

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

<b>In the Matter of the Merger of South</b>	)	
<b>Jersey Industries, Inc. and Boardwalk</b>	)	<b>Docket No. GM22040270</b>
<b>Merger Sub, Inc.</b>	)	

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PRE-FILED DIRECT TESTIMONY  
OF  
DAVID G. HILL  
ON BEHALF OF  
ENVIRONMENTAL DEFENSE FUND

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**I. Introduction and Qualifications**

**Q: Please state your name, title, and business address.**

A: My name is David G. Hill. I am a Managing Consultant with Energy Futures Group, Inc.

My business address is P.O. Box 587, Hinesburg, Vermont 05461.

**Q: On whose behalf are you submitting this testimony in this proceeding?**

A: I am submitting this testimony on behalf of Environmental Defense Fund (“EDF”).

**Q: Please provide a summary of your education and experience.**

A: I earned a Bachelor of Arts in Political Science and Geography from Middlebury College in 1981, a Master’s Degree in Appropriate Technology and International Development from the University of Pennsylvania in 1989, and a Ph.D. in Energy Management and Policy Planning from the University of Pennsylvania in 1993. For the past three decades I have provided economic and environmental analysis on energy system planning, with particular focus on energy efficiency and renewable and distributed energy resources. My recent work includes leading teams on economy-wide scenario modeling of Decarbonization Pathways in Massachusetts and Vermont, and expert testimony and analysis on proposed gas system pilots and infrastructure investments. I have attached a copy of my curriculum vitae in Attachment \_\_ (DGH-1).

**Q: Have you previously filed testimony before regulatory or judicial bodies?**

A: Yes. Over my career, I have provided testimony in regulatory hearings on more than two dozen occasions and have participated in scores of technical workshops and working groups on behalf of many clients, including participation for more than a decade in planning and administration for the renewable energy and residential efficiency aspects

1 of New Jersey's Clean Energy Programs. Attachment \_\_ (DGH-1) provides further  
2 details on my experience as an expert witness.

3 **II. Purpose of Testimony and Recommendations**

4 **Q: What is the purpose of your testimony?**

5 **A:** The purpose of my testimony is (1) to review the merger transaction proposed by South  
6 Jersey Industries Inc., Boardwalk Merger Sub, Inc., and other entities ("Joint  
7 Petitioners"<sup>1</sup>) with respect to statutory requirements for the provision of safe and  
8 adequate service, including consideration of environmental impacts; and (2) to examine  
9 and recommend conditions that should be included if the New Jersey Board of Public  
10 Utilities ("BPU" or "Board") approves the requested merger. My recommendations focus  
11 on actions to better align the investments and planning of South Jersey Gas Company  
12 ("SJG") and Elizabethtown Gas Company ("ETG") (collectively "the Utilities") with  
13 state climate targets, the New Jersey Energy Master Plan ("EMP"),<sup>2</sup> and Integrated  
14 Energy Plan.<sup>3</sup> Another expert witness for EDF, Tianyi Sun, presents additional  
15 recommended conditions that should be included if the Board approves the requested  
16 merger.

17 **Q: Please provide a summary of your testimony and recommendations.**

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<sup>1</sup> The complete list of Joint Petitioners seeking BPU approval for the merger transaction are: IIF US Holding 2 LP ("IIF US 2"), NJ Boardwalk Holdings LLC ("Boardwalk"), Boardwalk Merger Sub, Inc. ("Merger Sub"), South Jersey Industries, Inc. ("SJI"), SJI Utilities, Inc. ("SJIU"), Elizabethtown Gas Company ("ETG"), and South Jersey Gas Company ("SJG").

<sup>2</sup> N.J. BD. PUB. UTILS., *2019 New Jersey Energy Master Plan: Pathway to 2050* (Jan. 2020), [https://www.nj.gov/emp/docs/pdf/2020\\_NJBPU\\_EMP.pdf](https://www.nj.gov/emp/docs/pdf/2020_NJBPU_EMP.pdf).

<sup>3</sup> Evolved Energy Research, *New Jersey 2019 IEP*, Technical Appendix, [https://www.nj.gov/emp/pdf/New\\_Jersey\\_2019\\_IEP\\_Technical\\_Appendix.pdf](https://www.nj.gov/emp/pdf/New_Jersey_2019_IEP_Technical_Appendix.pdf).

1 A: Meeting the requirements of the 2007 Global Warming Response Act,<sup>4</sup> the goal of 50%  
2 GHG emissions reductions from 2006 levels by 2030 set by Governor Murphy's  
3 Executive Order 274,<sup>5</sup> and the "100% Clean Energy by 2050" objectives of Governor  
4 Murphy's Executive Order No. 28<sup>6</sup> requires a significant departure from business-as-  
5 usual approaches to New Jersey's energy systems. By focusing on pathways to achieve  
6 100% clean energy by 2050, New Jersey's 2019 EMP marks a paradigm shift in the  
7 State's energy and environmental planning by identifying the need for new approaches to  
8 investment and regulatory oversight of energy supplies, services, and infrastructure.

9 My testimony reviews the Joint Petitioners' proposed merger with regard to the  
10 provision of safe and adequate service in the context of state climate objectives. I  
11 evaluate current natural gas consumption volumes for each utility and the associated  
12 greenhouse gas ("GHG") emissions; consider the existing efficiency requirements from  
13 the Clean Energy Act; and assess the potential gap between the Utilities' business plans  
14 as conveyed in the merger petition and New Jersey climate and environmental objectives.  
15 Based on this analysis, I recommend the Board impose conditions on any merger  
16 approval to ensure the merger transaction is consistent with New Jersey environmental  
17 and climate objectives. The recommended conditions fall under the following categories  
18 and are presented in further detail at *infra* Part VIII:

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<sup>4</sup> N.J.S.A. 48:3-87.9. The GWRA obligates New Jersey to reduce greenhouse gas emissions to 24.1 million tonnes by 2050, which represents an 80% reduction by 2050 (80x50).

<sup>5</sup> N.J. Exec. Order No. 274 (Nov. 10, 2021), <https://www.nj.gov/infobank/eo/056murphy/pdf/EO-274.pdf>.

<sup>6</sup> N.J. Exec. Order No. 28 (May 23, 2018), <https://nj.gov/infobank/eo/056murphy/pdf/EO-28.pdf>.

- 1           • **Avoiding Unnecessary Expansion of the Gas System** – SJI and the Utilities  
2           should be required to revise existing practices and tariffs to the maximum  
3           extent possible under current law to prevent unnecessary expansion of the gas  
4           distribution system and pursue non-pipe alternatives (“NPAs”) whenever  
5           feasible.
- 6           • **Long-Term Planning and Investment Consistent with New Jersey**  
7           **Climate Objectives** – SJI and the Utilities should be required to engage in  
8           comprehensive long-term planning to avoid inappropriate costly investments  
9           in the fossil fuel system and assess how their role in the energy system will  
10          change with decarbonization.
- 11          • **Reporting GHG Emissions from the Existing Gas System** – SJI and the  
12          Utilities should be required to provide detailed GHG emission reporting to the  
13          BPU and the public.

14 **Q: Are you providing any attachments to your testimony?**

15 **A:** Yes. I am attaching the following attachments to my testimony:

- 16       - **Attachment \_\_ (DGH-1): Curriculum Vitae**
- 17       - **Attachment \_\_ (DGH-2): Joint Petitioners’ Response & Supplemental Response**  
18       **to Information Request EDF-1**
- 19       - **Attachment \_\_ (DGH-3): Joint Petitioners’ Response to Information Request**  
20       **EDF-2.**

21 **III. Standard of Review for Merger Proposal**

22 **Q. What is your understanding of the standard of review the BPU should apply in**  
23 **considering the merger proposal?**

1 A. Counsel has advised me that N.J.S.A. 48:2-51.1 is a merger review statute that requires  
2 consideration of the impact of a proposed utility acquisition on, among other things, the  
3 provision of “safe and adequate service.”

4 Q. Does the provision of “safe and adequate service” require consideration of the  
5 environmental impacts?

6 A. Yes. Counsel has also advised me that N.J.S.A. 48:2-23, the provision requiring utilities  
7 to provide safe and adequate service, states that such service includes:

8 “furnishing and performance of service in a manner that tends to conserve and  
9 preserve the quality of the environment and prevent the pollution of the waters,  
10 land and air of this State, . . . and to maintain its property and equipment in such  
11 condition as to enable it to do so.”

12 I review the proposed merger transaction with this standard in mind and recommend  
13 conditions the Board should require of Joint Petitioners as part of any approval of the  
14 proposed merger transaction, to ensure the merger results in safe and adequate service  
15 that is consistent with the environmental policies of the State of New Jersey.

16 **IV. New Jersey’s Climate Objectives**

17 Q. Can you provide an overview of New Jersey’s statutory requirements and targets  
18 related to emissions of GHGs that are important to the review of the proposed  
19 merger?

20 A. Yes. The New Jersey Global Warming Response Act (“GWRA”), enacted in 2007 and  
21 updated in 2019, mandates an 80% reduction in statewide GHG emissions by 2050, from

1 2006 levels.<sup>7</sup> Based on the historic baseline, the 80x50 target entails reducing total  
2 emissions to 24 million metric tonnes of carbon dioxide equivalent (MMTCO<sub>2</sub>e) by  
3 2050. Executive Order 274 established an interim goal to reduce GHG emissions 50% by  
4 2030, from 2006 levels.<sup>8</sup>

5 Executive Order 28, signed by Governor Murphy in 2018, directed the BPU and  
6 other state agencies in developing the 2019 Energy Master Plan to “provide a  
7 comprehensive blueprint for the total conversion of the State’s energy production to  
8 100% clean energy” by 2050, and to also “provide specific proposals to be implemented  
9 over the next ten (10) years in order to achieve the January 1, 2050 goal.”<sup>9</sup> Based on this  
10 directive, the agencies “took a much broader approach to the process of updating its 2019  
11 [EMP] than the state has done traditionally,” to create an EMP that “sets higher goals and  
12 objectives and includes multiple sectors and governmental agencies.”<sup>10</sup>

13 In 2018, Governor Murphy signed the Clean Energy Act (“CEA”) which included  
14 requirements for specific percentage reductions in energy consumption from efficiency  
15 programs for gas and electric utilities.<sup>11</sup> Under the CEA, the gas utilities are required to  
16 implement efficiency programs that by the fifth program year (July 2025 to June 2026)

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<sup>7</sup> P.L. 2007 c.112; P.L. 2019 c.197. The specific reduction requirements are at: N.J.S.A. 26:2C-40.

<sup>8</sup> N.J. Exec. Order No. 274 (Nov. 10, 2021), <https://www.nj.gov/infobank/eo/056murphy/pdf/EO-274.pdf>.

<sup>9</sup> N. J. Exec. Order No. 28 (May 23, 2018), <https://nj.gov/infobank/eo/056murphy/pdf/EO-28.pdf>.

<sup>10</sup> N.J. BD. PUB. UTILS., *2019 New Jersey Energy Master Plan: Pathway to 2050* (Jan. 2020), at 20, [https://www.nj.gov/emp/docs/pdf/2020\\_NJBPU\\_EMP.pdf](https://www.nj.gov/emp/docs/pdf/2020_NJBPU_EMP.pdf).

<sup>11</sup> P.L. 2018, c17.



1 provide net savings of at least 0.75% annually of retail sales, and then when combined  
2 with other efficiency efforts from state-administered programs, provide total net annual  
3 savings of at least 1.1% of retail sales.

4 **Q. Are New Jersey GHG emissions reduction requirements and policies likely to have**  
5 **significant impacts on planning and investments for New Jersey’s regulated gas and**  
6 **electric utilities?**

7 **A.** Yes. Achieving New Jersey’s climate goals will dramatically change the way gas is used  
8 and transported within the state. Residential and commercial buildings account for the  
9 second-largest share of GHG emissions in the state (26%), and those emissions are  
10 primarily attributable to natural gas use in buildings.<sup>12</sup> The EMP projects that demand for  
11 pipeline gas will significantly decrease “as 90% of buildings are transitioned from gas  
12 appliances to electric,” and estimates that overall gas demand will decrease 75% by  
13 2050.<sup>13</sup> To reach the emissions reductions requirements and objectives, New Jersey’s gas  
14 and electric utilities need to transition to decarbonized energy services. The EMP clearly  
15 identifies and addresses the challenge and the magnitude of the required changes, stating:

16 *“New Jersey is embarking on a significant transformation in how it generates,*  
17 *distributes, consumes, and conserves energy as it strives to reach 100% clean*

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<sup>12</sup> N.J. DEP’T OF ENVTL. CONSERVATION, *New Jersey’s Global Warming Response Act 80x50 Report*, (Oct. 2020), at xi, <https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf>.

