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CASE MANAGEMENT
APR 16 2019
BOARD OF PUBLIC UTILITIES
TRENTON, NJ

April 15, 2019

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 Nos. GO18101112 and EO18101113

VIA ELECTRONIC & OVERNIGHT MAIL

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APR 16 2019
BOARD OF PUBLIC UTILITIES
TRENTON, NJ

Aida Camacho-Welch, Secretary
Board of Public Utilities
44 South Clinton Avenue, 3rd Flr.
P.O. Box 350
Trenton, New Jersey 08625-0350

Dear Secretary Camacho-Welch:

Pursuant to Commissioner Solomon's Order Adopting Procedural Schedule issued in the above-referenced matter, enclosed please find an original and ten (10) hard copies of the pre-filed Rebuttal Testimonies of Karen Reif, Stephen Swetz, Daniel Hansen and Isaac Gabel-Frank being filed on behalf of Public Service Electric and Gas Company.

Please note that the confidential exhibit IGF-CEF-EE-6 of Isaac Gabel-Frank's rebuttal testimony is being provided only to those parties that have singed the non-disclosure agreement. The confidential portion of this exhibit must be treated in a manner that complies with, and abides by the terms set forth in the confidentiality agreement, including but not limited to the proper security and control protocols for the appropriate handling, filing, storage, dissemination and return of the confidential documents.

Thank you for your review and consideration of this matter.

C.M.S
J. Hart
J. Lampert
P. Krogman
E. Kaso
D. Van Brunt
S. Peterson (5)

Respectfully submitted,

FORWARD
CASE MANAGEMENT
2019 APR 16 P 2: 58
BOARD OF PUBLIC UTILITIES
TRENTON, NJ

Justin B. Incardone

C Commissioner Dianne Solomon
Service List (via e-mail only)

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 ("CEF-EE") PROGRAM ON A REGULATED BASIS

BPU Docket Nos. GO18101112 and EO18101113

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

April 15, 2019

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

I. INTRODUCTION

Q. Please state your name and professional title.

A. My name is Karen Reif. I am the Vice President of Renewables & Energy Solutions at Public Service Electric and Gas Company ("PSE&G" or "Company"). My professional credentials are set forth in Schedule KR-CEF-EE-1, which is attached to my direct testimony.

Q. What is the purpose of your rebuttal testimony?

A. I submit this rebuttal testimony on behalf of PSE&G in support of its Clean Energy Future – Energy Efficiency ("CEF-EE") Program, and for the purpose of responding to the following testimonies submitted by the New Jersey Division of Rate Counsel ("Rate Counsel") on March 22, 2019 in this proceeding:

- the sections of Dr. Ezra Hausman's and Dr. David Dismukes' testimonies recommending that the New Jersey Board of Public Utilities ("BPU" or "Board") reject the CEF-EE Program because the Board has not yet completed various initiatives set forth in the Clean Energy Act of May 2018 ("CEA" or "Act");
- the section of Dr. Hausman's testimony where he claims that PSE&G should not be the sole provider of regulated energy efficiency programs in the PSE&G territory;
- the section of Dr. Hausman's testimony wherein he claims that there are "issues of equity" with PSE&G's CEF-EE Program;
- the sections of Dante Mugrace's testimony related to the Company's proposed budget for capitalized Information Technology ("IT") costs and his proposed cap on CEF-EE administrative expenses; and

- the section of Dr. Hausman's testimony related to customer data privacy.

Company witnesses Stephen Swetz (amortization period/impact of lost revenues), Isaac Gabel-Frank (cost-benefit analysis), and Daniel Hansen (Green Enabling Mechanism/decoupling) will respond to other aspects of the Rate Counsel witnesses' testimonies.

II. THE CEF-EE FILING IS TIMELY

Q. Can you briefly summarize Dr. Hausman's and Dr. Dismukes' recommendations for how the BPU should rule on the CEF-EE Program?

A. Yes. Dr. Hausman and Dr. Dismukes both recommend that the BPU reject the CEF-EE Program because the Board has not yet completed various energy efficiency-related initiatives under the CEA. Dr. Hausman refers to the CEF-EE program as "premature", and Dr. Dismukes describes the filing as PSE&G putting the "cart before the horse."[1] For example, Dr. Hausman notes that the Board, pursuant to the CEA, has yet to establish quantitative performance indicators ("QPI") and incentives/penalties for compliance with the energy reduction targets set forth in the Act.[2]

Q. Do you agree that the CEF-EE Program is premature given the status of the Board's implementation of the CEA?

A. I do not. I am not an attorney but I am advised by counsel that as an initial matter, nothing in the Act prohibited PSE&G from making its CEF-EE filing, nor prevents the Board from approving it. Similarly, the New Jersey "RGGI" law gives the Board authority to

[1] Direct Testimony of Ezra Hausman ("Hausman Testimony"), p. 24; Direct Testimony of David E. Dismukes ("Dismukes Testimony"), p. 41.

[2] Hausman Testimony, p. 24.

review and approve utilities' energy efficiency programs, such as CEF-EE, and nothing in the CEA supersedes that authority.[3]

Moreover, the Act requires that the Board, by May 23, 2019, complete three principal tasks with respect to energy efficiency. More specifically, the BPU must:

- require each electric and gas public utility to "reduce the use of electricity, or natural gas, as appropriate, within its territory, by its customers, below what would have otherwise been used";
- "conduct and complete a study to determine the energy savings targets for full, economic, cost-effective potential" for electric and natural gas usage reduction, "as well as the potential for peak demand reduction by the customers of each [electric and gas utility] and the timeframe for achieving the reductions"; and
- "adopt quantitative performance indicators" for each electric and gas public utility, "which shall establish reasonably achievable targets for energy usage reductions and peak demand reductions. . . ."[4]

The CEF-EE filing is scheduled to conclude by no later than early July 2019. Thus, the May 23, 2019 deadline for the Board's energy efficiency initiatives under the CEA will have passed weeks *before* the BPU's final ruling on the CEF-EE Program. For that reason, the CEF-EE filing is timely and should be approved by the Board.

Q. Can you provide an update, from the Company's perspective, on the status of the Board's energy efficiency initiatives under the CEA?

A. Yes. The Board has retained a consultant named Optimal Energy ("Optimal") to conduct the market potential study described in the Act which is summarized above. Optimal has already conducted two stakeholder meetings with, among other groups, the gas and electric utilities subject to the CEA and Rate Counsel. Two more stakeholder meetings

[3] *See* N.J.S.A. § 48:3-98.1.

[4] *See* N.J.S.A. § 48:3-87.9(a)-(c).

are tentatively scheduled in April 2019. Optimal advised the stakeholders that its report will address the utilities' energy savings targets, the QPIs, and the incentive/penalty structure required by the CEA. Optimal further informed the stakeholders that: (1) a draft of its report is due to the BPU in the middle of April 2019; (2) the fourth and final stakeholder meeting, tentatively set for April 30, 2019, is to discuss the draft energy reduction targets, QPIs, and incentive structures; and (3) a final report is due in early May 2019.

Q. Is that timetable important when assessing Rate Counsel's claim that the CEF-EE Program is premature?

A. Yes. The Optimal study, which it is conducting on behalf of the Board, will address the utility savings targets, QPIs, and incentive structure for compliance with the Act. There is no reason to delay the CEF-EE Program, and the important benefits it will achieve for the state and its residents, if the savings targets, QPIs, and incentive structures will be disclosed in the Optimal study weeks *prior* to the Board ruling on the CEF-EE Program.

Q. Do you agree with Dr. Dismukes that the Board should not approve the Green Enabling Mechanism ("GEM") until it completes the various energy efficiency-related initiatives under the CEA? Dismukes Testimony, pp. 30-31.

A. No, for many of the same reasons I state above. Moreover, Dr. Dismukes states that there are a "large number of unknowns" with respect to the CEA, including "how lost sales and revenues as a result of these [CEF-EE] programs will be tracked and verified. . . ."[5] However, there is no obligation under the CEA for the BPU to issue any regulations or other guidance on how lost revenues associated with energy efficiency programs "will be tracked and verified." As PSE&G witness Daniel Hansen has explained, the GEM would not

[5] Dismukes Testimony, p. 31.

require PSE&G to track and verify lost revenues associated with its energy efficiency programs. Lastly, Dr. Dismukes recommended in the Company's 2018 base rate case that the GEM, first introduced in that proceeding, should be rejected at that time because: "[f]irst and most importantly, the Company has not tied its GEM request to a specific set of energy efficiency programs and savings targets."[6] Here, the Company has satisfied Dr. Dismukes' concern by re-proposing the GEM alongside a suite of 22 specific energy efficiency programs. Thus, the Board may adequately review and rule on the GEM at this time.

Q. Is denying the CEF-EE Program at this time consistent with New Jersey's clean energy goals and its residents' best interest?

A. No. As set forth in my direct testimony, the CEF-EE Program will result in the following, important benefits for the State:

- **Lower bills** – participating customers will reduce their energy consumption by approximately 40.6 billion kWh and 675 million therms, and lower their energy bills by approximately $5.7 billion over the life of the energy efficiency measures;

- **Environmental improvements** – the CEF-EE Program will result in the reduction of carbon dioxide emissions by 24 million tons, sulfur dioxide emissions by 43,000 tons, and nitrogen oxide emissions by 18,000 tons; and

- **Job creation** – the CEF-EE Program is expected to increase employment through the creation of approximately 30,000 job-years and facilitate associated economic activity.[7]

To delay the realization of these benefits, as Rate Counsel recommends the Board do, would frustrate the State's goals of reducing energy consumption, cutting harmful emissions,

[6] BPU Docket Nos. ER18010029 and GR18010030, Direct Testimony of David E. Dismukes, PhD., p. 42 (accessible at https://www.nj.gov/rpa/docs/ER18010029-and-GR18010030-PSE&G-BRC-2018-RC-Initial-Testimony-of-David-Dismukes-and-Schedules%20.pdf).

[7] *See* Direct Testimony of Karen Reif, pp. 4-5.

and growing the green economy. These goals are reflected in the CEA's mandate that utilities reduce their customers' energy usage, and the New Jersey Global Warming Response Act's requirement that the State reduce greenhouse gas emissions (with the initial emissions reduction target arriving next year, 2020).[8] The CEF-EE Program benefits outlined above are also consistent with the Administration's upcoming Energy Master Plan ("EMP") due in June 2019, two goals of which are "growing New Jersey's clean energy economy" and "reducing the state's carbon footprint".[9] Moreover, one of the working groups for the new EMP is focused on "Reducing Energy Consumption."[10]

In sum, the CEA requires the State to significantly expand its energy efficiency efforts to satisfy the targets set forth in the Act. The State's current efforts to reduce energy consumption do not come close to meeting the 2% electric and 0.75% gas reduction targets set forth in the CEA. Further delay will harm the State and its residents. The Board should approve the CEF-EE Program so that the State can realize its clean energy, environmental, and green economy goals.

Q. Is there any other way that the CEF-EE Program can assist the State if approved in accordance with the procedural schedule in this case?

A. Yes. As the Board continues with its energy efficiency initiatives under the CEA, including the rulemaking the Act requires, the CEF-EE Program can provide the BPU with the benefit of actual program experience in New Jersey from a suite of programs that: (1) the Company designed to meet the energy reduction targets set forth in the Act; and (2) are based

[8] N.J.S.A. § 26:2c-37 *et seq.*

[9] https://www.nj.gov/emp/energy/

[10] *Id.*

on best practices gleaned from leading energy efficiency programs around the country. Dr. Dismukes agrees that the CEF-EE programs "appear to be cost-effective. . . ."[11] Approval and implementation of the CEF-EE Program can provide the Board with the information and data it needs to set practical, cost-effective policy directives, as opposed to the BPU making those decisions in a vacuum. This filing is timely, and should be approved.

III. PSE&G AS THE EXCLUSIVE PROVIDER OF REGULATED ENERGY EFFICIENCY PROGRAMS IN ITS SERVICE TERRITORY

Q. Did Dr. Hausman accurately describe the Company's rationale for why PSE&G believes it should be the exclusive provider of regulated energy efficiency programs in its service territory?

A. No. Dr. Hausman describes the Company's "first argument" for why it should be the exclusive provider of regulated energy efficiency programs in its service territory as reflecting PSE&G's concern that it might not be able to "take 'credit' [under the CEA] for all of the savings in its service territory" if a third-party, as opposed to the Company, achieves those savings."[12] That is not PSE&G's position. The Company acknowledges that it would receive credit towards the CEA's energy reduction targets for savings generated by non-utility programs, such as the Office of Clean Energy's ("OCE") programs. As Dr. Hausman notes, the CEA states that the QPIs "shall establish reasonably achievable targets for energy savings that take into account the public utility's energy efficiency measures and other non-utility energy efficiency measures. . . ."[13]

[11] Dismukes Testimony, pp. 24-25.

[12] Hausman Testimony, pp. 22-23.

[13] N.J.S.A. § 48:3-87.9(c).

The Company's actual position is that because the CEA puts the responsibility to achieve savings on the utilities, not the Board or any other entity, the utilities must also have the responsibility to deliver those savings.[14] The CEA allows the Board to assess penalties against the utilities if they fail to achieve those targets.[15] Neither the Board nor any other entity has the same incentive to meet the savings targets as the utilities, nor will the Board or any other entity incur any penalty for underperformance. Simply put, the utilities are the only entities that have the responsibility (and incentive) to meet the savings targets under the Act. With that *responsibility* must come full *control* over PSE&G's ability to meet those targets, free from any competition from other regulated programs. The Company's success, and the achievement of the State's policy goals, cannot be dependent upon entities that do not bear responsibility for achieving those goals. This is one reason, among others, why PSE&G should be the exclusive provider of regulated energy efficiency programs in its service territory.[16]

Q. Is there any other way in which the Company being the exclusive provider of regulated energy efficiency programs in its service territory is consistent with the CEA?

A. Yes. The Act is clear that utilities are now the epicenter of regulated energy efficiency programs in New Jersey, requiring utilities (not the Board) to establish and run energy efficiency programs. For example, the Act requires utilities to:

[14] *See generally* N.J.S.A. § 48:3-87.9.

[15] N.J.S.A. § 48:3-87.9(e)(3)-(4).

[16] *See* Reif Direct Testimony, pp. 18-19, for other reasons why PSE&G should be the exclusive provider of regulated energy efficiency programs in its service territory.

- "reduce the use of electricity, or natural gas, as appropriate, within its territory, by its customers, below what would have otherwise been used";
- "establish energy efficiency programs and peak demand reduction programs";
- "file with the board implementation and reporting plans...to determine the energy usage reductions and peak demand reductions achieved by the energy efficiency programs and peak demand reduction programs . . .."; and
- "file an annual petition with the board to demonstrate compliance with the energy efficiency and peak demand reduction programs, compliance with the targets established pursuant to the quantitative performance indicators, and for cost recovery of the programs."[17]

In total, the words "utility" or "utilities" appear 49 times in the CEA's energy efficiency provision, while the OCE receives a single reference in the law (*i.e.*, the reference to utilities receiving "credit" toward the energy reduction targets for savings the OCE achieves). Perhaps most notably, the CEA directs the Board to "establish an independent advisory group to study the evaluation, measurement, and verification process for energy efficiency and peak demand reduction programs, which shall include representatives from the public utilities, the Division of Rate Counsel, and environmental and consumer organizations, to provide recommendations to the board for improvements to the programs."[18] The OCE is noticeably absent from the CEA's list of key stakeholders that are to drive the future of energy efficiency program implementation in New Jersey.

That is not to say that the OCE has no role to play in energy efficiency going forward. The OCE's knowledge of energy efficiency programs and regulatory activities can be best

[17] *See generally* N.J.S.A. § 48:3-87.9.

[18] N.J.S.A. § 48:3-87.9(f)(1).

utilized by placing the OCE at the head of energy efficiency policy across the state, and performing roles related to standard setting and oversight.

Q. Has Rate Counsel previously acknowledged the expanding role that utilities will have in energy efficiency under the CEA?

A. Yes. In its February 2019 comments submitted in connection with the BPU's stakeholder process to implement the CEA's energy efficiency provisions, Rate Counsel asserted the following:

> The Clean Energy Act establishes standards for utility energy efficiency program achievement. Those standards. . .*expand the roles of the utilities in relation to the state-managed CEP* in delivering energy efficiency".[19] (emphasis added)

Q. If PSE&G gets "credit" for savings the OCE achieves, why does it need to significantly expand its current energy efficiency program offerings in the manner contemplated by the CEF-EE Program?

A. As Dr. Hausman notes, it is appropriate to increase spending on energy efficiency given both the CEA and "the availability of unexploited, cost-effective potential."[20] This is why the CEF-EE Program represents a significant expansion of PSE&G's current energy efficiency offerings.

If PSE&G were limited to its current EE2017 subprograms, several of which are targeted to niche market segments and products, as Dr. Hausman recommends, its contributions to energy savings targets would be approximately 0.05%, due to the limited scope of the subprograms. This would leave the vast majority of the savings required under

[19] BPU Docket No. QO19010040, Rate Counsel's February 15, 2019 comments, at p. 9 (accessible at https://www.nj.gov/rpa/docs/In_the_Matter_of_The_Implementation_of_P.L._2018_c.%2017_Energy_Efficiency_and_Peak_Demand_Comments_BPU_Docket_No._QO19010040.pdf).

[20] Dr. Hausman believes this increase in spending should occur after the BPU completes its energy efficiency initiatives under the CEA. Hausman Testimony, pp. 20-21.

the CEA to come from other sources such as OCE, but with PSE&G being the only entity assessed penalties for under-performance. This would require the OCE to achieve a significant amount of energy savings to meet the aggressive targets in the CEA, likely resulting in the State not meeting its consumption goals and a penalty being assessed against PSE&G for failing to comply with those targets.

Q. Could the OCE increase its spending to help PSE&G reach the CEA reduction targets?

A. Yes, theoretically. However, any shortfall will result in the Company and the State not achieving the statutory goal to reduce electric consumption annually by 2% and gas consumption by 0.75%. For example, assume the OCE funding is increased significantly, thereby increasing its electric savings to 1%, or approximately triple its current level of 0.36%.[21] While that would be a significant increase for the OCE from its 2018 performance, PSE&G would not be able to achieve the additional 1% savings needed to satisfy the CEA's target by running the energy efficiency programs it currently implements. Again, this would result in the State not meeting its targeted savings and penalties assessed to PSE&G for missing savings targets it had no real chance to achieve.

