	\$874,930	\$1,026,690	\$1,057,490	\$1,089,215	\$1,121,892	\$780,581	\$6,316,367
C&I Custom	\$281,961	\$674,826	\$791,877	\$815,634	\$840,103	\$865,306	\$856,453	\$5,126,160
C&I Small Non-Residential Efficiency	\$365,570	\$874,930	\$1,026,690	\$1,057,490	\$1,089,215	\$1,121,892	\$780,581	\$6,316,367
C&I New Construction	\$173,065	\$414,201	\$486,046	\$500,627	\$515,646	\$531,116	\$294,911	\$2,915,611
C&I Energy Management	\$249,877	\$598,038	\$701,770	\$722,823	\$744,508	\$766,843	\$622,464	\$4,406,324
C&I Engineered Solutions	\$699,055	\$1,673,071	\$1,963,272	\$2,022,170	\$2,082,836	\$2,145,321	\$1,918,125	\$12,503,850
C&I Streetlight	\$123,617	\$295,856	\$347,174	\$357,589	\$368,316	\$379,366	\$4,607,869	\$6,479,787
ETA Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Energy Efficiency as a Service Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Smart Homes Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Non-Wires Alternative Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Non-Pipes Solution Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Volt Var Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Business Energy Reports Pilot	\$124,938	\$299,019	\$350,885	\$361,412	\$372,254	\$383,422	\$219,406	\$2,111,336
Building Operator Certification Pilot	\$124,938	\$299,019	\$350,885	\$361,412	\$372,254	\$383,422	\$219,406	\$2,111,336
Program Design and Development	\$1,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$500,000	\$12,000,000
Program Management	\$2,446,981	\$3,893,533	\$4,277,509	\$4,608,754	\$4,891,976	\$5,156,469	\$13,978,984	\$39,254,205
Education and Outreach	\$7,693,013	\$14,494,454	\$15,580,166	\$16,380,223	\$17,707,953	\$18,978,451	\$4,822,022	\$95,656,284
IT Run	\$16,875	\$2,900,850	\$5,650,100	\$6,246,700	\$6,246,700	\$6,246,700	\$1,561,675	\$28,869,600
Total	\$17,622,984	\$37,567,737	\$44,263,407	\$46,493,979	\$48,622,680	\$50,690,953	\$38,133,300	\$283,395,041

APPENDIX C – COMPARISON TO IN-STATE PROGRAMS

The following provides a detailed explanation of how the proposed subprograms are consistent with and/or different from existing or proposed New Jersey Clean Energy Program or utility programs.

Table 74. Comparison to In-State Programs

C&I Engineered Solutions Comparison to NJCEP Programs		
Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>Pay for Performance Program – Existing Buildings – Whole building approach to C&I retrofit projects provides incentives based on customer achievement of energy savings plans. EE measures must achieve a minimum of 15% energy reduction. Incentives are released in phases upon satisfactory completion of each of the three subprogram milestones:</p> <ul style="list-style-type: none"> • Incentive #1 - contingent upon moving forward with the installation of measured identified in the energy reduction plan prepared by an approved subprogram partner. • Incentive #2 - Installation of recommended measures • Incentive #3 - Completion of Post-Construction Benchmarking Report - A completed report verifying energy reductions based on one year of post implementation results. Incentives for electricity and natural gas savings will be paid based on actual savings, provided that the minimum performance threshold of 15% savings has been achieved. <p>Smart Start Rebate Program provides design assistance, incentives for custom measures, and prescriptive incentives for approved energy saving measures. Includes: new construction additions, renovations, remodeling, and equipment replacement.</p>	<p>The C&I Engineered Solutions Subprogram will provide tailored energy efficiency assistance to public service entities, such as municipalities, universities, schools, hospitals (MUSH), non-profit entities and multi-family facilities. The subprogram will provide expert-guided service throughout delivery to assist customers in identifying and undertaking large energy efficiency projects on site, while requiring no up-front funding from the customer.</p> <p>Through this subprogram, customers will be provided with an in-depth audit of their facilities as well as a detailed assessment and recommendation of energy efficiency measures that could be economically installed. Customer incentives are determined on a project-by-project basis, and participants may select their preferred installation providers. In addition to the calculated project-by-project incentive, participants will have the option to pay back the non-incentive portion of the project costs through interest free on-bill repayments over a period of five years (and ten years for HMFA qualified multi-family facilities). Through this subprogram design, participants in market segments that have typically been underserved are able to achieve greater energy savings.</p> <p>The subprogram also includes a combined heat and power (CHP) component which will provide incentives to</p>

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	<p>Home Performance with ENERGY STAR (HPwES) is a national home performance improvement subprogram developed by the Environmental Protection Agency (EPA) and administered by the Department of Energy (DOE). The purpose of the subprogram is to offer a comprehensive (“whole-house”) energy efficiency improvement package based on sound building science principles that produce predictable savings and that improve a home’s energy efficiency, comfort, safety, and durability. The New Jersey Home Performance with ENERGY STAR program (the Program) is built on two parallel delivery strategies: providing information, education, and incentives directly to customers to encourage them to undertake significant energy efficiency improvements to their homes; and encouraging contractors to receive the proper training and Building Performance Institute (BPI) GoldStar Program qualifications to provide high quality home energy efficiency services. BPI certifications are based on national standards that ensure that home assessors have the skills required to identify and realize savings opportunities and that best practices are based on national standards that ensure that home assessors have the skills required to identify and realize savings opportunities and that best practices are met.</p>	<p>customers with adequate thermal and electric loads to benefit from CHP technology. The CHP component of this subprogram will also assign incentives on a project-by-project basis, with the balance of costs eligible for on-bill repayments over a ten-year period.</p> <p>The C&I Engineered Solution Subprogram extends PSE&G's existing Hospital and Healthcare subprogram and Multi-Family subprogram into new sectors including municipalities, universities, non-profits, and schools, while continuing to offer services to the hospital, healthcare, and multi-family segments previously covered. This subprogram is different than the proposed C&I Custom Subprogram in that it provides an audit and funding for whole-building energy efficiency projects accompanied by a more hands-on approach from PSE&G and a different incentive structure. While the C&I Custom Subprogram is designed to incent energy efficiency for facilities with non-standard usage or unique equipment, the C&I Engineered Solutions Subprogram is designed to reach segments of the market that have difficulty accomplishing projects through the other pathways (including C&I Prescriptive and C&I Custom).</p> <p>Neither NJCEP nor any other utility within the State is offering a similar program at this time. With respect to public school districts this subprogram may operate in a complementary manner with the existing NJ ESIP financing mechanism, while also providing an optional, alternative financing mechanism.</p>
Eligibility	<p>Pay for Performance Program – The subprogram is available to all commercial, industrial, and institutional</p>	<p>C&I public service (MUSH), non-profit, and multi-family entities located within PSE&G’s electric and/or natural gas</p>

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customers who contribute to the societal benefits charge (i.e. customers of at least one of New Jersey's investor owned utility companies).

The Existing Buildings component is designed for commercial and industrial buildings with a peak demand in excess of 200 kW in any of the preceding twelve months, and 100kW for eligible multifamily buildings. Eligible multifamily buildings include those that are four or more stories above ground, and low rise, garden-style buildings with central heating and/or cooling or master metered.

Smart Start Rebate Program - Commercial and Industrial properties eligible. Applicants or customers must be contributors to the Societal Benefits Charge (SBC) and the construction project must be located within the service territory of at least one of New Jersey's seven regulated utilities.

Multifamily Eligibility Requirements for Home Performance with ENERGY STAR (HPwES):

The NJ HPwES program defines eligibility as buildings that:

- are no more than three stories high; have single ownership,
- have total building energy usage which is accessible through individual metering of the units within the multi-family structure, or a master meter at the building (as opposed to sites with multiple buildings heated by a central heating plant),
- are made up of five or more units in a single building, or multiple buildings (each with five or more units), within a single geographic boundary

service territory are eligible to participate in this subprogram. The subprogram will provide energy audits and incentives to entities that directly serve the public but often have difficulty investing in energy efficiency. The measures included in this subprogram may include HVAC, building envelope, motors, lighting, controls, energy storage, and other energy consuming equipment. In addition, the CHP segment will address customers with required heating and cooling loads to balance a CHP application.

PSE&G will leverage existing relationships with municipalities, universities, schools, and other public agencies to promote the subprogram and will conduct further outreach through school, university, and municipal associations. In addition, PSE&G will generate a marketing campaign to hospitals, healthcare facilities, non-profits, and multi-family agencies to increase awareness of the subprogram. The subprogram will leverage PSE&G's existing relationships and communication channels with customers through subprogram staff and account management team.

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	<p>and with a single property management structure.</p> <p>Multi-family facilities that do not meet this criteria fall into the Commercial & Industrial (C&I) program, Pay for Performance, for energy efficient measures.</p> <p>The total incentive amount for a multifamily project must not exceed 50% of the total costs of approved measures; approved measures are the same as for the single-family houses and townhouses. If the total multifamily project incentive based on the above structure yields an amount greater than 50% of the costs of approved measures, the incentive amount offered will be lowered to the 50% maximum.</p> <p>HPwES program improvements must consider a whole building approach to be approved. Individual units within a multifamily structure or development are not eligible for the subprogram independently of the entire building or development; however, they may take advantage of other NJCEP offerings, such as <i>WARM</i> and <i>COOL</i> Advantage programs.</p> <p>The subprogram will work with the contractor of a multifamily project to ensure proper project assessment and approval process. Multifamily buildings are to be addressed in accordance with the BPI Multifamily Building Standards. The subprogram will only approve such projects for contractors that have at least one staff member holding BPI Multifamily certification.</p>	
Program Delivery	<p>Pay for Performance Program- Participants select a contractor or “Program Partner” from a list of approved partners maintained by the subprogram, to perform the work. Participants assigned a “Case Manager” once</p>	<p>PSE&G will retain qualified vendors to undertake the audit and engineering services required to deliver this subprogram. Participants will contract with their preferred installation providers to install the measures included in</p>

**C&I Engineered Solutions
Comparison to NJCEP Programs**

	<p>program application for project approved.</p> <hr/> <p>Smart Start Rebate Program – customers may perform their own work or hire independent contractors.</p> <hr/> <p>Home Performance with ENERGY STAR: The selected contractor will conduct an energy assessment, documenting the home in its current state. The assessment will include:</p> <ul style="list-style-type: none"> • Health and safety checks (carbon monoxide levels, moisture, and indoor air quality problems) • Overall comfort level such as cold/hot spots, stale odors, stuffiness, etc. • Air sealing opportunities • Insulation levels • Heating system efficiency • Cooling system/central air conditioning efficiency • Water heating system efficiency <p>After the energy assessment is completed, the contractor will present a report detailing the findings along with any recommended measures to improve the home’s energy consumption and comfort. Using software, the contractor will model their recommended measures, as agreed to by the customer, to determine the project’s estimated TES. To help offset the cost of these upgrades, the subprogram offers rebates and low interest financing, the amount of which is based on the estimated TES achieved by installing the package of measures.</p>	<p>projects.</p> <p>The subprogram delivery will typically occur in four steps:</p> <ul style="list-style-type: none"> • Audit: PSE&G shall assess the required level of American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) audit to perform based on the complexity of the facility and the potential energy efficiency measures; an investment grade audit may not be required for all facilities. The selected PSE&G vendor then will perform the appropriate level energy audit and prepare a customized audit report that includes a list of recommended energy efficiency upgrades. PSE&G and its representatives review the recommended energy efficiency upgrades with the customer to determine whether to proceed with a project. • Engineering Analysis of Project: Based on the audit results, an engineering analysis may be required. PSE&G will conduct a screening of the payback and project cost effectiveness and select a set of approved energy efficiency measures for the project. The subprogram engineering vendor will prepare bid-ready documents and works with the participant to prepare a project Scope of Work, which will be used by the customer to obtain installation cost estimates for project. • Scope of Work/Contractor Bids: The participant will issue a Scope of Work to obtain bids to complete the identified and approved project. PSE&G, the subprogram engineering vendor and the participant review and evaluate the bids/costs received, with the participant making the final
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**C&I Engineered Solutions
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		<p>decision on bid selection. Following bid selection, the proposed project is again screened for cost effectiveness and the participant is presented the funding commitment proposal from PSE&G. Once (i) the participant and PSE&G have executed the funding commitment and (ii) and the installation provider and the participant have executed applicable agreements and contracts, the first progress payment equal to approximately 30% of the installation cost can be issued to the customer to initiate the project (Stage 1 Progress Payment).</p> <ul style="list-style-type: none"> Measures Installation and Inspections: PSE&G and the energy engineering vendor, acting as construction administration agent, will monitor project progress. Upon verification of satisfactory project progress, a series of Stage 2 progress payments up to 50% of total project commitment can be issued. When the project is 100% complete, a final project true-up, and final inspection are undertaken. The final payment based on the results of project true-up is determined and issued only if the final inspection is successfully completed and approved. If the final costs are less than the estimated project commitment, the final payment will be adjusted down to reflect the actual costs. If the final costs are greater than the estimated project commitment, the final payment will not be adjusted and will be paid according to the executed agreements and contracts specifying original costs. <p>The progress payment schedule described above is designed to ensure that building owners can pay their contractors on a timely basis. Project progress and the project cash flow will be monitored and verified by PSE&G or a designated third-</p>
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**C&I Engineered Solutions
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		party implementation contractor.
Program Financing	<p>Pay for Performance Program - whole building approach to C&I retrofit projects provides incentives based on customer achievement of energy savings plans. Incentives paid directly to the participant. Three (3) types of incentives:</p> <ul style="list-style-type: none"> • Energy Reduction Plan – payment per sq. feet with \$5000 min. and \$50,000 max. • Installation of Recommended Measures – payment based on 15 % performance target with 25% of project cost incentive cap – Gas and Electric Incentives. • Post Construction Benchmarking Report – payment based on meeting 15 % performance target with 25% of project cost incentive cap– Gas and Electric Incentives. <p>Program includes Post-Construction Benchmarking</p> <p>Smart Start Rebate Program - The Subprogram pays incentives after the installation of qualified energy efficient measures. The Subprogram utilizes a performance-based approach to determine incentives for custom measures. Established incentive caps for the subprogram are the lesser of:</p> <ul style="list-style-type: none"> ➤ \$0.16/kWh and/or \$1.60/therm based on estimated annual savings ➤ 50% of total installed project cost ➤ Buy down to a one-year payback 	<p>The subprogram will provide a 100% incentive for an up-front ASHRAE Level I, II, or III audit, the specific audit level to be determined based upon the type, size, and age of the facility. In addition, PSE&G will buy-down the simple payback of the recommended energy efficiency project cost for approved measures by up to six years, with the resulting payback not less than three years. After the project incentive buy-down, the remaining project costs may be funded by the subprogram with participants repaying the balance of the project costs on-bill.</p> <p>PSE&G will retain the option and flexibility to adjust the incentive offered to participants to enable a whole-building approach that will include additional ECMs in the project.</p> <p>The full cost of the energy efficiency projects (including engineering, transaction costs and cost of construction) will be covered through a combination of subprogram incentive and customer repayments.</p>

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Eligible projects must have a minimum first-year energy savings of 75,000 kWh for electric projects or 1,500 therms for gas projects. This requirement may be waived on a case-by- case basis if project savings are within 10% of these required minimums. Projects with both electric and gas savings may be considered for incentives if either of the minimum savings requirements are met.

Home Performance with ENERGY STAR: The subprogram does not offer any rebates for having the home energy assessment completed (Tier 1). As stated above, some contractors may offer this service at no cost to the homeowner. To qualify for Tier 2 and 3 incentives, at a minimum, air sealing and insulation must be performed.

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Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>Pay for Performance Program – Existing Buildings – Whole building approach to C&I retrofit projects provides incentives based on customer achievement of energy savings plans. EE measures must achieve a minimum of 15% energy reduction. Incentives are released in phases upon satisfactory completion of each of the three program milestones:</p> <ul style="list-style-type: none"> • Incentive #1 - contingent upon moving forward with the installation of measured identified in the energy reduction plan prepared by an approved program partner. • Incentive #2 - Installation of recommended measures • Incentive #3 - Completion of Post-Construction Benchmarking Report - A completed report verifying energy reductions based on one year of post implementation results. Incentives for electricity and natural gas savings will be paid based on actual savings, provided that the minimum performance threshold of 15% savings has been achieved. <hr/> <p>Home Performance with ENERGY STAR (HPwES) is a national home performance improvement program developed by the Environmental Protection Agency (EPA) and</p>	<p>The C&I Energy Management Subprogram includes two major subprogram initiatives: Retro-commissioning and Strategic Energy Management. Both subprograms are designed to optimize energy consumption in existing C&I buildings through management of major energy using systems, user behavior, and low-cost, easy to install efficiency measures at the time of an initial site visit or a follow-up by a participating trade ally. In many cases revised building management processes can produce meaningful energy savings without capital investment in new equipment or controls; however, recommended investment areas may also be identified through this subprogram. Details of the subprogram initiatives are as follows:</p> <ul style="list-style-type: none"> • Retro-commissioning (RCx): Also known as ‘existing building commissioning’, retro-commissioning focuses on identifying operations and maintenance improvements in existing commercial buildings to ensure optimal performance of building systems and system interactions. Retro-commissioning applies the same systematic process to buildings as is applied during initial building commissioning, and may be performed every three to five years to ensure optimal building performance. Retro-commissioning is typically among the most cost-effective energy savings strategies applied in commercial buildings and may produce other non-energy benefits including extending the life of existing equipment and improving thermal comfort and indoor air quality. • Strategic Energy Management (SEM): This subprogram is primarily geared toward industrial and manufacturing buildings and is a holistic approach to managing energy usage focused on management of existing systems and processes (including behavior), as well as tracking and benchmarking performance to identify and evaluate energy optimization efforts. SEM is a long-term effort typically led by an external instructor focused on

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	<p>administered by the Department of Energy (DOE). The purpose of the subprogram is to offer a comprehensive (“whole-house”) energy efficiency improvement package based on sound building science principles that produce predictable savings and that improve a home’s energy efficiency, comfort, safety, and durability. The New Jersey Home Performance with ENERGY STAR program (the Program) is built on two parallel delivery strategies: providing information, education, and incentives directly to customers to encourage them to undertake significant energy efficiency improvements to their homes; and encouraging contractors to receive the proper training and Building Performance Institute (BPI) GoldStar Program qualifications to provide high quality home energy efficiency services. BPI certifications are based on national standards that ensure that home assessors have the skills required to identify and realize savings opportunities and that best practices are met. The contractor recruitment element of the Program is designed to ensure an adequate supply of qualified contractors to meet the demand for program services created by the marketing and public education elements. The Subprogram also has encouraged contractors (primarily insulation contractors, HVAC contractors, and remodelers) to transform their business and pursue an integrated, whole house approach to energy efficiency and home improvement.</p>	<p>developing and executing an energy management strategy via workshops, webinars, and group/individual training sessions with cohorts of facility managers. SEM applies continuous improvement principles to energy management to encourage and enable a culture of energy efficiency within an organization to develop measurable long-term savings.</p> <p>The Energy Management Subprogram is designed to support optimal management of existing equipment and processes. During the implementation of both processes, additional retrofit or equipment replacement opportunities may be identified for the customer that could drive participation for other commercial subprograms such as the C&I Prescriptive Subprogram.</p> <p>The NJCEP does not currently offer an RCx initiative however improvements identified as part of an RCx process can qualify as measures, and could qualify for an incentive under the NJCEP’s Pay for Performance Program. RCx may also be an energy conservation measure as part of an Energy Savings Improvement Program (ESIP).</p>
Eligibility	Pay for Performance Program – The	All commercial, industrial, and other non-residential customers located

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	<p>subprogram is available to all commercial, industrial, and institutional customers who contribute to the societal benefits charge (i.e. customers of at least one of New Jersey's investor owned utility companies).</p> <p>The Existing Buildings component is designed for commercial and industrial buildings with a peak demand in excess of 200 kW in any of the preceding twelve months, and 100kW for eligible multifamily buildings. Eligible multifamily buildings include those that are four or more stories above ground, and low rise, garden-style buildings with central heating and/or cooling or master metered.</p>	<p>within PSE&G's electric and/or natural gas territory are eligible to participate in this subprogram.</p> <p>RCx targets the existing commercial building stock, and is particularly relevant for medium to large non-industrial building types including office, lodging, education, healthcare, laboratory, warehouse/storage, supermarkets, and more. The primary target market for the RCx subprogram will be C&I customers utilizing a building management system.</p> <p>SEM targets existing large and very large commercial and industrial customers and building types, and is particularly relevant to large energy users engaged in manufacturing processes. For SEM to be successful, the subprogram will invest significant resources upfront to focus on recruiting and pre-qualifying customers to participate in the subprogram. SEM's objective is to change a company's focus and engagement with energy management over the long-term, in a continuous manner, a core goal is to recruit customers who demonstrate genuine and committed interest in working with PSE&G over a long period of time. These "energy champions," will ideally include multiple staff at each company, placed in different departments and various levels of seniority and decision making in the company.</p> <p>Eligible measures will vary depending on the business segment served, but are likely to include at least the following:</p> <ul style="list-style-type: none"> • Optimizing chiller and boiler operations to better match building load conditions • Reducing ventilation in over-ventilated areas • Fixing ventilation dampers that are open when they should be closed, or vice versa • System rebalancing and decreasing supply air pressure set-point • Reducing supply air temperature and fan speed in air handling units
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		<ul style="list-style-type: none"> Aligning zone temperature set-points to match the building’s occupancy patterns Operating equipment only when building is occupied or when equipment is needed Lighting controls including occupancy/vacancy controls, photo-sensors, and timer controls
Program Delivery	<p>Pay for Performance Program- Participants select a contractor or “Program Partner” from this list of approved partners maintained by the subprogram, to perform the work. Participants assigned a “Case Manager” once program application for project approved.</p> <hr/> <p>Home Performance with ENERGY STAR: The selected contractor will conduct an energy assessment, documenting the home in its current state. The assessment will include:</p> <ul style="list-style-type: none"> Health and safety checks (carbon monoxide levels, moisture, and indoor air quality problems) Overall comfort level such as cold/hot spots, stale odors, stuffiness, etc. Air sealing opportunities Insulation levels Heating system efficiency Cooling system/central air conditioning efficiency Water heating system efficiency 	<p>The RCx and SEM Programs will be delivered by a third-party implementation contractor(s). Both subprograms require customer and trade ally involvement in the form of on-site access to existing equipment, management protocols, and energy management/facilities staff.</p> <p>To support the marketplace and develop a project pipeline, the following delivery strategies, among others, will be pursued:</p> <ul style="list-style-type: none"> Targeted Customer Outreach: Subprogram staff and their representatives will make outreach efforts directly to PSE&G customers that own or operate facilities identified by internal screening activity as potential participants. Factors considered in initial screening may include building age/size/type and historical energy use patterns. Technical Customer Assistance: An important element of the C&I Energy Management Subprogram is the availability of technical support, guidance, training and orientation from PSE&G’s third-party implementation contractor(s). Subprogram staff will be available to support customers and determine if they may qualify for participation for either RCx or SEM. Depending on the customer’s goals and likely energy savings potential, significant customer engagement may be undertaken for the SEM subprogram. On-Site Implementation: Both the RCx and SEM subprograms

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After the energy assessment is completed, the contractor will present a report detailing the findings along with any recommended measures to improve the home’s energy consumption and comfort. Using software, the contractor will model their recommended measures, as agreed to by the customer, to determine the project’s estimated TES. To help offset the cost of these upgrades, the subprogram offers rebates and low interest financing, the amount of which is based on the estimated TES achieved by installing the package of measures.

require subprogram staff to visit customer premises to identify energy savings opportunities (including through the logging and analysis of energy consumption data) and develop strategies and solutions for acquiring these savings.

The RCx subprogram will be delivered through a network of approved retro-commissioning service providers (RSPs) operating in PSE&G’s service territory that have been trained in subprogram protocols and participation processes. Once an application has been accepted, one of the expert engineering RSPs conducts a detailed energy assessment to investigate and identify low-cost energy-saving operational improvements through a systematic evaluation of energy using systems. RCx involves a series of steps to qualify appropriate customers for participation and to ensure the subprogram will produce meaningful energy savings. These steps may include:

- **Initial Customer Screening:** Customer-submitted applications are reviewed to assess the likelihood of energy savings. Customers may also be identified through a data analytics engine using PSE&G data and through data acquired via the Business Energy Reports Pilot or other methods.
- **Project Scoping:** The building owner or primary representative will be contacted by PSE&G subprogram staff or their representatives to schedule a time for an on-site visit. This visit will entail inspecting the building and major energy using equipment, reviewing past energy consumption, and identifying preliminary opportunities for energy-use reduction.
- **Agreement and Implementation:** A rigorous evaluation of building systems is conducted and an incentive agreement is finalized with the customer regarding project measures, implementation strategy, and incentives.
- **Follow-up:** Additional training may be provided to building owners/operators after completion of an RCx project to ensure savings persistence.

**C&I Energy Management
Comparison to NJCEP Programs**

		<p>Example SEM implementation efforts, above and beyond what would occur as detailed in the RCx section, also include the following:</p> <ul style="list-style-type: none"> • Onsite Energy Management Assessment: Identify current strengths and weaknesses in existing energy management practices. • Metering Training: Instruction on the use of metering equipment to identify energy saving opportunities and an introduction to energy modelling. • Coach-led Training Employee-engagement Sessions: Targeted at any combination of building operations/facilities staff, management personnel, and other company staff, training sessions are used to build awareness and detect inefficient operating practices. • Benchmarking: Energy consumption benchmarking is a key aspect of SEM, and both baseline and ongoing energy use monitoring strategies are employed to encourage data-driven energy management and short-term feedback.
<p>Program Financing</p>	<p>Pay for Performance Program - whole building approach to C&I retrofit projects provides incentives based on customer achievement of energy savings plans. Incentives paid directly to the participant. Three (3) types of incentives: Energy Reduction Plan – payment per sq. feet</p>	<p>Incentives will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure the incentive design is optimally driving energy savings and participation. The incentive design structure and payment per first year kWh and therm saved may be different between the RCx and SEM subprogram participants. Additionally, incentive levels may vary depending on the end-use where the savings are achieved, and the overall</p>

**C&I Energy Management
Comparison to NJCEP Programs**

	<p>with \$5000 min. and \$50,000 max.</p> <ul style="list-style-type: none"> • Installation of Recommended Measures – payment based on 15 % performance target with 25% of project cost incentive cap – Gas and Electric Incentives. • Post Construction Benchmarking Report – payment based on meeting 15% performance target with 25% of project cost incentive cap– Gas and Electric Incentives. 	<p>comprehensiveness and estimated longevity of the energy savings. These incentives are subject to change based on final subprogram design and the go-to-market implementation plan.</p>
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C&I Custom Subprogram Comparison to NJCEP Programs		
Feature	NJCEP 2018 Programs	PSE&G Subprogram
<p>Free energy audit and upfront financing/incentives for funding the installation of energy efficiency measures. On-bill repayment of customer's share of the cost.</p>	<p>Pay for Performance Program – Existing Buildings – Whole building approach to C&I retrofit projects provides incentives based on customer achievement of energy savings plans. EE measures must achieve a minimum of 15% energy reduction.</p> <p>Incentives are released in phases upon satisfactory completion of each of the three program milestones:</p> <ul style="list-style-type: none"> • Incentive #1 - contingent upon moving forward with the installation of measured identified in the energy reduction plan prepared by an approved program partner. • Incentive #2 - Installation of recommended measures • Incentive #3 - Completion of Post-Construction <p>Benchmarking Report - A completed report verifying energy reductions based on one year of post implementation results. Incentives for electricity and natural gas savings will be paid based on actual savings, provided that the minimum performance threshold of 15% savings has been achieved.</p> <hr/> <p>Smart Start Rebate Program provides design assistance, incentives for custom measures, and prescriptive incentives for approved energy saving measures. Includes: new construction additions, renovations, remodeling, and equipment</p>	<p>The Commercial and Industrial (C&I) Custom Subprogram will offer incentives for electric and natural gas efficiency opportunities for commercial, industrial, and other non-residential customers that are non-standard and not captured by the C&I Prescriptive Subprogram, or any other proposed custom subprogram offering including the C&I Engineered Solutions Subprogram. Typical measures incentivized by the C&I Custom Subprogram are either less common measures or efficiency opportunities in specialized applications that may include specialized manufacturing processes or non-traditional use cases. In many cases custom efficiency projects are more complex than prescriptive equipment replacement.</p> <p>Large customers with facilities and engineering teams will develop and submit custom efficiency project rebate applications for review. A third-party implementation contractor will also play an active role in supporting project identification, developing energy savings calculations, and assessing project economics as required. Potential participants are required to submit an application for pre-approval to reserve funding, and if accepted by PSE&G, a timeline is established for project completion to qualify for a rebate. The typical lead time for completing a custom project is 90 to 120 days. Large projects, or subsets of projects, may be required to undergo pre-and post-inspection to validate project energy savings. Approved projects will also be eligible for on-bill repayment support to further reduce first-cost barriers.</p> <p>PSE&G currently offers other efficiency subprograms that cater to custom efficiency projects in addition to the C&I Custom Subprogram. For instance, PSE&G offers a Hospital Subprogram that caters to custom projects specific to that</p>

**C&I Custom Subprogram
Comparison to NJCEP Programs**

	<p>replacement.</p>	<p>market, and is also proposing a new C&I Engineered Solutions Subprogram targeting efficiency projects primarily for municipalities, universities, schools, and hospital (MUSH) sector as well as non-profits. The C&I Custom Subprogram differs from these subprograms because it does not include the upfront engineering and all commercial customers are eligible to participate.</p> <p>The NJCEP currently offers rebates for custom efficiency projects in a similar manner as the C&I Custom program under their SmartStart buildings program. In both, incentive values are calculated based on estimated and actual energy savings values. This subprogram differs from the NJCEP Pay for Performance (P4P) program since it does not include the energy reduction plan required in the P4P program. The incentive payout will occur once under this subprogram while P4P has three (3) incentive payout milestones. This subprogram will include M&V site visits and documentation of savings after construction as opposed to the P4P benchmarking report. PSE&G peer utilities currently do not offer a custom, performance-based incentive program similar to the C&I Custom Subprogram.</p> <p>The PSE&G C&I Custom Subprogram will address many of the same efficiency opportunities and is targeted at a similar market within PSE&G’s service territory. However, PSE&G’s use of its customer relationships, communication channels, on-bill repayments capabilities, and its commitment to aggressively pursue and promote activity with the rest of the delivery ecosystem will realize wider and deeper participation.</p>
<p>Eligibility</p>	<p>Pay for Performance Program – The subprogram is available to all commercial, industrial, and institutional customers who contribute to the societal benefits charge (i.e. customers of at least one of New Jersey's investor owned utility</p>	<p>The C&I Custom Subprogram targets all C&I customers in PSE&G’s electric and/or natural gas service territory with cost effective savings opportunities that are not covered by the C&I Prescriptive or Small Non-Residential Efficiency Programs, and in building types not eligible for participating in the C&I</p>

C&I Custom Subprogram Comparison to NJCEP Programs		
	<p>companies). The Existing Buildings component is designed for commercial and industrial buildings with a peak demand in excess of 200 kW in any of the preceding twelve months, and 100kW for eligible multifamily buildings. Eligible multifamily buildings include those that are four or more stories above ground, and low rise, garden-style buildings with central heating and/or cooling or master metered.</p> <p>The New Construction component is designed for new commercial, industrial, and multifamily buildings with 50,000 square feet or more of planned space, as well as buildings undergoing substantial renovation.</p> <hr/> <p>Smart Start Rebate Program - Commercial and Industrial properties eligible. Applicants or customers must be contributors to the Societal Benefits Charge (SBC) and the construction project must be located within the service territory of at least one of New Jersey’s seven regulated utilities.</p>	<p>Engineered Solutions Subprogram (non-MUSH/multifamily common areas/non-profit). However, customers participating in the C&I Custom Subprogram will generally be larger energy users with more complex needs and non-standard efficiency opportunities. Customers targeted for participation typically include building types such as light/heavy industrial, manufacturing, data centers, and distribution centers, among others.</p>
Program Delivery	<p>Pay for Performance Program - Participants select a contractor or “Program Partner” from this list of approved partners maintained by the subprogram, to perform the work. Participants assigned a “Case Manager” once program application for project approved.</p> <hr/> <p>Smart Start Rebate Program – customers may perform their own work or hire independent contractors.</p>	<p>The C&I Custom Subprogram will be supervised by PSE&G and delivered by a qualified third-party implementation contractor. The following delivery strategies will be pursued:</p> <ul style="list-style-type: none"> • Targeted Customer Outreach: High-use customers will be targeted by subprogram staff to develop relationships with facilities and energy mangers, operations staff, and procurement personnel to inform them of the benefits of participating in the custom subprogram. Subprogram staff will provide technical

**C&I Custom Subprogram
Comparison to NJCEP Programs**

		<p>support and assist customers in identifying efficiency opportunities and with review and preparation of their rebate application.</p> <ul style="list-style-type: none"> • Technical Customer Assistance: An important element of the C&I Custom Subprogram is the availability of technical support from qualified subprogram staff. PSE&G subprogram management staff and their representatives will be available to support customers with project identification and analysis, including assistance with targeted energy audits and savings estimates. • Trade Allies: Developing relationships in the trade ally community will spread broader awareness of the existence of the custom subprogram option and obtain referrals for potential projects <p>Measurement & Verification (M&V) for projects above a certain estimated incentive size, or projects that do not have reliable information to accurately forecast energy savings may require energy monitoring before and after project implementation to determine savings and incentive levels.</p>
<p>Program Financing/ Repayment</p>	<p>Pay for Performance Program - whole building approach to C&I retrofit projects provides incentives based on customer achievement of energy savings plans. Incentives paid directly to the participant. Three (3) types of incentives:</p> <ul style="list-style-type: none"> • Energy Reduction Plan – payment per sq. feet with \$5000 min. and \$50,000 max. • Installation of Recommended Measures – payment based on 15 % performance target with 25% of project cost incentive cap – Gas and Electric Incentives. • Post Construction Benchmarking Report – 	<p>The C&I Custom Subprogram incentives will be set based on an incentive level per first year kWh or therm saved. These incentive levels will be reviewed and updated periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings across a full spectrum of market opportunities. Incentive level design may change over time based on the specific end-use where the savings are being acquired. Additionally, incentive level restrictions may be established that could include limits to total incentives as a percentage of project costs or minimum project payback periods. Overall total facility and customer level incentive limits may also be established to</p>

C&I Custom Subprogram Comparison to NJCEP Programs		
	<p>payment based on meeting 15 % performance target with 25% of project cost incentive cap– Gas and Electric Incentives.</p> <p>Smart Start Rebate Program - The Subprogram pays incentives after the installation of qualified energy efficient measures. The Subprogram utilizes a performance-based approach to determine incentives for custom measures. Established incentive caps for the subprogram are the lesser of: \$0.16/kWh and/or \$1.60/therm based on estimated annual savings</p> <ul style="list-style-type: none"> • 50% of total installed project cost • Buy down to a one-year payback <p>Eligible projects must have a minimum first-year energy savings of 75,000 kWh for electric projects or 1,500 therms for gas projects. This requirement may be waived on a case-by- case basis if project savings are within 10% of these required minimums. Projects with both electric and gas savings may be considered for incentives if either of the minimum savings requirements are met.</p>	<p>ensure funding is available to as many C&I customers as possible, while also still providing robust incentives to capture the full suite of energy savings from large projects. Approved projects will also be eligible for on-bill repayment support to further reduce first-cost barriers.</p>

C&I Small Non-Residential Efficiency Comparison to NJCEP Programs		
Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>Direct Install Program: Free walk-through energy assessment for eligible facilities and a written report of recommended energy savings improvements with turn-key measure installation. The subprogram pays</p>	<p>The C&I Small Non-Residential Efficiency Subprogram is focused on installation of efficiency measures in small non-residential customers that typically lack the time, knowledge, or financial resources necessary to pursue energy efficiency. The subprogram is designed to provide non-residential owners with easy investment decisions for the direct</p>

**C&I Small Non-Residential Efficiency
Comparison to NJCEP Programs**

up to 70% of retrofit costs with a \$125,000 incentive cap on each project, \$250,000 per customer per year. Measures include lighting, Heating, Cooling & Ventilation (HVAC), Refrigeration, Motors, and Variable Frequency Drives, various Energy Star rated equipment

installation of energy efficiency projects. The subprogram will pay the up-front cost to install the recommended energy efficiency measures with the participating customer repaying 30% either in a lump sum or interest-free on their PSE&G bill. The reduced overall costs and on-bill repayments mitigate up-front cost barriers and assist participants in making decisions which otherwise would be time-consuming and difficult to justify. The C&I Small Non-Residential Efficiency Subprogram plays an important role in the marketplace because private providers of energy efficiency services typically do not target small non-residential customers due to the lower overall profit for their services when compared with larger non-residential customers. For these reasons, small non-residential customers are often hard to reach, and the subprogram fills an important gap by delivering efficiency services to these customers directly.

The audit will be provided to customers free of charge and will offer recommendations on energy efficiency projects to reduce energy usage and costs. The aggregation of this data will allow PSE&G to better understand its customers and can be used to inform other subprograms and future subprogram designs, such as the C&I Prescriptive Subprogram, the C&I New Construction Subprogram, and the Business Energy Reports Pilot Subprogram.

The subprogram will also focus on the smallest customers within the small business segment. PSE&G anticipates portions of the subprogram to be directed at restaurants, small offices, and other small businesses that often are left behind in less-comprehensive energy efficiency subprograms. Through a number of delivery mechanisms, PSE&G will assure that all business types are able to participate in this subprogram.

The C&I Small Non-Residential Efficiency Subprogram is specifically designed to address the needs of all small non-residential customers. This subprogram has similar design features to PSE&G's current Direct Install Program offering, as well as to the NJCEP Direct Install program offering (of which some utilities in the state provide financing for customers).

**C&I Small Non-Residential Efficiency
Comparison to NJCEP Programs**

		<p>However, as compared to the previous PSE&G and NJCEP offerings, this subprogram will greatly expand the diversity of participants, and will increase the focus on the smallest of non-residential customers, which previously had limited participation. While many of the incentive levels may be similar to the existing programs, the C&I Small Non-Residential Efficiency Subprogram's focus on underserved customers differentiates this offer from that provided by the NJCEP. This subprogram will also use PSE&G's brand, customer relationship base, resources and the above focus and incentive methods, all of which differentiate it from the Direct Install Program. Finally, the relationship of this subprogram with the balance of subprograms provided throughout this program offer a synergistic approach to customers that is unavailable elsewhere.</p>
<p>Eligibility</p>	<p>Direct Install - Existing small to mid-sized commercial and industrial facilities with a peak electric demand that did not exceed 200 kW in any of the preceding 12 months are eligible to participate. Buildings must be located in New Jersey and served by one of the state's public, regulated electric or natural gas utility companies.</p>	<p>PSE&G expects small non-residential customers with an average 12-month individual facility annual electricity peak demand usage of less than 200 kW to be the eligibility threshold; however, this figure may be adjusted by PSE&G up to 500 kW, to ensure the subprogram is properly addressing the market in PSE&G's service territory. The subprogram will also be structured to focus on and secure participants especially in the lower-usage tiers.</p> <p>The subprogram seeks to address high-return, relatively low-cost measures (e.g. LED lighting retrofits), but customers may choose to pursue further retrofits that are eligible for additional incentives. Example end-use categories covered by the subprogram include lighting, HVAC, controls, refrigeration, motors, low-flow devices, pipe wrap and domestic hot water equipment.</p>
<p>Program Delivery</p>	<p>Direct Install – A network of subprogram selected participating contractors address project from start to finish, beginning with an assessment of the facility, and ending with the installation of eligible energy-efficient equipment. Project installations are</p>	<p>The C&I Small Non-Residential Efficiency Subprogram interfaces with customers via either direct solicitation or upon customer request. All participants receive a site visit, including a free on-site audit to identify energy efficiency retrofit opportunities. Following the audit, participants are provided with a report assessing the site and recommending investments that could further improve the energy efficiency of the</p>

**C&I Small Non-Residential Efficiency
Comparison to NJCEP Programs**

	<p>typically completed within 90 days from the time of scheduling your energy assessment.</p>	<p>facility.</p> <p>Based on the results of the audit report, the subprogram will offer to initially pay 100% of the project cost to install the recommended energy efficiency measures with the participating customer (or landlord) repaying 30% either in a lump sum or interest free on their PSE&G bill. PSE&G may adjust the incentive structure to encourage deeper retrofits, as well as to encourage participation by micro-customers. PSE&G will provide for the installation of all work and assure it is completed on time and to specifications. This approach frees up the participant, which as a small non-residential customer may not have the time or resources to focus on implementation issues.</p> <p>The subprogram budget will be split into tranches based upon customer consumption size, or other designated factors, to focus contractors to complete work on specific tranches. This will assure that non-residential customers, even those that are the smallest and often overlooked, receive ample focus. Contractors will be limited to specific tranches to assure minimum volumes and scale can be reached while also providing for adequate cost effectiveness. PSE&G may also elect to provide additional contractor-focused bonus incentives to further encourage contractor emphasis on specific sectors. The tranche divisions will be implemented to combat contractors' inherent focus on larger customer facilities. The subprogram may also be marketed and structured into customer types. For example, one element of the subprogram structure may focus on restaurants, while another is focused on convenience stores and bodegas.</p>
<p>Program Financing/ Repayment</p>	<p>Direct Install - Customers share of the project's cost will be approximately 30%; the subprogram pays the remaining 70%.</p>	<p>One of the key benefits of the subprogram is that it is a simple, turnkey solution for small non-residential customers that requires no up-front customer investment. The initial site visit, energy audit, and installation of recommended efficiency measures are provided at no initial cost to participants. This up-front incentive value will be evaluated periodically to assure that the subprogram incentive is adequate and provides the correct signal to the marketplace regarding energy efficiency. Participants will reimburse PSE&G 30% of total project cost interest-free through on-</p>

**C&I Small Non-Residential Efficiency
Comparison to NJCEP Programs**

		bill repayments, thereby eliminating the up-front cost burden of installing energy efficiency measures. PSE&G may adjust the incentive structure to encourage deeper retrofits, as well as to encourage participation by micro-customers.
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**Residential New Construction
Comparison to NJCEP Subprogram**

Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>Market based program which relies on builders and raters to build to nationally recognized platform standards, which are defined by core efficiency measures, energy modeling, rater and builder oversight, and checklists to ensure quality installation. NJ’s RNC program uses the platforms to create different pathways to provide flexibility to the NJ market in improving the efficiency of baseline construction practices in the state.</p> <p>New Jersey ENERGY STAR Homes are designed to achieve 15% more energy efficiency than the building code. These homes meet ENERGY STAR version 3.1 standards, which means they are ENERGY STAR certified.</p> <p>New Jersey Zero Energy Ready Home promotes innovation in building design, materials, techniques, and operation. This level requires ENERGY STAR v3.1 specification as well as the IECC 2015 insulation levels.</p>	<p>The Residential New Construction Subprogram will significantly improve the energy efficiency of newly constructed single-family and single-family attached homes in the PSE&G service territory. The subprogram will educate residential new construction market stakeholders on energy efficient home design and construction, and provide incentives to them for utilizing high efficiency building practices and materials. Participating builders will work with subprogram-enrolled Residential Energy Services Network (RESNET) certified Home Energy Rating System (HERS) raters, who will inspect the home, verify subprogram requirements, calculate the home's energy performance, and submit required documentation. The subprogram will follow guidelines and qualifying criteria associated with the U.S. Environmental Protection Agency ENERGY STAR Homes program subject to as-needed enhancements to align with other programs, as well as maximize participation and cost-effective energy savings opportunities. PSE&G’s Residential New Construction Subprogram will also include promotion and incentives to builders for “electric vehicle ready” and “solar photovoltaic ready” wiring, such that pre-wiring and electrical panel capacity is designed to facilitate installation of these systems in the future, if not at the time of the initial construction.</p> <p>The NJCEP offers an ENERGY STAR Homes and ENERGY STAR Zero Energy Homes program. The NJCEP programs offer performance incentives based on the HERS rating of a newly constructed home and a predetermined performance tier. This structure results in nearly 70 different incentive levels, depending on the HERS score, though each incremental improvement in the HERS score may not result in energy savings.</p>
Eligibility	To qualify for the subprogram, a home must meet IECC2015 ERI, ENERGY STAR Home, Zero Energy Ready Home, or ENERGY STAR Multifamily	The subprogram targets trade allies including architects, developers, builders, contractors, and home energy raters who are responsible for new home design, construction, and equipment decisions. All new construction in the residentially metered single-family or single-family attached home or

**Residential New Construction
Comparison to NJCEP Subprogram**

	<p>High-Rise requirements.</p> <p>Newly constructed single family, multi-single, low-rise, mid-rise, and high-rise family building are eligible for RNC benefits if the home or building will use natural gas and/ or electricity as the heating fuel supplied by a New Jersey Public Utility.</p>	<p>low-rise (three stories or less) multifamily segment that receive electric and/or natural gas service from PSE&G are eligible to participate. Multifamily buildings over three stories will be eligible to participate in the C&I New Construction Subprogram. The subprogram will increase the efficiency of newly constructed homes by comprehensively improving the building shell and efficiency of the mechanical systems in the home.</p>
Program Delivery	<p>Using an account management approach, the Program recruits new and supports existing raters who oversee the energy efficiency work completed by participating builders. The Subprogram will initiate a relationship with the participating builders via a Program Participation Agreement, utilize the account managers to provide more direct support to the builders, and use the Enhanced Outreach Team to recruit new builder participants with an emphasis toward ZERH projects. The subprogram also provides necessary training to raters, trade allies, and builders to ensure they understand the subprogram rules/ requirements and have the skillset to meet the higher-than-code program standards and build homes that contribute to New Jersey’s energy reduction efforts.</p>	<p>The delivery strategy for the Residential New Construction Subprogram will involve: 1) offering education, financial incentives, and cooperative advertising efforts to participating home builders; 2) offering technical training to home builders and trade allies; and 3) educating industry professionals and homebuyers on the benefits of energy efficiency construction.</p> <p>This subprogram will be delivered by a qualified third-party implementation contractor with experience delivering similar subprograms. The third-party implementation contractor will be responsible for activities including, but not limited to, the following:</p> <ul style="list-style-type: none"> • Builder and energy rater outreach, recruitment, education, and ongoing relationship management • Marketing collateral development and deployment • Reviewing, approving, and tracking of incentive applications for completed homes, including all necessary supporting documentation • Processing incentives, including fund management, issuing checks, and reporting • Quality assurance of technical and procedural subprogram requirements • Budgeting, goal tracking, and reporting
Program Financing/ Repayment	<p>Detailed tables with incentive amounts under each scenario, path, and housing</p>	<p>PSE&G proposes to offer a performance incentive paid either to the builder or homeowner (in instances where the homeowner is directly responsible for</p>

Residential New Construction Comparison to NJCEP Subprogram		
	type can be found in Appendix A of the New Jersey Clean Energy Program on page 90.	construction) based upon modeled savings rather than HERS rating. This incentive design will simplify the offering and allow builders to easily assess the incentives available for adhering to energy efficiency building standards. Additionally, the subprogram will include a supplemental incentive for electric vehicle charging station electrical panel wiring and preparation (EV Ready), as well as an incentive for solar photovoltaic roof-top electrical wiring (PV Ready). The incentive levels and design may be evaluated and revised periodically to maximize uptake and cost-effective energy savings. The subprogram may also introduce additional building performance standards or prescriptive requirements as the market matures to increase energy savings per home and maintain the subprogram’s cost-effectiveness.
Residential Efficient Products Comparison to NJCEP program		
Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>Residential Gas and Electric HVAC: To increase the selection and quality installation of high efficiency residential HVAC equipment in the New Jersey market through the use of incentives, supply chain support, and customer outreach and education.</p> <hr/> <p>Energy Efficient Products Program: The Energy Efficient Products Program promotes the sale and purchase of ENERGY STAR qualified and other energy efficient products including lighting, appliances and consumer electronics, while also supporting the “early retirement” and recycling of existing inefficient products in New Jersey households. The long-term goal of the Program is to transform the market for energy efficient products in New Jersey by removing barriers to new technologies and providing participants with the knowledge and motivation</p>	<p>The Residential Efficient Products Subprogram will promote the installation of ENERGY STAR and other high-efficiency electric and natural gas equipment by residential customers by offering a broad range of energy efficient equipment and appliances through a variety of channels, including an online marketplace, in-store rebates, reduced point of sale costs, and a network of trade allies. The Subprogram will provide incentives for energy efficient lighting, appliances, smart thermostats, electronics, and heating and cooling equipment, and installation services may also be offered as a component of the subprogram for some equipment. Measures range in type and price but include both electric and natural gas technologies that improve energy efficiency in the home. Up-front rebates will be offered on all technologies to reduce initial costs and some purchases will qualify for on-bill repayments to further reduce first cost barriers. The subprogram is designed to provide easy and cost-effective access to energy efficient measures through customers' preferred channels.</p> <p>The subprogram is designed to:</p>

**Residential New Construction
Comparison to NJCEP Subprogram**

they need to make cost-effective purchases. The Energy Efficient Products Program provides targeted rebates and messaging to consumers, community partners, manufacturers and retailers for the purchase/sale of selected energy efficient products. The subprogram continues to transition towards greater upstream and midstream initiatives that leverage manufacturer, distributor and retailer incentives and marketing dollars. These initiatives increase available funds for incentives and decrease program operating costs. Aligned and complimentary to the Residential HVAC, New Construction, and Home Performance programs, the Energy Efficient Products Program is focused on the reduction of plug load and lighting energy usage in New Jersey households. Significant gains in market share of higher efficiency products through coordinated voluntary efficiency programs nationwide have resulted in rapid advancements in federal minimum standards, resulting in long term energy savings. The subprogram also provides, when necessary, technical support for the development of such upgrades to federal standards, tracking of activities and monitoring developments, and review and modification of subprogram designs to integrate changes to the standards and codes.

- Provide incentives to customers for the installation of products to reduce energy use in the home and information about other subprograms that encourage the installation of high efficiency equipment, such as lighting, room air conditioners, HVAC units, electronics and appliances.
- Provide midstream incentives to retailers to increase sales of ENERGY STAR products.
- Provide a marketing mechanism for retailer and high efficiency product suppliers to promote energy efficient equipment and products to end users.
- Ensure the participation process is clear, easy to understand and simple for the customer and contractor.
- Provide online channels for customers to acquire select ENERGY STAR products.

This subprogram will significantly increase adoption of energy efficient equipment by harnessing PSE&G's unique customer relationship to positively impact the entire sales process surrounding efficient equipment, from education and awareness with customers, engagement with trade ally contractors and equipment distributors, to on-bill repayments and final installation and commissioning of the high efficiency equipment.

The NJCEP currently offers an Energy Efficiency Products Program for lighting, clothes washers & dryers, freezers and refrigerators, a refrigerator and freezer recycling program, and a Residential Gas & Electric HVAC Program (through the COOLAdvantage and WARMAdvantage Programs). The NJCEP Energy Efficiency Products Program is intended to promote the sale and purchase of ENERGY STAR certified and other energy efficiency products including lighting, appliances, and consumer electronics, while also supporting the retirement of existing inefficient appliances in NJ households. The Residential Gas &

Residential New Construction Comparison to NJCEP Subprogram		
		Electric HVAC Program is intended to increase the selection and quality installation of high efficiency residential HVAC equipment in the New Jersey market through the use of incentives, supply chain support, and customer outreach and education.
Eligibility	The subprogram covers conventional central and mini-split air conditioning and air source heat pump systems. Additional bonuses are available for houses heated with electric resistance and have no natural gas service.	The Residential Efficient Products Subprogram will be available to all residential electric and/or natural gas customers in the PSE&G service territory. The Subprogram is focused on promoting the sale and installation of efficient electric and natural gas equipment across all major residential end-use categories and can be easily promoted to trade allies and customers via straightforward prescriptive rebates. Technologies incentivized through this subprogram include lighting, HVAC, other heating/cooling equipment, smart thermostats, and other efficient products. The subprogram will also promote the retirement, recycling, and replacement of old refrigerators, freezers, and other inefficient appliances.
Program Delivery	<ul style="list-style-type: none"> • Cool Advantage- The subprogram will offer incentives for central and mini-split air conditioning and heat pumps meeting or exceeding criteria. • Warm Advantage- Offers incentives for efficient furnaces, boilers and hot water heaters. The subprogram will continue to offer an incentive to promote the combined upgrade of qualifying space and water heating equipment as well as combination equipment with the goal of achieving greater savings and facilitating the appropriate treatment of any potential combustion appliance safety issues. • Any incentives available for the HVAC State Energy Program participants will be identical to those provided by NJCEP. 	<p>PSE&G will use its brand, its customer outreach infrastructure, and its marketplace relationships to increase the availability, awareness, and customer uptake of energy efficient products. On-bill repayments will be available to customers to cover the remaining cost (after applying the rebate discount) for the balance of the efficient product cost for select products and services.</p> <p>A third-party implementation contractor(s) will be selected to assist with the administration, oversight, and delivery of the subprogram. This contractor will assist in the expansion of the PSE&G branded online marketplace, will work to promote the subprogram through word-of-mouth, advertising, and awareness, and will work with PSE&G to review and adjust the product and service list, both prior to commercial operation and during the delivery of the subprogram, to assure the products and services being delivered provide what the market needs. The third-party implementation contractor will also assist in securing partnerships with retailers, wholesalers, and</p>

**Residential New Construction
Comparison to NJCEP Subprogram**

Incentives will be paid directly to homeowners or with written consent, assignable to contactors.

Energy Efficient Products:

- Lighting: Offer retail price incentives through upstream markdown and creative markdown promotions for qualified lighting products.
- Appliance and Consumer Electronics: Offer downstream mail-in rebates on clothes washers, clothes dryers, and refrigerators purchased by NJ customers. Customers are able to apply via a traditional paper application or through an online application. Program will also offer midstream rebates on appliances and advanced power strips with retail partners based on market opportunities.
- Appliance Recycling: Offers residential customers the opportunity to recycle their old, inefficient refrigerators and freezers in exchange for a “bounty” incentive payment. Program is working to add additional incentives for room air conditioners and dehumidifiers when a freezer or fridge is already being picked up for the household.

trade allies to assure all PSE&G customers are able to easily purchase energy efficient products and equipment through the subprogram. Customer engagement and sales channels may include:

- **Point of Sale Rebates**: Prescriptive rebate applications will be made available at the point of sale. PSE&G will explore the viability of using a digital, smartphone-based application platform, to enable customers to purchase efficient equipment at traditional consumer retail outlets and instantly redeem rebates at point-of-sale in both physical stores and online. Allowing easy access to rebates encourages customers to purchase qualifying efficient products. Appliance recycling will also be available to customers whereby they may schedule a pick-up to have eligible inefficient appliances (e.g. old refrigerators) removed and a rebate issued.
- **Post Purchase Rebates**: Rebates will also be made available to customers after they have made their purchase. Applications will be available on-line to submit either electronically or in hard copy with proof-of-purchase.
- **Online Marketplace**: PSE&G will expand the self-branded online marketplace currently being deployed for the EE2017 Smart Thermostat Program to incorporate other products and services in this direct-to-customer platform. This online marketplace is a branded, easy to use source for the online purchase of efficient products and services. Participants will be able to browse energy efficient equipment and appliances and purchase through the marketplace which will offer instant rebates and the option for on-bill repayments on purchases above a certain threshold. PSE&G will validate customer eligibility prior to applying rebates.
- **Midstream Rebates**: PSE&G will promote a midstream

**Residential New Construction
Comparison to NJCEP Subprogram**

rebate component to encourage purchase of efficient equipment via directly marking down the price of the efficient equipment at the point of sale. PSE&G will work with retail partners (such as Home Depot, Lowes, etc.) to assure that marked down measures are available throughout the PSE&G service territory. Midstream rebates encourage market transformation and wider availability of efficient equipment. Efficient products that are rebated via a midstream approach will not be eligible for retail channel rebates.

- **Trade Allies:** PSE&G will establish a network of trade allies to promote and deliver the subprogram with a consistent experience to the customer. The trade ally network will consist of qualified installation contractors, plumbers, electricians, and other trade service professionals. Trade allies will be able to leverage the subprogram and offer customers rebates through their normal course of business. In addition, PSE&G will refer customers to a list of qualified trade allies. By allowing participants to select a trade ally they are comfortable with (either through an existing relationship or by reference from PSE&G, the subprogram reduces barriers to entry related to knowledge of energy efficiency, confidence in assessments, and measure installation. PSE&G will qualify entities to participate in the trade ally network and oversee trade ally performance to verify quality standards are met.

By developing relationships with trade allies, the subprogram will develop a broad reach across the marketplace, and also solicit feedback from the marketplace to ensure incentives and measures are impacting the market as designed. Targeted trade ally firms may include:

- HVAC & appliance distributors, contractors, and retail

Residential New Construction Comparison to NJCEP Subprogram		
		<p>providers</p> <ul style="list-style-type: none"> • General contractors, plumbers, electricians, and other trade service professionals <p>Regardless of the delivery mechanism, PSE&G will take steps to ensure customers are made aware of PSE&G's engagement in helping to off-set up-front costs of the efficient products.</p>
Program Financing/Repayment	<p>Detailed tables with incentive amounts under each scenario, path, and housing type can be found in Appendix A of the New Jersey Clean Energy Program Filing (2018) on page 94.</p> <p>Energy Efficient Products Program: The Efficient Products program offers comparable incentive levels to many other leading efficiency programs nationally for its lighting, appliance and refrigerator recycling program</p>	<p>PSE&G proposes to provide a range of incentives depending on the measure type, subject to changes based upon customer response and marketplace changes over the plan period. Incentives will vary depending on the specific product and. PSE&G anticipates rebates will range based on the incremental cost of the high-efficiency technology, depending on the product maturity in the marketplace. Incentive levels will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings across offered measures, while minimizing any potential free ridership.</p> <p>Incentives will be available in several ways and are adapted to the retail partner needs and market response. The strategies that might be used include:</p> <ul style="list-style-type: none"> • Mail-in applications available from the retailer and the subprogram website • Online rebate forms • In-store “Instant Reward” coupons that are redeemed in-store at the time of purchase. • Special sale events in retail stores • Manufacturer buy down to Retailer • Midstream incentives to retailers to encourage them to carry and stock efficient products <p>Incentives may change based on market prices and response as well as manufacturer / distributor co-funding. Other incentive</p>

**Residential New Construction
Comparison to NJCEP Subprogram**

		alternatives may be used when appropriate and as the market evolves and new and innovative customer and trade ally engagement opportunities become apparent.
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**C&I New Construction
Comparison to NJCEP Program**

Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>C&I New Construction and Retrofit <i>Prescriptive Energy Measure Incentives:</i> Fixed incentives for energy efficiency measures. Based on incremental costs, market barriers, changes in baseline over time, and market transformation objectives. Approved equipment:</p> <ul style="list-style-type: none"> ○ Electric chillers ○ Natural gas chillers ○ Unitary HVAC Systems ○ Ground Source Heat Pumps ○ Gas Fired Boilers ○ Gas Furnaces ○ Variable Frequency Drivers ○ Gas Fired Water Heating ○ Gas Fired Water Booster Heating ○ Tankless Water Heaters ○ Select Premium Efficiency Motors ○ Prescriptive Lighting and Lighting Controls ○ Performance Based Lighting ○ Kitchen Hood Variable Frequency Drives ○ Low Intensity Infrared Heaters ○ Boiler/ AC Economizing Controls ○ Refrigeration Controls ○ Refrigerated Doors and Covers ○ Food Service Equipment <p><i>Custom Measures:</i> Incentives: the process for calculating custom measure incentives is performance based which may include a</p>	<p>The C&I New Construction Subprogram will advance efficient building design and equipment installation that captures long-term energy savings opportunities that are available only during the design and construction of new buildings (or during periods of major additions and renovations). Energy savings opportunities that exist during the design and construction phase are uniquely valuable to capture because the marginal cost of these savings opportunities is at its lowest during design/construction, and some savings opportunities may not be reasonably achievable after construction is complete.</p> <p>Through comprehensive efforts to influence design, engineering, and construction practices, the subprogram will incentivize stakeholders including architects, engineers, contractors, prospective building owners, and developers such that energy saving opportunities are achieved through better design, equipment specification, and construction practices.</p> <p>The C&I New Construction Subprogram will have multiple participation pathways to procure energy savings based on the interest of the developer/builder and the timing of PSE&G involvement. These pathways may include:</p> <ul style="list-style-type: none"> • System/Equipment Pathway: Incentives are provided for high-efficiency equipment. Use of this approach is available at nearly any stage of development. Incentives may also be available in this pathway for non-standard efficient equipment. • High Performance/Whole Building Pathway:

**C&I New Construction
Comparison to NJCEP Program**

	<p>commissioning component.</p> <ul style="list-style-type: none"> • \$0.16/kWh and/ or \$1.60/ therm based on estimated annual savings • 50% of total installed project cost • Buy down to a one-year payback <hr/> <p>Pay for Performance- New Construction: Incentive commercial and industrial projects that are designed to perform better than required by the current state energy code. Intended to encourage developers and design professionals to look for ways to optimize design, operation, and maintenance of new construction and substantial renovation projects in order to maximize energy cost savings.</p>	<p>Subprogram staff is involved early in the design/construction phase so that developers can maximize available energy savings at minimal cost. Incentives are based on modeled savings achievement relative to existing building code. To encourage participation, some projects may be eligible for an early design incentive.</p> <ul style="list-style-type: none"> • Net Zero Buildings Pathway: Net Zero buildings are highly efficient buildings that save at least 30% to 40% versus code baseline, and generate renewable energy on-site to achieve ‘net-zero’ energy consumption. PSE&G will work with customers early-on in the design phase to maximize energy savings and available incentives for developers pursuing a net-zero design. <p>The NJCEP currently offers incentives for new construction efficiency projects under their C&I New Construction and Retrofit Programs (SmartStart), as well as through a Pay for Performance offering. As compared with current NJCEP incentives, the proposed subprogram is designed to build deeper relationships with the design/build community and offer more flexibility through multiple paths to incentives. When a customer applies through the high-performance pathway, PSE&G will work with design/build contractors and provide incentives to encourage above-code design, and may offer early design incentives to encourage incorporation of energy efficiency early in the design process similar to the NJCEP Pay for Performance program.</p>
Eligibility	<p>C&I New Construction and Retrofit: Targets commercial, educational, government/ institutional, industrial, and agricultural customers engaged in customer-initiated construction events including public</p>	<p>All new commercial construction and major renovation projects located within PSE&G’s electric and/or natural gas service territory will be eligible to participate. Commercial buildings (e.g. office, retail, light industrial)</p>

**C&I New Construction
Comparison to NJCEP Program**

	<p>school construction other new building construction, renovations, remodeling, equipment replacement, and manufacturing process improvements.</p> <hr/> <p>P4P New Construction: Open to new commercial and industrial construction projects with 50,000 square feet or more of conditioned space. The Subprogram Manager has the discretion to approve projects that are within 10% of the minimum 50,000 square foot threshold. Projects may include a single building meeting square footage requirements or multiple buildings so long as those buildings are all owned by the same entity, are located on adjacent properties, and are designed and constructed within the same time period.</p>	<p>are expected to be among the most common building-types influenced; however, all new construction and major renovation projects that produce energy savings above code will be encouraged to participate. Multifamily high-rise buildings above three stories are also eligible to participate.</p> <p>This subprogram will capture energy efficiency opportunities through comprehensive efforts to influence building design and construction practices. The subprogram will work with design professionals and construction contractors to incentivize prospective building owners and developers to construct high-performance buildings that provide improved energy efficiency, systems performance, and comfort. Energy savings targets will be achieved by stimulating incremental improvements of efficiency in lighting, HVAC, and other building systems. The subprogram seeks to capture synergistic energy savings by incentivizing the design and construction of buildings as integrated systems.</p>
Program Delivery	<p>C&I New Construction and Retrofit: As new technologies are introduced and prices for measures change, sometimes in response to program offerings, program managers will continuously monitor technologies and costs in order to adjust incentives accordingly.</p> <hr/> <p>The P4P NC program’s incentive structure was created to encourage the design and achievement of comprehensive energy savings and as such are released in phases upon satisfactory completion of each of three program milestones, which are:</p> <ol style="list-style-type: none"> i. Submittal and Approval of a Proposed ERP with 	<p>The C&I New Construction Subprogram will be administered by PSE&G and delivered by a third-party implementation contractor. The C&I New Construction Subprogram will benefit from developing strong relationships with the local design/build community, as participation pathways such as the high performance/whole building approach require early involvement of technical subprogram staff based upon the limited development timeline of many of these projects. To support the marketplace and develop a project pipeline, the following are potential delivery strategies which may be among those pursued by PSE&G and the third-party implementation contractor:</p>

**C&I New Construction
Comparison to NJCEP Program**

proposed design meeting all program requirements

ii. Submittal and approval of an As-Built ERP and Commissioning Report confirming installation and operation of recommended measures per the Proposed ERP.

iii. Submittal of ENERGY STAR Program Manager benchmark based on first year of operation with a score of 75 or higher.