<sup>13</sup> Evolved Energy Research, *New Jersey 2019 IEP*, Technical Appendix, at 12, [https://www.nj.gov/emp/pdf/New\\_Jersey\\_2019\\_IEP\\_Technical\\_Appendix.pdf](https://www.nj.gov/emp/pdf/New_Jersey_2019_IEP_Technical_Appendix.pdf); see also N.J. BD. PUB. UTILS., *2019 New Jersey Energy Master Plan: Pathway to 2050* (Jan. 2020), at 160, 174, [https://www.nj.gov/emp/docs/pdf/2020\\_NJBPU\\_EMP.pdf](https://www.nj.gov/emp/docs/pdf/2020_NJBPU_EMP.pdf).

1           *energy by 2050 and an 80% reduction in greenhouse gas emissions from 2006*  
2           *levels.*”<sup>14</sup>

3           *“A least-cost energy system that meets New Jersey’s emissions and clean energy*  
4           *targets looks quite different from today’s system, including significantly higher*  
5           *levels of renewables deployment, building electrification, and transportation*  
6           *electrification.*”<sup>15</sup>

7           *“[A]ny meaningful transition of the state’s energy system to reduce energy*  
8           *consumption and emissions must also encompass decarbonization – primarily*  
9           *through electrification – of the transportation and building sectors, which have*  
10          *not been significantly addressed in previous state EMPs.*”<sup>16</sup>

11   **Q.    Have the least-cost and alternative pathways for meeting the GHG emission**  
12    **reduction targets been analyzed?**

13   **A.**    Yes. The EMP and accompanying IEP identify and analyze multiple pathways for  
14          meeting the GHG emissions reduction targets and requirements. Analysis demonstrates  
15          that for New Jersey, as well as for other states, the required transitions are technically and  
16          economically feasible, relying on equipment and delivery mechanisms that are  
17          commercially available today.<sup>17</sup> New Jersey’s EMP cites extensive findings and analysis

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<sup>14</sup> N.J. BD. PUB. UTILS., *2019 New Jersey Energy Master Plan: Pathway to 2050* (Jan. 2020), at 32, [https://www.nj.gov/emp/docs/pdf/2020\\_NJBPU\\_EMP.pdf](https://www.nj.gov/emp/docs/pdf/2020_NJBPU_EMP.pdf).

<sup>15</sup> *Id.* at 16.

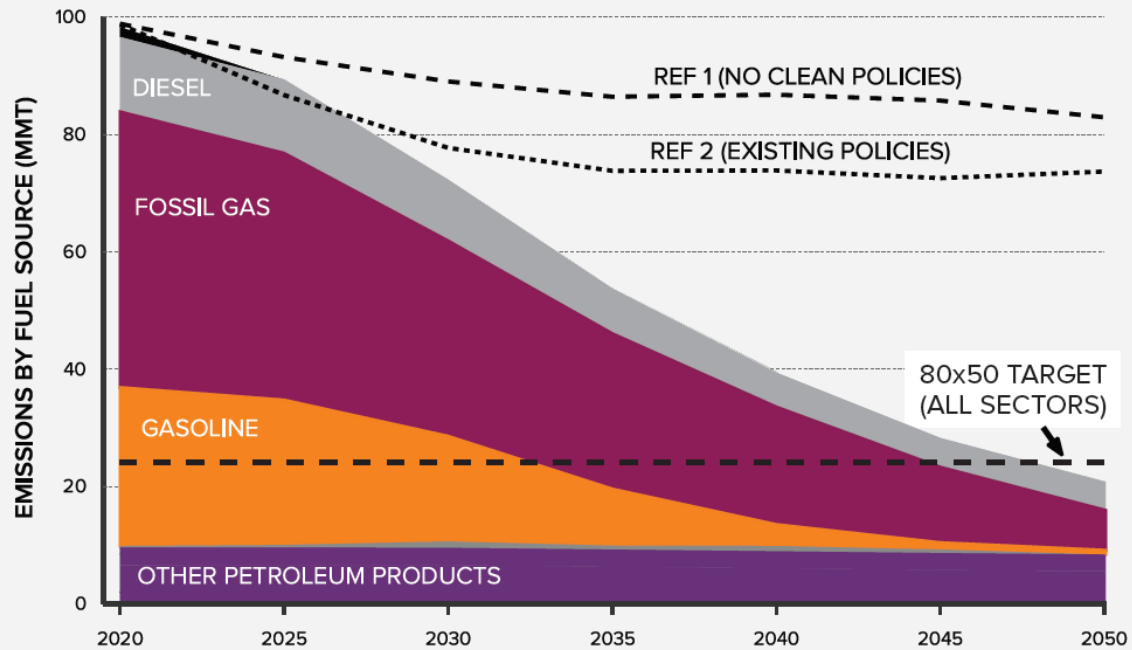
<sup>16</sup> *Id.* at 36.

<sup>17</sup> *Id.* at 41.

from the Integrated Energy Plan,<sup>18</sup> including Figure DH-1 below, illustrating energy emissions from fossil fuel sources in the least-cost scenario.

FIGURE 7.

## Energy Emissions by Fuel Source, Least Cost Scenario



**Figure DH-1: Least-Cost EMP Scenario Requires Significant Action Beyond Existing Policies and Significant Reductions in Emissions from Fossil Gas**

A Ratepayer Impact Study conducted by the Brattle Group on behalf of the BPU confirms the anticipated decline in fossil gas consumption, indicating that the EMP Achievement Pathway entails a decline in gas consumption of 25% (equivalent to 100 Trillion British Thermal Units or TBtu) by 2030, as demonstrated in Figure DH-2 below.

<sup>18</sup> *Id.* at 252.

TABLE 19: STATEWIDE NATURAL GAS CONSUMPTION (MILLIONS OF MMBTU)

Category	2020	Current Policy Pathway (2030)	EMP Achievement Pathway (2030)	Ambitious Pathway (2030)
Consumption	435.7	409.5	328.4	310.8
Difference From 2020		-6%	-25%	-29%

Natural gas consumption declines by over 100 million MMBTUs in both the EMP Achievement Pathway and Ambitious Pathway. Building electrification in the residential sector alone reduces natural gas consumption by 45 million MMBTUs in the EMP Achievement Pathway and 55 million MMBTUs in the Ambitious Pathway. Statewide energy efficiency targets further reduce consumption by about 25 million MMBTUs across both scenarios.

**Figure DH-2: EMP Achievement Pathways Result in 25% or Greater Decline in Gas Consumption by 2030<sup>19</sup>**

**V. Gas Consumption and GHG Emissions for South Jersey Gas and Elizabethtown Gas**

**Q. How do SJG and ETG contribute to GHG emissions in New Jersey?**

**A.** SJG and ETG transport and deliver natural gas to customers in New Jersey, including residential and commercial buildings, industrial gas users, and power generation facilities. Natural gas is a fossil fuel comprising almost entirely methane, a potent GHG. The combustion of natural gas to generate heat and power emits the greenhouse gas carbon dioxide (“CO<sub>2</sub>”).

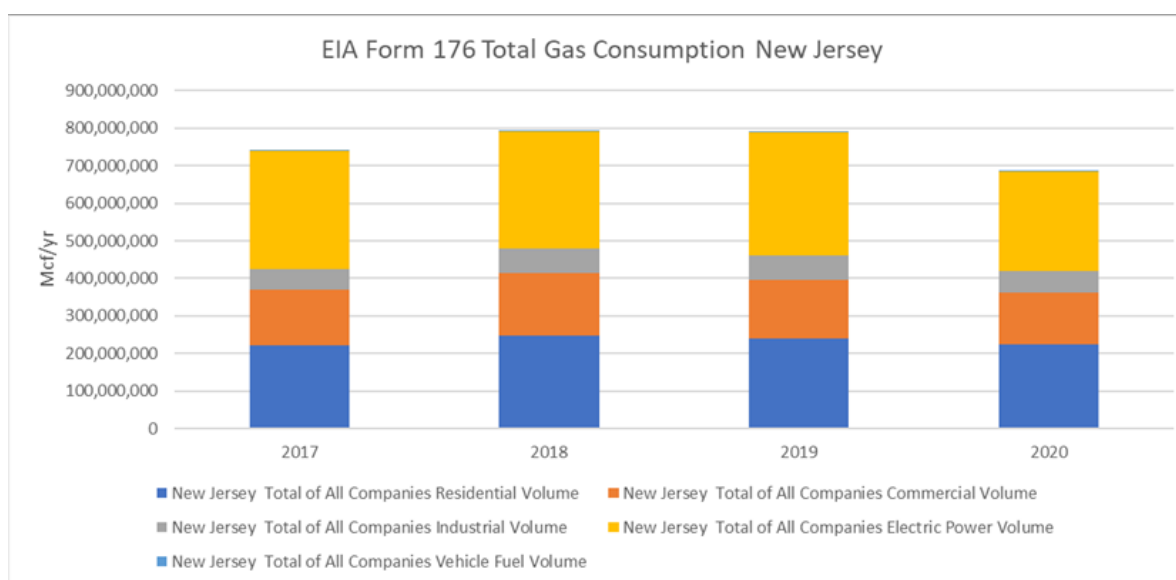
It is important to assess the lifecycle GHG emissions when considering the climate impact of a fuel, and reporting on lifecycle GHG emissions by gas utilities can help regulators such as the BPU assess the overall climate impact of certain programs or investments. It can also enhance transparency and accountability to drive awareness and

<sup>19</sup> Sanem Sergici et al., *New Jersey Energy Master Plan Ratepayer Impact Study*, N.J. BD. PUB. UTILS. (Aug. 2022), at 55, [https://nj.gov/bpu/pdf/reports/2022-08-13%20-%20BPU,%20EMP%20Ratepayer%20Impact%20Study%20Report\\_PUBLIC\\_Brattle.pdf](https://nj.gov/bpu/pdf/reports/2022-08-13%20-%20BPU,%20EMP%20Ratepayer%20Impact%20Study%20Report_PUBLIC_Brattle.pdf).

GHG emission reductions.<sup>20</sup> My analysis here, however, focuses on the emissions associated with end-use combustion of natural gas, because these emissions all occur in New Jersey and can be influenced directly by the Utilities.