Moreover, for the reasons set forth in my direct testimony, PSE&G is uniquely situated to achieve the savings set forth in the CEF-EE filing.[22] The Company's name brand recognition, customer relationships, ability to provide on-bill payment options to customers, and access to customer usage data are all inherent advantages it enjoys over State-

[21] *New Jersey's Clean Energy Program FY19-FY22 Strategic Plan*, p. 10 (accessible at http://njcleanenergy.com/files/file/Library/Compliance%20Filings/NJCEP%20FY19-FY22%20Strategic%20Plan.pdf).

[22] Direct Testimony of Karen Reif, pp. 18-19.

administered programs. Given the Company's unique characteristics, it is in a much better position than the OCE to achieve the reductions required by the Act even if the OCE were to increase spending.

Q. Are there any practical problems with the OCE, as opposed to the utilities, increasing its spending to achieve the required reductions?

A. Yes. According to the Board's accounting, more than $1.5 billion has been diverted from the State's Clean Energy Fund.[23] Those funds were reallocated for purposes other than the OCE implementing energy efficiency programs. Given ongoing budget gaps in the state, it is reasonable to believe that even more money would be diverted from the Clean Energy Fund if the OCE is permitted to increase its spending. In a June 2018 Board Order on the OCE budget, Board Staff comments on this issue, stating: "Board Staff notes that the amount of funding appropriated to [purposes other than OCE programs] and to NJCEP is set by appropriations legislation, which legislation the Board is legally bound to follow".[24]

Multiple stakeholders have commented on the disruptive state funding process that the OCE faces. For example, the Board in its June 2018 Order collectively summarized the positions of Environment NJ, the New Jersey Business and Industry Association, the Sierra Club, and Rate Counsel on the issue of diverting Clean Energy Fund dollars for other uses as follows: "no, or substantially less, SBC funds should be allocated" to initiatives other than energy efficiency.[25]

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[23] *NJ Board of Public Utilities Response to FY 2017-2018 State Budget*, p.14 (accessible at https://www.njleg.state.nj.us/legislativepub/budget_2018/BPU_response.pdf).

[24] *In the Matter of the Comprehensive Energy Efficiency and Renewable Energy Resource Analysis for the Fiscal Years 2019-2022*, BPU Docket No. QO18040392, June 22, 2018 Order, p. 11.

[25] *Id.*

This funding uncertainty and constraint has hampered, and will continue to hamper, the OCE's ability to scale its energy savings. Conversely, CEF-EE Program dollars will either be spent on the Company's energy efficiency programs or returned to customers as part of its annual cost recovery filings. All utility spending will be subject to an annual prudency review as well.

Moreover, the OCE currently operates on one year budgets. If this current practice continues, it will prevent the growth in energy savings that the CEA requires and will also cause anxiety among energy efficiency vendors operating in New Jersey that are looking for steadfast projects to keep their members employed. Conversely, if approved, the CEF-EE Program will run for six years, creating the kind of consistency and certainty that will give the energy efficiency marketplace confidence to invest in New Jersey, thereby growing the green economy in the state and encouraging year-over-year improvements in energy savings that will satisfy the CEA's savings targets.

IV. THE OCE'S PERFORMANCE

Q. Dr. Hausman states in his testimony that the OCE programs are "cost-effective." Hausman Testimony, p. 16. Do you agree?

A. No, I do not agree. Dr. Hausman's testimony provides no evidence, metrics, explanation or supporting documentation validating the OCE's cost-effectiveness. In his discovery responses, Dr. Hausman provided a link to the OCE's annual compliance filings to support this conclusion, but that filing contains only the cost-benefit test scores for the OCE programs as filed (not actual results).[26] The Company is not aware of any documentation

[26] Hausman Discovery Response, PS-RC-EH-5(b).

that shows *actual* cost-benefit results for completed OCE programs, nor has Dr. Hausman provided or reviewed any such results.

Q. Is Dr. Hausman's conclusion that the OCE programs are "cost-effective" consistent with prior Rate Counsel statements on this topic?

A. No, it is not. Rate Counsel has questioned the cost-effectiveness of the OCE programs on several recent occasions. For example, in May 2018 comments on the Clean Energy Program Budget and Strategic Plan, Rate Counsel notes: "The OCE has not adequately addressed. . .its plans to assure that the funds collected are spent. . .cost-effectively."[27] In the same comments, Rate Counsel objected to the cost-effectiveness of individual OCE programs, noting: (1) "the cost-effectiveness of the proposed Multi-Family program is low"; and (2) the benefit-cost ratio of the Home Performance with Energy Star component of the OCE's Residential Existing Homes Program is "only" 0.2 under the Total Resource Cost Test.[28]

Furthermore, in its March 20, 2019 comments about the proposed New Jersey Clean Energy Program ("NJCEP") fiscal year 2019 true-up budget, Rate Counsel expressed concern that the proposed budget changes might "reduce the overall cost-effectiveness of the entire CEP program because the OCE is now projecting substantially less energy savings" while increasing spending.[29]

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[27] *NJ Division of Rate Counsel Comments on NJCEP FY2019 Budget and Strategic Plan*, p. 105 (accessible at https://s3.amazonaws.com/CandI/Binder1Final.pdf).

[28] *Id.* at page 130-32.

[29] *NJ Division of Rate Counsel Comments on NJCEP FY19 True-Up Budget*, p. 2 (accessible at http://njcleanenergy.com/files/file/public_comments/FY19/TrueUpComments.pdf).

Q. How do the OCE programs compare to the programs of peer entities with respect to cost effectiveness?

A. The most recent independent evaluation report performed by Energy & Resource Solutions ("ERS") in 2016 for the OCE programs found that "NJCEP is generally less cost-effective than peer programs" and that "compared to other EE portfolios, New Jersey has a typical-sized budget but achieves fewer energy savings than most, resulting in a higher cost per energy unit saved than many other programs with very similar portfolios."[30] The report also noted that "cost efficiency is not a focus within the organization."[31]

Similarly, a cost benchmarking study of the OCE programs that ERS performed in 2015 concluded: "The first portfolio-wide trend of note in the data is an overall high cost per kWh relative to other programs", and the "program-by-program $/kWh results fall short of the level of excellence desired by the NJCEP administrators, with few exceptions."[32] The 2015 ERS benchmarking study found that NJCEP programs were on average in the 39th percentile of peer programs for their cost efficiency, far away from the top quartile of programs that would be considered the most cost-effective.[33]

Q. Are having State-implemented energy efficiency programs, such as the OCE's programs, consistent with best practices in other jurisdictions?

A. No. New Jersey's program administrative structure is not appropriate from a governance standpoint; it is not aligned with best practices; and it prevents the OCE from

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[30] *See Process Evaluation Study prepared for the New Jersey Clean Energy Program*, January 2016, at pp. 42 and 95 (accessible at http://www.njcleanenergy.com/files/file/Library/NJCEP%20Process%20Evaluation%20Final%20Report%20and%20Memo%2002152017.pdf).

[31] *Id.* at p. 94.

[32] *Review and Benchmarking of the New Jersey Clean Energy Program prepared for the New Jersey Board of Public Utilities*, February 24, 2015, p. 6 (accessible at http://www.njcleanenergy.com/files/file/Library/ERS%20Benchmark%20and%20Program%20Review_v3.pdf).

[33] *Id.*

achieving cost-effective and meaningful energy reductions despite the best efforts of OCE Staff. The 2016 ERS report cites New Jersey as "*the only state where the organization promoting clean energy is part of the regulatory body*, as opposed to an independent authority."[34] Emphasis added. A report by the Regulatory Assistance Project ("RAP") and referenced by Dr. Hausman in discovery[35] confirms that it is not a best practice for the State to implement energy efficiency programs. The RAP report states that "government administration of consumer-funded energy efficiency programs has not gone as well as administration by other means" and "[w]hen the state is the administrator of energy efficiency programs, the role of the regulator can diminish".[36] This structure creates a fundamental conflict of interest, where sound governance and oversight is unlikely, or even impossible. On the one hand, the Board must provide regulatory oversight over the use of utility customers' funds to support regulated energy efficiency programs, yet on the other hand it itself implements energy efficiency programs through the OCE without a separate, independent governance or oversight body for that function.

Most states avoid this conflict of interest by directing utilities, which already have a sound oversight structure in place, to serve as program administrators for energy efficiency programs. This leaves the state's public utility commission to what it does best -- regulate the utilities. The ACEEE reports that in the overwhelming majority of states (*i.e.*, over 80%), utilities are the sole program administrators for energy efficiency programs.[37] Even so, there

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[34] *See* January 2016 ERS report, *supra*, at p. 21.
[35] Hausman Discovery Response PS-RC-EH-1.
[36] *RAP Report, Who Should Deliver Ratepayer-Funded Energy Efficiency*, November 2011, at pp. 23-24 (accessible at https://www4.eere.energy.gov/seeaction/system/files/documents/rap_sedano_whoshoulddeliverratepayerfundedee_2011_11_15.pdf).
[37] *ACEEE state policy database* (accessible at https://aceee.org/sector/state-policy).

are a handful of successful models that fully or partially feature a statewide program administrator. One noteworthy example, referenced by Dr. Hausman in discovery, is Vermont,[38] which achieved 3.3% electric savings in 2017, the highest of any state.[39] Contrary to Dr. Hausman's discovery response, however, the Vermont model is materially different than New Jersey's model, and is actually more akin to a utility-run model (so much so that the Vermont implementer, known as Efficiency Vermont, is called an "Energy Efficiency Utility").[40] More specifically: (1) by law, "the funds collected for Efficiency Vermont may not be used to meet the general obligations of the state";[41] and (2) Efficiency Vermont is administered by the Vermont Energy Investment Corporation, an "independent nonprofit energy services organization" that is subject to oversight by regulators through a "rigorous management process".[42] The full independence of Efficiency Vermont stands in stark contrast to the OCE, which resides within the regulatory body itself. Efficiency Vermont is also subject to performance incentives, like the New Jersey utilities will be under the CEA.[43]

Rate Counsel, in its public comments from February 2019, noted two states as exemplary energy efficiency models for New Jersey to consider: New York and

[38] Hausman Discovery Response PS-RC-EH-1.

[39] ACEEE 2018 State Energy Efficiency Scorecard, at p. 28 (accessible at https://aceee.org/research-report/u1808).

[40] https://www.energy.gov/savings/efficiency-vermont

[41] *Id.*

[42] https://www.efficiencyvermont.com/about/what-we-do

[43] https://puc.vermont.gov/energy-efficiency-utility-program/eeu-verification-and-evaluation

Massachusetts.[44] With respect to New York, Rate Counsel noted that "the lion's share of conventional energy efficiency programs" is assigned to that state's utilities.[45] Regarding Massachusetts, where the utilities serve as program administrators, Rate Counsel noted that it is "possible to have the investor-owned utilities offer their own programs without a single statewide administrator", so long as there is "careful coordination."[46] PSE&G agrees with this framework.

There is wide stakeholder alignment that moving towards a utility program administrator model is the right move for New Jersey. In comments from February 2019, the Natural Resources Defense Council, the Environmental Defense Fund, and the New Jersey League of Conservation Voters assert that "utilities should be responsible for program design, and implementation,"[47] while the Energy Efficiency Alliance of NJ states that "utilities should be empowered to propose and administer programs[.]"[48] Lime Energy concurs that "[u]tilities are best suited to administer energy efficiency programs".[49]

Q. Is the "State as program implementer" model, such as here in New Jersey, efficient?

A. No, it is not. This is simply and inherently due to the OCE being part of the State government. In its 2016 independent evaluation report, ERS describes policies and procedures that the OCE is required to follow as a state entity but that place "constraints on

[44] BPU Docket No. QO19010040, Rate Counsel's February 15, 2019 comments, at pp. 9-11 (accessible at https://www.nj.gov/rpa/docs/In_the_Matter_of_The_Implementation_of_P.L._2018_c.%2017_Energy_Efficiency_and_Peak_Demand_Comments_BPU_Docket_No._QO19010040.pdf).

[45] *Id* at p. 9.

[46] *Id* at p. 11.

[47] BPU Docket No. QO19010040, Comments of NRDC, EDF and the New Jersey League of Conservation Voters February 15, 2019, at p. 50 (accessible at https://s3.amazonaws.com/njcepfiles/Binder1.pdf).

[48] *Id.* at p. 103.

[49] *Id.* at p. 215.

its work".[50] For example, all contract changes and details "must go through the Department of Treasury for approval," a slow, inefficient process that can take "weeks, months, or, in some cases, years."[51] Additionally, "[i]ncentive checks must also be issued by the Treasury, which increases the amount of time it takes to pay customers."[52] RAP shares the view that state government procurement rules are a barrier to efficient program administration. In its report entitled "Who Should Deliver Ratepayer-Funded Energy Efficiency," RAP states that "State government is likely to be attuned to statutory goals, but without care may not be nimble enough to manage changing markets. . . ."[53] Rate Counsel has also commented in the past about the importance of efficiency for program administrators, stating in February 2019 that an administrative structure "should further program goals by supporting efficiency in operation".[54] Due to the constraints and governmental procedures it inherently faces, the OCE does not demonstrate "efficiency in operation."

Q. Besides being inefficient and not cost effective, are there any other issues with the "State as the implementer" approach Dr. Hausman supports?

A. Yes. One of the most important indicators of success in energy efficiency is the amount of energy savings achieved. In Fiscal Year 2018, the OCE achieved 0.36% energy savings as a percentage of retail sales.[55] This value is well below the New Jersey average energy savings of 0.55%, which is itself low, as the State ranks only 29th in the country.[56]

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[50] 2016 ERS Report, *supra*, at p. 44.

[51] *Id.* at p. 45.

[52] *Id.*

[53] *RAP Report, supra,* at p. 24.

[54] Rate Counsel's February 15, 2019 comments, *supra*, at p. 1.

[55] NJCEP FY2019-FY2022 Strategic Plan, *supra*, at p. 10.

[56] ACEEE 2018 State Energy Efficiency Scorecard, *supra.*

These low savings levels are not indicative of successful energy efficiency programs, and they will not help New Jersey satisfy the reduction targets set forth the CEA.

In May 2018 comments on the BPU's Comprehensive Energy Efficiency and Renewable Energy Resource Analysis Straw Proposal and the Draft Strategic Plan for Fiscal Year 2019, Rate Counsel expressed its concern that the OCE's savings targets "are lower than those actually achieved by the OCE in the past, and lower than those achieved in other states."[57] Rate Counsel further criticized the OCE's strategic plan, stating it was "lacking . . . a clear explanation of how the money that the OCE is proposing to collect from ratepayers will translate into achieving the State's Clean Energy goals in an effective and cost-effective manner."[58]

New Jersey's current model also lacks meaningful measurement and verification ("M&V") data for OCE programs. In its May 2018 comments, Rate Counsel expressed concern about the "lack of specificity for planning and budgeting levels for evaluation",[59] and cites the 2016 ERS finding that the NJCEP programs have "very little evaluation or measurement and verification (M&V) data to improve program performance" and that "NJCEP also does not perform any M&V of projects to measure savings."[60] To address this deficiency, the ERS evaluation recommended that the OCE "[g]ather more evaluation/M&V data to improve program performance."[61]

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[57] *NJ Division of Rate Counsel Comments on NJCEP FY2019 Budget and Strategic Plan*, p. 16 (accessible at https://www.nj.gov/rpa/docs/NJRC_Comments_to_NJCEP_FY19-22_CRA_&_Strategic_Plan_May_31_2018.PDF).

[58] *Id.* at p. 3.

[59] *Id.* at p. 8.

[60] 2016 ERS report, *supra*, at pp. 2 and 5.

[61] *Id.* at p. 3.

In sum, more robust energy savings and M&V efforts would be required before the OCE programs could be characterized as "successful," as Dr. Hausman described them.[62]

Q. As compared to the OCE, can the Company more efficiently and effectively deliver energy services as the exclusive regulated provider in its territory?

A. Yes, contrary to Dr. Hausman's testimony. PSE&G has a long track-record of successfully delivering energy efficiency programs, and has won multiple energy efficiency awards.[63] The inherent inefficiencies that have plagued the OCE as described above are not applicable to PSE&G, as an investor-owned utility, and thus the Company can be more nimble and responsive to the marketplace than the State can be. The CEF-EE proposal aims to put in place a more efficient model that: (1) clearly separates oversight from operational performance; (2) eliminates the inefficiencies inherent in government processes; (3) ensures all funds collected from customers are used only for energy efficiency purposes; and (4) creates an environment where energy efficiency can thrive. As noted above, the OCE can be best utilized by it being at the head of energy efficiency policy, and performing roles related to standard setting and oversight.

V. ISSUES OF EQUITY

Q. Please comment on the issues of equity described by Dr. Hausman.

A. Dr. Hausman comments that "CEF-EE program costs would be borne by all ratepayers, whether they are eligible (or choose) to participate in various programs or not,

[62] Hausman Testimony, p. 5.

[63] PSE&G also has a successful history of running large scale infrastructure programs, including Energy Strong I ($1.22 billion). The Company is no stranger to larger scale programs like CEF-EE.

while the benefits disproportionately accrue to the participants in the various programs."[64] However, the CEF-EE proposal is broad, far-reaching, and designed to provide opportunities for every customer class to participate. In fact, Dr. Hausman has not been able to articulate, either in his testimony or in a targeted discovery question, a single customer class that would not be able to participate in at least one CEF-EE subprogram.[65] That is because the CEF-EE subprograms will promote equity, and will provide opportunities for low and moderate income customers to participate through the Residential Income-Eligible and Residential Multi-Family programs. Moreover, as Dr. Hausman acknowledges in discovery, certain program benefits will accrue to non-program participants, such as the substantial environmental and economic benefits described in my direct testimony.[66] Lastly, it should be noted that all customer classes pay the clean energy portion of the SBC, so the issues Dr. Hausman notes with respect to equity apply (at least) equally to the OCE programs.

That said, PSE&G agrees with Dr. Hausman that the Board should "ensure that as many customers as possible have a full opportunity to participate in [the CEF-EE Program] and that costs are reasonably allocated among rate classes commensurate with the benefits available to each."[67]

[64] Hausman Testimony, p. 35.

[65] Hausman Discovery Response, PS-RC-EH-17.

[66] Hausman Discovery Response, PS-RC-EH-18.

[67] Hausman Testimony, p. 36.