- **Design/Build Sector Outreach:** To develop awareness of the C&I New Construction Subprogram in the design/build and developer community, subprogram staff and their representatives will reach out to known firms developing projects in PSE&G’s service territory. In addition, subprogram staff will work to build awareness with important technical and trade groups represented in New Jersey, which will include participation at local conferences and events.
 - **Targeted Customer Outreach:** Subprogram staff and their representatives will make outreach directly to PSE&G customers that are planning or currently developing large new construction or major renovation projects to inform them of available incentives and build awareness early in the design phase.
 - **Technical Customer Assistance:** An important element of the C&I New Construction subprogram is the availability of technical support from qualified subprogram staff. Subprogram staff and their representatives will be available to assist customers and developers with early-design support including whole building energy modeling, LEED certification level planning, and above-code measures and equipment procurement.
- Extension of Service Requests:** PSE&G gets informed of construction projects when a developer or customer requests information on the cost and process for extending gas or electric service to a potential site. This information will be harnessed to support the subprogram.

**C&I New Construction
Comparison to NJCEP Program**

Program Financing/
Repayment

C&I New Construction and Retrofit: Eligible projects must have a minimum first year energy savings of 75,000 kWh for custom electric projects or 1,500 therms for custom gas projects. This requirement may be waived by the Program Manager on a case-by-case basis if project savings are within 10% of these minimum requirements. Projects with both electric and gas savings may be considered for incentives if either of the minimum savings requirements are met.

Pay for Performance- New Construction:

Two paths exist for these incentives.

- Path #1 is the ASHRAE Building Energy Quotient (bEQ) As Designed Path in which the Partner develops a single energy model representing the proposed project design using the prescribed modeling assumptions and requirements.

Performance Score= (EUI standard / EUI median) x 100

- Path #2 is ASHRAE 90.1-2013 Appendix G in which the Partner models a baseline and proposed building using ASHRAE 90.1-2013 Appendix G modified by Addendum BM. The proposed building must have energy cost savings of 11-40% from the Addendum BM baseline.

All incentives regarding these two paths are paid based on the rate schedule above.

The incentive design for the C&I New Construction Subprogram will vary depending on the participation pathway. For the Systems/Equipment pathway, prescriptive incentives will be offered. For the High Performance/Whole Building and Net Zero Building Pathway, incentives are based on modeled savings achievement relative to existing building code. Incentive amounts will increase as the buildings become more efficient and incorporate more aggressive energy saving measures and designs. Incentives will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings across offered measures, and varying participation pathways.

**C&I Prescriptive
Comparison to NJCEP Program**

Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>C&I New Construction and Retrofit: <i>Prescriptive Energy Measure Incentives:</i> Fixed incentives for energy efficiency measures. Based on incremental costs, market barriers, changes in baseline over time, and market transformation objectives.</p> <p>Approved equipment:</p> <ul style="list-style-type: none"> ○ Electric chillers ○ Natural gas chillers ○ Unitary HVAC Systems ○ Ground Source Heat Pumps ○ Gas Fired Boilers ○ Gas Furnaces ○ Variable Frequency Drivers ○ Gas Fired Water Heating ○ Gas Fired Water Booster Heating ○ Tankless Water Heaters ○ Select Premium Efficiency Motors ○ Prescriptive Lighting and Lighting Controls ○ Performance Based Lighting ○ Kitchen Hood Variable Frequency Drives ○ Low Intensity Infrared 	<p>The C&I Prescriptive Subprogram will promote the installation of high-efficiency electric and natural gas equipment by C&I customers. The subprogram is designed to:</p> <ul style="list-style-type: none"> • Provide incentives to facility owners and operators for the installation of high efficiency equipment and controls • Provide the knowledge necessary and market demand to justify the marketing of high efficiency measures by participating trade allies such as electrical contractors, mechanical contractors, and their distributors • Ensure the participation process is clear, easy to understand, and simple <p>The subprogram will offer a broad range of energy efficient equipment and appliances through a variety of channels, including reduced point of sale costs, and a network of trade allies. The subprogram will incent energy efficient lighting, appliances, heating and cooling equipment, and food service equipment, among other efficiency measures. These measures will range in type and price but include both electric and natural gas technologies that improve energy efficiency. Up-front rebates will be offered on all technologies to reduce initial costs and some purchases will qualify for on-bill repayments to further reduce first cost barriers. The subprogram is designed to provide easy and cost-effective access to energy efficient measures through customers' preferred channels.</p> <p>This subprogram will significantly increase adoption of energy efficient equipment by harnessing PSE&G's unique customer relationships to positively impact the entire sales process surrounding efficient equipment, from education and awareness with customers, engagement with trade ally contractors and equipment distributors, to on-bill repayments and final installation and commissioning of the high efficiency equipment.</p>

**C&I Prescriptive
Comparison to NJCEP Program**

	<p>Heaters</p> <ul style="list-style-type: none"> ○ Boiler/ AC Economizing Controls ○ Refrigeration Controls ○ Refrigerated Doors and Covers ○ Food Service Equipment <p><i>Custom Measures:</i> Incentives: the process for calculating custom measure incentives is performance based which may include a commissioning component.</p> <ul style="list-style-type: none"> • \$0.16/kWh and/ or \$1.60/therm based on estimated annual savings • 50% of total installed project cost • Buy down to a one-year payback 	<p>NJCEP currently offers prescriptive rebates for a variety of commercial measures under their C&I New Construction and Retrofit (SmartStart) program. Other NJ utilities offer either no or limited incentive programs for their commercial customers which are more similar to the NJCEP Direct Install program than SmartStart or this proposed subprogram. The PSE&G C&I Prescriptive Subprogram will address many of the same measures and is targeted at a similar market segment within PSE&G’s service territory as the SmartStart program. Both programs provide prescriptive incentives on energy efficient HVAC equipment, lighting, and certain appliances to commercial customers.</p> <p>However, PSE&G’s use of its customer relationships, communication channels, on-bill repayments capabilities, and its commitment to aggressively pursue and promote activity with the rest of the delivery eco-system will realize wider and deeper participation. PSE&G’s proposed use of a midstream incentive component, rebates-as-a-service, and ability to leverage existing customer relationships and communication channels are key differentiating factors for this subprogram.</p>
Eligibility	<p>C&I New Construction and Retrofit: Targets commercial, educational, government/ institutional, industrial, and agricultural customers engaged in customer-initiated construction events including public school construction other new building construction, renovations, remodeling, equipment replacement, and manufacturing process improvements.</p>	<p>The C&I Prescriptive Subprogram will be available to all commercial, industrial, and other non-residential electric and natural gas customers located within PSE&G’s service territory. The subprogram is focused on promoting the sale and installation of efficient electric and natural gas equipment across all major end-use categories and can be easily promoted to trade allies and customers via straightforward prescriptive rebates. Potential technologies incentivized through this subprogram include energy efficient lighting, appliances, heating and cooling equipment, and food service equipment, among other efficiency measures.</p>
Program Delivery	C&I New Construction and	To maximize customer participation and streamline the customer experience,

**C&I Prescriptive
Comparison to NJCEP Program**

	<p>Retrofit: As new technologies are introduced and prices for measures change, sometimes in response to program offerings, program managers will continuously monitor technologies and costs in order to adjust incentives accordingly.</p>	<p>PSE&G will use its strong customer and marketplace relationships to support multiple implementation strategies to achieve subprogram goals.</p> <ul style="list-style-type: none"> • Trade Allies: PSE&G will establish a network of trade allies (e.g. electricians, HVAC contractors, lighting retailers and distributors, building energy managers, etc.) to promote the efficiency opportunities and incentives to their clients, and deliver the subprogram with a consistent experience to the customer. Trade allies will be able to leverage the subprogram and offer customers rebates through their normal course of business. In addition, PSE&G or the third-party implementation contractor can refer customers to a list of qualified trade allies to perform more intricate work. By allowing participants to select a partner they are comfortable with (either through an existing relationship or by reference from PSE&G or the third-party implementation contractor), the subprogram reduces barriers to entry related to knowledge of energy efficiency, confidence in assessments, and measure installation. PSE&G will oversee trade ally performance to verify quality standards are met and qualify contractors to participate in the Trade Ally network. By developing relationships with trade allies, the subprogram will develop a broad reach across the marketplace, and also solicit feedback from the marketplace to ensure incentives and measures are impacting the market as designed. Examples of targeted trade ally firms include: <ul style="list-style-type: none"> ○ Design, engineering, and controls firms ○ HVAC distributors, contractors, and retail providers ○ Food service retailers and service providers ○ Commercial lighting distributors and wholesalers • Retail: PSE&G subprogram staff, third-party implementation contractors, and field representatives will work with retailers and distributors that directly target C&I customers so they are aware of the participation process and available equipment incentives. This will include training and instruction to participating retailers and distributors about the PSE&G prescriptive rebate forms as well as enrollment of distributors to participate in mid-stream subprogram offerings.
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**C&I Prescriptive
Comparison to NJCEP Program**

		<ul style="list-style-type: none"> • Midstream: PSE&G will aggressively promote a midstream component for specific equipment types to encourage purchase of efficient equipment via directly marking down the cost of the efficient equipment at the point of sale. Midstream rebates encourage market transformation and wider availability of efficient equipment. PSE&G anticipates offering midstream point of sale discounts across numerous equipment types, including, but not limited to: LED lighting, HVAC, and food service equipment. Efficient products that are rebated via a midstream subprogram approach will not be eligible for rebates in any other PSE&G rebate subprogram. • Digital: The subprogram will be marketed directly to C&I customers on the PSE&G website, where customers will have easy access to information regarding eligible equipment and savings opportunities, how to participate, and incentives across all efficient equipment types and end-uses. In addition, the website will offer information on qualified local trade allies to enable easy access to equipment retailers for customers. • Rebate-as-a-Service: PSE&G will evaluate the viability of using a digital, smartphone based application platform, where business customers purchasing efficient equipment for commercial use at traditional consumer retail outlets can instantly redeem rebates at point-of-sale in both physical stores and online. This channel will help PSE&G offer rebates to very small commercial customers and local businesses outside of the C&I Small Non-Residential Efficiency Subprogram. <p>Targeted Customer Outreach: In select cases, PSE&G staff and its third-party implementation contractor may choose to reach out directly to large business and commercial customers to develop relationships with energy and facilities managers, operations staff, and procurement personnel. Subprogram staff can help facilitate completion of rebate applications and serve as a direct resource to these customers.</p>
Program Financing/ Repayment	C&I New Construction and Retrofit: Eligible projects must have a	Incentive levels and the list of eligible equipment will be reviewed periodically with the input of subprogram staff and broader feedback from the marketplace to ensure incentive design is optimally driving energy savings

**C&I Prescriptive
Comparison to NJCEP Program**

	<p>minimum first year energy savings of 75,000 kWh for custom electric projects or 1,500 therms for custom gas projects. This requirement may be waived by the Program Manager on a case-by-case basis if project savings are within 10% of these minimum requirements. Projects with both electric and gas savings may be considered for incentives if either of the minimum savings requirements are met.</p>	<p>across offered measures. Incentive levels will vary depending on the efficient measure, and the unit level being rebated (e.g. incentives for equipment, and/or incentive based on the system size or square footage where the system is being applied).</p>
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Income Eligible Comparison to NJCEP Program		
Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>The New Jersey Comfort Partners Program is a free energy saving and energy education program for qualified low-income customers.</p> <p>Certified Building Performance Institute contractors will install energy saving measures in qualifying home to help lower the customer’s energy bills. Residents will also be taught new ways to conserve energy and how to create an Action Plan to support these energy efficiency efforts.</p>	<p>The Residential Income Eligible Subprogram is targeted at customers whose household income is less than or equal to 400 percent of the Federal Poverty Level (FPL). The Residential Income Eligible Subprogram provides free direct installation of energy efficient technologies and weatherization services to qualifying PSE&G customers with limited income. The subprogram generates energy savings for residential low-income customers through an in-home energy audit and the direct installation of a wide range of energy efficiency measures such as efficient lighting, efficient refrigerators, HVAC, as well as weatherization upgrades for air-sealing and attic and wall insulation. The subprogram also provides for the installation of health and safety measures as appropriate, and may also include actions to address building shell issues that prevent the installation of energy efficiency measures, such as moisture/mold remediation, roof repairs, electrical repairs, lead, and asbestos remediation.</p> <p>In addition to the core subprogram attributes described above, the subprogram will also provide for the distribution of free LED light bulbs via food banks/pantries or other distribution venues that serve income eligible customers, along with educational information on energy efficiency. The subprogram will coordinate low-income services with local, state and federal agencies to provide comprehensive assistance. The subprogram may also seek to work with workforce development organizations, in order to provide a sufficient pool of qualified workforce that will be required to support a significant growth in energy efficiency services.</p> <p>Currently, NJ’s Residential Low-Income Program (known as Comfort Partners) is jointly administered by NJ’s electric and gas utilities. PSE&G’s income eligible subprogram will be similar in structure and approach, by providing for the direct installation of energy efficiency improvements to low income customers. This subprogram builds upon the success of the existing program, and enhances the current program in the following ways:</p> <ul style="list-style-type: none"> • Increased ability to serve vulnerable populations by increasing

Income Eligible Comparison to NJCEP Program		
		<p>spending and eligibility limits to address building shell, energy efficiency measures, and health/safety issues as needed to provide energy efficiency services</p> <ul style="list-style-type: none"> • Identify opportunities to offer shared costs for landlord/tenant HVAC equipment upgrades • Increased focus on outreach and education through partnerships in subprogram delivery, including the offering of free LEDs and education through various community agencies and organizations • Development of a qualified workforce through coordination with workforce development programs to support subprogram growth • Generation of leads through PSE&G’s day-to-day operations, including other PSE&G energy efficiency subprograms (e.g. the Behavioral Subprogram, K-12 Education Subprogram) • Additional focus on multi-family segment, integrating with other CEF subprograms, Residential Existing Homes, Residential Efficient Products, Residential Behavioral, Residential Education, and Residential Multifamily • Expanded opportunities for lead abatement, radon testing/abatement, and oil-to-gas conversions • Directly supplementing and developing the available workforce through use of PSE&G employees for subprogram delivery <p>PSE&G intends to run the Residential Income Eligible Subprogram, while continuing to coordinate with the NJ Utilities on program design and delivery to low income customers. This enables PSE&G to leverage the other subprograms in its suite of energy efficiency subprograms to drive more savings and benefits. To drive operational and customer service synergies, the Residential Income Eligible Subprogram will be operated in coordination with the Residential Existing Homes Subprogram.</p>
Eligibility	The Comfort Partners Program is available to any New Jersey household with significant energy use, having an income at or below 225% of the federal poverty	The Residential Income Eligible Subprogram targets residential customers in PSE&G’s electric and/or gas service territory whose household income is less than or equal to 400 percent of the Federal Poverty Level (FPL). Customers who receive Federal Supplemental Security Income (“SSI”), Home Energy Assistance (“HEAP”), Universal Service Fund (“USF”), Lifeline,

Income Eligible Comparison to NJCEP Program		
	guidelines. Households that receive USF, Lifeline and/or Pharmaceutical Assistance to the Aged and Disabled (PAAD) are also eligible.	Pharmaceutical Assistance to the Aged and Disabled (“PAAD”), Temporary Assistance to Needy Families (“TANF”), or Section 8 Housing will also be eligible.
Program Delivery	<p>If eligible, participants receive:</p> <p>Installation of cost-effective energy efficiency measures in the home (determined on a home-specific basis) which can include: efficient lighting products; hot water conservation measures (water heater insulation, water heater pipe insulation and energy-saving showerheads and aerators); replacement of inefficient refrigerators; thermostats; insulation upgrades (attic, wall, etc.); blower-door guided air sealing; duct sealing and repair; heating/cooling equipment maintenance and other measures.</p> <p>Comprehensive, personalized energy education and counseling.</p> <p>All efficiency measures and energy education services are provided free of charge.</p>	<p>This subprogram will be managed by PSE&G with the support of a qualified third-party implementation contractor with experience delivering services in similar subprograms. It is envisioned that PSE&G’s third-party implementation contractor will facilitate subprogram delivery across the multiple subprogram vendors as well as PSE&G’s workforce. Eligible customers will receive an in-home energy assessment from PSE&G. The applicable measures and services will be installed either by subprogram vendors, or by PSE&G’s workforce. PSE&G, with its third-party implementation contractor will be responsible for activities including, but not limited to, the following:</p> <ul style="list-style-type: none"> • Ensuring customers meet eligibility requirements • Marketing collateral development and deployment • Reviewing, approving, and tracking of documentation for completed projects • Payment processing, fund management, and reporting • Quality assurance of technical and procedural subprogram guidelines • Budgeting, goal tracking, and reporting • Call center services • Customer satisfaction and problem resolution • Provide technical training to workforce.
Program Financing/ Repayment	Program representatives work personally with customers, in their house or apartment, to evaluate the home’s current level of energy efficiency. They review many factors that affect energy use – including	<p>Equipment and installation costs for all eligible measures will be provided free to eligible customers, subject to subprogram terms and conditions.</p> <p>Among the measures to be considered for each home are efficient lighting products; hot water conservation measures (water heater replacement and tank temperature turn-down); replacement of inefficient refrigerators and freezers;</p>

**Income Eligible
Comparison to NJCEP Program**

	<p>home heating and cooling, water heating, lighting and major appliances. They also teach customers and their family members new ways to conserve energy and help them create an action plan for the future! In most cases, program representatives install energy-saving home improvements to lower energy costs and improve health, safety and comfort in the home. Improvements may include measures such as added insulation, caulking, weather-stripping, energy-saving showerheads and light bulbs and more – all at no cost to the customer. All work is inspected and is guaranteed for one year.</p>	<p>installation of programmable and smart thermostats; insulation up-grades (attic, wall, basement, etc.); blower-door guided air sealing; duct sealing and repair; heating/cooling equipment maintenance, repair and/or replacement; and other measures as may be needed to enable the installation of energy efficiency measures (e.g. repair or replacement of a broken window, repair of a hole in the wall and/or roof, mold remediation, or the installation of rain gutters).</p> <p>Failed or failing heating or cooling systems can be replaced for efficiency and/or health and safety reasons, on a case-by-case basis, as subprogram funds permit. For customer homes that require treatment beyond the scope of the subprogram, such services may be coordinated with other agencies.</p>
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**Residential Existing Homes
Comparison to NJCEP Program**

Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>Home Performance with ENERGY STAR (HPwES) is a national home performance improvement program developed by the Environmental Protection Agency (EPA) and administered by the Department of Energy (DOE). The purpose of the subprogram is to offer a comprehensive (“whole-house”) energy efficiency improvement package based on sound building science principles that produce predictable savings and that improve a home’s energy efficiency, comfort, safety, and durability. The New Jersey Home Performance with ENERGY STAR program (the Program) is built on two parallel delivery strategies: providing information, education, and incentives directly to customers to encourage them to undertake significant energy efficiency improvements to their homes; and encouraging contractors to receive the proper training and Building Performance Institute (BPI) GoldStar Program qualifications to provide high quality home energy efficiency services. BPI certifications are based on national standards that ensure that home assessors have the skills required to identify and realize savings opportunities and that best practices are met. The contractor recruitment element of the Program is designed to ensure an adequate supply of qualified contractors to meet the demand for program services created by the marketing and public education elements. The Subprogram also has encouraged contractors (primarily insulation contractors, HVAC contractors, and remodelers) to transform their business and pursue an integrated, whole house approach to energy efficiency and home improvement.</p>	<p>The Residential Existing Homes Subprogram provides a holistic approach for customers to explore and invest in the efficiency and comfort of their homes. Under the Residential Existing Homes Subprogram, participants undergo an energy audit and receive free installation of low-cost direct install energy efficiency measures, as well as an energy efficiency action-plan that includes recommendations for potential upgrades and available incentives. The audit will be incentivized, while the work to complete recommended energy efficiency measures will receive rebates with the ability for customers to use on-bill repayments for the balance of the costs. Home energy audits will be conducted by local trade allies (including, e.g. home improvement contractors) that are qualified to perform comprehensive home assessments, and a follow-up audit may be conducted after completing home energy improvements to verify proper installation and function of home efficiency improvements.</p> <p>This subprogram is designed to review the entire status of a home, including equipment and envelope to achieve deeper energy savings than the Residential Efficient Products Subprogram. The subprogram will follow guidelines and qualifying criteria associated with the U.S. Environmental Protection Agency Home Performance with ENERGY STAR (HPwES) program subject to as-needed enhancements to maximize participation and cost-effective energy savings opportunities.</p>

Residential Existing Homes Comparison to NJCEP Program		
		The NJCEP currently offers a similar program in its Home Performance with Energy Star Program (HPwES), and it is anticipated that PSE&G customers will participate in PSE&G's subprogram.
Eligibility	<p>Home Performance with ENERGY STAR is designed to transform the way energy efficiency services are delivered to existing 1-4 family homes and low-rise multifamily buildings. A combination of <u>eligible measures</u> may be financed. All projects must include at least attic air sealing and insulation in at least one location as per the eligible measures list.</p> <p>Single Family Home Eligibility Requirements Single family homes and townhouses, and residential buildings of 2-4 units (individual living spaces) are eligible for the Home Performance with ENERGY STAR Program. A townhouse is a single-family dwelling unit constructed in groups of three or more attached units in which each unit extends from foundation to roof and with open space on at least two sides.</p> <p>NJ Urban Enterprise Zones are eligible for HPwES: All NJ residential dwellings that meet the above criteria, including those located in one of the municipalities designated as <u>NJ Urban Enterprise Zones</u>, are eligible to participate in the NJ Home Performance with ENERGY STAR Program.</p> <p>Multifamily Eligibility Requirements The EPA has determined that small multifamily (MF) building developments may participate in HPwES. The NJ HPwES program defines eligibility as buildings that:</p> <ul style="list-style-type: none"> • are no more than three stories high; have single ownership, • have total building energy usage which is accessible 	<p>The Residential Existing Homes Subprogram will be available to all single-family and single-family attached electric and/or natural gas customers in the PSE&G service territory. PSE&G may also consider segmenting out a portion of the budget to address low-to-middle income customers (up to 400% of federal poverty level) to assure that the subprogram reaches all customer types. Potential measures incentivized through this subprogram include but are not limited to insulation, air sealing, lighting, smart thermostats, low-flow devices, smart strips, and HVAC. This subprogram will drive deeper levels of activity and investment in homes than the Residential Efficient Products Subprogram by including a suite of home performance measures and the advice of qualified trade ally professionals that can identify efficiency opportunities in residential homes.</p>

**Residential Existing Homes
Comparison to NJCEP Program**

through individual metering of the units within the multi-family structure, or a master meter at the building (as opposed to sites with multiple buildings heated by a central heating plant),

- are made up of five or more units in a single building, or multiple buildings (each with five or more units), within a single geographic boundary and with a single property management structure.

Multifamily facilities that do not meet this criteria fall into the Commercial & Industrial (C&I) program, Pay for Performance, for energy efficient measures.

The subprogram will offer the following incentive structure for multi-family projects:

- Improvement packages showing a minimum of 5% but less than 15% estimated total building energy savings will receive a per unit incentive of \$500 not to exceed 50% of the costs of the approved measures used to calculate TES.
- Improvement packages showing a minimum of 15% but less than 20% estimated total building energy savings will receive a per unit incentive of \$1,000 not to exceed 50% of the costs of the approved measures used to calculate TES.
- Improvement packages showing 20% or greater estimated total building energy savings will receive a per unit incentive of \$1,500 not to exceed 50% of the costs of the approved measures used to calculate TES.

The total incentive amount for a multifamily project must not exceed 50% of the total costs of approved measures; approved measures are the same as for the single-family houses and townhouses. If the total multifamily project incentive based on the above structure yields an amount greater than 50% of the

**Residential Existing Homes
Comparison to NJCEP Program**

	<p>costs of approved measures, the incentive amount offered will be lowered to the 50% maximum.</p> <p>HPwES program improvements must consider a whole building approach to be approved. Individual units within a multifamily structure or development are not eligible for the subprogram independently of the entire building or development; however, they may take advantage of other NJCEP offerings, such as <u>WARM</u> and <u>COOL Advantage</u> programs.</p> <p>The subprogram will work with the contractor of a multi-family project to ensure proper project assessment and approval process. Multifamily buildings are to be addressed in accordance with the BPI Multifamily Building Standards. The subprogram will only approve such projects for contractors that have at least one staff member holding BPI Multifamily certification.</p>	
<p>Program Delivery</p>	<p>The selected contractor will conduct an energy assessment, documenting the home in its current state. The assessment will include:</p> <ul style="list-style-type: none"> • Health and safety checks (carbon monoxide levels, moisture, and indoor air quality problems) • Overall comfort level such as cold/hot spots, stale odors, stuffiness, etc. • Air sealing opportunities • Insulation levels • Heating system efficiency • Cooling system/central air conditioning efficiency • Water heating system efficiency <p>After the energy assessment is completed, the contractor will present a report detailing the findings along with any</p>	<p>The subprogram will be managed by a third-party implementation contractor as outlined in detail in the Contractor Role. The subprogram relies on the local trade ally network to identify and deliver efficiency services to customers according to the format described herein:</p> <ul style="list-style-type: none"> • Local Trade Ally Network: The core of the Residential Existing Homes Subprogram is the local trade ally network, which will be qualified, trained, and managed by the third-party implementation contractor to deliver not only excellent efficiency services but a consistent face of the subprogram to participants. Leveraging the local trade ally

**Residential Existing Homes
Comparison to NJCEP Program**

recommended measures to improve the home’s energy consumption and comfort. Using software, the contractor will model their recommended measures, as agreed to by the customer, to determine the project’s estimated TES. To help offset the cost of these upgrades, the subprogram offers rebates and low interest financing, the amount of which is based on the estimated TES achieved by installing the package of measures.

network to perform audits and efficiency measure implementation is an important strategy as it builds a much broader marketplace for efficiency than by ‘acquiring’ the efficiency resource through a specific implementation team. As more trade allies are qualified and become a part of the PSE&G trade ally network, the subprogram will benefit from organic growth and increased participation as the marketplace develops.

- **In-Home Energy Audit:** In-home energy audits are conducted by local trade allies. During the audit, customers will receive free installation of low-cost measures such as LED lighting, low-flow devices, and smart strips at no additional cost, in addition to behavioral suggestions to improve efficiency of the home and a review of thermostat set points. Smart thermostats may be made available while the auditors are on premises through the Residential Efficient Products Subprogram. Following the in-home audit, the participant will be provided an energy efficiency action-plan that summarizes the findings of the audit and recommends technology and building performance improvements that will maximize the efficiency of the home. This report will also include detail regarding estimated cost, available rebates, and availability of on-bill repayment.
- **In-Home Efficiency Improvements:** If the customer chooses to pursue some or all of

**Residential Existing Homes
Comparison to NJCEP Program**

		<p>the recommended home efficiency measures, a second appointment will be scheduled to implement the measures. At the completion of the work, the trade ally must test the home to document the home’s energy performance was improved and all mechanical equipment is operating safely. Subprogram management staff, including the third-party implementation contractor, may spot check installations as needed.</p> <p>Measures from the Residential Efficient Products Subprogram such as home appliances (e.g. clothes washers) may be installed by the trade ally if requested by the participant and if within the scope of the participating trade ally’s services. These measures are not typically addressed in a home performance subprogram because they are generally only replaced at end-of-life.</p>
<p>Program Financing/ Repayment</p>	<p>The subprogram does not offer any rebates for having the home energy assessment completed (Tier 1). As stated above, some contractors may offer this service at no cost to the homeowner. To qualify for Tier 2 and 3 incentives, at a minimum, air sealing and insulation must be performed.</p>	<p>PSE&G will provide a subsidized in-home audit, as well as a suite of low-cost direct-install measures. Home performance measures recommended by the trade ally carry incentives that will be available individually but may also be offered as part of bundled performance incentives depending on customer interest and budget. If utilized, home performance incentives will be structured on the basis of estimated total energy reduction in the home and the total cost of installed measures, such that customers can receive an overall, packaged incentive that is subject to a maximum of either a specific cap, to be evaluated and modified periodically, or a percentage of total installation cost. On-bill repayment will also be available to qualified</p>

Residential Existing Homes Comparison to NJCEP Program		
		customers to reduce upfront cost barriers.

**Residential Multi-Family
Comparison to NJCEP Program**

Feature	NJCEP 2018 Programs	PSE&G Subprogram
Program Offering	<p>Home Performance with ENERGY STAR (HPwES) is a national home performance improvement program developed by the Environmental Protection Agency (EPA) and administered by the Department of Energy (DOE). The purpose of the subprogram is to offer a comprehensive (“whole-house”) energy efficiency improvement package based on sound building science principles that produce predictable savings and that improve a home’s energy efficiency, comfort, safety, and durability. The New Jersey Home Performance with ENERGY STAR program (the Program) is built on two parallel delivery strategies: providing information, education, and incentives directly to customers to encourage them to undertake significant energy efficiency improvements to their homes; and encouraging contractors to receive the proper training and Building Performance Institute (BPI) GoldStar Program qualifications to provide high quality home energy efficiency services. BPI certifications are based on national standards that ensure that home assessors have the skills required to identify and realize savings opportunities and that best practices are met. The contractor recruitment element of the Program is designed to ensure an adequate supply of qualified contractors to meet the demand for program services created by the marketing and public education elements. The Subprogram also has encouraged contractors (primarily insulation contractors, HVAC contractors, and remodelers) to transform their</p>	<p>The Residential Multi-Family Subprogram provides a turnkey service for multi-family property owners, managers, and the residents of multi-family facilities to help improve the energy efficiency of their facilities and reduce their operating costs. This service provides direct installation of energy-efficient measures in individual living units. The primary measures to be installed include LED lighting, low-flow showerheads and faucet aerators, and smart power strips. The subprogram will also provide literature on energy saving tips achieved through other behavioral actions (e.g. thermostat settings, maximizing dishwasher and clothes washer loads, etc.).</p> <p>Neither PSE&G nor NJCEP currently offer a similar program design for this market segment. The NJCEP Comfort Partners program (jointly administered by the NJ utilities) offers in-home energy assessments, energy education, and low- or no- cost measures to improve energy efficiency in low income homes. NJCEP Home Performance with Energy Star includes specific requirements for eligible, small multifamily buildings. PSE&G’s EE2017 Multifamily Subprogram may include direct installation of energy efficiency measures in tenant spaces, but only as part of a broader and more comprehensive approach.</p>

**Residential Multi-Family
Comparison to NJCEP Program**

	<p>business and pursue an integrated, whole house approach to energy efficiency and home improvement.</p>	
<p>Eligibility</p>	<p>Home Performance with ENERGY STAR is designed to transform the way energy efficiency services are delivered to existing 1-4 family homes and low-rise multifamily buildings. A combination of <u>eligible measures</u> may be financed. All projects must include at least attic air sealing and insulation in at least one location as per the eligible measures list.</p> <p>Single Family Home Eligibility Requirements Single family homes and townhouses, and residential buildings of 2-4 units (individual living spaces) are eligible for the Home Performance with ENERGY STAR Program. A townhouse is a single-family dwelling unit constructed in groups of three or more attached units in which each unit extends from foundation to roof and with open space on at least two sides.</p> <p>NJ Urban Enterprise Zones are eligible for HPwES: All NJ residential dwellings that meet the above criteria, including those located in one of the municipalities designated as <u>NJ Urban Enterprise Zones</u>, are eligible to participate in the NJ Home Performance with ENERGY STAR Program.</p> <p>Multifamily Eligibility Requirements The EPA has determined that small multifamily (MF) building developments may participate in HPwES. The NJ HPwES program defines</p>	<p>The subprogram targets multi-family property owners, property managers, and residents. All multi-family buildings with three or more units in PSE&G's electric or natural gas service territory are eligible to participate, although it is anticipated that the majority of participating units will be from low income or moderate income multi-family units, and will have 12 or more units.</p> <p>The subprogram will look to achieve direct, easy to install, energy savings through the provision of measures such as LED lighting, low-flow showerheads and faucet aerators, and smart power strips.</p>

**Residential Multi-Family
Comparison to NJCEP Program**

eligibility as buildings that:

- are no more than three stories high; have single ownership,
- have total building energy usage which is accessible through individual metering of the units within the multi-family structure, or a master meter at the building (as opposed to sites with multiple buildings heated by a central heating plant),
- are made up of five or more units in a single building, or multiple buildings (each with five or more units), within a single geographic boundary and with a single property management structure.

Multifamily facilities that do not meet this criteria fall into the Commercial & Industrial (C&I) program, Pay for Performance, for energy efficient measures.

The subprogram will offer the following incentive structure for multi-family projects:

- Improvement packages showing a minimum of 5% but less than 15% estimated total building energy savings will receive a per unit incentive of \$500 not to exceed 50% of the costs of the approved measures used to calculate TES.
- Improvement packages showing a minimum of 15% but less than 20% estimated total building energy savings will receive a per unit incentive of \$1,000 not to exceed 50% of the costs of the approved measures used to calculate TES.
- Improvement packages showing 20% or greater estimated total building energy

**Residential Multi-Family
Comparison to NJCEP Program**

	<p>savings will receive a per unit incentive of \$1,500 not to exceed 50% of the costs of the approved measures used to calculate TES.</p> <p>The total incentive amount for a multifamily project must not exceed 50% of the total costs of approved measures; approved measures are the same as for the single-family houses and townhouses. If the total multifamily project incentive based on the above structure yields an amount greater than 50% of the costs of approved measures, the incentive amount offered will be lowered to the 50% maximum.</p> <p>HPwES program improvements must consider a whole building approach to be approved. Individual units within a multifamily structure or development are not eligible for the subprogram independently of the entire building or development; however, they may take advantage of other NJCEP offerings, such as <i>WARM</i> and <i>COOL advantage</i> programs.</p> <p>The subprogram will work with the contractor of a multi-family project to ensure proper project assessment and approval process. Multifamily buildings are to be addressed in accordance with the BPI Multifamily Building Standards. The subprogram will only approve such projects for contractors that have at least one staff member holding BPI Multifamily certification.</p>	
Program Delivery	The selected contractor will conduct an energy assessment, documenting the home in its current	The Multi-Family Subprogram will be delivered by a qualified third-party implementation contractor with experience delivering

**Residential Multi-Family
Comparison to NJCEP Program**

	<p>state. The assessment will include:</p> <ul style="list-style-type: none"> • Health and safety checks (carbon monoxide levels, moisture, and indoor air quality problems) • Overall comfort level such as cold/hot spots, stale odors, stuffiness, etc. • Air sealing opportunities • Insulation levels • Heating system efficiency • Cooling system/central air conditioning efficiency • Water heating system efficiency <p>After the energy assessment is completed, the contractor will present a report detailing the findings along with any recommended measures to improve the home’s energy consumption and comfort. Using software, the contractor will model their recommended measures, as agreed to by the customer, to determine the project’s estimated TES. To help offset the cost of these upgrades, the subprogram offers rebates and low interest financing, the amount of which is based on the estimated TES achieved by installing the package of measures.</p>	<p>similar subprograms. This contractor will recruit multi-family property owners and oversee the direct-installation of free low-cost measures (e.g. lighting, showerheads) in individual units. The service is provided at no cost to property owners or occupants. This subprogram design (including the provision of no cost services) is intended to overcome market barriers and assure that benefits are provided to tenants.</p> <p>The implementation contractor will be responsible for activities including, but not limited to, the following:</p> <ul style="list-style-type: none"> • Developing relationships with property management companies, owners, associations, and their members to recruit participants • Training, education, and coordination with direct-install staff and/or contractors • Marketing collateral development and deployment • Procuring energy efficiency equipment and materials • Reviewing, approving, and tracking of documentation for completed projects • Quality assurance of technical and procedural subprogram guidelines • Budgeting, goal tracking, and reporting • Customer satisfaction and problem resolution <p>Provide notice to tenants and property owners prior to conducting work</p>
<p>Program Financing/ Repayment</p>	<p>The subprogram does not offer any rebates for having the home energy assessment completed (Tier 1). As stated above, some contractors may offer this service at no cost to the homeowner. To qualify for Tier 2 and 3 incentives, at a minimum, air sealing and insulation must be performed.</p>	<p>Equipment and installation costs for all measures directly installed in tenant units will be provided free to eligible properties.</p>

Brief Program Descriptions of other New Jersey Based Utilities

Atlantic City Electric has the **Energy Wise Rewards Program**, which works by cycling the central air conditioner over short intervals (conservation periods) on selected summer days (called Peak Savings Days). During normal cycling operation, a customer's air conditioner compressor runs and rests in recurring intervals to maintain the ideal room temperature. Customers receive their Installation Credit for each device installed in full as a one-time bill reduction within two billing cycles after ACE installs the Energy Wise Rewards device(s). Installation Credit of \$50 is provided when the energy-saving device is installed. Additionally, ACE offers Quick Home Energy Check-ups where customers receive a home audit and the installation of energy savings measures.

Through the **Save Green Project**, **New Jersey Natural Gas (NJNG)** provides rebates that supplement the statewide WARMAdvantage Program. Installation qualifies customer for NJNG's free Home Energy Audit. This audit is performed by a BPI certified NJNG auditor. The subprogram offers rebate of \$500 for installing Gas Furnace, Gas Boiler, or a Gas Water Heater. Installation of equipment in new homes, and participants who have received rebates from the NJ Clean Energy Program are not eligible the rebates. Additional incentives up to \$600 are available for installing both heat and hot water systems. Furthermore, New Jersey Natural Gas Company (NJNG) offers a behavioral program intended to influence customer behavior by providing timely feedback regarding energy consumption through personalized Home Energy Reports (HER). NJNG offers a program that is integrated with NJCEP Direct Install program. NJCEP pays 70% and its customers can apply for remaining 30% as on bill repayment at 0% for 3 years. This is tied to the NJCEP incentive cap of \$125K so financing is \$53,570.

South Jersey Gas has a variety of energy efficiency programs.

- **Whole House Upgrade Program:** South Jersey Gas partnered with NJ Clean Energy's "Home Performance with Energy Star" program to bring special financing and rebates to their customers. They offer a home energy audit by a Home Energy Expert, who provides a list of recommended upgrades to the resident. Based upon each resident's results, energy-efficient upgrades are available with the following incentives: Up to \$10,000 in financing at 0% for 7 years; Up to \$15,000 in financing at 4.99% for 10 years; or Up to \$4,000 in rebates from the NJ Clean Energy Program before December 31, 2018.
- **Equipment Upgrade Program:** South Jersey Gas Customers heating with natural gas can choose 1 of 2 options available for financing and/or rebates:
 1. Upgrade to a qualifying high-efficiency natural gas water heater and a qualifying high-efficiency natural gas boiler or furnace:
 - a. Get \$6,500 in financing at 0% for 5 years;
 - b. Take advantage of up to \$700 in rebates from the NJ Clean Energy Program;
 2. Upgrade to a qualifying high-efficiency natural gas water heater and a qualifying high-efficiency natural gas boiler or furnace and get \$1200 in rebates:
 - a. \$500 from South Jersey Gas - Click Here for Rebate Form; and
 - b. \$700 from the NJ Clean Energy Program.

Jersey Central Power and Light offers an online marketplace for energy efficient products as well as a Home Energy Analyzer, which assists residents in reporting their home's major sources of energy and identifying appliances and products in need of an upgrade.

Orange and Rockland Utilities offer a variety of subprograms for energy efficiency, some of which mirror those offered by the NJCEP. Programs offered by ORU include:

- **Electric Appliance Rebates**
 - Rebates for qualifying electric appliances and equipment.
- **Appliance Recycling**
 - Program available for older, working refrigerators and freezers.
- **Thermostat Program**
 - Residents receive \$85 for enrolling in the Bring Your Own Thermostat (BYOT) program.
- **Gas Appliance Rebates**
 - Rebates from Orange & Rockland for a new high-efficiency natural gas system.
- **Gas Conversion Rebates**
 - Orange & Rockland is offering a \$1,000 rebate to qualifying residential customers who convert their oil or propane heating system to natural gas.
- **Solar-Electric Incentives**
 - New Jersey customers are eligible to receive financial incentives through the New Jersey Clean Energy Program. There's no maximum installation size, but the photovoltaic system must be sized to meet each resident's specific electricity needs—the "local load" or "demand"—to be eligible for incentives under this subprogram.
- **Prescriptive Program Rebates**
 - Prescriptive rebates are designed to cover up to 50 percent of the incremental measure cost for installing high-efficiency electric heating, cooling, and ventilation equipment, or for upgrading fluorescent lighting, motors, and installing variable speed drives (VSD).

Elizabethtown Gas offers HVAC incentives for water heaters, furnaces, boilers, and other equipment. Additionally, Elizabethtown Gas offers a free 75 minute assessment as well as Direct install of some measures and incentives for seal-up and insulation outside of HPwES. Furthermore, Elizabethtown Gas offers an audit of steam traps within hospitals, schools or municipalities. Incentive covers 50% of survey costs plus \$.50 per therm saved up to 50% of project cost.

APPENDIX D – COMPARISON TO OUT-OF-STATE PROGRAMS

The following provides a comparison of the proposed programs to a sampling of/examples of existing or proposed utility programs or pilots in other states.

Table 75. Comparison to Out-of-State Programs

A. PSE&G Proposed Subprogram	B. Comparison to Out-of-State Programs with Examples
Residential Programs	
Residential Efficient Products	<p>Residential efficient products incentive programs are among the most common residential energy efficiency programs. While numerous administrators offer prescriptive incentives for residential efficient products, PSE&G has drawn from leading programs and emerging strategies to design a program that includes midstream incentives, an online marketplace, and has proposed to explore the viability of using a smartphone-based immediate point-of-sale rebate mechanism. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Xcel • National Grid • Pacific Gas & Electric
Residential Existing Homes	<p>Home retrofit and weatherization programs are offered by many administrators to provide whole-home efficiency solutions to participants and improve the efficiency of residential housing stock. Existing homes programs typically either utilize an ‘unmanaged’ approach, whereby program incentives are available to any contractor or homeowner, or a ‘managed’ approach, whereby program incentives are available only to trade allies that are trained by the subprogram and meet eligibility criteria. PSE&G has chosen to pursue a ‘managed’ approach and modeled the Existing Homes program after leading Home Performance with ENERGY STAR (HPwES) programs. This strategy helps to build the contractor/trade ally marketplace around a culture of energy efficiency, so that the subprogram may organically grow, as opposed to simply ‘procuring’ energy savings. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • National Grid • EnergizeCT • Efficiency Vermont

Residential New Construction	<p>The RNC program is similar to other leading residential new construction programs and market best practices. The RNC program will streamline the performance incentive structure as compared to NJCEP's existing program by basing the incentive on actual modeled energy savings, rather than HERS score. This new incentive structure is easier to understand and more directly aligns incentives with energy savings. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Duke Energy Carolinas • AEP Ohio • PECO
Residential Multifamily	<p>The multifamily program provides direct installation of low-cost efficiency measures, behavioral education and referral to the C&I Prescriptive Program for whole building or common area efficiency opportunities. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • PECO • MassSave • ConEdison
Residential Behavior	<p>Behavioral programs are offered by many utility administrators and have proven to be a successful strategy for producing behavior-driven energy savings and as a key touchpoint for informing customers of other energy efficiency measures and programs. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • National Grid • PECO • ComED
Income Eligible	<p>Income eligible programs are commonly offered by administrators to ensure energy efficiency opportunities are available to all customer segments. The subprogram will provide free direct installation of energy efficiency services for income eligible customers, as coordinated via the existing Comfort Partners participation platform. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Efficiency Vermont • Eversource • EmPower Maryland
Commercial & Industrial Programs	

C&I New Construction	<p>Commercial New Construction programs are offered by many program administrators to integrate energy efficient design and systems into new buildings during design and construction when these opportunities are the most cost effective. This subprogram draws from best-practices approaches to offer incentives to participants at different stages of the design/build process and with different objectives by providing incentives for equipment as well as a high-performance/whole-building pathway and a net-zero pathway. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Efficiency Vermont • AEP Ohio • National Grid
C&I Non-Residential Small Business	<p>Small business programs are offered by many program administrators to offer turnkey efficiency services for small businesses that are often hard to reach through traditional DSM programs. Small business programs, including the proposed program, typically include an on-site energy audit, installation of simple direct-install measures, and provide small business customers with information and incentives to pursue additional efficiency measures. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Consumers Energy • ConEdison • AEP Ohio
C&I Custom	<p>Custom programs are offered by many program administrators to offer efficiency incentives to commercial customers with unique savings opportunities. Key characteristics shared with other programs include per-unit savings incentives, project pre-approval, and use of additional M&V steps where savings are difficult to quantify or expected to be above a size threshold. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Consumers Energy • Xcel • DTE Energy
C&I Prescriptive	<p>Commercial prescriptive programs are among the most common commercial energy efficiency programs, and the proposed program shares similarities with many out-of-state programs with respect to the suite of measures offered. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • National Grid • Consumers Energy • Efficiency Vermont

C&I Energy Management	<p>The C&I Energy Management Program includes two primary pathways: Retrocommissioning (RCx) and Strategic Energy Management (SEM), each of which focus on developing teams of people at large C&I customer sites to focus on low-cost and behavioral changes that can save significant energy through better operations and maintenance, and better advanced planning for efficiency opportunities. The subprogram draws on the design of out-of-state programs led by program administrators including:</p> <ul style="list-style-type: none"> • NYSERDA • PG&E • ComEd
C&I Streetlight	<p>The C&I Streetlight Program will advance the efficiency goals of municipalities by retrofitting to LED street lights and funding for other Smart City initiatives. Out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Georgia Power • PG&E • National Grid
C&I Engineered Solutions	<p>The C&I Engineered Solutions Program includes two primary pathways: tailored energy efficiency assistance to public service entities, such as municipalities, universities, schools, hospitals (MUSH), non-profit entities and multi-family facilities (many of which are HMFA qualified), and Combined Heat and Power (CHP). The ‘tailored energy efficiency assistance’ component is (to our knowledge) unique, and while no known out-of-state program administrators combine these elements into a single ‘engineered solutions’ offering, out-of-state programs with similarities to the proposed program are offered by the following administrators, among others:</p> <ul style="list-style-type: none"> • Centerpoint Energy • PG&E • PECO

APPENDIX E – COST-BENEFIT ANALYSIS RESULTS

Table 76. Detailed Cost-Benefit Analysis Results

Results		Residential Programs	Commercial & Industrial Programs	Low Income Programs	Total Portfolio
Total Resource Costs Tests (TRC)					
1 Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 187,029,305	\$ 839,413,887	\$ 9,536,963	\$ 1,035,980,156
2 Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 14,126,746	\$ 47,681,332	\$ 475,530	\$ 62,283,608
3 Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 101,304,666	\$ 89,324,760	\$ 16,733,975	\$ 207,363,401
4 Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 21,886,840	\$ 76,770,861	\$ 3,095,054	\$ 101,752,755
5 Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 35,826,217	\$ 155,697,535	\$ 1,705,462	\$ 193,229,214
6 Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 30,246,072	\$ 97,641,998	\$ 2,674,647	\$ 130,562,716
7 Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ 30,177,102	\$ -	\$ 30,177,102
8 Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 3,552,458	\$ 12,182,898	\$ 87,550	\$ 15,822,906
Total Benefit	1+2+3+4+5+6+7+8	\$ 393,972,304	\$ 1,348,890,373	\$ 34,309,181	\$ 1,777,171,858
9 Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 96,876,783	\$ 480,251,384	\$ -	\$ 577,128,166
10 Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 75,602,236	\$ 184,484,368	\$ 19,414,033	\$ 279,500,637
11 Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 188,141,545	\$ 606,522,046	\$ 68,181,939	\$ 862,845,530
Total Costs	9+10+11	\$ 360,620,564	\$ 1,271,257,797	\$ 87,595,972	\$ 1,719,474,333
Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(9+10+11)	1.1	1.1	0.4	1.0
Participant Cost Test (PCT)					
12 Lifetime Participant Benefits	<i>PV of bill reduction at retail</i>	\$ 971,732,801	\$ 1,748,971,128	\$ 67,019,378	\$ 2,787,723,306
Benefit-Cost Ratio	(11+12)/(9)	12.0	4.9	n/a	6.3
Program Administrator Cost Test (PAC)					
Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(10+11)	1.5	1.7	0.4	1.6
Ratepayer Impact Measure Test (RIM)					
13 Lifetime Utility Revenue Gained		\$ -	\$ 36,205,483	\$ -	\$ 36,205,483
14 Lifetime Utility Cost		\$ 276,057,152	\$ 286,418,651	\$ 21,557,526	\$ 584,033,329
Benefit-Cost Ratio	(1+2+3+4+5+6+7+8+13)/(10+11+14)	0.7	1.3	0.3	1.1
Societal Cost Test (SCT)					
15 Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 267,475,908	\$ 1,274,526,460	\$ 14,579,709	\$ 1,556,582,077
16 Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 21,812,768	\$ 80,790,279	\$ 782,066	\$ 103,385,114
17 Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 155,640,112	\$ 130,962,608	\$ 26,811,566	\$ 313,414,285
18 Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 35,299,236	\$ 123,409,566	\$ 7,756,348	\$ 166,465,150
19 Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 49,849,262	\$ 227,378,749	\$ 2,471,545	\$ 279,699,557
20 Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 44,492,879	\$ 148,627,935	\$ 4,217,334	\$ 197,338,148
21 Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ 45,824,877	\$ -	\$ 45,824,877
22 Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 5,129,226	\$ 19,041,155	\$ 133,053	\$ 24,303,434
23 Lifetime Emission Savings	<i>PV of CO₂ + NO_x + SO₂ emissions savings</i>	\$ 638,699,057	\$ 2,583,723,002	\$ 51,510,829	\$ 3,273,932,888
24 Lifetime Economic Multiplier Benefits	<i>PV of economic multiplier benefits</i>	\$ 344,586,606	\$ 1,093,217,480	\$ 69,539,760	\$ 1,507,343,846
Total Benefit	15+16+17+18+19+20+21+22+23+24	\$ 1,562,985,054	\$ 5,727,502,111	\$ 177,802,211	\$ 7,468,289,375
25 Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 111,654,947	\$ 561,919,657	\$ -	\$ 673,574,604
26 Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 86,960,804	\$ 214,006,396	\$ 22,229,628	\$ 323,196,828
27 Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 215,550,010	\$ 749,820,038	\$ 78,307,897	\$ 1,043,677,945
Total Costs	25+26+27	\$ 414,165,761	\$ 1,525,746,091	\$ 100,537,525	\$ 2,040,449,378
Benefit-Cost Ratio	(15+16+17+18+19+20+21+22+23+24)/(25+26+27)	3.8	3.8	1.8	3.7

Results		Res Eff Products	Res Existing Homes	Res Behavior	Res K-12 Education	Res New Construction	Res MF	Income Eligible	
Total Resource Costs Tests (TRC)									
1	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 121,742,832	\$ 18,475,144	\$ 24,202,074	\$ 3,392,091	\$ 6,802,613	\$ 12,414,551	\$ 9,536,963
2	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 10,849,588	\$ 1,218,354	\$ -	\$ 125,558	\$ 1,270,720	\$ 662,526	\$ 475,530
3	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 44,855,516	\$ 17,106,797	\$ 17,801,394	\$ 1,729,263	\$ 19,292,866	\$ 518,831	\$ 16,733,975
4	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 10,903,381	\$ 4,524,803	\$ 3,944,486	\$ 284,367	\$ 1,206,128	\$ 1,023,674	\$ 3,095,054
5	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 23,959,594	\$ 3,204,305	\$ 4,656,505	\$ 641,223	\$ 1,066,317	\$ 2,298,274	\$ 1,705,462
6	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 17,744,794	\$ 3,680,029	\$ 4,200,347	\$ 524,691	\$ 2,736,620	\$ 1,359,591	\$ 2,674,647
7	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
8	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 2,963,165	\$ 234,433	\$ -	\$ 22,904	\$ 211,326	\$ 120,630	\$ 87,550
	Total Benefit	1+2+3+4+5+6+7+8	\$ 233,018,869	\$ 48,443,865	\$ 54,804,806	\$ 6,720,097	\$ 32,586,590	\$ 18,398,077	\$ 34,309,181
9	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 52,925,231	\$ 26,458,838			\$ 17,492,713		
10	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 32,861,241	\$ 18,083,573	\$ 4,752,841	\$ 2,525,342	\$ 10,283,887	\$ 7,095,353	\$ 19,414,033
11	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 99,166,011	\$ 31,547,359	\$ 34,971,794	\$ 2,763,490	\$ 12,494,795	\$ 7,198,096	\$ 68,181,939
	Total Costs	9+10+11	\$ 184,952,483	\$ 76,089,770	\$ 39,724,634	\$ 5,288,833	\$ 40,271,395	\$ 14,293,449	\$ 87,595,972
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(9+10+11)	1.3	0.6	1.4	1.3	0.8	1.3	0.4
Participant Cost Test (PCT)									
12	Lifetime Participant Benefits	<i>PV of bill reduction at retail</i>	\$ 602,845,355	\$ 106,173,404	\$ 130,917,881	\$ 17,486,812	\$ 61,115,340	\$ 53,194,009	\$ 67,019,378
	Benefit-Cost Ratio	(11+12)/(9)	13.3	5.2	n/a	n/a	4.2	n/a	n/a
Program Administrator Cost Test (PAC)									
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(10+11)	1.8	1.0	1.4	1.3	1.4	1.3	0.4
Ratepayer Impact Measure Test (RIM)									
13	Lifetime Utility Revenue Gained								
14	Lifetime Utility Cost		\$ 164,806,862	\$ 31,578,932	\$ 40,039,069	\$ 4,944,764	\$ 21,242,818	\$ 13,444,705	\$ 21,557,526
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8+13)/(10+11+14)	0.8	0.6	0.7	0.7	0.7	0.7	0.3
Societal Cost Test (SCT)									
15	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 175,190,713	\$ 28,981,940	\$ 28,714,296	\$ 4,980,147	\$ 11,200,253	\$ 18,408,559	\$ 14,579,709
16	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 16,354,574	\$ 2,034,700	\$ -	\$ 194,904	\$ 2,194,795	\$ 1,033,796	\$ 782,066
17	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 72,052,089	\$ 27,817,339	\$ 21,027,491	\$ 2,259,942	\$ 31,795,589	\$ 687,662	\$ 26,811,566
18	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 15,495,342	\$ 10,956,238	\$ 4,408,052	\$ 411,539	\$ 2,524,011	\$ 1,504,055	\$ 7,756,348
19	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 33,711,917	\$ 4,743,866	\$ 5,559,222	\$ 912,926	\$ 1,619,190	\$ 3,302,142	\$ 2,471,545
20	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 26,359,738	\$ 5,883,398	\$ 4,974,179	\$ 743,499	\$ 4,519,064	\$ 2,013,002	\$ 4,217,334
21	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
22	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 4,216,111	\$ 364,980	\$ -	\$ 33,522	\$ 337,423	\$ 177,190	\$ 133,053
23	Lifetime Emission Savings	<i>PV of CO₂ + NO_x + SO₂ emissions savings</i>	\$ 396,151,120	\$ 81,243,249	\$ 63,400,631	\$ 11,323,781	\$ 51,411,071	\$ 35,169,205	\$ 51,510,829
24	Lifetime Economic Multiplier Benefits	<i>PV of economic multiplier benefits</i>	\$ 212,233,226	\$ 63,587,329	\$ 20,067,232	\$ 6,972,520	\$ 21,457,678	\$ 20,268,620	\$ 69,539,760
	Total Benefit	15+16+17+18+19+20+21+22+23+24	\$ 951,764,829	\$ 225,613,038	\$ 148,151,102	\$ 27,832,780	\$ 127,059,074	\$ 82,564,231	\$ 177,802,211
25	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 60,790,378	\$ 30,672,197			\$ 20,192,372		
26	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 37,847,167	\$ 20,868,928	\$ 5,408,904	\$ 2,890,933	\$ 11,824,724	\$ 8,120,149	\$ 22,229,628
27	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 113,802,659	\$ 36,542,121	\$ 39,347,697	\$ 3,183,470	\$ 14,423,123	\$ 8,250,939	\$ 78,307,897
	Total Costs	25+26+27	\$ 212,440,204	\$ 88,083,246	\$ 44,756,601	\$ 6,074,402	\$ 46,440,219	\$ 16,371,089	\$ 100,537,525
	Benefit-Cost Ratio	(15+16+17+18+19+20+21+22+23+24)/(25+26+27)	4.5	2.6	3.3	4.6	2.7	5.0	1.8

Results		C&I Prescriptive	C&I Custom	C&I Small Non-Residential Efficiency	C&I New Construction	C&I Energy Management	C&I Engineered Solutions	C&I Streetlight	
Total Resource Costs Tests (TRC)									
1	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 411,500,195	\$ 124,292,722	\$ 124,111,426	\$ 23,488,223	\$ 4,774,558	\$ 113,379,282	\$ 37,867,481
2	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 10,808,160	\$ 2,361,721	\$ 2,165,537	\$ 459,398	\$ 59,961	\$ 31,826,555	\$ -
3	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 37,103,055	\$ 9,182,705	\$ 5,455,632	\$ 13,371,025	\$ 1,013,803	\$ 23,198,540	\$ -
4	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 35,308,201	\$ 9,746,378	\$ 9,422,200	\$ 1,894,251	\$ 401,723	\$ 14,892,707	\$ 5,105,401
5	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 77,416,867	\$ 23,497,025	\$ 24,651,261	\$ 4,241,471	\$ 1,006,051	\$ 17,742,938	\$ 7,141,921
6	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 45,941,141	\$ 13,583,715	\$ 13,173,260	\$ 3,731,865	\$ 584,832	\$ 16,840,438	\$ 3,786,748
7	Lifetime Avoided Replacement	<i>PV of avoided replacement costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 30,177,102
8	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 3,241,809	\$ 717,739	\$ 727,566	\$ 132,002	\$ 29,496	\$ 7,334,285	\$ -
	Total Benefit	1+2+3+4+5+6+7+8	\$ 621,319,428	\$ 183,382,004	\$ 179,706,882	\$ 47,318,235	\$ 7,870,425	\$ 225,214,746	\$ 84,078,653
9	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 256,060,285	\$ 56,568,473	\$ 76,734,981	\$ 14,682,952	\$ 1,645,583	\$ 74,559,110	\$ -
10	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 86,250,254	\$ 22,718,131	\$ 14,134,817	\$ 8,312,520	\$ 4,062,941	\$ 43,915,717	\$ 5,089,987
11	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 307,405,589	\$ 56,568,473	\$ 61,743,398	\$ 12,313,533	\$ 1,610,041	\$ 80,607,960	\$ 86,273,051
	Total Costs	9+10+11	\$ 649,716,129	\$ 135,855,077	\$ 152,613,196	\$ 35,309,004	\$ 7,318,565	\$ 199,082,788	\$ 91,363,038
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(9+10+11)	1.0	1.3	1.2	1.3	1.1	1.1	0.9
Participant Cost Test (PCT)									
12	Lifetime Participant Benefits	<i>PV of bill reduction at retail</i>	\$ 846,205,687	\$ 246,129,499	\$ 263,501,981	\$ 62,968,894	\$ 9,863,303	\$ 301,523,092	\$ 18,778,672
	Benefit-Cost Ratio	(11+12)/(9)	4.5	5.4	4.2	5.1	7.0	5.1	n/a
Program Administrator Cost Test (PAC)									
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(10+11)	1.6	2.3	2.4	2.3	1.4	1.8	0.9
Ratepayer Impact Measure Test (RIM)									
13	Lifetime Utility Revenue Gained								\$ 36,205,483
14	Lifetime Utility Cost		\$ 137,189,559	\$ 39,617,590	\$ 46,537,353	\$ 12,146,232	\$ 1,643,556	\$ 49,284,362	\$ -
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8+13)/(10+11+14)	1.2	1.5	1.5	1.4	1.1	1.3	1.3
Societal Cost Test (SCT)									
15	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 622,790,230	\$ 186,418,679	\$ 179,952,215	\$ 35,826,253	\$ 6,116,162	\$ 187,494,836	\$ 55,928,084
16	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 17,269,455	\$ 3,733,892	\$ 3,277,240	\$ 743,807	\$ 79,442	\$ 55,686,443	\$ -
17	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 49,407,721	\$ 13,795,682	\$ 7,919,346	\$ 20,421,179	\$ 1,298,034	\$ 38,120,646	\$ -
18	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 55,100,397	\$ 14,523,299	\$ 13,374,531	\$ 2,919,197	\$ 499,688	\$ 29,775,304	\$ 7,217,150
19	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 112,989,578	\$ 34,194,808	\$ 35,177,366	\$ 6,224,288	\$ 1,293,263	\$ 27,455,531	\$ 10,043,916
20	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 68,946,741	\$ 20,394,825	\$ 19,114,880	\$ 5,699,124	\$ 749,364	\$ 28,130,193	\$ 5,592,808
21	Lifetime Avoided Replacement	<i>PV of avoided replacement costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 45,824,877
22	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 4,791,230	\$ 1,060,084	\$ 1,041,990	\$ 197,900	\$ 37,578	\$ 11,912,373	\$ -
23	Lifetime Emission Savings	<i>PV of CO₂ + NO_x + SO₂ emissions savings</i>	\$ 1,266,729,784	\$ 373,929,364	\$ 348,590,256	\$ 87,447,271	\$ 11,397,218	\$ 381,928,263	\$ 113,700,845
24	Lifetime Economic Multiplier Benefits	<i>PV of economic multiplier benefits</i>	\$ 385,573,130	\$ 154,805,007	\$ 216,119,369	\$ 20,712,757	\$ 12,354,831	\$ 211,008,694	\$ 92,643,693
	Total Benefit	15+16+17+18+19+20+21+22+23+24	\$ 2,583,598,265	\$ 802,855,639	\$ 824,567,194	\$ 180,191,777	\$ 33,825,580	\$ 971,512,283	\$ 330,951,373
25	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 297,603,099	\$ 65,807,733	\$ 89,268,012	\$ 17,081,101	\$ 1,914,354	\$ 90,245,358	\$ -
26	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 99,991,002	\$ 26,355,060	\$ 16,358,425	\$ 9,611,932	\$ 4,690,598	\$ 50,494,749	\$ 6,504,630
27	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 357,448,246	\$ 65,807,733	\$ 71,827,872	\$ 14,324,687	\$ 1,873,008	\$ 98,009,044	\$ 140,529,449
	Total Costs	25+26+27	\$ 755,042,347	\$ 157,970,527	\$ 177,454,310	\$ 41,017,719	\$ 8,477,959	\$ 238,749,151	\$ 147,034,078
	Benefit-Cost Ratio	(15+16+17+18+19+20+21+22+23+24)/(25+26+27)	3.4	5.1	4.6	4.4	4.0	4.1	2.3

Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Program Management	\$2,446,981	\$3,893,533	\$4,277,509	\$4,608,754	\$4,891,976	\$5,156,469	\$13,978,984	\$39,254,205
Education and Outreach	\$7,693,013	\$14,494,454	\$15,580,166	\$16,380,223	\$17,707,953	\$18,978,451	\$4,822,022	\$95,656,284
Total	\$10,161,693	\$20,057,563	\$22,842,973	\$24,518,038	\$26,602,287	\$28,156,352	\$19,797,469	\$152,136,375

Training

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Existing Homes	\$0	\$52,895	\$83,153	\$98,101	\$122,464	\$121,571	\$29,741	\$507,924
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$44,118	\$67,647	\$75,000	\$80,882	\$86,765	\$22,059	\$376,471
Residential Multi-Family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Income Eligible	\$0	\$42,470	\$56,627	\$56,627	\$56,104	\$61,039	\$15,685	\$288,553
C&I Prescriptive	\$0	\$65,108	\$149,130	\$194,320	\$226,497	\$199,744	\$47,039	\$881,838
C&I Custom	\$0	\$18,884	\$32,523	\$40,217	\$47,211	\$54,205	\$13,988	\$207,028
C&I Small Non-Residential Efficiency	\$0	\$8,120	\$13,984	\$17,292	\$20,300	\$23,307	\$6,015	\$89,018
C&I New Construction	\$0	\$6,246	\$10,757	\$13,302	\$15,615	\$17,928	\$4,627	\$68,475
C&I Energy Management	\$0	\$635	\$1,094	\$1,353	\$1,588	\$1,823	\$471	\$6,964
C&I Engineered Solutions	\$4,340	\$50,203	\$69,348	\$74,134	\$76,917	\$80,814	\$20,482	\$376,238
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$4,340	\$288,679	\$484,264	\$570,346	\$647,578	\$647,196	\$160,106	\$2,802,509