**Q. What are the current gas consumption levels for the services provided by South Jersey Gas and Elizabethtown Gas to New Jersey consumers?**

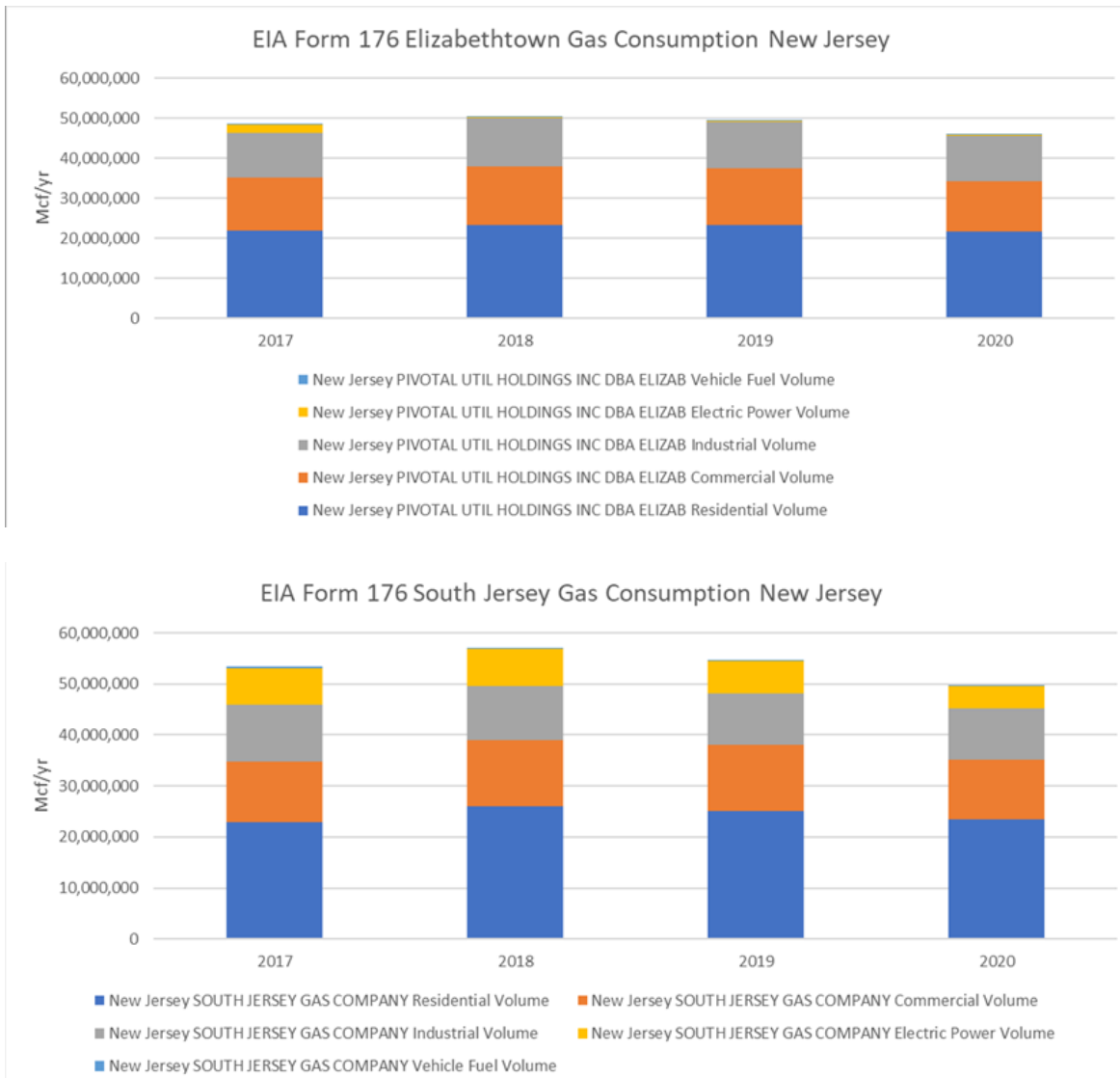
**A.** Serving more than 700,000 customers, SJG and ETG provide more than 95 billion cubic feet of gas to New Jersey customers each year. Figure DH-3 illustrates data from the U.S. Energy Information Administration (EIA) Form 176<sup>21</sup> on gas consumption by sector for New Jersey statewide and for ETG and SJG.



**Figure DH-3(a): New Jersey Delivered Gas Volumes by Sector and Year**

<sup>20</sup> See Erin Murphy & Christie Hicks, *New innovative tool empowers utilities to reduce emissions in investment planning*, EDF ENERGY EXCHANGE (May 3, 2021), <https://blogs.edf.org/energyexchange/2021/05/03/new-innovative-tool-empowers-utilities-to-reduce-emissions-in-investment-planning/>; ERM, *Gas Company Climate Planning Tool*, <https://www.sustainability.com/thinking/gas-company-climate-planning-tool/> (June 2022).

<sup>21</sup> Historic data series by state and sector from EIA Form 176 gas survey: [https://www.eia.gov/dnav/ng/ng\\_cons\\_sum\\_a\\_EPG0\\_vgt\\_mmcfc\\_a.htm](https://www.eia.gov/dnav/ng/ng_cons_sum_a_EPG0_vgt_mmcfc_a.htm).



**Figure DH-3(b): ETG and SJG Delivered Gas Volumes by Sector and Year**

In combination, the ETG and SJG systems account for approximately 14% of New Jersey's total annual natural gas consumption. The residential and commercial markets are the largest consuming sectors for both utilities, while SJG also provides some gas to electric generating stations.

1    **Q.     What combustion-based emissions of greenhouse gases are associated with the gas**  
2       **service provided to SJG and ETG’s customers?**

3    **A.     The combustion of natural gas delivered by ETG and SJG results in CO2 emissions of**  
4       roughly 5 million metric tonnes from the residential, commercial, and industrial sector<sup>22</sup>  
5       customers. Figure DH-4 illustrates these emissions. The CO2 emissions are calculated  
6       based on the U.S. Environmental Protection Agency (“EPA”) emissions factor of 0.0551  
7       metric tonnes of carbon dioxide per thousand cubic feet (Mcf) of gas.<sup>23</sup>

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<sup>22</sup> EIA Form 176 data for 2020 indicate roughly 9% of total gas consumption for SJG was for electric power generation, while for ETG this was less 0.5%. While decarbonization of the electric grid is also an important element for reducing GHG emissions, this analysis focuses on gas consumption for the utilities’ residential, commercial, and industrial customers.

<sup>23</sup> U.S. EPA, *Greenhouse Gases Equivalencies Calculator – Calculations and References*, <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references> (last visited Nov. 10, 2022).

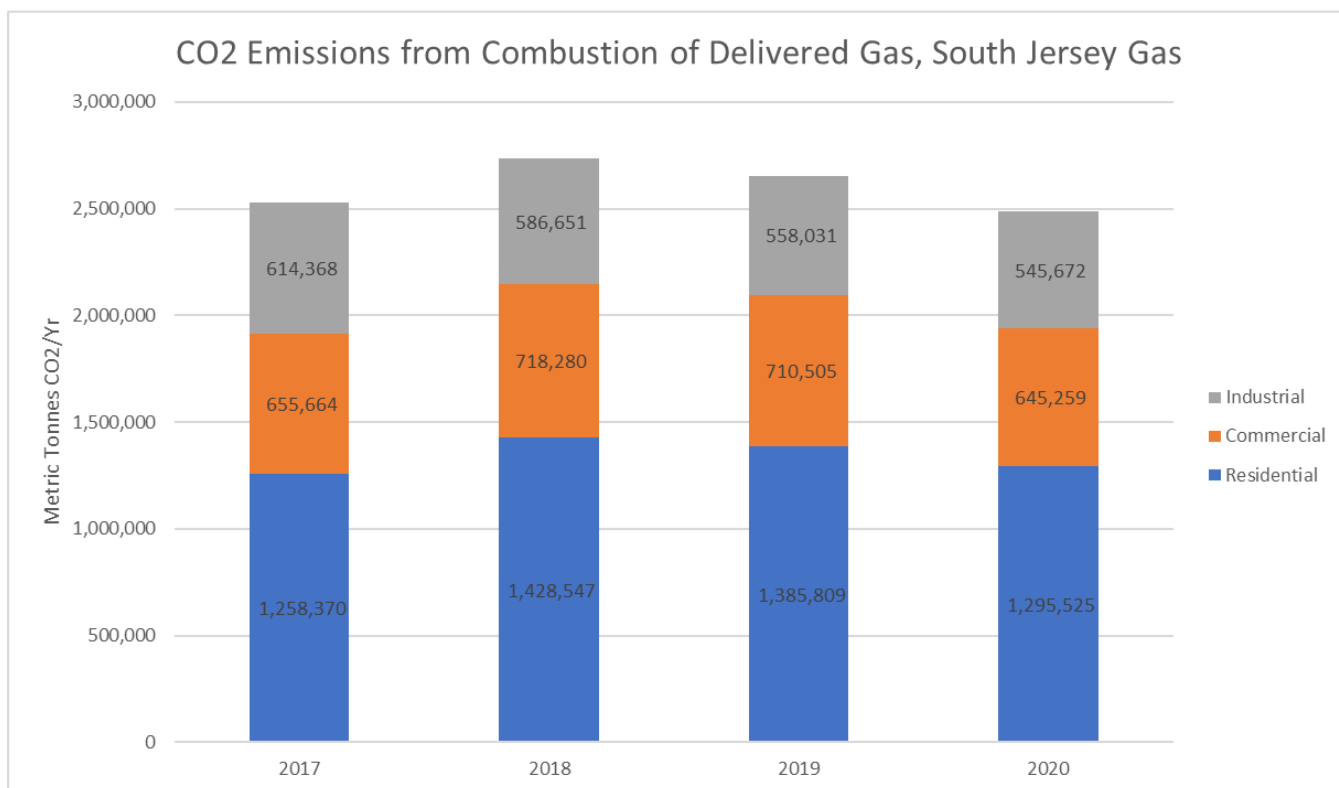
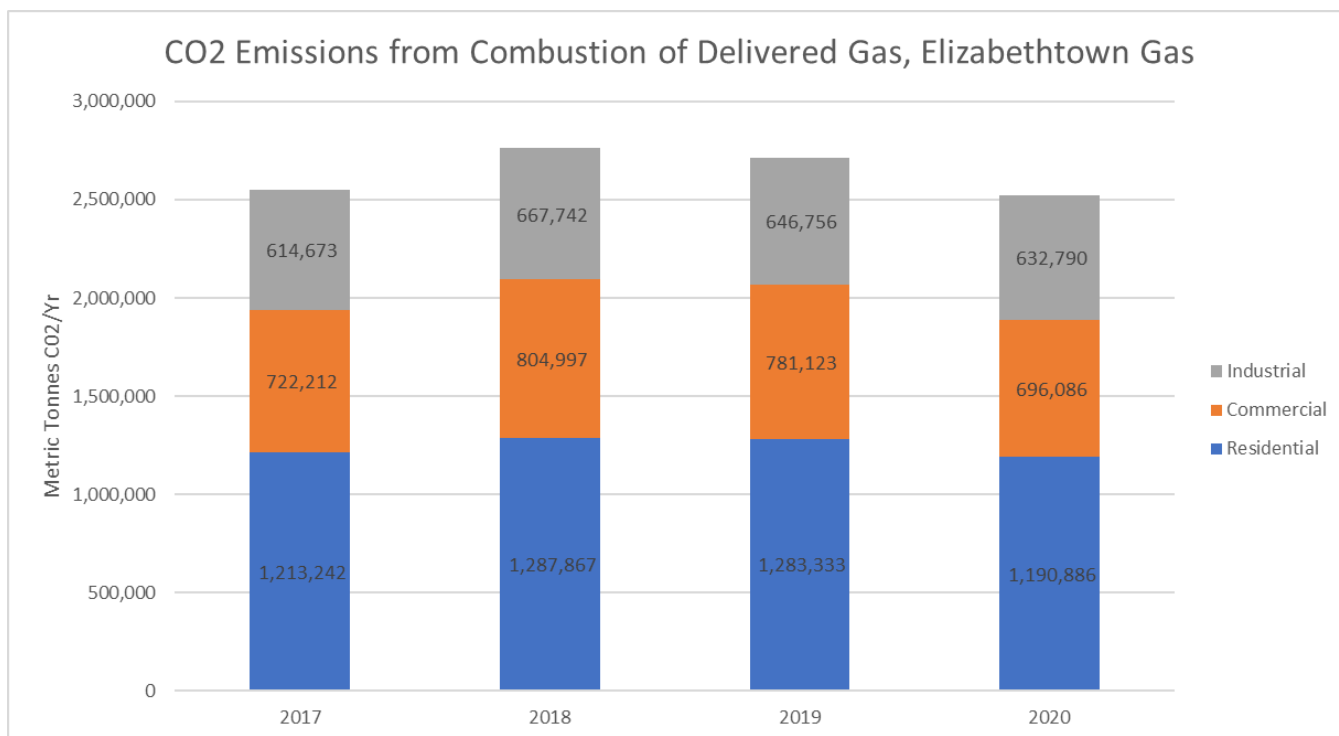


Figure DH-4: CO2 Emissions from Combustion of Delivered Gas for Residential, Commercial, and Industrial Customers



1 **Q. Will gas consumption and emissions need to change for SJG and ETG to be aligned**  
2 **with the 2030 EMP Achievement Pathway? And if so, by how much?**

3 **A.** Yes. The EMP Achievement Pathway least-cost scenario results in statewide reductions  
4 in gas consumption of 25% or more by 2030,<sup>24</sup> and Executive Order 274 established an  
5 interim goal of 50% GHG emissions reductions from 2006 levels by 2030. While the  
6 EMP does not place enforceable requirements on individual entities, it presents energy  
7 scenarios that meet New Jersey's energy and environmental policy goals. On a simple  
8 pro-rata basis, alignment with the EMP Achievement Pathway equates to a reduction of  
9 25%, or a 23.9 million Mcf reduction in consumption from ETG and SJG customers by  
10 2030. This would result in a reduction of combustion emissions from the ETG and SJG  
11 systems of more than 1.3 million tonnes CO<sub>2</sub>e per year by 2030.<sup>25</sup>

12 **VI. Efficiency Program Activity and Plans**

13 **Q. Will the Utilities' current and planned efficiency activities reduce gas consumption**  
14 **and emissions?**

15 **A.** Yes. The energy efficiency programs run by ETG and SJG are expanding to meet the  
16 requirements of the Clean Energy Act. However, even with expanded efforts, the

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<sup>24</sup> See *supra*, Figures DH-1 and DH-2; Sanem Sergici et al., *New Jersey Energy Master Plan Ratepayer Impact Study*, N.J. BD. PUB. UTILS (Aug. 2022), at 55, [https://nj.gov/bpu/pdf/reports/2022-08-13%20-%20BPU,%20EMP%20Ratepayer%20Impact%20Study%20Report\\_PUBLIC\\_Brattle.pdf](https://nj.gov/bpu/pdf/reports/2022-08-13%20-%20BPU,%20EMP%20Ratepayer%20Impact%20Study%20Report_PUBLIC_Brattle.pdf).