VI. PROPOSED IT CAPITAL COSTS

Q. Please summarize Rate Counsel's position with respect to the Company's proposed IT costs.

A. Rate Counsel witness Mugrace believes that, "[w]ithout more detailed explanation", the Company seemingly should not recover any IT costs in connection with the significant expansion of its CEF-EE Programs, because it "has spent and recovered millions of dollars in IT investments in prior energy efficiency programs."[68]

Q. Do you agree with Mr. Mugrace's position?

A. No. The Company has provided sufficient detail regarding its proposed IT expenses, including in discovery.[69] More importantly, technology is a main enabler of the modern platform required to provide exceptional energy efficiency services to customers. As such, spending on technology is not only desired, but necessary to build top-tier efficiency solutions. In today's digital world, the interaction between utility companies and customers is increasingly influenced by companies in other sectors, not simply other utilities. Companies that currently provide an effortless customer experience -- such as Amazon and Netflix -- have become integral to many customers' daily lives and the benchmark for convenience and service. This means that customers expect higher levels of engagement with their utility's energy efficiency programs through capabilities that the CEF-EE proposed IT spend will enable. This includes all twelve technology categories described in the CEF-EE proposal, and attached to this testimony as Exhibit 1.

[68] Mugrace Testimony, p. 10.

[69] *See, e.g.*, S-PSEG-EE-ENE-0019 and S-PSEG-EE-ENE-0020.

Q. But isn't Mr. Mugrace correct that the Company has "spent and recovered millions of dollars in IT investment in prior energy efficiency programs?"

A. Yes, but that is not a rational reason to deny the proposed IT costs in the CEF-EE Program. For starters, given that technology is constantly changing, IT investments in 2008 -- when the Company's Carbon Abatement Program was approved -- are meaningless in 2019 (and beyond). To illustrate this point: the iPhone debuted in 2007. Today, 12 years later, Apple has released many different versions of the iPhone, and most consumers are on their 3rd or 4th version of the smartphone. Amazon's Echo (or "Alexa") had yet to debut at the time the Company filed its Energy Efficiency Extension II filing in August 2014. Today it is ubiquitous. Current technology needed to support energy efficiency programs is no different; anything less is tantamount to a flip phone in an iPhone world.

Mr. Mugrace himself recognizes this in the following section of his testimony related to the amortization of IT capital costs:

> Given the rapidly changing technology environment, changes in capabilities, behavior, new developing apps for mobile devices and computers, as well as, the fact that new technologies are being developed at a much quicker pace, a five-year amortization for software costs is reasonable.[70]

It is difficult to reconcile Mr. Mugrace's position that technologies "are being developed at a much quicker pace" with his conclusion that the Company's IT spend from prior programs dating back 11 years precludes the recovery of any additional IT costs in this filing. More importantly, Mr. Mugrace is correct – technology is rapidly developing. The proposed IT spend to support a filing that represents a significant expansion of PSE&G's existing energy efficiency programs is necessary to keep pace with these developments.

[70] Mugrace Testimony, p. 13.

Lastly, in prior PSE&G energy efficiency cases, the Board was only willing to approve the IT spend necessary to implement *those* energy efficiency programs. While that approach was sensible, it means that the technology used to implement those prior energy efficiency programs is of little assistance with respect to implementing the new CEF-EE subprograms. Case in point: the on-bill repayment solution that supports the Company's current energy efficiency programs includes some manual components, and is not designed to scale to the level needed to handle the volume of repayments proposed under CEF-EE.

Q. Has any third party commented on the need for sufficient investment in IT to support energy efficiency programs?

A. Yes. ERS has commented on this topic heavily with respect to the OCE programs, citing the State's failure to spend in the area of technology as causing inefficiencies, lower participation, and poorer customer experiences. For example, some key recommendations from the 2016 report were improvements to the NJCEP website, which "is not seen to be user-friendly."[71] Another recommendation was to "[d]esign an online portal for customers and contractors to submit applications electronically" to improve processing time and participation.[72] The report also discussed at length the "deficiencies" that currently exist due to an inadequate tracking and reporting system, which ERS believes to be "important for evaluating program cost-effectiveness, program reach, and other metrics."[73] As a remedy, the report makes a recommendation that the OCE "[b]uild a more flexible IMS [information

[71] 2016 ERS report, *supra*, at p. 74.

[72] *Id.* at p. 6.

[73] *Id.* at p. 51-52.

management system] with future capabilities in mind".[74] The IT spend that PSE&G outlined in the CEF-EE proposal is designed to avoid these issues.

VII. CAP ON CEF-EE ADMINISTRATIVE EXPENSES

Q. In the direct testimony of Dante Mugrace, he argued that CEF-EE administrative costs should be capped. Do you agree with this recommendation?

A. No. The administrative costs estimated for the CEF-EE proposal represent the Company's projections of the internal labor and supporting program costs that are needed to administer successful energy efficiency programs and meet the energy savings targets in the CEF-EE proposal and the CEA. Capping the administrative costs could prohibit the utility from pursuing opportunities for cost-effective energy efficiency and from meeting the requirements of the CEA. Furthermore, the Societal Cost Test, which the Company proposes to use to evaluate program cost-effectiveness, is a comprehensive test that takes into account all program benefits and costs, and is the most appropriate mechanism to use to screen for cost efficiency. Arbitrarily capping administrative costs would interfere with proper cost-benefit screening without consideration of the full breadth of program costs and benefits, and is therefore not a reasonable approach.

VIII. DATA COLLECTION AND PRIVACY

Q. Please comment on the data collection and privacy issues raised by Dr. Hausman.

A. PSE&G takes the security and confidentiality of its customers' data very seriously. For that reason, PSE&G agrees with Dr. Hausman's recommendation that the Board require

[74] *Id.* at p. 54.

PSE&G to implement a "clear and readily accessible policy regarding the collection and use of customer data."[75] Indeed, the Company already maintains data privacy policies, which would apply to all CEF-EE programs.

Q. Does this conclude your rebuttal testimony at this time?

A. Yes.

[75] Hausman Testimony, p. 37.

Exhibit 1: IT Cost Detail

IT Cost Amounts

		IT Build Cost	IT Run Cost
1	SAP Billing - On-Bill Finance (Hybris)	$ 28,322,580	$ 7,798,050
2	Customer & EE Data Analytics Platform	$ 11,859,960	$ 7,589,025
3	EE Service Integration Platform	$ 10,749,120	$ 7,050,000
4	CRM Enhancements	$ 5,666,752	$ 2,106,000
5	MyAccount Enhancements	$ 4,474,860	$ 1,755,000
6	CGI CAD Enhancements	$ 2,553,984	
7	Interfaces to/from EE Integration and PSE&G Systems	$ 2,603,430	$ 1,671,525
8	EE Program Enhancements	$ 5,000,000	$ -
9	ETA - VVO/CVR Pilot	$ 879,900	$ 360,000
10	ETA - Other	$ 6,000,000	
11	PSE&G Asset Accounting Upgrade	$ 2,100,000	$ 540,000
12	Streetlight Control Software OMS Interface	$ 2,200,000	$ 0

IT Cost Narratives from Discovery Response S-PSEG-EE-ENE-0020

Subcategory		Narrative	What is included	
			IT Development	IT Run
1	SAP Billing - On-Bill Finance (Hybris)	Supports On-Bill Financing related functions which includes verification, qualification, and enrollment of customers in available energy efficiency on-bill financing incentives. Calculates and posts amounts due to PSE&G bill and tracks payments and balances. Current EE2017 on-bill repayment is for a much smaller number of customers and requires significant manual intervention. It is not scalable to support CEF-EE.	• Software Licensing Cost • Procurement and installation of Hardware • Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/Integrity • Third Party Services for Integration Efforts, Configuration, Development, Testing and Deployment of Solution to Production	• Company Labor / Third Party Labor for on-going support • Yearly Licensing Cost
2	Customer & EE Data Analytics Platform	Consolidates, manages, and performs advanced analytics on all forms of data related to PSE&G's energy efficiency programs. Provides insight and supports decision-making on customer behavior, program performance, and future program design	• Software Licensing Cost • Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/ Integrity • Third Party Services for Integration Efforts, Platform Consulting/Development Services, Testing and Deployment of Solution to Production	• Company Labor / Third Party Labor for on-going support • Yearly Licensing Cost
3	EE Service Integration Platform	Enables timely, accurate, and secure application and data integration across all energy efficiency technology solutions. The integration platform is an essential element to ensure customer security, user-friendly experience, and timely and accurate data flows.	• User Licensing Cost to access and use the SaaS Solution • Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/Integrity • Third Party Services for Configuring the Platform, Integration Efforts, Testing and Deployment of Solution to Production	• Company Labor / Third Party Labor for on-going support • Yearly Licensing Cost

Subcategory		Narrative	What is included	
			IT Development	IT Run
4	CRM Enhancements	Allow customers to access energy efficiency program information through a customer service representative, including past participation, eligibility, recommendations or analysis on energy usage, and information on status of ongoing projects.	• User Licensing Cost to access to use the CRM SaaS Solution • Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/Integrity • Third Party Services for Configuring the Solution, Enhancements to PSEG MyAccount, Multi-System Integration, Testing and Deployment of Solution to Production	• Company Labor / Third Party Labor for on-going support • Yearly Licensing Cost
5	MyAccount Enhancements	Supports integration of marketplace order processing and fulfillment functionality. The solution component provides a user-friendly "point-of-entry" for customers to gain insight on current energy usage and consider and enroll in available energy efficiency offerings. This component will also assist the customer in deciding on "best fit" offerings as additional premise/usage information is provided, while also simplifying the eligibility and qualification process. In addition, the online marketplace enables customers to purchase energy savings products, including on-bill repayment options.	• Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/Integrity • Third Party Services for Configuring and Development, Multi-System Integration Efforts, Testing and Deployment of Solution to Production	• Company Labor / Third Party Labor for on-going support

Subcategory		Narrative	What is included	
			IT Development	IT Run
6	CGI CAD Enhancements	Supports order fulfillment of EE orders. The solution component will automate the creation, sequencing, scheduling, assignment, and completion of all energy efficiency fulfillment activities for PSE&G internal as well as 3rd party installation partners. Provides fulfillment status information to PSE&G call center and customer portal.	• Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/Integrity • Third Party Services for Configuring and Development, Multi-System Integration Effort, Testing and Deployment of enhancements to Production	• No additional run costs
7	Interfaces to/from EE Integration and PSE&G Systems	The integration platform is an essential element to ensure user-friendly experience, customer security, and timely and accurate data flows.	• Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/Integrity • Third Party Services for Configuring and building the Data transfer and Integration efforts for PSEG CRM, Billing, Work Management and External Vendor / Implementation Contractor Systems, Testing and Deployment of enhancements to Production	• Company Labor / Third Party Labor for on-going support
8	EE Program Enhancements	Perform ongoing enhancements over the CEF filing period to support changes and/or additions to energy efficiency program offerings and/or program reporting needs. Ensure systems continue to support the CEF-EE Program as it evolves.	• Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation of the Solution and Data Provisioning/Integrity • Third Party Services for Configuring and developing systems and integrations needed for potential EE Program changes and integrations, Testing and Deployment of enhancements to Production	• No additional run costs

Subcategory		Narrative	What is included	
			IT Development	IT Run
9	ETA - VVO/CVR Pilot	Configuration and custom software development to support operation of the VVO/CVR pilot subprogram.	• Company Labor for Project Management, Requirement Gathering, Design, development effort, Testing (System Integration and User Acceptance), Security Evaluation and Data Provisioning/Integrity	• Third Party On-going maintenance cost
10	ETA - Other	Cover costs for Non-Wires Alternative – Pilot (EE/ DR/ Storage), Efficiency as a Service – Pilot, Smart Home- Pilot (connected devices, diagnostics, EV charging), Emerging Technologies and Approaches (Research and Commercialization).	• Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), development effort, Security Evaluation and Data Provisioning/Integrity	• No additional run costs
11	PSE&G Asset Accounting Upgrade	Add functionality and features to PSE&G asset accounting systems to support complex tracking and reporting requirements of CEF programs and subprograms.	• Company Labor (PowerPlan) for Project Management, Requirement Gathering, Design, Development effort for upgrade/enhancements, Testing (System Integration and User Acceptance), Security Evaluation and Data Provisioning/Integrity	• Third Party On-going maintenance cost
12	Streetlight Control Software OMS 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. The system will also integrate with PSE&G's Work Management system (CGI CAD) to automatically generate maintenance and repair work orders whenever an abnormal status condition is detected.	• Company Labor for Project Management, Requirement Gathering, Design, Testing (System Integration and User Acceptance), Security Evaluation and Data Provisioning/Integrity • Third Party Services for configuring and developing systems and integrations, Testing and Deployment of enhancements to Production	• No additional run costs

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 ("CEF-EE") PROGRAM ON A REGULATED BASIS

BPU Docket Nos. GO18101112 and EO18101113

REBUTTAL TESTIMONY
OF
DANIEL HANSEN
VICE PRESIDENT, CHRISTENSEN ASSOCIATES ENERGY CONSULTING, LLC

April 15, 2019

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY
REBUTTAL TESTIMONY
OF
DANIEL HANSEN

VICE PRESIDENT, CHRISTENSEN ASSOCIATES ENERGY CONSULTING, LLC

I. INTRODUCTION AND PURPOSE OF THE TESTIMONY

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

A. My name is Daniel Hansen and I am a Vice President at Christensen Associates Energy Consulting, LLC. My principal place of business is 800 University Bay Drive, Suite 400, Madison, Wisconsin 53705.

Q. Have you previously filed testimony in this proceeding?

A. Yes, I filed direct testimony on behalf of Public Service Electric and Gas Company ("PSE&G" or "the Company") describing and supporting its Green Enabling Mechanism ("GEM") proposal as part of its Clean Energy Future – Energy Efficiency ("CEF-EE") filing. My credentials are set forth in Schedule DGH-1 attached to my direct testimony.

Q. Did any parties provide direct testimony in response to the GEM proposal?

A. Yes, there were two: David E. Dismukes on behalf of the Division of Rate Counsel ("Rate Counsel"); and Amanda Levin on behalf of Environment New Jersey ("ENJ"), the Environmental Defense Fund ("EDF"), Sierra Club ("SC"), New Jersey League of Conservation Voters ("NJLCV"), and the Natural Resources Defense Council ("NRDC"), represented collectively by the Eastern Environmental Law Center ("EELC").

Q. What is the purpose of your rebuttal testimony in this proceeding?

A. The purpose of my testimony is to respond to arguments made by Dr. Dismukes. I also comment on the testimony of Ms. Levin.

Q. Please summarize Dr. Dismukes's testimony regarding the Company's GEM proposal.

A. Dr. Dismukes recommends the rejection of the Company's GEM proposal, citing three general arguments (Dismukes Direct, p. 28, lines 16-22):

- The GEM is inconsistent with the Clean Energy Act ("CEA" or the "Act");
- The GEM is inconsistent with past Board revenue adjustment policies; and
- The Company has not shown that its current or proposed energy efficiency efforts have resulted in a negative financial impact.

I will address each of these arguments in my testimony.

Q. How is your rebuttal testimony organized?

A. Following this introductory section, Section II describes the need for the GEM; Section III responds to Dr. Dismukes's argument that the GEM is not consistent with the CEA; Section IV discusses the precedent for decoupling in New Jersey; Section V discusses the prevalence of revenue decoupling in the United States; Section VI discusses Ms. Levin's recommendation that there be a third-party audit of the GEM; and Section VII concludes with a summary of my recommendations.

II. THE NEED FOR THE GEM

Q. Please summarize Dr. Dismukes's arguments that there is no need for the GEM.

A. Dr. Dismukes presents two such arguments. First, he claims that the GEM is not necessary to remove the Company's disincentive to promote conservation and energy

efficiency because "[t]he Clean Energy Act effectively eliminates this disincentive since it mandates utilities to adopt energy efficiency programs and meet target usage reduction levels." Dismukes Direct, p. 29, lines 12-14. Second, he claims that the GEM is not needed because "[t]he Company has not shown that its current or proposed energy efficiency efforts have resulted in a negative financial impact." *Id.*, p. 37, lines 25-26.

Q. Do you agree that the mandates within the Act effectively remove the Company's disincentive to promote conservation and energy efficiency?

A. No, I do not. While the requirements of the Act are enforceable through incentives and penalties, those do not eliminate the Company's disincentive to promote conservation. In the absence of the GEM, the Company must weigh these incentives / penalties against the expected revenue losses from reduced sales. An example is one directly cited in the CEA, namely an incentive or penalty that increases or reduces the return on equity ("ROE") for PSE&G's CEF-EE programs if it does or does not meet the CEA energy savings goals (N.J.S.A. 48:3-87.9(e)(4)). If PSE&G determines that meeting the CEA savings goals and receiving an incentive ROE for its CEF-EE program will result in a lower ROE for the entire Company, PSE&G has a disincentive to achieve the energy savings goal. In contrast, the GEM eliminates that disincentive as PSE&G would recover the impact of the lost sales revenue separately from the incentives / penalties envisioned in the CEA. Indeed, the GEM is an effective way to eliminate the disincentive to promote energy efficiency and allows the incentives envisioned in the CEA to work effectively.

Q. What types of actions would the Company have an incentive to take in the absence of the GEM?

A. There are a number of ways a utility could respond to a requirement/penalty framework when the throughput disincentive remains. First, the utility could seek out programs it believes underperform relative to their measurement and valuation, which would be a way of meeting requirements on paper without incurring the full loss of sales. Second, the utility could look for ways to grow load to offset the losses from successfully implemented conservation programs. Third, the utility could resist programs that may reduce sales but do not have readily verifiable energy savings, such as providing general advice on energy savings or supporting improvements in building codes or appliance standards. The GEM would eliminate the utility's incentive to do any of these things, while the absence of the GEM potentially puts PSE&G in an adversarial position regarding achievement of the Act's goals. Note that I am not aware of any such plans – I am simply describing the incentives that result from emphasizing a requirement/penalty approach versus directly addressing the Company's disincentive to reduce customer sales.

Q. Do you agree that the Company's efficiency activities have not resulted in a negative financial impact?

A. While it is true that the Company's past energy efficiency activities have not had a large effect on the Company's earnings, the scale of these efforts will improve significantly in response to the Act. Therefore, the historical experience is not indicative of what the Company expects to occur in the future. The Company provided the distribution revenue impact of lost sales from existing energy efficiency programs in the response to RCR-POL-0011, and from CEF-EE in RCR-POL-0012. As shown in the table below, by 2024, the

revenue impact compared to current levels is seven times greater when CEF-EE is added. The rebuttal testimony of Company witness Steven Swetz discusses this topic further.

$ in millions	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
PSE&G Current EE Program Distribution Lost Revenue Impact (RCR-POL-11)																
Electric	0	2	3	4	5	5	6	6	6	7	7	7	7	7	7	7
Gas	0	0	1	1	1	2	2	2	2	3	3	3	3	3	3	3
Total	0	2	4	5	6	7	7	8	8	10	10	10	10	10	10	10
PSE&G CEF-EE Program Distribution Lost Revenue Impact (RCR-POL-12)																
Electric	0	0	0	0	0	0	0	0	0	0	1	6	15	25	35	46
Gas	0	0	0	0	0	0	0	0	0	0	1	3	5	7	10	13
Total	0	0	0	0	0	0	0	0	0	0	2	9	20	32	44	59
Times Increase due to CEF-EE	1X	1X	1X	1X	1X	1X	1X	1X	1X	1X	1X	2X	3X	4X	5X	7X

Q. In the absence of the GEM, what options would the Company have to mitigate the significant negative financial effects of the proposed CEF-EE program?