Rebates, Grants, and Other Direct Incentives

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$35,133,393	\$46,046,620	\$45,475,589	\$49,508,925	\$53,740,866	\$8,153,155	\$238,058,548
Residential Existing Homes	\$0	\$8,076,089	\$11,415,513	\$13,312,072	\$16,523,848	\$16,106,480	\$2,391,206	\$67,825,208
Residential Behavioral	\$5,362,500	\$7,150,000	\$7,150,000	\$7,150,000	\$7,150,000	\$7,150,000	\$1,787,500	\$42,900,000
Residential K-12 Education	\$0	\$494,060	\$705,800	\$705,240	\$705,000	\$705,000	\$211,500	\$3,526,600
Residential New Construction	\$0	\$2,125,000	\$2,925,000	\$3,212,500	\$3,462,500	\$3,712,500	\$562,500	\$16,000,000
Residential Multi-Family	\$0	\$1,538,925	\$1,810,500	\$1,819,850	\$1,827,875	\$1,835,375	\$275,475	\$9,108,000
Residential Income Eligible	\$0	\$14,439,928	\$16,988,150	\$16,988,150	\$16,810,299	\$18,516,042	\$2,823,389	\$86,565,958
C&I Prescriptive	\$0	\$53,352,752	\$83,023,390	\$100,495,203	\$116,563,827	\$132,577,069	\$20,246,835	\$506,259,077
C&I Custom	\$0	\$22,764,223	\$35,634,192	\$43,519,838	\$50,959,126	\$58,398,415	\$8,927,146	\$220,202,940
C&I Small Non-Residential Efficiency	\$0	\$34,287,851	\$53,672,813	\$65,550,304	\$76,755,484	\$87,960,665	\$13,446,216	\$331,673,334
C&I New Construction	\$0	\$1,651,733	\$2,585,556	\$3,157,724	\$3,697,506	\$4,237,288	\$647,738	\$15,977,546
C&I Energy Management	\$0	\$914,704	\$1,431,840	\$1,748,698	\$2,047,621	\$2,346,543	\$358,707	\$8,848,113

C&I Engineered Solutions	\$0	\$5,394,756	\$51,826,579	\$57,221,335	\$60,641,090	\$62,350,968	\$65,770,724	\$303,205,452
C&I Streetlight	\$79,062,853	\$63,417,070	\$1,620,150	\$0	\$0	\$0	\$0	\$144,100,073
ETA Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Energy Efficiency as a Service Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Smart Homes Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Wires Alternative Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Pipes Solution Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Volt Var Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$1,041,667	\$0	\$0	\$15,000,000
Business Energy Reports Pilot	\$0	\$1,583,333	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$416,667	\$10,000,000
Building Operator Certification Pilot	\$0	\$1,187,500	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$312,500	\$7,500,000
Total	\$84,425,353	\$277,261,318	\$350,336,104	\$393,856,504	\$436,194,769	\$478,137,211	\$131,539,592	\$2,151,750,850

Rebate Processing, Inspections, and Other Quality Control

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$352,835	\$1,149,958	\$1,415,994	\$1,373,972	\$1,420,268	\$1,713,407	\$665,301	\$8,091,735
Residential Existing Homes	\$406,216	\$1,067,609	\$1,301,595	\$1,375,262	\$1,476,068	\$1,507,653	\$680,650	\$7,815,053
Residential Behavioral	\$129,555	\$298,468	\$347,707	\$357,701	\$367,994	\$378,596	\$189,735	\$2,069,756
Residential K-12 Education	\$50,621	\$126,207	\$148,661	\$152,577	\$156,620	\$160,790	\$77,595	\$873,070
Residential New Construction	\$175,503	\$499,607	\$622,224	\$655,690	\$685,459	\$715,630	\$303,860	\$3,657,971
Residential Multi-Family	\$236,634	\$579,183	\$681,074	\$700,366	\$720,234	\$740,670	\$366,797	\$4,024,959
Residential Income Eligible	\$446,255	\$1,117,789	\$1,317,214	\$1,351,520	\$1,385,252	\$1,436,782	\$686,924	\$7,741,735
C&I Prescriptive	\$385,609	\$1,519,970	\$2,760,229	\$3,425,267	\$3,904,797	\$3,542,204	\$1,023,285	\$16,561,361
C&I Custom	\$168,614	\$489,522	\$660,563	\$749,575	\$831,676	\$914,078	\$325,956	\$4,139,984
C&I Small Non-Residential Efficiency	\$246,144	\$626,071	\$771,700	\$824,604	\$874,974	\$925,926	\$412,581	\$4,682,000
C&I New Construction	\$99,036	\$265,463	\$339,997	\$373,083	\$403,993	\$435,115	\$175,692	\$2,092,378
C&I Energy Management	\$94,128	\$227,634	\$269,777	\$280,062	\$290,352	\$300,883	\$149,341	\$1,612,177
C&I Engineered Solutions	\$563,702	\$1,562,156	\$1,903,201	\$1,988,168	\$2,053,571	\$2,131,543	\$875,122	\$11,077,463
C&I Streetlight	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935	\$3,239,893
ETA Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Energy Efficiency as a Service Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Smart Homes Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Non-Wires Alternative Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Non-Pipes Solution Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Volt Var Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Business Energy Reports Pilot	\$46,140	\$110,428	\$129,583	\$133,470	\$137,474	\$141,598	\$72,388	\$771,082
Building Operator Certification Pilot	\$46,140	\$110,428	\$129,583	\$133,470	\$137,474	\$141,598	\$72,388	\$771,082
Total	\$3,572,961	\$10,051,644	\$13,152,487	\$14,238,774	\$15,221,112	\$15,572,626	\$8,481,990	\$80,291,593

Evaluation and Related Research

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$103,576	\$911,403	\$1,207,366	\$1,126,224	\$1,167,062	\$1,297,005	\$415,526	\$6,228,162
Residential Existing Homes	\$59,998	\$302,280	\$417,962	\$467,860	\$546,155	\$548,839	\$183,352	\$2,526,446
Residential Behavioral	\$189,271	\$278,981	\$289,406	\$291,522	\$293,701	\$295,946	\$94,118	\$1,732,944
Residential K-12 Education	\$20,227	\$68,259	\$83,273	\$84,955	\$86,702	\$88,510	\$38,342	\$470,269
Residential New Construction	\$27,556	\$148,671	\$204,228	\$220,336	\$233,757	\$247,250	\$84,592	\$1,166,390
Residential Multi-Family	\$32,442	\$128,565	\$159,006	\$162,049	\$165,178	\$168,360	\$68,115	\$883,716
Residential Income Eligible	\$62,178	\$573,517	\$740,897	\$746,136	\$746,301	\$801,207	\$254,405	\$3,924,640
C&I Prescriptive	\$32,221	\$1,379,278	\$2,435,963	\$3,008,005	\$3,493,460	\$3,800,626	\$991,328	\$15,140,880

C&I Custom	\$41,984	\$357,995	\$561,406	\$669,856	\$768,875	\$868,003	\$256,618	\$3,524,737
C&I Small Non-Residential Efficiency	\$32,221	\$320,711	\$510,017	\$611,975	\$704,991	\$798,092	\$230,992	\$3,209,000
C&I New Construction	\$22,596	\$116,540	\$171,031	\$198,382	\$223,476	\$248,629	\$81,718	\$1,062,372
C&I Energy Management	\$40,379	\$104,264	\$126,532	\$133,039	\$139,367	\$145,799	\$68,997	\$758,378
C&I Engineered Solutions	\$114,915	\$752,827	\$1,008,656	\$1,071,386	\$1,110,237	\$1,162,610	\$344,367	\$5,564,998
C&I Streetlight	\$832,160	\$525,977	\$82,864	\$0	\$0	\$0	\$0	\$1,441,001
ETA Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Energy Efficiency as a Service Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Smart Homes Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Non-Wires Alternative Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Non-Pipes Solution Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Volt Var Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Business Energy Reports Pilot	\$20,190	\$48,321	\$56,702	\$58,403	\$60,155	\$61,960	\$31,675	\$337,406
Building Operator Certification Pilot	\$20,190	\$48,321	\$56,702	\$58,403	\$60,155	\$61,960	\$31,675	\$337,406
Total	\$1,758,804	\$6,321,279	\$8,411,676	\$9,217,186	\$10,117,488	\$10,922,246	\$3,343,224	\$50,091,901

Total

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$1,513,259	\$41,013,983	\$53,447,474	\$52,394,291	\$56,677,493	\$62,959,217	\$12,007,107	\$280,012,824
Residential Existing Homes	\$892,969	\$10,913,356	\$15,131,767	\$17,426,232	\$21,254,092	\$20,873,587	\$4,496,947	\$90,988,950
Residential Behavioral	\$5,859,496	\$8,049,464	\$8,142,205	\$8,161,027	\$8,180,414	\$8,200,382	\$2,252,578	\$48,845,567
Residential K-12 Education	\$165,376	\$960,263	\$1,261,670	\$1,271,526	\$1,282,135	\$1,293,368	\$482,733	\$6,717,069
Residential New Construction	\$481,379	\$3,811,392	\$5,169,416	\$5,640,701	\$6,043,005	\$6,446,017	\$1,495,576	\$29,087,486
Residential Multi-Family	\$470,808	\$2,848,421	\$3,370,112	\$3,413,007	\$3,455,548	\$3,498,275	\$1,011,331	\$18,067,502
Residential Income Eligible	\$1,076,578	\$18,052,021	\$21,368,182	\$21,425,967	\$21,284,968	\$23,265,858	\$4,625,898	\$111,099,473
C&I Prescriptive	\$1,986,760	\$62,581,048	\$101,308,598	\$123,899,478	\$143,700,209	\$157,375,100	\$26,672,076	\$617,523,268
C&I Custom	\$808,834	\$25,760,622	\$40,121,870	\$48,905,547	\$57,164,101	\$65,423,388	\$11,373,191	\$249,557,553
C&I Small Non-Residential Efficiency	\$592,113	\$36,293,875	\$56,517,445	\$68,855,787	\$80,483,648	\$92,112,460	\$15,008,708	\$349,864,035
C&I New Construction	\$347,329	\$2,811,088	\$4,254,881	\$5,121,547	\$5,930,816	\$6,740,536	\$1,451,586	\$26,657,782
C&I Energy Management	\$268,361	\$1,590,046	\$2,256,134	\$2,623,030	\$2,969,987	\$3,317,594	\$1,033,870	\$14,059,023
C&I Engineered Solutions	\$2,141,809	\$13,009,445	\$61,556,834	\$67,546,555	\$71,338,684	\$73,547,438	\$69,982,807	\$359,123,572
C&I Streetlight	\$80,018,630	\$64,238,904	\$2,050,187	\$357,589	\$368,316	\$379,366	\$4,607,869	\$152,020,861
ETA Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Energy Efficiency as a Service Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Smart Homes Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Non-Wires Alternative Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Non-Pipes Solution Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Volt Var Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$1,270,528	\$235,728	\$143,902	\$16,307,060
Business Energy Reports Pilot	\$124,938	\$1,882,352	\$2,350,885	\$2,361,412	\$2,372,254	\$2,383,422	\$636,073	\$12,111,336
Building Operator Certification Pilot	\$124,938	\$1,486,519	\$1,850,885	\$1,861,412	\$1,872,254	\$1,883,422	\$531,906	\$9,611,336
Program Design and Development	\$1,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$500,000	\$12,000,000
Program Management	\$2,446,981	\$3,893,533	\$4,277,509	\$4,608,754	\$4,891,976	\$5,156,469	\$13,978,984	\$39,254,205
Education and Outreach	\$7,693,013	\$14,494,454	\$15,580,166	\$16,380,223	\$17,707,953	\$18,978,451	\$4,822,022	\$95,656,284
IT Build	\$30,297,753	\$47,046,092	\$1,941,741	\$1,750,000	\$1,125,000	\$250,000	\$0	\$82,410,586
IT Run	\$16,875	\$2,900,850	\$5,650,100	\$6,246,700	\$6,246,700	\$6,246,700	\$1,561,675	\$28,869,600
Total	\$139,289,072	\$390,490,749	\$440,902,405	\$493,583,959	\$543,764,389	\$588,745,416	\$184,604,678	\$2,781,380,668

Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Program Management	\$2,068,807	\$3,291,799	\$3,616,431	\$3,896,483	\$4,135,934	\$4,359,551	\$11,818,571	\$33,187,576
Education and Outreach	\$6,504,079	\$12,254,376	\$13,172,294	\$13,848,705	\$14,971,238	\$16,045,384	\$4,076,792	\$80,872,869
Total	\$8,588,320	\$16,859,593	\$19,254,544	\$20,726,648	\$22,512,340	\$23,749,757	\$16,717,318	\$128,408,519

Training

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Existing Homes	\$0	\$25,972	\$40,830	\$48,169	\$60,132	\$59,693	\$14,603	\$249,399
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$22,059	\$33,824	\$37,500	\$40,441	\$43,382	\$11,029	\$188,235
Residential Multi-Family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Income Eligible	\$0	\$9,258	\$12,344	\$12,344	\$12,230	\$13,306	\$3,419	\$62,901
C&I Prescriptive	\$0	\$64,342	\$147,376	\$192,034	\$223,833	\$197,395	\$46,486	\$871,466
C&I Custom	\$0	\$17,911	\$30,847	\$38,145	\$44,779	\$51,412	\$13,268	\$196,362
C&I Small Non-Residential Efficiency	\$0	\$7,905	\$13,615	\$16,835	\$19,763	\$22,691	\$5,856	\$86,666
C&I New Construction	\$0	\$3,842	\$6,617	\$8,183	\$9,606	\$11,029	\$2,846	\$42,123
C&I Energy Management	\$0	\$463	\$797	\$986	\$1,158	\$1,329	\$343	\$5,076
C&I Engineered Solutions	\$3,087	\$35,708	\$49,325	\$52,729	\$54,709	\$57,480	\$14,568	\$267,605
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$3,087	\$187,461	\$335,575	\$406,926	\$466,650	\$457,718	\$112,418	\$1,969,835

Rebates, Grants, and Other Direct Incentives

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$24,085,522	\$31,567,030	\$31,175,563	\$33,940,596	\$36,841,782	\$5,589,354	\$163,199,848
Residential Existing Homes	\$0	\$3,965,496	\$5,605,210	\$6,536,452	\$8,113,489	\$7,908,554	\$1,174,123	\$33,303,324
Residential Behavioral	\$2,681,250	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$893,750	\$21,450,000
Residential K-12 Education	\$0	\$388,989	\$555,698	\$555,257	\$555,068	\$555,068	\$166,520	\$2,776,600
Residential New Construction	\$0	\$1,062,500	\$1,462,500	\$1,606,250	\$1,731,250	\$1,856,250	\$281,250	\$8,000,000
Residential Multi-Family	\$0	\$1,500,824	\$1,765,675	\$1,774,793	\$1,782,620	\$1,789,934	\$268,655	\$8,882,500
Residential Income Eligible	\$0	\$3,147,737	\$3,703,220	\$3,703,220	\$3,664,451	\$4,036,283	\$615,466	\$18,870,378
C&I Prescriptive	\$0	\$52,725,224	\$82,046,879	\$99,313,191	\$115,192,817	\$131,017,713	\$20,008,695	\$500,304,519
C&I Custom	\$0	\$21,591,419	\$33,798,333	\$41,277,713	\$48,333,732	\$55,389,752	\$8,467,223	\$208,858,172
C&I Small Non-Residential Efficiency	\$0	\$33,382,027	\$52,254,873	\$63,818,582	\$74,727,741	\$85,636,900	\$13,090,991	\$322,911,115
C&I New Construction	\$0	\$1,016,067	\$1,590,510	\$1,942,481	\$2,274,529	\$2,606,577	\$398,458	\$9,828,620
C&I Energy Management	\$0	\$666,794	\$1,043,772	\$1,274,753	\$1,492,659	\$1,710,566	\$261,488	\$6,450,032

C&I Engineered Solutions	\$0	\$3,837,106	\$36,862,480	\$40,699,586	\$43,131,942	\$44,348,119	\$46,780,475	\$215,659,708
C&I Streetlight	\$79,062,853	\$63,417,070	\$1,620,150	\$0	\$0	\$0	\$0	\$144,100,073
ETA Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Energy Efficiency as a Service Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Smart Homes Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Non-Wires Alternative Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$1,041,667	\$0	\$0	\$15,000,000
Business Energy Reports Pilot	\$0	\$791,667	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$208,333	\$5,000,000
Building Operator Certification Pilot	\$0	\$593,750	\$750,000	\$750,000	\$750,000	\$750,000	\$156,250	\$3,750,000
Total	\$81,744,103	\$229,601,358	\$276,701,330	\$316,502,841	\$353,807,560	\$391,522,498	\$100,965,197	\$1,750,844,887

Rebate Processing, Inspections, and Other Quality Control

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$241,884	\$788,348	\$970,727	\$941,920	\$973,658	\$1,174,617	\$456,094	\$5,547,248
Residential Existing Homes	\$199,459	\$524,214	\$639,105	\$675,277	\$724,774	\$740,283	\$334,211	\$3,837,323
Residential Behavioral	\$64,777	\$149,234	\$173,854	\$178,850	\$183,997	\$189,298	\$94,868	\$1,034,878
Residential K-12 Education	\$39,855	\$99,367	\$117,045	\$120,128	\$123,312	\$126,595	\$61,093	\$687,395
Residential New Construction	\$87,752	\$249,803	\$311,112	\$327,845	\$342,729	\$357,815	\$151,930	\$1,828,986
Residential Multi-Family	\$230,776	\$564,843	\$664,212	\$683,026	\$702,402	\$722,332	\$357,716	\$3,925,308
Residential Income Eligible	\$97,278	\$243,665	\$287,137	\$294,616	\$301,969	\$313,202	\$149,741	\$1,687,609
C&I Prescriptive	\$381,073	\$1,502,093	\$2,727,764	\$3,384,980	\$3,858,869	\$3,500,541	\$1,011,249	\$16,366,568
C&I Custom	\$159,927	\$464,302	\$626,531	\$710,957	\$788,828	\$866,985	\$309,163	\$3,926,694
C&I Small Non-Residential Efficiency	\$239,641	\$609,531	\$751,313	\$802,819	\$851,859	\$901,465	\$401,681	\$4,558,310
C&I New Construction	\$60,922	\$163,300	\$209,150	\$229,503	\$248,517	\$267,662	\$108,077	\$1,287,131
C&I Energy Management	\$68,617	\$165,939	\$196,660	\$204,157	\$211,659	\$219,335	\$108,865	\$1,175,233
C&I Engineered Solutions	\$400,942	\$1,111,108	\$1,353,682	\$1,414,116	\$1,460,635	\$1,516,094	\$622,445	\$7,879,022
C&I Streetlight	\$61,808	\$147,928	\$173,587	\$178,794	\$184,158	\$189,683	\$2,303,935	\$3,239,893
ETA Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Energy Efficiency as a Service Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Smart Homes Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Non-Wires Alternative Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Business Energy Reports Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Building Operator Certification Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Total	\$2,418,198	\$6,983,484	\$9,436,345	\$10,388,488	\$11,206,110	\$11,342,113	\$6,602,046	\$58,376,784

Evaluation and Related Research

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$71,006	\$624,807	\$827,704	\$772,077	\$800,073	\$889,155	\$284,862	\$4,269,685
Residential Existing Homes	\$29,460	\$148,424	\$205,226	\$229,727	\$268,172	\$269,489	\$90,029	\$1,240,528
Residential Behavioral	\$94,635	\$139,490	\$144,703	\$145,761	\$146,851	\$147,973	\$47,059	\$866,472
Residential K-12 Education	\$15,925	\$53,743	\$65,563	\$66,887	\$68,263	\$69,687	\$30,188	\$370,257
Residential New Construction	\$13,778	\$74,335	\$102,114	\$110,168	\$116,879	\$123,625	\$42,296	\$583,195
Residential Multi-Family	\$31,639	\$125,382	\$155,070	\$158,037	\$161,089	\$164,191	\$66,429	\$861,836
Residential Income Eligible	\$13,554	\$125,020	\$161,507	\$162,649	\$162,685	\$174,654	\$55,457	\$855,526
C&I Prescriptive	\$31,842	\$1,363,055	\$2,407,311	\$2,972,625	\$3,452,370	\$3,755,923	\$979,668	\$14,962,795

C&I Custom	\$39,821	\$339,551	\$532,482	\$635,345	\$729,263	\$823,284	\$243,398	\$3,343,144
C&I Small Non-Residential Efficiency	\$31,370	\$312,239	\$496,544	\$595,807	\$686,367	\$777,008	\$224,890	\$3,124,224
C&I New Construction	\$13,900	\$71,690	\$105,210	\$122,035	\$137,472	\$152,945	\$50,269	\$653,520
C&I Energy Management	\$29,435	\$76,006	\$92,238	\$96,982	\$101,595	\$106,284	\$50,297	\$552,837
C&I Engineered Solutions	\$81,735	\$535,460	\$717,423	\$762,041	\$789,674	\$826,925	\$244,937	\$3,958,194
C&I Streetlight	\$832,160	\$525,977	\$82,864	\$0	\$0	\$0	\$0	\$1,441,001
ETA Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Energy Efficiency as a Service Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Smart Homes Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Non-Wires Alternative Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Business Energy Reports Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Building Operator Certification Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Total	\$1,412,692	\$4,712,466	\$6,327,466	\$7,068,594	\$7,866,356	\$8,534,115	\$2,539,104	\$38,460,795

Total

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$1,037,407	\$28,116,931	\$36,640,648	\$35,918,644	\$38,854,972	\$43,161,376	\$8,231,412	\$191,961,391
Residential Existing Homes	\$438,463	\$5,358,642	\$7,429,954	\$8,556,574	\$10,436,119	\$10,249,284	\$2,208,077	\$44,677,113
Residential Behavioral	\$2,929,748	\$4,024,732	\$4,071,102	\$4,080,513	\$4,090,207	\$4,100,191	\$1,126,289	\$24,422,783
Residential K-12 Education	\$130,205	\$756,044	\$993,351	\$1,001,111	\$1,009,464	\$1,018,308	\$380,070	\$5,288,554
Residential New Construction	\$240,690	\$1,905,696	\$2,584,708	\$2,820,351	\$3,021,502	\$3,223,009	\$747,788	\$14,543,743
Residential Multi-Family	\$459,152	\$2,777,899	\$3,286,673	\$3,328,506	\$3,369,994	\$3,411,663	\$986,292	\$17,620,178
Residential Income Eligible	\$234,681	\$3,935,132	\$4,658,017	\$4,670,613	\$4,639,877	\$5,071,688	\$1,008,392	\$24,218,400
C&I Prescriptive	\$1,963,392	\$61,844,977	\$100,117,018	\$122,442,187	\$142,010,024	\$155,524,073	\$26,358,362	\$610,260,034
C&I Custom	\$767,163	\$24,433,445	\$38,054,807	\$46,385,953	\$54,219,029	\$62,052,801	\$10,787,248	\$236,700,446
C&I Small Non-Residential Efficiency	\$576,470	\$35,335,055	\$55,024,355	\$67,036,740	\$78,357,413	\$89,679,012	\$14,612,204	\$340,621,250
C&I New Construction	\$213,660	\$1,729,246	\$2,617,399	\$3,150,530	\$3,648,353	\$4,146,454	\$892,946	\$16,398,589
C&I Energy Management	\$195,628	\$1,159,100	\$1,644,660	\$1,912,117	\$2,165,039	\$2,418,435	\$753,663	\$10,248,642
C&I Engineered Solutions	\$1,523,396	\$9,253,175	\$43,783,279	\$48,043,563	\$50,740,775	\$52,311,787	\$49,776,386	\$255,432,361
C&I Streetlight	\$80,018,630	\$64,238,904	\$2,050,187	\$357,589	\$368,316	\$379,366	\$4,607,869	\$152,020,861
ETA Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Energy Efficiency as a Service Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Smart Homes Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Non-Wires Alternative Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$1,270,528	\$235,728	\$143,902	\$16,307,060
Business Energy Reports Pilot	\$62,469	\$941,176	\$1,175,443	\$1,180,706	\$1,186,127	\$1,191,711	\$318,036	\$6,055,668
Building Operator Certification Pilot	\$62,469	\$743,260	\$925,443	\$930,706	\$936,127	\$941,711	\$265,953	\$4,805,668
Program Design and Development	\$1,268,179	\$1,690,906	\$1,690,906	\$1,690,906	\$1,690,906	\$1,690,906	\$422,726	\$10,145,433
Program Management	\$2,068,807	\$3,291,799	\$3,616,431	\$3,896,483	\$4,135,934	\$4,359,551	\$11,818,571	\$33,187,576
Education and Outreach	\$6,504,079	\$12,254,376	\$13,172,294	\$13,848,705	\$14,971,238	\$16,045,384	\$4,076,792	\$80,872,869
IT Build	\$25,615,319	\$39,775,248	\$1,641,650	\$1,479,542	\$951,134	\$211,363	\$0	\$69,674,257
IT Run	\$14,267	\$2,452,532	\$4,776,893	\$5,281,290	\$5,281,290	\$5,281,290	\$1,320,322	\$24,407,883
Total	\$126,593,117	\$320,515,870	\$348,210,252	\$396,291,015	\$440,426,523	\$479,794,410	\$143,807,223	\$2,255,638,410

Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Program Management	\$378,174	\$601,735	\$661,077	\$712,270	\$756,041	\$796,918	\$2,160,413	\$6,066,629
Education and Outreach	\$1,188,934	\$2,240,078	\$2,407,872	\$2,531,518	\$2,736,715	\$2,933,067	\$745,230	\$14,783,415
Total	\$1,573,373	\$3,197,970	\$3,588,429	\$3,791,389	\$4,089,947	\$4,406,596	\$3,080,151	\$23,727,856

Training

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Existing Homes	\$0	\$26,923	\$42,324	\$49,932	\$62,332	\$61,877	\$15,138	\$258,525
Residential Behavioral	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential K-12 Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential New Construction	\$0	\$22,059	\$33,824	\$37,500	\$40,441	\$43,382	\$11,029	\$188,235
Residential Multi-Family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential Income Eligible	\$0	\$33,212	\$44,283	\$44,283	\$43,874	\$47,733	\$12,266	\$225,652
C&I Prescriptive	\$0	\$766	\$1,754	\$2,286	\$2,664	\$2,349	\$553	\$10,372
C&I Custom	\$0	\$973	\$1,676	\$2,072	\$2,432	\$2,793	\$721	\$10,666
C&I Small Non-Residential Efficiency	\$0	\$215	\$369	\$457	\$536	\$616	\$159	\$2,352
C&I New Construction	\$0	\$2,404	\$4,140	\$5,119	\$6,009	\$6,900	\$1,781	\$26,353
C&I Energy Management	\$0	\$172	\$296	\$367	\$430	\$494	\$128	\$1,887
C&I Engineered Solutions	\$1,253	\$14,495	\$20,023	\$21,405	\$22,209	\$23,334	\$5,914	\$108,633
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy Efficiency as a Service Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Homes Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Operator Certification Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$1,253	\$101,218	\$148,689	\$163,420	\$180,928	\$189,478	\$47,688	\$832,674

Rebates, Grants, and Other Direct Incentives

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$0	\$11,047,871	\$14,479,590	\$14,300,026	\$15,568,329	\$16,899,084	\$2,563,800	\$74,858,701
Residential Existing Homes	\$0	\$4,110,593	\$5,810,303	\$6,775,620	\$8,410,359	\$8,197,926	\$1,217,083	\$34,521,884
Residential Behavioral	\$2,681,250	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$3,575,000	\$893,750	\$21,450,000
Residential K-12 Education	\$0	\$105,071	\$150,102	\$149,983	\$149,932	\$149,932	\$44,980	\$750,000
Residential New Construction	\$0	\$1,062,500	\$1,462,500	\$1,606,250	\$1,731,250	\$1,856,250	\$281,250	\$8,000,000
Residential Multi-Family	\$0	\$38,101	\$44,825	\$45,057	\$45,255	\$45,441	\$6,820	\$225,500
Residential Income Eligible	\$0	\$11,292,190	\$13,284,930	\$13,284,930	\$13,145,848	\$14,479,759	\$2,207,923	\$67,695,580
C&I Prescriptive	\$0	\$627,529	\$976,511	\$1,182,012	\$1,371,010	\$1,559,355	\$238,141	\$5,954,558
C&I Custom	\$0	\$1,172,804	\$1,835,860	\$2,242,125	\$2,625,394	\$3,008,663	\$459,923	\$11,344,769
C&I Small Non-Residential Efficiency	\$0	\$905,824	\$1,417,940	\$1,731,722	\$2,027,743	\$2,323,764	\$355,225	\$8,762,220
C&I New Construction	\$0	\$635,666	\$995,046	\$1,215,244	\$1,422,978	\$1,630,712	\$249,281	\$6,148,926
C&I Energy Management	\$0	\$247,910	\$388,068	\$473,945	\$554,961	\$635,978	\$97,220	\$2,398,081

C&I Engineered Solutions	\$0	\$1,557,650	\$14,964,099	\$16,521,749	\$17,509,149	\$18,002,849	\$18,990,249	\$87,545,745
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Energy Efficiency as a Service Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Smart Homes Pilot	\$0	\$1,979,167	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$520,833	\$12,500,000
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$0	\$791,667	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$208,333	\$5,000,000
Building Operator Certification Pilot	\$0	\$593,750	\$750,000	\$750,000	\$750,000	\$750,000	\$156,250	\$3,750,000
Total	\$2,681,250	\$47,659,959	\$73,634,774	\$77,353,663	\$82,387,209	\$86,614,713	\$30,574,395	\$400,905,963

Rebate Processing, Inspections, and Other Quality Control

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$110,951	\$361,610	\$445,266	\$432,052	\$446,610	\$538,789	\$209,207	\$2,544,486
Residential Existing Homes	\$206,757	\$543,395	\$662,490	\$699,985	\$751,293	\$767,370	\$346,439	\$3,977,730
Residential Behavioral	\$64,777	\$149,234	\$173,854	\$178,850	\$183,997	\$189,298	\$94,868	\$1,034,878
Residential K-12 Education	\$10,765	\$26,840	\$31,616	\$32,448	\$33,308	\$34,195	\$16,502	\$185,675
Residential New Construction	\$87,752	\$249,803	\$311,112	\$327,845	\$342,729	\$357,815	\$151,930	\$1,828,986
Residential Multi-Family	\$5,859	\$14,340	\$16,862	\$17,340	\$17,832	\$18,338	\$9,081	\$99,652
Residential Income Eligible	\$348,976	\$874,124	\$1,030,076	\$1,056,905	\$1,083,283	\$1,123,580	\$537,182	\$6,054,126
C&I Prescriptive	\$4,535	\$17,878	\$32,465	\$40,288	\$45,928	\$41,663	\$12,036	\$194,793
C&I Custom	\$8,687	\$25,220	\$34,032	\$38,618	\$42,848	\$47,093	\$16,793	\$213,290
C&I Small Non-Residential Efficiency	\$6,503	\$16,540	\$20,387	\$21,785	\$23,115	\$24,461	\$10,900	\$123,690
C&I New Construction	\$38,114	\$102,163	\$130,847	\$143,580	\$155,476	\$167,453	\$67,615	\$805,248
C&I Energy Management	\$25,511	\$61,695	\$73,117	\$75,904	\$78,693	\$81,547	\$40,475	\$436,944
C&I Engineered Solutions	\$162,760	\$451,048	\$549,519	\$574,052	\$592,936	\$615,449	\$252,678	\$3,198,441
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Energy Efficiency as a Service Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Smart Homes Pilot	\$5,335	\$12,768	\$14,983	\$15,433	\$15,896	\$16,373	\$8,370	\$89,158
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$10,670	\$25,537	\$29,966	\$30,865	\$31,791	\$32,745	\$16,740	\$178,316
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Building Operator Certification Pilot	\$23,070	\$55,214	\$64,791	\$66,735	\$68,737	\$70,799	\$36,194	\$385,541
Total	\$1,154,763	\$3,068,160	\$3,716,142	\$3,850,286	\$4,015,002	\$4,230,513	\$1,879,944	\$21,914,810

Evaluation and Related Research

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$32,570	\$286,595	\$379,662	\$354,147	\$366,988	\$407,850	\$130,664	\$1,958,477
Residential Existing Homes	\$30,538	\$153,855	\$212,736	\$238,133	\$277,984	\$279,350	\$93,323	\$1,285,918
Residential Behavioral	\$94,635	\$139,490	\$144,703	\$145,761	\$146,851	\$147,973	\$47,059	\$866,472
Residential K-12 Education	\$4,302	\$14,517	\$17,710	\$18,067	\$18,439	\$18,823	\$8,154	\$100,012
Residential New Construction	\$13,778	\$74,335	\$102,114	\$110,168	\$116,879	\$123,625	\$42,296	\$583,195
Residential Multi-Family	\$803	\$3,183	\$3,937	\$4,012	\$4,090	\$4,168	\$1,686	\$21,879
Residential Income Eligible	\$48,624	\$448,497	\$579,390	\$583,487	\$583,616	\$626,553	\$198,948	\$3,069,114
C&I Prescriptive	\$379	\$16,223	\$28,652	\$35,380	\$41,090	\$44,702	\$11,660	\$178,085

C&I Custom	\$2,163	\$18,444	\$28,923	\$34,511	\$39,612	\$44,719	\$13,221	\$181,593
C&I Small Non-Residential Efficiency	\$851	\$8,473	\$13,474	\$16,167	\$18,625	\$21,084	\$6,102	\$84,776
C&I New Construction	\$8,696	\$44,850	\$65,821	\$76,347	\$86,004	\$95,685	\$31,449	\$408,852
C&I Energy Management	\$10,944	\$28,258	\$34,294	\$36,057	\$37,772	\$39,516	\$18,700	\$205,541
C&I Engineered Solutions	\$33,180	\$217,367	\$291,233	\$309,346	\$320,563	\$335,685	\$99,431	\$1,606,805
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Energy Efficiency as a Service Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Smart Homes Pilot	\$8,892	\$21,281	\$24,972	\$25,721	\$26,493	\$27,288	\$13,950	\$148,596
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$17,783	\$42,562	\$49,944	\$51,442	\$52,986	\$54,575	\$27,900	\$297,193
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Building Operator Certification Pilot	\$10,095	\$24,160	\$28,351	\$29,202	\$30,078	\$30,980	\$15,838	\$168,703
Total	\$346,111	\$1,608,812	\$2,084,210	\$2,148,592	\$2,251,131	\$2,388,131	\$804,120	\$11,631,107

Total

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$475,852	\$12,897,052	\$16,806,825	\$16,475,647	\$17,822,521	\$19,797,840	\$3,775,695	\$88,051,432
Residential Existing Homes	\$454,506	\$5,554,714	\$7,701,814	\$8,869,657	\$10,817,974	\$10,624,303	\$2,288,870	\$46,311,837
Residential Behavioral	\$2,929,748	\$4,024,732	\$4,071,102	\$4,080,513	\$4,090,207	\$4,100,191	\$1,126,289	\$24,422,783
Residential K-12 Education	\$35,170	\$204,218	\$268,319	\$270,415	\$272,671	\$275,060	\$102,662	\$1,428,515
Residential New Construction	\$240,690	\$1,905,696	\$2,584,708	\$2,820,351	\$3,021,502	\$3,223,009	\$747,788	\$14,543,743
Residential Multi-Family	\$11,656	\$70,523	\$83,439	\$84,501	\$85,554	\$86,612	\$25,039	\$447,323
Residential Income Eligible	\$841,896	\$14,116,889	\$16,710,165	\$16,755,354	\$16,645,091	\$18,194,170	\$3,617,506	\$86,881,072
C&I Prescriptive	\$23,368	\$736,071	\$1,191,579	\$1,457,291	\$1,690,184	\$1,851,027	\$313,714	\$7,263,234
C&I Custom	\$41,671	\$1,327,177	\$2,067,063	\$2,519,594	\$2,945,072	\$3,370,587	\$585,942	\$12,857,107
C&I Small Non-Residential Efficiency	\$15,643	\$958,820	\$1,493,090	\$1,819,047	\$2,126,235	\$2,433,447	\$396,503	\$9,242,786
C&I New Construction	\$133,669	\$1,081,841	\$1,637,482	\$1,971,017	\$2,282,462	\$2,594,082	\$558,640	\$10,259,193
C&I Energy Management	\$72,733	\$430,946	\$611,474	\$710,913	\$804,948	\$899,159	\$280,207	\$3,810,381
C&I Engineered Solutions	\$618,413	\$3,756,270	\$17,773,555	\$19,502,992	\$20,597,909	\$21,235,651	\$20,206,421	\$103,691,211
C&I Streetlight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ETA Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Energy Efficiency as a Service Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Smart Homes Pilot	\$38,406	\$2,071,085	\$2,607,862	\$2,611,098	\$2,614,431	\$2,617,864	\$592,784	\$13,153,530
Non-Wires Alternative Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Pipes Solution Pilot	\$76,812	\$4,142,170	\$5,215,724	\$5,222,196	\$5,228,862	\$5,235,728	\$1,185,568	\$26,307,060
Volt Var Pilot	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Business Energy Reports Pilot	\$62,469	\$941,176	\$1,175,443	\$1,180,706	\$1,186,127	\$1,191,711	\$318,036	\$6,055,668
Building Operator Certification Pilot	\$62,469	\$743,260	\$925,443	\$930,706	\$936,127	\$941,711	\$265,953	\$4,805,668
Program Design and Development	\$231,821	\$309,094	\$309,094	\$309,094	\$309,094	\$309,094	\$77,274	\$1,854,567
Program Management	\$378,174	\$601,735	\$661,077	\$712,270	\$756,041	\$796,918	\$2,160,413	\$6,066,629
Education and Outreach	\$1,188,934	\$2,240,078	\$2,407,872	\$2,531,518	\$2,736,715	\$2,933,067	\$745,230	\$14,783,415
IT Build	\$4,682,434	\$7,270,844	\$300,091	\$270,458	\$173,866	\$38,637	\$0	\$12,736,329
IT Run	\$2,608	\$448,318	\$873,207	\$965,410	\$965,410	\$965,410	\$241,353	\$4,461,717
Total	\$12,695,955	\$69,974,879	\$92,692,153	\$97,292,944	\$103,337,865	\$108,951,006	\$40,797,456	\$525,742,258

Investment

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$836,024	\$39,393,136	\$51,545,484	\$50,435,241	\$54,659,672	\$60,880,861	\$10,093,034	\$267,843,453
Residential Existing Homes	\$250,721	\$9,376,244	\$13,328,037	\$15,568,390	\$19,340,515	\$18,902,602	\$3,075,246	\$79,841,755
Residential Behavioral	\$5,636,097	\$7,514,796	\$7,514,796	\$7,514,796	\$7,514,796	\$7,514,796	\$1,878,699	\$45,088,776
Residential K-12 Education	\$39,701	\$659,482	\$908,718	\$907,985	\$907,688	\$907,688	\$262,172	\$4,593,433
Residential New Construction	\$209,118	\$3,159,779	\$4,404,779	\$4,853,125	\$5,231,801	\$5,610,478	\$1,045,037	\$24,514,118
Residential Multi-Family	\$100,822	\$1,962,921	\$2,331,019	\$2,342,741	\$2,353,173	\$2,362,830	\$407,473	\$11,860,980
Residential Income Eligible	\$390,727	\$16,410,553	\$19,441,994	\$19,441,994	\$19,241,476	\$21,161,061	\$3,503,094	\$99,590,900
C&I Prescriptive	\$1,621,191	\$61,706,118	\$100,281,908	\$122,841,987	\$142,610,994	\$156,253,208	\$25,891,495	\$611,206,901
C&I Custom	\$526,873	\$25,085,796	\$39,329,992	\$48,089,914	\$56,323,998	\$64,558,082	\$10,516,738	\$244,431,393
C&I Small Non-Residential Efficiency	\$226,544	\$35,418,945	\$55,490,755	\$67,798,297	\$79,394,432	\$90,990,568	\$14,228,127	\$343,547,668
C&I New Construction	\$174,265	\$2,396,886	\$3,768,835	\$4,620,919	\$5,415,170	\$6,209,420	\$1,156,676	\$23,742,171
C&I Energy Management	\$18,485	\$992,008	\$1,554,364	\$1,900,207	\$2,225,479	\$2,550,751	\$411,406	\$9,652,699
C&I Engineered Solutions	\$1,442,754	\$11,336,373	\$59,593,562	\$65,524,384	\$69,255,848	\$71,402,118	\$68,064,682	\$346,619,722
C&I Streetlight	\$79,895,013	\$63,943,047	\$1,703,014	\$0	\$0	\$0	\$0	\$145,541,074
ETA Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Energy Efficiency as a Service Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Smart Homes Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Wires Alternative Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Non-Pipes Solution Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$1,041,667	\$25,000,000
Volt Var Pilot	\$0	\$3,958,333	\$5,000,000	\$5,000,000	\$1,041,667	\$0	\$0	\$15,000,000
Business Energy Reports Pilot	\$0	\$1,583,333	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$416,667	\$10,000,000
Building Operator Certification Pilot	\$0	\$1,187,500	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$312,500	\$7,500,000
IT Build	\$30,297,753	\$47,046,092	\$1,941,741	\$1,750,000	\$1,125,000	\$250,000	\$0	\$82,410,586
Total	\$121,666,088	\$352,923,012	\$396,638,998	\$447,089,980	\$495,141,708	\$538,054,463	\$146,471,379	\$2,497,985,628

Expenses

Program	2019	2020	2021	2022	2023	2024	2025+	Total
Residential Efficient Products	\$677,234	\$1,620,847	\$1,901,990	\$1,959,050	\$2,017,821	\$2,078,356	\$1,914,073	\$12,169,370
Residential Existing Homes	\$642,247	\$1,537,112	\$1,803,730	\$1,857,842	\$1,913,577	\$1,970,985	\$1,421,701	\$11,147,195
Residential Behavioral	\$223,399	\$534,668	\$627,409	\$646,231	\$665,618	\$685,586	\$373,879	\$3,756,791
Residential K-12 Education	\$125,674	\$300,781	\$352,952	\$363,541	\$374,447	\$385,681	\$220,561	\$2,123,637
Residential New Construction	\$272,261	\$651,612	\$764,637	\$787,576	\$811,203	\$835,539	\$450,539	\$4,573,368
Residential Multi-Family	\$369,986	\$885,500	\$1,039,093	\$1,070,266	\$1,102,374	\$1,135,445	\$603,857	\$6,206,522
Residential Income Eligible	\$685,850	\$1,641,468	\$1,926,187	\$1,983,973	\$2,043,492	\$2,104,797	\$1,122,804	\$11,508,572
C&I Prescriptive	\$365,570	\$874,930	\$1,026,690	\$1,057,490	\$1,089,215	\$1,121,892	\$780,581	\$6,316,367
C&I Custom	\$281,961	\$674,826	\$791,877	\$815,634	\$840,103	\$865,306	\$856,453	\$5,126,160
C&I Small Non-Residential Efficiency	\$365,570	\$874,930	\$1,026,690	\$1,057,490	\$1,089,215	\$1,121,892	\$780,581	\$6,316,367
C&I New Construction	\$173,065	\$414,201	\$486,046	\$500,627	\$515,646	\$531,116	\$294,911	\$2,915,611
C&I Energy Management	\$249,877	\$598,038	\$701,770	\$722,823	\$744,508	\$766,843	\$622,464	\$4,406,324
C&I Engineered Solutions	\$699,055	\$1,673,071	\$1,963,272	\$2,022,170	\$2,082,836	\$2,145,321	\$1,918,125	\$12,503,850
C&I Streetlight	\$123,617	\$295,856	\$347,174	\$357,589	\$368,316	\$379,366	\$4,607,869	\$6,479,787
ETA Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Energy Efficiency as a Service Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Smart Homes Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Non-Wires Alternative Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Non-Pipes Solution Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Volt Var Pilot	\$76,812	\$183,837	\$215,724	\$222,196	\$228,862	\$235,728	\$143,902	\$1,307,060
Business Energy Reports Pilot	\$124,938	\$299,019	\$350,885	\$361,412	\$372,254	\$383,422	\$219,406	\$2,111,336
Building Operator Certification Pilot	\$124,938	\$299,019	\$350,885	\$361,412	\$372,254	\$383,422	\$219,406	\$2,111,336
Program Design and Development	\$1,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$500,000	\$12,000,000
Program Management	\$2,446,981	\$3,893,533	\$4,277,509	\$4,608,754	\$4,891,976	\$5,156,469	\$13,978,984	\$39,254,205
Education and Outreach	\$7,693,013	\$14,494,454	\$15,580,166	\$16,380,223	\$17,707,953	\$18,978,451	\$4,822,022	\$95,656,284
IT Run	\$16,875	\$2,900,850	\$5,650,100	\$6,246,700	\$6,246,700	\$6,246,700	\$1,561,675	\$28,869,600
Total	\$17,622,984	\$37,567,737	\$44,263,407	\$46,493,979	\$48,622,680	\$50,690,953	\$38,133,300	\$283,395,041

Participants

Program	2019	2020	2021	2022	2023	2024	2025	Total
Residential Efficient Products	0	2,697,014	2,362,092	545,411	274,923	303,098	46,094	6,228,633
Residential Existing Homes	0	148,100	187,180	210,242	236,980	240,068	35,984	1,058,554
Residential Behavioral	487,500	650,000	650,000	650,000	650,000	650,000	162,500	3,900,000
Residential K-12 Education	0	71,540	102,200	102,060	102,000	102,000	30,600	510,400
Residential New Construction	0	1,700	2,340	2,570	2,770	2,970	450	12,800
Residential Multi-Family	0	182,920	215,200	216,050	217,050	218,050	32,730	1,082,000
Residential Income Eligible	0	171,354	201,593	201,593	79,404	63,493	9,674	727,109
C&I Prescriptive	0	249,978	390,240	471,100	543,765	615,052	93,858	2,363,992
C&I Custom	0	80	126	154	180	207	32	779
C&I Small Non-Residential Efficiency	0	4,486	7,023	8,577	10,043	11,509	1,759	43,399
C&I New Construction	0	16	25	31	36	41	6	155
C&I Energy Management	0	22	34	41	48	55	8	209
C&I Engineered Solutions	0	2	31	33	35	36	38	175
C&I Streetlight	723	642	0	0	0	0	0	1,365
Total	488,223	4,177,854	4,118,083	2,407,861	2,117,234	2,206,580	413,734	15,929,569

Electric Savings (MWh)

Program	2019	2020	2021	2022	2023	2024	2025	Total
Residential Efficient Products	0	99,130	101,015	51,918	47,414	51,595	7,833	358,903
Residential Existing Homes	0	6,288	8,208	9,122	10,165	10,319	1,548	45,649
Residential Behavioral	71,502	95,336	95,336	95,336	95,336	95,336	23,834	572,014
Residential K-12 Education	0	1,847	2,639	2,632	2,629	2,629	789	13,165
Residential New Construction	0	1,870	2,574	2,827	3,047	3,267	495	14,080
Residential Multi-Family	0	5,865	6,899	6,899	6,899	6,899	1,035	34,497
Residential Income Eligible	0	5,367	6,314	6,314	2,779	2,394	365	23,533
C&I Prescriptive	0	120,127	187,571	228,175	265,863	303,470	46,367	1,151,572
C&I Custom	0	35,986	56,331	68,796	80,556	92,316	14,112	348,097
C&I Small Non-Residential Efficiency	0	40,219	62,958	76,890	90,033	103,177	15,772	389,050
C&I New Construction	0	6,350	9,941	12,141	14,216	16,291	2,490	61,429
C&I Energy Management	0	3,175	4,970	6,070	7,108	8,146	1,245	30,714
C&I Engineered Solutions	0	6,130	20,895	27,025	27,745	28,104	28,824	138,723
C&I Streetlight	41,240	36,574	0	0	0	0	0	77,814
Total	112,742	464,262	565,650	594,144	653,789	723,944	144,709	3,259,240

Electric Savings (MW)

Program	2019	2020	2021	2022	2023	2024	2025	Total
Residential Efficient Products	0.0	31.4	36.2	29.7	30.2	32.0	4.8	164.3

Residential Existing Homes	0.0	1.3	1.7	2.0	2.4	2.4	0.4	10.1
Residential Behavioral	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Residential K-12 Education	0.0	0.2	0.2	0.2	0.2	0.2	0.1	1.1
Residential New Construction	0.0	1.1	1.5	1.7	1.8	1.9	0.3	8.3
Residential Multi-Family	0.0	1.0	1.1	1.1	1.1	1.1	0.2	5.7
Residential Income Eligible	0.0	0.8	1.0	1.0	0.4	0.3	0.1	3.6
C&I Prescriptive	0.0	17.0	26.4	31.9	36.8	41.8	6.4	160.3
C&I Custom	0.0	3.6	5.6	6.9	8.1	9.2	1.4	34.8
C&I Small Non-Residential Efficiency	0.0	4.0	6.3	7.7	9.0	10.3	1.6	38.9
C&I New Construction	0.0	0.6	1.0	1.2	1.4	1.6	0.2	6.1
C&I Energy Management	0.0	0.3	0.5	0.6	0.7	0.8	0.1	3.1
C&I Engineered Solutions	0.0	0.9	4.1	5.0	5.2	5.3	5.5	26.0
C&I Streetlight	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	62.3	85.7	89.0	97.4	107.1	21.0	462.4

Natural Gas Savings (Decatherm)

Program	2019	2020	2021	2022	2023	2024	2025	Total
Residential Efficient Products	0	204,248	271,767	292,454	317,527	335,937	50,773	1,472,706
Residential Existing Homes	0	35,849	52,896	63,722	82,486	79,544	11,773	326,270
Residential Behavioral	487,500	650,000	650,000	650,000	650,000	650,000	162,500	3,900,000
Residential K-12 Education	0	12,600	18,000	18,000	18,000	18,000	5,400	90,000
Residential New Construction	0	23,800	32,760	35,980	38,780	41,580	6,300	179,200
Residential Multi-Family	0	2,856	3,360	4,329	5,138	5,888	900	22,470
Residential Income Eligible	0	52,628	61,915	61,915	65,834	73,367	11,186	326,845
C&I Prescriptive	0	242,751	305,182	359,706	435,803	514,631	78,968	1,937,040
C&I Custom	0	23,837	37,314	45,572	53,362	61,152	9,348	230,585
C&I Small Non-Residential Efficiency	0	15,892	24,876	30,381	35,574	40,768	6,232	153,723
C&I New Construction	0	31,783	49,752	60,762	71,149	81,536	12,464	307,446
C&I Energy Management	0	5,959	9,329	11,393	13,340	15,288	2,337	57,646
C&I Engineered Solutions	0	-15,702	71,177	55,475	64,023	68,298	76,846	320,117
C&I Streetlight	0	0	0	0	0	0	0	0
Total	487,500	1,286,502	1,588,327	1,689,689	1,851,016	1,985,987	435,028	9,324,049

CO2 Emissions

Subprogram	2019	2020	2021	2022	2023	2024	2025	Total
Residential Efficient Products	0	59,797	64,127	41,685	40,902	43,944	6,679	257,135
Residential Existing Homes	0	5,131	7,011	8,045	9,611	9,511	1,421	40,731
Residential Behavioral	62,744	84,015	83,519	83,147	82,917	82,910	20,791	500,042
Residential K-12 Education	0	1,628	2,312	2,299	2,291	2,291	689	11,510
Residential New Construction	0	2,294	3,144	3,442	3,702	3,969	603	17,154
Residential Multi-Family	0	2,998	3,492	3,521	3,552	3,595	543	17,701
Residential Income Eligible	0	5,667	6,634	6,609	5,157	5,416	827	30,309
C&I Prescriptive	0	72,185	107,420	129,107	150,767	173,076	26,588	659,143
C&I Custom	0	18,767	29,084	35,252	41,084	47,075	7,234	178,496
C&I Small Non-Residential Efficiency	0	20,347	31,523	38,198	44,511	51,001	7,839	193,419
C&I New Construction	0	4,923	7,655	9,302	10,858	12,442	1,909	47,089
C&I Energy Management	0	1,881	2,919	3,541	4,130	4,732	727	17,930
C&I Engineered Solutions	0	2,042	14,139	16,044	16,817	17,235	18,150	84,427
C&I Streetlight	19,757	17,658	0	0	0	0	0	37,415
Total	82,500	299,335	362,979	380,191	416,300	457,197	93,999	2,092,501

SO2 Emissions

Subprogram	2019	2020	2021	2022	2023	2024	2025	Total
Residential Efficient Products	0	83	82	43	40	45	7	301
Residential Existing Homes	0	5	7	8	9	9	1	39
Residential Behavioral	62	80	78	79	81	83	22	484
Residential K-12 Education	0	2	2	2	2	2	1	11
Residential New Construction	0	2	2	2	3	3	0	12
Residential Multi-Family	0	5	6	6	6	6	1	29
Residential Income Eligible	0	4	5	5	2	2	0	20
C&I Prescriptive	0	100	153	189	225	264	43	974
C&I Custom	0	30	46	57	68	80	13	294
C&I Small Non-Residential Efficiency	0	34	51	64	76	90	15	329
C&I New Construction	0	5	8	10	12	14	2	52
C&I Energy Management	0	3	4	5	6	7	1	26
C&I Engineered Solutions	0	5	17	22	23	24	27	119
C&I Streetlight	36	31	0	0	0	0	0	66
Total	98	388	461	493	552	629	134	2,756

NOx Emissions

Subprogram	2019	2020	2021	2022	2023	2024	2025	Total
Residential Efficient Products	0.0	43.7	46.7	30.8	30.5	32.9	5.0	189.7

Residential Existing Homes	0.0	3.8	5.2	6.0	7.2	7.1	1.1	30.5
Residential Behavioral	47.7	62.9	62.2	61.8	61.8	62.1	15.7	374.3
Residential K-12 Education	0.0	1.2	1.7	1.7	1.7	1.7	0.5	8.6
Residential New Construction	0.0	1.7	2.4	2.6	2.8	3.0	0.5	13.0
Residential Multi-Family	0.0	2.2	2.5	2.5	2.5	2.6	0.4	12.7
Residential Income Eligible	0.0	4.3	5.0	5.0	4.0	4.2	0.6	23.0
C&I Prescriptive	0.0	52.7	77.6	92.9	109.0	126.0	19.7	477.8
C&I Custom	0.0	13.5	20.8	25.1	29.4	33.9	5.3	128.1
C&I Small Non-Residential Efficiency	0.0	14.6	22.5	27.1	31.7	36.7	5.7	138.4
C&I New Construction	0.0	3.7	5.7	6.9	8.0	9.2	1.4	34.9
C&I Energy Management	0.0	1.4	2.1	2.6	3.0	3.5	0.5	13.0
C&I Engineered Solutions	0.0	1.4	10.4	11.6	12.2	12.6	13.5	61.7
C&I Streetlight	14.5	12.7	0.0	0.0	0.0	0.0	0.0	27.2
Total	62.2	219.9	264.7	276.5	303.9	335.6	70.1	1,532.8

Cost Benefit Analysis Results		Residential Programs	Commercial & Industrial Programs	Low Income Programs	Total Portfolio	
Total Resource Costs Tests (TRC)						
1	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 187,029,305	\$ 839,413,887	\$ 9,536,963	\$ 1,035,980,156
2	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 14,126,746	\$ 47,681,332	\$ 475,530	\$ 62,283,608
3	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 101,304,666	\$ 89,324,760	\$ 16,733,975	\$ 207,363,401
4	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 21,886,840	\$ 76,770,861	\$ 3,095,054	\$ 101,752,755
5	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 35,826,217	\$ 155,697,535	\$ 1,705,462	\$ 193,229,214
6	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 30,246,072	\$ 97,641,998	\$ 2,674,647	\$ 130,562,716
7	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ 30,177,102	\$ -	\$ 30,177,102
8	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 3,552,458	\$ 12,182,898	\$ 87,550	\$ 15,822,906
	Total Benefit	1+2+3+4+5+6+7+8	\$ 393,972,304	\$ 1,348,890,373	\$ 34,309,181	\$ 1,777,171,858
9	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 96,876,783	\$ 480,251,384	\$ -	\$ 577,128,166
10	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 75,602,236	\$ 184,484,368	\$ 19,414,033	\$ 279,500,637
11	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 188,141,545	\$ 606,522,046	\$ 68,181,939	\$ 862,845,530
	Total Costs	9+10+11	\$ 360,620,564	\$ 1,271,257,797	\$ 87,595,972	\$ 1,719,474,333
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(9+10+11)	1.1	1.1	0.4	1.0
Participant Cost Test (PCT)						
12	Lifetime Participant Benefits	<i>PV of bill reduction at retail</i>	\$ 971,732,801	\$ 1,748,971,128	\$ 67,019,378	\$ 2,787,723,306
	Benefit-Cost Ratio	(11+12)/(9)	12.0	4.9	n/a	6.3
Program Administrator Cost Test (PAC)						
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(10+11)	1.5	1.7	0.4	1.6
Ratepayer Impact Measure Test (RIM)						
13	Lifetime Utility Revenue Gained		\$ -	\$ 36,205,483	\$ -	\$ 36,205,483
14	Lifetime Utility Cost		\$ 276,057,152	\$ 286,418,651	\$ 21,557,526	\$ 584,033,329
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8+13)/(10+11+14)	0.7	1.3	0.3	1.1
Societal Cost Test (SCT)						
15	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 267,475,908	\$ 1,274,526,460	\$ 14,579,709	\$ 1,556,582,077
16	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 21,812,768	\$ 80,790,279	\$ 782,066	\$ 103,385,114
17	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 155,640,112	\$ 130,962,608	\$ 26,811,566	\$ 313,414,285
18	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 35,299,236	\$ 123,409,566	\$ 7,756,348	\$ 166,465,150
19	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 49,849,262	\$ 227,378,749	\$ 2,471,545	\$ 279,699,557
20	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 44,492,879	\$ 148,627,935	\$ 4,217,334	\$ 197,338,148
21	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ 45,824,877	\$ -	\$ 45,824,877
22	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 5,129,226	\$ 19,041,155	\$ 133,053	\$ 24,303,434
23	Lifetime Emission Savings	<i>PV of CO₂ + NO_x + SO₂ emissions savings</i>	\$ 638,699,057	\$ 2,583,723,002	\$ 51,510,829	\$ 3,273,932,888
24	Lifetime Economic Multiplier Benefits	<i>PV of economic multiplier benefits</i>	\$ 344,586,606	\$ 1,093,217,480	\$ 69,539,760	\$ 1,507,343,846
	Total Benefit	15+16+17+18+19+20+21+22+23+24	\$ 1,562,985,054	\$ 5,727,502,111	\$ 177,802,211	\$ 7,468,289,375
25	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 111,654,947	\$ 561,919,657	\$ -	\$ 673,574,604
26	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 86,960,804	\$ 214,006,396	\$ 22,229,628	\$ 323,196,828
27	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 215,550,010	\$ 749,820,038	\$ 78,307,897	\$ 1,043,677,945
	Total Costs	25+26+27	\$ 414,165,761	\$ 1,525,746,091	\$ 100,537,525	\$ 2,040,449,378
	Benefit-Cost Ratio	(15+16+17+18+19+20+21+22+23+24)/(25+26+27)	3.8	3.8	1.8	3.7

Cost Benefit Analysis Results		Res Eff Products	Res Existing Homes	Res Behavior	Res K-12 Education	Res New Construction	Res MF	Income Eligible	
Total Resource Costs Tests (TRC)									
1	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 121,742,832	\$ 18,475,144	\$ 24,202,074	\$ 3,392,091	\$ 6,802,613	\$ 12,414,551	\$ 9,536,963
2	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 10,849,588	\$ 1,218,354	\$ -	\$ 125,558	\$ 1,270,720	\$ 662,526	\$ 475,530
3	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 44,855,516	\$ 17,106,797	\$ 17,801,394	\$ 1,729,263	\$ 19,292,866	\$ 518,831	\$ 16,733,975
4	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 10,903,381	\$ 4,524,803	\$ 3,944,486	\$ 284,367	\$ 1,206,128	\$ 1,023,674	\$ 3,095,054
5	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 23,959,594	\$ 3,204,305	\$ 4,656,505	\$ 641,223	\$ 1,066,317	\$ 2,298,274	\$ 1,705,462
6	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 17,744,794	\$ 3,680,029	\$ 4,200,347	\$ 524,691	\$ 2,736,620	\$ 1,359,591	\$ 2,674,647
7	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
8	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 2,963,165	\$ 234,433	\$ -	\$ 22,904	\$ 211,326	\$ 120,630	\$ 87,550
	Total Benefit	1+2+3+4+5+6+7+8	\$ 233,018,869	\$ 48,443,865	\$ 54,804,806	\$ 6,720,097	\$ 32,586,590	\$ 18,398,077	\$ 34,309,181
9	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 52,925,231	\$ 26,458,838	\$ -	\$ -	\$ 17,492,713	\$ -	\$ -
10	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 32,861,241	\$ 18,083,573	\$ 4,752,841	\$ 2,525,342	\$ 10,283,887	\$ 7,095,353	\$ 19,414,033
11	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 99,166,011	\$ 31,547,359	\$ 34,971,794	\$ 2,763,490	\$ 12,494,795	\$ 7,198,096	\$ 68,181,939
	Total Costs	9+10+11	\$ 184,952,483	\$ 76,089,770	\$ 39,724,634	\$ 5,288,833	\$ 40,271,395	\$ 14,293,449	\$ 87,595,972
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(9+10+11)	1.3	0.6	1.4	1.3	0.8	1.3	0.4
Participant Cost Test (PCT)									
12	Lifetime Participant Benefits	<i>PV of bill reduction at retail</i>	\$ 602,845,355	\$ 106,173,404	\$ 130,917,881	\$ 17,486,812	\$ 61,115,340	\$ 53,194,009	\$ 67,019,378
	Benefit-Cost Ratio	(11+12)/(9)	13.3	5.2	n/a	n/a	4.2	n/a	n/a
Program Administrator Cost Test (PAC)									
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(10+11)	1.8	1.0	1.4	1.3	1.4	1.3	0.4
Ratepayer Impact Measure Test (RIM)									
13	Lifetime Utility Revenue Gained								
14	Lifetime Utility Cost		\$ 164,806,862	\$ 31,578,932	\$ 40,039,069	\$ 4,944,764	\$ 21,242,818	\$ 13,444,705	\$ 21,557,526
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8+13)/(10+11+14)	0.8	0.6	0.7	0.7	0.7	0.7	0.3
Societal Cost Test (SCT)									
15	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 175,190,713	\$ 28,981,940	\$ 28,714,296	\$ 4,980,147	\$ 11,200,253	\$ 18,408,559	\$ 14,579,709
16	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 16,354,574	\$ 2,034,700	\$ -	\$ 194,904	\$ 2,194,795	\$ 1,033,796	\$ 782,066
17	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 72,052,089	\$ 27,817,339	\$ 21,027,491	\$ 2,259,942	\$ 31,795,589	\$ 687,662	\$ 26,811,566
18	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 15,495,342	\$ 10,956,238	\$ 4,408,052	\$ 411,539	\$ 2,524,011	\$ 1,504,055	\$ 7,756,348
19	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 33,711,917	\$ 4,743,866	\$ 5,559,222	\$ 912,926	\$ 1,619,190	\$ 3,302,142	\$ 2,471,545
20	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 26,359,738	\$ 5,883,398	\$ 4,974,179	\$ 743,499	\$ 4,519,064	\$ 2,013,002	\$ 4,217,334
21	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
22	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 4,216,111	\$ 364,980	\$ -	\$ 33,522	\$ 337,423	\$ 177,190	\$ 133,053
23	Lifetime Emission Savings	<i>PV of CO₂ + NO_x + SO₂ emissions savings</i>	\$ 396,151,120	\$ 81,243,249	\$ 63,400,631	\$ 11,323,781	\$ 51,411,071	\$ 35,169,205	\$ 51,510,829
24	Lifetime Economic Multiplier Benefits	<i>PV of economic multiplier benefits</i>	\$ 212,233,226	\$ 63,587,329	\$ 20,067,232	\$ 6,972,520	\$ 21,457,678	\$ 20,268,620	\$ 69,539,760
	Total Benefit	15+16+17+18+19+20+21+22+23+24	\$ 951,764,829	\$ 225,613,038	\$ 148,151,102	\$ 27,832,780	\$ 127,059,074	\$ 82,564,231	\$ 177,802,211
25	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 60,790,378	\$ 30,672,197	\$ -	\$ -	\$ 20,192,372	\$ -	\$ -
26	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 37,847,167	\$ 20,868,928	\$ 5,408,904	\$ 2,890,933	\$ 11,824,724	\$ 8,120,149	\$ 22,229,628
27	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 113,802,659	\$ 36,542,121	\$ 39,347,697	\$ 3,183,470	\$ 14,423,123	\$ 8,250,939	\$ 78,307,897
	Total Costs	25+26+27	\$ 212,440,204	\$ 88,083,246	\$ 44,756,601	\$ 6,074,402	\$ 46,440,219	\$ 16,371,089	\$ 100,537,525
	Benefit-Cost Ratio	(15+16+17+18+19+20+21+22+23+24)/(25+26+27)	4.5	2.6	3.3	4.6	2.7	5.0	1.8

Cost Benefit Analysis Results		C&I Prescriptive	C&I Custom	C&I Small Non-Residential Efficiency	C&I New Construction	C&I Energy Management	C&I Engineered Solutions	C&I Streetlight	
Total Resource Costs Tests (TRC)									
1	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 411,500,195	\$ 124,292,722	\$ 124,111,426	\$ 23,488,223	\$ 4,774,558	\$ 113,379,282	\$ 37,867,481
2	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 10,808,160	\$ 2,361,721	\$ 2,165,537	\$ 459,398	\$ 59,961	\$ 31,826,555	\$ -
3	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 37,103,055	\$ 9,182,705	\$ 5,455,632	\$ 13,371,025	\$ 1,013,803	\$ 23,198,540	\$ -
4	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 35,308,201	\$ 9,746,378	\$ 9,422,200	\$ 1,894,251	\$ 401,723	\$ 14,892,707	\$ 5,105,401
5	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 77,416,867	\$ 23,497,025	\$ 24,651,261	\$ 4,241,471	\$ 1,006,051	\$ 17,742,938	\$ 7,141,921
6	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 45,941,141	\$ 13,583,715	\$ 13,173,260	\$ 3,731,865	\$ 584,832	\$ 16,840,438	\$ 3,786,748
7	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 30,177,102
8	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 3,241,809	\$ 717,739	\$ 727,566	\$ 132,002	\$ 29,496	\$ 7,334,285	\$ -
	Total Benefit	1+2+3+4+5+6+7+8	\$ 621,319,428	\$ 183,382,004	\$ 179,706,882	\$ 47,318,235	\$ 7,870,425	\$ 225,214,746	\$ 84,078,653
9	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 256,060,285	\$ 56,568,473	\$ 76,734,981	\$ 14,682,952	\$ 1,645,583	\$ 74,559,110	\$ -
10	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 86,250,254	\$ 22,718,131	\$ 14,134,817	\$ 8,312,520	\$ 4,062,941	\$ 43,915,717	\$ 5,089,987
11	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 307,405,589	\$ 56,568,473	\$ 61,743,398	\$ 12,313,533	\$ 1,610,041	\$ 80,607,960	\$ 86,273,051
	Total Costs	9+10+11	\$ 649,716,129	\$ 135,855,077	\$ 152,613,196	\$ 35,309,004	\$ 7,318,565	\$ 199,082,788	\$ 91,363,038
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(9+10+11)	1.0	1.3	1.2	1.3	1.1	1.1	0.9
Participant Cost Test (PCT)									
12	Lifetime Participant Benefits	<i>PV of bill reduction at retail</i>	\$ 846,205,687	\$ 246,129,499	\$ 263,501,981	\$ 62,968,894	\$ 9,863,303	\$ 301,523,092	\$ 18,778,672
	Benefit-Cost Ratio	(11+12)/(9)	4.5	5.4	4.2	5.1	7.0	5.1	n/a
Program Administrator Cost Test (PAC)									
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8)/(10+11)	1.6	2.3	2.4	2.3	1.4	1.8	0.9
Ratepayer Impact Measure Test (RIM)									
13	Lifetime Utility Revenue Gained								\$ 36,205,483
14	Lifetime Utility Cost		\$ 137,189,559	\$ 39,617,590	\$ 46,537,353	\$ 12,146,232	\$ 1,643,556	\$ 49,284,362	\$ -
	Benefit-Cost Ratio	(1+2+3+4+5+6+7+8+13)/(10+11+14)	1.2	1.5	1.5	1.4	1.1	1.3	1.3
Societal Cost Test (SCT)									
15	Lifetime Avoided Electric Supply Costs	<i>PV of electric energy reduction at wholesale</i>	\$ 622,790,230	\$ 186,418,679	\$ 179,952,215	\$ 35,826,253	\$ 6,116,162	\$ 187,494,836	\$ 55,928,084
16	Lifetime Avoided Electric Capacity Costs	<i>PV of peak electric capacity cost</i>	\$ 17,269,455	\$ 3,733,892	\$ 3,277,240	\$ 743,807	\$ 79,442	\$ 55,686,443	\$ -
17	Lifetime Avoided Natural Gas Supply Costs	<i>PV of natural gas reduction at wholesale</i>	\$ 49,407,721	\$ 13,795,682	\$ 7,919,346	\$ 20,421,179	\$ 1,298,034	\$ 38,120,646	\$ -
18	Lifetime Merit Order (DRIPE) Benefits	<i>PV of merit order electric market benefits</i>	\$ 55,100,397	\$ 14,523,299	\$ 13,374,531	\$ 2,919,197	\$ 499,688	\$ 29,775,304	\$ 7,217,150
19	Lifetime REC Avoided Purchases	<i>PV of reduction of REC purchases</i>	\$ 112,989,578	\$ 34,194,808	\$ 35,177,366	\$ 6,224,288	\$ 1,293,263	\$ 27,455,531	\$ 10,043,916
20	Lifetime Wholesale Volatility Value	<i>PV of market hedge value</i>	\$ 68,946,741	\$ 20,394,825	\$ 19,114,880	\$ 5,699,124	\$ 749,364	\$ 28,130,193	\$ 5,592,808
21	Lifetime Avoided Replacement	<i>PV of avoided replacement Costs</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 45,824,877
22	Lifetime Avoided T&D Costs	<i>PV of avoided T&D</i>	\$ 4,791,230	\$ 1,060,084	\$ 1,041,990	\$ 197,900	\$ 37,578	\$ 11,912,373	\$ -
23	Lifetime Emission Savings	<i>PV of CO₂ + NO_x + SO₂ emissions savings</i>	\$ 1,266,729,784	\$ 373,929,364	\$ 348,590,256	\$ 87,447,271	\$ 11,397,218	\$ 381,928,263	\$ 113,700,845
24	Lifetime Economic Multiplier Benefits	<i>PV of economic multiplier benefits</i>	\$ 385,573,130	\$ 154,805,007	\$ 216,119,369	\$ 20,712,757	\$ 12,354,831	\$ 211,008,694	\$ 92,643,693
	Total Benefit	15+16+17+18+19+20+21+22+23+24	\$ 2,583,598,265	\$ 802,855,639	\$ 824,567,194	\$ 180,191,777	\$ 33,825,580	\$ 971,512,283	\$ 330,951,373
25	Lifetime Participant Costs	<i>PV of initial costs & repayments by participants</i>	\$ 297,603,099	\$ 65,807,733	\$ 89,268,012	\$ 17,081,101	\$ 1,914,354	\$ 90,245,358	\$ -
26	Lifetime Administration Costs	<i>PV of administrative costs</i>	\$ 99,991,002	\$ 26,355,060	\$ 16,358,425	\$ 9,611,932	\$ 4,690,598	\$ 50,494,749	\$ 6,504,630
27	Lifetime Program Investment Costs	<i>PV of incentives</i>	\$ 357,448,246	\$ 65,807,733	\$ 71,827,872	\$ 14,324,687	\$ 1,873,008	\$ 98,009,044	\$ 140,529,449
	Total Costs	25+26+27	\$ 755,042,347	\$ 157,970,527	\$ 177,454,310	\$ 41,017,719	\$ 8,477,959	\$ 238,749,151	\$ 147,034,078
	Benefit-Cost Ratio	(15+16+17+18+19+20+21+22+23+24)/(25+26+27)	3.4	5.1	4.6	4.4	4.0	4.1	2.3

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

**IN THE MATTER OF THE PETITION OF PUBLIC
SERVICE ELECTRIC AND GAS COMPANY
FOR APPROVAL OF ITS CLEAN ENERGY FUTURE-
ENERGY EFFICIENCY PROGRAM ON A
REGULATED BASIS**

BPU Docket No. _____

**PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
STEPHEN SWETZ
SR. DIRECTOR – CORPORATE RATES
AND REVENUE REQUIREMENTS**

October 11, 2018

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**PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
STEPHEN SWETZ
SR. DIRECTOR – CORPORATE RATES AND REVENUE REQUIREMENTS**

1 **I. INTRODUCTION AND PURPOSE**

2 **Q. Please state your name and professional title.**

3 A. My name is Stephen Swetz and I am the Sr. Director – Corporate Rates and Revenue
4 Requirements for PSEG Services Corporation. My credentials are set forth in the attached
5 Schedule SS-CEF-1.