<sup>25</sup> Calculation based on the U.S. EPA gas combustion emissions factor. U.S. E.P.A., *Greenhouse Gases Equivalencies Calculator – Calculations and References*, <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references> (last visited Nov. 10, 2022).

1 Utilities' energy efficiency programs are inadequate to approach the level of reductions in  
2 gas reliance required for alignment with the EMP.

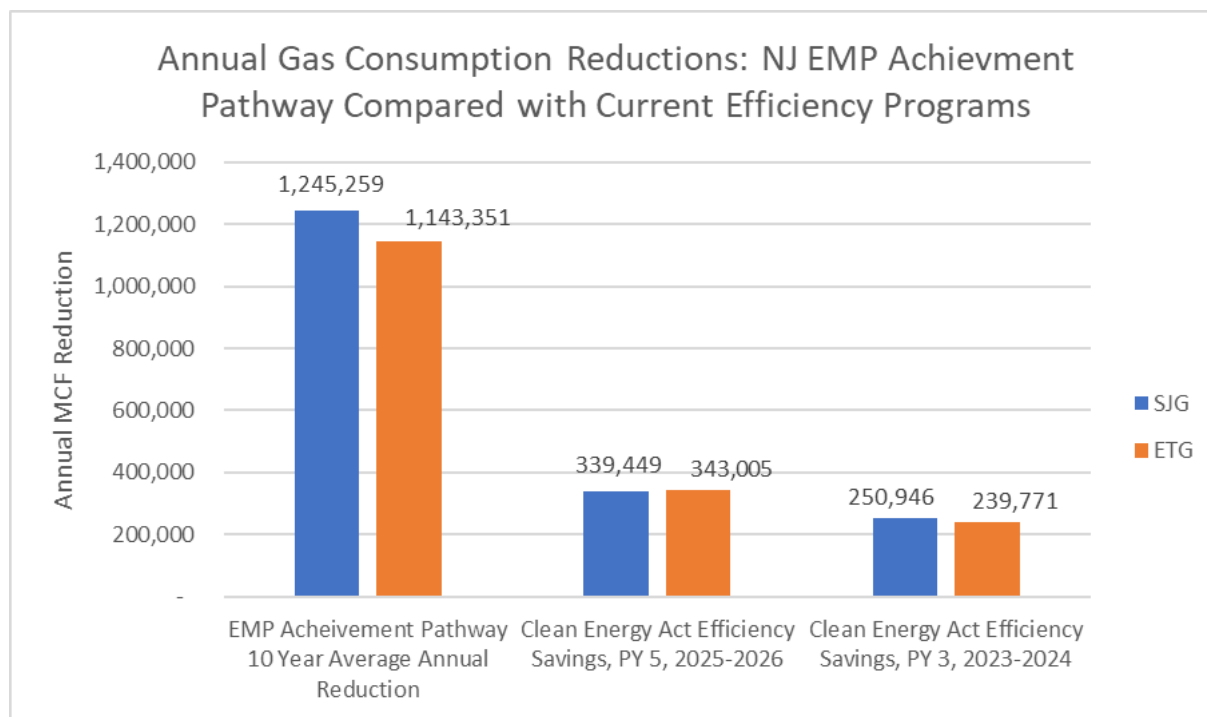
3 Gas consumption for the ETG and SJG systems totals more than 95 million  
4 Mcf/year.<sup>26</sup> To be aligned with the EMP Achievement Pathway—a 25% reduction in gas  
5 consumption by 2030—ETG and SJG would each need average reductions in gas  
6 consumption in the range of 1.1 million to 1.2 million Mcf/year over the ten-year period  
7 of 2020 to 2030.

8 The Clean Energy Act (CEA) requires savings from the utility administered  
9 efficiency programs to increase to 0.75%/year by program year five (PY5). Figure DH-5  
10 compares the annual reduction in gas reliance necessary under the “EMP Achievement  
11 Pathway” with the utility efficiency program savings for PY3 (2023-24) and PY5 (2025-  
12 26) required by the CEA.<sup>27</sup> There is a large gap between the average annual savings  
13 needed for alignment with the EMP Achievement Pathway and the current and near-term  
14 levels of efficiency savings for ETG and SJG. Current gas utility energy efficiency  
15 programs alone are not sufficient to reduce gas consumption to levels consistent with the  
16 Least Cost Achievement Pathway in the EMP. Efficiency, while continuing to be an  
17 essential and cost-effective contributor, needs to be accompanied by electrification of the  
18 building sector and other decarbonization strategies to meet New Jersey's statewide GHG  
19 emissions reduction objectives.

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<sup>26</sup> See *supra* Figure DH-3.

<sup>27</sup> Program Year 3 (PY3) is July 2023 to June 2024. Program Year 5 (PY5) is July 2025 to June 2026.



**Figure DH-5: Annual Gas Consumption Reductions: NJ EMP Achievement Pathway compared with Clean Energy Act efficiency programs**

## **VII. Assessment of Joint Petitioners' Merger Proposal**

**Q. How does the joint petition for the merger transaction address climate and environmental issues?**

**A.** The proposed transaction lacks substantive commitments to achieve significant GHG emission reductions by the Utilities, which is necessary for New Jersey to achieve its climate objectives established in law and policy. The Joint Petitioners' Merger Commitments, provided as Exhibit C,<sup>28</sup> do not contain any commitments related to climate change, alignment with the Energy Master Plan, or other environmental issues.

<sup>28</sup> *In the Matter of the Merger of South Jersey Industries, Inc. and Boardwalk Merger Sub, Inc.*, BPU Docket No. GM22040270, Certified Joint Petition, Exhibit C (filed Apr. 25, 2022).

1           Section 3.13 of the Merger Agreement, provided as Attachment B,<sup>29</sup> addresses  
2           “Environmental Matters,” but this section does not mention climate change, New Jersey’s  
3           climate objectives, or alignment with the New Jersey Energy Master Plan.

4           South Jersey Industries’ Annual Shareholder report, provided as Attachment G,  
5           highlights environmental, social, and governance goals, but the GHG emissions reduction  
6           goals are limited to SJI’s operational emissions.<sup>30</sup> This is a limited, partial goal that  
7           leaves out the much larger environmental impact associated with combustion of the gas  
8           that the Utilities provide customers.

9   **Q.    Can you elaborate on how SJI’s goals to reduce operational reductions are**  
10   **“partial,” and why that is a concern?**

11   **A.**   Yes. Witness Orsen and the SJI 2021 Earnings Presentation states the following high-  
12   level goals:

13           SJI is pursuing aggressive decarbonization goals, with commitments to (1)  
14           achieve a 70% carbon reduction of operational emissions and consumption by the  
15           year 2030; (2) realize 100% carbon reduction by 2040; and (3) dedicate at least  
16           25% of annual capital expenditures to sustainability projects throughout the SJI

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<sup>29</sup> *In the Matter of the Merger of South Jersey Industries, Inc. and Boardwalk Merger Sub, Inc.*, BPU Docket No. GM22040270, Certified Joint Petition, Exhibit B, at 48-50 (filed Apr. 25, 2022).

<sup>30</sup> *In the Matter of the Merger of South Jersey Industries, Inc. and Boardwalk Merger Sub, Inc.*, BPU Docket No. GM22040270, Certified Joint Petition, Exhibit G, at 131 (filed Apr. 25, 2022).

1 organization. Our utilities are equally committed to these sustainability goals and  
2 partnering with the State to advance the objectives of the EMP.<sup>31</sup>

3 SJI's GHG emissions reduction goals of 70% by 2030 and 100% by 2040 below 2018  
4 levels address only a limited portion of the company's overall GHG emissions.<sup>32</sup> SJI's  
5 2030 and 2040 GHG reduction goals only encompass Scope 1 and 2 emissions,<sup>33</sup> and its  
6 2040 goal is a "net neutral goal" for which "[o]ffset credits will be applied as needed to  
7 balance to zero."<sup>34</sup> This means the GHG emissions reduction goals apply only to SJI's  
8 operational consumption of gas and other energy as well as emissions from SJI's  
9 purchase of electricity. SJI's GHG goals fail to address more than 95% of the total GHG  
10 emissions impact created by the Utilities' provision of gas services in the state. Figure  
11 DH-6 summarizes SJI's GHG emissions reduction goals.  
12

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<sup>31</sup> *In the Matter of the Merger of South Jersey Industries, Inc. and Boardwalk Merger Sub, Inc.*, BPU Docket No. GM22040270, Direct Testimony of Melissa J. Orsen, at 4-5; *see also* Direct Testimony of Ellen Lapson, Exhibit EL-3, Fourth Quarter and Full Year 2021 Earnings Presentation (Feb. 24, 2022), p26.

<sup>32</sup> *See* Attachment \_\_ (DGH-2), Joint Petitioners' Response to Information Request EDF-1(a)-(b) (indicating that 2018 is the baseline year for SJI's GHG goals).

<sup>33</sup> The U.S. Environmental Protection Agency Climate Leadership Program defines Scope 1, 2, and 3 emissions as: Scope 1 emissions are direct GHG emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles). Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling, and Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain. U.S. E.P.A., *EPA Center for Corporate Climate Leadership*, [www.epa.gov/climateleadership](http://www.epa.gov/climateleadership) (last visited Nov. 10, 2022).

<sup>34</sup> Attachment \_\_ (DGH-2), Joint Petitioners' Response to Information Request EDF-1(d)-(f).