A. The absence of the GEM would require PSE&G to recover its costs in a different manner. Some potential options include agreeing to a lost revenue adjustment mechanism ("LRAM") that would recover the lost revenue from the CEF-EE program only; PSE&G filing base rate cases more regularly, possibly on an annual basis; and the Company seeking to significantly increase its fixed service charges.

III. THE GEM IS CONSISTENT WITH THE CLEAN ENERGY ACT

Q. Please summarize Dr. Dismukes's argument that the GEM is inconsistent with the Act.

A. Dr. Dismukes argues that "the legislation's ratemaking treatment of lost revenues... is much more specific than the Company's GEM proposal" because the CEA "specifically provides that utilities can request recovery of costs including revenues associated with the 'sales losses resulting from implementation of energy efficiency and peak demand reductions' that are mandated under the legislation." Dismukes Direct, p. 30, lines 7-11.

Q. Do you agree that the GEM is inconsistent with the Act?

A. No, the GEM is a means of obtaining recovery for "sales losses resulting from implementation of energy efficiency and peak demand reductions", as the Act contemplates. Dr. Dismukes appears to equate the Act's language with a LRAM, in which the sales reductions from conservation programs are multiplied by their associated customer bill rate to obtain the amount of lost revenue, which is recovered in the following year via a rate surcharge. While it is not uncommon for stakeholders to prefer this "narrow" approach to removing the utility's disincentive to promote conservation over revenue decoupling, it has clear disadvantages.

Q. Why do you prefer the GEM to an LRAM-based approach?

A. In my direct testimony, I listed six reasons that LRAMs are inferior to revenue decoupling mechanisms such as the GEM (Hansen Direct, p. 26, line 12 through p. 27 line 10), and those six reasons are incorporated by reference herein. The summary in my direct testimony presents the cumulative effect of those differences, which is that the GEM "establishes PSE&G as a partner rather than an adversary to achieve the goals of the Clean Energy Act." Hansen Direct, p. 27, lines 16-17.

Q. But still, Rate Counsel insists that the GEM is somehow inconsistent with the terms of the Act (Dismukes Direct, p. 30, lines 15-17.); can you respond?

A. I am not an attorney (neither is Dr. Dismukes) and I cannot provide an expert legal opinion. However, I have been advised by counsel that there is nothing in the Act that precludes the Board's approval of the GEM, and in my view the incentives provided under the mechanism proposed by PSE&G are entirely consistent with the policies articulated in

the CEA. I am further advised by counsel that the GEM is also authorized under pre-existing New Jersey statutory law (N.J.S.A. 48:3-98.1), and that there is nothing in the CEA stating, or even suggesting, that that prior provision has been repealed or modified in any way by the CEA.

IV. THE GEM IS CONSISTENT WITH PAST BOARD POLICIES

Q. Please summarize Dr. Dismukes's argument that the GEM is inconsistent with past Board revenue adjustment policies.

A. Dr. Dismukes states that while the Conservation Incentive Program ("CIP") that is in place for New Jersey Natural Gas ("NJNG") and South Jersey Gas ("SJG") is commonly referred to as a revenue decoupling mechanism, he believes "this mechanism is **not** a true form of revenue decoupling and has characteristics that are much more performance-based and symmetric than traditional revenue decoupling mechanisms as they have been adopted throughout the U.S." Dismukes Direct, p. 33, lines 3-5 (emphasis in original).

Q. What does Dr. Dismukes argue are the primary differences between the Company's proposed GEM and the CIP?

A. Dr. Dismukes describes three categories of differences between the GEM and the CIP that, he argues, make the two mechanisms qualitatively different. They are:

- The CIP has the BGSS savings test, which Dr. Dismukes believes implies that the CIP "only allows for the recovery of revenue losses when a verifiable loss of capacity requirements has occurred, as reflected in the reduction of a utility's need for pipeline transportation and storage capacity." Dismukes Direct, p. 34, lines 16-18.
- "The use of shareholder, as opposed to ratepayer money, to finance and administer the program." Dismukes Direct, p. 35, lines 16-17.

- A strict earnings cap for each utility [NJNG and SJG] that restricts revenue recoveries in the event a utility is already earning its allowed ROE." Dismukes Direct, p. 35, lines 18-19.

Q. Does Dr. Dismukes accurately describe the CIP?

A. No, he does not. Specifically, Dr. Dismukes says that the CIP "only allows for the recovery of revenue losses when a verifiable loss of capacity requirements has occurred." Dismukes Direct, p. 34, lines 16-17. However, he ignores two key features of the CIP:

- The BGSS savings test does not apply to the recovery of weather-related deferrals; and
- The BGSS savings test only applies to 75 percent of non-weather-related deferrals.

As I described in my direct testimony, these two aspects of the CIP mean that the vast majority of CIP deferrals are not subject to the BGSS savings test. Specifically, over the previous three years (2016 to 2018), the BGSS savings test only applied to 18.7 percent of NJNG's total deferral, and 15.7 percent of SJG's total deferral. Hansen Direct, p. 24, line 12 through p. 25 line 13. When Dr. Dismukes claims that the BGSS savings test makes the CIP fundamentally different from the GEM, he ignores the fact that it does not apply to all of (or even a large fraction of) the CIP deferral, and that over the last three years (for which CIP annual reports were readily available), the vast majority of the deferral is due to weather.

Q. Does Dr. Dismukes overstate the importance of the BGSS savings test in differentiating the CIP and GEM?

A. Yes. The limited impact of the BGSS savings test on the total deferral described above is just one reason the test is not a fundamental difference between CIP and GEM.

Additionally, the CIP, as a full revenue decoupling mechanism like the GEM, does not differentiate as to the cause of the non-weather-related deferral and simply allows the companies to recover an amount of revenue per customer that is approved by the Board in a rate case. Finally, the rebuttal testimony of Mr. Swetz explains that the BGSS savings test cannot be applied to PSE&G. Therefore, it is highly misleading to argue that the BGSS savings test feature of CIP makes it more customer friendly than the proposed GEM.

Q. Is Dr. Dismukes correct about the other two differences between the GEM and the CIP that he lists?

A. Dr. Dismukes is correct that the CIP includes a shareholder contribution of program funds that is not included in the Company's GEM proposal. However, Dr. Dismukes is not correct in claiming that only the CIP includes a "strict earnings cap". As I noted in my direct testimony, the GEM earnings test "will match the test set forth in the Board's recently adopted Infrastructure Investment Program mechanism." Hansen Direct, p. 22, lines 5-6. I believe Dr. Dismukes differentiates the two based on my direct testimony that stated any deferrals above the earnings test would be recovered in future periods. The Company has clarified its proposal for the earnings test as provided in the response to discovery question RCR-POL-7, which states "[i]f the Company's GEM deferral exceeds the maximum amount it's allowed per the test, the Company will be limited to the maximum allowable increase per the test." It does not propose to defer amounts above the amount allowed by the earnings test to future periods. This means that both the CIP and GEM have a "strict earnings cap."

Q. Does Dr. Dismukes omit any differences between the Company's proposed GEM and the CIP?

A. Yes, Dr. Dismukes omits two differences between the mechanisms that make the recovery of GEM deferrals **more** restrictive than the recovery of CIP deferrals. As I noted in my direct testimony (Hansen Direct, p. 23, lines 12-16):

- The CIP includes an Incremental Large Customer Count Adjustment, which allows total revenue to increase by more when especially large commercial customers are added to the system. The GEM does not contain this provision.
- The CIP applies its rate increase cap to only the non-weather component of the deferral, while the GEM applies it to that year's entire deferral.

Q. Does Dr. Dismukes discuss the ways that the Company's proposed GEM and the CIP are similar?

A. No, Dr. Dismukes does not discuss the many similarities between the GEM and the CIP. I explained how the two mechanisms are fundamentally similar in my direct testimony, citing the following overlapping characteristics (Hansen Direct, p. 22, line 20 through p. 23, line 8):

- Both are general decoupling mechanisms, as opposed to a LRAM that includes only surcharges resulting from energy and demand savings (and the resulting reduction in utility fixed cost recovery) in energy efficiency and conservation programs;
- Both use a per-customer deferral calculation in which the utility's total allowed revenue changes with the number of customers served;
- The effect of weather is included in the deferrals of both mechanisms;
- The CIP/GEM deferral is calculated for each month and adjusts the rate annually;

- There are separate rate adjustments by customer class; and
- An earnings test is applied to the entire deferral.

Q. How do you define a revenue decoupling mechanism in general terms?

A. Fundamentally, a revenue decoupling mechanism compares a utility's allowed revenue to its actual revenue during a billing month, places the difference in a deferral account, and recovers/refunds the balance periodically through a rate adjustment. Any two decoupling mechanisms may differ in how they define allowed revenue, which customer/rate classes are decoupled, and the restrictions (if any) on the magnitude of a decoupling-related rate increase. However, as long as the two mechanisms both entail refunds/surcharges based on the difference between allowed and actual revenue, they are both fundamentally revenue decoupling mechanisms.

Q. Do you agree with Dr. Dismukes that the GEM and the CIP are fundamentally different, and that the CIP is not a true revenue decoupling mechanism?

A. No, both the GEM and the CIP are clearly revenue decoupling mechanisms. The differences he cites (*i.e.*, shareholder contribution of program funds and the BGSS savings test that has applied to less than 20 percent of the total deferral from 2016-18) are minor compared to the similarities.

Q. Do you conclude that a precedent exists for the Board approving revenue decoupling?

A. Yes, the Board, which initially approved the CIP in 2006 and subsequently approved its continuation in 2014, has approved a revenue decoupling mechanism. Dr. Dismukes's

own Schedule DED-5 agrees with this conclusion, as it classifies New Jersey as a decoupled state, implying that the CIP is a revenue decoupling mechanism.

V. PREVALENCE OF REVENUE DECOUPLING

Q. What does Dr. Dismukes claim regarding the pervasiveness of revenue decoupling in the United States?

A. In Schedule DED-5, Dr. Dismukes presents a map of states that have approved revenue decoupling. In commenting on this schedule, he claims "[t]his map, however, can tend to distort the pervasiveness of the use of this regulatory mechanism." He goes on to say that 41 out of 152 investor-owned electric utilities (27 percent) and 60 out of 256 investor-owned natural gas utilities (23 percent) have revenue decoupling or a lost revenue mechanism. Dismukes Direct, p. 27, lines 9-14.

Q. What is your view on the pervasiveness of revenue decoupling in the United States?

A. Dr. Dismukes's statistics on the prevalence of electric revenue decoupling lack the following, important context: (1) a greater percentage of customers are served by utilities with decoupling than the 27% (electric) and 23% (gas) figures cited by Dr. Dismukes; (2) most states with an energy efficiency resource standard have decoupling; and (3) the states with the highest energy efficiency savings almost always have approved revenue decoupling.

First, Dr. Dismukes supplied data in response to discovery question PS-RC-DED-2 that includes the number of customers served by every utility in the country. Based on this data, 40 percent of electric customers within investor-owned utility territories are served by

utilities that have decoupling, and 47 percent of gas customers are served by utilities that have decoupling.

Second, based on Dr. Dismukes's response to PS-RC-DED-4, the vast majority of states with an energy efficiency resource standard have decoupling for at least one utility. Specifically, out of the 26 states with an energy efficiency resource standard, 21 have decoupling for at least one utility. This means that 81 percent of states with an energy efficiency resource standard have general decoupling for at least one utility, indicating this is the standard throughout the country.

Third, states with the highest levels of savings from energy efficiency tend to have general decoupling mechanisms. Schedule DGH-1 (electric) and DGH-2 (gas) rank states in descending order of their 2017 energy efficiency savings (expressed as a percentage of sales), along with an indication of whether the state has approved revenue decoupling (electric also indicates if an LRAM is approved, or neither mechanism). The conservation percentages are taken from the ACEEE "2018 Energy Efficiency Scorecard".[1] The decoupling statuses for electric (inclusive of an approved LRAM) are taken from The Edison Foundation Institute for Electric Innovation's "Energy Efficiency Trends in the Electric Power Industry (2008-2017)."[2] The decoupling statuses for gas are taken from the NRDC's "Electric and Gas Decoupling" fact sheet.[3] The important point to note is that, for electric, the top nine states (and 17 of the top 20 states) by energy efficiency savings have approved revenue decoupling.

[1] Available at: https://aceee.org/research-report/u1808.

[2] Available at: http://www.edisonfoundation.net/iei/publications/Documents/IEI_Energy%20Efficiency%20Report_Mar2019.pdf.

[3] Available at: https://www.nrdc.org/resources/gas-and-electric-decoupling.

The table further shows a low prevalence of revenue decoupling around New Jersey's current savings level of 0.55 percent (though there are a number of states that have approved an LRAM). However, **all of the states with a comparable savings percentage to the 2% electric goal in the CEA have approved electric revenue decoupling**. For gas, eight of the top 10 states by energy efficiency savings have approved revenue decoupling.

This summary is more relevant than a summary of the overall prevalence of revenue decoupling, as it takes into account the significant level of energy efficiency activity expected in New Jersey in the coming years. It also suggests that a general decoupling mechanism like the GEM is a key component of achieving significant levels of energy savings from energy efficiency initiatives.

Q. What does Dr. Dismukes's data show regarding utility experience with revenue decoupling in the United States?

A. While Dr. Dismukes attempts to minimize the use of decoupling in the United States using language such as "only approximately 41 electric utilities..." and "only approximately 60 natural gas utilities..." (Dismukes Direct, p. 27, lines 11 and 13), data underlying his Schedule DED-6 (provided in response to discovery question PS-RC-DED-5) reflects extensive utility experience with decoupling. Natural gas utilities have over 500 combined years of experience with revenue decoupling, while electric utilities have nearly 300 combined years. Revenue decoupling has a long track record in the United States.

VI. THIRD-PARTY AUDIT OF THE GEM

Q. Does EELC witness Amanda Levin recommend any modifications to the Company's proposed GEM?

A. While Ms. Levin supports the approval of the GEM as proposed by the Company (Levin Direct, p. 6, line 4), she recommends that the Board "[r]equire PSE&G, in consultation with Board Staff and interested stakeholders, to undertake and fund a third-party audit after GEM has been in place for 3 or 4 years." Levin Direct, p. 12, lines 1-2. Ms. Levin believes the audit "would help inform the Board, stakeholders, and the utility on the impacts of and possible improvements to the GEM in the future." Levin Direct, p. 12, lines 5-6.

Q. Do you agree with Ms. Levin's recommendation?

A. Yes. While I am confident that the conclusions of a GEM evaluation would recommend its continuation, the process could uncover potential improvements in the mechanism and/or increase stakeholder comfort with the mechanism. The cost incurred by PSE&G to conduct this audit should be recovered along with other costs of the program.

VII. SUMMARY OF RECOMMENDATIONS

Q. Please summarize your recommendations.

A. I recommend that the New Jersey Board of Public Utilities approve the GEM as described in my direct testimony, adding the third-party audit recommended by EELC witness Amanda Levin (Levin Direct, p. 12, lines 1-2) inclusive of cost recovery. The GEM is consistent with, and is not precluded by, the CEA, as it provides a means of recovering the revenue impact of sales losses resulting from implementation of the energy efficiency programs. As I explained in my direct testimony (pp. 26-27), the GEM is not the only means

of accomplishing this goal, but it is the best method to ensure a partnership between PSE&G, its customers, and other stakeholders in meeting the goals of the CEA. Furthermore, the Board has a precedent for approving a mechanism such as the GEM, as it approved the CIP in 2006 and 2014. Finally, arguments that the Company has not previously experienced significant harm from the promotion of energy efficiency ignore the change in the scope of the effort proposed in this proceeding and required by the Act. I have shown that all states with a comparable level of energy efficiency to that required by the CEA have approved revenue decoupling.