6 **Q. What is the purpose of your direct testimony in this proceeding?**

7 A. The purpose of this testimony is to support Public Service Electric and Gas
8 Company’s (“PSE&G” or “the Company”) proposed methodology for recovery of the costs
9 related to PSE&G’s Clean Energy Future - Energy Efficiency Program (“CEF-EE Program”).
10 I will also address projected bill impacts.

11 **II. CEF-EE PROGRAM REVENUE REQUIREMENTS AND COST RECOVERY**

12 **Q. Please briefly summarize PSE&G’s proposed cost recovery program.**

13 A. PSE&G is proposing to recover the revenue requirements associated with the direct
14 costs of the CEF-EE Program. Direct costs include all costs related to CEF-EE Program
15 capital expenditures, allowance for funds used during construction (“AFUDC”), information
16 technology (“IT”) costs and operations and maintenance costs including the administrative

1 costs of running the Program. These costs would be offset by any repayments or other
 2 revenue offsets.

3 **A. Revenue Requirement Formula and Components**

4 **Q. How does PSE&G propose to calculate the revenue requirements on a monthly**
 5 **basis?**

6 A. With the exception of certain light-emitting diode (“LED”) streetlight investments
 7 (discussed below), the CEF-EE Program investments proposed will be treated as regulatory
 8 assets and depending on the type of investment, depreciated or amortized as described in the
 9 corresponding section below. The revenue requirements associated with the direct costs of
 10 the CEF-EE Program would be expressed as:

$$\begin{aligned}
 & \text{Revenue Requirements} = (\text{Pre-tax Cost of Capital} * \text{Net Investment}) + \text{Amortization} \\
 & \text{and/or Depreciation} + \text{Expenses} + \text{Program Investment Repayments} + \text{Revenue} \\
 & \text{Offsets} + \text{Tax Flow-thru} + \text{Tax Adjustments}
 \end{aligned}$$

14 **Q. Please describe the components and defined terms in PSE&G’s proposed**
 15 **monthly revenue requirement calculation.**

16 A. The following is a description of each term proposed in PSE&G’s revenue
 17 requirement calculation.

18 Cost of Capital – This is PSE&G’s requested overall weighted average cost of capital
 19 (“WACC”) for the CEF-EE Program. PSE&G shall earn a return on its net investment in the
 20 CEF-EE Program based upon an authorized return on equity (“ROE”) and capital structure
 21 including income tax effects. The Company is proposing to utilize the latest cost of capital
 22 authorized by the Board in a base rate case proceeding. Since the EE Program is anticipated
 23 to commence after Board approval of the Company’s pending base rate case, the Company is

1 utilizing the WACC submitted in the Company’s pending base rate case for forecasting
2 purposes. See Schedule SS-CEF-EE-1 for the calculation of the current Pre-Tax WACC
3 utilized in the revenue requirement calculation. Any change in the WACC authorized by the
4 Board of Public Utilities (“BPU” or the “Board”) in the pending or any subsequent electric,
5 gas, or combined base rate case would be reflected in the subsequent monthly revenue
6 requirement calculations. Any changes to current tax rates would also be reflected in an
7 adjustment to the After-Tax WACC.

8 Net Investment – This is the Gross Plant-in-Service less associated accumulated depreciation
9 and/or amortization less Accumulated Deferred Income Tax (“ADIT”). The Gross Plant is
10 comprised of:

- 11 1) Program Investment, which includes the regulatory asset associated with the CEF-EE
12 investments and the Company-owned investments associated with the Commercial
13 and Industrial (“C&I”) Street Lighting subprogram (LED streetlight installations,
14 Smart Controllers and Smart Cities);
- 15 2) Capitalized IT Costs; and
- 16 3) The regulatory asset associated with the remaining net plant balance of the High
17 Pressure Sodium (“HPS”) street lights being retired as a result of the CEF-EE
18 Program.

19 With regard to the LED street light installations, Smart Controllers and Smart Cities
20 investments, the Company retains the right to transfer the net investment to base rates in a
21 subsequent base rate case proceeding.

1 ADIT will be computed at all times utilizing a normalization method of accounting
2 as required by applicable IRS and Treasury Regulations for depreciable assets and a flow-
3 thru methodology for all intangible assets. Further, the ADIT balance for the CEF-EE
4 Program depreciable assets incorporate the federal tax proration methodology as required by
5 the IRS for depreciable assets recovered over a forecasted period. The proration
6 methodology and flow-thru methodology utilized in the calculation of ADIT are described in
7 more detail below. The assumptions supporting the capital expenditures related to the
8 Program are found in the direct testimony and workpapers of Karen Reif.

9 Depreciation/Amortization – The depreciation or amortization of the CEF-EE Program assets
10 will vary depending on the type of asset. The table below summarizes the proposed book
11 recovery and associated tax depreciation and tax treatment applied to the corresponding asset
12 classes. The 15 year book recovery of the Residential and C&I Investment is based on the
13 weighted average of the measure lives forecasted to be installed as described in the testimony
14 of Ms. Reif. The Company is proposing to recover the costs associated with the early
15 retirement of all HPS Body Politic Lighting (“BPL”) cobra-head streetlights over a five-year
16 amortization period. The LED Installation, Smart Controller, Smart Cities, and IT Capital
17 cost book recovery is based on the expected useful life of the asset as shown below.

Asset Class	Book Recovery	Tax Amortization / Depreciation	Tax Treatment
Residential and C&I Investment	15 years amort.	100% expense	Flow-Thru
HPS Regulatory Assets	5 years amort.	N/A	Normalization
LED Installation	22 years dep.	7yr MACRS	Proration
Smart Controller	10 years dep.	5yr MACRS	Proration
Smart Cities	7years dep.	5yr MACRS	Proration
IT Software Investment	5 years amort.	3 yrs. SL	Flow-Thru

1 CEF-EE Program Investment Repayments – These repayments from participants will be
2 credited back to customers as an offset to revenue requirements. The CEF-EE Program
3 Investment Repayments consist of repayments of a portion of the grant/rebates provided as
4 described in the testimony of Ms. Reif, as well as the net distribution revenue received from
5 municipalities as a result of the LED installations. The monthly detail and assumptions
6 supporting the CEF-EE program investment repayments can be found in electronic
7 workpapers WP-KR-CEF-EE-1.xlsx.

8 Note: the net distribution revenues as a result of the LED streetlight conversion will
9 be reset at the conclusion of the Company’s next base rate case. For forecasting purposes,
10 the Company assumes the LED net distribution revenue are set to zero in 2024 as PSE&G is
11 required to submit a rate case by no later than December 31, 2023 per the Board Order
12 approving the Gas System Modernization II Program. Further, the Company has assumed
13 approximately 1% of total repayment will not be recovered from participants consistent with
14 the Company’s historical experience as reflected in Schedule KR-CEF-EE-2, Section 4.10,
15 included with the testimony of Ms. Reif.

1 Expenses - The O&M expenses will include predetermined expenses for the administration,
2 marketing, training, program management, inspections, evaluations and quality
3 assurance/quality control required to run the CEF-EE Program. An annual summary of the
4 projected administrative costs can be found in Attachment 1, Schedule KR-CEF-EE-2 from
5 the testimony of Ms. Reif. The monthly detail and assumptions supporting the expenses can
6 be found in electronic workpaper WP-KR-CEF-EE-1.xlsx.

7 Revenue Offsets - Any net revenues received from any future source shall be credited to
8 ratepayers as a reduction to revenue requirements. To the extent that CEF-EE sub-program
9 measures are eligible to bid in the PJM Reliability Pricing Model (“RPM”) Capacity Market
10 Auctions (“Capacity Market”) and such bidding is appropriate, PSE&G will bid the committed
11 energy efficiency capacity from the CEF-EE Program into the Capacity Market. All auction
12 proceeds, net of the costs associated with participation in the RPM auctions, will be credited to
13 ratepayers. However, as detailed in Ms. Reif’s testimony, given current performance rules and
14 the performance risk to customers, the Company has not assumed any capacity revenues for the
15 CEF-EE Program.

16 Tax Flow-Thru – Rather than normalizing the timing difference between book and tax
17 depreciation over the life of the assets, the Company will immediately credit/recover the
18 timing difference between certain book and tax depreciation to customers for eligible assets.

19 Gross-up of Amortization Tax Flow-Thru – As the amortization tax flow-thru impacts above
20 are after-tax, an income tax gross-up is required on the amortization of the flow-thru
21 amount.

1 Tax Adjustments – According to current Internal Revenue Service regulations, the portion
2 of the investment that will be repaid by the participant must be treated as a loan for tax
3 purposes. The portions of the investments that are expected to be repaid by the participant
4 are not tax deductible. Therefore, when the loan portions of the investments are amortized
5 and added to revenue requirements, taxable income increases and current taxes increase.
6 The Company must increase the revenue requirement to pay for the increase in current
7 taxes. Conversely, when the participant repayment is returned to the ratepayers, it is non-
8 taxable revenue, which reduces taxable income and current taxes, which further reduces
9 revenue requirements. While the tax adjustments affect monthly revenue requirements,
10 there is no net impact to ratepayers over the life of the investments and 100% of the
11 participant repayments are returned to the ratepayers.

12 **B. *Monthly Revenue Requirement Calculation***

13 **Q. Please describe the monthly detailed revenue requirement calculations.**

14 A. The monthly detailed calculations of the electric and gas revenue requirements for the
15 initial period (April 1, 2019 through September 30, 2020) along with an annual summary for
16 the entire CEF-EE Program based upon the projected direct costs for electric and gas are
17 shown in Schedules SS-CEF-EE-2E and SS-CEF-EE-2G, respectively. The remaining
18 monthly calculations that support the annual summary for the third year and beyond are
19 available in the electronic workpapers (WP-SS-CEF-EE-1.xlsx, worksheets “RevReqE” &
20 “RevReqG”). Below is a detailed description of the monthly revenue requirements
21 calculations set forth in Columns 1 – 23 of Schedules SS-CEF-EE-2E and SS-CEF-EE-2G.

ATTACHMENT 2

1 CEF-EE Program Investment (Column 1) is an input into the revenue requirements
2 calculation. An annual summary of the projected CEF-EE Program Investments can be
3 found in Attachment 1, Schedule KR-CEF-EE-3. Capitalized IT Costs (Column 2) represent
4 projects necessary for the implementation of the CEF-EE Program. The HPS Regulatory
5 Asset (Column 3) is the remaining net plant balance at the time each HPS streetlight is retired
6 due to replacement with a more efficient LED light. For detailed assumptions regarding the
7 CEF-EE Program investments and capitalized IT costs, see electronic workpaper WP-KR-
8 CEF-EE-1.xlsx. Gross Plant (Column 4) is the cumulative sum of CEF-EE Program
9 Investments (Column 1), Capitalized IT Costs (Column 2) and HPS Regulatory Assets
10 (Column 3). The Net Plant (Column 9) is calculated as the gross plant (Column 4) less the
11 depreciation/amortizations of the Program Investments (Column 5), Capitalized IT Costs
12 (Column 6), and HPS Regulatory Assets from (Column 7). The amortization/depreciation
13 lives for each asset in the CEF-EE Program is described above. The details for the
14 calculation of Tax Amortization / Depreciation (Column 10), Book Amortization /
15 Depreciation – Tax Basis (Column 11), Deferred Income Tax (Column 12), Beginning ADIT
16 Balance (Column 13) and Ending ADIT Balance (Column 14) related to the CEF-EE
17 Program Investments, Capitalized IT Costs and HPS Regulatory Asset are included in the
18 electronic workpapers (WP-SS-CEF-EE-1.xlsx, worksheets “EERegAsset-E”, “EERegAsset-
19 G”, “LEDInstall”, “SmController”, “SmCities”, “HPSRegAsset”, “IT-E”, and “IT-G”). The
20 Average Net Investment (Column 15) is equal to the prior month Net Plant (Column 9) less
21 the Beginning ADIT Balance (Column 13) plus the current month Net Plant (Column 9) less
22 the Ending ADIT Balance (Column 15) divided by 2. The monthly Return Requirement

ATTACHMENT 2

1 (Column 16) is the Average Net Investment (Column 15) multiplied by the Monthly Pre-Tax
2 WACC from Schedule SS-CEF-EE-1. Program Investment Repayments (Column 17) are an
3 input from workpaper WP-KR-CEF-EE-1.xlsx and are an offset to revenue requirements.
4 The Expenses (Column 18) are an input from workpaper WP-KR-CEF-EE-1.xlsx. A
5 breakdown of the Expenses is provided in Attachment 1, Schedule KR-CEF-EE-3. As noted
6 above, the Company is not assuming any revenue offsets at this time but if PSE&G does
7 realize any additional financial benefits the Revenue Offsets (Column 19) will reduce the
8 revenue requirement for the Program. The details of the Tax Flow-Thru (Column 20), Tax
9 Flow-Thru Gross-up (Column 21) and Tax Adjustment on Loan (Column 22) are shown in
10 WP-SS-CEF-EE-1.xlsx, worksheets "EERegAsset-E", "EERegAsset-G", "LEDInstall",
11 "SmController", "SmCities", "HPSRegAsset", "IT-E", and "IT-G". The Monthly Revenue
12 Requirement (Column 18) is calculated as the CEF-EE Program Investment Amortization
13 (Column 4) plus the IT Cost Amortization (Column 5), plus the Return Requirement
14 (Column 13) less the CEF-EE Program Investment Repayments (Column 14) plus the Fixed
15 Administrative Allowance (Column 15) less Cost Offsets (Column 16), plus the Tax
16 Adjustments (Column 17). The Monthly Revenue Requirement (Column 23) is calculated as
17 the Program Investment Amortization (Column 5) plus the IT Cost Amortization (Column 6),
18 plus the HPS Regulatory Asset Amortization (Column 7), plus the Return Requirement
19 (Column 16) less the Program Investment Repayments (Column 17) plus the Expenses
20 (Column 18) less Revenue Offsets (Column 19), plus the Tax Flow-Thru (Column 20), Tax
21 Flow-Thru Gross-up (Column 21), and Tax Adjustment on Loans (Column 22).

1 **C. *Initial Revenue Requirements***

2 **Q. What are the revenue requirements for the initial rate recovery period?**

3 A. The electric and gas revenue requirements for the initial rate period of April 1, 2019
4 to September 30, 2020 are \$32.8 million and \$1.5 million, respectively. See Schedule SS-
5 CEF-EE-3.

6 **D. *Method for Cost Recovery***

7 **Q. Please describe the cost recovery mechanism.**

8 A. Consistent with the cost recovery methodology for the EEE Program, EEE Extension
9 Program, EEE Extension II Program and EE 2017 Program, PSE&G proposes to recover the
10 net revenue requirements associated with these CEF-EE Program components (“CEF-EECs”)
11 as new components of the Company’s electric and gas Green Program Recovery Charges
12 (“GPRC”). The electric CEF-EEC will be applicable to all electric rate schedules on an
13 equal dollar per kilowatt-hour basis for recovery of costs associated with the electric
14 allocation of the CEF-EE Program. The gas CEF-EEC will be applicable to all gas rate
15 schedules on an equal dollar per therm basis for recovery of costs associated with the gas
16 allocation of the CEF-EE Program. The initial CEF-EECs will be based on estimated CEF-
17 EE Program revenue requirements from April 1, 2019 through September 30, 2020.

18 **Q. When is the anticipated implementation of the CEF-EE?**

19 A. PSE&G is proposing to implement the CEF-EE of the GPRC simultaneously with
20 Board approval based upon forecasted expenditures and usage. Since Board approval is
21 anticipated by the end March 2019 for rates effective April 1, 2019, the initial period for
22 determining rates will be from April 1, 2019 through September 30, 2020 consistent with the

1 rate recovery period for similar GPRC programs. If Board approval is received prior to
2 March 31, 2019, rates will still go into effect as filed for the initial rate period. All CEF-EE
3 Program costs incurred prior to April 1, 2019 will be deferred. If Board approval is received
4 after April 1, 2019 but prior to September 30, 2020, the proposed initial rate period charge
5 will still be implemented for the remaining months of the initial rate period. In that instance,
6 all CEF-EE Program costs incurred prior to the rate-effective date will be deferred until rates
7 go into effect.

8 **Q. How is recovery anticipated for the subsequent rate periods?**

9 A. For subsequent rate periods, the CEF-EECs will be changed on an annual basis
10 incorporating a true-up for actuals and an estimate of the revenue requirements for the
11 upcoming recovery period. The calculations of the proposed CEF-EECs are shown in
12 Schedules SS-CEF-EE-4E and SS-CEF-EE-4G, respectively. The Revenue Requirements
13 (Column 1) for each period, initial and all subsequent annual periods, are divided by the
14 forecasted sales, kilowatt-hours for electric and therms for gas, to determine the electric
15 CEF-EEC and gas CEF-EEC (Column 2) without the New Jersey Energy Sales and Use Tax
16 (“SUT”) applied.

17 **E. Projected CEF-EE Bill Impacts**

18 **Q. Please describe the calculation of the bill impacts for the CEF-EE Program.**

19 A. An estimate of rate and bill impacts of the CEF-EE Program has been prepared as
20 Schedules SS-CEF-EE-4E and SS-CEF-EE-4G, respectively. The calculations of CEF-EECs
21 without SUT were previously described in the Method of Direct Cost Recovery section
22 above. The CEF-EECs with SUT (Column 3) are determined by multiplying each CEF-EEC

1 without SUT (Column 2) by one plus the current SUT rate (6.625%) This Rate Impact
2 Analysis uses current rates for calculating the percentage change for all major rate classes.
3 The September 8, 2018 current average rates for all electric rate classes are shown on the first
4 row of Schedule SS-CEF-EE-4E. The September 1, 2018 current average rates for all of the
5 gas rate classes are shown on Schedule SS-CEF-EE-4G. In addition, the typical residential
6 electric and gas annual bill calculations are also shown in Schedule SS-CEF-EE-4E and SS-
7 CEF-EE-4G, respectively.

8 **Q. What are the initial and maximum rates and bill impacts?**

9 A. The expected increase from the electric CEF-EEC for the initial recovery period
10 would be \$0.000514 per kWh without SUT (\$0.000548 per kWh with SUT) with an expected
11 maximum increase occurring in the period from October 1, 2029 through September 30,
12 2030 with a rate of \$0.005626 per kWh without SUT (\$0.005999 per kWh with SUT).

13 PSE&G's typical residential electric customer using 750 kWh in a summer month and
14 7,200 kWh annually would experience an initial increase in their annual bill from \$1,233.72
15 to \$1,237.72 or \$4.00 or approximately 0.32% (based upon Delivery Rates and BGS-RSCP
16 charges in effect September 8, 2018 assuming that the customer receives BGS-RSCP service
17 from PSE&G). The expected maximum increase of \$43.20 or approximately 3.50% is
18 projected to occur in the period from October 2029 to September 2030, based on rates in
19 effect September 8, 2018.

20 The expected increase from the gas CEF-EEC for the initial recovery period would be
21 \$0.000403 per therm without SUT (\$0.000430 per therm with SUT) with an expected

1 maximum increase occurring in the period from October 1, 2031 through September 30,
2 2032 with a rate of \$0.018665 per therm without SUT (\$0.019902 per therm with SUT).

3 PSE&G's typical residential gas heating customers using 165 therms in a winter
4 month and 1,010 therms annually would experience an initial increase in their annual bill
5 from \$879.22 to \$879.64 or \$0.42, or approximately or 0.05% (based upon current Delivery
6 Rates and BGSS-RSG charges in effect September 8, 2018 assuming that the customer
7 receives BGSS service from PSE&G and not including any BGSS-RSG Bill Credits). The
8 expected maximum increase of \$20.04 or approximately 2.28% will occur in the period from
9 October 2031 to September 2032, based on gas rates in effect September 8, 2018.

10 ***F. Other Schedules***

11 **1. Cumulative GPRC Impact**

12 **Q. Do you provide a projection of the cumulative GPRC impact?**

13 A. Yes. Schedules SS-CEF-EE-5E and SS-CEF-EE-5G show the cumulative rate
14 impacts of the electric GPRC plus Solar Pilot Recovery Charge ("SPRC") and the gas GPRC
15 on all of the class average customers as well as on the typical residential customers.

16 **2. Over / Under Calculation**

17 **Q. How will the Company account for any over- or under-recoveries?**

18 A. Under the Company's proposal, any over/under recovery of the actual revenue
19 requirements compared to revenues would be deferred. In calculating the monthly interest on
20 net over and under recoveries, the interest rate shall be based upon the Company's interest
21 rate obtained on its commercial paper and/or bank credit lines utilized in the preceding
22 month. If both commercial paper and bank credit lines have been utilized, the weighted

1 average of both sources of capital shall be used. In the event that neither commercial paper
2 nor bank credit lines were utilized in the preceding month, the last calculated rate will be
3 used. The interest rate shall not exceed PSE&G's overall rate of return as authorized by the
4 Board as utilized in calculating revenue requirements for the corresponding period. The
5 interest amount charged to the CEF-EE Program electric and gas deferred balances will be
6 computed using the methodology set forth in Schedule SS-CEF-EE-6E and SS-CEF-EE-6G,
7 respectively. The calculation of monthly interest shall be based on the net of tax average
8 monthly balance, consistent with the methodology set forth in Schedules SS-CEF-EE-6E and
9 SS-CEF-EE-6G for the CEF-EE Program. Simple interest shall accrue on any under and
10 over recovered balances, and shall be included in the deferred balances at the end of each
11 reconciliation period. Near the end of the initial and each subsequent recovery period, the
12 corresponding electric and gas deferred balances would be included with forecasted revenue
13 requirements for the succeeding period for purpose of setting the revised electric and gas
14 CEF-EECs.

15 3. Income Statement / Balance Sheet

16 Q. Are there any additional items included with this filing?

17 A. Yes, the Board's Order in *I/M/O the Matter of Electric Public Utilities and Gas*
18 *Public Utilities Offering Energy Efficiency and Conservation Programs, investing in Class I*
19 *Renewable Energy Resources, and Offering Class I Renewable Energy Programs in Their*
20 *Respective Service Territories on a Regulated Basis Pursuant to N.J.S.A. 48:3-98.1, BPU*
21 *Docket No. EO08030164 (Order dated May 12, 2008), at Appendix A, § I(a), requires three*
22 *years of a pro-forma Income Statement and Balance Sheet showing the incremental impacts*

1 from the CEF-EE Program. The Income Statement and Balance Sheet for the electric and
2 gas CEF-EE Program for all years is contained in Schedules SS-CEF-EE-7E and SS-CEF-
3 EE-7G, respectively. Note that the amortization of the regulatory asset associated with the
4 CEF-EE Program Investment described above is considered "Customer Assistance Expense"
5 for accounting purposes and is included in the Operations & Maintenance Expense line on
6 the Income Statement.

7 **III. FEDERAL INCOME TAX PRORATION METHODOLOGY**

8 **Q. Why are you utilizing the proration methodology?**

9 A. In accordance with current IRS regulations, the accumulated deferred Federal income
10 tax ("ADFIT") balance used in the calculation of Net Investment must be compliant with the
11 IRS Normalization Rules. This entails applying a proration methodology to the forecasted
12 changes in the ADFIT balance for depreciable utility-owned plant recovered over a
13 forecasted period.

14 **Q. How does the proration methodology work?**

15 A. During the forecasted rate period, which is proposed to be October 1 through
16 September 30 for a program after the initial period, the monthly Federal deferred income tax
17 balance is adjusted by a proration percentage. However, at the conclusion of each rate period
18 the actual ADFIT balance is substituted for the prorated ADFIT balance.

19 **Q. How is the proration percentage calculated?**

20 A. The proration percentage is calculated as a fraction, the numerator of which is the
21 remaining days in the forecasted portion of the rate period after the accrual of a change in the

1 ADFIT balance and the denominator of which is the total number of days in the forecasted
2 portion of the rate period.

3 For example, if the rate period is October 2018 through September 2019, the
4 proration factor for changes in the ADFIT balance occurring in October 2018 is
5 approximately 92%, calculated as the days between October 31, 2018 (the last day of the
6 month) and September 30, 2019 (the end of the rate period), or 335 days, divided by the total
7 days in the rate period (365).

8 **IV. DECOUPLING OR LOST REVENUE ADJUSTMENT MECHANISM**

9 **Q. Will the CEF-EE filing result in lost revenues?**

10 A. Yes. As discussed in the testimony of Ms. Reif, the CEF Program will result in a
11 meaningful reduction in our customers' electric and gas usage. Since most of New Jersey
12 utilities' revenues, including PSE&G's, are based on sales volumes, the CEF-EE Program
13 will cause a meaningful reduction in Company revenues

14 **Q. How does the Company intend to address lost revenues?**

15 A. The Company is reintroducing its decoupling proposal from the pending base rate
16 case and believes that it directly addresses the above conflict by revising our rate design and
17 aligning the interests and objectives of the State, customers, and the Company to pursue
18 conservation and green energy goals. However, there is more than one way to address the
19 recovery of lost revenues. In the event that the Company's decoupling proposal is not
20 approved, the Company would be open to considering another form of decoupling or an
21 annual lost revenue adjustment mechanism.

1 **Q. Why is a decoupling or lost revenue adjustment mechanism essential to**
2 **implementing the Clean Energy Future-Energy Efficiency Program?**

3 A. The majority of PSE&G's distribution revenues is derived from volumetric or
4 demand charges. Therefore, based on current base rate design, the Company has a
5 disincentive to promote energy efficiency as it will result a reduction in revenues that does
6 not correspond with a reduction in distribution costs. The Company's proposed decoupling
7 mechanism removes that disincentive, providing PSE&G with the opportunity to
8 significantly increase its investment in energy efficiency equipment, which will reduce
9 participating customers' bills and emissions as detailed in Ms. Reif's testimony.

10 **Q. Does this conclude your testimony at this time?**

11 A. Yes, it does.

SCHEDULE INDEX

Schedule SS-CEF-1	CEF Steve Swetz Credentials
Schedule SS-CEF-EE-1	CEF-EE Weighted Average Cost of Capital (WACC)
Schedule SS-CEF-EE-2E	CEF-EE Electric Revenue Requirements Calculation
Schedule SS-CEF-EE-2G	CEF-EE Gas Revenue Requirements Calculation
Schedule SS-CEF-EE-3	CEF-EE Proposed Rate Calculation
Schedule SS-CEF-EE-4E	CEF-EE Electric Recovery Charge (GPRC) - Rate Impact Analysis
Schedule SS-CEF-EE-4G	CEF-EE Gas Recovery Charge (GPRC) - Rate Impact Analysis
Schedule SS-CEF-EE-5E	CEF-EE Cumulative Rate Impact Analysis – Solar Pilot Recovery Charge (SPRC) and Electric Green Programs Recovery Charge (GPRC)
Schedule SS-CEF-EE-5G	CEF-EE Cumulative Rate Impact Analysis – Gas Green Programs Recovery Charge (GPRC)
Schedule SS-CEF-EE-6E	CEF-EE Electric Over / Under Balance Calculation
Schedule SS-CEF-EE-6G	CEF-EE Gas Over / Under Balance Calculation
Schedule SS-CEF-EE-7E	CEF-EE Electric Income Statement and Balance Sheet
Schedule SS-CEF-EE-7G	CEF-EE Gas Income Statement and Balance Sheet

ELECTRONIC WORKPAPER INDEX

WP-SS-CEF-EE-1.xlsx	CEF-EE Revenue Requirements Summary and Rate Analysis Calculations
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1 contributed to other filings including unbundling electric rates and Off-Tariff Rate
2 Agreements. I have had a leadership role in various economic analyses, asset valuations,
3 rate design, pricing efforts and cost of service studies.

4 I am an active member of the American Gas Association's Rate and
5 Strategic Issues Committee, the Edison Electric Institute's Rates and Regulatory Affairs
6 Committee and the New Jersey Utility Association (NJUA) Finance and Regulatory
7 Committee.

8 **EDUCATIONAL BACKGROUND**

9 I hold a B.S. in Mechanical Engineering from Worcester Polytechnic
10 Institute and an MBA from Fairleigh Dickinson University.

LIST OF PRIOR TESTIMONIES

Company	Utility	Docket	Testimony	Date	Case / Topic
Public Service Electric & Gas Company	E/G	ER18070688 and GR18070689	written	Jul-18	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, S4AEXT II, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER18060681	written	Jul-18	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR18060675	written	Jun-18	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	EO18060629 - GO18060630	written	Jun-18	Energy Strong II / Revenue Requirements & Rate Design
Public Service Electric & Gas Company	G	GR18060605	written	Jun-18	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER18030231	written	Mar-18	Tax Cuts and Job Acts of 2017
Public Service Electric & Gas Company	E/G	GR18020093	written	Feb-18	Remediation Adjustment Charge-RAC 25
Public Service Electric & Gas Company	E/G	ER18010029 and GR18010030	written	Jan-18	Base Rate Proceeding / Cost of Service & Rate Design
Public Service Electric & Gas Company	E	ER17101027	written	Sep-17	Energy Strong / Revenue Requirements & Rate Design
Public Service Electric & Gas Company	G	GR17070776	written	Jul-17	Gas System Modernization Program II (GSMP II)
Public Service Electric & Gas Company	G	GR17070775	written	Jul-17	Gas System Modernization Program (GSMP) - Second Roll-In
Public Service Electric & Gas Company	G	GR17060720	written	Jul-17	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	ER17070724 - GR17070725	written	Jul-17	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, S4AEXT II, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER17070723	written	Jul-17	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR17060593	written	Jun-17	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER17030324 - GR17030325	written	Mar-17	Energy Strong / Revenue Requirements & Rate Design - Sixth Roll-in
Public Service Electric & Gas Company	E/G	EO14080897	written	Mar-17	Energy Efficiency 2017 Program
Public Service Electric & Gas Company	E	ER17020136	written	Feb-17	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E/G	GR16111064	written	Nov-16	Remediation Adjustment Charge-RAC 24
Public Service Electric & Gas Company	E	ER16090918	written	Sep-16	Energy Strong / Revenue Requirements & Rate Design - Fifth Roll-in
Public Service Electric & Gas Company	E	EO16080788	written	Aug-16	Construction of Mason St Substation
Public Service Electric & Gas Company	E	ER16080785	written	Aug-16	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	G	GR16070711	written	Jul-16	Gas System Modernization Program (GSMP) - First Roll-In
Public Service Electric & Gas Company	G	GR16070617	written	Jul-16	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	ER16070613 - GR16070614	written	Jul-16	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER16070616	written	Jul-16	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR16060484	written	Jun-16	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E	EO16050412	written	May-16	Solar 4 All Extension II (S4AllExt II) / Revenue Requirements & Rate Design
Public Service Electric & Gas Company	E/G	ER16030272 - GR16030273	written	Mar-16	Energy Strong / Revenue Requirements & Rate Design - Fourth Roll-in
Public Service Electric & Gas Company	E/G	GR15111294	written	Nov-15	Remediation Adjustment Charge-RAC 23
Public Service Electric & Gas Company	E	ER15101180	written	Sep-15	Energy Strong / Revenue Requirements & Rate Design - Third Roll-in
Public Service Electric & Gas Company	E/G	ER15070757-GR15070758	written	Jul-15	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER15060754	written	Jul-15	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR15060748	written	Jul-15	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	G	GR15060646	written	Jun-15	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER15050558	written	May-15	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E	ER15050558	written	May-15	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER15030389-GR15030390	written	Mar-15	Energy Strong / Revenue Requirements & Rate Design - Second Roll-in
Public Service Electric & Gas Company	G	GR15030272	written	Feb-15	Gas System Modernization Program (GSMP)
Public Service Electric & Gas Company	E/G	GR14121411	written	Dec-14	Remediation Adjustment Charge-RAC 22
Public Service Electric & Gas Company	E/G	ER14091074	written	Sep-14	Energy Strong / Revenue Requirements & Rate Design - First Roll-in
Public Service Electric & Gas Company	E/G	EO14080897	written	Aug-14	EEE Ext II
Public Service Electric & Gas Company	G	ER14070656	written	Jul-14	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	ER14070651-GR14070652	written	Jul-14	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER14070650	written	Jul-14	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR14050511	written	May-14	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	GR14040375	written	Apr-14	Remediation Adjustment Charge-RAC 21
Public Service Electric & Gas Company	E/G	ER13070603-GR13070604	written	Jun-13	Green Programs Recovery Charge (GPRC)-Including DR, EEE, EEE Ext, CA, S4All, SLII / Cost Recovery
Public Service Electric & Gas Company	E	ER13070605	written	Jul-13	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR13070615	written	Jun-13	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	G	GR13060445	written	May-13	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	EO13020155-GO13020156	written/oral	Mar-13	Energy Strong / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	G	GO12030188	written/oral	Mar-13	Appliance Service / Tariff Support
Public Service Electric & Gas Company	E	ER12070599	written	Jul-12	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER12070606-GR12070605	written	Jul-12	RGGI Recovery Charges (RRC)-Including DR, EEE, EEE Ext, CA, S4All, SLII / Cost Recovery
Public Service Electric & Gas Company	E	EO12080721	written/oral	Jul-12	Solar Loan III (SLIII) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO12080721	written/oral	Jul-12	Solar 4 All Extension(S4AllExt) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	G	GR12060489	written	Jun-12	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	G	GR12060583	written	Jun-12	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	ER12030207	written	Mar-12	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E	ER12030207	written	Mar-12	Non-Utility Generation Charge (NGC) / Cost Recovery

LIST OF PRIOR TESTIMONIES

Company	Utility	Docket	Testimony	Date	Case / Topic
Public Service Electric & Gas Company	G	GR11060338	written	Jun-11	Margin Adjustment Charge (MAC) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	G	GR11060395	written	Jun-11	Weather Normalization Charge / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO11010030	written	Jan-11	Economic Energy Efficiency Extension (EEEext) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E/G	ER10100737	written	Oct-10	RGGI Recovery Charges (RRC)-Including DR, EEE, CA, S4All, SLII / Cost Recovery
Public Service Electric & Gas Company	E/G	ER10080550	written	Aug-10	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E	ER10080550	written	Aug-10	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	E/G	GR09050422	written/oral	Mar-10	Base Rate Proceeding / Cost of Service & Rate Design
Public Service Electric & Gas Company	E	ER10030220	written	Mar-10	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	E	EO09030249	written	Mar-09	Solar Loan II(SLII) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E/G	EO09010056	written	Feb-09	Economic Energy Efficiency(EEE) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO09020125	written	Feb-09	Solar 4 All (S4All) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO08080544	written	Aug-08	Demand Response (DR) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E/G	ER10100737	written	Jun-08	Carbon Abatement (CA) / Revenue Requirements & Rate Design - Program Approval

**PSE&G Clean Energy Future Energy Efficiency Program
Weighted Average Cost of Capital (WACC)**

Schedule SS-CEF-EE-1

	<u>Percent</u>	<u>Cost</u>	<u>Weighted Cost</u>	<u>Revenue Conversion Factor</u>	<u>Pre-Tax Weighted Cost</u>	<u>Discount Rate</u>
Long Term Debt	45.53%	3.9567%	1.8017%	1.0000	1.8017%	
Customer Deposits	<u>0.47%</u>	0.8700%	<u>0.0041%</u>	1.0000	<u>0.0041%</u>	
Sub-total	46.00%		1.8058%		1.8058%	1.2982%
Common Equity	<u>54.00%</u>	10.30%	<u>5.5615%</u>	1.3910	<u>7.7361%</u>	<u>5.5615%</u>
Total	100.00%		7.37%		9.54%	6.8597%
Monthly WACC			0.6139%		0.7952%	

Reflects a tax rate of 28.11%

**PSE&G Clean Energy Future Energy Efficiency Program
Electric Revenue Requirements Calculation**

Schedule SS-CEF-EE-2E

Page 1 of 2

Monthly WACC effective 1/1/2018	0.79516%
Inc. tax rate effective 1/1/2018	28.11%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	<u>Program Investment</u>	<u>Capitalized IT Costs</u>	<u>HPS Regulatory Asset</u>	<u>Gross Plant</u>	<u>Program Investment Amortization</u>	<u>IT Cost Amortization</u>	<u>HPS Regulatory Asset Amortization</u>	<u>Accumulated Amortization</u>	<u>Net Plant</u>	<u>Tax Depreciation</u>	<u>Book Depreciation Tax Basis</u>	<u>Deferred Income Tax</u>	<u>Beginning Accumulated Deferred Income Tax</u>
Monthly Calculation													
Jan-19	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb-19	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar-19	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr-19	2,985,932	-	800,027	3,785,959	9,239	-	6,667	15,906	3,770,053	852,612	9,239	286,381	-
May-19	4,027,319	-	1,200,174	9,013,452	31,122	-	23,335	70,363	8,943,089	921,288	31,122	401,222	286,381
Jun-19	5,079,068	-	1,600,054	15,692,574	59,846	-	46,670	176,879	15,515,694	1,036,397	59,846	517,263	687,603
Jul-19	6,108,787	-	1,999,933	23,801,293	95,378	-	76,670	348,927	23,452,366	1,176,421	95,378	632,152	1,204,866
Aug-19	8,191,395	-	2,800,228	34,792,916	141,094	-	116,672	606,693	34,186,223	1,429,272	141,094	863,400	1,837,018
Sep-19	9,242,624	-	3,199,839	47,235,379	197,055	-	160,005	963,753	46,271,626	1,801,078	197,055	984,206	2,700,419
Oct-19	9,231,524	-	3,199,839	59,666,743	256,418	-	210,001	1,430,172	58,236,571	2,270,920	256,418	1,223,193	4,008,666
Nov-19	9,231,524	-	3,199,839	72,098,106	314,142	-	260,000	2,004,314	70,093,792	2,992,333	314,142	1,356,409	5,231,859
Dec-19	9,242,624	-	3,199,839	84,540,569	372,701	-	309,998	2,687,014	81,853,556	4,446,257	372,701	1,636,462	6,588,269
Jan-20	9,699,774	-	3,199,839	97,440,183	432,562	-	356,660	3,476,235	93,963,948	2,343,495	431,580	1,088,613	8,224,730
Feb-20	9,699,774	-	3,199,839	110,339,797	490,446	-	406,660	4,373,341	105,966,456	2,474,717	487,445	1,074,577	9,313,343
Mar-20	9,855,167	-	3,199,839	123,394,803	549,580	-	459,991	5,382,912	118,011,892	2,774,447	544,559	1,069,213	10,387,919
Apr-20	27,933,305	-	2,800,228	154,128,336	659,713	-	509,991	6,552,616	147,575,720	15,093,231	634,252	1,802,168	11,457,132
May-20	27,694,002	-	2,400,080	184,222,418	819,232	-	553,327	7,925,175	176,297,243	16,030,935	753,873	1,722,054	13,259,300
Jun-20	27,214,159	-	1,999,933	213,436,509	974,103	-	589,994	9,489,272	203,947,238	16,684,056	868,742	1,621,872	14,981,355
Jul-20	16,479,578	-	1,200,174	231,116,261	1,097,908	-	616,662	11,203,841	219,912,420	11,753,479	961,997	1,011,415	16,603,227
Aug-20	21,631,619	-	400,147	253,148,027	1,205,776	-	629,998	13,039,615	240,108,412	15,430,805	1,039,951	1,014,203	17,614,643
Sep-20	21,680,879	68,676,776	400,147	343,905,829	1,327,066	572,306	639,997	15,578,984	328,326,845	17,285,970	1,693,237	1,072,766	18,628,846
	Program Assumption	See WP-SS-CEF-EE-1.xlsx 'ITCap-E' wkshft	Program Assumption	Prior Month + (Col 1 + Col 2 + Col 3)	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wkshft	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wkshft	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wkshft	Prior Month + (Col 5 + Col 6 + Col 7)	Col 4 - Col 8	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wkshft			
Annual Summary													
2019	63,340,797	-	21,199,772	84,540,569	1,476,994	-	1,210,019	2,687,014	81,853,556	16,926,577	1,476,994	7,900,689	6,588,269
2020	235,897,125	68,676,776	18,800,228	407,914,698	12,248,730	4,006,145	6,716,611	25,658,500	382,256,198	154,229,672	14,682,626	15,144,988	24,023,974
2021	291,579,995	-	-	699,494,692	29,512,313	13,163,049	7,993,331	76,327,193	623,167,499	231,132,496	35,533,404	13,387,657	38,823,487
2022	352,705,720	-	-	1,052,200,413	51,089,096	13,735,355	8,000,000	149,151,644	903,048,768	253,878,854	49,714,688	13,082,202	52,850,991
2023	399,936,672	-	-	1,452,137,085	76,140,756	13,735,355	8,000,000	247,027,756	1,205,109,329	266,841,285	65,102,323	12,462,732	65,864,327
2024	439,133,268	4,866,907	-	1,896,137,260	103,996,438	14,465,391	6,919,977	372,409,562	1,523,727,698	271,016,963	82,705,784	11,544,814	77,447,456
2025	110,689,642	-	-	2,006,826,902	125,327,132	11,274,898	1,160,061	510,171,653	1,496,655,249	68,044,030	92,121,087	(2,260,445)	76,585,368
2026	25,096,017	-	-	2,031,922,918	128,073,071	973,381	-	639,218,106	1,392,704,813	15,656,783	82,736,745	(5,244,107)	71,118,875
2027	6,437,701	-	-	2,038,360,619	127,761,291	973,381	-	767,952,778	1,270,407,841	4,701,424	81,597,024	(6,055,890)	64,552,224
2028	-	-	-	2,038,360,619	127,593,399	973,381	-	896,519,558	1,141,841,061	625,951	81,106,383	(6,396,406)	57,536,501
2029	-	-	-	2,038,360,619	127,067,541	243,345	-	1,023,830,445	1,014,530,174	322,022	79,550,256	(6,238,815)	50,637,074
2030	-	-	-	2,038,360,619	124,263,014	-	-	1,148,093,459	890,667,160	95,734	76,276,096	(5,740,317)	44,535,051
2031	-	-	-	2,038,360,619	123,698,196	-	-	1,271,791,655	766,568,964	48,279	75,663,822	(5,634,602)	38,652,001
2032	-	-	-	2,038,360,619	123,698,196	-	-	1,395,489,851	642,870,768	7,160	75,622,703	(5,634,337)	32,769,003
2033	-	-	-	2,038,360,619	123,698,196	-	-	1,519,188,047	519,172,572	-	75,615,543	(5,634,550)	26,895,978
2034	-	-	-	2,038,360,619	123,514,977	-	-	1,642,703,023	395,657,596	-	75,432,324	(5,621,523)	21,013,246
2035	-	-	-	2,038,360,619	118,468,803	-	-	1,761,171,827	277,188,792	-	72,006,176	(5,377,976)	15,341,205
2036	-	-	-	2,038,360,619	102,294,555	-	-	1,863,466,381	174,894,238	-	61,551,655	(4,634,395)	10,386,707
2037	-	-	-	2,038,360,619	80,814,937	-	-	1,944,281,318	94,079,301	-	48,240,537	(3,688,187)	6,365,643
2038	-	-	-	2,038,360,619	55,794,300	-	-	2,000,075,618	38,285,001	-	33,144,437	(2,614,855)	3,408,218
2039	-	-	-	2,038,360,619	27,938,670	-	-	2,028,014,288	10,346,331	-	16,571,273	(1,436,555)	1,621,096
2040	-	-	-	2,038,360,619	6,607,977	-	-	2,034,622,265	3,738,354	-	4,144,083	(552,716)	791,680
2041	-	-	-	2,038,360,619	3,272,128	-	-	2,037,894,394	466,225	-	2,534,416	(395,072)	140,825
2042	-	-	-	2,038,360,619	465,598	-	-	2,038,359,991	628	(0)	396,226	(69,161)	320
2043	-	-	-	2,038,360,619	628	-	-	2,038,360,619	-	-	628	(130)	-
Total	1,924,816,937	73,543,682	40,000,000	1,924,816,937	73,543,682	40,000,000				1,283,527,230	1,283,527,230	293,041	
Apr 19 - Sep 20	235,229,053				9,033,379	572,306	5,973,299			116,797,712	8,892,631	19,377,570	

**PSE&G Clean Energy Future Energy Efficiency Program
Electric Revenue Requirements Calculation**

Schedule SS-CEF-EE-2E

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Monthly WACC effective 1/1/2018	0.79516%
Inc. tax rate effective 1/1/2018	28.11%

	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
	Ending Accumulated Deferred Income Tax	Average Net Investment	Return Requirement	Program Investment Repayments	Expenses	Revenue Offsets	Tax Flow-through Tax Flow-through	Tax Flow-Through Gross-up	Tax Adjustment on Loan	Revenue Requirements
Monthly Calculation										
Jan-19	-	-	-	-	-	-	-	-	-	-
Feb-19	-	-	-	-	-	-	-	-	-	-
Mar-19	-	-	-	-	-	-	-	-	-	-
Apr-19	286,381	1,741,836	13,850	(5,153)	1,554,115	-	(169,927)	(66,444)	-	1,342,348
May-19	687,603	5,869,579	46,672	(13,370)	1,554,115	-	(168,980)	(66,074)	-	1,406,821
Jun-19	1,204,866	11,283,157	89,719	(25,075)	1,554,115	-	(170,358)	(66,612)	-	1,488,305
Jul-19	1,837,018	17,963,088	142,835	(38,025)	1,554,115	-	(167,074)	(65,328)	-	1,598,571
Aug-19	2,700,419	26,550,576	211,119	(54,511)	1,554,115	-	(166,127)	(64,958)	-	1,737,403
Sep-19	3,684,625	37,036,403	294,498	(71,785)	1,554,115	-	(167,505)	(65,497)	-	1,900,886
Oct-19	5,231,859	47,633,836	378,764	(83,830)	1,554,115	-	(164,221)	(64,213)	-	2,087,035
Nov-19	6,588,269	58,255,118	463,220	(97,761)	1,554,115	-	(163,274)	(63,843)	-	2,266,600
Dec-19	8,224,730	68,567,175	545,218	(107,939)	1,554,115	-	(164,652)	(64,381)	-	2,445,060
Jan-20	9,313,343	79,139,715	629,286	(135,058)	1,554,115	-	(181,228)	(70,863)	(2,028)	2,583,445
Feb-20	10,387,919	90,114,571	716,554	(178,073)	1,554,115	-	(180,171)	(70,449)	(3,651)	2,735,430
Mar-20	11,457,132	101,066,648	803,640	(204,067)	1,554,115	-	(211,655)	(82,760)	(5,273)	2,863,570
Apr-20	13,259,300	120,435,589	957,654	(361,123)	2,768,424	-	(2,760,745)	(1,079,490)	(44,943)	649,480
May-20	14,981,355	147,816,154	1,175,372	(507,690)	2,768,424	-	(2,913,268)	(1,139,129)	(77,004)	679,264
Jun-20	16,603,227	174,329,949	1,386,199	(654,124)	2,768,424	-	(3,006,582)	(1,175,616)	(109,024)	773,374
Jul-20	17,614,643	194,820,894	1,549,135	(718,179)	2,768,424	-	(1,938,074)	(757,814)	(121,522)	2,496,539
Aug-20	18,628,846	211,888,672	1,684,850	(830,694)	2,768,424	-	(2,689,150)	(1,051,495)	(157,487)	1,560,221
Sep-20	19,701,612	265,052,400	2,107,586	(942,963)	2,768,424	-	(2,933,404)	(1,147,002)	(189,387)	2,202,623
	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	(Prev Col 9 - Col 13 + Col 9 - Col 14) / 2	Col 15 * Monthly Pre Tax WACC	See WP-SS-CEF-EE-1.xlsx 'Rev-Exp' wksht	See WP-SS-CEF-EE-1.xlsx 'Rev-Exp' wksht	Program Assumption	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	Col 5 + Col 6 + Col 7 + Col 16 + Col 17 + Col 18 + Col 19 + Col 20 + Col 21 + Col 22
Annual Summary										
2019	8,224,730	68,567,175	2,185,896	(497,449)	13,987,037	-	(1,502,120)	(587,350)	-	16,273,028
2020	25,248,733	348,432,751	18,919,790	(7,993,646)	29,578,159	-	(25,680,592)	(10,041,472)	(1,469,686)	26,284,039
2021	40,324,283	569,221,143	43,365,715	(25,096,339)	34,860,279	-	(37,687,177)	(14,736,216)	(5,837,151)	45,537,805
2022	54,257,139	833,972,355	66,822,219	(47,550,524)	36,669,252	-	(41,276,213)	(16,139,579)	(11,477,864)	59,871,742
2023	67,106,437	1,122,129,858	93,210,796	(76,680,487)	38,389,792	-	(41,643,523)	(16,283,203)	(19,065,180)	75,804,306
2024	78,768,267	1,428,291,491	121,647,846	(107,029,641)	40,056,868	-	(39,346,835)	(15,385,165)	(27,868,977)	97,455,901
2025	76,317,679	1,421,884,335	138,781,823	(126,958,802)	15,866,201	-	4,619,687	1,806,362	(32,250,002)	139,627,360
2026	70,619,138	1,327,129,409	130,943,657	(115,512,394)	4,653,477	-	13,142,531	5,138,914	(27,059,223)	140,353,416
2027	64,011,613	1,211,482,872	120,758,088	(97,704,006)	2,690,401	-	14,998,436	5,864,599	(19,772,156)	155,570,034
2028	56,974,355	1,089,942,582	109,298,470	(69,431,894)	1,903,275	-	15,576,915	6,090,793	(8,591,164)	183,413,175
2029	50,114,724	969,397,631	97,734,343	(35,931,592)	1,626,670	-	15,423,608	6,030,847	4,625,320	216,820,082
2030	44,054,380	851,126,536	86,363,547	(10,682,144)	959,344	-	15,372,505	6,010,865	14,586,691	236,873,826
2031	38,171,304	733,311,403	75,117,472	(5,387,002)	767,206	-	15,372,505	6,010,865	16,675,721	232,254,963
2032	32,288,332	615,496,192	63,875,661	(798,868)	790,222	-	15,372,505	6,010,865	18,485,825	227,434,406
2033	26,405,307	497,681,021	52,633,860	0	813,929	-	15,372,505	6,010,865	18,800,993	217,330,348
2034	20,535,310	380,018,173	41,396,137	0	838,347	-	15,334,029	5,995,821	18,800,993	205,880,303
2035	14,908,860	266,709,896	30,301,091	0	211,124	-	14,614,538	5,714,490	18,167,540	187,477,586
2036	10,025,830	168,541,065	20,221,950	0	-	-	12,419,089	4,856,038	15,931,046	155,722,678
2037	6,089,169	90,731,163	11,875,313	0	-	-	9,623,754	3,763,023	12,737,048	118,814,074
2038	3,225,841	36,742,073	5,657,465	0	-	-	6,453,573	2,523,438	8,856,415	79,285,190
2039	1,540,812	9,325,050	1,859,234	0	-	-	2,973,208	1,162,566	4,444,812	38,378,491
2040	739,461	3,171,088	514,384	0	-	-	363,498	142,133	963,417	8,591,409
2041	114,107	412,019	132,457	-	-	-	94,673	37,019	288,456	3,824,733
2042	223	565	4,475	-	-	-	8,903	3,481	27,125	509,582
2043	-	-	3	-	-	-	-	-	-	631
Total			1,333,621,691	(727,254,789)	224,661,584	-	(0)	(0)	0	2,869,389,105
Apr 19 - Sep 20			13,196,172	(5,029,422)	35,259,925	-	(18,316,398)	(7,161,969)	(710,319)	32,816,973

**PSE&G Clean Energy Future Energy Efficiency Program
Gas Revenue Requirements Calculation**

Monthly WACC effective 1/1/2018	0.79516%
Inc. tax rate effective 1/1/2018	28.110%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	<u>Program Investment</u>	<u>Capitalized IT Costs</u>	<u>HPS Regulatory Asset</u>	<u>Gross Plant</u>	<u>Program Investment Amortization</u>	<u>IT Cost Amortization</u>	<u>HPS Regulatory Asset Amortization</u>	<u>Accumulated Amortization</u>	<u>Net Plant</u>	<u>Tax Depreciation</u>	<u>Book Depreciation Tax Basis</u>	<u>Deferred Income Tax</u>	<u>Beginning Accumulated Income Tax</u>
Monthly Calculation													
Jan-19	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb-19	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar-19	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr-19	463,383	-	-	463,383	1,287	-	-	1,287	462,096	463,383	1,287	32,855	-
May-19	463,383	-	-	926,767	3,862	-	-	5,149	921,618	463,383	3,862	32,672	32,855
Jun-19	467,889	-	-	1,394,656	6,448	-	-	11,597	1,383,059	467,889	6,448	32,808	65,527
Jul-19	463,383	-	-	1,858,039	9,035	-	-	20,632	1,837,407	463,383	9,035	32,304	98,335
Aug-19	463,383	-	-	2,321,422	11,610	-	-	32,242	2,289,181	463,383	11,610	32,121	130,640
Sep-19	467,889	-	-	2,789,312	14,196	-	-	46,438	2,742,873	467,889	14,196	32,258	162,761
Oct-19	463,383	-	-	3,252,695	16,783	-	-	63,222	3,189,473	463,383	16,783	31,753	195,018
Nov-19	463,383	-	-	3,716,078	19,358	-	-	82,580	3,633,499	463,383	19,358	31,570	226,772
Dec-19	467,889	-	-	4,183,967	21,945	-	-	104,524	4,079,443	467,889	21,945	31,707	258,342
Jan-20	653,467	-	-	4,837,434	25,059	-	-	129,584	4,707,850	501,904	24,661	33,932	290,048
Feb-20	653,467	-	-	5,490,901	28,690	-	-	158,273	5,332,627	501,927	27,472	33,734	323,980
Mar-20	716,547	-	-	6,207,448	32,495	-	-	190,769	6,016,679	565,030	30,458	38,008	357,714
Apr-20	5,540,795	-	-	11,748,243	49,877	-	-	240,646	11,507,598	4,621,983	45,004	325,423	395,722
May-20	6,134,545	-	-	17,882,789	82,308	-	-	322,954	17,559,835	5,215,871	72,468	365,696	721,145
Jun-20	6,504,056	-	-	24,386,845	117,416	-	-	440,370	23,946,475	5,570,272	102,566	388,754	1,086,841
Jul-20	4,594,253	-	-	28,981,098	148,244	-	-	588,614	28,392,484	4,037,098	129,334	277,842	1,475,595
Aug-20	5,525,785	-	-	34,506,884	176,356	-	-	764,970	33,741,914	4,607,471	153,481	316,679	1,753,437
Sep-20	5,404,160	12,123,881	-	52,034,924	206,716	101,032	-	1,072,718	50,962,206	4,762,452	279,739	318,721	2,070,116
	Program Assumption	See WP-SS-CEF-EE-1.xlsx 'ITCap-G' wksht	N/A	Prior Month + (Col 1 + Col 2 + Col 3)	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	Prior Month + (Col 5 + Col 6 + Col 7)	Col 4 - Col 8	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht			
Annual Summary													
2019	4,183,967	-	-	4,183,967	104,524	-	-	104,524	4,079,443	4,183,967	104,524	290,048	258,342
2020	53,702,545	12,123,881	-	70,010,394	1,678,048	707,226	-	2,489,799	67,520,595	46,653,993	2,168,019	3,162,953	3,077,677
2021	74,657,813	-	-	144,668,207	6,111,124	2,323,744	-	10,924,666	133,743,540	62,775,172	7,446,055	3,933,900	6,955,487
2022	84,148,471	-	-	228,816,677	11,420,193	2,424,776	-	24,769,636	204,047,042	66,185,310	11,611,925	3,880,168	10,855,201
2023	91,597,067	-	-	320,413,744	17,276,765	2,424,776	-	44,471,177	275,942,567	68,689,452	15,910,196	3,752,605	14,635,321
2024	97,225,108	889,662	-	418,528,514	23,556,941	2,558,225	-	70,586,343	347,942,170	70,211,337	20,602,244	3,527,207	18,160,616
2025	32,442,213	-	-	450,970,727	28,454,707	1,996,514	-	101,037,565	349,933,162	18,943,013	23,472,453	(322,043)	18,271,966
2026	10,187,575	-	-	461,158,302	29,568,061	177,932	-	130,783,558	330,374,744	4,333,650	22,123,364	(1,264,849)	17,087,018
2027	2,613,345	-	-	463,771,648	30,005,170	177,932	-	160,966,661	302,804,987	1,203,549	22,279,175	(1,498,477)	15,592,653
2028	-	-	-	463,771,648	30,050,540	177,932	-	191,195,133	272,576,514	124,570	22,258,100	(1,573,694)	14,018,959
2029	-	-	-	463,771,648	30,050,540	44,483	-	221,290,157	242,481,491	77,336	22,077,417	(1,564,206)	12,453,699
2030	-	-	-	463,771,648	30,050,540	-	-	251,340,697	212,430,951	38,419	21,994,017	(1,561,043)	10,892,656
2031	-	-	-	463,771,648	30,050,540	-	-	281,391,237	182,380,410	19,902	21,975,500	(1,561,043)	9,331,613
2032	-	-	-	463,771,648	30,050,540	-	-	311,441,778	152,329,870	2,951	21,958,549	(1,561,043)	7,770,570
2033	-	-	-	463,771,648	30,050,540	-	-	344,492,318	122,279,330	-	21,955,598	(1,561,043)	6,209,527
2034	-	-	-	463,771,648	29,946,016	-	-	371,438,334	92,333,313	-	21,851,074	(1,553,611)	4,654,355
2035	-	-	-	463,771,648	28,372,492	-	-	399,810,826	63,960,821	-	20,501,435	(1,457,652)	3,179,784
2036	-	-	-	463,771,648	23,939,416	-	-	423,750,243	40,021,405	-	16,859,573	(1,198,716)	1,958,099
2037	-	-	-	463,771,648	18,630,347	-	-	442,380,590	21,391,058	-	12,821,665	(911,620)	1,021,966
2038	-	-	-	463,771,648	12,773,775	-	-	455,154,365	8,617,283	-	8,564,621	(608,945)	387,053
2039	-	-	-	463,771,648	6,493,600	-	-	461,647,964	2,123,683	-	4,053,247	(288,186)	71,367
2040	-	-	-	463,771,648	1,595,833	-	-	463,243,798	527,850	-	653,651	(46,475)	16,376
2041	-	-	-	463,771,648	482,479	-	-	463,726,277	45,371	-	183,009	(13,012)	1,621
2042	-	-	-	463,771,648	45,371	-	-	463,771,648	(0)	-	17,210	(1,224)	-
2043	-	-	-	463,771,648	-	-	-	463,771,648	(0)	-	-	-	-
Total	450,758,105	13,013,543	-	450,758,105	13,013,543	-	-	-	343,442,622	343,442,622	-	0	-
Apr 19 - Sep 20	39,911,043	-	-	39,911,043	971,686	101,032	-	-	-	34,567,975	969,708	2,388,837	-