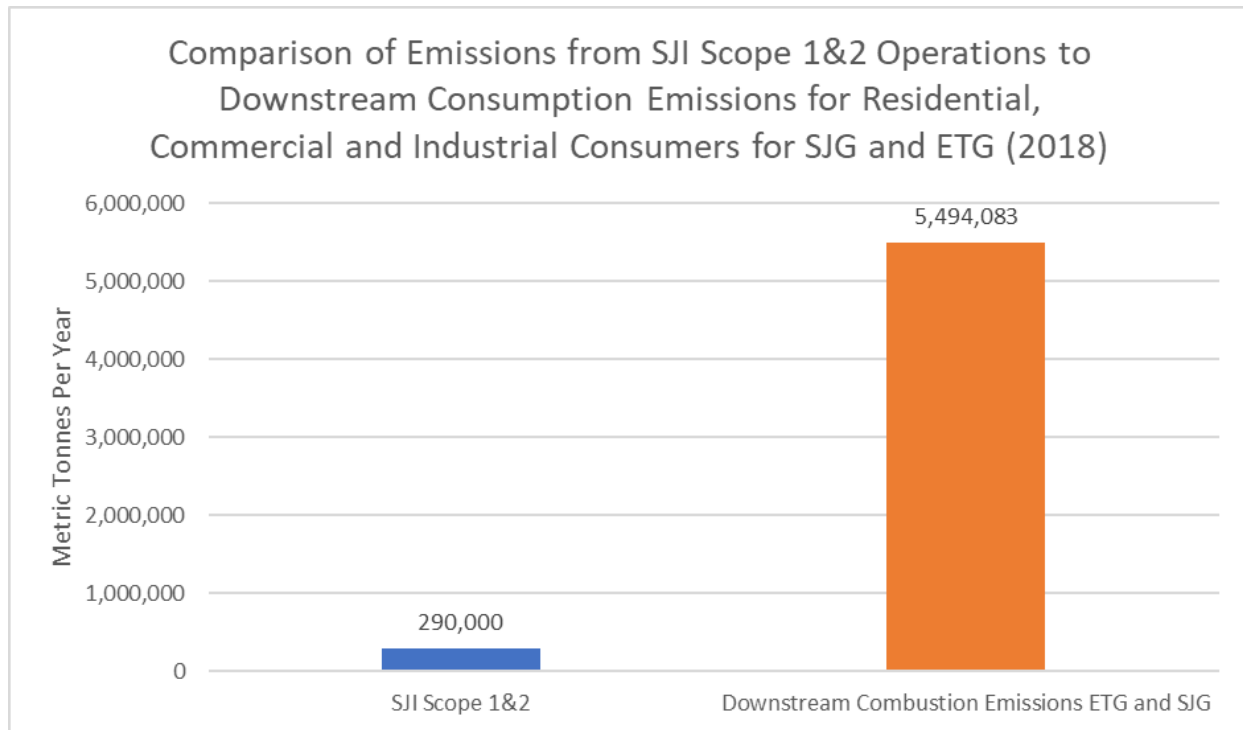
1

South Jersey Industries Climate Targets			
	2018 Baseline CO <sub>2</sub> e Emissions, in metric tons	2030 Goal CO <sub>2</sub> e Emissions, in metric tons (70% below baseline)	2040 Goal CO <sub>2</sub> e Emissions in metric tons (100% below Baseline)
Scope 1	285,854	85,756	0 (w/ offsets)
Scope 2	4,146*	1,244	0 (w/ offsets)
Scope 3	not reported by SJI	not included	not included
Total	290,000	87,000*	0 (w/ offsets)
*provided in Joint Petitioners' Supplemental Response to EDF-1(g)-(h), see Attachment __ (DGH-2).			

2

3 **Figure DH-6: Summary of Scope 1 and 2 Emissions Reduction Goals in Company's**  
4 **Application**

5 While SJI's goal to lower Scope 1 and 2 operational GHG emissions is better than  
6 nothing, it comprises just 5.3% of the SJI Utilities' Scope 3 direct combustion emissions  
7 associated with gas delivered by SJG and ETG. Regarding the standard of review for  
8 safe, adequate, and environmentally conscious service, it is essential to recognize that the  
9 proposed merger lacks any clear commitments to address climate issues. Even the goals  
10 that SJI expressed to shareholders do not address the vast majority of the Utilities'  
11 emissions—the GHG emissions from the actual product that the Utilities provide to  
12 consumers in New Jersey.



**Figure DH-7: South Jersey Industries’ Scope 1 and 2 GHG Emissions Compared to SJI’s Combustion GHG Emissions (2018).**

The downstream emissions are a direct result of the Utilities providing gas service, and they are essential to consider when assessing whether the proposed merger provides for service that preserves the environment consistent with the state’s clean energy and climate goals.

**Q. What about SJI’s goal to fund sustainability projects through capital investment?**

**A.** In the Annual Report and Proxy Statement Summary, SJI states that it will dedicate at least 25% of annual capital spending for sustainability investment.<sup>35</sup> SJI states that this investment commitment is “intended to be broad in scope and could include, while not

<sup>35</sup> *In the Matter of the Merger of South Jersey Industries, Inc. and Boardwalk Merger Sub, Inc.*, BPU Docket No. GM22040270, Certified Joint Petition, Exhibit G, at 149 (filed Apr. 25, 2022).

1 being limited to, infrastructure replacement projects aimed at reducing fugitive  
2 emissions; projects aimed at reducing the amount of combustion related emissions related  
3 to SJI's operations; and investing in the development of low to no carbon intensity energy  
4 sources such as solar, renewable natural gas (RNG) and hydrogen."<sup>36</sup> While some of  
5 these types of investments have the possibility of facilitating decarbonization,  
6 "infrastructure replacement projects aimed at reducing fugitive emissions" likely refers to  
7 replacing old gas pipelines with new gas pipelines, which extends the life of gas  
8 distribution infrastructure and is incompatible with the need to reduce gas reliance.

9 While RNG and hydrogen investments can contribute to the decarbonization of  
10 the energy system as a whole, they are likely to play limited roles in the gas distribution  
11 sector due to limited climate benefits resulting from leakage concerns; feedstock resource  
12 limitations for RNG; engineering and safety limitations on hydrogen blending; the cost of  
13 RNG and hydrogen production and transportation; and the necessity of new pipeline and  
14 appliance infrastructure if hydrogen is blended at higher levels for general thermal use in  
15 buildings.<sup>37</sup> Therefore, RNG and hydrogen initiatives are best considered targeted high-  
16 value investments for specific hard-to-electrify applications, and should not be  
17 considered options to replace fossil gas at a bulk level for general thermal applications.<sup>38</sup>

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<sup>36</sup> Attachment \_\_ (DGH-3), Joint Petitioners' Response to Information Request EDF-2.

<sup>37</sup> *See generally* Direct Testimony of Tianyi Sun on behalf of EDF.

<sup>38</sup> For example, the U.S. Department of Energy's recent National Clean Hydrogen Strategy and Roadmap identifies targeting strategic, high-impact end uses in hard-to-abate sectors as a foundational strategy. U.S. DEP'T ENERGY, *DOE National Clean Hydrogen Strategy and Roadmap* (Sept. 2022), at 39, <https://www.hydrogen.energy.gov/pdfs/clean-hydrogen-strategy-roadmap.pdf>.



1 EDF witness Tianyi Sun further addresses issues and possible limitations on over-  
2 reliance upon low-carbon fuels to meet climate targets.<sup>39</sup>

3 **Q. Are there default business assumptions about infrastructure expansion that should**  
4 **be reconsidered?**

5 **A.** The merger petition's discussion of infrastructure investments implies a business  
6 expectation that the gas distribution system will continue to expand. This assumption is  
7 inconsistent with New Jersey's climate objectives and policies and should therefore be  
8 questioned. For example, the Company's 2020 ESG Annual Report indicates that 275  
9 miles of main were installed with 147 miles removed, for a net increase of 128 miles of  
10 main in service.<sup>40</sup> The direct testimony of Andrew E. Gilbert identifies ongoing access to  
11 long-term equity capital as a benefit of the proposed merger.<sup>41</sup> As an example of the  
12 Infrastructure Investment Fund's ("IIF") philosophy in action as it relates to utility  
13 portfolio companies, Mr. Gilbert cites Summit, a U.S.-based gas distribution company in  
14 the IIF portfolio that "has grown through acquisitions and greenfield expansion projects  
15 in underserved regions."<sup>42</sup>

16 Many aspects of the business and regulatory environment in which SJG and ETG  
17 operate are premised on the assumption that the gas utilities will continue to expand their  
18 systems and service existing and new customers in perpetuity. But as New Jersey strives

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<sup>39</sup> See generally Direct Testimony of Tianyi Sun on behalf of EDF.

<sup>40</sup> SJI, *ESG 2020 Annual Report*, at 39, <https://www.sjindustries.com/sji/media/2020-ESG-Report/SJI-ESG-2020AnnualReport.pdf?ver=20210817>.

<sup>41</sup> Direct Testimony of Andrew E. Gilbert, at 6, Lines 17-18.

<sup>42</sup> *Id.* at 12, Lines 26-27.

1 to reduce GHG emissions and shift away from fossil fuel reliance, those assumptions are  
2 outdated and should be revisited. There is no longer a network benefit to having more  
3 customers connected to the gas system, and non-gas alternatives are available to meet  
4 building heating and cooking needs, such that continued investment to expand the gas  
5 system is not appropriate.<sup>43</sup> To ensure consistency with New Jersey climate policies, the  
6 proposed merger transaction should include commitments to prevent unnecessary  
7 expansion of the SJG and ETG gas distribution systems.

8 **Q. Is cost-sharing for gas line extensions an example of an outdated gas expansion**  
9 **practice that should be updated?**

10 **A.** Yes. SJG and ETG currently facilitate new connections to their gas distribution system at  
11 no cost to new customers, creating an environment where gas service may be perceived  
12 as the preferred default, and transparent evaluation of alternatives is difficult, if not  
13 impossible. Both SJG and ETG's tariffs contain provisions that allow up to 200 feet of  
14 service connection, as well as meters and regulators, to be installed at no cost to the  
15 applicant if the cost of installation does not exceed ten times the estimated annual  
16 distribution revenue to be realized from the extension.<sup>44</sup> On advice of counsel, it is my  
17 understanding that these tariff provisions go beyond what is explicitly required in New

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<sup>43</sup> See Andy Bilich et al., *Managing the Transition: Proactive Solutions for Stranded Gas Asset Risk in California*, ENV'T. DEF. FUND (2019), [https://www.edf.org/sites/default/files/documents/Managing\\_the\\_Transition\\_new.pdf](https://www.edf.org/sites/default/files/documents/Managing_the_Transition_new.pdf).

<sup>44</sup> South Jersey Gas Tariff, NJ BPU, Docket No. GR20030243, at PDF p. 113 (revised Aug. 1, 2022), <https://southjerseygas.com/SJG/media/pdf/pdf-regulatory/SJG-Tariff-No-13-August-1-2022.pdf>; Elizabethtown Gas Tariff, NJ BPU, Docket No. GR19040486, at PDF p. 15 (revised Aug. 1, 2022), <https://www.elizabethtowngas.com/Elizabethtown/media/PDF/Regulatory%20Info/Elizabethtown-Gas-TARIFF-NO-17.pdf?version=20220728>.

1 Jersey law and regulations regarding service extensions, because the tariffs allocate the  
2 cost of new connections to the gas system across all existing gas customers.

3 Other jurisdictions are taking action to eliminate subsidization of gas service line  
4 extensions. The California Public Utility Commission issued a Proposed Decision to  
5 eliminate gas line extension subsidies, with support from electric and gas utilities and  
6 environmental organizations.<sup>45</sup> The CPUC stated that “[e]limination of the gas line  
7 subsidies will discourage construction of gas infrastructure while encouraging more all-  
8 electric new construction that together will help reduce GHG emissions and improve air  
9 quality consistent with California’s decarbonization goals,” and further noted that  
10 “[c]urrent gas line subsidies provide incentives to install appliances which largely lock-in  
11 that use over the 10 to 20-year life of the appliance, which are likely to become stranded  
12 assets given California’s ambitious GHG emissions reduction goals.”<sup>46</sup>

13 To ensure unnecessary expansion is avoided, SJI should commit to revising the  
14 utilities’ existing tariffs to minimize or eliminate line extension allowances and update  
15 the tariffs in a manner consistent with existing state regulations.

16 **Q. Are there new investment opportunities gas utilities could pursue to facilitate**  
17 **decarbonization?**

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<sup>45</sup> CALIF. PUB. UTILS. COMM., Phase III Decision Eliminating Gas Line Extension Allowances, Ten-Year Refundable Payment Option, and Fifty Percent Discount Payment Option Under Gas Line Extension Rules, Proposed D. 22-08-008, Building Decarbonization OIR (R. 19-01-011) (Aug. 8, 2022), <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M496/K415/496415627.PDF>.

<sup>46</sup> *Id.* at 22.