Q. Does this conclude your rebuttal testimony at this time?

A. Yes, it does.

SCHEDULE INDEX

Schedule DGH-1

Electric Sales Savings from Energy Efficiency by State 2017

State	2017 Savings Ranking*	2017 Electric Savings*	Lost Revenue Mechanism**
Vermont	1	3.33%	General
Rhode Island	2	3.08%	General
Massachusetts	3	2.57%	General
NJ Clean Energy Act Goal		**2.00%**	
California	4	1.97%	General
Connecticut	5	1.62%	General
Michigan	6	1.48%	General
Hawaii	7	1.45%	General
Washington	8	1.35%	General
Illinois	9	1.34%	General
Arizona	10	1.33%	LRAM
Minnesota	11	1.31%	General
Oregon	12	1.21%	General
New York	13	1.17%	General
Maryland	14	0.97%	General
Idaho	15	0.96%	General
Ohio	16	0.96%	General
Colorado	17	0.88%	General
Iowa	18	0.87%	None
Maine	19	0.85%	General
Utah	20	0.84%	None
Missouri	21	0.78%	LRAM
District of Columbia	22	0.75%	General
New Hampshire	23	0.71%	LRAM
Arkansas	24	0.69%	LRAM
North Carolina	25	0.69%	LRAM
Wisconsin	26	0.66%	None
Nevada	27	0.60%	LRAM
Pennsylvania	28	0.55%	None
New Jersey	**29**	**0.55%**	**None**
New Mexico	30	0.52%	None
Montana	31	0.51%	None

Kentucky	32	0.42%	LRAM
Oklahoma	33	0.41%	LRAM
Indiana	34	0.41%	LRAM
South Carolina	35	0.38%	LRAM
Wyoming	36	0.28%	LRAM
Nebraska	37	0.25%	None
South Dakota	38	0.25%	LRAM
Georgia	39	0.24%	None
West Virginia	40	0.22%	None
Mississippi	41	0.20%	LRAM
Texas	42	0.20%	None
Tennessee	43	0.19%	None
Delaware	44	0.11%	None
Virginia	45	0.09%	None
Florida	46	0.09%	None
Alabama	47	0.06%	LRAM
Louisiana	48	0.05%	LRAM
North Dakota	49	0.01%	None
Alaska	50	0.01%	None
Kansas	51	0.00%	LRAM
US total		0.72%	
Median		0.66%	

* From ACEEE "The 2018 State Energy Efficiency Scorecard" https://aceee.org/research-report/u1808

** From IEI "Energy Efficiency Trends in the Electric Power Industry (2008-2017)" http://www.edisonfoundation.net/iei/publications/Documents/IEI_Energy%20Efficiency%20Report_Mar2019.pdf

Schedule DGH-2

Gas Sales Savings from Energy Efficiency by State 2017

State	Savings Ranking*	% of commercial and residential retail sales*	General Decoupling**
Minnesota	1	1.35%	Yes
Massachusetts	2	1.08%	Yes
Rhode Island	3	1.02%	Yes
Michigan	4	1.01%	Yes
Utah	5	0.78%	Yes
California	6	0.78%	Yes
NJ Clean Energy Act Goal		**0.75%**	
Oregon	7	0.73%	Yes
District of Columbia	8	0.73%	No
Vermont	9	0.68%	Yes
Hawaii	10	0.00%	No
Iowa	11	0.64%	No
Arkansas	12	0.56%	Yes
Maine	13	0.53%	Yes
Connecticut	14	0.52%	Yes
Wisconsin	15	0.49%	Yes
Arizona	16	0.44%	Yes
Oklahoma	17	0.43%	No
New York	18	0.42%	Yes
Indiana	19	0.42%	Yes
Kentucky	20	0.39%	No
New Hampshire	21	0.35%	Yes
Colorado	22	0.33%	No
Illinois	23	0.32%	No
Washington	24	0.29%	Yes
New Jersey	**25**	**0.21%**	**Yes**
Mississippi	26	0.15%	No
Montana	27	0.15%	No
Ohio	28	0.15%	No
Delaware	29	0.13%	No
South Dakota	30	0.12%	No

New Mexico	31	0.11%	No
Maryland	32	0.08%	Yes
North Carolina	33	0.07%	Yes
Idaho	34	0.05%	Yes
North Dakota	35	0.03%	No
Pennsylvania	36	0.02%	No
Nevada	37	0.00%	Yes
Alabama	38	0.00%	No
Alaska	39	0.00%	No
Florida	40	0.00%	No
Georgia	41	0.00%	Yes
Kansas	42	0.00%	No
Louisiana	43	0.00%	No
Missouri	44	0.00%	No
Nebraska	45	0.00%	No
South Carolina	46	0.00%	No
Tennessee	47	0.00%	Yes
Texas	48	0.00%	No
Virginia	49	0.00%	Yes
West Virginia	50	0.00%	No
Wyoming	51	0.00%	Yes
US total		0.39%	
Median		0.15%	

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 ("CEF-EE") PROGRAM ON A REGULATED BASIS
BPU Docket Nos. GO18101112 and EO18101113

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
REBUTTAL TESTIMONY
OF
STEPHEN SWETZ
SENIOR DIRECTOR – CORPORATE RATES AND REVENUE REQUIREMENTS

APRIL 15, 2019

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY
REBUTTAL TESTIMONY
OF
STEPHEN SWETZ
SENIOR DIRECTOR – CORPORATE RATES AND REVENUE REQUIREMENTS

I. INTRODUCTION

Q. Please state your name and title.

A. My name is Stephen Swetz. I am the Senior Director – Corporate Rates and Revenue Requirements, PSEG Services Corporation.

Q. Have you submitted testimony previously in this PSE&G Energy Efficiency proceeding?

A. Yes. I submitted direct testimony in support of the proposed cost recovery methodology, including projected rate and bill impacts, related to the Clean Energy Future-Energy Efficiency Program ("CEF-EE" or "Program") of Public Service Electric and Gas Company ("PSE&G" or "the Company"). My credentials are set forth in Schedule SS-CEF-1 of my direct testimony.

Q. What is the purpose of your rebuttal testimony?

A. I will address two of the four recommendations proposed by New Jersey Division of Rate Counsel ("Rate Counsel") witness Dante Mugrace. First, I do not agree with Mr. Mugrace's adjustment to shorten the amortization period for Residential and Commercial and Industrial program investments. Second, I accept his recommendation to update the rate of return on investment for the CEF-EE Program upon Board approval of any change in the Company's return on equity ("ROE") in future rate case proceedings.

I will also address some of Rate Counsel witness Dr. David Dimsukes' arguments against the Green Enabling Mechanism ("GEM"). Specifically, I will explain why the Basic Gas Supply Service ("BGSS") savings test as utilized in the New Jersey Natural Gas ("NJNG") and South

Jersey Gas ("SJG") Conservation Incentive Program ("CIP") cannot be applied to PSE&G. I will also address Dr. Dismukes contention that the Company has not showed the need for the GEM.

Q. Can you summarize Mr. Mugrace's recommendations if any portion of the CEF-EE program is approved?

A. Mr. Mugrace has four recommendations with regard to cost recovery for the CEF-EE Program:

1. The Company's proposed budget for capitalized IT costs is not properly supported and should not be approved.
2. The amortization period for certain investments should be shortened to a period of 7 years rather than the proposed 15 years.
3. The administrative costs should be capped at 10% of the total investment cost and should be reviewed in future annual filings.[1]
4. The rate of return on investment should be updated upon Board approval of rates in future base rate proceedings.

Company witness Karen Reif will address Mr. Mugrace's recommendations with regard to the capitalized IT costs and the administrative cost cap.

II. AMORTIZATION PERIOD

Q. Why does Mr. Mugrace recommend a 7-year amortization period?

A. On page 11 of his direct testimony, Mr. Mugrace argues that the proposed 15-year amortization period will result in more debt, equity returns, and taxes than his proposal for a 7-year amortization. He goes on to state that the cost to ratepayers of a "longer" amortization period will intensify if the Company continues its energy efficiency efforts in the future.

[1] In response to PS-RC-DM-6, Mr. Mugrace clarified that the 10% cap referenced on page 8 of his direct testimony was included in error. Mr. Mugrace recommends that administrative costs should be capped and reviewed in future annual filings, but he does not specify the cap amount.

Q. Do you agree with Mr. Mugrace's recommendation?

A. No, I do not. The Company's proposed 15-year amortization period is consistent with accounting and cost causation principles supporting cost recovery over the economic useful life of the underlying asset. Even Mr. Mugrace acknowledges in his response to PS-RC-DM-2(c) that, "as a general principle . . . basic rate-making theory provides that costs and benefits should be matched."

Q. What is the basis for the Company's proposed 15-year amortization period?

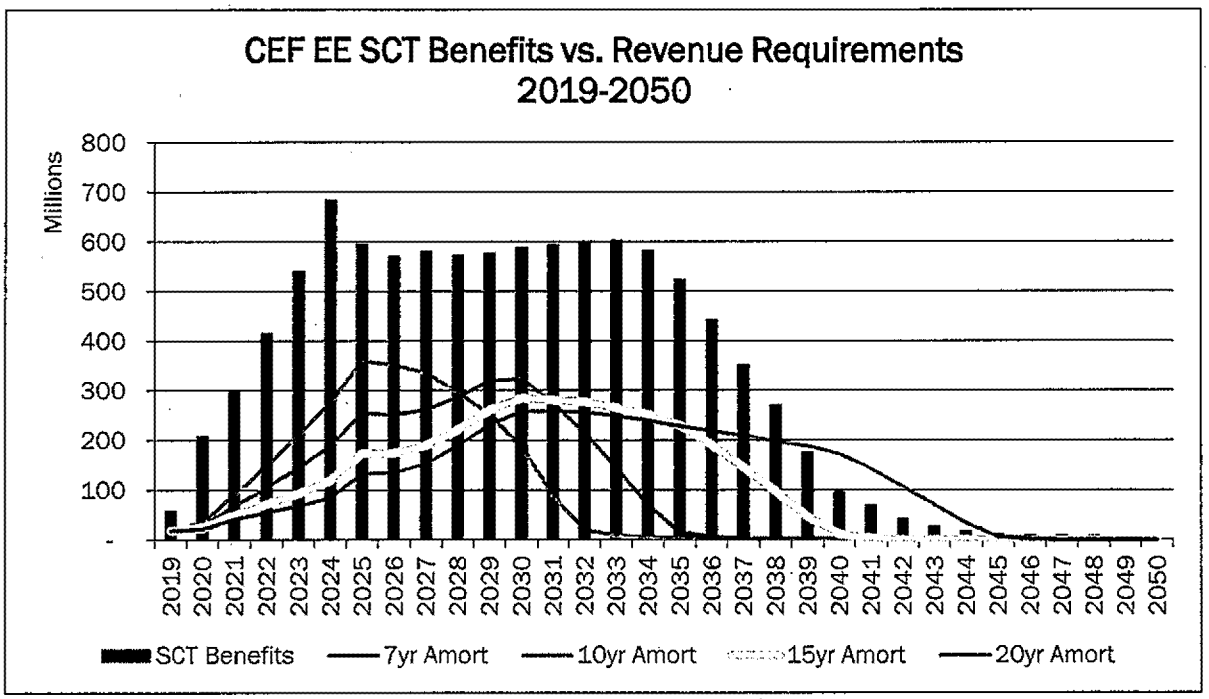
A. As described in the response to S-PSEG-EE-ENE-0003, the amortization period was calculated based on the weighted average useful life of all measures proposed to be installed under the CEF-EE program. The purpose of using this methodology is to align the costs of the Program with its benefits to avoid intergenerational inequity. While the Residential and Commercial and Industrial program investments are regulatory assets and not depreciable, the same logic applies. In the detailed depreciation study that was recently conducted in the Company's 2018 base rate case, the Company's assets were reviewed to set depreciation rates based on the assets' remaining useful lives. The Company utilized a similar approach in the CEF-EE filing, by evaluating the useful life of each measure to be installed and calculating a weighted average depreciation rate to be applied to each measure.

Q. Has anyone disputed the measure lives proposed for the program?

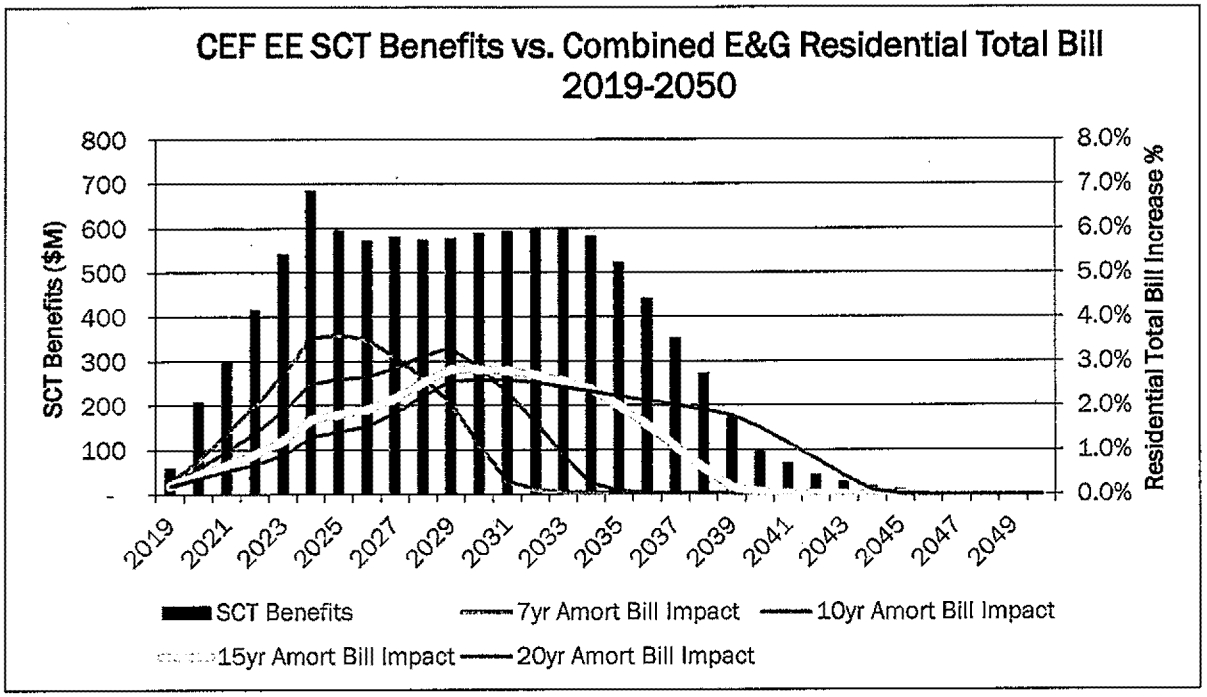
A. No. The Company provided detail on the measure lives in workpaper WP-KR-CEF-EE-1 and provided further detail on the measure screening in responses to RCR-EE-0024 and RCR-POL-0028. However, no witness raised objections or proposed any adjustments to the Company's proposed measure lives. In fact, Mr. Mugrace in his response to PS-RC-DM-2 accepted the Company's proposed 15-year measure life.

Q. Has the Company demonstrated that the 15-year proposed amortization period best matches the cost to customers with the benefits over the measure lives?

A. Yes. In response to S-PSEG-EE-ENE-0020, the Company graphed the revenue requirements under a 7, 10, 15 and 20 year amortization period compared to the benefits of the measures installed. As shown in the tables below, the 15-year amortization period best matches the revenue requirement to the benefits. There is a 90% correlation between the benefits and the revenue requirements under the 15-year amortization period versus only a 67% correlation under the 7-year amortization period proposed by Rate Counsel; under the shorter amortization period, customers are paying more upfront than they need to so future customers pay less.



The same correlation exists when looking at the residential total bill impact percentage.



Q. Do you agree with Mr. Mugrace that a 7-year amortization period results in a lower total revenue requirement over the entire program period?

A. The shorter 7-year amortization period does have a lower total revenue requirement over the entire program period on a nominal basis compared to the proposed 15-year amortization period. However, the "real cost" of these revenue requirements to ratepayers must take into account the time value of money by applying a discount rate to future revenue requirements. While the appropriate discount rate could be debated, the difference in the net present value of revenue requirements between the 7-year and 15-year amortization periods would be significantly lower than the nominal difference. In addition, as shown in the charts above, customers would be paying significantly more in the initial 7 years of the program with the 7-year amortization period than under the 15-year amortization period. In fact, customers would pay more with a 7-year amortization period from program start through around 2031. It is likely

that many customers would prefer the lower near-term bill impacts associated with the 15-year amortization period.

Q. What support does Mr. Mugrace provide for his recommendation of a 7-year amortization period?

A. Mr. Mugrace does not provide any analysis or calculations that support using a 7-year period. Further, Mr. Mugrace did not identify any calculation errors in the Company's methodology. The support for his recommendation is limited to the fact that 7 years is less than 15 years, and therefore the former would reduce total Program cost. Also, Mr. Mugrace relies on the fact that the Company agreed to a 7-year amortization period in its last two energy efficiency program filings.

Q. Do you agree with this logic?

A. While I do agree that a 7-year amortization period will have less total nominal costs than a 15-amortization program, the same argument can be made for a 14- or a 13-year amortization period. PSE&G requests that the Board consider, if the Company arbitrarily requested a 20 or 30-year amortization period, would Rate Counsel then support a 15 year amortization period since it would result in lower nominal costs than the Company's proposal? Ultimately, there should be some underlying logic to the period chosen, and not the selection of some arbitrary figure.

While a 7-year period was approved for the Company's prior two energy efficiency programs, that amortization period was part of a comprehensive settlement of those cases. There is no analysis or discussion in the settlement agreements explaining why seven years is appropriate, nor did either settlement state that seven years should apply to future programs. The Board should not adopt an arbitrary figure simply because it was selected in the past.

Q. Does Mr. Mugrace make any other arguments against the 15-year amortization period?

A. Yes. Mr. Mugrace states on page 12 of his direct testimony that while the 15-year amortization period may better match costs, he believes that rates and benefits in this filing should not be considered in isolation, and that future impacts of continuing the program must be considered. As Mr. Mugrace further states, "[a]s future additional EE program are introduced, rate recoveries for these programs will become 'pancaked,' and ratepayers will be paying for multiple energy efficiency programs simultaneously."

Q. Do you agree with Mr. Mugrace?

A. While I do not dispute that the Company may continue its energy efficiency efforts in the future (especially considering the mandate of the Clean Energy Act that utilities reduce customers' energy consumption) and customers may be paying for multiple energy efficiency programs simultaneously, I do not agree that those facts support a 7-year amortization period. First, the "pancaking" effect of multiple energy efficiency programs would apply to the benefits as well as the costs. If the future energy efficiency programs are cost-beneficial and the amortization period is based on the measure lives, the benefits will continue to outweigh the costs. Second, the proposed 7-year amortization period accelerates upfront costs to reduce costs in the future, resulting in intergenerational inequity. That intergenerational inequity would be exacerbated if continued into the future as costs continue to be collected over a shorter time period than the benefits will last.

In addition, the Company estimated the impact of continuing the program at 2024 levels with a 2% escalation through September 2030 to evaluate the impact to customers of a 15-year amortization period versus a 7-year amortization period. While the nominal cost over the entire program would be higher, bill impacts will remain lower under the 15-year amortization proposal

through 2030. Further, the maximum average monthly impact under the 15-year amortization period would be only $0.62 higher than under the 7-year amortization period and occurs four years later (in 2034 vs 2031).

III UPDATING THE RATE OF RETURN

Q. Do you agree with Mr. Mugrace's recommendation that the CEF-EE rate of return be updated upon Board approval of rates in future base rate proceedings?

A. Yes, I do. I agree with Mr. Mugrace recommendation that the Company's rate of return should be updated upon Board approval in future base rate cases. In fact, I proposed as such in my initial testimony, page 3, lines 3-6.

IV. THE GEM

Q. What is the BGSS savings test utilized by NJNG and SJG in their CIP?

A. According to Dr. Dismukes, the CIP utilized by NJNG and SJG utilizes a BGSS savings test that "only allows for the recovery of revenue losses when a verifiable loss of capacity requirements has occurred, as reflected in the reduction of a utility's need for pipeline transportation and storage capacity." Dismukes Direct, p. 34, lines 16-18.

Q. Can the same BGSS savings test be applied to PSE&G?

A. No. First, Company witness Daniel Hansen addresses some of the flaws with the BGSS savings utilized in the CIP. Second, the CIP BGSS savings test has no equivalent for the electric business, and the proposed CEF-EE Program is approximately 80% electric. Even Dr. Dismukes admits there is not an equivalent test on the electric side of the business. See Dismukes testimony, at page 35. Third, for gas, PSE&G does not own any capacity; the capacity used to serve PSE&G's BGSS customers is owned by PSEG Power, which is the sole provider of gas for the Company's BGSS customers. Any short-term excess capacity from these contracts is used to

make off-system sales of gas and capacity. The margin from these sales far outweighs the cost of maintaining these contracts on a regular basis. Also, margins from these off-system sales provide significant benefits to residential customers. Further, as the interest rate for the BGSS residential service gas is set at the Company's overall rate of return and only applies to over-collections, the Company has a financial incentive to pass back savings to customers as soon as possible. Given these facts, there is no equivalent supply savings test that can be applied to PSE&G similar to the BGSS savings test applicable under the CIP.