**PSE&G Clean Energy Future Energy Efficiency Program
Gas Revenue Requirements Calculation**

Schedule SS-CEF-EE-2G

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Monthly WACC effective 1/1/2018	0.79516%
Inc. tax rate effective 1/1/2018	28.11%

	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
	<u>Ending</u> <u>Accumulated</u> <u>Deferred Income</u> <u>Tax</u>	<u>Average Net</u> <u>Investment</u>	<u>Return</u> <u>Requirement</u>	<u>Program</u> <u>Investment</u> <u>Repayments</u>	<u>Expenses</u>	<u>Revenue Offsets</u>	<u>Tax Flow-through</u>	<u>Tax Flow-Through</u> <u>Gross-up</u>	<u>Tax Adjustment</u> <u>on Loan</u>	<u>Revenue</u> <u>Requirements</u>
Monthly Calculation										
Jan-19	-	-	-	-	-	-	-	-	-	-
Feb-19	-	-	-	-	-	-	-	-	-	-
Mar-19	-	-	-	-	-	-	-	-	-	-
Apr-19	32,855	214,621	1,707	-	403,994	-	(97,040)	(37,944)	-	272,004
May-19	65,527	642,666	5,110	-	403,994	-	(96,500)	(37,733)	-	278,733
Jun-19	98,335	1,070,407	8,511	-	403,994	-	(96,903)	(37,890)	-	284,161
Jul-19	130,640	1,495,745	11,894	-	403,994	-	(95,413)	(37,308)	-	292,202
Aug-19	162,761	1,916,593	15,240	-	403,994	-	(94,872)	(37,096)	-	298,875
Sep-19	195,018	2,337,137	18,584	-	403,994	-	(95,275)	(37,254)	-	304,245
Oct-19	226,772	2,755,278	21,909	-	403,994	-	(93,786)	(36,672)	-	312,229
Nov-19	258,342	3,168,929	25,198	-	403,994	-	(93,245)	(36,460)	-	318,844
Dec-19	290,048	3,582,276	28,485	-	403,994	-	(93,648)	(36,618)	-	324,157
Jan-20	323,980	4,086,633	32,495	(2,504)	403,994	-	(100,221)	(39,188)	(823)	318,812
Feb-20	357,714	4,679,392	37,209	(5,009)	403,994	-	(99,635)	(38,959)	(1,482)	324,807
Mar-20	395,722	5,297,935	42,127	(7,513)	403,994	-	(112,260)	(43,895)	(2,141)	312,807
Apr-20	721,145	8,203,705	65,232	(22,695)	753,066	-	(96,165)	(375,829)	(6,969)	(498,483)
May-20	1,086,841	13,629,723	108,378	(37,878)	753,066	-	(1,080,115)	(422,340)	(10,963)	(607,543)
Jun-20	1,475,595	19,471,937	154,833	(53,061)	753,066	-	(1,148,218)	(448,970)	(14,941)	(639,875)
Jul-20	1,753,437	24,554,964	195,251	(62,275)	753,066	-	(820,630)	(320,878)	(16,956)	(124,178)
Aug-20	2,070,116	29,155,423	231,832	(77,457)	753,066	-	(935,338)	(365,730)	(21,343)	(238,615)
Sep-20	2,388,837	40,122,583	319,038	(92,640)	753,066	-	(941,370)	(368,089)	(25,271)	(47,517)
	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	(Prev Col 9 - Col 13 + Col 9 - Col 14) / 2	Col 15 * Monthly Pre Tax WACC	See WP-SS-CEF-EE-1.xlsx 'Rev-Exp' wksht	See WP-SS-CEF-EE-1.xlsx 'Rev-Exp' wksht	N/A	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	See WP-SS-CEF-EE-1.xlsx 'BkTaxSum' wksht	Col 5 + Col 6 + Col 7 + Col 16 + Col 17 + Col 18 + Col 19 + Col 20 + Col 21 + Col 22
Annual Summary										
2019	290,048	3,582,276	136,637	-	3,635,946	-	(856,683)	(334,975)	-	2,685,449
2020	3,453,001	61,365,795	2,524,985	(728,425)	7,989,578	-	(9,342,055)	(3,652,875)	(199,875)	(1,023,391)
2021	7,386,901	122,502,332	8,803,382	(2,888,271)	9,403,128	-	(11,619,115)	(4,543,237)	(742,715)	6,848,041
2022	11,267,069	188,990,055	14,966,956	(5,847,330)	9,824,727	-	(11,460,411)	(4,481,182)	(1,413,236)	15,434,494
2023	15,019,674	257,077,529	21,386,676	(10,377,233)	10,232,888	-	(11,083,644)	(4,333,860)	(2,575,175)	22,951,193
2024	18,546,881	325,541,676	27,917,948	(15,566,232)	10,634,086	-	(10,417,910)	(4,073,549)	(3,930,986)	30,678,524
2025	18,224,838	331,419,272	31,989,995	(19,117,898)	4,413,606	-	951,182	371,926	(4,746,570)	44,313,463
2026	16,959,989	314,567,103	30,827,865	(18,991,798)	1,145,431	-	3,735,840	1,460,766	(4,445,505)	43,478,594
2027	15,461,512	288,537,424	28,721,257	(17,894,200)	505,332	-	4,425,882	1,730,582	(3,906,337)	43,765,617
2028	13,887,818	259,882,646	26,050,922	(13,687,570)	307,481	-	4,648,041	1,817,449	(2,235,504)	47,129,292
2029	12,323,612	231,344,941	23,321,147	(8,497,548)	235,299	-	4,620,017	1,806,492	(187,664)	51,392,766
2030	10,762,569	202,855,444	20,602,215	(4,221,404)	105,405	-	4,610,676	1,802,839	1,499,586	54,449,856
2031	9,201,526	174,365,947	17,883,776	(2,186,821)	67,405	-	4,610,676	1,802,839	2,302,376	54,530,792
2032	7,640,483	145,876,449	15,165,336	(324,296)	69,428	-	4,610,676	1,802,839	3,037,278	54,411,801
2033	6,079,440	117,386,952	12,446,897	0	71,510	-	4,610,676	1,802,839	3,165,236	52,147,698
2034	4,525,829	88,984,355	9,730,787	0	73,656	-	4,588,726	1,794,256	3,165,236	49,298,677
2035	3,068,177	61,936,880	7,065,379	0	18,549	-	4,305,301	1,683,433	3,077,694	44,522,849
2036	1,869,461	39,004,126	4,688,055	0	-	-	3,540,510	1,384,389	2,768,318	36,320,689
2037	957,840	21,064,352	2,752,700	0	-	-	2,692,550	1,052,825	2,271,276	27,399,698
2038	348,896	8,658,889	1,322,936	-	-	-	1,798,570	703,266	1,645,838	18,244,386
2039	60,710	2,197,950	443,634	-	-	-	851,182	332,824	954,212	9,075,451
2040	14,236	552,228	109,783	-	-	-	137,267	53,673	368,407	2,264,963
2041	1,224	51,309	20,877	-	-	-	38,432	15,027	117,097	673,912
2042	-	(0)	716	-	-	-	3,614	1,413	11,011	62,125
2043	-	(0)	(0)	-	-	-	-	-	-	(0)
Total			308,880,863	(120,329,026)	58,733,457	-	(0)	(0)	0	711,056,942
Apr 19 - Sep 20			1,323,032	(361,032)	9,366,326	-	(7,055,636)	(2,758,853)	(100,890)	1,485,665

PSE&G Clean Energy Future Energy Efficiency Program Proposed Rate Calculations

Schedule SS-CEF-EE-3

(\$'s Unless Specified)

Current SUT Rate 6.625%

<u>Line</u>	<u>Date(s)</u>		<u>Electric</u>	<u>Gas</u>	<u>Source/Description</u>
1	Apr 19 - Sep 20	Revenue Requirements	32,816,973	1,485,665	SS-2E/G, Col 23
2	Apr 19 - Sep 20	Forecasted (\$/kWh or \$/Therm)	63,853,501	3,683,165	
3		Proposed Rate w/o SUT (\$/kWh or \$/Therm)	0.000514	0.00040300	Line 1 / Line 2 [Rnd 6]
4		Public Notice Rate w/o SUT (\$/kWh)	0.000514	0.000403	Line 3
5		Proposed Rate w/ SUT (\$/kWh or \$/Therm)	0.000548	0.000430	(Line 3 * (1 + SUT Rate)) [Rnd 6]
6		Existing Rate w/o SUT (\$/kWh or \$/Therm)	0.000000	0.000000	
7		Difference in Proposed and Existing Rate	0.000514	0.000403	(Line 3 - Line 6)
8		Resultant CEF-EE Program Revenue Increase / (Decrease)	32,820,700	1,484,316	(Line 2 * Line 7 * 1,000)

PSE&G Clean Energy Future Energy Efficiency Program
Electric GPRC Recovery Charge (GPRC) - Rate Impact Analysis

Schedule SS-CEF-EE-4E

6.625% SUT Rate effective 1/1/2018
 63,853,501 kWh Sales (000) - Apr 19 - Sep 20
 41,942,182 kWh Sales (000) - Oct 20 - thereafter

7,200 Avg RS kWh / yr.
 750 Avg RS kWh / Summer Month
 525 Avg RS kWh / Winter Month

0.001073 Current electric GPRC (\$/kWh)

(1)	(2)	(3)	(4)-(10) Class Average Rate w/SUT - \$/kWh ¹							(11)-(13) Typical RS GPRC (\$)			(14) Change in RS Typical Annual Bill (\$'s)	(15) RS Typical Annual Bill (\$'s) ³	(16) % Change in RS Typical Annual Bill			
			Electric CEF-EE Revenue Requirements ²	Electric CEF-EE w/o SUT (\$/kWh)	Electric CEF-EE w/ SUT (\$/kWh) ³	RS	RHS	RLM	GLP	LPL-S	LPL-P	HTS-S				Summer Monthly Bill	Winter Monthly Bill	Annual Bill
Apr 19 - Sep 20	32,816,973	0.000514	0.000548	0.171898	0.136381	0.170369	0.162849	0.132337	0.109572	0.096090	1.22	0.85	11.68	\$4.00	1,237.72	0.32%		
Oct 20 - Sep 21	44,266,651	0.001055	0.001125	0.172475	0.136958	0.170946	0.163426	0.132914	0.110149	0.096667	1.65	1.15	15.80	\$8.12	1,241.84	0.66%		
Oct 21 - Sep 22	56,319,335	0.001343	0.001432	0.172782	0.137265	0.171253	0.163733	0.133221	0.110456	0.096974	1.88	1.32	18.08	\$10.40	1,244.12	0.84%		
Oct 22 - Sep 23	70,918,478	0.001691	0.001803	0.173153	0.137636	0.171624	0.164104	0.133592	0.110827	0.097345	2.16	1.51	20.72	\$13.04	1,246.76	1.06%		
Oct 23 - Sep 24	93,912,893	0.002239	0.002387	0.173737	0.138220	0.172208	0.164688	0.134176	0.111411	0.097929	2.60	1.82	24.96	\$17.28	1,251.00	1.40%		
Oct 24 - Sep 25	129,023,029	0.003076	0.003280	0.174630	0.139113	0.173101	0.165581	0.135069	0.112304	0.098822	3.26	2.29	31.36	\$23.68	1,257.40	1.92%		
Oct 25 - Sep 26	137,340,580	0.003275	0.003492	0.174842	0.139325	0.173313	0.165793	0.135281	0.112516	0.099034	3.42	2.40	32.88	\$25.20	1,258.92	2.04%		
Oct 26 - Sep 27	150,788,983	0.003595	0.003833	0.175183	0.139666	0.173654	0.166134	0.135622	0.112857	0.099375	3.68	2.58	35.36	\$27.68	1,261.40	2.24%		
Oct 27 - Sep 28	175,583,622	0.004186	0.004463	0.175813	0.140296	0.174284	0.166764	0.136252	0.113487	0.100005	4.15	2.91	39.88	\$32.20	1,265.92	2.61%		
Oct 28 - Sep 29	208,195,331	0.004964	0.005293	0.176643	0.141126	0.175114	0.167594	0.137082	0.114317	0.100835	4.77	3.34	45.80	\$38.12	1,271.84	3.09%		
Oct 29 - Sep 30	235,967,988	0.005626	0.005999	0.177349	0.141832	0.175820	0.168300	0.137788	0.115023	0.101541	5.30	3.71	50.88	\$43.20	1,276.92	3.50%		
Oct 30 - Sep 31	233,335,379	0.005563	0.005932	0.177282	0.141765	0.175753	0.168233	0.137721	0.114956	0.101474	5.25	3.68	50.44	\$42.76	1,276.48	3.47%		
Oct 31 - Sep 32	229,018,317	0.005460	0.005822	0.177172	0.141655	0.175643	0.168123	0.137611	0.114846	0.101364	5.17	3.62	49.64	\$41.96	1,275.68	3.40%		
Oct 32 - Sep 33	220,134,829	0.005249	0.005597	0.176947	0.141430	0.175418	0.167898	0.137386	0.114621	0.101139	5.00	3.50	48.00	\$40.32	1,274.04	3.27%		
Oct 33 - Sep 34	208,813,316	0.004979	0.005309	0.176659	0.141142	0.175130	0.167610	0.137098	0.114333	0.100851	4.79	3.35	45.96	\$38.28	1,272.00	3.10%		
Oct 34 - Sep 35	193,843,824	0.004622	0.004928	0.176278	0.140761	0.174749	0.167229	0.136717	0.113952	0.100470	4.50	3.15	43.20	\$35.52	1,269.24	2.88%		
Oct 35 - Sep 36	164,233,260	0.003916	0.004175	0.175525	0.140008	0.173996	0.166476	0.135964	0.113199	0.099717	3.94	2.76	37.84	\$30.16	1,263.88	2.44%		
Oct 36 - Sep 37	128,373,957	0.003061	0.003264	0.174614	0.139097	0.173085	0.165565	0.132288	0.112288	0.098806	3.25	2.28	31.24	\$23.56	1,257.28	1.91%		
Oct 37 - Sep 38	89,362,121	0.002131	0.002272	0.173622	0.138105	0.172093	0.164573	0.134061	0.111296	0.097814	2.51	1.76	24.12	\$16.44	1,250.16	1.33%		
Oct 38 - Sep 39	48,712,124	0.001161	0.001238	0.172588	0.137071	0.171059	0.163539	0.133027	0.110262	0.096780	1.73	1.21	16.60	\$8.92	1,242.64	0.72%		
Oct 39 - Sep 40	12,523,420	0.000299	0.000319	0.171669	0.136152	0.170140	0.162620	0.132108	0.109343	0.095861	1.04	0.73	10.00	\$2.32	1,236.04	0.19%		
Oct 40 - Sep 41	4,818,763	0.000115	0.000123	0.171473	0.135956	0.169944	0.162424	0.131912	0.109147	0.095665	0.90	0.63	8.64	\$0.96	1,234.68	0.08%		
Oct 41 - Sep 42	1,083,708	0.000026	0.000028	0.171378	0.135861	0.169849	0.162329	0.131817	0.109052	0.095570	0.83	0.58	7.96	\$0.28	1,234.00	0.02%		
Oct 42 - Sep 43	2,223	-	-	0.171350	0.135833	0.169821	0.162301	0.131789	0.109024	0.095542	0.80	0.56	7.68	\$0.00	1,233.72	0.00%		
	From Schedule SS-CEF-EE-2E Col 23	Col 1 / kWh Sales] (Rnd to 6 dec.)	Col 2 * (1 + SUT Rate) Rnd 6	Current Class Avg Rate + Col 3 for Each Rate Class (Col 4 thru Col 11)							(Cur. eGPRC + Col 3) * Avg RS kWh Sum Mo Rnd 2	(Cur. eGPRC + Col 3) * Avg RS kWh Win Mo Rnd 2	(4 * Col 11) + (8 * Col 12)	Col 13 - Current Col 13	Current Col 15 + Col 14	Col 14 / Current Col 15 Rnd 4		

	% Change from Current Class Average Rate w/SUT						
	RS	RHS	RLM	GLP	LPL-S	LPL-P	HTS-S
Apr 19 - Sep 20	0.32%	0.40%	0.32%	0.34%	0.42%	0.50%	0.57%
Oct 20 - Sep 21	0.66%	0.83%	0.66%	0.69%	0.85%	1.03%	1.18%
Oct 21 - Sep 22	0.84%	1.05%	0.84%	0.88%	1.09%	1.31%	1.50%
Oct 22 - Sep 23	1.05%	1.33%	1.06%	1.11%	1.37%	1.65%	1.89%
Oct 23 - Sep 24	1.39%	1.76%	1.41%	1.47%	1.81%	2.19%	2.50%
Oct 24 - Sep 25	1.91%	2.41%	1.93%	2.02%	2.49%	3.01%	3.43%
Oct 25 - Sep 26	2.04%	2.57%	2.06%	2.15%	2.65%	3.20%	3.65%
Oct 26 - Sep 27	2.24%	2.82%	2.26%	2.36%	2.91%	3.52%	4.01%
Oct 27 - Sep 28	2.60%	3.29%	2.63%	2.75%	3.39%	4.09%	4.67%
Oct 28 - Sep 29	3.09%	3.90%	3.12%	3.26%	4.02%	4.85%	5.54%
Oct 29 - Sep 30	3.50%	4.42%	3.53%	3.70%	4.55%	5.50%	6.28%
Oct 30 - Sep 31	3.46%	4.37%	3.49%	3.65%	4.50%	5.44%	6.21%
Oct 31 - Sep 32	3.40%	4.29%	3.43%	3.59%	4.42%	5.34%	6.09%
Oct 32 - Sep 33	3.27%	4.12%	3.30%	3.45%	4.25%	5.13%	5.86%
Oct 33 - Sep 34	3.10%	3.91%	3.13%	3.27%	4.03%	4.87%	5.56%
Oct 34 - Sep 35	2.88%	3.63%	2.90%	3.04%	3.74%	4.52%	5.16%
Oct 35 - Sep 36	2.44%	3.07%	2.46%	2.57%	3.17%	3.83%	4.37%
Oct 36 - Sep 37	1.90%	2.40%	1.92%	2.01%	2.48%	2.99%	3.42%
Oct 37 - Sep 38	1.33%	1.67%	1.34%	1.40%	1.72%	2.08%	2.38%
Oct 38 - Sep 39	0.72%	0.91%	0.73%	0.76%	0.94%	1.14%	1.30%
Oct 39 - Sep 40	0.19%	0.23%	0.19%	0.20%	0.24%	0.29%	0.33%
Oct 40 - Sep 41	0.07%	0.09%	0.07%	0.08%	0.09%	0.11%	0.13%
Oct 41 - Sep 42	0.02%	0.02%	0.02%	0.02%	0.02%	0.03%	0.03%
Oct 42 - Sep 43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

¹ All customers assumed to have BGS Supply

² Initial Rate period is April 2019 to September 2020 for the CEF-EE Program

³ SUT is assumed at the current SUT rate effective January 1, 2018 through the life of the Program

⁴ The rates are based on a typical residential bill as of September 8, 2018

**PSE&G Clean Energy Future Energy Efficiency Program
Gas GPRC Recovery Charge (GPRC) - Rate Impact Analysis**

Schedule SS-CEF-EE-4G

6.625% SUT Rate effective 1/1/2018
 3,683,165 Therm Sales (000) Apr 19 - Sep 20
 2,925,067 Therm Sales (000) Oct 20 - thereafter

1,010 Typical RSG Therms / yr.
 0.005932 Current gas GPRC (\$/therm)
 165 91 28 Monthly Therms
 4 2 6 # of Months/year

(1)	(2)	(3)	(4)-(9) Class Average Rate w/SUT - \$/therm ¹						(10)-(13) Typical RSG GPRC (\$)				(14) Change in RSG Typical Annual Bill (\$'s) ¹	(15) RSG Typical Annual Bill (\$'s) ¹	(16) % Change in RSG Typical Annual Bill			
			Gas CEF-EE Revenue Requirements ²	Gas CEF-EEC w/o SUT (\$/therm)	Gas CEF-EEC w/ SUT (\$/therm) ³	RSG	GSG	LVG	TSG-F	TSG-NF	CIG	Dec-Mar Monthly Bill				Nov & Apr Monthly Bill	May-Oct Monthly Bill	Annual Bill
Apr 19 - Sep 20	1,485,665	0.000403	0.000430	0.870945	0.992513	0.829007	0.709809	0.640070	0.429780	1.05	0.58	0.18	6.44	\$0.42	879.64	0.05%		
Oct 20 - Sep 21	5,057,965	0.001729	0.001844	0.872359	0.993927	0.830421	0.711223	0.641484	0.431106	1.28	0.71	0.22	7.86	\$1.84	881.06	0.21%		
Oct 21 - Sep 22	13,290,225	0.004544	0.004845	0.875360	0.996928	0.833422	0.714224	0.644485	0.433921	1.78	0.98	0.30	10.88	\$4.86	884.08	0.55%		
Oct 22 - Sep 23	20,943,053	0.007160	0.007634	0.878149	0.999717	0.836211	0.717013	0.647274	0.436537	2.24	1.23	0.38	13.70	\$7.68	886.90	0.87%		
Oct 23 - Sep 24	28,976,772	0.009906	0.010562	0.881077	1.002645	0.839139	0.719941	0.650202	0.439283	2.72	1.50	0.46	16.64	\$10.62	889.84	1.21%		
Oct 24 - Sep 25	41,193,428	0.014083	0.015016	0.885531	1.007099	0.843593	0.724395	0.654656	0.443460	3.46	1.91	0.59	21.20	\$15.18	894.40	1.73%		
Oct 25 - Sep 26	43,507,879	0.014874	0.015859	0.886374	1.007942	0.844436	0.725238	0.655499	0.444251	3.60	1.98	0.61	22.02	\$16.00	895.22	1.82%		
Oct 26 - Sep 27	43,487,139	0.014867	0.015852	0.886367	1.007935	0.844429	0.725231	0.655492	0.444244	3.59	1.98	0.61	21.98	\$15.96	895.18	1.82%		
Oct 27 - Sep 28	46,124,943	0.015769	0.016814	0.887329	1.008897	0.845391	0.726193	0.656454	0.445146	3.75	2.07	0.64	22.98	\$16.96	896.18	1.93%		
Oct 28 - Sep 29	50,286,080	0.017191	0.018330	0.888845	1.010413	0.846907	0.727709	0.657970	0.446568	4.00	2.21	0.68	24.50	\$18.48	897.70	2.10%		
Oct 29 - Sep 30	54,126,861	0.018504	0.019730	0.890245	1.011813	0.848307	0.729109	0.659370	0.447881	4.23	2.34	0.72	25.92	\$19.90	899.12	2.26%		
Oct 30 - Sep 31	54,509,867	0.018635	0.019870	0.890385	1.011953	0.848447	0.729249	0.659510	0.448012	4.26	2.35	0.72	26.06	\$20.04	899.26	2.28%		
Oct 31 - Sep 32	54,595,329	0.018665	0.019902	0.890417	1.011985	0.848479	0.729281	0.659542	0.448042	4.26	2.35	0.72	26.06	\$20.04	899.26	2.28%		
Oct 32 - Sep 33	52,826,784	0.018060	0.019256	0.889771	1.011339	0.847833	0.728635	0.658996	0.447437	4.16	2.29	0.71	25.48	\$19.46	898.68	2.21%		
Oct 33 - Sep 34	50,051,165	0.017111	0.018245	0.888760	1.010328	0.846822	0.727624	0.657885	0.446488	3.99	2.20	0.68	24.44	\$18.42	897.64	2.10%		
Oct 34 - Sep 35	46,176,680	0.015787	0.016833	0.887348	1.008916	0.845410	0.726212	0.656473	0.445164	3.76	2.07	0.64	23.02	\$17.00	896.22	1.93%		
Oct 35 - Sep 36	38,449,795	0.013145	0.014016	0.884531	1.006099	0.842593	0.723395	0.653656	0.442522	3.29	1.82	0.56	20.16	\$14.14	893.36	1.61%		
Oct 36 - Sep 37	29,666,928	0.010142	0.010814	0.881329	1.002897	0.839391	0.720193	0.650454	0.439519	2.76	1.52	0.47	16.90	\$10.88	890.10	1.24%		
Oct 37 - Sep 38	20,547,273	0.007025	0.007490	0.878005	0.999573	0.836067	0.716869	0.647130	0.436402	2.21	1.22	0.38	13.56	\$7.54	886.76	0.86%		
Oct 38 - Sep 39	11,362,598	0.003865	0.004142	0.874657	0.996225	0.832719	0.713521	0.643782	0.433262	1.66	0.92	0.28	10.16	\$4.14	883.36	0.47%		
Oct 39 - Sep 40	3,281,146	0.001122	0.001196	0.871711	0.993279	0.829773	0.710575	0.640836	0.430499	1.18	0.65	0.20	7.22	\$1.20	880.42	0.14%		
Oct 40 - Sep 41	970,958	0.000332	0.000354	0.870869	0.992437	0.828931	0.709733	0.639994	0.429709	1.04	0.57	0.18	6.38	\$0.36	879.58	0.04%		
Oct 41 - Sep 42	138,408	0.000047	0.000050	0.870565	0.992133	0.828627	0.709429	0.639690	0.429424	0.99	0.54	0.17	6.06	\$0.04	879.26	0.00%		
Oct 42 - Sep 43	(0.000000)	-	-	0.870515	0.992083	0.828577	0.709379	0.639640	0.429377	0.98	0.54	0.17	6.02	\$0.00	879.22	0.00%		

	From Schedule SS-CEF-EE-2G Col 23	Col 1 / Therm Sales	Col 2 * (1 + SUT Rate) Rnd 6	Current Class Avg Rate + Col 3 for Each Rate Class (Col 4 thru Col 10)						(Cur. GPRC + Col 3) * Dec-Mar Monthly Therms Rnd 2	(Cur. GPRC + Col 3) * Nov & Apr Monthly Therms Rnd 2	(Cur. GPRC + Col 3) * May-Oct Monthly Therms Rnd 2	(4 * Col 10) + (2 * Col 11) + (6 * Col 12)	Col 13 - Current Col 13	Current Col 15 + Col 14	Col 14 / Current Col 15 Rnd 4
				RSG	GSG	LVG	TSG-F	TSG-NF	CIG							
Apr 19 - Sep 20				0.05%	0.04%	0.05%	0.06%	0.07%	0.10%							
Oct 20 - Sep 21				0.21%	0.19%	0.22%	0.26%	0.29%	0.43%							
Oct 21 - Sep 22				0.56%	0.49%	0.58%	0.68%	0.76%	1.13%							
Oct 22 - Sep 23				0.88%	0.77%	0.92%	1.08%	1.19%	1.78%							
Oct 23 - Sep 24				1.21%	1.06%	1.27%	1.49%	1.65%	2.46%							
Oct 24 - Sep 25				1.72%	1.51%	1.81%	2.12%	2.35%	3.50%							
Oct 25 - Sep 26				1.82%	1.60%	1.91%	2.24%	2.48%	3.69%							
Oct 26 - Sep 27				1.82%	1.60%	1.91%	2.23%	2.48%	3.69%							
Oct 27 - Sep 28				1.93%	1.69%	2.03%	2.37%	2.63%	3.92%							
Oct 28 - Sep 29				2.11%	1.85%	2.21%	2.58%	2.87%	4.27%							
Oct 29 - Sep 30				2.27%	1.99%	2.38%	2.78%	3.08%	4.60%							
Oct 30 - Sep 31				2.28%	2.00%	2.40%	2.80%	3.11%	4.63%							
Oct 31 - Sep 32				2.29%	2.01%	2.40%	2.81%	3.11%	4.64%							
Oct 32 - Sep 33				2.21%	1.94%	2.32%	2.71%	3.01%	4.48%							
Oct 33 - Sep 34				2.10%	1.84%	2.20%	2.57%	2.85%	4.25%							
Oct 34 - Sep 35				1.93%	1.70%	2.03%	2.37%	2.63%	3.92%							
Oct 35 - Sep 36				1.61%	1.41%	1.69%	1.98%	2.19%	3.26%							
Oct 36 - Sep 37				1.24%	1.09%	1.31%	1.52%	1.69%	2.52%							
Oct 37 - Sep 38				0.86%	0.75%	0.90%	1.06%	1.17%	1.74%							
Oct 38 - Sep 39				0.48%	0.42%	0.50%	0.58%	0.65%	0.96%							
Oct 39 - Sep 40				0.14%	0.12%	0.14%	0.17%	0.19%	0.28%							
Oct 40 - Sep 41				0.04%	0.04%	0.04%	0.05%	0.06%	0.08%							
Oct 41 - Sep 42				0.01%	0.01%	0.01%	0.01%	0.01%	0.01%							
Oct 42 - Sep 43				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%							

¹ All customers assumed to have BGSS Supply
² Initial Rate period is April 1919 to September 2020 for the CEF-EE Program
³ SUT is assumed at the current SUT rate effective January 1, 2018 through the life of the Program
⁴ The rates are based on a typical residential bill as of September 1, 2018

**PSE&G Clean Energy Future Energy Efficiency Program
Cumulative Rate Impact Analysis - Electric GPRC Recovery Charge (GPRC)
Rate Calculations**

Schedule SS-CEF-EE-5E

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	<u>Oct 18 - Sep 19</u>	<u>Oct 19 - Sep 20</u>	<u>Oct 20 - Sep 21</u>	<u>Oct 21 - Sep 22</u>	<u>Oct 22 - Sep 23</u>
kWh Forecast =	41,942,182	41,942,182	41,942,182	41,942,182	41,942,182
<u>Revenue Requirement (\$)</u>					
Carbon Abatement	\$1,062,673	\$976,620	\$620,377	\$127,397	\$23,468
Energy Efficiency Economic	(\$412,068)	(\$176,644)	(\$184,038)	(\$277,232)	(\$196,756)
Demand Response	\$3,198,828	\$3,215,007	\$2,504,008	\$1,365,087	\$566,505
Solar 4 All	\$16,567,238	\$16,216,167	\$14,805,323	\$12,852,918	\$24,425,344
Solar Loan II	\$9,351,214	\$8,958,224	\$8,534,675	\$8,097,032	\$7,298,684
EEE Extension	\$3,727,234	\$1,320,518	\$126,901	(\$2,470)	(\$2,590)
Solar Loan III	\$321,994	\$1,738	(\$921,159)	(\$1,155,588)	(\$1,000,795)
Solar 4 All Extension	\$3,347,729	\$3,274,551	\$2,395,594	\$1,276,380	\$8,925,193
EEE Extension II	\$3,548,507	\$7,044,358	\$6,843,896	\$6,615,695	\$6,732,981
Solar 4 All Extension II	\$29	(\$35)	(\$414)	(\$606)	(\$823)
EE 2017	\$4,554,171	\$5,928,340	\$5,543,101	\$4,752,122	\$5,423,187
CEF - EE ¹	\$9,474,334	\$23,342,639	\$44,266,651	\$56,319,335	\$70,918,478
Electric Revenue Requirements	\$54,741,881	\$70,101,485	\$84,534,916	\$89,970,070	\$123,112,875
SPRC	\$5,817,688	\$5,689,744	\$4,782,413	\$4,167,308	\$2,989,403
<u>Rate w/o SUT (\$/kWh)</u>					
	Total Existing Electric GPRC Rate w/o SUT				
Carbon Abatement	\$0.000050	\$0.000025	\$0.000023	\$0.000015	\$0.000003
Energy Efficiency Economic	\$0.000064	(\$0.000010)	(\$0.000004)	(\$0.000004)	(\$0.000007)
Demand Response	(\$0.000085)	\$0.000076	\$0.000077	\$0.000060	\$0.000033
Solar 4 All	\$0.000364	\$0.000395	\$0.000387	\$0.000353	\$0.000306
Solar Loan II	\$0.000038	\$0.000223	\$0.000214	\$0.000203	\$0.000193
EEE Extension	\$0.000280	\$0.000089	\$0.000031	\$0.000003	\$0.000000
Solar Loan III	\$0.000048	\$0.000008	\$0.000000	(\$0.000022)	(\$0.000028)
Solar 4 All Extension	\$0.000005	\$0.000080	\$0.000078	\$0.000057	\$0.000030
EEE Extension II	\$0.000142	\$0.000085	\$0.000168	\$0.000163	\$0.000158
Solar 4 All Extension II	\$0.000011	\$0.000000	\$0.000000	\$0.000000	\$0.000000
EE 2017	\$0.000089	\$0.000109	\$0.000141	\$0.000132	\$0.000113
CEF - EE ¹	\$0.000000	\$0.000514	\$0.000514	\$0.001055	\$0.001343
GPRC Rate w/o SUT	0.001006	\$0.001594	\$0.001629	\$0.002015	\$0.002144
SPRC Rate w/o SUT	0.000136	\$0.000139	\$0.000136	\$0.000114	\$0.000099

Note: GPRC sub-program revenue requirements reflect the forecasted amounts filed in the 2018 GPRC and 2018 SPRC cost recovery July 1, 2018.

¹ Initial Rate period is April 2019 to September 2020 for the CEF - EE Program

**PSE&G Clean Energy Future Energy Efficiency Program
Cumulative Rate Impact Analysis - Electric GPRC Recovery Charge (GPRC)**

Schedule SS-CEF-EE-5E

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Rate Impact Analysis

Current SUT ¹ = 6.625%

7,200 Avg RS kWh / yr.
750 Avg RS kWh / Summer Month
525 Avg RS kWh / Winter Month
1,233.72 Current RS Typical Annual Bill
0.002079 Current GPRC + SPRC w SUT (\$/kWh)

(1)	(2)	(3)	(4)	(5) - (11) Class Average Rate w/SUT (\$/kWh) ²							(12) - (14) Typical RS GPRC (\$/kWh)			(15) - (16) Cumul. GPRC + SPRC % of Current RS Typical Annual Bill			
				SPRC w/o SUT (\$/kWh)	GPRC w/o SUT (\$/kWh)	GPRC + SPRC w/o SUT (\$/kWh)	Forecasted GPRC + SPRC w/ SUT (\$/kWh)	RS	RHS	RLM	GLP	LPL-S	LPL-P	HTS-S	Summer Monthly Bill	Winter Monthly Bill	Annual Bill
			Current less (GPRC + SPRC)	0.001848	0.169271	0.133754	0.167742	0.160222	0.129710	0.106945	0.093463	1.56	1.09	14.96	1,218.76		
Oct 18 - Sep 19	0.000139	0.001594	0.001733	0.001848	0.171119	0.135602	0.169590	0.162070	0.131558	0.108793	0.095311	1.39	0.97	13.32	1,232.08	1.081%	
Oct 19 - Sep 20	0.000136	0.001629	0.001765	0.001882	0.171153	0.135636	0.169624	0.162104	0.131592	0.108827	0.095345	1.41	0.99	13.56	1,232.32	1.100%	
Oct 20 - Sep 21	0.000114	0.002015	0.002129	0.002270	0.171541	0.136024	0.170012	0.162492	0.131980	0.109215	0.095733	1.70	1.19	16.32	1,235.08	1.321%	
Oct 21 - Sep 22	0.000099	0.002144	0.002243	0.002392	0.171663	0.136146	0.170134	0.162614	0.132102	0.109337	0.095855	1.79	1.26	17.24	1,236.00	1.395%	
Oct 22 - Sep 23	0.000071	0.002936	0.003007	0.003206	0.172477	0.136960	0.170948	0.163428	0.132916	0.110151	0.096669	2.40	1.68	23.04	1,241.80	1.855%	
<u>Proposed Rate [Rnd 6]</u>	<u>Proposed Rate [Rnd 6]</u>	<u>(Col 1 + Col 2)</u>	<u>(Col 3 * (1 + SUT Rate)) [Rnd 6]</u>	Current Class Avg Rate + Col 4 for Each Rate Class (Col 5 thru Col 11)							Col 4 * Sum Mo kWh Rnd	Col 4 * Win Mo kWh Rnd	(4 * Col 12) + (8 * Col 13)	Current Col 15 + Col 14	Col 14 / Col 15		

	Cumulative GPRC + SPRC % of Current Class Average Rate w/SUT						
	RS	RHS	RLM	GLP	LPL-S	LPL-P	HTS-S
Oct 18 - Sep 19	1.080%	1.363%	1.090%	1.140%	1.405%	1.699%	1.939%
Oct 19 - Sep 20	1.100%	1.388%	1.110%	1.161%	1.430%	1.729%	1.974%
Oct 20 - Sep 21	1.323%	1.669%	1.335%	1.397%	1.720%	2.078%	2.371%
Oct 21 - Sep 22	1.393%	1.757%	1.406%	1.471%	1.811%	2.188%	2.495%
Oct 22 - Sep 23	1.859%	2.341%	1.875%	1.962%	2.412%	2.911%	3.316%

¹ All revenue requirements reflect the new federal tax rate and SUT rate effective January 1, 2018.

² All customers assumed to have BGS Supply

³ GPRC sub-program revenue requirements reflect the forecasted amounts filed in the 2018 GPRC and 2018 SPRC cost recovery filings submitted July 1, 2018.

**PSE&G Clean Energy Future Energy Efficiency Program
Cumulative Rate Impact Analysis - Gas GPRC Recovery Charge (GPRC)
Rate Calculations**

Schedule SS-CEF-EE-5G

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		Oct 18 - Sep 19	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23
	Therm Forecast =	2,925,067	2,925,067	2,925,067	2,925,067	2,925,067
Revenue Requirement (\$)						
Carbon Abatement		\$2,098,591	\$2,731,091	\$1,673,790	\$409,549	\$18,659
Energy Efficiency Economic		(\$214,293)	(\$109,831)	(\$133,365)	(\$184,824)	(\$131,171)
EEE Extension		\$1,990,457	\$785,227	\$78,990	(\$3,144)	(\$3,296)
EEE Extension II		\$2,483,551	\$3,791,683	\$3,239,533	\$3,125,688	\$3,447,559
EE 2017		\$2,980,321	\$4,234,211	\$4,407,730	\$3,507,606	\$3,104,045
CEF - EE ¹		\$1,730,220	(\$244,554)	\$5,057,965	\$13,290,225	\$20,943,053
Gas Revenue Requirements		\$11,068,847	\$11,187,827	\$14,324,643	\$20,145,100	\$27,378,850
	Gas GPRC Rate (w/o SUT)					
Rate w/o SUT (\$/kWh)						
Carbon Abatement	\$0.001446	\$0.000717	\$0.000934	\$0.000572	\$0.000140	\$0.000006
Energy Efficiency Economic	\$0.000450	(\$0.000073)	(\$0.000038)	(\$0.000046)	(\$0.000063)	(\$0.000045)
EEE Extension	\$0.001618	\$0.000680	\$0.000268	\$0.000027	(\$0.000001)	(\$0.000001)
EEE Extension II	\$0.001147	\$0.000849	\$0.001296	\$0.001108	\$0.001069	\$0.001179
EE 2017	\$0.000902	\$0.001019	\$0.001448	\$0.001507	\$0.001199	\$0.001061
CEP-EE ¹	\$0.000000	\$0.000403	\$0.000403	\$0.001729	\$0.004544	\$0.007160
GPRC Rate w/o SUT	\$0.005563	\$0.003595	\$0.004311	\$0.004897	\$0.006888	\$0.009360

¹ Initial Rate period is April 2019 to September 2020 for the CEP - EE Program

**PSE&G Clean Energy Future Energy Efficiency Program
Cumulative Rate Impact Analysis - Gas GPRC Recovery Charge (GPRC)
Rate Impact Analysis**

Current SUT = 6.625%

879.22 Current RSG Typical Annual Bill
0.005932 Current GPRC w/SUT (\$/therm)
165 91 28 Monthly Therms
4 2 6 # of Months/year

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Class Average Rate w/SUT (\$/therm) ¹							Typical RSG GPRC (\$/therm)				RSG Typical Annual Bill (\$'s) ³	Cumul. GPRC % of Current RSG Typical Annual Bill
	Forecasted GPRC w/ SUT (\$/therm)	RSG	GSG	LVG	TSG-F	TSG-NF	CIG	Dec-Mar Monthly Bill	Nov & Apr Monthly Bill	May-Oct Monthly Bill	Annual Bill		
Current less GPRC	0.864583	0.986151	0.822645	0.703447	0.633708	0.423445	0.98	0.54	0.17	6.02	873.20		
Oct 18 - Sep 19	0.003833	0.868416	0.989984	0.826478	0.707280	0.637541	0.63	0.35	0.11	3.88	877.08	0.442%	
Oct 19 - Sep 20	0.004597	0.869180	0.990748	0.827242	0.708044	0.638305	0.76	0.42	0.13	4.66	877.86	0.531%	
Oct 20 - Sep 21	0.005221	0.869804	0.991372	0.827866	0.708668	0.638929	0.86	0.48	0.15	5.30	878.50	0.603%	
Oct 21 - Sep 22	0.007344	0.871927	0.993495	0.829989	0.710791	0.641052	1.21	0.67	0.21	7.44	880.64	0.845%	
Oct 22 - Sep 23	0.009980	0.874563	0.996131	0.832625	0.713427	0.643688	1.65	0.91	0.28	10.10	883.30	1.143%	
Current Class Avg Rate + Col 1 for Each Rate Class (Col 2 thru Col 7)							Col 1 * Dec-Mar Monthly Therms Rnd 2	Col 1 * Nov & Apr Monthly Therms Rnd 2	Col 1 * May-Oct Monthly Therms Rnd 2	(4 * Col 8) + (2 * Col 9) + (6 * Col 10)	Current Col 12 + Col 11	Col 11 / Col 12	

	Cumulative GPRC % of Current Class Average Rate w/SUT						
	RSG	GSG	LVG	TSG-F	TSG-NF	CIG	
Oct 18 - Sep 19	0.441%	0.387%	0.464%	0.542%	0.601%	0.897%	
Oct 19 - Sep 20	0.529%	0.464%	0.556%	0.649%	0.720%	1.074%	
Oct 20 - Sep 21	0.600%	0.527%	0.631%	0.737%	0.817%	1.218%	
Oct 21 - Sep 22	0.842%	0.739%	0.885%	1.033%	1.146%	1.705%	
Oct 22 - Sep 23	1.141%	1.002%	1.199%	1.399%	1.550%	2.303%	

¹ All revenue requirements reflect the new SUT rate effective January 1, 2018.

² All customers assumed to have BGSS Supply

³ GPRC sub-program revenue requirements reflect the forecasted amounts filed in the 2018 GPRC and 2018 SPRC cost recovery submitted during July 1, 2018.

**PSE&G Clean Energy Future Energy Efficiency Program
Electric Over/(Under) Calculation**

Schedule SS-CEF-EE-6E

Reflects a tax rate of	28.11%
Existing Rate / kWh (w/o SUT)	0.000000
Proposed Rate / kWh (w/o SUT)	0.000514

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<u>Over / (Under) Recovery Beginning Balance</u>	<u>Electric Revenues</u>	<u>Revenue Requirement Excluding WACC Cost</u>	<u>Over / (Under) Recovery</u>	<u>Over / (Under) Recovery Ending Balance</u>	<u>Over / (Under) Average Monthly Balance</u>	<u>Interest Rate (Annualized)</u>	<u>Interest On Over / (Under) Average Monthly Balance</u>	<u>Interest Roll-In</u>	<u>Cumulative Interest</u>
Monthly Calculation										
Dec-18	-	-	-	-	-	-	2.16%	-	-	-
Jan-19	-	-	-	-	-	-	2.16%	-	-	-
Feb-19	-	-	-	-	-	-	2.16%	-	-	-
Mar-19	-	-	-	-	-	-	2.16%	-	-	-
Apr-19	-	1,470,999	1,342,348	128,652	128,652	64,326	2.16%	83	-	83
May-19	128,652	1,562,763	1,406,821	155,942	284,594	206,623	2.16%	267	-	351
Jun-19	284,594	1,962,544	1,488,305	474,239	758,833	521,714	2.16%	675	-	1,026
Jul-19	758,833	2,294,834	1,598,571	696,264	1,455,097	1,106,965	2.16%	1,432	-	2,458
Aug-19	1,455,097	2,233,362	1,737,403	495,959	1,951,056	1,703,076	2.16%	2,204	-	4,662
Sep-19	1,951,056	1,767,754	1,900,886	(133,133)	1,817,923	1,884,490	2.16%	2,439	-	7,101
Oct-19	1,817,923	1,662,253	2,087,035	(424,782)	1,393,142	1,605,532	2.16%	2,078	-	9,178
Nov-19	1,393,142	1,528,994	2,266,600	(737,606)	655,536	1,024,339	2.16%	1,326	-	10,504
Dec-19	655,536	1,708,389	2,445,060	(736,670)	(81,134)	287,201	2.16%	372	-	10,875
Jan-20	(81,134)	1,820,864	2,583,445	(762,581)	(843,716)	(462,425)	2.16%	(598)	-	10,277
Feb-20	(843,716)	1,693,115	2,735,430	(1,042,316)	(1,886,031)	(1,364,873)	2.16%	(1,766)	-	8,511
Mar-20	(1,886,031)	1,714,420	2,863,570	(1,149,149)	(3,035,181)	(2,460,606)	2.16%	(3,184)	-	5,327
Apr-20	(3,035,181)	1,450,421	649,480	800,941	(2,234,239)	(2,634,710)	2.16%	(3,409)	-	1,917
May-20	(2,234,239)	1,611,324	679,264	932,059	(1,302,180)	(1,768,210)	2.16%	(2,288)	-	(371)
Jun-20	(1,302,180)	1,971,678	773,374	1,198,304	(103,876)	(703,028)	2.16%	(910)	-	(1,281)
Jul-20	(103,876)	2,311,239	2,496,539	(185,300)	(289,176)	(196,526)	2.16%	(254)	-	(1,535)
Aug-20	(289,176)	2,267,367	1,560,221	707,145	417,970	64,397	2.16%	83	-	(1,452)
Sep-20	417,970	1,788,379	2,202,623	(414,243)	3,726	210,848	2.16%	273	-	(1,179)
	(Prior Col 5) + (Col 9)	Forecasted kWh * Proposed Rate	See Revenue Requirements Schedule for Details	Col 2 - Col 3	Col 1 + Col 4	(Col 1 + Col 5) / 2		(Col 6 * (Col 7) / 12)*net of tax rate		Prior Month + Col 8 - Col 9

**PSE&G Clean Energy Future Energy Efficiency Program
Gas Over/(Under) Calculation**

Schedule SS-CEF-EE-6G

Reflects a tax rate of	28.11%
Existing Rate / Therms (w/o SUT)	0.000000
Proposed Rate /Therms (w/o SUT)	0.000403

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<u>Over / (Under) Recovery Beginning Balance</u>	<u>Gas Revenues</u>	<u>Revenue Requirement Excluding WACC Cost</u>	<u>Over / (Under) Recovery</u>	<u>Over / (Under) Recovery Ending Balance</u>	<u>Over / (Under) Average Monthly Balance</u>	<u>Interest Rate (Annualized)</u>	<u>Interest On Over / (Under) Average Monthly Balance</u>	<u>Interest Roll-In</u>	<u>Cumulative Interest</u>
Monthly Calculations										
Dec-18	-	-	-	-	-	-	2.16%	-	-	-
Jan-19	-	-	-	-	-	-	2.16%	-	-	-
Feb-19	-	-	-	-	-	-	2.16%	-	-	-
Mar-19	-	-	-	-	-	-	2.16%	-	-	-
Apr-19	-	89,733	272,004	(182,270)	(182,270)	(91,135)	2.16%	(118)	-	(118)
May-19	(182,270)	50,368	278,733	(228,366)	(410,636)	(296,453)	2.16%	(384)	-	(502)
Jun-19	(410,636)	47,085	284,161	(237,076)	(647,712)	(529,174)	2.16%	(685)	-	(1,186)
Jul-19	(647,712)	39,109	292,202	(253,093)	(900,805)	(774,258)	2.16%	(1,002)	-	(2,188)
Aug-19	(900,805)	41,288	298,875	(257,586)	(1,158,391)	(1,029,598)	2.16%	(1,332)	-	(3,521)
Sep-19	(1,158,391)	37,930	304,245	(266,315)	(1,424,706)	(1,291,548)	2.16%	(1,671)	-	(5,192)
Oct-19	(1,424,706)	61,756	312,229	(250,473)	(1,675,179)	(1,549,942)	2.16%	(2,006)	-	(7,197)
Nov-19	(1,675,179)	113,000	318,844	(205,844)	(1,881,022)	(1,778,101)	2.16%	(2,301)	-	(9,498)
Dec-19	(1,881,022)	167,582	324,157	(156,575)	(2,037,598)	(1,959,310)	2.16%	(2,535)	-	(12,034)
Jan-20	(2,037,598)	194,111	318,812	(124,701)	(2,162,298)	(2,099,948)	2.16%	(2,717)	-	(14,751)
Feb-20	(2,162,298)	182,606	324,807	(142,201)	(2,304,499)	(2,233,399)	2.16%	(2,890)	-	(17,641)
Mar-20	(2,304,499)	153,926	312,807	(158,881)	(2,463,381)	(2,383,940)	2.16%	(3,085)	-	(20,726)
Apr-20	(2,463,381)	88,988	(498,483)	587,472	(1,875,909)	(2,169,645)	2.16%	(2,808)	-	(23,534)
May-20	(1,875,909)	50,817	(607,543)	658,360	(1,217,549)	(1,546,729)	2.16%	(2,001)	-	(25,535)
Jun-20	(1,217,549)	47,343	(639,875)	687,218	(530,331)	(873,940)	2.16%	(1,131)	-	(26,666)
Jul-20	(530,331)	38,938	(124,178)	163,115	(367,215)	(448,773)	2.16%	(581)	-	(27,247)
Aug-20	(367,215)	41,552	(238,615)	280,166	(87,049)	(227,132)	2.16%	(294)	-	(27,541)
Sep-20	(87,049)	38,183	(47,517)	85,699	(1,349)	(44,199)	2.16%	(57)	-	(27,598)
	(Prior Col 5) + (Col 9)		See Revenue Requirements Schedule for Details	Col 2 - Col 3	Col 1 + Col 4	(Col 1 + Col 5) / 2	PSE&G CP/STD Wght Avg Rate from Previous Month	(Col 6 * (Col 7) / 12)*net of tax rate		Prior Month + Col 8 - Col 9

**PSE&G Clean Energy Future Energy Efficiency Program
Electric Income Statement and Balance Sheet**

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<u>Electric Program</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
<u>Income Statement</u>								
Operating Revenues	16,273,028	26,284,039	45,537,805	59,871,742	75,804,306	97,455,901	139,627,360	140,353,416
Operating Expenses								
Operations & Maintenance ¹	15,380,276	41,524,163	64,257,251	87,552,511	114,293,688	142,736,370	134,116,481	124,749,998
Depreciation & Amortization	1,293,775	11,025,483	21,271,721	21,941,192	21,972,216	22,702,304	19,511,811	8,949,932
Total Operating Expenses	<u>16,674,051</u>	<u>52,549,645</u>	<u>85,528,972</u>	<u>109,493,703</u>	<u>136,265,903</u>	<u>165,438,674</u>	<u>153,628,292</u>	<u>133,699,930</u>
Operating Income	(401,023)	(26,265,607)	(39,991,167)	(49,621,962)	(60,461,598)	(67,982,773)	(14,000,932)	6,653,486
Other Income	1,040,990	10,589,591	25,144,115	47,740,104	76,974,006	107,101,604	126,958,802	115,512,394
Interest Expense	(546,907)	(4,216,854)	(8,218,651)	(12,692,541)	(17,712,043)	(23,039,435)	(26,264,393)	(24,781,024)
Income Before Income Taxes	93,060	(19,892,869)	(23,065,703)	(14,574,398)	(1,199,634)	16,079,395	86,693,476	97,384,855
Income Tax Expense	1,591,300	32,879,893	48,377,412	53,664,741	55,748,983	54,877,195	(5,804,697)	(21,064,539)
Net Income	<u>1,684,360</u>	<u>12,987,024</u>	<u>25,311,709</u>	<u>39,090,343</u>	<u>54,549,349</u>	<u>70,956,590</u>	<u>80,888,780</u>	<u>76,320,317</u>
Preferred Dividends	-	-	-	-	-	-	-	-
Earnings Available to PSEG	<u>1,684,360</u>	<u>12,987,024</u>	<u>25,311,709</u>	<u>39,090,343</u>	<u>54,549,349</u>	<u>70,956,590</u>	<u>80,888,780</u>	<u>76,320,317</u>
¹ The amortization of the regulatory asset associated with the Program Investment is considered "Customer Assistance Expense" for Accounting Purposes and is included in Operations & Maintenance Expense								
Incentive / (Penalty) Include in Revenues above								
<u>Balance Sheet</u>								
<u>Assets</u>								
Property, Plant & Equipment	56,004,626	174,134,986	174,217,849	174,217,849	174,217,849	179,084,756	179,084,756	179,084,756
Plant in CWIP								
Less: Accumulated Depreciation & Amortization	(1,293,775)	(12,319,258)	(33,590,979)	(55,532,171)	(77,504,386)	(100,206,690)	(119,718,501)	(128,668,433)
Net Property, Plant & Equipment	<u>54,710,851</u>	<u>161,815,728</u>	<u>140,626,871</u>	<u>118,685,679</u>	<u>96,713,463</u>	<u>78,878,066</u>	<u>59,366,255</u>	<u>50,416,324</u>
Regulatory Asset	28,535,943	233,779,712	525,276,843	877,982,563	1,277,919,236	1,717,052,504	1,827,742,145	1,852,838,162
Less: Accumulated Amortization	(1,393,239)	(13,339,242)	(42,736,214)	(93,619,474)	(169,523,369)	(272,202,872)	(390,453,152)	(510,549,673)
Net Regulatory Asset	<u>27,142,705</u>	<u>220,440,469</u>	<u>482,540,628</u>	<u>784,363,090</u>	<u>1,108,395,866</u>	<u>1,444,849,632</u>	<u>1,437,288,993</u>	<u>1,342,288,489</u>
Total Assets	<u>81,853,556</u>	<u>382,256,198</u>	<u>623,167,499</u>	<u>903,048,768</u>	<u>1,205,109,329</u>	<u>1,523,727,698</u>	<u>1,496,655,249</u>	<u>1,392,704,813</u>
<u>Liabilities & Capitalization</u>								
<u>Liabilities</u>								
Deferred Income Taxes	8,224,730	25,248,733	40,324,283	54,257,139	67,106,437	78,768,267	76,317,679	70,619,138
Capitalization	-	-	-	-	-	-	-	-
Debt	33,872,477	164,239,036	268,133,351	390,481,243	523,531,063	664,744,485	653,417,353	608,217,188
Preferred Stock	-	-	-	-	-	-	-	-
Common Equity	39,756,348	192,768,429	314,709,866	458,310,386	614,471,829	780,214,945	766,920,216	713,868,487
Total Capitalization	<u>73,628,826</u>	<u>357,007,465</u>	<u>582,843,216</u>	<u>848,791,629</u>	<u>1,138,002,892</u>	<u>1,444,959,431</u>	<u>1,420,337,569</u>	<u>1,322,085,675</u>
Total Liabilities & Capitalization	<u>81,853,556</u>	<u>382,256,198</u>	<u>623,167,499</u>	<u>903,048,768</u>	<u>1,205,109,329</u>	<u>1,523,727,698</u>	<u>1,496,655,249</u>	<u>1,392,704,813</u>

**PSE&G Clean Energy Future Energy Efficiency Program
Electric Income Statement and Balance Sheet**

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<u>Electric Program</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>
<u>Income Statement</u>								
Operating Revenues	155,570,034	183,413,175	216,820,082	236,873,824	232,254,963	227,434,406	217,330,348	205,880,303
Operating Expenses								
Operations & Maintenance ¹	123,863,692	123,188,332	122,911,727	122,244,402	122,052,264	122,075,280	122,098,987	121,940,185
Depreciation & Amortization	7,561,380	7,281,723	6,025,829	2,977,957	2,413,138	2,413,138	2,413,138	2,413,138
Total Operating Expenses	131,425,073	130,470,055	128,937,557	125,222,359	124,465,402	124,488,418	124,512,125	124,353,323
Operating Income	24,144,961	52,943,120	87,882,526	111,651,465	107,789,561	102,945,988	92,818,223	81,526,980
Other Income	97,704,006	69,431,894	35,931,592	10,682,144	5,387,002	798,868	(0)	(0)
Interest Expense	(22,853,410)	(20,684,683)	(18,496,177)	(16,344,260)	(14,215,946)	(12,088,438)	(9,960,933)	(7,834,199)
Income Before Income Taxes	98,995,556	101,690,331	105,317,940	105,989,349	98,960,618	91,656,418	82,857,290	73,692,780
Income Tax Expense	(28,611,884)	(37,985,879)	(48,353,623)	(55,652,483)	(55,178,511)	(54,426,583)	(52,179,723)	(49,565,103)
Net Income	70,383,673	63,704,452	56,964,317	50,336,866	43,782,107	37,229,834	30,677,567	24,127,677
Preferred Dividends	-	-	-	-	-	-	-	-
Earnings Available to PSEG	70,383,673	63,704,452	56,964,317	50,336,866	43,782,107	37,229,834	30,677,567	24,127,677

¹The amortization of the regulatory asset associated with the Program Investment is considered "Customer Assistance Expense" for Accounting Purposes and is included in Operations & Maintenance Expense

Incentive / (Penalty) Include in Revenues above

Balance Sheet

<u>Assets</u>								
Property, Plant & Equipment	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756
Plant in CWIP								
Less: Accumulated Depreciation & Amortization	(136,229,813)	(143,511,536)	(149,537,365)	(152,515,322)	(154,928,460)	(157,341,599)	(159,754,737)	(162,167,875)
Net Property, Plant & Equipment	42,854,943	35,573,220	29,547,391	26,569,434	24,156,296	21,743,158	19,330,019	16,916,881
Regulatory Asset	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863
Less: Accumulated Amortization	(631,722,965)	(753,008,022)	(874,293,080)	(995,578,137)	(1,116,863,195)	(1,238,148,252)	(1,359,433,310)	(1,480,535,148)
Net Regulatory Asset	1,227,552,898	1,106,267,840	984,982,783	863,697,725	742,412,668	621,127,610	499,842,553	378,740,715
Total Assets	1,270,407,841	1,141,841,061	1,014,530,174	890,267,160	766,568,964	642,870,768	519,172,572	395,657,596
<u>Liabilities & Capitalization</u>								
<u>Liabilities</u>								
Deferred Income Taxes	64,011,613	56,974,355	50,114,724	44,054,380	38,171,304	32,288,332	26,405,307	20,535,310
<u>Capitalization</u>								
Debt	554,994,987	499,086,095	443,673,254	389,294,860	335,094,756	280,894,604	226,694,477	172,572,645
Preferred Stock	-	-	-	-	-	-	-	-
Common Equity	651,401,242	585,780,611	520,742,196	456,917,920	393,302,904	329,687,832	266,072,788	202,549,641
Total Capitalization	1,206,396,228	1,084,866,706	964,415,450	846,212,780	728,397,660	610,582,437	492,767,265	375,122,286
Total Liabilities & Capitalization	1,270,407,841	1,141,841,061	1,014,530,174	890,267,160	766,568,964	642,870,768	519,172,572	395,657,596