1     **A.**     Yes. Networked geothermal systems are an innovative, non-GHG-emitting solution that  
2             can heat and cool homes using an interconnected system of ground source heat pumps.  
3             Networked geothermal uses infrastructure that is similar to a gas distribution system, but  
4             the underground pipes running between buildings carry water, not gas, so there are no  
5             safety or climate pollution concerns.<sup>47</sup> The Massachusetts Department of Public Utilities  
6             approved gas utility Eversource's proposal to own and operate a geothermal network,  
7             finding that the intent of the proposal is consistent with the Massachusetts' Global  
8             Warming Solutions Act and energy climate policies, including the statewide emissions  
9             limit for 2050.<sup>48</sup> And in New York, the Utility Thermal Energy Network and Jobs Act  
10            requires each of the seven largest gas and electric utilities in the state to submit a proposal  
11            to the New York Public Service Commission for at least one, and as many as five, pilot  
12            thermal energy network projects.<sup>49</sup>

13               Exploration of thermal networks through the development of pilot projects by the  
14               Utilities would demonstrate that the merger can facilitate investment in efforts to reduce  
15               gas reliance and associated GHG emissions. Such pilot projects should adhere to the

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<sup>47</sup> See Geo Micro District Feasibility Study, BURO HAPPOLD ENGINEERING FOR HEET (Nov. 2019), <https://heet.org/wp-content/uploads/2019/11/HEET-BH-GeoMicroDistrict-Final-Report-v2.pdf>; see also Philip Warburg, *Geothermal heating and cooling: Renewable energy's hidden gem*, YALE CLIMATE CONNECTIONS (Aug. 4, 2022), <https://yaleclimateconnections.org/2022/08/geothermal-heating-and-cooling-renewable-energys-hidden-gem/>.

<sup>48</sup> See *Petition of NSTAR Gas Company doing business as Eversource Energy for Approval of a General Increase in Base Distribution Rates for Gas Service and a Performance Based Ratemaking Mechanism*, D.P.U. 19-120, at 139 (Oct. 30, 2020).

<sup>49</sup> Utility Thermal Energy Network and Jobs Act, N.Y. SENATE BILL S9422 (effective July 5, 2022), <https://www.nysenate.gov/legislation/bills/2021/S9422>.

1 principles of accountability (consistent, detailed reporting throughout the project ensures  
2 that regulators and the public can track progress and outcome); scalability (a pilot should  
3 be demonstrably scalable if successful, and the scope must be adequate to generate  
4 actionable information and results); equity (a pilot should not disproportionately burden  
5 disadvantaged communities and should specifically provide outreach to, and inclusion of,  
6 disadvantaged communities); and reducing GHG emissions (a pilot should estimate the  
7 anticipated GHG emission reductions as a condition of regulatory approval; report GHG  
8 emissions throughout the project; and quantify the achieved reductions at the conclusion  
9 of the pilot).<sup>50</sup>

#### 10 **VIII. Solutions to Improve the Merger Proposal**

11 **Q. Do you have recommendations for how the commitments in the proposed merger**  
12 **could be improved?**

13 **A.** Yes. If approved, the merger should include further commitments to align the Utilities'  
14 business plans and investments with New Jersey climate policies, as specified herein.  
15 Absent such provisions, the proposal is not consistent with provision of safe and adequate  
16 service "in a manner that tends to conserve and preserve the quality of the environment  
17 and prevent the pollution of waters, land and air," as required. N.J.S.A. 48:2-23.

18 In the merger proposal, the Company highlights the benefits of access to long-  
19 term equity capital, and lower cost investment capital can help New Jersey implement  
20 decarbonization initiatives and meet the climate objectives of the EMP. However, there

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<sup>50</sup> See Natalie Karas et al., *Aligning Gas Regulation and Climate Goals, A Road Map for State Regulators*, ENV'T. DEF. FUND (Jan. 2021), at 33-34, <http://blogs.edf.org/energyexchange/files/2021/01/Aligning-Gas-Regulation-and-Climate-Goals.pdf>.

1 are significant gaps between the merger proposal—which is based on an assumption of  
2 an expanding gas pipeline network—and what the EMP requires—which is the  
3 decreased use of gas in buildings. To ensure the merger is in the public interest, I  
4 recommend the NJBPU should, at minimum, only approve the proposed merger  
5 transaction contingent on the following conditions:

- 6 • **Avoiding Unnecessary Expansion of the Gas System** – SJI and the Utilities should  
7 be required to revise existing practices and tariffs to the maximum extent possible  
8 under current law to prevent expansion of the gas distribution system and pursue  
9 NPAs whenever feasible.

- 10 1. The Utilities should be required to not expand gas service to new  
11 municipalities in which there is not a current Board approved consent to serve.
- 12 2. The Utilities should be required to modify tariffs for SJG and ETG to end any  
13 general ratepayer supported contributions to new service-oriented main  
14 extensions and new service connections. For example, while I am advised that  
15 there are rules addressing aspects of main and tariff extensions with suggested  
16 formulas, both utilities have tariffs that allow for them to exceed those  
17 formulas. These tariffs provide: “the Company may furnish and place, at no  
18 cost to the Customer, up to 200 feet of normal residential facilities.”<sup>51</sup> This is  
19 more generous than what is provided by the rules. These and other tariffs  
20 should be modified to limit such Company contributions to the extent allowed  
21 by law.

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<sup>51</sup> Elizabethtown Gas Company, B.P.U. No. 18 – Gas Sheet No. 13; South Jersey Gas Company B.P.U. N.J. No. 13 – Gas Sheet No. 112.

1           3. SJI and the Utilities should be required to terminate all funded gas  
2           promotional and non-efficiency rebate programs, including promotion of  
3           heating-oil to gas conversion programs; to cease all marketing for new gas  
4           connections and conversions; and to remove any references from their  
5           website, customer mailings, emails, and marketing materials regarding the  
6           environmental or climate benefits of natural gas. Advertisement or promotion  
7           of natural gas is inconsistent with New Jersey's climate goals, and utilities in  
8           other states have recently made similar commitments to terminate natural gas  
9           promotion.<sup>52</sup>

10          4. SJI and the Utilities should be required to seek out and prioritize, informed by  
11          stakeholder and industry engagement, NPAs to identify cost-effective (from  
12          both the customer and system perspectives), and environmentally beneficial  
13          options for meeting demands. NPAs shall include enhanced energy efficiency,  
14          demand response, fuel-switching (including strategic electrification), and non-  
15          pipeline sources of compressed or liquified gas (CNG, LNG).

16          • **Long-Term Planning and Investment Consistent with New Jersey's Climate**

17          **Objectives** – SJI and the Utilities should be required to engage in comprehensive  
18          long-term planning to avoid inappropriate costly investments in the fossil fuel system  
19          and assess how their role in the energy system will change with decarbonization.

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<sup>52</sup> See *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of The Brooklyn Union Gas Company d/b/a National Grid NY for Gas Service et al.*, Case 19-G-0309 et al., Order Approving Joint Proposal As Modified and Imposing Additional Requirements, N.Y. Public Service Commission, at 171-72 (Aug. 12, 2021), <https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=271988&MatterSeq=59676>.

1           **5. Gas Utility Climate Planning:** The Utilities should each be required to  
2           develop and publicly file with the NJBPU a climate plan detailing the  
3           company's business plan out to 2030 and 2050. These plans, filed within one  
4           year of the merger approval, shall address anticipated demand and supply,  
5           consistent with the building electrification and other relevant objectives of the  
6           EMP; describe future proposed investments by the utility to ensure each  
7           utility's operations are consistent with federal, state, and local climate  
8           policies; and explain how the utility's GHG emissions will decline over time  
9           consistent with the EMP. The climate plans shall include and explain the  
10          levels of energy efficiency, demand response, strategic electrification, and  
11          other NPAs in the baseline and scenario forecasts.

12          **6. Gas Utility Climate Planning Updates:** After filing the climate plan above,  
13          the Utilities should be required to file an annual update each year out to 2050,  
14          explaining investments and programs made in the last year, identifying the  
15          GHG emissions impact of those programs, and showcasing a demand and  
16          supply lookback for the last year as well as demand and supply updates.

17          **7. Thermal Energy Network Pilots:** Each utility should be required to, within  
18          one year of the merger approval, file at least one pilot proposal to undertake a  
19          thermal energy network project. At least one of these pilot projects shall be  
20          proposed in an overburdened community, as defined in New Jersey's  
21          Environmental Justice Law.

22          • **Reporting and Reducing GHG Emissions from the Existing System**



1           8. **Annual GHG Emissions Reporting:** Each utility should be required to issue  
2           annual GHG emissions inventory (including scope 1, 2, and 3 emissions).<sup>53</sup>  
3           These should be public reports that are filed with the NJBPU and made  
4           available on each utilities' website. These reports shall include a description  
5           of the methodology used to calculate the emissions and an assessment of the  
6           actions, investments, programs, and initiatives SJI and/or each utility is taking  
7           to reduce emissions both from SJI's own operations (consumption and  
8           leakage) and from the downstream consumption and leakage from customers.

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

10 **A.     Yes.**

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<sup>53</sup> See *supra* Part VII.

# David Hill

## Managing Consultant



### Professional Summary

David Hill joined EFG as a Managing Consultant at the start of 2020, after 22 years of employment with VEIC, most recently as Director of Distributed Resources and a VEIC Policy Fellow. He is known nationally for his advancement of sustainable energy program design and evaluation, and renewable energy policy. David has been the principal investigator and led analysis teams for multi-year stakeholder informed studies on solar market and decarbonization pathways and scenarios. David provides expert testimony and regulatory support; participates in international, national, and state boards; leads policy committees and conferences; provides comprehensive studies of the economic, technical, and achievable potentials for sustainable energy programming; and supports program budget planning and implementation. He has led or significantly contributed to the design and development of efficiency and renewable energy programs with annual budgets of \$100+ million for initiatives in New Jersey, Washington DC, New York, Vermont, Arizona, and Maryland. Recent work includes expert testimony and whitepaper analyses related to gas infrastructure investments, pilot programs and planning. He has clients in more than a dozen states and six countries; several of them are international organizations.

### Experience

January 2020 – present: Managing Consultant, Energy Futures Group, Hinesburg, Vermont (VT)

2014 – 2019: Director, Distributed Energy Resources, Policy Fellow, VEIC, Burlington, VT

2010 – 2014: Managing Consultant, VEIC, Burlington, VT

2008 – 2010: Deputy Director, Planning and Evaluation, VEIC, Burlington, VT

2000 – 2008: Senior Consultant, VEIC, Burlington, VT

1998 – 2000: Consultant, VEIC, Burlington, VT

1993 – 1998: Research Associate, Tellus Institute and the Boston Center of the Stockholm Environment Institute

### Testimony as Expert Witness

Expert witness and reports for technical working groups and before commissions on renewable energy, energy efficiency, and gas infrastructure, in Illinois, Vermont, New York, Rhode Island, New Jersey, Maryland, Pennsylvania, South Carolina, for the Federal Energy Regulatory Commission, Nova Scotia and Ontario.

2022 *GTN Xpress Project: A Critical Review of Need, Cost and Impacts*, prepared for the Washington State Office of the Attorney General, and filed with the Federal Energy Regulatory Commission in Docket No.CP22-2-00, on behalf of the States of Washington, California, and Oregon.