Q. Does Dr. Dismukes argue that the Company has not demonstrated a need for the GEM?

A. Yes. He states that the Company has not shown any negative financial impact on its ability to earn its ROE that will flow from implementation of CEF-EE.

Q. Do you agree with Dr. Dismukes?

A. No, I do not. Given that the majority of electric and gas revenues are collected volumetrically or through demand charges, any reduction in sales will have a negative financial impact for the Company. As the effort to expand energy efficiency grows, the negative financial impact will also grow.

Q. Have you quantified the impact of lost revenues from the proposed CEF-EE Program?

A. Yes. The Company provided the impact of lost revenues from the CEF-EE Program in response to Rate Counsel's request RCR-POL-0012. As shown in that response, the Company's lost revenue impact from CEF-EE just through 2024 is $166 million. It is important to note that while Dr. Dismukes and Dr. Hausman have proposed adjustments to the Company's cost-benefit analysis, which are being addressed by Company witness Isaac Gabel-Frank, no witness has

disputed the measure lives or the estimated sales reductions used to calculate the lost revenues in RCR-POL-0012.

Q. Dr. Dismukes states in response to PS-RC-DED-12 and 13 that the Company would recover $3.6 billion over the next 26 years which would contribute to its ability to earn its ROE. Do you agree that the recovery of the CEF-EE revenue requirement is sufficient to address the impact of lost revenues?

A. No, I do not. First, the Company will not earn more than its allowed return for the Program, which is proposed at the 9.60% ROE approved in the 2018 base rate case. While $3.6 billion is certainly a large number, it is driven by the size of the investment and, as noted by Dr. Dismukes, is spread out over 26 years. Therefore, the Company's recovery of its revenue requirement for CEF-EE will never raise the ROE for the Company above its allowed return (assuming the ROE for the Program remains at the allowed ROE for PSE&G as proposed). Further, as shown in the response to RCR-POL-0012, if lost revenues are deducted from the Company's revenue requirement, its realized return on equity for its investment is approximately 4% through 2024, well below its allowed return of 9.60%.

Q. Has Dr. Dismukes reviewed the response to RCR-POL-0012 and if so, why does he not agree that CEF-EE lost revenues will impact the Company's ROE?

A. Dr. Dismukes acknowledges in his response to PS-RC-DED-13 that he reviewed the response to RCR-POL-0012, which provides estimated lost sales from CEF-EE, but argues that the Company has not demonstrated that it will be negatively impacted as a result of the proposed Program, presumably as RCR-POL-0012 only shows the ROE for CEF-EE, and he prefers to review the total forecasted ROE for the utility.

Q. Have you calculated the utility regulatory ROE from 2019 forward?

A. No, I have not. However, as a proxy, below is the impact the lost sales from the response to RCR-POL-0012 would have on the Company based on PSE&G's 2018 base rate case results. As shown in the table below, the lost revenues from CEF-EE will have a significant impact on the Company's ROE, dropping it 83 basis points by 2024.

ROE Impact Scenarios	
	2018 Rate Case
Rate Base	9,510,590
Common Equity %	54%
Common Equity	5,135,718
Allowed ROE	9.60%
Allowed Net Income	493,029
ROE with CEF Lost Sales	
2019	9.58%
2020	9.47%
2021	9.32%
2022	9.16%
2023	8.98%
2024	8.77%
ROE Deficiency with CEF-EE Lost Sales	
2019	-0.02%
2020	-0.13%
2021	-0.28%
2022	-0.44%
2023	-0.62%
2024	-0.83%

Q. Does this conclude your rebuttal testimony?

A. Yes it does.

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 ("CEF-EE") PROGRAM ON A REGULATED BASIS

BPU Docket Nos. GO18101112 and EO18101113

REBUTTAL TESTIMONY AND EXHIBITS OF ISAAC GABEL-FRANK

ON BEHALF OF

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

APRIL 15, 2019

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY
REBUTTAL TESTIMONY
OF
ISAAC GABEL-FRANK
VICE PRESIDENT, GABEL ASSOCIATES, INC.

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Isaac Gabel-Frank and my business address is 417 Denison Street, Highland Park, New Jersey, 08904. I am presently employed as a Vice President at Gabel Associates, Inc., an energy, environmental, and public utility consulting firm.

Q. Please summarize your professional experience and educational background.

A. As a Vice President at Gabel Associates, Inc., I perform specialized economic, financial, tariff, regulatory, and marketplace analysis for various energy projects including energy efficiency, renewable energy, cogeneration, and traditional generation sources. This comprehensive analysis takes into account all critical cost/benefit factors and is designed to quantify the economic outcome of customized projects to support investment decisions. Through this work, I also monitor the electricity, natural gas, and renewable markets and offer tailored insights in that regard. Since beginning work at Gabel Associates, Inc. in 2009, I have evaluated a myriad of projects for both public and private clients and assisted in the analysis, development, and implementation for all types of technologies and contractual arrangements. This includes the development of proprietary models that evaluate the viability of projects, as well as long-term forecasts that are based on market signals and industry knowledge.

I use my knowledge of wholesale electricity and natural gas markets, paired with my experience working with retail tariffs, to deliver in-depth market forecasts which are used to assess and undertake project investment decisions. I am also versed on regional transmission

organizations ("RTOs"), including the offering of energy efficiency, demand response, renewable, and traditional generation resources into the PJM market, and was a lead contributor in the development of a proprietary statistical model that computes the risk exposure of capacity resources within the PJM and ISO-New England footprints.

I received a BA in Economics, Political Science, and English Writing from the University of Pittsburgh.

Further work experience is detailed in my resume provided in the attached Schedule IGF-CEF-EE-1.

Q. What experience do you have in conducting cost-benefit analyses for energy efficiency programs?

A. In 2018, I prepared analysis and supporting testimony for the South Jersey Gas, New Jersey Natural Gas, and Elizabethtown Gas energy efficiency filings. In 2017, I prepared Public Service Electric and Gas Company's ("PSE&G" or "Company") Cost-Benefit Analysis ("CBA") using the five tests required by the New Jersey Board of Public Utilities' ("BPU" or "Board") Minimum Filing Requirements ("MFR") in support of PSE&G's 2017 Energy Efficiency Program filing, as well as provided expert testimony in relation to the CBAs. I have also completed numerous cost-benefit analyses for federal agencies across the United States, as well as a multitude of counties, municipalities, and school districts within the State of New Jersey. In addition, I am currently preparing cost-benefit analyses for other utilities in New Jersey to support their upcoming energy efficiency filings.

The projects I have analyzed range in type and size and represent an array of different technologies and configurations. Having performed this analysis for projects with varying degrees of complexity, I am extremely familiar with the process and methodology to formulate an objective and balanced cost-benefit study.

Q. Did you prepare the cost-benefit analysis supporting the petition of PSE&G for the Clean Energy Future – Energy Efficiency ("CEF-EE") filing?

A. Yes. I assisted PSE&G with preparing the CBA for the CEF-EE filing, which calculates and details the results of the five tests prescribed in the MFRs as required by the BPU. This entailed developing a model that analyzed measure-specific details and computed the estimated costs and savings of each program for use in the Total Resource Cost ("TRC") test, the Participant Cost test ("PCT"), the Program Administrator Cost ("PAC") test, the Ratepayer Impact Measure ("RIM") test, and the Societal Cost test ("SCT").

II. PURPOSE OF THIS TESTIMONY

Q. Please describe the purpose of your rebuttal testimony.

A. The purpose of my rebuttal testimony is to respond to the concerns and adjustments proposed by Rate Counsel witnesses Ezra D. Hausman, Ph.D. and David E. Dismukes regarding the cost-benefit analysis supporting the Company's CEF-EE filing. My rebuttal testimony only responds to the issues related to Rate Counsel's criticisms of the cost-benefit analysis and does not address other issues raised by these witnesses. PSE&G witnesses Karen Reif, Stephen Swetz, and Daniel Hansen address additional issues in their rebuttal testimonies.

Q. How is your testimony organized?

A. My testimony is organized in the following manner:

- I provide a summary of my conclusions based upon my review of Dr. Hausman's and Dr. Dismukes' direct testimonies;
- I respond directly to the criticisms raised by Dr. Hausman;
- I respond directly to the criticisms raised by Dr. Dismukes;
- I summarize the corrections I made to the CBA;
- I provide a conclusion based upon my rebuttal of Dr. Hausman's and Dr. Dismukes' testimonies, as well as the updates made to the CBA.

III. SUMMARY OF CONCLUSIONS

Q. Please summarize your conclusions and recommendations for the Board in this case.

A. Based on my review of Dr. Hausman's and Dr. Dismukes testimonies, most of their concerns are unfounded and do not change my analysis or the findings that the CEF-EE filing is cost-effective. These include:

1) Dr. Hausman claims that free measures provided to participants are not a benefit to those participants, and therefore should not be included in the PCT as a benefit. I disagree with this claim, as any incentive provided to participants is meant to encourage increased use of energy efficient measures, equipment, practices, and behavior. If the incentive had no benefit to the participant, why would it be provided at all?
2) Dr. Hausman claims that avoided wholesale supply costs should be included as a utility cost in the RIM test. I disagree with this claim. Because New Jersey is deregulated, avoided wholesale supply costs are not reallocated to ratepayers; therefore, there is no additional utility cost.
3) Dr. Hausman and Dr. Dismukes question the use of a societal discount rate in the SCT. I disagree with this criticism and provide numerous sources to support the conclusion that the SCT should be calculated using the societal discount rate.
4) Dr. Dismukes claims that market-based costs of emissions, such as RGGI allowance prices, should be used to value avoided emissions. I disagree with this criticism, and demonstrate that market-based costs do not capture all externalities. Dr. Dismukes' approach does not recognize the benefits from emissions reductions, and is inconsistent with the strong climate change policy of Governor's Murphy administration and the Clean Energy Act.[1]
5) Dr. Dismukes references two previous Board Orders to justify the exclusion of the social cost of emissions, Demand Reduction Induced Price Effects ("DRIPE") benefits, hedge volatility benefits, the avoided Renewable Portfolio Standard ("RPS") cost forecast used in the CEF-EE filing, and the use of AURORAxmp ("AURORA")

[1] *See* N.J.S.A. 48:3-87.9(d)(2) (requiring utility energy efficiency programs to have a benefit-to-cost ratio of at least 1.0 at the portfolio level, "considering both economic and environmental factors".

as a modeling tool. I disagree with this criticism and provide my reasoning for including these benefits, as well as for the reasonableness of using AURORA to calculate DRIPE benefits.

6) Dr. Dismukes produced an alternative CBA that, despite omitting a number of benefits and not conforming to standard cost-effectiveness practices, finds that the CEF-EE filing is cost-effective. Despite the fact that Dr. Dismukes' alternative CBA found the CEF-EE filing to be cost-effective, I disagree with his calculation methods, and believe he has significantly underestimated the benefits of the CEF-EE filing.

I also proposed a few minor changes to the CBA based upon the recommendations of Dr. Hausman, Dr. Dismukes, and other factors. These include:

1) I added the time value of on-bill repayment loans to participants in the PCT, PAC, and RIM tests. In the PCT, this was included as a benefit because allowing participants to avoid an up-front cost and pay back over time is a benefit. In the PAC and RIM tests, this was included as a cost.
2) I updated the source used to determine SO_2 and NOx emission damages and also updated the GDP deflator used to convert the forecasts from real dollars into nominal dollars. The updated GDP deflator applies to the forecasts for CO_2, SO_2, and NOx.
3) I updated the calculation of economic multiplier benefits to capture CEF-EE Program expenditures as a cost to ratepayers and the economy.
4) I adjusted the discount rate used to calculate the net-present value in the SCT to 3.0%. It had previously been calculating using a discount rate of 2.77%, equal to the yield of a 30-year treasury bond at the time of developing the CBA.

These updates result in some changes to the results of the CBA, which are summarized in the table below:

Table 1: Updated CBA Results

	SCT	TRC	PC	PAC	RIM
Residential Programs	4.3	1.1	12.2	1.4	0.7
C&I Programs	4.5	1.1	5.3	1.5	1.0
Low Income Programs	1.8	0.4	n/a	0.4	0.3
Total Portfolio	**4.3**	**1.0**	**6.7**	**1.4**	**0.9**

As illustrated in the table above, the CEF-EE Program is cost-effective and will generate benefits that clearly exceed costs.

Accordingly, I have a number of recommendations for the Board. These include:

1) Accept the use of the August 2016 Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis – Interagency Working Group on Social Cost of Greenhouse Gases ("IWG")[2] to value the benefits associates with avoided carbon emissions, consistent with Governor Murphy's climate change policies and accepted studies.
2) Accept the use of the February 2018 Environmental Protection Agency ("EPA") Technical Support Document for Estimating Benefit per Ton of Reducing PM2.5 Precursors from 17 Sectors[3] to value the benefits associated with avoided SO_2 and NOx emissions.
3) Accept the calculation I propose to include the time value of money of on-bill repayment loans provided to participants as a benefit to participants in the PCT, and a cost in the PAC and RIM tests.
4) Accept the calculation I propose of economic multiplier benefits and costs related to CEF-EE expenditures.
5) Accept the inclusion of a 3.0% discount rate in the SCT.
6) Reject the findings of Dr. Hausman, including:
    a. The statement that free measures are not a benefit to participants and should not be included in the PCT;
    b. The statement that avoided wholesale supply costs are a cost to ratepayers and should be included in the RIM; and
    c. The inference that the use of a societal discount rate is inappropriate in the SCT.
7) Reject the findings of Dr. Dismukes, including:

[2] https://www.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf
[3] https://www.epa.gov/sites/production/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf

a. The statement that market-based emissions costs, such as those determined through RGGI auctions, are the appropriate means to measure the benefits of avoided emissions;

b. The reference to previous Board Orders and the precedent setting nature of their findings;

c. The statement that the AURORA model is inappropriate to use, particularly to calculate DRIPE benefits;

d. The statement that hedge volatility benefits should not be included in the CBA;

e. The statement that the avoided RPS forecast used in the CEF-EE filing was inappropriate; and

f. The inclusion of Dr. Dismukes' own alternative CBA, which removed certain real benefits to participants and ratepayers.

8) Accept the cost-effectiveness findings of all five tests as they are calculated in a just and reasonable manner.

9) Approve the CEF-EE filing as it is cost-effective, is in the best interest of ratepayers, and provides a clear and achievable path to meet the goals set forth in the Clean Energy Act and align with the policy positions of Governor Murphy and the Legislature.

IV. RESPONSE TO DR. HAUSMAN'S DIRECT TESTIMONY

Q. Please summarize Dr. Hausman's findings regarding the cost-benefit analysis.

A. Dr. Hausman was not Rate Counsel's main witness on the cost-benefit analysis, but he did offer some criticisms and proposed changes to the CBA. Dr. Hausman found that the TRC test, which indicated that the CEF-EE Program as a whole was cost-effective, was "applied in a reasonable manner."[4] Dr. Hausman also indicated that he believed the PCT, PAC, RIM, and SCT tests contained errors which produced unreliable results.

[4] Hausman Direct Testimony, page 29, line 14.

Q. Do you agree with Dr. Hausman's assessment of the cost-benefit analysis?

A. I agree that the TRC test was properly calculated; however, I disagree that the balance of the CBA was calculated in a manner that produced results that were "unreliable for assessing the cost effectiveness of the proposed programs." [5]

Q. What portions of the cost-benefit analysis did Dr. Hausman believe were conducted erroneously?

A. Dr. Hausman's criticisms focused on four main issues. These issues include:

- the analytical approach to assessing the cost-effectiveness of subprograms with on-bill repayment loans in the PCT, PAC, and RIM tests;
- inclusion of free measures as an incentive in the PCT;
- the calculation of utility costs in the RIM test; and
- the use of a societal discount rate in the SCT.

I address each of these concerns below.

Q. Please describe Dr. Hausman's criticism of how you considered the value of on-bill repayment loans in the cost-benefit analysis.

A. Dr. Hausman's primary concern with the approach used in the CEF-EE filing is that the time value of money between when on-bill repayment loans are provided to customers and when those loans are repaid by customers was not captured. This criticism applies to the PAC, RIM, and PCT tests. Dr. Hausman did not identify any issues with the TRC test, and only identified a single issue regarding the SCT, which was unrelated to the time value of money of on-bill repayment loans.

Q. Did you include the time value of money of on-bill repayment loans in the PCT, PAC, and RIM tests?

A. No, I did not. In nominal terms, the value of on-bill repayment loans is zero because the loans that are provided to customers have no interest. However, on a present value basis, the

[5] Hausman Direct Testimony, page 7, lines 13-14.

value of loans to customers is greater than the repayments made by customers on those loans. Therefore, I have made an adjustment to the PCT, PAC, and RIM tests in the CBA to account for this value. This correction is further discussed elsewhere in my testimony.

For the PAC and RIM tests, this value was included as an additional cost. In the PCT, the value was included as a benefit. Being that the PCT already provides positive results, this update only further increases the cost-effectiveness of the CEF-EE filing.

Q. Did Dr. Hausman raise any other concerns regarding the calculation of the PCT?

A. Yes. Dr. Hausman also stated that any subprogram that provided free measures to participants resulted in overstated benefits in the PCT for the CEF-EE filing.

Q. Please describe Dr. Hausman's criticism of how the CEF-EE filing accounted for free measures in the PCT test.

A. My approach to accounting for free measures in the CBA is to include free measures as incentives to customers. Dr. Hausman disagrees with this approach and only believes a direct payment to a customer, through a rebate for example, should be considered an incentive in the PCT. According to Dr. Hausman, "energy saving investments do not have intrinsic value to the customer beyond the associated reduction in energy use" [6] and therefore the PCT double-counted these benefits by including both "the market value of any equipment provided to customers as a benefit, in addition to the energy savings provided by that equipment."[7]

Q. Do you agree with the concerns raised by Dr. Hausman regarding the PCT?

A. No, I disagree with Dr. Hausman's suggestion to remove the inclusion of free measures as an incentive in the PCT. Free measures are incentives in the same way a rebate is an incentive, and should be applied as such in the PCT. All incentives, including both rebates and

[6] Hausman Direct Testimony, page 32 lines 13-14.
[7] Hausman Direct Testimony, page 32 lines 11-12.

free measures, are designed to entice PSE&G customers to reduce energy consumption, and both have intrinsic value for participants because the measures have an incremental value to participants, regardless of whether it was fully or partially subsidized. Under Dr. Hausman's proposed approach, nothing would be considered an incentive because energy saving investments would not have any intrinsic value beyond the bill savings. Finally, the calculation formula for the PCT in the California Standard Practice Manual ("CSPM") specifically includes incentives and bill reductions as a benefit to the participant.[8] Therefore, including both is in line with accepted practices of cost-benefit analysis and should be included in the CBA.