**PSE&G Clean Energy Future Energy Efficiency Program
Electric Income Statement and Balance Sheet**

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<u>Electric Program</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	<u>2041</u>	<u>2042</u>
<u>Income Statement</u>								
Operating Revenues	187,477,586	155,722,678	118,814,074	79,285,190	38,378,491	8,591,409	3,824,733	509,582
Operating Expenses								
Operations & Maintenance ¹	116,266,789	99,881,416	78,401,798	53,381,162	25,525,532	4,194,838	1,188,537	111,766
Depreciation & Amortization	2,413,138	2,413,138	2,413,138	2,413,138	2,413,138	2,413,138	2,083,592	353,832
Total Operating Expenses	<u>118,679,928</u>	<u>102,294,555</u>	<u>80,814,937</u>	<u>55,794,300</u>	<u>27,938,670</u>	<u>6,607,977</u>	<u>3,272,128</u>	<u>465,598</u>
Operating Income	68,797,659	53,428,123	37,999,137	23,490,890	10,439,820	1,983,432	552,605	43,984
Other Income	(0)	(0)	(0)	(0)	(0)	(0)	-	-
Interest Expense	(5,734,467)	(3,826,994)	(2,247,397)	(1,070,673)	(351,859)	(97,347)	(25,067)	(847)
Income Before Income Taxes	63,063,192	49,601,129	35,751,740	22,420,218	10,087,961	1,886,085	527,537	43,137
Income Tax Expense	(45,402,246)	(37,814,795)	(28,830,232)	(19,122,772)	(9,004,310)	(1,586,278)	(450,335)	(40,529)
Net Income	17,660,946	11,786,334	6,921,509	3,297,445	1,083,652	299,808	77,203	2,608
Preferred Dividends	-	-	-	-	-	-	-	-
Earnings Available to PSEG	<u>17,660,946</u>	<u>11,786,334</u>	<u>6,921,509</u>	<u>3,297,445</u>	<u>1,083,652</u>	<u>299,808</u>	<u>77,203</u>	<u>2,608</u>
¹ The amortization of the regulatory asset associated with the Program Investment is considered "Customer Assistance Expense" for Accounting Purposes and is included in Operations & Maintenance Expense								
Incentive / (Penalty) Include in Revenues above								
<u>Balance Sheet</u>								
<u>Assets</u>								
Property, Plant & Equipment	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756	179,084,756
Plant in CWIP								
Less: Accumulated Depreciation & Amortization	(164,581,013)	(166,994,152)	(169,407,290)	(171,820,428)	(174,233,566)	(176,646,705)	(178,730,296)	(179,084,129)
Net Property, Plant & Equipment	14,503,743	12,090,605	9,677,466	7,264,328	4,851,190	2,438,052	354,460	628
Regulatory Asset	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863	1,859,275,863
Less: Accumulated Amortization	(1,596,590,813)	(1,696,472,230)	(1,774,874,028)	(1,828,255,190)	(1,853,780,722)	(1,857,975,560)	(1,859,164,097)	(1,859,275,863)
Net Regulatory Asset	<u>262,685,049</u>	<u>162,803,633</u>	<u>84,401,835</u>	<u>31,020,673</u>	<u>5,495,141</u>	<u>1,300,302</u>	<u>111,766</u>	<u>(0)</u>
Total Assets	<u>277,188,792</u>	<u>174,894,238</u>	<u>94,079,301</u>	<u>38,285,001</u>	<u>10,346,331</u>	<u>3,738,354</u>	<u>466,225</u>	<u>628</u>
<u>Liabilities & Capitalization</u>								
<u>Liabilities</u>								
Deferred Income Taxes	14,908,860	10,025,830	6,089,169	3,225,841	1,540,812	739,461	114,107	223
Capitalization	-	-	-	-	-	-	-	-
Debt	120,660,231	75,846,672	40,479,306	16,128,746	4,050,923	1,379,622	161,990	186
Preferred Stock	-	-	-	-	-	-	-	-
Common Equity	141,619,701	89,021,735	47,510,826	18,930,414	4,754,595	1,619,271	190,129	219
Total Capitalization	<u>262,279,932</u>	<u>164,868,407</u>	<u>87,990,132</u>	<u>35,059,160</u>	<u>8,805,518</u>	<u>2,998,893</u>	<u>352,119</u>	<u>405</u>
Total Liabilities & Capitalization	<u>277,188,792</u>	<u>174,894,238</u>	<u>94,079,301</u>	<u>38,285,001</u>	<u>10,346,331</u>	<u>3,738,354</u>	<u>466,225</u>	<u>628</u>

**PSE&G Clean Energy Future Energy Efficiency Program
Gas Income Statement and Balance Sheet**

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<u>Gas Program</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
<u>Income Statement</u>								
Operating Revenues	2,685,449	(1,023,391)	6,848,041	15,434,494	22,951,193	30,678,524	44,313,463	43,478,594
Operating Expenses								
Operations & Maintenance ¹	3,740,470	9,667,627	15,514,252	21,244,920	27,509,654	34,191,026	32,868,313	30,713,493
Depreciation & Amortization	-	707,226	2,323,744	2,424,776	2,424,776	2,558,225	1,996,514	177,932
Total Operating Expenses	<u>3,740,470</u>	<u>10,374,853</u>	<u>17,837,996</u>	<u>23,669,696</u>	<u>29,934,430</u>	<u>36,749,252</u>	<u>34,864,828</u>	<u>30,891,425</u>
Operating Income	(1,055,021)	(11,398,244)	(10,989,955)	(8,235,202)	(6,983,236)	(6,070,728)	9,448,635	12,587,169
Other Income	91,897	1,181,154	2,897,004	5,881,984	10,430,888	15,579,387	19,117,898	18,991,798
Interest Expense	(48,384)	(588,821)	(1,668,176)	(2,840,984)	(4,060,589)	(5,286,683)	(6,054,091)	(5,834,159)
Income Before Income Taxes	(1,011,507)	(10,805,911)	(9,761,127)	(5,194,201)	(612,918)	4,221,976	22,512,442	25,744,808
Income Tax Expense	<u>1,160,518</u>	<u>12,619,355</u>	<u>14,898,758</u>	<u>13,943,830</u>	<u>13,118,614</u>	<u>12,059,889</u>	<u>(3,867,120)</u>	<u>(7,776,832)</u>
Net Income	149,011	1,813,444	5,137,631	8,749,629	12,505,696	16,281,865	18,645,321	17,967,976
Preferred Dividends	-	-	-	-	-	-	-	-
Earnings Available to PSEG	<u>149,011</u>	<u>1,813,444</u>	<u>5,137,631</u>	<u>8,749,629</u>	<u>12,505,696</u>	<u>16,281,865</u>	<u>18,645,321</u>	<u>17,967,976</u>

¹The amortization of the regulatory asset associated with the Program Investment is considered "Customer Assistance Expense" for Accounting Purposes and is included in Operations & Maintenance Expense

Incentive / (Penalty) Include in Revenues above

<u>Balance Sheet</u>	<u>Assets</u>							
Property, Plant & Equipment	-	12,123,881	12,123,881	12,123,881	12,123,881	13,013,543	13,013,543	13,013,543
Plant in CWIP								
Less: Accumulated Depreciation & Amortization	-	(707,226)	(3,030,970)	(5,455,746)	(7,880,523)	(10,438,748)	(12,435,262)	(12,613,195)
Net Property, Plant & Equipment	-	11,416,654	9,092,911	6,668,134	4,243,358	2,574,795	578,280	400,348
Regulatory Asset	4,183,967	57,886,513	132,544,326	216,692,796	308,289,863	405,514,971	437,957,184	448,144,760
Less: Accumulated Amortization	(104,524)	(1,782,572)	(7,893,696)	(19,313,889)	(36,590,655)	(60,147,596)	(88,602,303)	(118,170,364)
Net Regulatory Asset	<u>4,079,443</u>	<u>56,103,941</u>	<u>124,650,630</u>	<u>197,378,907</u>	<u>271,699,209</u>	<u>345,367,376</u>	<u>349,354,882</u>	<u>329,974,396</u>
Total Assets	<u>4,079,443</u>	<u>67,520,595</u>	<u>133,743,540</u>	<u>204,047,042</u>	<u>275,942,567</u>	<u>347,942,170</u>	<u>349,933,162</u>	<u>330,374,744</u>
	<u>Liabilities & Capitalization</u>							
Liabilities								
Deferred Income Taxes	290,048	3,453,001	7,386,901	11,267,069	15,019,674	18,546,881	18,224,838	16,959,989
Capitalization								
Debt	1,743,287	29,473,893	58,129,576	88,687,212	120,035,933	151,536,228	152,600,326	144,184,484
Preferred Stock	-	-	-	-	-	-	-	-
Common Equity	<u>2,046,108</u>	<u>34,593,701</u>	<u>68,227,063</u>	<u>104,092,760</u>	<u>140,886,959</u>	<u>177,859,061</u>	<u>179,107,999</u>	<u>169,230,271</u>
Total Capitalization	<u>3,789,395</u>	<u>64,067,594</u>	<u>126,356,639</u>	<u>192,779,973</u>	<u>260,922,893</u>	<u>329,395,290</u>	<u>331,708,325</u>	<u>313,414,755</u>
Total Liabilities & Capitalization	<u>4,079,443</u>	<u>67,520,595</u>	<u>133,743,540</u>	<u>204,047,042</u>	<u>275,942,567</u>	<u>347,942,170</u>	<u>349,933,162</u>	<u>330,374,744</u>

**PSE&G Clean Energy Future Energy Efficiency Program
Gas Income Statement and Balance Sheet**

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<u>Gas Program</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>
<u>Income Statement</u>								
Operating Revenues	43,765,617	47,129,292	51,392,766	54,449,856	54,530,792	54,411,801	52,147,698	49,298,677
Operating Expenses								
Operations & Maintenance ¹	30,510,502	30,358,021	30,285,839	30,155,946	30,117,946	30,119,968	30,122,051	30,019,672
Depreciation & Amortization	177,932	177,932	44,483	-	-	-	-	-
Total Operating Expenses	30,688,434	30,535,954	30,330,322	30,155,946	30,117,946	30,119,968	30,122,051	30,019,672
Operating Income	13,077,183	16,593,338	21,062,444	24,293,911	24,412,846	24,291,833	22,025,648	19,279,005
Other Income	17,894,200	13,687,570	8,497,548	4,221,404	2,186,821	324,296	(0)	(0)
Interest Expense	(5,435,484)	(4,930,124)	(4,413,516)	(3,898,959)	(3,384,496)	(2,870,033)	(2,355,569)	(1,841,547)
Income Before Income Taxes	25,535,899	25,350,784	25,146,476	24,616,356	23,215,171	21,746,096	19,670,078	17,437,458
Income Tax Expense	(8,795,757)	(10,167,043)	(11,553,780)	(12,608,385)	(12,791,639)	(12,907,002)	(12,415,423)	(11,765,883)
Net Income	16,740,142	15,183,741	13,592,696	12,007,970	10,423,532	8,839,094	7,254,655	5,671,575
Preferred Dividends	-	-	-	-	-	-	-	-
Earnings Available to PSEG	16,740,142	15,183,741	13,592,696	12,007,970	10,423,532	8,839,094	7,254,655	5,671,575

¹The amortization of the regulatory asset associated with the Program Investment is considered "Customer Assistance Expense" for Accounting Purposes and is included in Operations & Maintenance Expense

Incentive / (Penalty) Include in Revenues above

<u>Balance Sheet</u>								
<u>Assets</u>								
Property, Plant & Equipment	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543
Plant in CWIP								
Less: Accumulated Depreciation & Amortization	(12,791,127)	(12,969,060)	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)
Net Property, Plant & Equipment	222,415	44,483	0	0	0	0	0	0
Regulatory Asset	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105
Less: Accumulated Amortization	(148,175,533)	(178,226,074)	(208,276,614)	(238,327,154)	(268,377,695)	(298,428,235)	(328,478,775)	(358,424,792)
Net Regulatory Asset	302,582,572	272,532,031	242,481,491	212,430,951	182,380,410	152,329,870	122,279,330	92,333,313
Total Assets	302,804,987	272,576,514	242,481,491	212,430,951	182,380,410	152,329,870	122,279,330	92,333,313
<u>Liabilities & Capitalization</u>								
<u>Liabilities</u>								
Deferred Income Taxes	15,461,512	13,887,818	12,323,612	10,762,569	9,201,526	7,640,483	6,079,440	4,525,829
<u>Capitalization</u>								
Debt	132,190,556	119,008,106	105,882,683	92,776,269	79,669,855	66,563,441	53,457,027	40,395,280
Preferred Stock	-	-	-	-	-	-	-	-
Common Equity	155,152,919	139,680,591	124,275,196	108,892,113	93,509,029	78,125,946	62,742,862	47,412,204
Total Capitalization	287,343,475	258,688,697	230,157,879	201,668,382	173,178,884	144,689,387	116,199,890	87,807,485
Total Liabilities & Capitalization	302,804,987	272,576,514	242,481,491	212,430,951	182,380,410	152,329,870	122,279,330	92,333,313

**PSE&G Clean Energy Future Energy Efficiency Program
Gas Income Statement and Balance Sheet**

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<u>Gas Program</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	<u>2041</u>	<u>2042</u>
<u>Income Statement</u>								
Operating Revenues	44,522,849	36,320,689	27,399,698	18,244,386	9,075,451	2,264,963	673,912	62,125
Operating Expenses								
Operations & Maintenance ¹	28,391,041	23,939,416	18,630,347	12,773,775	6,493,600	1,595,833	482,479	45,371
Depreciation & Amortization	-	-	-	-	-	-	-	-
Total Operating Expenses	<u>28,391,041</u>	<u>23,939,416</u>	<u>18,630,347</u>	<u>12,773,775</u>	<u>6,493,600</u>	<u>1,595,833</u>	<u>482,479</u>	<u>45,371</u>
Operating Income	16,131,808	12,381,273	8,769,351	5,470,611	2,581,852	669,130	191,433	16,755
Other Income	(0)	(0)	(0)	-	-	-	-	-
Interest Expense	(1,337,120)	(887,212)	(520,947)	(250,365)	(83,957)	(20,776)	(3,951)	(136)
Income Before Income Taxes	14,794,688	11,494,061	8,248,404	5,220,246	2,497,894	648,353	187,482	16,619
Income Tax Expense	(10,676,642)	(8,761,635)	(6,643,997)	(4,449,175)	(2,239,323)	(584,366)	(175,314)	(16,202)
Net Income	4,118,046	2,732,426	1,604,407	771,072	258,571	63,987	12,168	417
Preferred Dividends	-	-	-	-	-	-	-	-
Earnings Available to PSEG	<u>4,118,046</u>	<u>2,732,426</u>	<u>1,604,407</u>	<u>771,072</u>	<u>258,571</u>	<u>63,987</u>	<u>12,168</u>	<u>417</u>

¹The amortization of the regulatory asset associated with the Program Investment is considered "Customer Assistance Expense" for Accounting Purposes and is included in Operations & Maintenance Expense

Incentive / (Penalty) Include in Revenues above

<u>Balance Sheet</u>								
<u>Assets</u>								
Property, Plant & Equipment	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543	13,013,543
Plant in CWIP								
Less: Accumulated Depreciation & Amortization	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)	(13,013,543)
Net Property, Plant & Equipment	0	0	0	0	0	0	0	0
Regulatory Asset	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105	450,758,105
Less: Accumulated Amortization	(386,797,284)	(410,736,700)	(429,367,047)	(442,140,822)	(448,634,422)	(450,230,255)	(450,712,734)	(450,758,105)
Net Regulatory Asset	<u>63,960,821</u>	<u>40,021,405</u>	<u>21,391,058</u>	<u>8,617,283</u>	<u>2,123,683</u>	<u>527,850</u>	<u>45,371</u>	<u>0</u>
Total Assets	<u>63,960,821</u>	<u>40,021,405</u>	<u>21,391,058</u>	<u>8,617,283</u>	<u>2,123,683</u>	<u>527,850</u>	<u>45,371</u>	<u>0</u>
<u>Liabilities & Capitalization</u>								
<u>Liabilities</u>								
Deferred Income Taxes	3,068,177	1,869,461	957,840	348,896	60,710	14,236	1,224	-
<u>Capitalization</u>								
Debt	28,013,278	17,551,562	9,400,173	3,803,819	949,058	236,285	20,310	0
Preferred Stock	-	-	-	-	-	-	-	-
Common Equity	32,879,367	20,600,382	11,033,044	4,464,567	1,113,915	277,329	23,837	0
Total Capitalization	<u>60,892,645</u>	<u>38,151,944</u>	<u>20,433,217</u>	<u>8,268,387</u>	<u>2,062,973</u>	<u>513,614</u>	<u>44,147</u>	<u>0</u>
Total Liabilities & Capitalization	<u>63,960,821</u>	<u>40,021,405</u>	<u>21,391,058</u>	<u>8,617,283</u>	<u>2,123,683</u>	<u>527,850</u>	<u>45,371</u>	<u>0</u>

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

**IN THE MATTER OF THE PETITION OF PUBLIC
SERVICE ELECTRIC AND GAS COMPANY
FOR APPROVAL OF ITS CLEAN ENERGY FUTURE-
ENERGY EFFICIENCY PROGRAM ON A
REGULATED BASIS**

BPU Docket No. _____

**DIRECT TESTIMONY
OF
DANIEL HANSEN
VICE PRESIDENT, CHRISTENSEN ASSOCIATES
ENERGY CONSULTING, LLC**

October 11, 2018

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**PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
DANIEL HANSEN**

VICE PRESIDENT, CHRISTENSEN ASSOCIATES ENERGY CONSULTING, LLC

1 **I. INTRODUCTION AND PURPOSE OF THE TESTIMONY**

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

3 A. My name is Daniel Hansen and I am a Vice President at Christensen Associates
4 Energy Consulting, LLC. My principal place of business is 800 University Bay Drive, Suite
5 400, Madison, Wisconsin 53705. My credentials are set forth in the attached Schedule DGH-
6 1.

7 **Q. Please describe your involvement in this proceeding.**

8 A. I have been retained by Public Service Electric and Gas Company (“PSE&G” or “the
9 Company”) to assist them in developing and supporting their Green Enabling Mechanism
10 (“GEM”) proposal. The GEM aligns utility and customer incentives to promote conservation
11 and energy efficiency.

12 **Q. What is the purpose of your direct testimony in this proceeding?**

13 A. The purpose of my testimony is to introduce and support PSE&G’s proposed GEM.

14 **II. THE PURPOSE OF PSE&G’S PROPOSED GREEN ENABLING**
15 **MECHANISM**

16 **Q. What is the purpose of PSE&G’s proposed GEM?**

17 A. The GEM is intended to remove the disincentive to promote conservation and energy
18 efficiency that PSE&G faces because of its retail distribution rate designs. Specifically,

1 PSE&G recovers its distribution costs through a combination of fixed service charges (*i.e.*,
2 \$/month), volumetric energy rates (*i.e.*, \$/kWh or \$/Therm), and demand charges (*i.e.*, \$/kW
3 or \$/Demand Therm). These rates are set periodically, typically in a rate case, to collect a
4 specific amount of revenue (the revenue requirements) based on an agreed-upon test year
5 number of customers and weather-normalized sales and/or demands from those customers.
6 Actual revenues recorded by PSE&G will vary as the number of customers and their usage
7 varies from the values used to set rates. When customers reduce their energy use or demand,
8 PSE&G experiences a reduction in revenue that is not matched by a reduction in distribution
9 costs. Consequently, PSE&G currently has a disincentive to encourage customers to reduce
10 usage.

11 The GEM would remove this disincentive by creating a deferral tracking account in
12 which the difference between allowed and actual distribution revenue is recorded. Allowed
13 revenue will be determined in PSE&G's current rate case proceeding (BPU Docket numbers
14 ER18010029 and GR18010030) and is reflective of each customer class's allocated cost of
15 service. As explained in detail later in my testimony, the GEM will establish the monthly
16 amount of total allowed revenue ("GEM revenue") by multiplying the per-customer allowed
17 revenue by the actual number of customers served in the current month. The difference
18 between the GEM revenue and actual distribution revenue from customers will be booked to
19 a GEM deferral account. Over-recovery of allowed revenue (when GEM revenues are lower
20 than actual revenues) results in a rate decrease in a future period. Conversely, under-recovery
21 of allowed revenues (when GEM revenues are higher than actual revenues) results in a rate

1 increase in a future period. Through these rate adjustments, the GEM would make PSE&G
2 indifferent to its customers' consumption decisions.

3 **Q. Why is it important to remove PSE&G's disincentive to promote conservation**
4 **and energy efficiency?**

5 A. By removing PSE&G's disincentive to promote conservation and energy efficiency,
6 the GEM helps align the interests of the Company and its ratepayers. This is particularly
7 relevant given the scale and scope of the energy efficiency and conservation programs
8 described in the testimony of Karen Reif. PSE&G's interest in implementing and
9 successfully running energy efficiency programs, like any other utility recovering fixed costs
10 through volumetric rates, is affected by a conflict between the success of those programs and
11 the resulting detriment to the Company's financial health. A report by the American Council
12 for an Energy Efficient Economy ("ACEEE") supported this view, concluded the following
13 in a 2015 report (italics added):¹

14 Our analysis of recent data shows that states achieving the highest energy savings are
15 those with a comprehensive strategy based on the right business model and long-term
16 energy efficiency targets aligned with that model. Energy savings targets are
17 established through specific annual and longer-term targets for cost-effective energy
18 efficiency (i.e., an EERS). *Complementary performance incentives and decoupling*
19 *policies play a critical role in elevating utilities' interest in achieving such targets.*
20 Furthermore, those complementary policies are likely essential for sustaining utility
21 interest in capturing energy efficiency resources over time.

22 In short, the GEM would allow the Company to work as a partner with its customers,
23 the Board of Public Utilities (the "Board" or "BPU"), and other stakeholders to meet the
24 goals of the Clean Energy Act.

¹ Molina, M. and Kushler, M. (2015). Policies Matter: Creating a Foundation for an Energy-Efficient Utility of the Future. American Council for an Energy Efficient Economy.

1 **Q. Is there any evidence that mechanisms like the GEM are associated with**
2 **improved conservation and energy efficiency outcomes?**

3 A. Yes, two recent articles have discussed the relationship between revenue decoupling
4 (the generic term for mechanisms such as the GEM) and electric energy efficiency. First, an
5 article in *The Electricity Journal* examined five decoupled utilities (Idaho Power Company,
6 Portland General Electric, Pacific Gas & Electric Company, San Diego Gas & Electric
7 Company, and Southern California Edison), concluding “In each instance, the utility
8 significantly increased both its efficiency program spending and its energy savings in the
9 years following adoption of decoupling.”²

10 Second, an article in *The Energy Journal* analyzed data from January 2001 through
11 December 2010 and found that “decoupling is historically associated with significant
12 residential electricity consumption reductions, augmented DSM [Demand Side Management]
13 spending levels, and increased DSM investment efficacy.”³

14 **Q. Is there any related evidence in favor of applying revenue decoupling to natural**
15 **gas utilities?**

16 A. Yes, I conducted two independent evaluations (conducted on behalf of all
17 stakeholders) of natural gas revenue decoupling mechanisms.⁴ The first evaluation was of
18 Northwest Natural Gas’s mechanism,⁵ while the second evaluation covered the Conservation
19 Incentive Programs (“CIPs”) in place at both South Jersey Gas and New Jersey Natural Gas.⁶

² Nissen, Will and Samantha Williams. “The link between decoupling and success in utility-led energy efficiency.” *The Electricity Journal*, 29 (2016) 59-65.

³ Kahn-Lang, Jenya. “Effects of Electric Utility Decoupling on Energy Efficiency.” *The Energy Journal*, Vol. 37, No. 4, pp. 297-314, 2016.

⁴ Both evaluations were required by the order approving the mechanism. While the utilities paid for the evaluations, they were independently conducted with input from all stakeholders.

⁵ “A Review of Distribution Margin Normalization as Approved by the Oregon Public Utility Commission for Northwest Natural.” March 2005.

⁶ “An Evaluation of the Conservation Incentive Program Implemented for New Jersey Natural Gas and South Jersey Gas.”

1 For all three utilities, I concluded that the mechanism should be continued, in part because
2 changes in utility behavior were consistent with the incentive changes decoupling is intended
3 to produce. In addition, a recent independent evaluation of natural gas and electric
4 decoupling mechanisms at Puget Sound Energy concluded that “[f]or all three years of
5 decoupling, *we find no conclusive evidence to suggest that the decoupling mechanism has*
6 *any adverse effects.*”⁷ (Italics in the original.)

7 **Q. Would the GEM reduce the Company’s incentive to operate efficiently?**

8 A. No, the GEM would not reduce PSE&G’s incentive to operate efficiently. The GEM
9 affects only the distribution revenue collected from applicable customers. It does not affect
10 cost levels or guarantee a rate of return. The benefits the Company can expect to realize from
11 operating efficiently are not changed by implementing the GEM.

12 **Q. Would the GEM reduce a customer’s incentive to conserve?**

13 A. No. With the GEM in place, a customer who is evaluating whether to engage in a
14 conservation activity can expect an immediate benefit that is the same as it would have
15 obtained under standard rates. That is, the customer can expect a bill reduction in the amount
16 of the full volumetric or demand rate, including the commodity cost and all riders and fees,
17 multiplied by the amount of saved energy (*i.e.*, kWh or Therms) or demand. The portion of
18 this bill reduction that is associated with distribution revenues is then placed in the GEM
19 deferral account for the utility to recover in the following year. Because each customer uses a
20 very small percentage of the total group-level usage or demand, a conserving customer pays

March 2009.

⁷ Peach, H.G., Thompson, M., and Joseph, J. (2016) Three Years of Decoupling: An Independent Third-Party Evaluation of Puget Sound Energy’s Electric and Natural Gas Decoupling Mechanisms.

1 back essentially none of its own lost revenues. Therefore, a customer's decision to conserve
 2 should not be affected by the presence of the GEM because the customer cannot conserve
 3 enough energy to affect the rate it pays in the following year.

4 **Q. Have other regulators acknowledged that decoupling does not affect a**
 5 **customer's incentive to conserve?**

6 A. Yes. The Oregon Public Utility Commission concluded that decoupling does not
 7 affect customer incentive to conserve in Order No. 09-020 for Docket UE-197,⁸ which
 8 approved the Sales Normalization Adjustment, or SNA, for Portland General Electric. The
 9 order stated the following:

10 Staff also argues that the SNA would create a disincentive for customers to improve
 11 their energy efficiency because the SNA would increase rates and reduce the bill
 12 savings. We believe that the opposite is true: an individual customer's action to
 13 reduce usage will have no perceptible effect on the decoupling adjustment, and the
 14 prospect of a higher rate because of actions by others may actually provide more
 15 incentive for an individual customer to become more energy efficient. (Page 28)

16 **Q. Have other organizations preferred decoupling to alternatives because it does**
 17 **not reduce a customer's incentive to conserve?**

18 A. Yes. The Natural Resources Defense Council ("NRDC") has supported revenue
 19 decoupling as a means of addressing utility disincentives to promote conservation because
 20 decoupling preserves the customer's incentive to conserve.⁹

21 **Q. Do you agree that the GEM proposal removes a utility disincentive to support**
 22 **technologies such as rooftop solar?**

23 A. Yes. In the absence of the GEM, customers who install rooftop solar, battery storage,
 24 or other technologies may reduce their bill by more than the reduction in utility costs. Even

⁸ <http://apps.puc.state.or.us/orders/2009ords/09-020.pdf>

⁹ Energy Facts: Removing Disincentives to Utility Energy Efficiency Efforts.
<https://www.nrdc.org/sites/default/files/decoupling-utility-energy.pdf>

1 “net zero” solar customers who generate as much energy as they consume in a month rely on
2 the utility grid in virtually all hours to balance their generation against their consumption. I
3 believe the grid will continue to have value to all customers and the GEM can help ensure
4 that the Company has sufficient resources to properly maintain it as new technologies
5 proliferate.

6 **III. PSE&G’S PROPOSED GREEN ENABLING MECHANISM**

7 **Q. What topics will you address in this section?**

8 A. In this section of my testimony, I provide a detailed description of PSE&G’s
9 proposed GEM.

10 **Q. At a conceptual level, how would the proposed GEM function?**

11 A. In the proposed GEM, PSE&G records the monthly difference between allowed, or
12 “GEM revenue,” and actual revenue for each of the applicable customer classes. This
13 difference is called the “GEM deferral.” These deferrals are accumulated for 12 consecutive
14 months, at which point the annual total is divided by forecast sales to the customer class for
15 the following year to calculate the Green Enabling Charge or Credit (“GEC”). “Sales” is
16 defined as therms for all gas service classifications, as kWh for non-demand electric service
17 classifications, and as annual kW (as opposed to summer kW which is a different tariff
18 component) for demand-based electric service classes (GLPMDED and LPL-S in Table 1
19 below). That is, the GEC will be based on a demand charge for GLPMDED and LPL-S
20 customers and will be based on an energy charge (per therm or kWh) for all other rate
21 classes.

1 When GEM revenue is less than actual revenue, customers receive a rate decrease or
2 credit in the following year. When GEM revenue exceeds actual revenue, customers receive
3 a rate increase or charge in the following year. The GEM deferral will include the effects of
4 weather (*i.e.*, allowed revenue is based on weather-normalized test-year revenues while
5 actual revenue fluctuates with weather conditions). As described below, total GEM revenue
6 scales with the number of customers served.

7 **Q. Why does the GEM adjust the per-kWh rate for non-demand classes and adjust**
8 **the per-kW rate for GLPMDED and LPL-S customers?**

9 A. The difference in adjustment method is intended to conform the GEM rate adjustment
10 to the associated tariff's rate design. As shown in Table 1 below, the volumetric energy rate
11 recovers a comparatively small proportion of revenue for the GLPMDED customers (18
12 percent vs. 78 percent from the demand charge) and is excluded from the LPL-S rate, which
13 consists entirely of a demand charge and a monthly fixed service charge.

14 **Q. How would the proposed GEM affect the total amount of revenue from**
15 **distribution base rates?**

16 A. As discussed earlier in my testimony, through regulatory proceedings, PSE&G
17 establishes rates to collect a specific amount of revenue from customers (the utility's revenue
18 requirement) based on the test-year number of customers and energy usage (volumes and
19 demand) by those customers (referred to as "billing determinants"). Currently, the actual
20 revenue PSE&G records varies from the revenue requirement set in the last rate proceeding
21 due to both changes in the number of customers served and their energy use. Changes in
22 energy use may be due to variability in weather, increases in appliance and home energy
23 efficiency, and variations in economic conditions in and around PSE&G's service territory.

1 PSE&G's GEM proposal is to record the difference between actual revenues and GEM
 2 revenues, which are a product of allowed revenue per customer (to be established in the
 3 ongoing base rate case proceeding and adjusted in future rate proceedings) and the actual
 4 number of customers served. By recovering or refunding the difference between GEM
 5 revenue and actual revenue, the GEM eliminates the variability in revenue due to variations
 6 in customer usage levels, regardless of the cause, but retains variability in revenue due to the
 7 number of customers served. Because the GEM severs the link between PSE&G's sales and
 8 revenues that exists via its rate designs, the GEM removes PSE&G's disincentive to promote
 9 conservation and energy efficiency. In addition, the GEM removes PSE&G's incentive to
 10 *increase* usage per customer.

11 **Q. How will GEM deferrals be calculated?**

12 A. Each month, PSE&G will compare GEM revenue and actual revenue from
 13 distribution base rates, with the difference entered in the GEM deferral account. The
 14 calculation of the deferral for customer group g in month m ($Deferral_{m,g}$) is shown in
 15 Equation 1. The equation has the same form regardless of the service (gas or electric) or
 16 customer class to which it is applied; only the parameter values (*e.g.*, the allowed revenue per
 17 customer) change when the GEM is applied to different customer classes.

18 Equation 1: $Deferral_{m,g} = C_{m,g} \times Allowed\ RPC_{m,g} - Actual\ Revenue_{m,g}$

19 where

20 $C_{m,g}$ = The number of customers served for customer class g served during month m .

21 $Allowed\ RPC_{m,g}$ = The allowed weather-normalized revenue per customer for customer class
 22 g served during month m , as determined each time base rates change, based on the
 23 revenue requirements and billing determinants established in each proceeding.

1 *Actual Revenue*_{*m,g*} = The distribution base rate revenue booked to customer class *g* served
2 during month *m*.

3 The first term of Equation 1, $C_{m,g} \times Allowed\ RPC_{m,g}$, represents the total allowed
4 revenue under the GEM, or GEM revenue, calculated as the allowed revenue per customer
5 multiplied by the number of customers currently served during month *m* for customer class *g*.
6 This term shows that total allowed revenue changes with the number of customers served.
7 The second term of Equation 1 (*Actual Revenue*_{*m,g*}) is the revenue booked from the base rates
8 during month *m* for customer class *g*. GEM deferrals (whether positive or negative) will earn
9 interest, with the applicable rate being the 2-year U.S. Treasury rate plus 60 basis points.
10 The interest rate will reset based on the current method for PSE&G's Universal Service Fund
11 rate, specifically resetting each month using the 2-year Treasury rate as of the first business
12 day of the month. Because the *Allowed RPC*_{*m,g*} values are based on weather-normalized
13 usage while the *Actual Revenue*_{*m,g*} includes the impacts of weather, the resulting GEM
14 deferral will include the effect of weather on revenue. That is, the GEM weather normalizes
15 PSE&G's distribution revenue, and also adjusts for any other factors that result in a change in
16 usage per customer versus the test-year usage per customer used in setting the base rates.

17 **Q. How will PSE&G determine the value of $C_{m,g}$, or the number of customers**
18 **served?**

19 A. The value of $C_{m,g}$ is based on the number of full-month customers, which is
20 calculated as the service charge revenue divided by the service charge rate. This definition is
21 used in place of the number of customers billed, which can include more than one customer
22 for the same meter in a given month due to move outs/move ins. Customers that move
23 out/move in during a billing cycle receive a prorated service charge, which is reflected in

1 PSE&G's service charge revenues. Therefore, PSE&G's proposal to use the number of full-
2 month customers provides an accurate number of meters receiving service for the month and
3 prevents double counting of customer premises in the calculation of allowed revenue.

4 **Q. How will PSE&G determine the values for *Allowed RPC_{m,g}*, or the allowed
5 revenue per customer?**

6 A. The *Allowed RPC_{m,g}* values will be based on the distribution revenues and full-month
7 number of customers established through the ongoing rate case in each customer class. That
8 is, the same inputs used to calculate the Delivery Charges through PSE&G's pending base
9 rate proceeding will be used to calculate the RPC values. Each month's RPC is calculated as
10 that month's allocated revenue requirement divided by the test-year number of customers in
11 the class for that month. The resulting values will reflect the pattern of RPC across months,
12 such as the fact that electric RS customers have higher RPC during summer months than in
13 winter months. For those customers, if the GEM used a single RPC value across the whole
14 year in place of the proposed month-specific values, it would tend to produce refunds during
15 summer months (when GEM revenue would tend to be less than actual revenue) and charges
16 during winter months (when GEM revenue would tend to exceed actual revenue). The use of
17 monthly RPC values results in GEM revenue values that better reflect the actual revenue for
18 PSE&G each month. Schedules DGH-2E and DGH-2G (for electric and gas service,
19 respectively) contain an example of PSE&G's RPC calculations for each customer class and
20 month of year, including the underlying data. The data submitted is based on current rates
21 and initial test-year billing determinants. Note that the RPC values will be updated whenever

1 base rates change (*e.g.*, at the conclusion of the rate case, due to infrastructure programs, and
2 subsequent rate cases), as illustrated in Schedules DGH-3E and DGH-3G.

3 **Q. Can you provide simple examples of how the calculations outlined above would**
4 **work?**

5 A. Yes. Let's assume that through a rate case PSE&G establishes that it needs to collect
6 \$1,300 from 10 customers with a fixed service charge of \$10 per customer per year, or \$100
7 in total per year. The remaining \$1,200 will be collected from sales volumes, or \$120 per
8 customer. Assuming sales to each customer is 2,400 kWh during the test year, the rate to
9 collect the \$1,200 will be \$0.05 per kWh ($\$1,200 / (10 \text{ customers} \times 2,400 \text{ kWh})$). The RPC in
10 this example is \$130 ($\$1,300 / 10 \text{ customers}$, which can also be calculated from the rates as
11 $\$10 \text{ per year} + \$0.05 \times 2,400 \text{ kWh}$).

12 Suppose that in the year after the rate case, the number of customers stays at 10 and
13 use per customer increases to 2,500 kWh. Actual revenues for the year will be \$1,350, which
14 is \$100 from the service charge plus \$1,250 from energy sales ($2,500\text{kWh}/\text{customer} \times$
15 $\$0.05/\text{kWh} \times 10 \text{ customers}$). Under current ratemaking methods (in the absence of the GEM),
16 PSE&G would gain \$50 compared to the revenues set in the rate case due to increase in sales.

17 In contrast, under the GEM the \$50 gain would be refunded to customers in the
18 following year. That is, actual revenue would still be \$1,350, but the GEM revenue would be
19 \$1,300 (the \$130 RPC multiplied by the 10 customers served). PSE&G would record a
20 deferral of (\$50) for the year and give it back to customers in the following year through a
21 rate decrease (of \$50 divided by the expected sales during the year).

1 The previous example shows what happens when sales increase but the number of
2 customers served stays the same. Now suppose that the number of customers served
3 increases, but use per customer remains the same. Specifically, the number of customers
4 served increases by 1 and use per customer remains 2,400 kWh. Actual revenue would be
5 \$1,430, with \$110 in service charge revenue and \$1,320 in sales revenue (2,400
6 kWh/customer x \$0.05/kWh x 11 customers). Without the GEM, PSE&G would gain \$130
7 compared to the rate case. With the GEM in place, GEM revenue would be \$1,430 (11
8 customers times \$130 RPC), which exactly matches the actual revenue. Thus, there would be
9 no GEM deferral for that year. The general point from these examples is that the GEM will
10 only affect Company revenue due to changes in use per customer. If the only thing that
11 changes relative to the test year is the number of customers served, the GEM will have no
12 effect.

13 **Q. How would the proposed GEM deferral be converted to a charge or credit?**

14 **A.** Every twelve months, the cumulative GEM deferral for each customer group would
15 be converted to a dollar-per-kWh (for non-demand electric service), dollar-per-kW (for
16 demand-based electric service), or dollar-per-therm (for gas service) charge or credit (the
17 GEC) by dividing the deferral amount by the annual forecasted sales (or demand) to the
18 customer group. A positive cumulative deferral would result in a charge while a negative
19 cumulative deferral would result in a credit. Separate GEC calculations will be made for each
20 affected customer class, which prevents the GEM from causing inter-class cross-subsidies.
21 Schedules DGH-4E and DGH-4G provide examples of the deferral calculation and Schedules
22 DGH-5E and DGH-5G show the associated calculations of the GEC. Schedules DGH-6E and

1 DGH-6G provide details on the deferral interest calculations.

2 **Q. What would be the typical reason for the GEC to be a charge or a credit?**

3 A. The primary purpose of the GEM is to remove the Company's disincentive to
4 promote conservation and energy efficiency. If it is successful in doing so, I would expect the
5 GEM to produce charges on average. These charges would reflect recovery of the reduced
6 revenue from conservation. Conversely, as electric vehicle adoption grows, the increase in
7 sales would produce a credit (all else equal). The effect of weather on customer usage could
8 lead to a charge or credit in a given year. Mild weather (reducing sales from cooling or
9 heating) would tend to produce charges, while severe weather (especially hot summers or
10 cold winters) would produce credits.

11 **Q. What administrative schedule does PSE&G propose for the GEM?**

12 A. For electric service, the proposed administrative schedule for the GEM aligns with
13 the timing of the annual BGS rate adjustments. Specifically, GEM deferrals will be
14 calculated from January through December. PSE&G will file the deferral-induced rate
15 adjustment by the following March 1st with the resulting rates going into effect on June 1st.
16 The rate adjustment will be in place from June 1st through the following May 31st.

17 For gas service, the proposed administrative schedule for the GEM aligns with the
18 timing of the typical annual BGSS rate adjustment. Specifically, GEM deferrals will be
19 calculated from May through April. PSE&G will file the deferral-induced rate adjustment by
20 the following July 1st with the resulting rates going into effect on October 1st. The rate
21 adjustment will be in place from October 1st through the following September 30th.

1 PSE&G will implement the GEM when approved, which may result in the first-year
2 deferral beginning prior to or after January for electric and May for gas.

3 **Q. What portion of the electric and gas rates will be included in the GEM?**

4 A. The GEM only applies to revenue collected from the following Delivery Charges:
5 Service Charge, Distribution Demand Charges (per peak kilowatt or average therm), and
6 Distribution Volumetric Charges (per kilowatt-hour or therm). It does not apply to any
7 supply charges or non-base rate charges such as the Social Benefits Charge, Solar Pilot
8 Recovery Charge, Green Programs Recovery Charge, or the Margin Adjustment Charge.

9 **Q. How does the GEM relate to PSE&G's current Weather Normalization Charge**
10 **("WNC")?**

11 A. As described above, the allowed revenue per customer is calculated using weather
12 normalized billing determinants. Since the GEM will defer the difference between actual
13 revenues and the weather-normalized GEM revenues, the deferral will include the effects of
14 weather (*i.e.*, all else equal, if it's a colder than normal winter and therm sales increase,
15 customers will receive a credit because actual revenues will be higher than GEM revenues,).
16 Because the impacts of weather are included in the GEM, the WNC deferral calculation
17 would be suspended once the GEM is in effect. The collection/credit of the WNC deferred
18 balance through the tariff would continue until the balance is close to \$0. Any small
19 remaining balances will be rolled into the GEM. Also, as discussed later in my testimony, the
20 GEM continues the customer protections established in the WNC, namely through a cap on
21 bill increases and an earnings test.

1 **Q. What are the applicable electric service classes for the GEM?**

2 A. The GEM will apply to the following electric service classes, comprising four distinct
3 groups:

- 4 • Residential customer classes: those taking service on the Residential Service (“RS”) and Residential Heating Service (“RHS”) rates;
- 5
- 6 • Residential Time-of-Use (“TOU”) customers: those taking service on the Residential
7 Load Management Service (“RLM”) rate;
- 8 • General Light and Power Service Measured Demand and Estimated Demand
9 (“GLPMDED”) customers; and
- 10 • Large Power and Lighting Service customers served at secondary distribution
11 voltages (“LPL-S”).

12 The GEM excludes all other customers, including: General Light and Power Traffic and
13 Signal (GLPTS) customers, General Light and Power Night Use (GLPNU) customers, Large
14 Power and Lighting Service customers served at primary voltage (“LPL-P”), High Tension
15 Service (“HTS”) customers, Water Heating Service (“WH”) customers, Water Heating
16 Storage Service (“WHS”) customers, Building Heating Service (“HS”) customers, and all
17 street lighting customers.

18 **Q. What are the applicable gas service classes for the GEM?**

19 A. The GEM will apply to the following gas service classes, comprising three distinct
20 groups:

- 21 • Residential customer classes: Residential Service (“RSG”), including heating
22 (“RSGH”) and non-heating (“RSGNH”);

- 1 • General Service (“GSG”) customers; and
- 2 • Large Volume Service (“LVG”) customers.

3 The GEM excludes all other customers, including Firm Transportation Gas Service (“TSG-
4 F”), Non-Firm Transportation Gas Service (“TSG-NF”), Contract Service (“CSG”),
5 Cogeneration Interruptible Service (“CIG”), and Street Lighting Service (“SLG”).

6 **Q. How did you determine which classes to include in the GEM?**

7 A. Within electric service, the Residential, Residential TOU, GLPMDED, and LPL-S
8 customers were chosen as the GEM-eligible customers because they account for the vast
9 majority of the distribution base rate revenue from volumetric and demand charges. Table 1
10 summarizes the share of electric base revenue from each of the three rate types, by customer
11 class, based on initial weather-normalized billing determinants filed in the rate case. Column
12 1 contains the share of revenue from volumetric rates; column 2 from demand charges; and
13 column 3 from fixed service charges. For example, the first row of column 1 shows that 90
14 percent of RS base rate revenue comes from volumetric rates. Column 4 shows the share of
15 PSE&G’s electric base revenue by customer class (*e.g.*, RS customers account for 44 percent
16 of PSE&G’s base rate revenue). Column 5 shows the share of PSE&G electric base rate
17 revenue from volumetric rates or demand charges by customer class. It is calculated as the
18 sum of columns 1 and 2 multiplied by column 4 (*e.g.*, for RS customers, $(90\% + 0\%) \times 44\%$
19 $= 40\%$). The total in the bottom right-hand corner of the table shows that 83 percent of
20 PSE&G electric base rate revenue comes from volumetric rates or demand charges. The
21 highlighted cells show that the GEM-eligible customer classes account for 78 of that 83
22 percent (where $78\% = 40\% + 0\% + 0\% + 21\% + 16\%$). The important point to note is that,

1 through the proposed GEM, PSE&G can remove 94 percent of its current link between
2 customer usage and revenue (where 94% = 78% / 83%), thereby removing the Company's
3 disincentive to promote energy efficiency to the customers that most impact distribution
4 revenues.

5 Additionally, the included customer classes have a large enough number of customers
6 such that the deferral associated with any one customer's usage change is *de minimis* when
7 spread across the entire class for recovery or refund. The Residential class (RS and RHS) has
8 approximately 1.9 million customers, the Residential TOU class has approximately 12,000
9 customers, GLPMDED has approximately 265,000 customers, and LPL-S has approximately
10 9,000 customers.

1 **Table 1: Share of Electric Base Rate Revenue from Variable Charges**

Customer Class	Share of Base Rate Revenue by Charge			(4) Share of PSE&G Base Rate Revenue	(5) % of Base Revenue from Volumetric or Demand Rates
	(1) Volumetric Rate	(2) Demand Charge	(3) Fixed Service Charge		
Residential (RS)	90%	0%	10%	44%	40%
Residential Load Management (RLM)	73%	0%	27%	1%	0%
Residential Heating (RHS)	93%	0%	7%	0%	0%
Water Heating (WH)	100%	0%	0%	0%	0%
Water Heating Storage (WHS)	2%	0%	98%	0%	0%
Building Heating (HS)	94%	0%	6%	0%	0%
General Lighting and Power Measured Demand (GLPMDED)	18%	78%	5%	22%	21%
General Lighting and Power Night Use (GLPNU)	13%	52%	34%	0%	0%
General Lighting and Power Traffic Signal (GLPTS)	25%	60%	16%	0%	0%
Large Power and Lighting – Secondary (LPL-S)	0%	84%	16%	20%	16%
Large Power and Lighting – Primary (LPL-P)	0%	92%	8%	3%	3%
High Tension Service – Sub-transmission (HTSST)	0%	85%	15%	2%	2%
High Tension Service – High Voltage (HTSHV)	0%	86%	14%	0%	0%
Street Lighting	0%	0%	100%	7%	0%
Total	44%	39%	17%	100%	83%
Total in GEM				86%	78%

2 **Q. Does a similar argument hold for the gas service classes included in the GEM?**

3 A. Yes. In the case of gas service, the Residential, GSG, and LVG customers were
4 chosen as the GEM-eligible customers because they account for the vast majority of the base
5 rate revenue from volumetric (*i.e.*, per-therm) rates and demand rates. Table 2 provides the
6 same information as Table 1, but for gas service instead of electric service. Also, it excludes
7 customers whose revenue collected is treated as a pass-through to suppliers or non-base rate

1 charges (customers in TSG-F, TSG-NF, CSG, and CIG). The total in the bottom right-hand
 2 corner of the table shows that 81 percent of PSE&G gas base rate revenue comes from
 3 volumetric or demand rates. The highlighted cells show the GEM-eligible customer classes.
 4 Through the proposed GEM, PSE&G can remove its current link between customer usage
 5 and revenue for the included gas customer classes.

6 Additionally, as with electric service, these classes have a large enough number of
 7 customers such that the deferral associated with any one customer's usage change is *de*
 8 *minimis* when spread across the entire class for recovery or refund. The Residential class has
 9 approximately 1.6 million customers, GSG has approximately 140,000 customers, and LVG
 10 has approximately 18,000 customers.

11 **Table 2: Share of Gas Base Rate Revenue from Variable Charges**

Customer Class	Share of Base Rate Revenue by Charge			(4) Share of PSE&G Base Rate Revenue	(5) % of Base Revenue from Volumetric or Demand Rates
	(1) Volumetric Rate	(2) Demand Rate	(3) Fixed Service Charge		
Residential (RSGH, RSGNH)	81%	0%	19%	73%	59%
General Service (GSG)	78%	0%	22%	12%	9%
Large Volume Service (LVG)	24%	58%	18%	15%	13%
Street Lighting	0%	0%	100%	0%	0%
Total	72%	9%	19%	100%	81%

12 **Q. Why are some customer classes excluded from the GEM?**

13 A. Street lighting classes are excluded because all revenues are obtained from fixed
 14 charges, so there is no link between sales and revenue to remove. The remaining excluded

1 customer classes (*e.g.*, GLPNU, GLPTS, LPL Primary, HTS, and water heating services
2 within electric service; and TSG-F, TSG-NF, CSG, and CIG within gas service) contain too
3 few customers and contribute relatively little to PSE&G's disincentive to promote
4 conservation and energy efficiency.

5 **Q. Why did you put Residential TOU customers in their own GEM class rather**
6 **than combining them with the RS and RHS customers?**

7 A. The Residential TOU customers (served on RLM) receive their own GEM deferral
8 because their rate design is significantly different from those of RS and RHS. Specifically,
9 the monthly service charge is higher (currently \$13.07 versus the \$2.27 monthly service
10 charge in RS and RHS) and the energy charges are comparatively low in all but the summer
11 On-Peak pricing period. These rate differences create the possibility of cross subsidies if the
12 RLM customers were pooled with the RS and RHS customers for purposes of the GEM.

13 **Q. Does PSE&G propose to place limits on the GEM charge or credit?**

14 A. PSE&G does not propose any limits on GEM credits. In contrast, PSE&G proposes to
15 limit GEM charges in two ways. First, the GEM charge is capped at 6.5 percent of allowed
16 distribution revenue, as calculated in the GEM. Deferrals in excess of 6.5 percent of allowed
17 distribution revenue will remain in the deferral account for recovery in a future year. Note
18 that 6.5 percent of *distribution revenue* is equivalent to a lower percentage of the customer's
19 *total bill*, which includes supply charges, taxes, and other charges (*e.g.*, the Societal Benefits
20 Charge). The equivalent percentage based on the total bill depends on the levels of supply
21 charges and other rates, which can vary over time, and are outside the purview of the GEM.
22 At rates as of September 8, 2018, the 6.5 percent cap in distribution revenue is equivalent to

1 approximately 1.3 percent of the total bill for electric service and 2.4 percent of the bill for
2 gas service. The 6.5 percent cap will be assessed on a class-by-class basis (*i.e.*, separately for
3 Residential, Residential TOU, GLPMDED, and LPL-S electric service customers and
4 Residential, GSG, and LVG gas service customers). The second limit on GEM charges is
5 accomplished through an earnings test, which will match the test set forth in the Board's
6 recently adopted Infrastructure Investment Program mechanism. Deferrals in excess of the
7 amount allowed by the earnings test will remain in the deferral account for recovery in a
8 future year.

9 **IV. THE PRECEDENTS FOR REVENUE DECOUPLING IN NEW JERSEY**

10 **Q. Has the New Jersey Board of Public Utilities ("BPU") previously approved a**
11 **revenue decoupling mechanism?**

12 A. Yes, in 2006 the BPU approved a revenue decoupling mechanism called the
13 Conservation Incentive Program ("CIP") for New Jersey Natural Gas ("NJNG") and South
14 Jersey Gas ("SJG"). (BPU Docket Nos. GR05121019 and GR05121020.) Though initially a
15 pilot program, the CIP was approved for use indefinitely, with some modifications, in 2014.
16 (BPU Docket No. GR13030185.)

17 **Q. What are the similarities between the CIP and the GEM?**

18 A. The GEM proposal and the CIP implemented at NJNG and SJG are fundamentally
19 similar in the following ways:

- 20 • Both are general decoupling mechanisms, as opposed to a lost revenue adjustment
21 mechanism ("LRAM") that includes only surcharges resulting from energy and

1 demand savings (and the resulting reduction in utility fixed cost recovery) in energy
2 efficiency and conservation programs.

- 3 • Both use a per-customer deferral calculation in which the utility's total allowed
4 revenue changes with the number of customers served;
- 5 • The effect of weather is included in the deferrals of both mechanisms¹⁰;
- 6 • The CIP/GEM deferral is calculated for each month and adjusts the rate annually;
- 7 • There are separate rate adjustments by customer class; and
- 8 • An earnings test is applied to the entire deferral.

9 **Q. What are the differences between the CIP and the GEM?**

10 A. There are some differences between the GEM proposal and the CIP implemented at
11 NJNG and SJG, including:

- 12 • The CIP includes an Incremental Large Customer Count Adjustment, which allows
13 total revenue to increase by more when especially large commercial customers are
14 added to the system. GEM does not contain this provision.
- 15 • The CIP applies its rate increase cap to only the non-weather component of the
16 deferral, while the GEM applies it to the entire deferral.
- 17 • The CIP includes shareholder funding of conservation programs, while the GEM does
18 not.

¹⁰ While the CIP annual filings contain calculations of weather and non-weather-related deferrals, those calculations are only performed for the purpose of applying various tests and not to exclude weather effects from the CIP deferral. Specifically, the non-weather-related deferral is subject to the Modified BGSS Savings Test and the Margin Revenue Test, while the entire deferral is subject to an earnings test.

- 1 • The CIP includes a “Modified BGSS Savings Test” that attempts to offset CIP rate
2 increases with cost savings.

3 **Q. Do those differences mean that the CIP is a fundamentally different type of**
4 **mechanism from the GEM?**

5 A. No. In my opinion the differences are minor and both mechanisms qualify as revenue
6 decoupling mechanisms. I am not alone in viewing the CIP as a revenue decoupling
7 mechanism, as it is included as a revenue decoupling mechanism in a report from the U.S.
8 Department of Energy titled “Natural Gas Revenue Decoupling Regulation: Impacts on
9 Industry”¹¹ and in a report that summarizes decoupling deferrals across utilities and time
10 called “A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs, and
11 Observations.”¹²

12 **Q. Does the CIP’s Modified BGSS Savings Test represent a significant departure**
13 **from the GEM?**

14 A. No, because the Modified BGSS Savings Test applies to only 75 percent of non-
15 weather-related CIP deferrals it does not fundamentally alter the nature of the mechanism.
16 On average during the past three years at SJG and NJNG, the annual CIP filings indicate that
17 the Modified BGSS Savings Test applied to only 18.7 percent and 15.7 percent of total CIP
18 deferrals, respectively. Tables 3 and 4 show the CIP deferrals by utility and year, showing the
19 filing year, the weather-related CIP deferral, the non-weather-related CIP deferral, the total
20 CIP deferral (which is the sum of the two columns to its left), and the amount of the CIP
21 deferral that is eligible for the Modified BGSS Savings Test. This column is calculated as

¹¹ Glatt, S. and M. Dunkle, “Natural Gas Revenue Decoupling Regulation: Impacts on Industry,” U.S. Department of Energy, July 2010.

¹² Morgan, P., “A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs, and Observations,” December 2012.

1 0.75 times the amount of the non-weather-related deferral when that deferral is positive, and
 2 zero otherwise. In the tables, positive values indicate utility under-recovery that leads to a
 3 surcharge in the following year, while negative values indicate utility over-recovery that
 4 leads to a rate decrease in the following year.

5 **Table 3: South Jersey Gas CIP Deferrals**

Filing Year	Weather related (\$ Millions)	Non-weather related (\$ Millions)	Total CIP Deferral (\$ Millions)	Deferral Eligible for Modified BGSS Savings Test (\$ Millions)
2016	21.9	5.8	27.7	4.4
2017	17.6	5.1	22.8	3.9
2018	(2.1)	(4.3)	(6.4)	0
Total	37.4	6.7	44.1	8.2

6
7

Table 4: New Jersey Natural Gas Deferrals

Filing Year	Weather related (\$ Millions)	Non-weather related (\$ Millions)	Total CIP Deferral (\$ Millions)	Deferral Eligible for Modified BGSS Savings Test (\$ Millions)
2016	28.4	11.3	39.7	8.5
2017	20.0	1.0	21.0	0.7
2018	(1.9)	-(0.3)	(2.2)	0
Total	46.5	11.9	58.5	9.2

8 As these tables show, the Modified BGSS Savings Test does not apply to all of (or even a
 9 large fraction of) the CIP deferral and over the last three years, the vast majority of the
 10 deferral is due to weather. I would characterize both the GEM and the CIP as full revenue
 11 decoupling mechanisms that do not differentiate as to the cause of the non-weather-related
 12 deferral and simply allow the companies to recover an amount of revenue per customer that
 13 is approved by the Board in a rate case.

1 **V. THE GEM IS CONSISTENT WITH THE CLEAN ENERGY ACT**

2 **Q. Do you believe that the GEM is consistent with the Clean Energy Act?**

3 A. Yes, the GEM is a means of obtaining recovery for “sales losses resulting from
4 implementation of energy efficiency and peak demand reductions”, as the recently
5 established NJ Clean Energy Act (“the Act”) contemplates. The Act’s language is also
6 consistent with an LRAM, in which the sales reductions from conservation programs are
7 multiplied by their associated customer bill rate to obtain the amount of lost revenue, which
8 is recovered in the following year via a rate surcharge. While an LRAM would make
9 progress toward addressing the Company’s disincentive to promote energy efficiency and
10 conservation, the GEM has a number of advantages, as described below.

11 **Q. Why do you prefer the GEM to an LRAM-based approach?**

12 A. LRAMs have a number of shortcomings relative to revenue decoupling mechanisms
13 such as the GEM:

- 14 • LRAMs do not address the utility’s incentive to *increase* sales;
- 15 • LRAMs may lead to increased contention regarding the measurement of conserved
16 sales or demand, since each additional conserved kWh, kW, or therm is an additional
17 cost to be recovered from customers;
- 18 • LRAMs may cause a utility to avoid offering programs for which the savings cannot
19 be accurately measured;

- 1 • LRAMs may lead to a utility advocating for rules that negatively affect competitors
2 within the energy efficiency space, to minimize the impact on customer sales from
3 non-utility programs.
- 4 • LRAMs may ignore revenue losses from distributed generation, thus giving the utility
5 a disincentive to support growth in renewables;
- 6 • LRAMs are not symmetric – they only lead to rate increases. For example, an LRAM
7 surcharge could occur following a year in which an electric utility successfully
8 implemented conservation programs *and* overall sales were above expected levels due
9 to hot summer weather. In contrast, the GEM would produce a rate decrease
10 following a summer with high sales due to hot weather.

11 The examples listed above reflect a potential adversarial relationship between utilities
12 subject to LRAMs and outside stakeholders. The fact that the GEM is not limited to specific
13 conservation programs eliminates both the issues listed above and the disincentive for
14 PSE&G to promote growth in programs that reduce customer use. The GEM simply results
15 in the Company recovering an amount of revenue per customer that is approved by the Board
16 in a rate case. This in turn establishes PSE&G as a partner rather than an adversary to achieve
17 the goals of the Clean Energy Act.

18 **VI. SUMMARY OF RECOMMENDATIONS**

19 **Q. Please summarize your testimony.**

20 A. I have described PSE&G's proposed Green Enabling Mechanism (GEM), which
21 would remove PSE&G's disincentive to promote conservation and energy efficiency to its

1 electric (Residential, Residential TOU, GLPMDED, and LPL-S) and gas (Residential, GSG,
2 and LVG) customers. The GEM accomplishes this task through a tracking account that
3 removes the link between customer usage decisions and Company distribution revenue, with
4 the resulting deferrals being collected from (or refunded to) customers through a dollar-per-
5 kWh, dollar-per-kW, or dollar-per-therm charge (or credit) in the following year. The GEM
6 is an important part of PSE&G's larger efforts to expand its energy efficiency programs. It
7 aligns Company and ratepayer interests, ensuring PSE&G's presence as a partner in
8 promoting conservation and energy efficiency with its customers. In addition, it maintains the
9 Company's incentive to promote economic growth and operate efficiently. The Board has
10 already implemented a similar mechanism for two of its gas utilities.

11 **Q. Please summarize your recommendations.**

12 A. I recommend that the New Jersey Board of Public Utilities approves the GEM as
13 described in my testimony.

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

15 A. Yes, it does.

SCHEDULE INDEX

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RESUME

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Academic Background:

PhD, Michigan State University, 1997, Economics
MA, Michigan State University, 1993, Economics
BA, Trinity University, 1991, Economics and History

Positions Held:

Vice President, Laurits R. Christensen Associates, Inc. 2006–present
Senior Economist, Laurits R. Christensen Associates, Inc., 1999–2005
Economist, Laurits R. Christensen Associates, Inc., 1997–1999

Professional Experience:

I work in a variety of areas related to retail and wholesale pricing in electricity and natural gas markets. I have used statistical models to forecast customer usage, estimate customer load response to changing prices, and estimate customer preferences for product attributes. I have developed and priced new product options; evaluated existing pricing programs; evaluated the risks associated with individual products and product portfolios; and developed cost-of-service studies. I have conducted evaluations and provided testimony regarding revenue decoupling and weather adjustment mechanisms.

Major Projects:

Assisted a utility in forecasting the load impacts from a new residential peak-time rebate program.

Evaluated residential demand response pilot programs with programmable-controllable thermostats.

Developed long-term forecasting models for an electric utility.

Conducted a review of an electric utility's load forecasting methods.

Conducted an independent evaluation of a revenue decoupling mechanism for an electric utility.

Estimated load impacts for commercial and industrial demand response programs.

Evaluated a straight-fixed variable rate design for a natural gas utility.

Estimated the load impacts from a residential peak-time rebate program.

Worked with a state's regulatory staff to evaluate alternative electricity pricing structures for residential, commercial, and industrial customers.

Assisted a utility in meeting regulatory requirements regarding the allocation of distribution services.

Evaluated a residential electricity pricing pilot program.

Evaluated the cost effectiveness of automated demand response technologies.

Evaluated and modified short- and long-term electricity sales and demand forecasting models.

Created a short-term electricity demand forecasting model.

Prepared testimony regarding the return on equity effects associated with natural gas revenue decoupling mechanisms.

Conducted an independent evaluation of two natural gas revenue decoupling mechanisms

Created forecasts of load impacts from electricity demand response programs.

Estimated historical the load impacts from electricity demand response programs.

Prepared testimony regarding a proposed natural gas decoupling mechanism.

Prepared testimony regarding the weather normalization of test year sales and revenues.

Participated on a regulatory proceeding panel to discuss decoupling mechanisms.

Prepared testimony regarding a proposed electricity decoupling mechanism.

Prepared a report and testimony regarding a natural gas decoupling mechanism.

Evaluated a model that estimated the costs associated with removing and relicensing hydroelectric facilities.

Assisted an electric utility in evaluating new rate options for commercial and industrial customers.

Designed and evaluated time-of-use and critical-peak pricing rates for an electric utility.

Reviewed cost-of-service study for a municipal electric utility.

Produced a report on rate design methods that provide appropriate incentives for demand response and energy efficiency.

Assisted in wholesale power procurement process.

Evaluated a weather-adjustment mechanism for a natural gas utility.

Assessed weather-related fixed cost recovery risk for an electric utility.

Evaluated a revenue decoupling mechanism for a natural gas utility.

Estimated price responsiveness of real-time pricing customers.

Evaluated the need for electricity transmission and distribution standby rates for a utility.

Developed a market share simulation model using conjoint survey results of electricity distributors.

Conducted conjoint surveyed of electricity distributors regarding rate structure preferences.

Developed a method to calculate a retail forward contract risk premium.

Prepared a report on the performance of Financial Transmission Rights (FTRs) in the PJM electricity market.

Reviewed a retail pricing model for use in a competitive electricity market.

Provided support in a natural gas rate case filing.

Simulated outcomes associated with alternative wholesale rate offers to electricity distributors.

Developed a business case to support a natural gas fixed bill product.

Assessed the accuracy of a natural gas fixed bill pricing algorithm.

Audited an evaluation of the costs associated with implementing a renewable portfolio standard.

Developed a model to value interruptible provisions in a long-term customer contract.

Performed a study on the determinants of electricity price differences across utilities and regions.

Developed long-term demand and energy forecasts.

Conducted market research to assess customer interest in new product options.

Recommended new retail pricing products for commercial and industrial customers.

Prepared a report on the fundamentals of retail electricity risk management.

Prepared a report that presented a taxonomy of retail electricity pricing products.

Presented at a workshop in Africa regarding deregulated electricity markets.

Prepared a report on the effectiveness of distributed resources in mitigating price risk.

Performed a valuation of energy derivatives consistent with FAS 133.

Created an electricity market share forecasting model.

Developed standby rates for an electric utility.

Developed an electricity wholesale price forecast.

Forecasted retail customer loads for an electric utility.

Assisted in mediating a new product development process with a utility and its industrial customers.

Developed a model that simulates wholesale market price changes due to retail load response.

Developed a pricing model for an innovative financial product.

Estimated changes in wholesale electricity prices due to customer load response.

Oversaw creation of software that estimates customer satisfaction with utilities.

Developed a model to economically evaluate a capital addition to a generator.

Developed a wholesale version of the Product Mix Model.

Evaluate Risk Implications of New Product Offering.

Mixed Logit Estimation of Customer Preferences.

Estimation of Customer Price Responsiveness.

Product Mix Model Workshops.

Unbundling and Rate Design.

Development of a Computer Program.

Large Commercial and Industrial Customer Rate Analysis.

Residential Customer Rate Analysis.

Survey of Power Marketers.

Development of Multi-Period Analysis Tool.

Evaluating the Effect of Alternative Rates on System Load.

Estimating the Persistence of Weather Patterns.

Electricity Customer Survey Data Analysis.

Product Mix Analysis for Small Customers.

Survey of Postal Facilities.

Professional Papers:

“2016 Load Impact Evaluation of Pacific Gas and Electric Company’s Residential Time-Based Pricing Programs: *Ex-post* and *Ex-ante* Report,” with Steven Braithwait and David Armstrong, 2017.

“2016 Load Impact Evaluation of Pacific Gas and Electric Company’s Mandatory Time-of-Use Rates for Small, Medium, and Agricultural Non-residential Customers: *Ex-post* and *Ex-ante* Report,” with Michael Ty Clark and Nick Crowley, 2017.

“2016 Load Impact Evaluation of California Statewide Demand Bidding Programs (DBP) for Non-Residential Customers: *Ex-post* and *Ex-ante* Report,” with Tim Huegerich, 2017.