### Energy Futures Group, Inc

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- 2022 In the Matter of Avoided Costs for EfficiencyOne's 2023-2025 Demand Side Management Plan Application, before the Nova Scotia Utility and Review Board, on behalf of EfficiencyOne. February 11, 2022.
- 2022 Appearance before the Rhode Island Energy Facilities Siting Review Board, Docket SB-2021-03, regarding a declaratory Order filed by Sea 3 Providence. LLC. Hearing appearance in support of Direct Testimony of Gabrielle Stebbins of Energy Futures Group, on behalf of the Conservation Law Foundation.
- 2021 Nicor Smart Neighborhood and Total Green Pilots. Expert witness testimony on behalf of Citizens Utility Board, Environmental Defense Fund and Natural Resources Defense Council, Docket 21-0098 before the Illinois Commerce Commission.
- 2021 Nicor Renewable Natural Gas Pilot. Expert witness testimony on behalf of Citizens Utility Board and Natural Resources Defense Council, Docket 20-0722 before the Illinois Commerce Commission.
- 2020 *NH Saves 2021-2023 Triennial Plan*. Expert witness testimony reviewing joint gas and electric triennial efficiency plan before the New Hampshire Public Service Commission submitted on behalf of Clean Energy New Hampshire, DE 20-092.
- 2020 *Dominion Energy South Carolina, 2020 Integrated Resource Plan*. Expert witness testimony before the South Carolina Public Service Commission submitted on behalf of Southern Alliance for Clean Energy and the South Carolina Coastal Conservation League on the characterization and analysis of energy efficiency and demand response in Dominion's 2020 IRP. Docket No. 2019-226-E.
- 2019 *Efficiency One 2020-2022 DSM Plan: Portfolio Diversification and Lighting Transition*. Expert Witness Testimony submitted on behalf of Efficiency Nova Scotia, to the Nova Scotia Utility and Review Board, Matter 09096.
- 2018 *In the Matter of an Application by Nova Scotia Power for Approval of its Advanced Meter Infrastructure Project*. Expert Witness Testimony submitted on behalf of Ecology Action Center, to the Nova Scotia Utility and Review Board, Matter 08349.
- 2018 *Becoming an Advanced Solar Economy*. Testimony before the Vermont House Committee on Energy and Technology, Montpelier.
- 2017 Maryland Public Service Commission. On behalf of Office of People's Counsel on EmPOWER Maryland Utilities 2018-2020 plans. Presentation and testimony, October 25-26, 2017.
- 2016 Maryland Office of People's Counsel, EmPOWER Maryland. *Written Comments on 2015 Semi Annual (Q3 and Q4) Review*. Presentation and testimony, May 4, 2016.
- 2015 Maryland Office of People's Counsel, EmPOWER Maryland. *Written Comments on 2015 Semi Annual Review*. Presentation and testimony, October 14-15, 2015.
- 2014 Maryland Office of People's Counsel, EmPOWER Maryland. *Written Comments on 2015-2017 Utility Proposed Plans*. Presentation and testimony, October 21-22, 2014.
- 2014 Maryland Office of People's Counsel, EmPOWER Maryland. Evaluation of Semi-Annual Reports - Case Nos. 9153-9157. Presentation and testimony, April 7, 2014.

- 2013 Pennsylvania Public Utility Commission. On behalf of the Office of Consumer Advocate, regarding Petitions of the Pennsylvania Power Company for Approval of its Act 129 Phase II Energy Efficiency and Conservation Plan (Docket Nos. M-2012-2334395 and M-2012-2334392); Petition of Metropolitan Edison Company (Docket No. M-2012-2334387); and Petition of West Penn Power Company (Docket No. M-2012-2334398). Written testimony. January 8, 2013.
- 2013 Maryland Office of People's Counsel, EmPOWER Maryland. *Written comments on 2012 Q3-Q4 Semi-Annual Report*. Presentation and testimony, October 2-3, 2013.
- 2011 Maryland Office of People's Counsel. *Utility-Specific Comments on the 2012-2014 EmPOWER Maryland Program Plans*. Case Nos. 9153-9157. Written testimony. October 19, 2011.
- 2011 Maryland Office of People's Counsel. *Written Comments on 2010 Annual Reports, and Q4 2010 reports*. Case Nos. 9153-9157. Presentation and testimony. March 31, 2011.
- 2011 Maryland Public Service Commission. On behalf of the Maryland Office of People's Counsel. *Comments on the 2012-2014 EmPOWER Maryland Utility Program Plans*. October 2011.
- 2009 Pennsylvania Public Utility Commission. On behalf of the Office of Consumer Advocate, regarding Petition of Duquesne Light Company for Approval of Its Energy Efficiency and Conservation and Demand Response Plan, Docket No. M-2009-2093217. August 7, 2009.
- 2005 Ontario Energy Board. On behalf of Green Energy Coalition, regarding Hydro One Networks and Brampton Conservation and Demand Management Plans. February 4, 2005 (written comments) and February 17-18, 2005 (testimony).
- 2005 Pennsylvania Public Utility Commission. On behalf of Penn Future, regarding net metering standards. Written comments and testimony. June 2005.
- 2005 Pennsylvania Public Utility Commission. On behalf of Penn Future. Written testimony and comments on interconnection standards. April 2005.
- 2005 Testimony to the Vermont State Legislature House Committee on Energy and Natural Resources on Vermont's Solar and Small Wind Incentive Program. February 9, 2005.

## Selected Projects (from more than 100)

**Vermont Agency of Natural Resources.** Co-leader of Vermont Pathways Analysis team providing technical support and quantitative modeling to the Vermont Climate Council, leading to adoption of Vermont Climate Action Plan.

**Conservation Law Foundation.** Lead author, for "*Rhode Island's Investments in Gas Infrastructure A Review of Critical Issues*", discussing renewable gas potential, gas planning in relation to greenhouse gas reduction goals and, depreciation periods for gas new infrastructure.

**Institute for Energy Economics and Financial Analysis.** Lead author, for "*Critical Elements in Short Supply: Assessing the Shortcomings of National Grid's Long-Term Capacity Report*", study calling into question proposed natural gas pipeline investment for New York City region.

**Massachusetts Executive Office of Energy and Environmental Affairs.** Senior advisor for team creating Low Emissions Analysis Platform (LEAP) integrated scenario modeling to inform Massachusetts efforts to reach greenhouse gas reduction targets.

- Pennsylvania Department of Environmental Protection.** Led team creating scenario modeling using the Low Emissions Analysis Platform (LEAP) model in support of two- and half-year study “*Pennsylvania’s Solar Future*”. Presentations for modeling review and collaborative stakeholder feedback at more than half a dozen stakeholder meetings and webinars.
- U.S. Department of Energy.** Principal Investigator for a three-year SunShot Initiative Solar Market Pathways study, investigating the technical, regulatory, and business model implications of getting 20 percent of Vermont’s total electric supply from solar by 2025.
- Sun Shares.** Created and launched, and responsible for management and business development of, a community solar business subsidiary to provide “Easy and Affordable Solar for Employers and their Employees,” 2015 – present.
- New Jersey Clean Energy Program.** Program design and policy advisor for the renewable energy program for more than a decade.
- Rhode Island Office of Energy Resources.** Strategic Advisor on State Energy Plan and System Reliability Procurement and Distributed Generation programs.
- Alaska Energy Authority.** Principal consultant for two studies on renewable and energy efficiency financing and funding strategies.
- New York State Energy Research and Development Authority (NYSERDA).** Twice led the renewable energy analysis for 20-year forecast of energy efficiency and renewable energy potential, 2003 and 2012.
- World Bank.** Expert consultant on a short-term study of efficiency and micro- / mini-grid opportunities in Tanzania, 2014.
- Arizona Public Service.** Managed a rapid assessment and redesign of PV and solar hot water incentives, 2009.

## Selected Presentations

- 2017 Sun Shares, Easy and Affordable Solar for Employers and their Employees, American Solar Energy Society, Solar 2017, Denver.
- 2017 Vermont Solar Market Pathways, American Solar Energy Society, Solar 2017, Denver.
- 2016 *Oxymoron: Harmonizing Distributed Energy Integration Realities with Policy Frameworks*. Solar Power International.
- 2015 World Bank, International Conference on Energy Efficiency in Cities, Puebla New Mexico. Invited Panel speaker on Efficiency Vermont and Third-Party Administration Model. February, 2015.
- 2015 *Vermont Solar Market Pathways*. Presentations at Solar 2015 (State College, Pennsylvania), and Renewable Energy Vermont Conference.
- 2014 New York State Energy Research and Development Authority (NYSERDA), Renewable Energy Potential Study Results, Albany, NY.
- 2013 *Transformative Energy Planning*. Invited speaker at Innovations in Renewable Energy Symposium, Metcalf Institute for Marine and Environmental Reporting, Narragansett, Rhode Island.

- 2012 World Renewable Energy Forum, 2012 – Welcome Address and Introduction of Keynote Plenary Speakers. American Solar Energy Society, Denver.
- 2012 *Efficiency Vermont: A Successful Statewide Clean Energy Utility Model*. Presented at the 2012 Business of Clean Energy in Alaska Conference, Anchorage.
- 2011 Nova Scotia Feed In Tariff Forum: Invited speaker for two panels addressing Regional Coordination and Export Potential and International Feed-in Tariffs.
- 2011 *Integrating Renewable Energy and Efficiency Services*. Presentation to the Clean Energy States Alliance Fall 2011 Meeting, Washington, DC.
- 2010 *The Potential for Energy Efficiency and Renewables as Resources in Wholesale Capacity Markets*, Presentation at EUEC 2010 Conference, Phoenix, AZ.
- 2008 “Technology and Policy; Getting it Right.” Solar Power International, Invited panel speaker. San Diego, California.
- 2008 *Solar Market Transition in New Jersey: Promise and Progress towards Sustained Growth*. Solar 2008, American Solar Energy Society.
- 2008 *Review of Efficiency Vermont Administrative Structure and Experience*. Penn Future 2008 Clean Energy Conference, May 2008.
- 2006 *Scoping Analysis of Potential Photovoltaic Contributions Towards Offsetting Transmission System Upgrades in Southern Vermont*. Solar 2006, American Solar Energy Society.
- 2006 *Growing New Construction Markets for Photovoltaics: Recent Strategies and Activities from LIPA’s Solar Pioneer Program*. Solar 2006, American Solar Energy Society, 2006.
- 2005 *Market Response to Photovoltaic Incentive Offerings: An Analysis of Trends and Indicators*. Presented at the International Solar Energy Society Solar World Congress, 2005.
- 2003 *Solar Energy Value and Opportunities in Vermont*, Invited Session Panel Moderator and Speaker, 2nd Annual Power for a New Economy Conference, Burlington, Vermont, October 8, 2003. Renewable Energy Vermont.
- 2003 *Renewable Energy Case Studies: Redefining the Models, Refining the Messages, and Getting the Word Out*, Invited Session Panel Moderator, Solar 2003 National Solar Energy Conference, Austin, Texas June 22, 2003. American Solar Energy Society.
- 2002 *Transforming Markets for Customer Sited Clean Renewable Energy: Connecting Field Experience with Lessons from the Efficiency World*, Invited Session Panel Moderator, Solar 2002 National Solar Energy Conference, Reno, Nevada June 18, 2002. American Solar Energy Society.
- 1997 *IDENTIFY: Improving Industrial Energy Efficiency and Mitigating Global Climate Change*. Software and paper prepared for the United Nations Industrial Development Organization, presented at the 1997 ACEEE Summer Study on Energy Efficiency in Industry.
- 1997 *E2/FINANCE: A Software System for Evaluating Industrial Eco-Efficiency Opportunities*, sponsored by the U.S. Department of Energy. ACEEE 1997 Summer Study on Energy Efficiency in Industry.
- 1995 *Process Evaluation of Three Gas Utility Commercial Industrial Demand Side Programs*. Prepared for the Colonial Gas Company, and presented at ACEEE 1995 Summer Study on Energy Efficiency in Industry.