Q. Did Dr. Hausman identify any additional issues with the calculation of the RIM test?

A. Yes. Dr. Hausman also raises a concern regarding the calculation of lifetime utility costs, stating that "the Company is claiming a benefit for ratepayers from foregone wholesale purchases of gas and electricity, but then ignoring the lost revenue from not selling that gas and electricity to its distribution customers."[9]

Q. Do you agree with Dr. Hausman's critique of the RIM test calculations?

A. No. The use of the lifetime utility cost is meant to capture all costs that would be avoided by participants and redistributed to ratepayers. Because New Jersey's electric and natural gas wholesale supply is deregulated and separate from utility distribution, the reduction of wholesale supply is not redistributed to ratepayers by the utility and is therefore not a cost that should be considered in the RIM test. All electric and natural gas supply costs, even after embedding wholesale costs into retail prices, are either a pass-through cost from the utility, or billed separately by a third-party supplier. This fact means that Dr. Hausman's statement that the RIM

[8] CSPM, page 8.
[9] Hausman Direct Testimony page 34 lines 4-7.

test should include "utility costs at the full retail rate, with the rationale that the utility's margin is not funded by EE program participants (because they are using less energy) and will ultimately have to be funded by nonparticipants through higher rates" [10] is incorrect because the full retail rate would not be recovered from nonparticipants.

Q. Finally, did Dr. Hausman have concerns regarding the use of a social discount rate in the SCT?

A. Yes. Dr. Hausman states that:

> *PSE&G has applied a very low ("societal") discount rate of 2.77% for the SCT to account for the time value of money, versus the utility discount rate of 6.8% that it applied for the TRC and all other tests. This discrepancy alone produces much higher calculated benefit-to-cost ratios, because most of the costs of the Company's programs occur at the beginning, while the benefits occur over a projected measure life of 10 to 20 years. There is nothing in the CEA that directs utilities to use a "societal" discount rate when performing cost-benefit analyses.* [11]

Q. Do you agree with Dr. Hausman's intimation that the societal discount rate was used incorrectly?

A. No. This is in direct conflict with the CSPM, which Dr. Hausman acknowledges "[p]ractitioners generally rely on...for standard definitions" [12] of the five most common cost-benefit tests. Specifically, the CSPM states that "[t]he Societal Test differs from the TRC test in that it includes the effects of externalities (e.g., environmental, national security), excludes tax credit benefits, and **uses a different (societal) discount rate**." [13]

[10] Hausman Direct Testimony page 33 lines 18-20.
[11] Hausman Direct Testimony, page 31, lines 6-13.
[12] Hausman Direct Testimony page 29, lines 10-11.
[13] CSPM, page 18 (emphasis added).

Consistent with the CSPM, which states that "a societal discount rate should be used",[14] the SCT filed by PSE&G in this matter incorporated a societal discount rate to represent the intergenerational nature of the benefits included in the SCT. The National Standard Practice Manual ("NSPM") also states that "[i]t is widely accepted that the societal discount rate should be used for the SCT. This is consistent with the notion of aligning the discount rate with the relevant perspective of the test. It is also consistent with the concepts and considerations described above regarding a societal preference for achieving policy objectives and placing greater weight on long-term resource impacts."[15]

While I have maintained the use of a societal discount rate, I have updated the value of the discount rate from 2.77% to 3.0%. This change is discussed elsewhere in my testimony.

V. RESPONSE TO DR. DISMUKES' DIRECT TESTIMONY

Q. Please summarize Dr. Dismukes' findings regarding the cost-benefit analysis.

A. Dr. Dismukes supported PSE&G's finding that the CEF-EE proposal is cost-effective, but raised several concerns regarding the cost-benefit analysis. These concerns include:

- the use of a societal discount rate;
- the use of social emissions benefits;
- the use of the AURORA modeling tool to calculate the value of DRIPE;
- the method to determine volatility hedge benefits;
- the calculation of economic multiplier benefits; and
- the future cost of avoided RPS costs to ratepayers.

I will respond to each of these concerns below.

Q. You noted that Dr. Dismukes supported the cost-effectiveness results of the PSE&G proposal. Please elaborate.

[14] CSPM, page 19.
[15] NSPM, page 83.

A. Dr. Dismukes did not directly support the results as presented by PSE&G, but he did note the programs were cost-effective.[16] To make this statement, Dr. Dismukes conducted his own alternative cost-benefit analysis. It appears that Dr. Dismukes relied on much of the data presented in the CEF-EE filing, but made several significant changes that depart from commonly accepted energy efficiency cost-benefit methods and the CSPM. Dr. Dismukes did not rely on any of the cost-benefit tests outlined in the MFRs, but instead created his own test. Under this alternative CBA, according to Dr. Dismukes, the Company's CEF-EE programs "appear to be cost effective."[17]

Q. Are you supportive of Dr. Dismukes' alternate approach to conduct CBA on the subprograms?

A. No, I am not. Dr. Dismukes made the following changes to conduct his alternative CBA:

> *First, the societal value of avoided emissions is excluded given prior Board precedent discussed earlier. Second, my analysis includes the economic impacts of the program on ratepayer bills. Third, I use a discount rate equal to the Company's weighted average cost of capital. Fourth, I remove the Company's estimated volatility and DRIPE benefits for reasons stated earlier in my testimony. Lastly, my analysis uses the renewable energy adder included in the CEEEP analysis which is used for evaluating energy efficiency programs in place of the Company's estimates for avoided REC purchases.*[18]

The majority of the changes undertaken by Dr. Dismukes are a sharp departure from the tests prescribed by the CSPM and commonly accepted cost-benefit testing methods for utility-sector energy efficiency programs. Dr. Dismukes provides no evidence or precedent where his CBA methodology was accepted, and provides no peer reviewed analysis of his method. For

[16] Dismukes Direct Testimony, page 24, line 19 to page 25, line 9.
[17] Dismukes Direct Testimony, page 25, line 7.
[18] Dismukes Direct Testimony, page 23, lines 8-15.

these reasons alone, his methodology should be rejected, but Dr. Dismukes also discards and fails to consider several benefits that are real, tangible benefits to customers.

Q. Do you agree with all of Dr. Dismukes' critiques, changes, and recommendations?

A. No. There are a number of areas in which I disagree with Dr. Dismukes' assessment. The factors discussed by Dr. Dismukes that I disagree with include:

- The use of a societal discount rate;
- The use of market-based costs for emissions;
- The inference of precedent from previous Board Orders;
- The use of AURORA to calculate DRIPE value;
- The inclusions of volatility hedge benefits;
- The use of the Rutgers Center for Energy, Economic & Environmental Policy ("CEEEP") renewable energy certificate ("REC") Forecast; and,
- The acceptance of Dr. Dismukes' alternative CBA.

I address each of these areas of disagreement below.

Q. Dr. Dismukes claims that the "benefits to society" used in the SCT "contradict normal ratemaking practices."[19] Do you agree?

A. No. The SCT, as defined by both the CSPM and the NSPM, includes "benefits to society" which are used by decision makers to understand the impacts of energy efficiency programs.

The CSPM states that "[t]he Societal Test differs from the TRC test in that it includes the effects of externalities (e.g., environmental, national security), excludes tax credit benefits, and uses a different (societal) discount rate."[20] According to Dr. Hausman, "[p]ractitioners generally

[19] Dismukes Direct Testimony, page 8, lines 11-12.
[20] CSPM, page 18.

rely on a common reference known as the California Standard Practice Manual ("CSPM") for standard definitions of these tests."[21] I have also relied on the prescribed approach in the CBA.

The NSPM states that in addition to the benefits included in the TRC, the SCT should include "any benefits experienced by society, including: low-income community benefits, environmental benefits, economic development benefits, and reduced health care costs."[22]

Further, the SCT, and in fact all the cost-benefit tests, are intended to evaluate the cost-effectiveness of potential programs, not ratemaking practices.

Q. What does Dr. Dismukes say about the discount rate used in the SCT?

A. Dr. Dismukes states that the 2.77% discount rate used in the SCT, which was linked to the yield of the 30-year U.S. Treasury Bond, was "a rate lower than most "rules of thumb" that are commonly employed for societal discount rates of around three to four percent."[23]

Q. Do you agree that the discount rate used in the SCT is lower than most rules of thumb?

A. No. The discount rate is appropriate and not significantly different than the range provided by Dr. Dismukes. The slightly lower rate, which was sourced from around the time when the CBA was developed, is indicative of recent bond market yields, which have been depressed over the past several years, dropping 39% in value between April 1, 2010 and April 1, 2019.[24] As of February 12, 2019, the yield on the 30-year treasury bond was equal to 2.97%, almost identical to the 3.0% rate proposed by Dr. Dismukes. However, I have elected to update the discount rate used in the SCT to 3.0% to conform with Dr. Dismukes' recommendation.

[21] Hausman Direct Testimony, page 29, lines 10-11.
[22] NSPM, page 113.
[23] Dismukes Direct Testimony, page 8, lines 1-3.
[24] https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield

Q. Does Dr. Dismukes accept the use of social emissions damages in his Direct Testimony?

A. No. Dr. Dismukes discusses why he believes that social emissions damages are difficult to quantify and why market-based costs should be used to quantify the value of emissions.

Q. What does Dr. Dismukes say about social cost, economic theory, and the use of Regional Greenhouse Gas Initiative ("RGGI") prices?

A. Dr. Dismukes explains preference theory and economic theory, and walks through how, in his opinion, market-based approaches to emissions represent societal costs. This is summed up in the following statement by Dr. Dismukes:

> *Market-based approaches, such as cap-and-trade programs value societal costs on an objective, as opposed to a subjective, basis. In these programs, valuation is based on the interplay between willing buyers and sellers. These values are furthermore verifiable and readily available. Examples of cap-and-trade markets include the EPA's acid rain program and RGGI.* [25]

Q. Are there any flaws with Dr. Dismukes statements above regarding social costs, economic theory, and RGGI?

A. Yes. The markets used as examples by Dr. Dismukes are not free markets able to capture all benefits related to avoided emissions. As Dr. Dismukes states in response to PS-RC-DED-23, also provided as Exhibit IGF-CEF-EE-2, not all externality costs are captured in the RGGI market. As Dr. Dismukes further states in his direct testimony, the RGGI and other markets are marketplaces with prices set by the interplay between buyers and sellers, not everyday people experiencing the harmful effects of emissions and climate change. These markets are further constrained by effective price floors and ceilings that limit their ability to properly achieve equilibrium. Additionally, RGGI prices are significantly influenced by the carbon allowance budgets set by participating States; which is a decision based on policy goals and political

[25] Dismukes Direct Testimony, page 12, lines 12-16.

agendas, not benefits of avoided emissions. Because of all of these factors, RGGI is not a true "market" for emissions benefits, but rather an administratively established proxy mechanism intended to achieve a policy goal.

Therefore, the market-based approach proposed by Dr. Dismukes does not properly balance emissions damages with disutility, does not capture the full social cost of emitting an additional ton of emissions, nor the full benefit of a one-ton reduction in emissions. The value of energy efficiency, renewable energy, and clean energy initiatives and programs overseen and administered by the BPU will be seriously undervalued if valued against market-based costs such as RGGI allowances.

In addition, Synapse Energy Economics, Inc. ("Synapse") published the "Avoided Energy Supply Components in New England: 2018 Report", an annual report that discusses a number of avoided costs, including emissions benefits. The report discusses Non-Embedded Environmental Costs and states that "[c]osts of GHG emissions are partially embedded in prices through RGGI allowances... However, the costs embedded by these policies represent only a portion of the total environmental impacts of GHG emissions."[26]

Q. Dr. Dismukes further questions the use of social costs because "societal benefit estimates vary widely between researchers." Do you agree social benefit costs should not be used because of his view that estimates are widely varied?

A. No. To support this argument, Dr. Dismukes cites a 2011 avoided cost study by Synapse ("2011 Synapse Study"), which cites a 2008 study by Richard S.J. Tol ("Tol Study") on the social cost of carbon. I find Dr. Dismukes' conclusion to be flawed based upon the following factors:

[26] 2018 Synapse Study, page 143 (accessible at http://www.synapse-energy.com/sites/default/files/AESC-2018-17-080.pdf).

a) The 2011 Synapse Study has since been updated and uses a marginal abatement cost methodology to estimate the social cost of carbon, which ranges between $100 and $318 per ton. The marginal abatement cost methodology "asserts that the value of damages avoided, at the margin, must be at least as great as the cost of the most expensive abatement technology used in a comprehensive strategy for emission reduction."[27] This methodology produces costs above those of the IWG study and states that the IWG study is conservative because the models used in that analysis "minimize or ignore risks of extreme events, and rely on traditional, somewhat dated estimates of future damages."[28]

b) The 2008 Tol Study does show a variety of outcomes, but on average these results show a much higher cost of carbon equal to approximately $106 per ton, much higher than that used in the CEF-EE filing. Even when controlling for only peer reviewed studies, the average is still approximately $77 per ton.

c) The 2008 Tol Study has data only through 2006. Much has changed in the past 13 years, and the Tol Study does not reflect the most recent data or market conditions.

d) The values proposed in the CEF-EE filing, sourced from the IGW, are relatively conservative compared to the values provided in the Tol Study, and therefore represent a conservative assumption on the benefits of avoided carbon emissions.

Based upon these factors, as well as the fact that the social cost is needed to measure social benefits, the use of social cost is not flawed and should be accepted to value the benefits of avoided emissions.

Q. After discussing the variability of prices, does Dr. Dismukes quote the EPA in stating that there is uncertainty in its analysis?

A. Yes. On page 11 of his direct testimony, Dr. Dismukes provides a quotation from the Regulatory Impact Analysis ("RIA") for Proposed Cross-State Air Pollution Rule ("CSAPR") Update for the 2008 Ozone National Ambient Air Quality Standards ("NAAQS") published by the EPA. Dr. Dismukes states that the "EPA explicitly notes that its analysis should not be

[27] *Id.*
[28] *Id.*

viewed as an estimate of the actual benefits anticipated to be found from the implementation of its proposed CSAPR regulations."[29]

Q. Do you agree with Dr. Dismukes' assessment of the quotation from the EPA?

A. No, in fact I read the EPA's quote in the opposite manner as Dr. Dismukes. Specifically, the EPA states that "the estimates of benefits should be viewed as representative of the general magnitude of benefits of the regulatory control alternatives for the 2017 analysis year, rather than the actual benefits anticipated from implement[ing] the proposal."[30]

My interpretation of this quote is that while a study conducted in 2015 cannot definitively state the actual benefits in 2017, it can provide a general range of benefits. This range provided corresponds with the social values used in the CEF-EE filing for SO_2 and NOx.

Q. Does Dr. Dismukes refer to previous Board Orders regarding environmental benefits?

A. Yes. Dr. Dismukes refers to the findings of the Fisherman's Atlantic City Wind Farm, LLC ("FACW") application from 2013, where the Board agreed with BPU Staff and Rate Counsel that "environmental benefits should be tied to market prices."[31]

Q. Do you believe this finding is applicable in this proceeding?

A. No. The statement that Dr. Dismukes references is outdated and not consistent with current State policy on environmental benefits. Since the Order was issued, New Jersey has taken steps to become a national leader in clean and emission free energy. These steps have been made by Governor Murphy and the Legislature. The Legislature has recently passed bills including the Clean Energy Act, the Zero Emission Certificate Law, and the NJ Territorial

[29] Dismukes Direct Testimony, page 11, lines 11-13.
[30] Dismukes Direct Testimony, page 11, line 29 – page 12, line 4 (originally EPA RIA for CSAPR update to NAAQS).
[31] In the Matter of the Petition or Fishermen's Atlantic City Wind Farm. LLC for the Approval or the State Waters Project and Authorizing Offshore Wind Renewable Energy Certificates, Docket No. EO11050314V, Board Decision on the Merits of the Application (12/18/18), page 23.

Waters Offshore Wind Law. Not only has Governor Murphy signed each of these laws, he has also issued numerous Executive Orders ("EOs") promoting clean energy, including EO7[32] directing New Jersey to reenter the RGGI program, EO8[33] promoting offshore wind energy, EO23[34] addressing environmental justice issues in New Jersey's urban communities, and EO28[35] to advance New Jersey's clean energy economy.

It is important to note that New Jersey law states that the Board shall promote energy efficiency "taking into consideration environmental benefits."[36] This is an important distinction, as market costs are not the same as environmental benefits.

Since the finding in the FACW case, there have also been numerous studies supporting the social cost of emissions.

Therefore, the Board Order cited by Dr. Dismukes is outdated, no longer reflective of New Jersey state policy, and should be rejected as not relevant to this case.

Q. Because of the above justifications, should the Board disregard the dated policy proposed by Dr. Dismukes in evaluating the Company's CEF-EE CBA?

A. Yes. As explained above, the FACW case is not applicable to the CEF-EE filing, and does not establish any precedent for the Board's evaluation of the CEF-EE filing.

Q. Did Dr. Dismukes reference any other previous Board Orders regarding the social cost of carbon?

A. Yes. Dr. Dismukes introduced a quotation from the Board Order that rejected the application of Nautilus Offshore Wind,[37] stating that:

[32] https://nj.gov/infobank/eo/056murphy/pdf/EO-7.pdf
[33] https://nj.gov/infobank/eo/056murphy/pdf/EO-8.pdf
[34] https://nj.gov/infobank/eo/056murphy/pdf/EO-23.pdf
[35] https://nj.gov/infobank/eo/056murphy/pdf/EO-28.pdf
[36] N.J.S.A. 48:3-87(l)(4)
[37] https://www.bpu.state.nj.us/bpu/pdf/boardorders/2018/20181218/12-18-18-8H.pdf

Nautilus relies on information related to emission benefits from a federal government document that has since been withdrawn by Executive Order (Technical Support Document, August 2016).[38]

Q. Do you have a response to this quote from the Nautilus Order?

A. Yes. This quote is related to the IWG study. On March 28, 2017, the Trump Administration issued an EO formally disbanding the IWG and asserting that the IWG's findings on the social cost of carbon are no longer the formal federal government policy.[39]

As discussed above, Governor Murphy, his Administration, and the Legislature have all expressed a goal for New Jersey to be a leader in climate change and clean energy policy. However, it appears that in the Nautilus Order, the Board inadvertently accepted the EO withdrawing the IWG as the expulsion of its valuable and peer reviewed findings. This CEF-EE case offers the Board the opportunity to clarify and align its policy with the Governor's and Legislature's vision for New Jersey to be a leader in fighting climate change and to create a vibrant clean energy economy. By not properly valuing the benefits of reduced emissions, the Board would undermine its own policy goals.