“2016 Load Impact Evaluation of San Diego Gas and Electric’s Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates,” with Steven D. Braithwait and Michael Ty Clark, 2017.

“2015 Load Impact Evaluation of Pacific Gas and Electric Company’s Residential Time-Based Pricing Programs: *Ex-post* and *Ex-ante* Report,” with Steven Braithwait and David Armstrong, 2016.

“2015 Load Impact Evaluation of Pacific Gas and Electric Company’s Mandatory Time-of-Use Rates for Small, Medium, and Agricultural Non-residential Customers: *Ex-post* and *Ex-ante* Report,” with Marlies Patton, 2016.

“2015 Load Impact Evaluation of California Statewide Demand Bidding Programs (DBP) for Non-Residential Customers: *Ex-post* and *Ex-ante* Report,” with Michael Ty Clark, 2016.

“2015 Load Impact Evaluation of California Statewide Base Interruptible Programs (BIP) for Non-Residential Customers: *Ex-post* and *Ex-ante* Report,” with Tim Huegerich, 2016.

“Statewide Time-of-Use Scenario Modeling for 2015 California Energy Commission Integrated Energy Policy Report,” with Steven Braithwait and David Armstrong, 2015.

"2014 Statewide Load Impact Evaluation of California Aggregator Demand Response Programs: *Ex-post* and *Ex-ante* Load Impacts," with Steven Braithwait and David Armstrong, 2015.

"2014 Load Impact Evaluation of California Statewide Demand Bidding Programs (DBP) for Non-Residential Customers: *Ex-post* and *Ex-ante* Report," with Steven Braithwait and David Armstrong, 2015.

"2014 Load Impact Evaluation of California Statewide Base Interruptible Programs (BIP) for Non-Residential Customers: *Ex-post* and *Ex-ante* Report," with Tim Huegerich, 2015.

"2014 Load Impact Evaluation of Southern California Edison's Mandatory Time-of-Use Rates for Small and Medium-Sized Business and Agricultural Customers: *Ex-post* and *Ex-ante* Report," with Marlies Patton, 2015.

"2014 Load Impact Evaluation of Pacific Gas and Electric Company's Mandatory Time-of-Use Rates for Small and Medium Non-residential Customers: *Ex-post* and *Ex-ante* Report," with Marlies Patton, 2015.

"FirstEnergy's Smart Grid Investment Grant Consumer Behavior Study," with EPRI (B. Neenan) and Marlies Patton, 2015.

"An Evaluation of Portland General Electric's Decoupling Adjustment, Schedule 123," with Robert J. Camfield and Marlies C. Hilbrink, 2013.

"Evaluation of the Straight-Fixed Variable Rate Design Implemented at Columbia Gas of Ohio," with Marlies C. Hilbrink, 2012.

"The Effect on Electricity Consumption of the Commonwealth Edison Customer Application Program Pilot," with EPRI and CA Energy Consulting staff, 2012.

"The Effects of Critical Peak Pricing for Commercial and Industrial Customers for the Kansas Corporation Commission," with David A. Armstrong, 2012.

"Meeting Commonwealth Edison's Distribution Allocation Requirements from Illinois Commerce Commission Order 10-0467," with Michael O'Sheasy, A. Thomas Bozzo, and Bruce Chapman, 2011.

"Residential Rate Study for the Kansas Corporation Commission," with Michael T. O'Sheasy, 2011.

"An Evaluation of the Conservation Incentive Program Implemented for New Jersey Natural Gas and South Jersey Gas," with Bruce R. Chapman, 2009.

"A Review of Natural Gas Decoupling Mechanisms and Alternative Methods for Addressing Utility Disincentives to Promote Conservation," June 2007.

"Evaluation of the Klamath Project Alternatives Analysis Model: Reply to Addendum A of the Consultant Report Prepared for the California Energy Commission Dated March 2007," May 2007, with Laurence D. Kirsch and Michael P. Welsh.

“Evaluation of the Klamath Project Alternatives Analysis Model,” March 2007, with Laurence D. Kirsch and Michael P. Welsh.

“A Review of the Weather Adjusted Rate Mechanism as Approved by the Oregon Public Utility Commission for Northwest Natural,” October 2005, with Steven D. Braithwait.

“A Review of Distribution Margin Normalization as Approved by the Oregon Public Utility Commission for Northwest Natural,” March 2005, with Steven D. Braithwait.

“Analysis of PJM’s Transmission Rights Market,” EPRI Report #1008523, December 2004, with Laurence Kirsch.

“Using Distributed Resources to Manage Price Risk,” EPRI Report #1003972, November 2001, with Michael Welsh.

“Hedging Exposure to Volatile Retail Electricity Prices,” *The Electricity Journal*, Vol. 14, number 5, pp. 33–38, June 2001, with A. Faruqui, C. Holmes and B. Chapman.

“Weather Hedges for Retail Electricity Customers,” with C. Holmes, B. Chapman and D. Glycer. In papers for EPRI International Pricing Conference 2000.

“Worker Performance and Group Incentives: A Case Study,” *Industrial and Labor Relations Review*, Vol. 51, No. 1, pp. 37–49, October 1997.

“Worker Quality and Profit Sharing: Does Unobserved Worker Quality Bias Firm-Level Estimates of the Productivity Effect of Profit Sharing?” Working Paper, May 1996.

“Supervision, Efficiency Wages, and Incentive Plans: How Are Monitoring Problems Solved?” Working Paper, November 1996, presented at the Western Economics Association Meetings, 1997.

“Has Job Stability Declined Yet? New Evidence for the 1990’s,” with David Neumark and Daniel Polsky, *The Journal of Labor Economics*, 1999.

Testimony and Reports before Regulatory Agencies:

Arizona Public Service Company, Arizona Docket No. E-01345A-16-0036: Testimony supporting residential demand charges and a revenue decoupling mechanism on behalf of the Arizona Investment Council, 2017.

Black Hills/Colorado Electric Utility Company, Colorado Docket No. 16A-0436E: Testimony supporting energy and demand forecasting models on behalf of Black Hills/Colorado Electric Utility Company, 2016.

UNS Electric, Inc., Arizona Docket No. E-04204A-15-0142: Testimony supporting a residential demand charge proposed by UNS Electric on behalf of the Arizona Investment Council, 2015.

Public Service Company of New Mexico (PNM), New Mexico Case No. 15-00261-UT: Testimony supporting a revenue decoupling mechanism on behalf of PNM, 2015.

Public Service Company of New Mexico (PNM), New Mexico Case No. 14-00332-UT: Testimony supporting a revenue decoupling mechanism on behalf of PNM, 2014.

Xcel Energy, Inc., Minnesota E002/GR-13-868: Testimony supporting a revenue decoupling mechanism on behalf of Xcel Energy, 2013.

Arizona Public Service Company, Arizona Docket No. E-01345A-11-0224: Testimony supporting a revenue decoupling mechanism proposed by APS on behalf of the Arizona Investment Council, 2011.

Southwest Gas Corporation, Arizona Docket No. G-01551A-10-0458: Testimony supporting a revenue decoupling mechanism contained in a settlement agreement on behalf of the Arizona Investment Council, 2011.

Otter Tail Power Company, Minnesota Docket No. E-017/GR-10-239: Testimony regarding the weather normalization of test year sales in a general rate case on behalf of Otter Tail Power Company, 2010.

Southwest Gas Corporation, Nevada Docket No. 09-04003: Testimony regarding the return on equity effects associated with a proposed revenue decoupling mechanism on behalf of Southwest Gas Corporation, 2009.

Southwest Gas Corporation, Arizona Docket No. G-01551A-07-0504: Testimony regarding a proposed revenue decoupling mechanism on behalf of the Arizona Investment Council, 2008.

Otter Tail Power Company, Minnesota Docket No. E-017/GR-07-1178: Testimony regarding the weather normalization of test year sales and revenues in a general rate case on behalf of Otter Tail Power Company, 2008.

Massachusetts Department of Public Utilities, Docket No. DPU 07-50: Participation in a panel regarding an "Investigation into Rate Structures that will Promote Efficient Deployment of Demand Resources", on behalf of Environment Northeast, 2007.

Connecticut Light & Power Company, Docket No. 07-07-01: Testimony regarding a proposed electricity revenue decoupling mechanism on behalf of Environment Northeast, 2007.

Questar Gas Company, Docket No. 05-057-T01: Testimony regarding the effectiveness of a natural gas revenue decoupling mechanism on behalf of the Utah Division of Public Utilities, 2007.

PacifiCorp, FERC Docket No. 2082: "Evaluation of the Klamath Project Alternatives Analysis Model: Reply to Addendum A of the Consultant Report Prepared for the California Energy Commission Dated March 2007," May 2007, with Laurence D. Kirsch and Michael P. Welsh.

PacifiCorp, FERC Docket No. 2082: "Evaluation of the Klamath Project Alternatives Analysis Model," March 2007, with Laurence D. Kirsch and Michael P. Welsh.

Northwest Natural Gas Company, Oregon Docket UG 163: Testimony relating to an investigation regarding possible continuation of Distribution Margin Normalization, May 2005.

Northwest Natural Gas Company, Oregon Docket UG 152: Submitted a report in compliance with a requirement to evaluate the functioning of the Weather Adjusted Rate Mechanism, October 2005.

Schedule DGH-2E

GEM Revenue per Customer Calculation Example

Based on current rates and test-year billing determinants

ELECTRIC

	(A)	(B)	(C)	(D)	(E)	(F)
				= (B x 1000) / C	= (A x 1000) / D	= Month's Value / Total
Month	Base Distribution Revenue (\$000s)	Base Service Charge Revenue (\$000s)	Base Service Charge Rate (\$)	Base # of Customers	Base Revenue per Customer (\$)	Base Monthly % of Annual
RS, RHS						
Jan-18	41,249	4,221	2.27	1,859,621	22	8%
Feb-18	35,466	4,208	2.27	1,853,618	19	7%
Mar-18	34,820	4,237	2.27	1,866,537	19	7%
Apr-18	29,328	4,223	2.27	1,860,513	16	6%
May-18	35,131	4,223	2.27	1,860,324	19	7%
Jun-18	58,562	4,258	2.27	1,875,840	31	11%
Jul-17	71,048	4,259	2.27	1,876,061	38	14%
Aug-17	66,826	4,235	2.27	1,865,502	36	13%
Sep-17	42,344	4,251	2.27	1,872,503	23	8%
Oct-17	29,990	4,252	2.27	1,873,168	16	6%
Nov-17	32,387	4,251	2.27	1,872,865	17	6%
Dec-17	40,727	4,240	2.27	1,867,805	22	8%
Total, Average	517,878	50,858	2.27	1,867,030	277	100%

RLM

Jan-18	431	153	13.07	11,733	37	6%
Feb-18	381	153	13.07	11,687	33	6%
Mar-18	391	155	13.07	11,863	33	6%
Apr-18	330	152	13.07	11,593	28	5%
May-18	498	152	13.07	11,622	43	7%
Jun-18	980	154	13.07	11,762	83	14%
Jul-17	1,162	162	13.07	12,397	94	16%
Aug-17	1,163	158	13.07	12,114	96	16%
Sep-17	557	160	13.07	12,213	46	8%
Oct-17	333	151	13.07	11,549	29	5%
Nov-17	342	160	13.07	12,247	28	5%
Dec-17	425	152	13.07	11,650	36	6%
Total, Average	6,994	1,862	13.07	11,869	586	100%

GLPMD

Jan-18	12,450	1,080	3.96	272,611	46	5%
Feb-18	12,074	1,069	3.96	269,848	45	5%
Mar-18	13,022	1,086	3.96	274,328	47	5%
Apr-18	12,568	1,078	3.96	272,221	46	5%
May-18	22,400	1,074	3.96	271,319	83	8%
Jun-18	39,970	1,081	3.96	272,985	146	15%
Jul-17	39,541	1,021	3.96	257,795	153	16%
Aug-17	41,552	999	3.96	252,289	165	17%
Sep-17	26,993	1,022	3.96	258,157	105	11%
Oct-17	12,455	957	3.96	241,625	52	5%
Nov-17	12,439	998	3.96	252,009	49	5%
Dec-17	13,285	1,069	3.96	270,065	49	5%
Total, Average	258,748	12,534	3.96	263,771	986	100%

Schedule DGH-2E

GEM Revenue per Customer Calculation Example

Based on current rates and test-year billing determinants

ELECTRIC

	(A)	(B)	(C)	(D)	(E)	(F)
				= (B x 1000) / C	= (A x 1000) / D	= Month's Value / Total
Month	Base Distribution Revenue (\$000s)	Base Service Charge Revenue (\$000s)	Base Service Charge Rate (\$)	Base # of Customers	Base Revenue per Customer (\$)	Base Monthly % of Annual
<u>LPLS</u>						
Jan-18	11,040	3,152	347.77	9,064	1,218	5%
Feb-18	10,803	3,163	347.77	9,094	1,188	5%
Mar-18	11,267	3,166	347.77	9,102	1,238	5%
Apr-18	11,245	3,179	347.77	9,140	1,230	5%
May-18	19,630	3,147	347.77	9,048	2,170	8%
Jun-18	31,550	3,141	347.77	9,031	3,493	14%
Jul-17	35,341	3,080	347.77	8,856	3,991	15%
Aug-17	36,476	3,089	347.77	8,883	4,106	16%
Sep-17	22,778	3,035	347.77	8,727	2,610	10%
Oct-17	16,353	2,911	347.77	8,370	1,954	8%
Nov-17	11,212	2,831	347.77	8,140	1,377	5%
Dec-17	10,721	3,033	347.77	8,721	1,229	5%
Total, Average	228,415	36,925	347.77	8,848	25,804	100%

Schedule DGH-2G

GEM Revenue per Customer Calculation Example

Based on current rates and test-year billing determinants

GAS

	(A)	(B)	(C)	(D)	(E)	(F)
				= (B x 1000) / C	= (A x 1000) / D	= Month's Value / Total
Month	Base Distribution Revenue (\$000s)	Base Service Charge Revenue (\$000s)	Base Service Charge Rate (\$)	Base # of Customers	Base Revenue per Customer (\$)	Base Monthly % of Annual
RSG						
May-18	27,371	8,838	5.46	1,618,709	17	5%
Jun-18	21,678	8,901	5.46	1,630,164	13	4%
Jul-17	18,366	9,354	5.46	1,713,242	11	3%
Aug-17	17,748	8,685	5.46	1,590,692	11	3%
Sep-17	18,780	8,927	5.46	1,634,904	11	3%
Oct-17	28,371	8,852	5.46	1,621,191	18	5%
Nov-17	52,969	8,924	5.46	1,634,354	32	9%
Dec-17	84,287	8,840	5.46	1,619,032	52	15%
Jan-18	100,490	8,827	5.46	1,616,717	62	18%
Feb-18	88,455	8,818	5.46	1,615,003	55	15%
Mar-18	74,821	8,858	5.46	1,622,310	46	13%
Apr-18	42,796	8,849	5.46	1,620,664	26	7%
Total, Average	576,133	106,672	5.46	1,628,082	355	100%

GSG

May-18	4,501	1,717	12.22	140,495	32	5%
Jun-18	4,019	1,728	12.22	141,420	28	4%
Jul-17	3,793	1,706	11.59	147,194	26	4%
Aug-17	3,386	1,587	11.59	136,895	25	4%
Sep-17	3,501	1,624	11.64	139,506	25	4%
Oct-17	5,588	1,630	11.64	140,009	40	6%
Nov-17	7,775	1,631	11.64	140,153	55	8%
Dec-17	12,676	1,629	11.64	139,986	91	14%
Jan-18	15,156	1,713	12.22	140,147	108	16%
Feb-18	14,184	1,700	12.22	139,104	102	15%
Mar-18	12,279	1,723	12.22	140,973	87	13%
Apr-18	6,546	1,715	12.22	140,363	47	7%
Total, Average	93,404	20,102	11.92	140,520	666	100%

LVG

May-18	3,084	1,878	100.12	18,756	164	2%
Jun-18	3,208	1,850	100.12	18,482	174	3%
Jul-17	2,880	1,868	100.12	18,662	154	2%
Aug-17	2,825	1,785	100.12	17,829	158	2%
Sep-17	2,758	1,762	100.12	17,603	157	2%
Oct-17	9,906	1,820	100.12	18,181	545	8%
Nov-17	17,944	1,789	100.12	17,866	1,004	15%
Dec-17	18,643	1,799	100.12	17,968	1,038	16%
Jan-18	21,055	1,864	100.12	18,621	1,131	17%
Feb-18	20,898	1,861	100.12	18,589	1,124	17%
Mar-18	15,179	1,883	100.12	18,808	807	12%
Apr-18	4,159	1,881	100.12	18,783	221	3%
Total, Average	122,537	22,041	100.12	18,346	6,678	100%

Schedule DGH-3E**Revenue per Customer Update Example****Simple example of impact of semi-annual annual revenue requirement roll-ins****ELECTRIC**

Month	(A) DGH-2E Base Monthly % of Annual	(B) Annual Revenue Requirement (\$000s)	(C) Cumulative Revenue Requirement (\$000s)	(D) = A x C Monthly Revenue Requirement (\$000s)	(E) DGH-2E Base # of Customers	(F) = (D x 1000) / E Revenue per Customer Adjustment (\$)
<u>RS, RHS</u>						
Jan-19	8%		0	0	1,859,621	0.0
Feb-19	7%		0	0	1,853,618	0.0
Mar-19	7%	3,000	3,000	202	1,866,537	0.1
Apr-19	6%		3,000	171	1,860,513	0.1
May-19	7%		3,000	204	1,860,324	0.1
Jun-19	11%		3,000	338	1,875,840	0.2
Jul-19	14%		3,000	410	1,876,061	0.2
Aug-19	13%		3,000	388	1,865,502	0.2
Sep-19	8%	3,000	6,000	489	1,872,503	0.3
Oct-19	6%		6,000	346	1,873,168	0.2
Nov-19	6%		6,000	374	1,872,865	0.2
Dec-19	8%		6,000	472	1,867,805	0.3
Jan-20	8%		6,000	480	1,859,621	0.3
Feb-20	7%		6,000	414	1,853,618	0.2
Mar-20	7%	3,000	9,000	606	1,866,537	0.3
Apr-20	6%		9,000	512	1,860,513	0.3
May-20	7%		9,000	613	1,860,324	0.3
Jun-20	11%		9,000	1,013	1,875,840	0.5
Jul-20	14%		9,000	1,229	1,876,061	0.7
Aug-20	13%		9,000	1,163	1,865,502	0.6
Sep-20	8%	3,000	12,000	979	1,872,503	0.5
Oct-20	6%		12,000	693	1,873,168	0.4
Nov-20	6%		12,000	748	1,872,865	0.4
Dec-20	8%		12,000	944	1,867,805	0.5

RLM

Jan-19	6%		0	0	11,733	0.0
Feb-19	6%		0	0	11,687	0.0
Mar-19	6%	40	40	2	11,863	0.2
Apr-19	5%		40	2	11,593	0.2
May-19	7%		40	3	11,622	0.3
Jun-19	14%		40	6	11,762	0.5
Jul-19	16%		40	6	12,397	0.5
Aug-19	16%		40	7	12,114	0.5
Sep-19	8%	40	80	6	12,213	0.5
Oct-19	5%		80	4	11,549	0.3

Schedule DGH-3E**Revenue per Customer Update Example****Simple example of impact of semi-annual annual revenue requirement roll-ins****ELECTRIC**

Month	(A) DGH-2E Base Monthly % of Annual	(B) Annual Revenue Requirement (\$000s)	(C) Cumulative Revenue Requirement (\$000s)	(D) = A x C Monthly Revenue Requirement (\$000s)	(E) DGH-2E Base # of Customers	(F) = (D x 1000) / E Revenue per Customer Adjustment (\$)
Nov-19	5%		80	4	12,247	0.3
Dec-19	6%		80	5	11,650	0.4
Jan-20	6%		80	5	11,733	0.4
Feb-20	6%		80	4	11,687	0.4
Mar-20	6%	40	120	7	11,863	0.6
Apr-20	5%		120	6	11,593	0.5
May-20	7%		120	9	11,622	0.8
Jun-20	14%		120	17	11,762	1.5
Jul-20	16%		120	19	12,397	1.5
Aug-20	16%		120	20	12,114	1.6
Sep-20	8%	40	160	12	12,213	1.0
Oct-20	5%		160	8	11,549	0.7
Nov-20	5%		160	8	12,247	0.6
Dec-20	6%		160	10	11,650	0.9

GLPMD

Jan-19	5%		0	0	272,611	0.0
Feb-19	5%		0	0	269,848	0.0
Mar-19	5%	1,500	1,500	72	274,328	0.3
Apr-19	5%		1,500	70	272,221	0.3
May-19	8%		1,500	126	271,319	0.5
Jun-19	15%		1,500	223	272,985	0.8
Jul-19	16%		1,500	233	257,795	0.9
Aug-19	17%		1,500	251	252,289	1.0
Sep-19	11%	1,500	3,000	318	258,157	1.2
Oct-19	5%		3,000	157	241,625	0.6
Nov-19	5%		3,000	150	252,009	0.6
Dec-19	5%		3,000	150	270,065	0.6
Jan-20	5%		3,000	139	272,611	0.5
Feb-20	5%		3,000	136	269,848	0.5
Mar-20	5%	1,500	4,500	217	274,328	0.8
Apr-20	5%		4,500	211	272,221	0.8
May-20	8%		4,500	377	271,319	1.4
Jun-20	15%		4,500	668	272,985	2.4
Jul-20	16%		4,500	700	257,795	2.7
Aug-20	17%		4,500	752	252,289	3.0
Sep-20	11%	1,500	6,000	636	258,157	2.5

Schedule DGH-3E**Revenue per Customer Update Example****Simple example of impact of semi-annual annual revenue requirement roll-ins****ELECTRIC**

Month	(A) DGH-2E Base Monthly % of Annual	(B) Annual Revenue Requirement (\$000s)	(C) Cumulative Revenue Requirement (\$000s)	(D) = A x C Monthly Revenue Requirement (\$000s)	(E) DGH-2E Base # of Customers	(F) = (D x 1000) / E Revenue per Customer Adjustment (\$)
Oct-20	5%		6,000	314	241,625	1.3
Nov-20	5%		6,000	300	252,009	1.2
Dec-20	5%		6,000	299	270,065	1.1

LPLS

Jan-19	5%		0	0	9,064	0.0
Feb-19	5%		0	0	9,094	0.0
Mar-19	5%	1,500	1,500	72	9,102	7.9
Apr-19	5%		1,500	72	9,140	7.8
May-19	8%		1,500	126	9,048	13.9
Jun-19	14%		1,500	203	9,031	22.5
Jul-19	15%		1,500	232	8,856	26.2
Aug-19	16%		1,500	239	8,883	26.9
Sep-19	10%	1,500	3,000	303	8,727	34.8
Oct-19	8%		3,000	227	8,370	27.1
Nov-19	5%		3,000	160	8,140	19.7
Dec-19	5%		3,000	143	8,721	16.4
Jan-20	5%		3,000	142	9,064	15.6
Feb-20	5%		3,000	138	9,094	15.2
Mar-20	5%	1,500	4,500	216	9,102	23.7
Apr-20	5%		4,500	215	9,140	23.5
May-20	8%		4,500	378	9,048	41.8
Jun-20	14%		4,500	609	9,031	67.5
Jul-20	15%		4,500	696	8,856	78.6
Aug-20	16%		4,500	716	8,883	80.6
Sep-20	10%	1,500	6,000	607	8,727	69.5
Oct-20	8%		6,000	454	8,370	54.3
Nov-20	5%		6,000	320	8,140	39.3
Dec-20	5%		6,000	286	8,721	32.8

Schedule DGH-3G**Revenue per Customer Update Example****Simple example of impact of semi-annual annual revenue requirement roll-ins****GAS**

Month	(A)	(B)	(C)	(D)	(E)	(F)
	DGH-2G Base Monthly % of Annual	Annual Revenue Requirement (\$000s)	Cumulative Revenue Requirement (\$000s)	= A x C Monthly Revenue Requirement (\$000s)	DGH-2G Base # of Customers	= (D x 1000) / E Revenue per Customer Adjustment (\$)
RSG						
May-19	5%		0	0	1,618,709	0.0
Jun-19	4%		0	0	1,630,164	0.0
Jul-19	3%	3,000	3,000	91	1,713,242	0.1
Aug-19	3%		3,000	94	1,590,692	0.1
Sep-19	3%		3,000	97	1,634,904	0.1
Oct-19	5%		3,000	148	1,621,191	0.1
Nov-19	9%		3,000	274	1,634,354	0.2
Dec-19	15%		3,000	440	1,619,032	0.3
Jan-20	18%	3,000	6,000	1,051	1,616,717	0.6
Feb-20	15%		6,000	926	1,615,003	0.6
Mar-20	13%		6,000	780	1,622,310	0.5
Apr-20	7%		6,000	446	1,620,664	0.3
May-20	5%		6,000	286	1,618,709	0.2
Jun-20	4%		6,000	225	1,630,164	0.1
Jul-20	3%	3,000	9,000	272	1,713,242	0.2
Aug-20	3%		9,000	283	1,590,692	0.2
Sep-20	3%		9,000	291	1,634,904	0.2
Oct-20	5%		9,000	444	1,621,191	0.3
Nov-20	9%		9,000	822	1,634,354	0.5
Dec-20	15%		9,000	1,320	1,619,032	0.8
Jan-21	18%	3,000	12,000	2,101	1,616,717	1.3
Feb-21	15%		12,000	1,851	1,615,003	1.1
Mar-21	13%		12,000	1,559	1,622,310	1.0
Apr-21	7%		12,000	893	1,620,664	0.6

GSG

May-19	5%		0	0	140,495	0.0
Jun-19	4%		0	0	141,420	0.0
Jul-19	4%	500	500	19	147,194	0.1
Aug-19	4%		500	19	136,895	0.1
Sep-19	4%		500	19	139,506	0.1
Oct-19	6%		500	30	140,009	0.2
Nov-19	8%		500	42	140,153	0.3
Dec-19	14%		500	68	139,986	0.5
Jan-20	16%	500	1,000	162	140,147	1.2
Feb-20	15%		1,000	153	139,104	1.1
Mar-20	13%		1,000	131	140,973	0.9
Apr-20	7%		1,000	70	140,363	0.5
May-20	5%		1,000	48	140,495	0.3
Jun-20	4%		1,000	43	141,420	0.3
Jul-20	4%	500	1,500	58	147,194	0.4

Schedule DGH-3G**Revenue per Customer Update Example****Simple example of impact of semi-annual annual revenue requirement roll-ins****GAS**

Month	(A) DGH-2G Base Monthly % of Annual	(B) Annual Revenue Requirement (\$000s)	(C) Cumulative Revenue Requirement (\$000s)	(D) = A x C Monthly Revenue Requirement (\$000s)	(E) DGH-2G Base # of Customers	(F) = (D x 1000) / E Revenue per Customer Adjustment (\$)
Aug-20	4%		1,500	56	136,895	0.4
Sep-20	4%		1,500	57	139,506	0.4
Oct-20	6%		1,500	90	140,009	0.6
Nov-20	8%		1,500	125	140,153	0.9
Dec-20	14%		1,500	204	139,986	1.5
Jan-21	16%	500	2,000	325	140,147	2.3
Feb-21	15%		2,000	306	139,104	2.2
Mar-21	13%		2,000	262	140,973	1.9
Apr-21	7%		2,000	140	140,363	1.0

LVG

May-19	2%		0	0	18,756	0.0
Jun-19	3%		0	0	18,482	0.0
Jul-19	2%	500	500	12	18,662	0.6
Aug-19	2%		500	12	17,829	0.7
Sep-19	2%		500	12	17,603	0.7
Oct-19	8%		500	41	18,181	2.2
Nov-19	15%		500	75	17,866	4.2
Dec-19	16%		500	78	17,968	4.3
Jan-20	17%	500	1,000	169	18,621	9.1
Feb-20	17%		1,000	168	18,589	9.1
Mar-20	12%		1,000	121	18,808	6.4
Apr-20	3%		1,000	33	18,783	1.8
May-20	2%		1,000	25	18,756	1.3
Jun-20	3%		1,000	26	18,482	1.4
Jul-20	2%	500	1,500	35	18,662	1.9
Aug-20	2%		1,500	36	17,829	2.0
Sep-20	2%		1,500	35	17,603	2.0
Oct-20	8%		1,500	122	18,181	6.7
Nov-20	15%		1,500	226	17,866	12.6
Dec-20	16%		1,500	233	17,968	13.0
Jan-21	17%	500	2,000	339	18,621	18.2
Feb-21	17%		2,000	337	18,589	18.1
Mar-21	12%		2,000	242	18,808	12.9
Apr-21	3%		2,000	66	18,783	3.5

Schedule DGH-4E

Green Enabling Mechanism Deferral Example

Assumes a 0.5% increase in the number of customers served and 1.0% increase in revenue compared to base

ELECTRIC

	(A)	(B)	(C) = (A x 1000) / B	(D) DGH-2E	(E) DGH-3E	(F) = D + E	(G) = F x C / 1000	(H)	(I) = G - H	(J) DGH-6E	(K) = I + J
Month	Actual Service Charge Revenue (\$000s)	Actual Service Charge Rate (\$)	# of Customers	Base Revenue per Customer (\$)	Revenue per Customer Adjustment (\$)	Allowed Revenue per Customer (\$)	Allowed Revenue (\$000s)	Actual Revenue (\$000s)	Deferral to Collect/ (Credit) excl Interest (\$000s)	Interest to Collect / (Credit) (\$000s)	Deferral to Collect/ (Credit) incl Interest (\$000s)
RS, RHS											
Jan-19	4,242	2.27	1,868,919	22	0	22	41,455	41,661	(206)		
Feb-19	4,229	2.27	1,862,886	19	0	19	35,643	35,820	(177)		
Mar-19	4,258	2.27	1,875,870	19	0	19	35,197	35,168	29		
Apr-19	4,244	2.27	1,869,816	16	0	16	29,646	29,621	25		
May-19	4,244	2.27	1,869,626	19	0	19	35,512	35,482	30		
Jun-19	4,279	2.27	1,885,220	31	0	31	59,194	59,147	47		
Jul-19	4,280	2.27	1,885,442	38	0	38	71,815	71,759	57		
Aug-19	4,256	2.27	1,874,830	36	0	36	67,550	67,494	55		
Sep-19	4,272	2.27	1,881,865	23	0	23	43,047	42,767	280		
Oct-19	4,273	2.27	1,882,534	16	0	16	30,489	30,290	198		
Nov-19	4,273	2.27	1,882,230	17	0	17	32,925	32,711	214		
Dec-19	4,261	2.27	1,877,144	22	0	22	41,405	41,135	271		
Total, Average	51,112		1,876,365	277	2	279	523,878	523,057	822	(1)	820
RLM											
Jan-19	154	13.07	11,792	37	0	37	433	436	(2)		
Feb-19	154	13.07	11,745	33	0	33	383	384	(2)		
Mar-19	156	13.07	11,922	33	0	33	396	395	0		
Apr-19	152	13.07	11,651	28	0	29	334	333	0		
May-19	153	13.07	11,680	43	0	43	504	503	0		
Jun-19	155	13.07	11,821	83	0	84	990	990	1		
Jul-19	163	13.07	12,459	94	1	94	1,174	1,173	1		
Aug-19	159	13.07	12,175	96	1	97	1,175	1,174	1		
Sep-19	160	13.07	12,274	46	1	46	567	563	3		
Oct-19	152	13.07	11,607	29	0	29	339	337	2		
Nov-19	161	13.07	12,308	28	0	28	348	346	2		
Dec-19	153	13.07	11,708	36	0	37	432	429	3		
Total, Average	1,871		11,929	586	4	589	7,074	7,064	10	(0)	10
GLPMD											
Jan-19	1,085	3.96	273,974	46	0	46	12,512	12,574	(62)		
Feb-19	1,074	3.96	271,197	45	0	45	12,134	12,195	(60)		
Mar-19	1,092	3.96	275,700	47	0	48	13,159	13,152	7		
Apr-19	1,083	3.96	273,582	46	0	46	12,701	12,694	8		
May-19	1,080	3.96	272,675	83	0	83	22,638	22,624	14		
Jun-19	1,086	3.96	274,350	146	1	147	40,394	40,370	24		
Jul-19	1,026	3.96	259,084	153	1	154	39,973	39,937	37		
Aug-19	1,004	3.96	253,551	165	1	166	42,012	41,968	44		
Sep-19	1,027	3.96	259,448	105	1	106	27,448	27,263	185		
Oct-19	962	3.96	242,834	52	1	52	12,675	12,580	95		
Nov-19	1,003	3.96	253,269	49	1	50	12,652	12,563	89		
Dec-19	1,075	3.96	271,415	49	1	50	13,502	13,418	84		
Total, Average	12,597		265,090	986	7	992	261,800	261,335	465	1	466
LPLS											
Jan-19	3,168	347.77	9,109	1,218	0	1,218	11,095	11,150	(55)		
Feb-19	3,178	347.77	9,140	1,188	0	1,188	10,857	10,911	(54)		
Mar-19	3,181	347.77	9,148	1,238	8	1,246	11,396	11,380	16		
Apr-19	3,195	347.77	9,186	1,230	8	1,238	11,373	11,357	16		
May-19	3,162	347.77	9,093	2,170	14	2,183	19,855	19,827	29		
Jun-19	3,156	347.77	9,076	3,493	22	3,516	31,912	31,866	46		
Jul-19	3,095	347.77	8,900	3,991	26	4,017	35,751	35,694	56		
Aug-19	3,105	347.77	8,927	4,106	27	4,133	36,898	36,840	58		
Sep-19	3,050	347.77	8,771	2,610	35	2,645	23,197	23,006	191		
Oct-19	2,925	347.77	8,412	1,954	27	1,981	16,663	16,516	147		
Nov-19	2,845	347.77	8,181	1,377	20	1,397	11,429	11,324	105		
Dec-19	3,048	347.77	8,765	1,229	16	1,246	10,919	10,828	90		
Total, Average	37,110	347.77	8,892	25,804	203	26,007	231,343	230,699	644	3	646

Schedule DGH-4G

Green Enabling Mechanism Deferral Example

Assumes a 0.5% increase in the number of customers served and 1.0% increase in revenue compared to base

GAS

	(A)	(B)	(C) = (A x 1000) / B	(D) DGH-2G	(E) DGH-3G	(F) = D + E	(G) = F x C / 1000	(H)	(I) = G - H	(J) DGH-6G	(K) = I + J
Month	Actual Service Charge Revenue (\$000s)	Actual Service Charge Rate (\$)	# of Customers	Base Revenue per Customer (\$)	Revenue per Customer Adjustment (\$)	Allowed Revenue per Customer (\$)	Allowed Revenue (\$000s)	Actual Revenue (\$000s)	Deferral to Collect/ (Credit) excl Interest (\$000s)	Interest to Collect / (Credit) (\$000s)	Deferral to Collect/ (Credit) incl Interest (\$000s)
RSG											
May-19	8,882	5.46	1,626,803	17	0	17	27,508	27,645	(137)		
Jun-19	8,945	5.46	1,638,315	13	0	13	21,786	21,895	(108)		
Jul-19	9,401	5.46	1,721,808	11	0	11	18,549	18,549	(1)		
Aug-19	8,729	5.46	1,598,645	11	0	11	17,932	17,926	6		
Sep-19	8,971	5.46	1,643,078	11	0	12	18,972	18,968	4		
Oct-19	8,896	5.46	1,629,297	18	0	18	28,662	28,655	7		
Nov-19	8,968	5.46	1,642,526	32	0	33	53,509	53,499	10		
Dec-19	8,884	5.46	1,627,127	52	0	52	85,150	85,129	21		
Jan-20	8,871	5.46	1,624,801	62	1	63	102,049	101,495	553		
Feb-20	8,862	5.46	1,623,078	55	1	55	89,827	89,339	488		
Mar-20	8,902	5.46	1,630,422	46	0	47	75,979	75,569	409		
Apr-20	8,893	5.46	1,628,768	26	0	27	43,458	43,224	235		
Total, Average	107,205	5.46	1,636,222	355	3	358	583,381	581,894	1,487	3	1,489

GSG

May-19	1,725	12.22	141,198	32	0	32	4,524	4,546	(23)		
Jun-19	1,737	12.22	142,127	28	0	28	4,039	4,059	(20)		
Jul-19	1,715	11.59	147,930	26	0	26	3,831	3,831	0		
Aug-19	1,595	11.59	137,580	25	0	25	3,422	3,420	2		
Sep-19	1,632	11.64	140,204	25	0	25	3,538	3,536	1		
Oct-19	1,638	11.64	140,709	40	0	40	5,646	5,644	2		
Nov-19	1,640	11.64	140,854	55	0	56	7,855	7,852	3		
Dec-19	1,638	11.64	140,686	91	0	91	12,808	12,803	5		
Jan-20	1,721	12.22	140,848	108	1	109	15,395	15,307	87		
Feb-20	1,708	12.22	139,799	102	1	103	14,409	14,326	83		
Mar-20	1,731	12.22	141,677	87	1	88	12,472	12,402	70		
Apr-20	1,724	12.22	141,065	47	0	47	6,649	6,611	38		
Total, Average	20,203	11.92	141,223	666	5	671	94,587	94,338	249	0	250

LVG

May-19	1,887	100.12	18,850	164	0	164	3,099	3,114	(15)		
Jun-19	1,860	100.12	18,574	174	0	174	3,224	3,240	(16)		
Jul-19	1,878	100.12	18,756	154	1	155	2,906	2,909	(3)		
Aug-19	1,794	100.12	17,918	158	1	159	2,851	2,853	(2)		
Sep-19	1,771	100.12	17,691	157	1	157	2,783	2,785	(2)		
Oct-19	1,829	100.12	18,272	545	2	547	9,997	10,005	(9)		
Nov-19	1,798	100.12	17,956	1,004	4	1,009	18,109	18,123	(14)		
Dec-19	1,808	100.12	18,058	1,038	4	1,042	18,814	18,829	(15)		
Jan-20	1,874	100.12	18,714	1,131	9	1,140	21,331	21,266	65		
Feb-20	1,870	100.12	18,681	1,124	9	1,133	21,172	21,107	65		
Mar-20	1,892	100.12	18,902	807	6	813	15,376	15,331	46		
Apr-20	1,890	100.12	18,876	221	2	223	4,213	4,201	13		
Total, Average	22,151	100.12	18,437	6,678	39	6,717	123,874	123,762	111	(0)	111

Schedule DGH-5E
Green Enabling Charge or Credit Example
Forecasted sales and demand as calculated by PSE&G
ELECTRIC

Month	(A) Forecasted Sales (kWh) or Annual Demands (kW)	(B) DGH-4E Deferral to be Collected/ (Credited) (\$000s)	(C) = (B x 1000) / A Rate per kWh or kW
<u>RS, RHS (kWh)</u>			
Jun-20	1,322,250,144		
Jul-20	1,703,943,081		
Aug-20	1,585,490,050		
Sep-20	1,122,310,470		
Oct-20	867,767,489		
Nov-20	851,034,142		
Dec-20	1,072,975,530		
Jan-21	1,114,017,868		
Feb-21	945,624,293		
Mar-21	938,871,130		
Apr-21	752,152,879		
May-21	865,944,503		
Total	13,142,381,577	820	0.000062

<u>RLM (kWh)</u>			
Jun-20	22,627,872		
Jul-20	28,473,079		
Aug-20	27,585,931		
Sep-20	19,723,880		
Oct-20	14,326,040		
Nov-20	13,098,871		
Dec-20	16,402,762		
Jan-21	18,798,035		
Feb-21	15,549,881		
Mar-21	16,082,180		
Apr-21	11,814,992		
May-21	14,344,620		
Total	218,828,143	10	0.000046

<u>GLPMD (kW)</u>			
Jun-20	2,635,426		
Jul-20	2,809,545		
Aug-20	2,716,304		
Sep-20	2,447,640		
Oct-20	2,326,038		
Nov-20	2,242,166		
Dec-20	2,074,673		
Jan-21	2,113,396		
Feb-21	2,057,569		
Mar-21	2,224,241		
Apr-21	2,194,304		
May-21	2,433,793		
Total	28,275,093	466	0.016477

Schedule DGH-5E
Green Enabling Charge or Credit Example
Forecasted sales and demand as calculated by PSE&G
ELECTRIC

	(A)	(B)	(C)
		DGH-4E	= (B x 1000) / A
Month	Forecasted Sales (kWh) or Annual Demands (kW)	Deferral to be Collected/ (Credited) (\$000s)	Rate per kWh or kW
<u>LPLS (kW)</u>			
Jun-20	2,536,020		
Jul-20	2,639,988		
Aug-20	2,867,085		
Sep-20	2,359,074		
Oct-20	2,218,492		
Nov-20	2,357,818		
Dec-20	2,106,545		
Jan-21	2,202,219		
Feb-21	2,133,316		
Mar-21	2,237,843		
Apr-21	2,235,084		
May-21	2,546,708		
Total	28,440,192	646	0.022726

Schedule DGH-5G
Green Enabling Charge or Credit Example
Forecasted sales as calculated by PSE&G
GAS

	(A)	(B)	(C)
		DGH-4G	= (B x 1000) / A
		Deferral to be	
Month	Forecasted Sales	Collected/	Rate per Therm
	(Therms)	(Credited) (\$000s)	
<u>RSG</u>			
Oct-20	66,995,138		
Nov-20	160,951,200		
Dec-20	249,703,696		
Jan-21	273,086,988		
Feb-21	245,943,005		
Mar-21	204,044,552		
Apr-21	104,955,599		
May-21	57,894,663		
Jun-21	41,231,041		
Jul-21	30,001,804		
Aug-21	29,322,776		
Sep-21	30,425,557		
Total	1,494,556,020	1,489	0.000997

<u>GSG</u>			
Oct-20	12,390,112		
Nov-20	25,196,833		
Dec-20	43,397,648		
Jan-21	52,230,164		
Feb-21	49,701,717		
Mar-21	42,562,289		
Apr-21	18,991,622		
May-21	10,681,551		
Jun-21	8,818,423		
Jul-21	6,821,999		
Aug-21	6,397,360		
Sep-21	8,129,379		
Total	285,319,097	250	0.000876

<u>LVG</u>			
Oct-20	44,394,748		
Nov-20	63,026,491		
Dec-20	91,379,865		
Jan-21	110,620,667		
Feb-21	109,091,266		
Mar-21	98,192,844		
Apr-21	53,457,224		
May-21	28,007,836		
Jun-21	31,082,494		
Jul-21	21,250,992		
Aug-21	24,627,409		
Sep-21	22,680,364		
Total	697,812,201	111	0.000159

Schedule DGH-6E

GEM Interest Calculation Example

Simple example of two-year cycle to calculate GEM interest and deferral balance; assume 2.20% interest rate (2 Year Treasury + 60 basis points)

ELECTRIC

	(A) Prior E - I	(B) DGH-5E (Sales*Rate)	(C) DGH-4E	(D) = C - B	(E) = A + D	(F) = (A + E) / 2	(G)	(H) = F * G	(I)	(J) = Prior J + H - I
Month	Under / (Over) Recovery Beginning Balance (\$000s)	Revenues Collected / (Credited) (\$000s)	Deferral to Collect / (Credit) excl interest (\$000s)	Under / (Over) Recovery (\$000s)	Under / (Over) Recovery Ending Balance (\$000s)	Under / (Over) Average Monthly Balance (\$000s)	Interest Rate Annualized	Interest Income / (Expense) Average Monthly Balance (\$000s)	Interest Roll-In (\$000s)	Cumulative Interest (\$000s)
RS_RHS										
Jan-19	0	0	(206)	(206)	(206)	(103)	2.20%	(0)		(0)
Feb-19	(206)	0	(177)	(177)	(384)	(295)	2.20%	(1)		(1)
Mar-19	(384)	0	29	29	(355)	(369)	2.20%	(1)		(1)
Apr-19	(355)	0	25	25	(330)	(342)	2.20%	(1)		(2)
May-19	(330)	0	30	30	(300)	(315)	2.20%	(1)		(3)
Jun-19	(300)	0	47	47	(254)	(277)	2.20%	(1)		(3)
Jul-19	(254)	0	57	57	(197)	(225)	2.20%	(0)		(4)
Aug-19	(197)	0	55	55	(142)	(169)	2.20%	(0)		(4)
Sep-19	(142)	0	280	280	138	(2)	2.20%	(0)		(4)
Oct-19	138	0	198	198	337	238	2.20%	0		(3)
Nov-19	337	0	214	214	551	444	2.20%	1		(3)
Dec-19	551	0	271	271	822	686	2.20%	1		(1)
Jan-20	820	0	0	0	820	820	2.20%	2	(1)	2
Feb-20	820	0	0	0	820	820	2.20%	2		3
Mar-20	820	0	0	0	820	820	2.20%	2		5
Apr-20	820	0	0	0	820	820	2.20%	2		6
May-20	820	0	0	0	820	820	2.20%	2		8
Jun-20	820	83	0	(83)	738	779	2.20%	1		9
Jul-20	738	106	0	(106)	631	685	2.20%	1		10
Aug-20	631	99	0	(99)	532	582	2.20%	1		11
Sep-20	532	70	0	(70)	462	497	2.20%	1		12
Oct-20	462	54	0	(54)	408	435	2.20%	1		13
Nov-20	408	53	0	(53)	355	382	2.20%	1		14
Dec-20	355	67	0	(67)	288	322	2.20%	1		14
Jan-21	288	70	0	(70)	219	253	2.20%	0		15
Feb-21	219	59	0	(59)	160	189	2.20%	0		15
Mar-21	160	59	0	(59)	101	130	2.20%	0		15
Apr-21	101	47	0	(47)	54	78	2.20%	0		15
May-21	54	54	0	(54)	(0)	27	2.20%	0		16

RLM

Jan-19	0	0	(2)	(2)	(2)	(1)	2.20%	(0)		(0)
Feb-19	(2)	0	(2)	(2)	(4)	(3)	2.20%	(0)		(0)
Mar-19	(4)	0	0	0	(4)	(4)	2.20%	(0)		(0)
Apr-19	(4)	0	0	0	(3)	(4)	2.20%	(0)		(0)
May-19	(3)	0	0	0	(3)	(3)	2.20%	(0)		(0)
Jun-19	(3)	0	1	1	(2)	(3)	2.20%	(0)		(0)
Jul-19	(2)	0	1	1	(2)	(2)	2.20%	(0)		(0)
Aug-19	(2)	0	1	1	(1)	(1)	2.20%	(0)		(0)
Sep-19	(1)	0	3	3	3	1	2.20%	0		(0)
Oct-19	3	0	2	2	5	4	2.20%	0		(0)
Nov-19	5	0	2	2	7	6	2.20%	0		(0)
Dec-19	7	0	3	3	10	9	2.20%	0		(0)
Jan-20	10	0	0	0	10	10	2.20%	0	(0)	0
Feb-20	10	0	0	0	10	10	2.20%	0		0
Mar-20	10	0	0	0	10	10	2.20%	0		0
Apr-20	10	0	0	0	10	10	2.20%	0		0
May-20	10	0	0	0	10	10	2.20%	0		0
Jun-20	10	1	0	(1)	9	9	2.20%	0		0
Jul-20	9	1	0	(1)	8	8	2.20%	0		0
Aug-20	8	1	0	(1)	6	7	2.20%	0		0
Sep-20	6	1	0	(1)	6	6	2.20%	0		0
Oct-20	6	1	0	(1)	5	5	2.20%	0		0
Nov-20	5	1	0	(1)	4	5	2.20%	0		0
Dec-20	4	1	0	(1)	4	4	2.20%	0		0
Jan-21	4	1	0	(1)	3	3	2.20%	0		0
Feb-21	3	1	0	(1)	2	2	2.20%	0		0
Mar-21	2	1	0	(1)	1	2	2.20%	0		0
Apr-21	1	1	0	(1)	1	1	2.20%	0		0
May-21	1	1	0	(1)	0	0	2.20%	0		0

GLPMD

Jan-19	0	0	(62)	(62)	(62)	(31)	2.20%	(0)		(0)
Feb-19	(62)	0	(60)	(60)	(123)	(92)	2.20%	(0)		(0)
Mar-19	(123)	0	7	7	(115)	(119)	2.20%	(0)		(0)
Apr-19	(115)	0	8	8	(107)	(111)	2.20%	(0)		(1)
May-19	(107)	0	14	14	(93)	(100)	2.20%	(0)		(1)
Jun-19	(93)	0	24	24	(69)	(81)	2.20%	(0)		(1)
Jul-19	(69)	0	37	37	(32)	(51)	2.20%	(0)		(1)
Aug-19	(32)	0	44	44	12	(10)	2.20%	(0)		(1)
Sep-19	12	0	185	185	197	104	2.20%	0		(1)
Oct-19	197	0	95	95	292	244	2.20%	0		(0)
Nov-19	292	0	89	89	381	337	2.20%	1		0
Dec-19	381	0	84	84	465	423	2.20%	1		1
Jan-20	466	0	0	0	466	466	2.20%	1	1	1
Feb-20	466	0	0	0	466	466	2.20%	1		2
Mar-20	466	0	0	0	466	466	2.20%	1		3
Apr-20	466	0	0	0	466	466	2.20%	1		3
May-20	466	0	0	0	466	466	2.20%	1		4
Jun-20	466	43	0	(43)	422	444	2.20%	1		5
Jul-20	422	46	0	(46)	376	399	2.20%	1		6
Aug-20	376	45	0	(45)	331	354	2.20%	1		6
Sep-20	331	40	0	(40)	291	311	2.20%	1		7
Oct-20	291	38	0	(38)	253	272	2.20%	0		8
Nov-20	253	37	0	(37)	216	234	2.20%	0		8
Dec-20	216	34	0	(34)	182	199	2.20%	0		8
Jan-21	182	35	0	(35)	147	164	2.20%	0		9
Feb-21	147	34	0	(34)	113	130	2.20%	0		9
Mar-21	113	37	0	(37)	76	95	2.20%	0		9
Apr-21	76	36	0	(36)	40	58	2.20%	0		9
May-21	40	40	0	(40)	(0)	20	2.20%	0		9

LPLS

ATTACHMENT 3

Jan-19	0	0	(55)	(55)	(55)	(28)	2.20%	(0)	(0)
Feb-19	(55)	0	(54)	(54)	(109)	(82)	2.20%	(0)	(0)
Mar-19	(109)	0	16	16	(93)	(101)	2.20%	(0)	(0)
Apr-19	(93)	0	16	16	(78)	(85)	2.20%	(0)	(1)
May-19	(78)	0	29	29	(49)	(63)	2.20%	(0)	(1)
Jun-19	(49)	0	46	46	(3)	(26)	2.20%	(0)	(1)
Jul-19	(3)	0	56	56	54	26	2.20%	0	(1)
Aug-19	54	0	58	58	111	83	2.20%	0	(1)
Sep-19	111	0	191	191	302	207	2.20%	0	(0)
Oct-19	302	0	147	147	449	376	2.20%	1	1
Nov-19	449	0	105	105	554	501	2.20%	1	1
Dec-19	554	0	90	90	644	599	2.20%	1	3
Jan-20	646	0	0	0	646	646	2.20%	1	1
Feb-20	646	0	0	0	646	646	2.20%	1	2
Mar-20	646	0	0	0	646	646	2.20%	1	4
Apr-20	646	0	0	0	646	646	2.20%	1	5
May-20	646	0	0	0	646	646	2.20%	1	6
Jun-20	646	58	0	(58)	589	618	2.20%	1	7
Jul-20	589	60	0	(60)	529	559	2.20%	1	8
Aug-20	529	65	0	(65)	464	496	2.20%	1	9
Sep-20	464	54	0	(54)	410	437	2.20%	1	10
Oct-20	410	50	0	(50)	360	385	2.20%	1	10
Nov-20	360	54	0	(54)	306	333	2.20%	1	11
Dec-20	306	48	0	(48)	258	282	2.20%	1	12
Jan-21	258	50	0	(50)	208	233	2.20%	0	12
Feb-21	208	48	0	(48)	160	184	2.20%	0	12
Mar-21	160	51	0	(51)	109	134	2.20%	0	13
Apr-21	109	51	0	(51)	58	83	2.20%	0	13
May-21	58	58	0	(58)	(0)	29	2.20%	0	13

3

Schedule DGH-6G

GEM Interest Calculation Example

Simple example of two-year cycle to calculate GEM interest and deferral balance; assume 2.20% interest rate (2 Year Treasury + 60 basis points)

GAS

	(A) Prior E - I	(B) DGH-5G (Sales*Rate)	(C) DGH-4G	(D) = C - B	(E) = A + D	(F) = (A + E) / 2	(G)	(H) = F * G	(I)	(J) = Prior J + H - I
Month	Under / (Over) Recovery Beginning Balance (\$000s)	Revenues Collected / (Credited) (\$000s)	Deferral to Collect / (Credit) excl interest (\$000s)	Under / (Over) Recovery (\$000s)	Under / (Over) Recovery Ending Balance (\$000s)	Under / (Over) Average Monthly Balance (\$000s)	Interest Rate Annualized	Interest Income / (Expense) Average Monthly Balance (\$000s)	Interest Roll-In (\$000s)	Cumulative Interest (\$000s)
RSG										
May-19	0	0	(137)	(137)	(137)	(68)	2.20%	(0)		(0)
Jun-19	(137)	0	(108)	(108)	(245)	(191)	2.20%	(0)		(0)
Jul-19	(245)	0	(1)	(1)	(246)	(246)	2.20%	(0)		(1)
Aug-19	(246)	0	6	6	(240)	(243)	2.20%	(0)		(1)
Sep-19	(240)	0	4	4	(236)	(238)	2.20%	(0)		(2)
Oct-19	(236)	0	7	7	(230)	(233)	2.20%	(0)		(2)
Nov-19	(230)	0	10	10	(219)	(224)	2.20%	(0)		(3)
Dec-19	(219)	0	21	21	(198)	(209)	2.20%	(0)		(3)
Jan-20	(198)	0	553	553	355	78	2.20%	0		(3)
Feb-20	355	0	488	488	843	599	2.20%	1		(2)
Mar-20	843	0	409	409	1,252	1,048	2.20%	2		0
Apr-20	1,252	0	235	235	1,487	1,370	2.20%	3		3
May-20	1,489	0	0	0	1,489	1,489	2.20%	3	3	3
Jun-20	1,489	0	0	0	1,489	1,489	2.20%	3		5
Jul-20	1,489	0	0	0	1,489	1,489	2.20%	3		8
Aug-20	1,489	0	0	0	1,489	1,489	2.20%	3		11
Sep-20	1,489	0	0	0	1,489	1,489	2.20%	3		14
Oct-20	1,489	67	0	(67)	1,423	1,456	2.20%	3		16
Nov-20	1,423	160	0	(160)	1,262	1,343	2.20%	2		19
Dec-20	1,262	249	0	(249)	1,013	1,138	2.20%	2		21
Jan-21	1,013	272	0	(272)	741	877	2.20%	2		22
Feb-21	741	245	0	(245)	496	619	2.20%	1		24
Mar-21	496	203	0	(203)	293	395	2.20%	1		24
Apr-21	293	105	0	(105)	188	241	2.20%	0		25
May-21	188	58	0	(58)	131	159	2.20%	0		25
Jun-21	131	41	0	(41)	89	110	2.20%	0		25
Jul-21	89	30	0	(30)	60	74	2.20%	0		25
Aug-21	60	29	0	(29)	30	45	2.20%	0		25
Sep-21	30	30	0	(30)	(0)	15	2.20%	0		26
GSG										
May-19	0	0	(23)	(23)	(23)	(11)	2.20%	(0)		(0)
Jun-19	(23)	0	(20)	(20)	(43)	(33)	2.20%	(0)		(0)
Jul-19	(43)	0	0	0	(42)	(42)	2.20%	(0)		(0)
Aug-19	(42)	0	2	2	(40)	(41)	2.20%	(0)		(0)
Sep-19	(40)	0	1	1	(39)	(40)	2.20%	(0)		(0)
Oct-19	(39)	0	2	2	(37)	(38)	2.20%	(0)		(0)
Nov-19	(37)	0	3	3	(34)	(35)	2.20%	(0)		(0)
Dec-19	(34)	0	5	5	(29)	(31)	2.20%	(0)		(0)
Jan-20	(29)	0	87	87	59	15	2.20%	0		(0)
Feb-20	59	0	83	83	142	100	2.20%	0		(0)
Mar-20	142	0	70	70	212	177	2.20%	0		0
Apr-20	212	0	38	38	249	231	2.20%	0		0
May-20	250	0	0	0	250	250	2.20%	0	0	0
Jun-20	250	0	0	0	250	250	2.20%	0		1
Jul-20	250	0	0	0	250	250	2.20%	0		1
Aug-20	250	0	0	0	250	250	2.20%	0		2
Sep-20	250	0	0	0	250	250	2.20%	0		2
Oct-20	250	11	0	(11)	239	244	2.20%	0		3
Nov-20	239	22	0	(22)	217	228	2.20%	0		3
Dec-20	217	38	0	(38)	179	198	2.20%	0		4
Jan-21	179	46	0	(46)	133	156	2.20%	0		4
Feb-21	133	44	0	(44)	90	111	2.20%	0		4
Mar-21	90	37	0	(37)	52	71	2.20%	0		4
Apr-21	52	17	0	(17)	36	44	2.20%	0		4
May-21	36	9	0	(9)	26	31	2.20%	0		4
Jun-21	26	8	0	(8)	19	23	2.20%	0		4
Jul-21	19	6	0	(6)	13	16	2.20%	0		4
Aug-21	13	6	0	(6)	7	10	2.20%	0		4
Sep-21	7	7	0	(7)	0	4	2.20%	0		4
LVG										
May-19	0	0	(15)	(15)	(15)	(8)	2.20%	(0)		(0)
Jun-19	(15)	0	(16)	(16)	(31)	(23)	2.20%	(0)		(0)
Jul-19	(31)	0	(3)	(3)	(34)	(33)	2.20%	(0)		(0)
Aug-19	(34)	0	(2)	(2)	(36)	(35)	2.20%	(0)		(0)
Sep-19	(36)	0	(2)	(2)	(38)	(37)	2.20%	(0)		(0)
Oct-19	(38)	0	(9)	(9)	(47)	(43)	2.20%	(0)		(0)
Nov-19	(47)	0	(14)	(14)	(61)	(54)	2.20%	(0)		(0)
Dec-19	(61)	0	(15)	(15)	(76)	(69)	2.20%	(0)		(1)
Jan-20	(76)	0	65	65	(11)	(44)	2.20%	(0)		(1)
Feb-20	(11)	0	65	65	53	21	2.20%	0		(1)
Mar-20	53	0	46	46	99	76	2.20%	0		(0)
Apr-20	99	0	13	13	111	105	2.20%	0		(0)
May-20	111	0	0	0	111	111	2.20%	0	(0)	0
Jun-20	111	0	0	0	111	111	2.20%	0		0
Jul-20	111	0	0	0	111	111	2.20%	0		1
Aug-20	111	0	0	0	111	111	2.20%	0		1
Sep-20	111	0	0	0	111	111	2.20%	0		1
Oct-20	111	7	0	(7)	104	108	2.20%	0		1
Nov-20	104	10	0	(10)	94	99	2.20%	0		1
Dec-20	94	15	0	(15)	80	87	2.20%	0		2
Jan-21	80	18	0	(18)	62	71	2.20%	0		2
Feb-21	62	17	0	(17)	45	53	2.20%	0		2
Mar-21	45	16	0	(16)	29	37	2.20%	0		2
Apr-21	29	9	0	(9)	20	25	2.20%	0		2
May-21	20	4	0	(4)	16	18	2.20%	0		2
Jun-21	16	5	0	(5)	11	13	2.20%	0		2
Jul-21	11	3	0	(3)	8	9	2.20%	0		2
Aug-21	8	4	0	(4)	4	6	2.20%	0		2
Sep-21	4	4	0	(4)	0	2	2.20%	0		2

PUBLIC SERVICE ELECTRIC AND GAS COMPANYBALANCE SHEET\$(In Thousands)

		<u>Dec 31, 2015</u>	<u>Dec 31, 2016</u>	<u>Dec 31, 2017</u>
Assets and Other Debits				
Utility Plant				
Electric Utility Plant				
101	Electric Utility Plant in Service	\$ 13,747,438	\$ 15,540,571	\$ 16,899,618
103	Electric Experimental Plant Unclassified	-	-	-
105	Electric Utility Plant Held for Future Use	26,136	19,257	19,907
106	Electric Completed Construction not classified- Electric	2,221,543	2,455,615	2,872,173
107	Electric Construction Work in Progress	1,432,943	1,423,604	1,588,835
	Total Electric Utility Plant	<u>17,428,059</u>	<u>19,439,047</u>	<u>21,380,534</u>
Gas Utility Plant				
101	Gas Utility Plant in Service	6,109,770	6,624,762	7,307,650
103	Gas Experimental Plant Unclassified	-	-	-
105	Gas Utility Plant Held for Future Use	4	96	96
106	Gas Completed Construction not classified	9,391	9,974	42,626
107	Gas Construction Work in Progress	6,852	17,013	14,301
	Total Gas Utility Plant	<u>6,126,017</u>	<u>6,651,845</u>	<u>7,364,673</u>
Common Utility Plant				
101	Common Utility Plant in Service	268,862	298,049	336,779
106	Common Completed Construction not classified	7,312	8,310	6,238
107	Common Construction Work in Progress	7,273	48,637	122,071
	Total Common Utility Plant	<u>283,447</u>	<u>354,996</u>	<u>465,087</u>
	Total Utility Plant	<u>23,837,523</u>	<u>26,445,887</u>	<u>29,210,294</u>
Accumulated Provisions for Depreciation and Amortization of				
Electric Utility Plant				
108 & 111	Electric Utility Plant in Service	(3,153,541)	(3,315,603)	(3,576,611)
108.5	Electric Utility Plant Held for Future Use	-	-	-
	Total Electric Utility Plant	<u>(3,153,541)</u>	<u>(3,315,603)</u>	<u>(3,576,611)</u>
Gas Utility Plant				
108 & 111	Gas Utility Plant in Service	(2,200,460)	(2,227,924)	(2,259,642)
Common Utility Plant				
108 & 111	Common Utility Plant in Service	(109,963)	(119,612)	(144,439)
	Total Accumulated Provisions for Depreciation and Amortization of Utility Plant	<u>(5,463,964)</u>	<u>(5,663,139)</u>	<u>(5,980,693)</u>
	Net Utility Plant Excluding Nuclear Fuel	<u>18,373,559</u>	<u>20,782,748</u>	<u>23,229,602</u>
Nuclear Fuel				
120.1	120.1 In Process	-	-	-
120.2	120.2 Materials and Assemblies Stock	-	-	-
120.3	120.3 In Reactor	-	-	-
120.4	120.4 Spent	-	-	-
Accumulated Provisions for Amortization				
120.5	120.5 Nuclear Fuel	-	-	-
	Net Nuclear Fuel	-	-	-
	Net Utility Plant	<u>18,373,559</u>	<u>20,782,748</u>	<u>23,229,602</u>
Other Property and Investments				
121	Nonutility Property	3,003	3,079	3,242
122	Accumulated Provision for Depreciation & Amortization of Nonutility Property	(573)	(600)	(628)
123 & 123.1	Investments in Associated & Subsidiary Companies	66,448	66,709	50,883
124	Other Investments	325,539	298,556	279,872
125-8	Special Funds	49,376	42,956	45,971
175	Long-Term Portion of Derivative Assets	-	-	-
	Total Other Property and Investments	<u>443,793</u>	<u>410,700</u>	<u>379,341</u>

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

BALANCE SHEET
\$(In Thousands)

Dec 31, 2015 **Dec 31, 2016** **Dec 31, 2017**

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

BALANCE SHEET

Dec 31, 2015 **Dec 31, 2016** **Dec 31, 2017**

Current and Accrued Assets

131	Cash	\$	12,248	\$	19,831	\$	13,231
132-4	Special Deposits		1,080		2,742		2,026
135	Working Funds		-		-		-
136	Temporary Cash Investments		160,000		365,000		223,000
141-3	Notes and Accounts Receivable		853,115		872,482		935,026
144	Accumulated Provision for Uncollectible Accounts - Credit		(67,116)		(67,619)		(59,315)
145-6	Receivables from Associated Companies		367,754		175,259		16,400
151-5	Materials and Supplies (incl. 163)		147,909		179,674		196,734
158	Allowances		-		-		-
164	Gas Stored Underground - Current		-		-		-
165	Prepayments		31,189		8,281		43,659
171	Interest and Dividends Receivable		0		-		-
172	Rents Receivable		6,223		7,803		7,305
173	Accrued Utility Revenues		197,431		260,355		296,463
174	Miscellaneous Current and Accrued		5,959		3,386		2,833
175	Current Portion of Derivative Instrument Assets		13,576		-		-
	Total Current and Accrued Assets		1,729,369		1,827,193		1,677,360