## Selected Publications

- 2017 Smart Electric Power Alliance, 51<sup>st</sup> State Initiative, *Role of Utilities in the Transforming Energy Economy of the 51st State*, September 2017.
- 2016 *Vermont Solar Market Pathways: From a Developed to an Advanced Solar Economy*. A Phase II Roadmap document prepared for the *Smart Electric Power Alliance 51<sup>st</sup> State Initiative*.
- 2016 *Vermont Solar Market Pathways*, Vols. 1-4. U.S. Department of Energy, Sun Shot Initiative, Office of Energy Efficiency and Renewable Energy. Award DE-EE-0006911.  
[www.Vermontsolarpathways.org](http://www.Vermontsolarpathways.org).
- 2016 *Energy Efficiency Program Evaluation and Financing Needs Assessment*. Report prepared for the Alaska Energy Authority, May 2016.
- 2015 *Michigan Renewable Resource Assessment*. Final Report, prepared for the Michigan Public Service Commission Staff under agreement with the Clean Energy States Alliance. April 2015.
- 2012 *Renewable Energy Grant Recommendation Program: Process and Impact Evaluations*. Principal in Charge for comprehensive two-volume study. Alaska Energy Authority.
- 2011 "Solar in Nepal: Small Systems, Big Benefits." *Solar Today*. July / August 2011.
- 2011 "National Clean Energy Standard: Congress Needs to Design It Properly." Perspective with Shaun McGrath and Jeff Lyng. *Solar Today*. July / August 2011.
- 2010 "National RPS Now!" *Solar Today*. July / August 2010.
- 2009 "Carbon Regulation: What's the Most Effective Path?" *Solar Today*. June 2009.
- 2009 "Policy Recommendations for the 111<sup>th</sup> Congress: Tackling Climate Change and Creating a Green Economy." Prepared by the American Solar Energy Society Policy Committee.
- 2008 "Pennsylvania Solar Assessment." Final Report, November 25, 2008. Incorporated into American Council for an Energy-Efficient Economy, *Potential for Energy Efficiency, Demand Response, and Onsite Solar Energy in Pennsylvania*. ACEEE Report No. E093. Washington, DC: ACEEE, April 2009.
- 2008 "Solar Market Transition in New Jersey: Promise and Progress towards Sustained Growth." *Proceedings of Solar 2008*, American Solar Energy Society.
- 2004 "Cost Effective Contributions to New York's Greenhouse Gas Reduction Targets from Energy Efficiency and Renewable Energy Resources." *Proceedings of 2004 ACEEE Summer Study on Energy Efficiency in Buildings*.
- 2002 "The Ten Percent Challenge: A Participatory Community Scale Climate Campaign." *Proceedings of 2002 ACEEE Summer Study on Energy Efficiency in Buildings*. Volume 9, (with Tom Buckley, Jennifer Green, and Debra Sachs).
- 2000 "Implementing and Monitoring Community-Based Climate Action Plans." *Proceedings of 2000 ACEEE Summer Study on Energy Efficiency in Buildings*. Volume 9, pp. 149-160 (with Tom Buckley, Mark Eldridge, Debra Sachs, and Abby Young).
- 1998 *Eco-Efficiency Financing Resource Directory*. Electronic web-site, and printed directory prepared for the Environmental Protection Agency, Region I, New England.



## Regulatory and Other Governmental / NGO Documents

- 2000 – 2012 *New Jersey's Clean Energy Programs – Honeywell Team Program Plans.* Led team on designing and implementing of Renewable Energy Program plans and initiatives. Many program plans and strategies for transition to market-based incentives.
- 1998 – 2008 *Long Island Power Authority's Clean Energy Initiative.* Lead Technical and Senior Advisor on Renewable Energy Plans, including the Solar Pioneer Initiative and Residential Energy Efficiency Programs.
- 2000 *The Climate Action Plan: A Plan to Save Energy and Reduce Greenhouse Gas Emissions,* Lead author for the Burlington (Vermont) Climate Protection Task Force.
- 1998 *Home Weatherization Assistance Program Environmental Impact Analysis.* Prepared for the Ohio Department of Development, Office of Energy Efficiency.
- 1997 *Achieving Public Policy Objectives Under Retail Competition: The Role of Customer Aggregation.* Prepared for the Colorado Governor's Office of Energy Conservation.
- 1997 *IDENTIFY: Improving Industrial Energy Efficiency and Mitigating Global Climate Change,* software and paper. For the United Nations Industrial Development Organization.
- 1997 *Review of the Swaziland Energy Information System and Report on LEAP Training Activities.* Prepared for the Ministry of Natural Resources and Energy, Government Kingdom of Swaziland.
- 1996 *Evaluation of the IDB's Policies and Practices in Support of Renewable Energy and Energy Efficiency: A Report to the Inter-American Development Bank.* Brower and Company and Tellus Institute.
- 1996 *Action Plan for the Massachusetts' Industrial Services Program (ISP),* prepared for the Sustainable Industries Initiative of the Corporation for Business Work and Learning.
- 1995 *Framework for National Energy Planning: Mission Report,* The Republic of Maldives. United Nations Department for Development Support and Management Services.
- 1994 *The SEI / UNEP Fuel Chain Project: Methods, Issues, and Case Studies in Developing Countries. Venezuela Case Study.*
- 1994 *Future Energy Requirements for Africa's Agriculture (Sudan Case Study).* Report to the African Development Bank by the UN Food and Agriculture Organization.
- 1994 Report to the Idaho Public Utility Commission on Suggested Cost Allowances for the Idaho Power Company's DSM Programs. Prepared for the Idaho Public Utilities Commission, Tellus Report No. 94-177.
- 1994 Review of Pennsylvania Electric Company's 1995 Demand Side Management Filing. Prepared for: Pennsylvania Office of Consumer Advocate. Tellus Study No. 94-071.
- 1994 Review of Union Electric Company's Electric Utility Resource Planning Compliance Filings. Prepared for: The Missouri Office of Public Counsel. Tellus Study No. 93-300.
- 1994 *Incorporating Environmental Externalities in Energy Decisions: A Guide for Energy Planners.* A Report to the Swedish International Development Agency. SEI-B Report No. 91-157.



## Leadership

- 2017 – 2019 Energy Coop of Vermont, Board Member and Treasurer.
- 2013 Solar 2013, “Power Forward, Baltimore Maryland.” Chair of Conference Advisory Committee responsible for recruiting and coordinating four main conference plenary sessions.
- 2012 – 2013 American Solar Energy Society (ASES), Chair of the Board.
- 2012 Policy Track Chair for the World Renewable Energy Forum, Denver, Colorado, May.
- 2009 – 2012 ASES Policy Committee, Board Member and Chair.
- 2007 Vermont Governor’s Climate Change Committee, Member of the Plenary Working Group.
- 2000 – 2010 Renewable Energy Vermont, Founding Board Member, Past Board Chair.

## Education

Ph.D., Energy Management and Policy Planning, University of Pennsylvania, Philadelphia, Pennsylvania (PA), 1993.

- Fulbright Scholar: Research on energy decision-making in rural Nepal, 1991 – 1993.

Master’s, Appropriate Technology and International Development, University of Pennsylvania, Philadelphia, PA, 1989.

B.A., Geography and Political Science, Middlebury College, Middlebury, VT, 1986.

## Other Qualifications

**Nepal, Himalayan Light Foundation.** Installed solar lighting systems in 3 remote health clinics and 3 homes, 2010.

**Advanced PV Installation certificate.** Solar Energy International, 2010.

**Peace Corps volunteer.** Sierra Leone, 1984 – 1986.

### Languages

- Nepali: ILR Level 3, speaking; ILR Level 2, reading
- Krio and Mende (Sierra Leone): ILR Level 2, speaking

### Software competency

- LEAP (Low Emissions Analysis Platform), Stockholm Environment Institute. Former trainer and current Principal Investigator of team using scenario modeling on three projects.
- NREL System Advisor Model. Financial and technical modeling tool for renewable energy systems.

**In the Matter of the Merger of  
South Jersey Industries, Inc. and Boardwalk Merger Sub, Inc.  
BPU Docket No. GM22040270**

**Environmental Defense Fund Information Requests-Set One**

- EDF-1. Please refer to the Direct Testimony of Melissa J. Orsen at p4-5, which states: “SJI is pursuing aggressive decarbonization goals, with commitments to (1) achieve a 70% carbon reduction of operational emissions and consumption by the year 2030; (2) realize 100% carbon reduction by 2040; and (3) dedicate at least 25% of annual capital expenditures to sustainability projects throughout the SJI organization.” These goals are also articulated at Exhibit EL-3, Fourth Quarter and Full Year 2021 Earnings Presentation (Feb. 24, 2022), p26, which lists these Decarbonization Goals: “70% Reduction in Carbon Emissions and Consumption by 2030”; and “100% Reduction in Carbon Emissions and Consumption by 2040.”
- a) What is the baseline year off which the 70% carbon emissions reduction by 2030 goal is measured?
  - b) What is the baseline year off which the 100% carbon emissions reduction by 2040 goal is measured?
  - c) Do the 70% by 2030 and 100% by 2040 goals refer solely to carbon dioxide emissions, or do they refer to all greenhouse gas emissions? If the latter, do the goals assume conversion of other greenhouse gas emissions into a carbon dioxide equivalent?
  - d) Please refer to the definition of Scope 1, 2, and 3 emissions from the Greenhouse Gas Protocol: “Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.”<sup>1</sup> Does SJI’s 70% by 2030 and 100% by 2040 goals include Scope 1, 2, and 3 emissions? If not, what emissions sources are included in the goals?
  - e) Please explain the stated goal to reduce “consumption” 70% by 2030 and 100% by 2040. In the explanation, please indicate who or what entity the reduction applies to.
  - f) Does the term “consumption” refer to consumption of natural gas? If so, please provide—for SJI, South Jersey Gas (“SJG”), and Elizabethtown Gas (“ETG”)—the baseline consumption volume (for the baseline year identified in

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<sup>1</sup> Greenhouse Gas Protocol, FAQ,  
[https://ghgprotocol.org/sites/default/files/standards\\_supporting/FAQ.pdf](https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf).

response to questions 1(a) and 1(b) above), and the corresponding target consumption volumes for the 70% by 2030 and 100% by 2040 goals. Please provide each of these baseline and target consumption volumes in thousand cubic feet (Mcf) or million British thermal units (MMBtu).

- g) If the term “consumption” referenced in 1(e) above does not refer to consumption of natural gas, please provide the baseline, 2030, and 2040 consumption goals using appropriate units for South Jersey Industries, South Jersey Gas, and Elizabethtown Gas.
- h) Please provide the carbon dioxide equivalent (CO<sub>2</sub>e) emissions reduction in million metric tons of CO<sub>2</sub>e for the 70% by 2030 and 100% by 2040 goals for South Jersey Industries, South Jersey Gas, and Elizabethtown Gas.

**Responsible Witness:**            **Melissa J. Orsen**

**Response:**

- a. Calendar Year 2018.
- b. Calendar Year 2018.
- c. All goals are presented in CO<sub>2</sub> equivalents and consider all greenhouse emissions.
- d. SJI’s reduction goals include Scope 1 and Scope 2 emissions.
- e. Consumption in this context refers to the use of purchased energy, which is reported within Scope 2 emissions.
- f. Please see the response to part e.
- g. Please see Confidential Attachment EDF-1.1.
- h. Please see Confidential Attachment EDF-1.2.

**Supplemental Response:**    In response to EDF’s request that the confidentiality of Confidential Attachments EDF-1.1 and EDF-1.2 be lifted, those attachments have been de-designated (and eliminated) and the response above should be revised to read as follows:

- g.     SJI Emissions Reductions Goals. SJI’s emissions reduction goals are not broken down by SJI affiliate; they are set at the parent company level. Our use of the term consumption in our goal statement is related to our Scope 2 emissions – which were calculated to the 4,146 metric tons of CO<sub>2</sub>e in our baseline year of 2018. Our goals for 2030 and 2040 are

aggregate reduction goals for reduction of our Scope 1 and Scope 2 impacts; they are not broken out by Scope.

- h. Carbon Dioxide Equivalent Reductions. The goals are not broken down among SJI, SJG and ETG.

The target emissions goal for 2030 equates to approximately 87,000 mt of CO<sub>2</sub>e based upon current assumptions and the 2018 base year. The 2040 goal is a net neutral goal. Offset credits will be applied as needed to balance to zero.

**In the Matter of the Merger of  
South Jersey Industries, Inc. and Boardwalk Merger Sub, Inc.  
BPU Docket No. GM22040270**

**Environmental Defense Fund Information Requests-Set One**

EDF-2. Please refer to the Direct Testimony of Melissa J. Orsen at p4-5, which states: “SJI is pursuing aggressive decarbonization goals, with commitments to . . . (3) dedicate at least 25% of annual capital expenditures to sustainability projects throughout the SJI organization.” Please also refer to Exhibit EL-3, SJI Fourth Quarter and Full Year 2021 Earnings Presentation, at p. 26, which lists the following decarbonization goal: “At least 25% of Annual Capex on Sustainability Investments.”

- a) What categories of projects and investments are included in the term “sustainability projects” and “Sustainability Investments”?

**Responsible Witness:**            **Melissa J. Orsen**

**Response:**    Our investment commitments are intended to be broad in scope and could include, while not being limited to, infrastructure replacement projects aimed at reducing fugitive emissions; projects aimed at reducing the amount of combustion related emissions related to SJI’s operations; and investing in the development of low to no carbon intensity energy sources such as solar, renewable natural gas and hydrogen. By way of further response, see the responses to RCR-EMP-9 through RCR-EMP-11 and Confidential RCR-EMP-45 through Confidential RCR-EMP-51.