Deferred Debits

181	Unamortized Debt Expense		40,728		44,819		46,324
182	Unrec'd Plt and Reg Costs and Other Reg Assets		3,382,881		3,530,993		3,441,941
183	Preliminary Survey and Investigation Charges		9,282		12,785		12,434
184	Clearing Accounts		421		421		421
185	Temporary Facilities		-		-		-
186	Miscellaneous Deferred Debits		36,016		41,909		46,516
188	Research and Development Expenditures		-		-		-
189	Unamortized Loss on Reacquired Debt		66,775		61,094		54,827
190	Accumulated Deferred Income Taxes		199,953		218,740		969,270
	Total Deferred Debits		3,736,056		3,910,761		4,571,733
	Total Assets and Other Debits	\$	24,282,776	\$	26,931,402	\$	29,858,036

PUBLIC SERVICE ELECTRIC AND GAS COMPANY**BALANCE SHEET****\$(In Thousands)**

		<u>Dec 31, 2015</u>	<u>Dec 31, 2016</u>	<u>Dec 31, 2017</u>
Liabilities and Other Credits				
Proprietary Capital				
201	Common Stock Issued	\$ 892,260	\$ 892,260	\$ 892,260
204	Preferred Stock Issued	-	-	-
207	Premium on Capital Stock	-	-	-
208	Donations from Stockholders	1,680,903	1,930,903	2,080,903
210	Gain on Resale or Cancellation of Required Capital Stock	-	-	-
211	Miscellaneous Paid-In Capital	-	-	-
215	Appropriated Retained Earnings	-	-	-
216	Unappropriated Retained Earnings	5,051,140	5,947,221	6,929,850
216.1	Unappropriated Undistributed Subsidiary Earnings	3,475	3,188	423
219	Other Comprehensive Income	1,227	816	499
	Total Proprietary Capital	<u>7,629,005</u>	<u>8,774,389</u>	<u>9,903,935</u>
Long-Term Debt				
221	221 Bonds	6,879,626	7,883,381	8,658,381
223	223 Advances from Assoc. Co.	-	-	-
225	225 Unamortized Premium on Long-Term Debt	-	-	-
226	226 Unamortized Discount on Long-Term Debt	(17,767)	(20,683)	(20,576)
	Total Long-Term Debt	<u>6,861,859</u>	<u>7,862,697</u>	<u>8,637,805</u>
Other Non-Current Liabilities				
227-9	Other Non-current Liabilities	1,168,046	1,292,025	1,360,896
244	Long-Term Portion of Derivative Instrument Liabilities	11,217	-	-
230	Asset Retirement Obligation	218,189	212,713	212,036
	Total Other Non-Current Liabilities	<u>1,397,453</u>	<u>1,504,739</u>	<u>1,572,931</u>
Current and Accrued Liabilities				
231	Notes Payable	152,924	-	-
232	Accounts Payable	723,759	718,132	727,745
233-4	Payables to Associated Companies	398,873	354,816	331,219
235	Customer Deposits	96,464	93,992	91,606
236	Taxes Accrued	3,663	3,226	4,630
237	Interest Accrued	90,336	96,183	100,843
238	Dividends Declared	-	-	-
239	Matured Long-Term Debt	-	-	-
241	Tax Collections Payable	2,597	500	3,198
242	Miscellaneous Current and Accrued Liabilities	431,876	439,717	434,154
243	Obligations Under Capital leases	-	-	-
244	Current Portion of Derivative Instrument Liabilities	-	5,447	-
	Total Current and Accrued Liabilities	<u>1,900,492</u>	<u>1,712,013</u>	<u>1,693,395</u>
Deferred Credits				
252	Customer Advances for Construction	48,855	48,815	45,882
253	Other Deferred Credits	427,217	416,089	366,496
254	Other Regulatory Liabilities	392,307	328,646	3,132,156
255	Accumulated Deferred Investment Tax Credits	152,266	151,618	141,244
281-3	Accumulated Deferred Income Taxes	5,473,322	6,132,397	4,364,192
	Total Deferred Credits	<u>6,493,966</u>	<u>7,077,565</u>	<u>8,049,970</u>
	Total Liabilities and Other Credits	<u>\$ 24,282,776</u>	<u>\$ 26,931,402</u>	<u>\$ 29,858,036</u>

PUBLIC SERVICE ELECTRIC AND GAS COMPANY**INCOME ACCOUNT**

	<u>YTD 2017 *</u> '(\$000)	<u>YTD 2016 *</u> '(\$000)	<u>YTD 2015 *</u> '(\$000)
400 Electric Operating Revenues	3,085,710	3,372,834	3,675,534
Electric Operating Expenses:			
401 Operation Expense	2,125,656	2,429,564	2,655,749
402 Maintenance Expense	118,804	123,045	114,650
403 Depreciation Expense	253,744	240,246	227,282
404 Amortization of Limited Term Plant	8,949	7,498	6,991
407 Amortization of Property Losses	24,343	4,146	112,278
408.1 Taxes Other Than Income Taxes	23,616	23,462	24,382
409.1 Income Taxes - Federal	40,451	75,769	160,902
410.1 Provision for Deferred Income Taxes	362,789	312,579	367,435
411.1 Provision for Deferred Income Taxes - Credit	(250,108)	(256,626)	(372,517)
411.103 Accretion Expense-Electric	0	41	0
411.4 Investment Tax Credit Adjustments (Net)	(14,243)	1,203	5,071
Total Electric Utility Operating Expenses	<u>2,694,000</u>	<u>2,960,926</u>	<u>3,302,224</u>
Electric Utility Operating Income	<u>\$ 391,710</u>	<u>\$ 411,908</u>	<u>\$ 373,310</u>

* Electric Distribution only

	<u>YTD 2017</u>	<u>YTD 2016</u>	<u>YTD 2015</u>
400 Gas Operating Revenues	1,747,800	1,637,774	1,674,924
Gas Operating Expenses:			
401 Operation Expense	1,161,006	1,101,538	1,149,233
402 Maintenance Expense	39,103	39,605	36,067
403 Depreciation Expense	134,631	123,362	112,763
404 Amortization of Limited Term Plant	7,176	6,330	6,180
407 Amortization of Property Losses	29,385	25,751	25,489
407.4 Amortization of Excess cost of removal	0	(13,200)	(13,200)
408.1 Taxes Other Than Income Taxes	18,038	18,556	19,234
409.1 Income Taxes - Federal	(81,297)	(78,656)	(10,177)
410.1 Provision for Deferred Income Taxes	323,891	270,731	212,738
411.1 Provision for Deferred Income Taxes - Cr	(137,358)	(78,156)	(102,659)
411.4 Investment Tax Credit Adjustments (Net)	3,869	(1,268)	(1,269)
Total Gas Utility Operating Expenses	<u>1,498,443</u>	<u>1,414,592</u>	<u>1,434,398</u>
Gas Utility Operating Income	<u>\$ 249,357</u>	<u>\$ 223,181</u>	<u>\$ 240,525</u>

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

BALANCE SHEET
\$ (In Thousands)

June 30, 2018

Assets and Other Debits

Utility Plant

Electric Utility Plant

101	Electric Utility Plant in Service	\$	17,617,192
103	Electric Experimental Plant Unclassified		-
105	Electric Utility Plant Held for Future Use		18,935
106	Electric Completed Construction not classified- Electric		3,608,212
107	Electric Construction Work in Progress		993,066
	Total Electric Utility Plant		<u>22,237,405</u>

Gas Utility Plant

101	Gas Utility Plant in Service	\$	7,648,692
103	Gas Experimental Plant Unclassified		-
105	Gas Utility Plant Held for Future Use		96
106	Gas Completed Construction not classified		76,055
107	Gas Construction Work in Progress		8,340
	Total Gas Utility Plant		<u>7,733,184</u>

Common Utility Plant

101	Common Utility Plant in Service	\$	510,827
106	Common Completed Construction not classified		3,778
107	Common Construction Work in Progress		1,104
	Total Common Utility Plant		<u>515,709</u>

Total Utility Plant

30,486,297

Accumulated Provisions for Depreciation and Amortization of
Electric Utility Plant

108 & 111	Electric Utility Plant in Service		(3,622,878)
108.5	Electric Utility Plant Held for Future Use		-
	Total Electric Utility Plant		<u>(3,622,878)</u>

Gas Utility Plant

108 & 111	Gas Utility Plant in Service		(2,272,045)
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Common Utility Plant

108 & 111	Common Utility Plant in Service		(160,779)
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Total Accumulated Provisions for
Depreciation and Amortization
of Utility Plant

(6,055,702)

Net Utility Plant Excluding Nuclear Fuel

24,430,596

Nuclear Fuel

120.1	120.1	In Process	-
120.2	120.2	Materials and Assemblies Stock	-
120.3	120.3	In Reactor	-
120.4	120.4	Spent	-

Accumulated Provisions for Amortization

120.5	120.5	Nuclear Fuel	-
		Net Nuclear Fuel	-
		Net Utility Plant	<u>24,430,596</u>

Other Property and Investments

121	Nonutility Property		3,249
122	Accumulated Provision for Depreciation & Amortization of Nonutility Property		(641)
123 & 123.1	Investments in Associated & Subsidiary Companies		50,882
124	Other Investments		284,821
125-8	Special Funds		45,329
175	Long-Term Portion of Derivative Assets		-
	Total Other Property and Investments		<u>383,641</u>

PUBLIC SERVICE ELECTRIC AND GAS COMPANYBALANCE SHEET

June 30, 2018

Current and Accrued Assets			
131	Cash	\$	14,968
132-4	Special Deposits		15,935
135	Working Funds		-
136	Temporary Cash Investments		-
141-3	Notes and Accounts Receivable		850,862
144	Accumulated Provision for Uncollectible Accounts - Credit		(58,796)
145-6	Receivables from Associated Companies		40,417
151-5	Materials and Supplies (incl. 163)		195,209
158	Allowances		-
164	Gas Stored Underground - Current		-
165	Prepayments		204,765
171	Interest and Dividends Receivable		-
172	Rents Receivable		4,027
173	Accrued Utility Revenues		188,888
174	Miscellaneous Current and Accrued		5,369
175	Current Portion of Derivative Instrument Assets		-
	Total Current and Accrued Assets		1,461,644
Deferred Debits			
181	Unamortized Debt Expense		49,545
182	Unrec'd Plt and Reg Costs and Other Reg Assets		3,528,499
183	Preliminary Survey and Investigation Charges		17,578
184	Clearing Accounts		421
185	Temporary Facilities		-
186	Miscellaneous Deferred Debits		40,557
188	Research and Development Expenditures		-
189	Unamortized Loss on Reacquired Debt		51,694
190	Accumulated Deferred Income Taxes		962,989
	Total Deferred Debits		4,651,283
	Total Assets and Other Debits	\$	<u>30,927,163</u>

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

BALANCE SHEET

June 30, 2018

	Liabilities and Other Credits		
	Proprietary Capital		
201	Common Stock Issued	\$	892,260
204	Preferred Stock Issued		-
207	Premium on Capital Stock		-
208	Donations from Stockholders		2,080,903
210	Gain on Resale or Cancellation of Required Capital Stock		-
211	Miscellaneous Paid-In Capital		-
215	Appropriated Retained Earnings		-
216	Unappropriated Retained Earnings		7,484,871
216.1	Unappropriated Undistributed Subsidiary Earnings		422
219	Other Comprehensive Income		(435)
	Total Proprietary Capital		<u>10,458,021</u>
	Long-Term Debt		
221	221 Bonds		8,958,381
223	223 Advances from Assoc. Co.		-
225	225 Unamortized Premium on Long-Term Debt		-
226	226 Unamortized Discount on Long-Term Debt		(23,156)
	Total Long-Term Debt		<u>8,935,225</u>
	Other Non-Current Liabilities		
227-9	Other Non-current Liabilities		1,283,293
244	Long-Term Portion of Derivative Instrument Liabilities		-
230	Asset Retirement Obligation		214,082
	Total Other Non-Current Liabilities		<u>1,497,375</u>
	Current and Accrued Liabilities		
231	Notes Payable		194,982
232	Accounts Payable		703,902
233-4	Payables to Associated Companies		147,533
235	Customer Deposits		92,848
236	Taxes Accrued		6,063
237	Interest Accrued		104,844
238	Dividends Declared		-
239	Matured Long-Term Debt		-
241	Tax Collections Payable		28,563
242	Miscellaneous Current and Accrued Liabilities		527,299
243	Obligations Under Capital leases		-
244	Current Portion of Derivative Instrument Liabilities		-
	Total Current and Accrued Liabilities		<u>1,806,034</u>
	Deferred Credits		
252	Customer Advances for Construction		45,749
253	Other Deferred Credits		387,863
254	Other Regulatory Liabilities		3,118,832
255	Accumulated Deferred Investment Tax Credits		135,743
281-3	Accumulated Deferred Income Taxes		4,542,321
	Total Deferred Credits		<u>8,230,508</u>
	Total Liabilities and Other Credits	\$	<u><u>30,927,163</u></u>

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

REVENUE BY CLASS OF BUSINESS
12 MONTHS ENDING DECEMBER 31, 2017

(Thousands)

Electric Operating Revenue	
Residential	1,910,413
Commercial	1,478,628
Industrial	152,182
Public Street & Highway Lighting	67,841
Interdepartmental Revenues	1,230
Sales for Resale	12,026
Forfeited Discounts	3,862
Miscellaneous Service Revenues	37,069
Rent from Electric Property	3,723
Other Electric Revenues	1,279
	<hr/>
Total Revenue from Electric Distribution Sales	3,668,254

*Excludes Transmission

Gas Operating Revenue	
Residential	\$1,071,883
Commercial	\$554,867
Industrial	\$52,989
Street & Yard Light Service	\$519
Cogeneration	\$6,600
Contract Service Gas	\$7,846
Interdepartmental Revenues	\$498
Forfeited Discounts	\$1,069
Miscellaneous Service Revenues	\$47,247
Other Gas Revenues	<u>\$4,283</u>
Total Revenue from Gas Distribution Sales	\$1,747,800

Public Service Electric & Gas Company
Total Utility Payments or Accruals to Affiliates
(\$ THOUSANDS) Net Billing

	2017	2016	2015
PSEG Services	\$ 617,725	\$ 604,583	\$ 553,486
PSEG Power	1,554,409	1,569,706	1,622,226
PSEG Long Island	(820)	(1,348)	(1,420)
PSEG Energy Holdings	(741)	(733)	(736)
PSEG Enterprise	(96,757)	(105,255)	(87,092)
Total Payments to Affiliates	<u>\$ 2,073,816</u>	<u>\$ 2,066,953</u>	<u>\$ 2,086,463</u>

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
Clean Energy Future - Energy Efficiency
Accounting Entries

Entry	Acct. Description	Debit	Credit
R1	To defer direct program expenditures.		
	182 Program Investment Regulatory Asset	XXX	
	131 Cash		XXX
R2	To amortize direct program expenditures.		
	908 Customer Assistance Expenses	XXX	
	182 Program Investment Regulatory Asset		XXX
R3	To record capitalized IT per PSE&G capitalization policy.		
	303 Capitalized IT	XXX	
	131 Cash		XXX
R4	To amortize IT costs over appropriate book life.		
	404 Amortization Expense	XXX	
	111 Accumulated Amortization		XXX
R5	To record incremental admin. costs.		
	908 Customer Assistance Expenses	XXX	
	131 Cash		XXX
R6	To record expenditure reimbursements or repayments		
	131 Cash	XXX	
	908 Customer Assistance Expenses		XXX
R7	To record the monthly Clean Energy Future Energy Efficiency revenues.		
	142 Customer Accounts Receivable	XXX	
	400 Operating Revenues		XXX
R8	To record any over/ under recovery.		
	182 Regulatory Asset - Clean Energy Future Energy Efficiency	XXX	
	908 Customer Assistance Expenses	XXX	XXX
	254 Regulatory Liabilities		XXX
R9	To record cost of capital on any over/ under recovered balance.		
	182 Regulatory Asset - Clean Energy Future Energy Efficiency	XXX	
	419 Other Income	XXX	XXX
	431 Interest Expense	XXX	XXX
	254 Regulatory Liabilities		XXX

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

XXX Revised Sheet No. 65

B.P.U.N.J. No. 15 ELECTRIC

**Superseding
XXX Revised Sheet No. 65**

GREEN PROGRAMS RECOVERY CHARGE

**Charge
(per kilowatthour)**

Component:

Carbon Abatement Program	\$ 0.000050
Energy Efficiency Economic Stimulus Program	\$ 0.000064
Demand Response Program	(\$ 0.000085)
Solar Generation Investment Program	\$ 0.000364
Solar Loan II Program	\$ 0.000038
Energy Efficiency Economic Extension Program	\$ 0.000280
Solar Generation Investment Extension Program	\$ 0.000005
Solar Loan III Program	\$ 0.000048
Energy Efficiency Economic Extension Program II	\$ 0.000142
Solar Generation Investment Extension II Program	\$ 0.000011
Energy Efficiency 2017 Program	\$ 0.000089
<u>Clean Energy Future - Energy Efficiency Program</u>	<u>\$ 0.000514</u>
Sub-total per kilowatthour	\$ 0.001006 <u>0.001520</u>
Charge including New Jersey Sales and Use Tax (SUT)	\$ 0.001073 <u>0.001621</u>

GREEN PROGRAMS RECOVERY CHARGE

This charge is designed to recover the revenue requirements associated with the PSE&G Green Programs. The charge will be reset nominally on an annual basis. Interest at the weighted average of the interest rates on PSE&G's commercial paper and bank credit lines utilized in the prior month will be accrued monthly on any under- or over- recovered balances. The interest rates shall be reset each month.

Date of Issue:

Issued by SCOTT S. JENNINGS, Vice President Finance – PSE&G
80 Park Plaza, Newark, New Jersey 07102
Filed pursuant to Order of Board of Public Utilities dated
in Docket No.

Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 ELECTRIC

Original Sheet No. XX

GREEN ENABLING MECHANISM

**CHARGE APPLICABLE TO
RATE SCHEDULES RS, RHS, RLM, GLP, LPL-S
(Per kilowatt-hour)**

	<u>Green Enabling Mechanism</u>	<u>Green Enabling Mechanism including SUT</u>
RS	\$0.000000	\$0.000000
RHS	\$0.000000	\$0.000000
RLM	\$0.000000	\$0.000000
GLP – Measured Demand	\$0.000000	\$0.000000
LPL-S	\$0.000000	\$0.000000

Green Enabling Mechanism

This charge shall be applicable to the rate schedules listed above. The green enabling mechanism shall be based on the differences between actual and allowed revenue per customer during the preceding annual period. The green enabling mechanism shall be determined as follows:

I. DEFINITION OF TERMS AS USED HEREIN

1. Actual Number of Customers

- the Actual Number of Customers (“C”) shall be determined on a monthly basis for each of the Customer Class Groups to which the Green Enabling Mechanism (“GEM”) clause applies. The C shall equal the aggregate actual monthly Service Charge revenue for each class of customers subject to the GEM as recorded on the Company’s books, divided by the service charge rate applicable to such class of customers in each Customer Class Group.

2. Actual Revenues

- the Actual Revenue (“AR”) shall be determined in dollars on a monthly basis for each of the Customer Class Groups to which the GEM applies. The AR shall equal the aggregate actual revenues derived from Service Charges, Distribution Kilowatt Charges and Distribution Kilowatt Hour Charges to each of the affected Customer Class Groups as recorded on the Company’s books. Actual revenues shall not include any non-base rate charges such as the Societal Benefits, Non-Utility Generation Charge, Securitization Transition Charges, System Control Charges, Solar Pilot Recovery Charges or Green Programs Recovery Charges.

3. Adjustment Period

- the Adjustment Period shall be the twelve months beginning June 1 and ending on the subsequent May 31 following the conclusion of the Annual Period.

Date of Issue:

Issued by SCOTT S. JENNINGS, Vice President Finance – PSE&G
80 Park Plaza, Newark, New Jersey 07102
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Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 ELECTRIC

Original Sheet No. XX

GREEN ENABLING MECHANISM

(Continued)

4. Allowed Revenue Per Customer

– the Allowed Revenue Per Customer (“ARPC”) is the amount, determined in dollars, of Service Charges, Distribution Kilowatt Charges and Distribution Kilowatt Hour Charges to the affected Customer Class Groups as determined by the Board.

<u>Month</u>	<u>RS & RHS</u>	<u>RLM</u>	<u>GLP</u>	<u>LPL-S</u>
<u>Oct.</u>				
<u>Nov.</u>				
<u>Dec.</u>				
<u>Jan.</u>				
<u>Feb.</u>				
<u>Mar.</u>				
<u>Apr.</u>				
<u>May</u>				
<u>Jun.</u>				
<u>Jul.</u>				
<u>Aug.</u>				
<u>Sep.</u>				
<u>Total Annual</u>				

The ARPC shall be reset each time new base rates are placed into effect.

5. Annual Period

– the Annual Period shall be the twelve consecutive months beginning January 1 and ending December 31.

6. Average 13 Month Common Equity Balance

– the Average 13 Month Common Equity Balance shall be the common equity balance at the beginning of the Annual Period (i.e. January 1) and the month ending balances for each of the twelve months in the Annual Period divided by thirteen (13).

7. Customer Class Group

– the Customer Class Groups for purposes of determining and applying the GEM shall be as follows:

- Group I: RS and RHS
- Group II: RLM
- Group II: GLP
- Group III: LPL-S

8. Forecast Annual Usage

– the Forecast Annual Usage (“FAU”) shall be the projected total annual distribution usage for all customers within the applicable Customer Class Groups. The FAU shall be estimated based on normal weather.

II. DETERMINATION OF THE GREEN ENABLING MECHANISM

1. At the end of each month the Annual Period, a calculation shall be made that determines for each Customer Class Group the deficiency or excess (“Deferral”) to be surcharged or credited pursuant to the GEM mechanism. The GEM Deferral shall be calculated each month by multiplying Number of Customers by the Allowed Revenue Per Customer minus the Actual Revenues as follows:

$$\text{GEM Deferral} = C \times \text{ARPC} - \text{AR}$$

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 ELECTRIC

Original Sheet No. XX

GREEN ENABLING MECHANISM

(continued)

2. The amount to be surcharged or credited ("GEM Recovery Amount") for each Customer Class Group shall equal the eligible aggregate Deferral for all months of the Annual Period determined in accordance with the provisions herein plus carrying charges applied to the Deferral balance and calculated at the then-current interest rate on Two-Year United States Treasury securities plus sixty (60) basis points, plus any cumulative GEM balances remaining from the prior period. The GEM Recovery Amount shall be divided by the FAU for the Adjustment Period to determine the GEM Clause Rate.

3. Recovery of GEM Deferral amounts will be subject to a recovery limitation ("recovery test"). GEM Recovery Amounts will be limited to the 6.5 percent of Distribution Revenues for each Customer Class Group. Any amount that exceeds this limitation may be deferred for future recovery and is subject to the recovery test in future years consistent with the amount by which GEM Recovery Amount exceeds the recovery test.

4. In addition, the GEM shall not operate to permit the Company to recover any portion of a GEM-related deficiency that will cause the Company to earn in excess of a 10.3 percent return on common equity for the Annual Period; any portion which is not recovered shall not be deferred. For purposes of this section, the Company's rate of return on common equity shall be calculated by dividing the Company's regulated jurisdictional net income for the Annual Period by the Company's average 13-month common equity balance for such Annual Period, all as reflected in the Company's monthly reports to the Board of Public Utilities. The Company's regulated jurisdictional net income shall be calculated by subtracting from total net income (1) net income derived from unregulated activities by Company. The Company's Average Thirteenth-Month Common Equity Balance for any Annual Period shall be the Company's average total common equity less the Company's average common equity investment in unregulated subsidiaries.

III. TRACKING THE OPERATION OF THE GREEN ENABLING MECHANISM

The revenues billed, or credits applied, net of taxes and assessments, through the application of the GEM Clause Rate shall be accumulated for each month of the Adjustment Period and applied against the GEM Deferral from the Annual Period and any cumulative GEM balances remaining from prior periods. Interest at 2-year U.S. Treasury rate plus 60 basis points will be accrued monthly on any deferred and under or over recovered balances. The interest rate shall be reset each month.

In accordance with P.L. 1997, c. 192, as amended by P.L. 2006, c. 44, the charges applicable under this Rider include provisions for the New Jersey Sales and Use Tax ("SUT") and when billed to customers exempt from this tax, as set forth in the Standard Terms and Conditions, shall be reduced by the amount of such tax included therein.

The annual filing for the adjustment to the GEM Clause Rate shall be made no later than March 31 of the year following the Annual Period. The GEM Clause Rate shall be credited/collected on a kilowatt-hour basis for all service classifications stated above.

Date of Issue:

Issued by SCOTT S. JENNINGS, Vice President Finance – PSE&G
80 Park Plaza, Newark, New Jersey 07102
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Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

XXX Revised Sheet No. 65

B.P.U.N.J. No. 15 ELECTRIC

**Superseding
XXX Revised Sheet No. 65**

GREEN PROGRAMS RECOVERY CHARGE

**Charge
(per kilowatthour)**

Component:

Carbon Abatement Program	\$ 0.000050
Energy Efficiency Economic Stimulus Program	\$ 0.000064
Demand Response Program	(\$ 0.000085)
Solar Generation Investment Program	\$ 0.000364
Solar Loan II Program	\$ 0.000038
Energy Efficiency Economic Extension Program	\$ 0.000280
Solar Generation Investment Extension Program	\$ 0.000005
Solar Loan III Program	\$ 0.000048
Energy Efficiency Economic Extension Program II	\$ 0.000142
Solar Generation Investment Extension II Program	\$ 0.000011
Energy Efficiency 2017 Program	\$ 0.000089
Clean Energy Future - Energy Efficiency Program	<u>\$ 0.000514</u>
Sub-total per kilowatthour	\$ 0.001520

Charge including New Jersey Sales and Use Tax (SUT) \$ 0.001621

GREEN PROGRAMS RECOVERY CHARGE

This charge is designed to recover the revenue requirements associated with the PSE&G Green Programs. The charge will be reset nominally on an annual basis. Interest at the weighted average of the interest rates on PSE&G's commercial paper and bank credit lines utilized in the prior month will be accrued monthly on any under- or over- recovered balances. The interest rates shall be reset each month.

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 ELECTRIC

Original Sheet No. XX

GREEN ENABLING MECHANISM

**CHARGE APPLICABLE TO
RATE SCHEDULES RS, RHS, RLM, GLP, LPL-S
(Per kilowatt-hour)**

	Green Enabling Mechanism	Green Enabling Mechanism including SUT
RS	\$0.000000	\$0.000000
RHS	\$0.000000	\$0.000000
RLM	\$0.000000	\$0.000000
GLP – Measured Demand	\$0.000000	\$0.000000
LPL-S	\$0.000000	\$0.000000

Green Enabling Mechanism

This charge shall be applicable to the rate schedules listed above. The green enabling mechanism shall be based on the differences between actual and allowed revenue per customer during the preceding annual period. The green enabling mechanism shall be determined as follows:

I. DEFINITION OF TERMS AS USED HEREIN

1. Actual Number of Customers

- the Actual Number of Customers (“C”) shall be determined on a monthly basis for each of the Customer Class Groups to which the Green Enabling Mechanism (“GEM”) clause applies. The C shall equal the aggregate actual monthly Service Charge revenue for each class of customers subject to the GEM as recorded on the Company’s books, divided by the service charge rate applicable to such class of customers in each Customer Class Group.

2. Actual Revenues

– the Actual Revenue (“AR”) shall be determined in dollars on a monthly basis for each of the Customer Class Groups to which the GEM applies. The AR shall equal the aggregate actual revenues derived from Service Charges, Distribution Kilowatt Charges and Distribution Kilowatt Hour Charges to each of the affected Customer Class Groups as recorded on the Company’s books. Actual revenues shall not include any non-base rate charges such as the Societal Benefits, Non-Utility Generation Charge, Securitization Transition Charges, System Control Charges, Solar Pilot Recovery Charges or Green Programs Recovery Charges.

3. Adjustment Period

– the Adjustment Period shall be the twelve months beginning June 1 and ending on the subsequent May 31 following the conclusion of the Annual Period.

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Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 ELECTRIC

Original Sheet No. XX

**GREEN ENABLING MECHANISM
(Continued)**

4. Allowed Revenue Per Customer

– the Allowed Revenue Per Customer (“ARPC”) is the amount, determined in dollars, of Service Charges, Distribution Kilowatt Charges and Distribution Kilowatt Hour Charges to the affected Customer Class Groups as determined by the Board.

Month	RS & RHS	RLM	GLP	LPL-S
Oct.				
Nov.				
Dec.				
Jan.				
Feb.				
Mar.				
Apr.				
May				
Jun.				
Jul.				
Aug.				
Sep.				
Total Annual				

The ARPC shall be reset each time new base rates are placed into effect.

5. Annual Period

– the Annual Period shall be the twelve consecutive months beginning January 1 and ending December 31.

6. Average 13 Month Common Equity Balance

– the Average 13 Month Common Equity Balance shall be the common equity balance at the beginning of the Annual Period (*i.e.* January 1) and the month ending balances for each of the twelve months in the Annual Period divided by thirteen (13).

7. Customer Class Group

– the Customer Class Groups for purposes of determining and applying the GEM shall be as follows:

- Group I: RS and RHS
- Group II: RLM
- Group II: GLP
- Group III: LPL-S

8. Forecast Annual Usage

– the Forecast Annual Usage (“FAU”) shall be the projected total annual distribution usage for all customers within the applicable Customer Class Groups. The FAU shall be estimated based on normal weather.

II. DETERMINATION OF THE GREEN ENABLING MECHANISM

1. At the end of each month the Annual Period, a calculation shall be made that determines for each Customer Class Group the deficiency or excess (“Deferral”) to be surcharged or credited pursuant to the GEM mechanism. The GEM Deferral shall be calculated each month by multiplying Number of Customers by the Allowed Revenue Per Customer minus the Actual Revenues as follows:

$$\text{GEM Deferral} = C \times \text{ARPC} - \text{AR}$$

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 ELECTRIC

Original Sheet No. XX

**GREEN ENABLING MECHANISM
(continued)**

2. The amount to be surcharged or credited ("GEM Recovery Amount") for each Customer Class Group shall equal the eligible aggregate Deferral for all months of the Annual Period determined in accordance with the provisions herein plus carrying charges applied to the Deferral balance and calculated at the then-current interest rate on Two-Year United States Treasury securities plus sixty (60) basis points, plus any cumulative GEM balances remaining from the prior period. The GEM Recovery Amount shall be divided by the FAU for the Adjustment Period to determine the GEM Clause Rate.

3. Recovery of GEM Deferral amounts will be subject to a recovery limitation ("recovery test"). GEM Recovery Amounts will be limited to the 6.5 percent of Distribution Revenues for each Customer Class Group. Any amount that exceeds this limitation may be deferred for future recovery and is subject to the recovery test in future years consistent with the amount by which GEM Recovery Amount exceeds the recovery test.

4. In addition, the GEM shall not operate to permit the Company to recover any portion of a GEM-related deficiency that will cause the Company to earn in excess of a 10.3 percent return on common equity for the Annual Period; any portion which is not recovered shall not be deferred. For purposes of this section, the Company's rate of return on common equity shall be calculated by dividing the Company's regulated jurisdictional net income for the Annual Period by the Company's average 13-month common equity balance for such Annual Period, all as reflected in the Company's monthly reports to the Board of Public Utilities. The Company's regulated jurisdictional net income shall be calculated by subtracting from total net income (1) net income derived from unregulated activities by Company. The Company's Average Thirteenth-Month Common Equity Balance for any Annual Period shall be the Company's average total common equity less the Company's average common equity investment in unregulated subsidiaries.

III. TRACKING THE OPERATION OF THE GREEN ENABLING MECHANISM

The revenues billed, or credits applied, net of taxes and assessments, through the application of the GEM Clause Rate shall be accumulated for each month of the Adjustment Period and applied against the GEM Deferral from the Annual Period and any cumulative GEM balances remaining from prior periods. Interest at 2-year U.S. Treasury rate plus 60 basis points will be accrued monthly on any deferred and under or over recovered balances. The interest rate shall be reset each month.

In accordance with P.L. 1997, c. 192, as amended by P.L. 2006, c. 44, the charges applicable under this Rider include provisions for the New Jersey Sales and Use Tax ("SUT") and when billed to customers exempt from this tax, as set forth in the Standard Terms and Conditions, shall be reduced by the amount of such tax included therein.

The annual filing for the adjustment to the GEM Clause Rate shall be made no later than March 31 of the year following the Annual Period. The GEM Clause Rate shall be credited/collected on a kilowatt-hour basis for all service classifications stated above.

Date of Issue:

Issued by SCOTT S. JENNINGS, Vice President Finance – PSE&G
80 Park Plaza, Newark, New Jersey 07102
Filed pursuant to Order of Board of Public Utilities dated
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Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

XXX Revised Sheet No. 44

B.P.U.N.J. No. 15 GAS

Superseding

XXX Revised Sheet No. 44

GREEN PROGRAMS RECOVERY CHARGE

**CHARGE APPLICABLE TO
RATE SCHEDULES RSG, GSG, LVG, SLG,
TSG-F, TSG-NF, CIG, CSG
(per Therm)**

Component:

Carbon Abatement Program	\$0.001446
Energy Efficiency Economic Stimulus Program.....	0.000450
Energy Efficiency Economic Extension Program.....	0.001618
Energy Efficiency Economic Extension Program II.....	0.001147
Energy Efficiency 2017 Program	0.000902
<u>Clean Energy Future - Energy Efficiency Program.....</u>	<u>0.000403</u>
Green Programs Recovery Charge.....	\$0.005563 <u>0.005966</u>
Green Programs Recovery Charge including New Jersey Sales and Use Tax (SUT)	\$0.005932 <u>0.006361</u>

Green Programs Recovery Charge

This charge is designed to recover the revenue requirements associated with the PSE&G Green Programs. The charge will be reset nominally on an annual basis. Interest at the weighted average of the interest rates on PSE&G's commercial paper and bank credit lines utilized in the prior month will be accrued monthly on any under- or over- recovered balances. The interest rate shall be reset each month.

See Section 16 of the Standard Terms and Conditions for exemptions from this charge.

Date of Issue:

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80 Park Plaza, Newark, New Jersey 07102
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in Docket No.

Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 GAS

Original Sheet No. XX

GREEN ENABLING MECHANISM

**CHARGE APPLICABLE TO
RATE SCHEDULES RSG, GSG, LVG
(Per Therm)**

	<u>Green Enabling Mechanism</u>	<u>Green Enabling Mechanism including SUT</u>
<u>RSG</u>	<u>\$0.000000</u>	<u>\$0.000000</u>
<u>GSG</u>	<u>\$0.000000</u>	<u>\$0.000000</u>
<u>LVG</u>	<u>\$0.000000</u>	<u>\$0.000000</u>

Green Enabling Mechanism

This charge shall be applicable to the rate schedules listed above. The green enabling mechanism shall be based on the differences between actual and allowed revenue per customer during the preceding annual period. The green enabling mechanism shall be determined as follows:

I. DEFINITION OF TERMS AS USED HEREIN

1. Actual Number of Customers

- The Actual Number of Customers ("C") shall be determined on a monthly basis for each of the Customer Class Groups to which the Green Enabling Mechanism ("GEM") clause applies. The C shall equal the aggregate actual monthly Service Charge revenue for each class of customers subject to the GEM as recorded on the Company's books, divided by the service charge rate applicable to such class of customers in each Customer Class Group.

2. Actual Revenues

- the Actual Revenue ("AR") shall be determined in dollars on a monthly basis for each of the Customer Class Groups to which the GEM applies. The AR shall equal the aggregate actual revenues derived from Service Charges and Distribution per therm Charges to each of the affected Customer Class Groups as recorded on the Company's books. Actual revenues shall not include any non-base rate charges such as the Societal Benefits, Margin Adjustment Clause or Green Programs Recovery Charges.

3. Adjustment Period

- the Adjustment Period shall be the twelve months beginning June 1 and ending on the subsequent May 31 following the conclusion of the Annual Period.

Date of Issue:

Issued by SCOTT S. JENNINGS, Vice President Finance – PSE&G
80 Park Plaza, Newark, New Jersey 07102
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Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 GAS

Original Sheet No. XX

GREEN ENABLING MECHANISM
(Continued)

4. Allowed Revenue Per Customer

– the Allowed Revenue Per Customer (“ARPC”) is the amount, determined in dollars, of Service Charges and Distribution per therm Charges to the affected Customer Class Groups as determined by the Board. The ARPC for each Customer Class Group by month are as follows:

<u>Month</u>	<u>RSG</u>	<u>GSG</u>	<u>LVG</u>
<u>Oct.</u>			
<u>Nov.</u>			
<u>Dec.</u>			
<u>Jan.</u>			
<u>Feb.</u>			
<u>Mar.</u>			
<u>Apr.</u>			
<u>May</u>			
<u>Jun.</u>			
<u>Jul.</u>			
<u>Aug.</u>			
<u>Sep.</u>			
<u>Total Annual</u>			

The ARPC shall be reset each time new base rates are placed into effect.

5. Annual Period

– the Annual Period shall be the twelve consecutive months beginning January 1 and ending December 31.

6. Average 13 Month Common Equity Balance

– the Average 13 Month Common Equity Balance shall be the common equity balance at the beginning of the Annual Period (i.e. January 1) and the month ending balances for each of the twelve months in the Annual Period divided by thirteen (13).

7. Customer Class Group

– the Customer Class Groups for purposes of determining and applying the GEM shall be as follows:

- Group I: RSG
- Group II: GSG
- Group III: LVG

8. Forecast Annual Usage

– the Forecast Annual Usage (“FAU”) shall be the projected total annual distribution usage for all customers within the applicable Customer Class Groups. The FAU shall be estimated based on normal weather.

II. DETERMINATION OF THE GREEN ENABLING MECHANISM

1. At the end of each month the Annual Period, a calculation shall be made that determines for each Customer Class Group the deficiency or excess (“Deferral”) to be surcharged or credited pursuant to the GEM mechanism. The GEM Deferral shall be calculated each month by multiplying Number of Customers by the Allowed Revenue Per Customer minus the Actual Revenues as follows:

$$\text{GEM Deferral} = C \times \text{ARPC} - \text{AR}$$

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Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 GAS

Original Sheet No. XX

GREEN ENABLING MECHANISM
(Continued)

2. The amount to be surcharged or credited ("GEM Recovery Amount") for each Customer Class Group shall equal the eligible aggregate Deferral for all months of the Annual Period determined in accordance with the provisions herein plus carrying charges applied to the Deferral balance and calculated at the then-current interest rate on Two-Year United States Treasury securities plus sixty (60) basis points, plus any cumulative GEM balances remaining from the prior period. The GEM Recovery Amount shall be divided by the FAU for the Adjustment Period to determine the GEM Clause Rate.

3. Recovery of GEM Deferral amounts will be subject to a recovery limitation ("recovery test"). GEM Recovery Amounts will be limited to the 6.5 percent of Distribution Revenues for each Customer Class Group. Any amount that exceeds this limitation may be deferred for future recovery and is subject to the recovery test in future years consistent with the amount by which GEM Recovery Amount exceeds the recovery test.

4. In addition, the GEM shall not operate to permit the Company to recover any portion of a GEM-related deficiency that will cause the Company to earn in excess of a 10.3 percent return on common equity for the Annual Period; any portion which is not recovered shall not be deferred. For purposes of this section, the Company's rate of return on common equity shall be calculated by dividing the Company's regulated jurisdictional net income for the Annual Period by the Company's average 13-month common equity balance for such Annual Period, all as reflected in the Company's monthly reports to the Board of Public Utilities. The Company's regulated jurisdictional net income shall be calculated by subtracting from total net income (1) net income derived from unregulated activities by Company. The Company's Average Thirteenth-Month Common Equity Balance for any Annual Period shall be the Company's average total common equity less the Company's average common equity investment in unregulated subsidiaries.

III. TRACKING THE OPERATION OF THE GREEN ENABLING MECHANISM

The revenues billed, or credits applied, net of taxes and assessments, through the application of the GEM Clause Rate shall be accumulated for each month of the Adjustment Period and applied against the GEM Deferral from the Annual Period and any cumulative GEM balances remaining from prior periods. Interest at 2-year U.S. Treasury rate plus 60 basis points will be accrued- monthly on any deferred and under or over recovered balances. The interest rate shall be reset each month.

In accordance with P.L. 1997, c. 192, as amended by P.L. 2006, c. 44, the charges applicable under this Rider include provisions for the New Jersey Sales and Use Tax ("SUT") and when billed to customers exempt from this tax, as set forth in the Standard Terms and Conditions, shall be reduced by the amount of such tax included therein.

The annual filing for the adjustment to the GEM Clause Rate shall be made no later than March 31 of the year following the Annual Period. The GEM Clause Rate shall be credited/collected on a per term basis for all service classifications stated above.

Date of Issue:

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80 Park Plaza, Newark, New Jersey 07102
Filed pursuant to Order of Board of Public Utilities dated
in Docket No.

Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

XXX Revised Sheet No. 44

B.P.U.N.J. No. 15 GAS

Superseding

XXX Revised Sheet No. 44

GREEN PROGRAMS RECOVERY CHARGE

**CHARGE APPLICABLE TO
RATE SCHEDULES RSG, GSG, LVG, SLG,
TSG-F, TSG-NF, CIG, CSG
(per Therm)**

Component:

Carbon Abatement Program	\$0.001446
Energy Efficiency Economic Stimulus Program.....	0.000450
Energy Efficiency Economic Extension Program.....	0.001618
Energy Efficiency Economic Extension Program II.....	0.001147
Energy Efficiency 2017 Program	0.000902
Clean Energy Future - Energy Efficiency Program.....	<u>0.000403</u>
Green Programs Recovery Charge.....	\$0.005966
Green Programs Recovery Charge including New Jersey Sales and Use Tax (SUT).....	\$0.006361

Green Programs Recovery Charge

This charge is designed to recover the revenue requirements associated with the PSE&G Green Programs. The charge will be reset nominally on an annual basis. Interest at the weighted average of the interest rates on PSE&G's commercial paper and bank credit lines utilized in the prior month will be accrued monthly on any under- or over- recovered balances. The interest rate shall be reset each month.

See Section 16 of the Standard Terms and Conditions for exemptions from this charge.

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 GAS

Original Sheet No. XX

GREEN ENABLING MECHANISM

**CHARGE APPLICABLE TO
RATE SCHEDULES RSG, GSG, LVG
(Per Therm)**

	Green Enabling Mechanism	Green Enabling Mechanism including SUT
RSG	\$0.000000	\$0.000000
GSG	\$0.000000	\$0.000000
LVG	\$0.000000	\$0.000000

Green Enabling Mechanism

This charge shall be applicable to the rate schedules listed above. The green enabling mechanism shall be based on the differences between actual and allowed revenue per customer during the preceding annual period. The green enabling mechanism shall be determined as follows:

I. DEFINITION OF TERMS AS USED HEREIN

1. Actual Number of Customers

- The Actual Number of Customers ("C") shall be determined on a monthly basis for each of the Customer Class Groups to which the Green Enabling Mechanism ("GEM") clause applies. The C shall equal the aggregate actual monthly Service Charge revenue for each class of customers subject to the GEM as recorded on the Company's books, divided by the service charge rate applicable to such class of customers in each Customer Class Group.

2. Actual Revenues

- the Actual Revenue ("AR") shall be determined in dollars on a monthly basis for each of the Customer Class Groups to which the GEM applies. The AR shall equal the aggregate actual revenues derived from Service Charges and Distribution per therm Charges to each of the affected Customer Class Groups as recorded on the Company's books. Actual revenues shall not include any non-base rate charges such as the Societal Benefits, Margin Adjustment Clause or Green Programs Recovery Charges.

3. Adjustment Period

- the Adjustment Period shall be the twelve months beginning June 1 and ending on the subsequent May 31 following the conclusion of the Annual Period.

Date of Issue:

Issued by SCOTT S. JENNINGS, Vice President Finance – PSE&G
80 Park Plaza, Newark, New Jersey 07102
Filed pursuant to Order of Board of Public Utilities dated
in Docket No.

Effective:

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

B.P.U.N.J. No. 15 GAS

Original Sheet No. XX

**GREEN ENABLING MECHANISM
(Continued)**

4. Allowed Revenue Per Customer

– the Allowed Revenue Per Customer (“ARPC”) is the amount, determined in dollars, of Service Charges and Distribution per therm Charges to the affected Customer Class Groups as determined by the Board. The ARPC for each Customer Class Group by month are as follows:

Month	RSG	GSG	LVG
Oct.			
Nov.			
Dec.			
Jan.			
Feb.			
Mar.			
Apr.			
May			
Jun.			
Jul.			
Aug.			
Sep.			
Total Annual			

The ARPC shall be reset each time new base rates are placed into effect.

5. Annual Period

– the Annual Period shall be the twelve consecutive months beginning January 1 and ending December 31.

6. Average 13 Month Common Equity Balance

– the Average 13 Month Common Equity Balance shall be the common equity balance at the beginning of the Annual Period (*i.e.* January 1) and the month ending balances for each of the twelve months in the Annual Period divided by thirteen (13).

7. Customer Class Group

– the Customer Class Groups for purposes of determining and applying the GEM shall be as follows:

Group I: RSG
Group II: GSG
Group III: LVG

8. Forecast Annual Usage

– the Forecast Annual Usage (“FAU”) shall be the projected total annual distribution usage for all customers within the applicable Customer Class Groups. The FAU shall be estimated based on normal weather.

II. DETERMINATION OF THE GREEN ENABLING MECHANISM

1. At the end of each month the Annual Period, a calculation shall be made that determines for each Customer Class Group the deficiency or excess (“Deferral”) to be surcharged or credited pursuant to the GEM mechanism. The GEM Deferral shall be calculated each month by multiplying Number of Customers by the Allowed Revenue Per Customer minus the Actual Revenues as follows:

$$\text{GEM Deferral} = C \times \text{ARPC} - \text{AR}$$

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**GREEN ENABLING MECHANISM
(Continued)**

2. The amount to be surcharged or credited ("GEM Recovery Amount") for each Customer Class Group shall equal the eligible aggregate Deferral for all months of the Annual Period determined in accordance with the provisions herein plus carrying charges applied to the Deferral balance and calculated at the then-current interest rate on Two-Year United States Treasury securities plus sixty (60) basis points, plus any cumulative GEM balances remaining from the prior period. The GEM Recovery Amount shall be divided by the FAU for the Adjustment Period to determine the GEM Clause Rate.

3. Recovery of GEM Deferral amounts will be subject to a recovery limitation ("recovery test"). GEM Recovery Amounts will be limited to the 6.5 percent of Distribution Revenues for each Customer Class Group. Any amount that exceeds this limitation may be deferred for future recovery and is subject to the recovery test in future years consistent with the amount by which GEM Recovery Amount exceeds the recovery test.

4. In addition, the GEM shall not operate to permit the Company to recover any portion of a GEM-related deficiency that will cause the Company to earn in excess of a 10.3 percent return on common equity for the Annual Period; any portion which is not recovered shall not be deferred. For purposes of this section, the Company's rate of return on common equity shall be calculated by dividing the Company's regulated jurisdictional net income for the Annual Period by the Company's average 13-month common equity balance for such Annual Period, all as reflected in the Company's monthly reports to the Board of Public Utilities. The Company's regulated jurisdictional net income shall be calculated by subtracting from total net income (1) net income derived from unregulated activities by Company. The Company's Average Thirteenth-Month Common Equity Balance for any Annual Period shall be the Company's average total common equity less the Company's average common equity investment in unregulated subsidiaries.

III. TRACKING THE OPERATION OF THE GREEN ENABLING MECHANISM

The revenues billed, or credits applied, net of taxes and assessments, through the application of the GEM Clause Rate shall be accumulated for each month of the Adjustment Period and applied against the GEM Deferral from the Annual Period and any cumulative GEM balances remaining from prior periods. Interest at 2-year U.S. Treasury rate plus 60 basis points will be accrued monthly on any deferred and under or over recovered balances. The interest rate shall be reset each month.

In accordance with P.L. 1997, c. 192, as amended by P.L. 2006, c. 44, the charges applicable under this Rider include provisions for the New Jersey Sales and Use Tax ("SUT") and when billed to customers exempt from this tax, as set forth in the Standard Terms and Conditions, shall be reduced by the amount of such tax included therein.

The annual filing for the adjustment to the GEM Clause Rate shall be made no later than March 31 of the year following the Annual Period. The GEM Clause Rate shall be credited/collected on a per term basis for all service classifications stated above.

Date of Issue:

Issued by SCOTT S. JENNINGS, Vice President Finance – PSE&G
80 Park Plaza, Newark, New Jersey 07102
Filed pursuant to Order of Board of Public Utilities dated
in Docket No.

Effective:

TYPICAL RESIDENTIAL ELECTRIC BILL IMPACTS

The effect of the proposed change in the electric Clean Energy Future Energy Efficiency Program component of the Green Programs Recovery Charge (GPRC) on typical residential electric bills, if approved by the Board, is illustrated below:

Residential Electric Service					
If Your Monthly Summer kWhr Use Is:	And Your Annual kWhr Use Is:	Then Your Present Annual Bill (1) Would Be:	And Your Proposed Annual Bill (2) Would Be:	Your Annual Bill Change Would Be:	And Your Percent Change Would Be:
200	1,920	\$348.04	\$349.12	\$1.08	0.31%
450	4,320	746.88	749.24	2.36	0.32
750	7,200	1,233.72	1,237.72	4.00	0.32
803	7,800	1,336.25	1,340.53	4.28	0.32
1,360	13,160	2,257.76	2,264.88	7.12	0.32

- (1) Based upon current Delivery Rates and Basic Generation Service Residential Small Commercial Pricing (BGS-RSCP) charges in effect September 8, 2018 and assumes that the customer receives BGS-RSCP service from Public Service.
- (2) Same as (1) except includes changes in the Clean Energy Future Energy Efficiency Program component of the GPRC.

Residential Electric Service					
If Your Annual kWhr Use Is:	And Your Monthly Summer kWhr Use Is:	Then Your Present Monthly Summer Bill (3) Would Be:	And Your Proposed Monthly Summer Bill (4) Would Be:	Your Monthly Summer Bill Change Would Be:	And Your Percent Change Would Be:
1,920	200	\$35.83	\$35.94	\$0.11	0.31%
4,320	450	77.60	77.85	0.25	0.32
7,200	750	129.79	130.21	0.42	0.32
7,800	803	139.37	139.81	0.44	0.32
13,160	1,360	240.12	240.86	0.74	0.31

- (3) Based upon current Delivery Rates and Basic Generation Service Residential Small Commercial Pricing (BGS-RSCP) charges in effect September 8, 2018 and assumes that the customer receives BGS-RSCP service from Public Service.
- (4) Same as (3) except includes changes in the Clean Energy Future Energy Efficiency Program component of the GPRC.

TYPICAL RESIDENTIAL GAS BILL IMPACTS

The effect of the proposed change in the gas Clean Energy Future Energy Efficiency Program component of the Green Programs Recovery Charge (GPRC) on typical residential gas bills, if approved by the Board, is illustrated below:

Residential Gas Service					
If Your Monthly Winter Therm Use Is:	And Your Annual Therm Use Is:	Then Your Present Annual Bill (1) Would Be:	And Your Proposed Annual Bill (2) Would Be:	Your Annual Bill Change Would Be:	And Your Percent Change Would Be:
25	180	\$210.34	\$210.40	\$0.06	0.03%
50	360	350.77	350.93	0.16	0.05
100	610	558.68	558.98	0.30	0.05
159	1,000	870.49	870.92	0.43	0.05
165	1,010	879.22	879.64	0.42	0.05
200	1,224	1,050.59	1,051.13	0.54	0.05
300	1,836	1,541.08	1,541.86	0.78	0.05

- (1) Based upon current Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect September 1, 2018 and assumes that the customer receives commodity service from Public Service.
- (2) Same as (1) except includes changes in the Clean Energy Future Energy Efficiency Program component of the GPRC.

Residential Gas Service					
If Your Annual Therm Use Is:	And Your Monthly Winter Therm Use Is:	Then Your Present Monthly Winter Bill (3) Would Be:	And Your Proposed Monthly Winter Bill (4) Would Be:	Your Monthly Winter Bill Change Would Be:	And Your Percent Change Would Be:
180	25	\$26.06	\$26.07	\$0.01	0.04%
360	50	46.31	46.33	0.02	0.04
610	100	88.49	88.54	0.05	0.06
1,010	165	142.24	142.31	0.07	0.05
1,224	200	171.19	171.27	0.08	0.05
1,836	300	253.86	253.99	0.13	0.05

- (3) Based upon current Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect September 1, 2018 and assumes that the customer receives commodity service from Public Service.
- (4) Same as (3) except includes changes in the Clean Energy Future Energy Efficiency Program component of the GPRC.

**NOTICE TO PUBLIC SERVICE ELECTRIC
AND GAS COMPANY CUSTOMERS**

**IN THE MATTER OF THE PETITION OF
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
FOR APPROVAL OF ITS
CLEAN ENERGY FUTURE – ENERGY EFFICIENCY PROGRAM
AND RECOVERY OF ASSOCIATED COSTS
("CEF-EE Program")**

Notice of Filing

BPU Docket No. XXXXXXXXXX

TAKE NOTICE that Public Service Electric and Gas Company ("Public Service" or the "Company") filed a Petition with the New Jersey Board of Public Utilities (Board, BPU) in September 2018 requesting approval to expand its energy efficiency deployment in its service territory beyond current levels through the establishment of a Clean Energy Future - Energy Efficiency Program ("CEF-EE Program" or the "Program").

Additionally, the Company has requested the authority to implement an electric and gas Green Enabling Mechanism (GEM) to encourage energy efficiency and remove its incentive to sell more kilowatt-hours of electricity or therms of gas. Instead it will encourage large-scale utility investments in energy efficiency, renewables, and other green initiatives.

The CEF-EE Program includes twenty-two subprograms that aim to increase energy efficiency in all sectors of the economy and offer savings opportunities across PSE&G's customer base.

PSE&G seeks BPU approval to commit up to \$2.5 billion in direct investment over a period of approximately six years. Approval of this filing would increase rates to be paid by the Company's electric customers by \$32.8 million and increase rates to be paid by the Company's gas customers by \$1.5 million.

PSE&G proposes to recover all Program costs through a new separate component of the electric and gas Green Programs Recovery Charge ("GPRC") entitled "Clean Energy Future - Energy Efficiency Program." The Clean Energy Future - Energy Efficiency Program component will be applicable to all electric and gas rate schedules. The component would be reviewed and modified in an annual filing.

The Company is requesting that any over/under recovery of actual revenue requirements compared to

revenues would be deferred. In calculating the monthly interest on net over and under recoveries, the interest rate would be based upon the Company's interest rate obtained on its commercial paper and/or bank credit lines utilized in the preceding month. The proposed GPRC rates, if approved by the Board, are shown in Table #1.

Table #2 and #3 provide the approximate net effect of the proposed increase in rates relating to the CEF-EE Program, if approved by the Board. The annual percentage increase applicable to specific customers will vary according to the applicable rate schedule and the level of the customer's usage. The approximate effect of the proposed increase on typical electric and gas residential monthly bills, if approved by the Board, is illustrated in Table # 4 and # 5.

Under the Company's proposal, a typical residential electric customer using 750 kilowatt-hours per summer month and 7,200 kilowatt-hours on an annual basis would see an increase in the annual bill from \$1,233.72 to \$1,237.72, or \$4.00 or approximately 0.32%.

Under the Company's proposal, a residential gas heating customer using 100 therms per month during the winter months and 610 therms on an annual basis would see an increase in the annual bill from \$558.68 to \$558.98, or \$0.30 or approximately 0.05%. Moreover, under the Company's proposal, a typical residential gas heating customer using 165 therms per month during the winter months and 1,010 therms on an annual basis would see an increase in the annual bill from \$879.22 to \$879.64, or \$0.42 or approximately 0.05%.

The Board has the statutory authority pursuant to N.J.S.A. 48:2-21, to establish the GPRC to levels it finds just and reasonable. Therefore, the Board may establish the GPRC at a level other than that proposed by Public Service. Therefore, the described charges may increase or decrease based upon the Board's decision.

Copies of the Company's filing are available for review at the Company's Customer Service Centers, online at the PSEG website at <http://www.pseg.com/pseandgfilings> and at the Board

of Public Utilities at 44 South Clinton Avenue, Seventh Floor, Trenton, New Jersey 08625-0350.

**Table # 1
GPRC Charges**

	CEF EE Program Component of the GPRC		Total GPRC	
	Present (Incl SUT)	Proposed (Incl SUT)	Present (Incl SUT)	Proposed (Incl SUT)
GPRC Electric - \$ per kWhr	\$0.000000	\$0.000548	\$0.001073	\$0.001621
GPRC Gas - \$ per Therm	\$0.000000	\$0.000430	\$0.005932	\$0.006361

**Table # 2
Impact By Electric Customer Class**

PROPOSED PERCENTAGE INCREASES BY CUSTOMER CLASS FOR ELECTRIC SERVICE		
	Rate Class	% Increase
Residential	RS	0.32%
Residential Heating	RHS	0.40
Residential Load Management	RLM	0.32
General Lighting & Power	GLP	0.34
Large Power & Lighting - Secondary	LPL-S	0.42
Large Power & Lighting – Primary	LPL-P	0.50
High Tension – Subtransmission	HTS-S	0.57

The percent increases noted above are based upon Delivery Rates and the applicable Basic Generation Service (BGS) charges in effect September 8, 2018 and assumes that customers receive commodity service from Public Service Electric and Gas Company.

**Table #3
Impact By Gas Customer Class**

PROPOSED PERCENTAGE INCREASES BY CUSTOMER CLASS FOR GAS SERVICE		
	Rate Class	% Increase
Residential Service	RSG	0.05%
General Service	GSG	0.04
Large Volume Service	LVG	0.05
Firm Transportation Gas Service	TSG-F	0.06
Non-Firm Transportation Gas Service	TSG-NF	0.07
Cogeneration Interruptible Service	CIG	0.09

The percent increases noted above are based upon Delivery Rates and the Basic Gas Supply Service (BGSS) charges in effect September 1, 2018 and assumes that customers receive commodity service from Public Service Electric and Gas Company.

**Table #4
Residential Electric Service**

If Your Annual kWhr Use Is:	And Your Monthly Summer kWhr Use Is:	Then Your Present Monthly Summer Bill (1) Would Be:	And Your Proposed Monthly Summer Bill (2) Would Be:	Your Monthly Summer Bill Change Would Be:	And Your Monthly Percent Change Would Be:
1,920	200	\$35.83	\$35.94	\$0.11	0.31%
4,320	450	77.60	77.85	0.25	0.32
7,200	750	129.79	130.21	0.42	0.32
7,800	803	139.37	139.81	0.44	0.32
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**Table #5
Residential Gas Service**

If Your Annual Therm Use Is:	And Your Monthly Winter Therm Use Is:	Then Your Present Monthly Winter Bill (1) Would Be:	And Your Proposed Monthly Winter Bill (2) Would Be:	Your Monthly Winter Bill Change Would Be:	And Your Monthly Percent Change Would Be:
180	25	\$26.06	\$26.07	\$0.01	0.04%
360	50	46.31	46.33	0.02	0.04
610	100	88.49	88.54	0.05	0.06
1,010	165	142.24	142.31	0.07	0.05
1,224	200	171.19	171.27	0.08	0.05
1,836	300	253.86	253.99	0.13	0.05

- (1) Based upon current Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect September 1, 2018 and assumes that the customer receives BGSS-RSG commodity service from Public Service.
- (2) Same as (1) except includes the proposed change in the Clean Energy Future Energy - Efficiency Program component of the GPRC.

Matthew M. Weissman, Esq.
General State Regulatory Counsel

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

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AND GAS COMPANY CUSTOMERS**

**IN THE MATTER OF THE PETITION OF
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
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CLEAN ENERGY FUTURE – ENERGY EFFICIENCY PROGRAM
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Notice of Public Hearings

BPU Docket No. XXXXXXXXXX

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PSE&G proposes to recover all Program costs through a new separate component of the electric and gas Green Programs Recovery Charge ("GPRC") entitled "Clean Energy Future - Energy Efficiency Program." The Clean Energy Future - Energy Efficiency Program component will be applicable to all electric and gas rate schedules. The component would be reviewed and modified in an annual filing.

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Table #2 and #3 provide the approximate net effect of the proposed increase in rates relating to the CEF-EE Program, if approved by the Board. The annual percentage increase applicable to specific customers will vary according to the applicable rate schedule and the level of the customer's usage. The approximate effect of the proposed increase on typical electric and gas residential monthly bills, if approved by the Board, is illustrated in Table # 4 and # 5.

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<http://www.pseg.com/pseandgfilings> and at the Board of Public Utilities at 44 South Clinton Avenue, Seventh Floor, Trenton, New Jersey 08625-0350.

have been scheduled so that members of the public may present their views. Information provided at the public hearings will become part of the record of this case and will be considered by the Board in making its decision.

The following dates, times and locations for public hearings on the Company's CEF-EE Program filing

Date 1, 2018	Date 2, 2018	Date 3, 2018
Time 1	Time 2	Time 3
Location 1	Location 2	Location 3
Location 1 Overflow	Location 2 Overflow	Location 3 Overflow
Room 1	Room 2	Room 3
Room 1 Overflow	Room 2 Overflow	Room 3 Overflow
Address 1	Address 2	Address 3
City 1, New Jersey Zip 1	City 2, New Jersey Zip 2	City 3, New Jersey Zip 3

In order to encourage full participation in this opportunity for public comment, please submit any requests for needed accommodations, including interpreters, listening devices or mobility assistance 48 hours prior to the above hearings.

Customers may file written comments with the Secretary of the Board of Public Utilities at 44 South Clinton Avenue, Third Floor, Suite 314, P.O. Box 350, Trenton, New Jersey, 08625-0350 ATTN: Secretary Aida Camacho-Welch whether or not they attend the public hearings.

**Table # 1
GPRC Charges**

	CEF EE Program Component of the GPRC		Total GPRC	
	Present (Incl SUT)	Proposed (Incl SUT)	Present (Incl SUT)	Proposed (Incl SUT)
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Residential Load Management	RLM	0.32
General Lighting & Power	GLP	0.34
Large Power & Lighting - Secondary	LPL-S	0.42
Large Power & Lighting – Primary	LPL-P	0.50
High Tension – Subtransmission	HTS-S	0.57

The percent increases noted above are based upon Delivery Rates and the applicable Basic Generation Service (BGS) charges in effect September 8, 2018 and assumes that customers receive commodity service from Public Service Electric and Gas Company.

Table #3
Impact By Gas Customer Class

PROPOSED PERCENTAGE INCREASES BY CUSTOMER CLASS FOR GAS SERVICE		
	Rate Class	% Increase
Residential Service	RSG	0.05%
General Service	GSG	0.04
Large Volume Service	LVG	0.05
Firm Transportation Gas Service	TSG-F	0.06
Non-Firm Transportation Gas Service	TSG-NF	0.07
Cogeneration Interruptible Service	CIG	0.09

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(1) Based upon current Delivery Rates and Basic Generation Service Residential Small Commercial Pricing (BGS-RSCP) charges in effect September 8, 2018 and assumes that the customer receives BGS-RSCP service from Public Service.

(2) Same as (1) except includes the proposed change in the Clean Energy Future - Energy Efficiency Program component of the GPRC.

Table #5
Residential Gas Service

If Your Annual Therm Use Is:	And Your Monthly Winter Therm Use Is:	Then Your Present Monthly Winter Bill (1) Would Be:	And Your Proposed Monthly Winter Bill (2) Would Be:	Your Monthly Winter Bill Change Would Be:	And Your Monthly Percent Change Would Be:
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1,224	200	171.19	171.27	0.08	0.05
1,836	300	253.86	253.99	0.13	0.05

(1) Based upon current Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect September 1, 2018 and assumes that the customer receives BGSS-RSG commodity service from Public Service.

(2) Same as (1) except includes the proposed change in the Clean Energy Future Energy - Efficiency Program component of the GPRC.

Matthew M. Weissman, Esq.
General State Regulatory Counsel

PUBLIC SERVICE ELECTRIC AND GAS COMPANY