In addition, even if the IWG's findings are no longer representative of federal policy, they are still highly relevant and one of the most widely regarded sources on the social cost of carbon. These findings underwent rigorous review and scrutiny over multiple years. They were also the result of a collaboration among a range of agencies and councils, including the Council of Economic Advisers, Council on Environmental Quality, Department of Agriculture, Department of Commerce, Department of Energy, Department of the Interior, Department of Transportation, Department of the Treasury, EPA, National Economic Council, Office of

[38] Nautilus Order, page 13.
[39] https://www.whitehouse.gov/presidential-actions/presidential-executive-order-promoting-energy-independence-economic-growth/

Management and Budget, and Office of Science and Technology Policy. The findings and validity of this peer reviewed collaborative effort should not be in question just because it is no longer representative of federal policy.

It should be noted that the Rutgers CEEEP Energy Efficiency Cost-Benefit Analysis Avoided Cost Assumptions report,[40] published March 13, 2018, which is used by the BPU to evaluate the energy efficiency programs it administers, also uses IWG to value carbon emissions. This is the same study recommended by Dr. Dismukes as a source for avoided REC purchases.[41] And according to the Nautilus Order, Rate Counsel argued in that matter that the Board should "use the NJ Office of Clean Energy assumptions developed by the Rutgers Center for Energy Economics and Environmental Policies ("CEEEP") which incorporate carbon values published by the U.S. Government Interagency Working Group on Social Cost of Carbon."[42]

Q. Did Dr. Dismukes discuss any other findings of the Nautilus Order regarding emissions?

A. Yes. Dr. Dismukes also introduced the following conclusion by the Board in its Nautilus Order:

> *Nautilus' estimate of benefits flowing from the Project's ability to avoid emissions of carbon and other pollutants [is] flawed.*[43]

Q. Can you address this second quote from the Nautilus Board Order regarding emissions?

A. Yes. This quote references the Board's finding that the benefits from avoided emissions proposed in the Nautilus case was flawed. However, the benefits in the CEF-EE filing are not the same as those submitted in the Nautilus case.

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[40] http://www.njcleanenergy.com/files/file/Library/Market%20Research/Avoided%20Cost%20Memo%20(3-13-18).pdf

[41] Dismukes Direct Testimony, page 22, lines 17-21.

[42] Nautilus Order, page 9.

[43] Nautilus Order, page 14.

According to the Nautilus Order, Rate Counsel argued that the "model not only included a calculating error, but that the mathematical approach was flawed."[44] Specifically, "averaging empirical outcomes over different discount rates is simply not appropriate and is inconsistent with standard CBA practice."[45] The CEF-EE filing does not average empirical outcomes over different discount rates and, therefore, this finding from the Nautilus case is not applicable to the CEF-EE filing, and the Board should accept the use of the IWG to value the benefits of avoided carbon emissions.

Q. Is there any precedent to support the use of the values provided in IWG study?

A. Yes. Since 2013, the CEEEP avoided cost study[46] has relied upon the IWG study to determine avoided carbon emissions benefits. This study is periodically provided to the Board and used to support the Office of Clean Energy's Clean Energy Program energy efficiency filings.

In addition, in 2018, New Jersey's Zero Emission Certificate Law codified that "[t]he social cost of carbon, as calculated by the U.S. Interagency Working Group on the Social Cost of Carbon in its August 2016 Technical Update, is an accepted measure of the cost of carbon emissions."[47]

Q. Based on the preceding discussion, how should the Board value emissions avoidance benefits?

A. The Board should reject the use of market-based costs, such as RGGI allowances, for emissions benefits, reverse its cited findings in the Nautilus case as contrary to the Murphy Administration's and State energy policy as reflected in the Executive Orders, public statements,

[44] Nautilus Order, page 9.
[45] *Id.*
[46] http://www.njcleanenergy.com/files/file/Library/Market%20Research/AvoidedCost20131.pdf
[47] N.J.S.A. 48:3-87.3(b)(8).

and recently passed laws, and use the sources proposed within the CEF-EE filing, including the IWG study, to value emissions-avoidance benefits. Market-based costs, such as RGGI allowances, do not include all externalities related to harmful air pollution and are not a reliable source of the value of reducing these emissions.

Finally, I note that notwithstanding the foregoing, Dr. Dismukes found the CEF-EE filing to be cost-effective, even without accounting for environmental benefits.

Q. Does Dr. Dismukes have any issues with the use of the AURORA platform?

A. Yes. Dr. Dismukes states that "[t]he Company's DRIPE benefits are derived from the AURORA model and cannot be substantiated or validated."[48] Dr. Dismukes described the Board's position with regard to AURORA and stated that DRIPE benefits should be "excluded from the CBA"[49] on the basis of their calculation using the AURORA model.

Q. Do you agree that the Board does not approve of the use of the AURORA model?

A. No. While the Board may have disapproved of certain circumstances related to the use of AURORA in a single case, it also has expressed confidence and support for the model, stating:

> *AURORA is the most comprehensive and reliable electricity forecasting and analysis tool available.*[50]

In addition, in answers to questions to the same bid solicitation, the Board stated:

> *NJ BPU requires AuroraXMP as stated in K. of the Bid Solicitation Section 3.2 Professional and Consultative Services.*[51]

These quotes show that the Board does accept, and even sometimes requires, the use of AURORA by its consultants, and there is no reason to believe that use of AURORA is

[48] Dismukes Direct Testimony, page 17, lines 6-8
[49] Dismukes Direct Testimony, page 17, line 9.
[50] Bid Solicitation for T# 2000 Energy Consulting Services – BPU, Bid #18DPP00237, June 4, 2018, page 15.
[51] Bid Addendum #1 to Bid Solicitation # 18DPP00237, T2000 – Energy Consulting Services – BPU, July 23, 2018, page 3.

impermissible or unreliable in this matter. Further, Dr. Dismukes provided no evidence or issues regarding the actual AURORA analysis in this case, only a citation to a past finding.

Q. Should the Board accept the use of AURORA to calculate DRIPE benefits?

A. Yes, the Board should accept the calculation of DRIPE benefits from the AURORA model. Moreover, the Board should note that notwithstanding the foregoing, Dr. Dismukes found the CEF-EE filing to be cost-effective, even without accounting for DRIPE benefits.

Q. Does Dr. Dismukes dispute that the CEF-EE Program could provide volatility hedge benefits?

A. No. Dr. Dismukes submits a number of criticisms of the methodology used to calculate volatility hedge benefits in the CEF-EE filing; however, he does not dispute the fact that energy efficiency does act as a hedge against market volatility, or that there is a value associated with the avoidance of market volatility.

Q. Does Dr. Dismukes' testimony dissuade you from using the sources provided to support a valuation of volatility hedge benefits?

A. No. Volatility by its nature cannot be exactly predicted or categorized. While energy and gas markets may currently be depressed, the energy efficiency measures proposed in the CEF-EE filing will be providing energy savings for a weighted average period of roughly fifteen years. With the increase in polar vortices, major hurricanes, and other extreme weather events, the likelihood of market price fluctuations can also increase. In addition, with ever changing rules at PJM, participants in these programs can limit exposure to potential capacity and transmission charges that could be passed through to ratepayers, even those served under Basic Generation Service ("BGS") contracts.

Therefore, the installation of energy efficiency measures allows participants to hedge the implied risk of participating in energy markets by reducing their participation in those markets.

Q. What is the right value to use as a volatility hedge benefit in this case?

A. While the multiple studies provided in support of the 10% hedge volatility factor illustrate the variability in potential outcomes, the range of benefits is spread between a minimum of 7.5% and a maximum of 24%. When compared against this range, the 10% figure used in the analysis appears rather modest, and at the conservative end of the spectrum. As such, the Board should accept the use of a 10% volatility hedge benefit factor. And again, I note that notwithstanding the foregoing, Dr. Dismukes found the CEF-EE filing to be cost-effective, even without accounting for volatility hedge benefits.

Q. Does Dr. Dismukes discuss the avoided RPS purchase forecast?

A. Yes. Dr. Dismukes questions the forecast used in the CEF-EE filing and states that the analysis should be based upon the values provided in the CEEEP avoided cost study. The basis for this recommendation is again the finding of the Nautilus Order.

Q. Do you agree that the findings in the Nautilus Order regarding Class I RECs are applicable in this CEF-EE case?

A. No. First, the Nautilus Order pertained to only Class I RECs, not all RPS requirements such as SRECs and Class II RECs. In addition, as quoted by Dr. Dismukes, the Nautilus Order states that "a steady-state or decrease in price is more likely in the future than sharply increasing Class I REC prices."[52] This is consistent with the forecast used in the CEF-EE filing; as stated by Dr. Dismukes, "[t]he Company's estimated avoided REC purchases start at $7.00 and increase to a maximum of $11.44 in 2027 and then gradually decrease."[53] Further, the forecast used in the CEF-EE filing is not dissimilar from that in the CEEEP study, which starts at $9.26 in 2017 and increases to a maximum of $14.56 in 2019 and then gradually decreases.

[52] Nautilus Order, page 13.
[53] Dismukes Direct Testimony, page 22, lines 4-5.

Q. Have you reviewed Dr. Dismukes alternative CEF-EE CBA?

A. Yes.

Q. How did Dr. Dismukes change the standard CBA to produce his alternative CBA?

A. In Dr. Dismukes' own words:

> *My alternative CBA modifies the Company's analysis in the following manner. First, the societal value of avoided emissions is excluded given prior Board precedent discussed earlier. Second, my analysis includes the economic impacts of the program on ratepayer bills. Third, I use a discount rate equal to the Company's weighted average cost of capital. Fourth, I remove the Company's estimated volatility and DRIPE benefits for reasons stated earlier in my testimony. Lastly, my analysis uses the renewable energy adder included in the CEEEP analysis which is used for evaluating energy efficiency programs in place of the Company's estimates for avoided REC purchases.*[54]

Q. What values are ignored in Dr. Dismukes' CBA?

A. Dr. Dismukes excludes avoided emissions benefits, volatility hedge benefits, and DRIPE benefits from his analysis. Despite all these changes, Dr. Dismukes still finds that the CEF-EE Program is cost-effective.

Q. What are your thoughts on Dr. Dismukes' alternative CBA?

A. Dr. Dismukes created a new CBA that does not conform with standard cost-benefit practices and is not consistent with the requirements of the MFR or used in any other jurisdictions to my knowledge. In fact, in response to Discovery Request PS-RC-DED-26, also provided as Exhibit IGF-CEF-EE-3, where Dr. Dismukes was asked to "provide any and all examples of other jurisdictions utilizing the ratepayer impact approach described", Dr. Dismukes was non-responsive and only stated that he believed "ratepayer impacts should be considered when modeling the costs versus benefits of a program", a fact that is not disputed as the RIM test

[54] Dismukes Direct Testimony, page 23, lines 8-15.

is designed to do just that. However, Dr. Dismukes' alternative CBA makes additional changes that ignore certain benefits to ratepayers while including supplementary economic costs.

Q. Should the Board accept Dr. Dismukes' alternative CBA?

A. No. Dr. Dismukes' alternative CBA is not consistent with other cost-benefit tests and does not provide a clear picture of the cost-effectiveness of the programs.

VI. CORRECTIONS TO THE COST-BENEFIT ANALYSIS

Q. Have you made any updates to the cost-benefit analysis as a result of the discovery questions and Direct Testimonies of Dr. Hausman and Dr. Dismukes?

A. Yes.

Q. What changes have you made to the CBA?

A. I have added the time value of loans provided to participants to the PCT, PAC, and RIM tests. I have also made an adjustment to the source for SO_2 and NOx societal damages and updated the GDP deflater forecast used to calculate the future values of the CO_2, SO_2, and NOx societal damages forecasts. I also amended the economic benefits formula in the SCT to capture the cost of program expenditures. Finally, I changed the discount rate used in the SCT to 3.0%, as discussed by Dr. Dismukes.

Q. How did you adjust the PCT, PAC, and RIM tests to account for the time value of loans provided to participants?

A. To account for the time value of money between when loans are provided to participants and when they are repaid, I subtracted the calculated net present value of the cash flow of loan repayments from loan amounts provided. Because loan repayments take place over a longer duration (often five years) than the loan amounts, this net present value was lower than the loan

amount. The positive difference between these two net present value cost streams represents the time value of money between the loans granted and the repayment of the loans.

In the PCT, this value was included as an additional benefit, as participants gain this time value of money differential by avoiding the payment of the loan amount up front.

In the PAC and RIM tests, this value was included as an additional cost, as the utility is on the other end of this transaction with participants and provides a lump-sum up-front to cover the balance of project costs and is repaid over time.

Because the loans are provided at zero interest and no cost to participants, the net discount rate assumed for present value purposes was equal to the utility weighted average cost of capital discount rate used to discount values in the TRC, PCT, PAC, and RIM tests.

Q. What changes did you make to the emissions damages?

A. I updated the emissions damages for all three emissions evaluated in the CBA. The first and most basic change was to update the forecasted GDP deflator used to adjust damages provided in real dollars into nominal dollars. The update consisted of substituting out the GDP deflator forecast from the 2018 Energy Information Administration ("EIA") Annual Energy Outlook ("AEO") with the 2019 EIA AEO forecast. This was applicable for all three emissions considered: CO_2, SO_2, and NOx.

Q. What source are you now recommending be used to determine SO_2 and NOx damages?

A. Based upon my current opinion on the market, I believe the SO_2 and NOx social emissions damages should be sourced from the EPA Technical Support Document for Estimating Benefit per Ton of Reducing $PM_{2.5}$ Precursors from 17 Sectors.[55] This guidance document contains analysis and values that have been used in several Regulatory Impact Assessments,

[55] https://www.epa.gov/sites/production/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf

including assessments for the Cross-State Air Pollution and Mercury and Air Toxins Rule. The guidance document presents a range of values for a national average or damages per ton of each pollutant. I relied on the average of the high and low values to present a conservative estimate of benefits. The updated calculation of emissions is provided as Exhibit IGF-CEF-EE-4.

Q. What changes did you make to the economic multiplier benefits in the SCT?

A. I adjusted the economic multiplier benefits to account for the CEF-EE Program expenditures, as defined in the TRC. To do this, I built off the multiplier values already contained in the CBA, specifically the energy savings benefit. This coefficient was originally included to capture the multiplier value of bill savings to participants, as well as the negative value of lost utility costs which were assumed to be reallocated to other distribution customers. However, I have adjusted the formula to incorporate the lifetime participant costs, lifetime administration costs, and lifetime program investment costs used in the TRC. This equation now captures program expenditures, as well as bill savings to participants, and calculates the overall multiplier benefit to the economy for these savings and associated spending.

Q. Why did you change the discount rate used in the SCT?

A. I changed the discount rate used in the SCT to 3.0% to conform with sources provided by Dr. Dismukes in response to Discovery Request PS-RC-DED-18, also provided as Exhibit IGF-CEF-EE-5. Therein, Dr. Dismukes provides numerous sources, such as the White House Office of Management and Budget ("OMB") Circular No. A-4, which states that "when examining the effects of regulation that do not fall exclusively or primarily on the allocation of capital... the OMB may use a three percent "societal" discount rate." According to Dr. Dismukes, "the EPA also uses a 3 percent discount in estimating future costs and benefits."

In response to Discovery Request PS-RC-DED-18, Dr. Dismukes also provided the following documents which supported the 3% discount rate:

- PS-RC-DED-18 OMB Circular No. A-4.pdf
- PS-RC-DED-18 CSAPR, Final 2016.pdf
- PS-RC-DED-18 EPA-Discounting Future Benefits and Costs.pdf; also available at: https://www.epa.gov/sites/production/files/2017-09/documents/ee-0568-06.pdf
- Creedy, J. and Passi, H. Public Sector Discount Rates.pdf

Q. How did the cost-effectiveness of the CEF-EE filing change based upon the updates described above?

A. Based upon the alterations described above, the updated CBA results, for each test, by sector and for the CEF-EE portfolio as a whole, are described in Table 1 below:

Table 2: Updated CBA Results

	SCT	TRC	PC	PAC	RIM
Residential Programs	4.3	1.1	12.2	1.4	0.7
C&I Programs	4.5	1.1	5.3	1.5	1.0
Low Income Programs	1.8	0.4	n/a	0.4	0.3
Total Portfolio	**4.3**	**1.0**	**6.7**	**1.4**	**0.9**

The complete results of the updated CBA are provided as Exhibit IGF-CEF-EE-6.

I also compared the results of the CBA from the initial filing to those generated as a result of my updates. Table 2 below illustrates the changes in CBA score for each test for by sector, and for the CEF-EE portfolio as a whole. Note that positive numbers represent increases in cost-effectiveness, while negative numbers represent decreases.

Table 3: Changes Between Initially Filed CBA and Updated CBA

	SCT	TRC	PC	PAC	RIM
Residential Programs	0.5	0.0	0.2	-0.1	0.0
C&I Programs	0.8	0.0	0.2	-0.2	-0.1
Low Income Programs	0.0	0.0	n/a	0.0	0.0
Total Portfolio	**0.7**	**0.0**	**0.2**	**-0.1**	**0.0**

As seen, the CEF-EE filing still screens as cost-effective in the SCT, the TRC, the PCT, and the PAC test. The results of each of these tests illustrate that the CEF-EE filing generates benefits that exceeds costs, would be a good investment, and is beneficial to the state. Finally, the RIM test shows acceptable value from a ratepayer perspective.

VII. CONCLUSIONS AND RECOMMENDATION

Q. Can you summarize the results of your analysis?

A. Yes. Based on my review of the Direct Testimonies of Dr. Hausman and Dr. Dismukes, I identified a series of claims with which I disagree. Both Dr. Hausman and Dr. Dismukes critiqued a number of factors related to the methodology, calculations, and assumptions of the CBA in the CEF-EE filing; however, those critiques are unwarranted and would incorrectly calculate or undervalue the benefits and overvalue the costs related to the CEF-EE filing. I provide reasonable alternatives to the recommendations of Dr. Hausman and Dr. Dismukes, all supported by rational, often conservative, and appropriate sources and assumptions.

I also identified a few minor updates to the CBA that would align the results with current market practices and provide more accurate results for the Board to consider in this case.

Q. What is your recommendation for the Board?

A. Based on my review and analysis described above, I recommend that the Board accept the CBA results I have provided and approve the CEF-EE filing, as it is cost-effective and would provide benefits that exceed its costs to those residing in the PSE&G service territory.

I also recommend the Board accept the use of the IWG social cost of carbon, accept the EPA Technical Support Document for Estimating Benefit per Ton of Reducing PM2.5 Precursors from 17 Sectors to value the benefits associated with avoided SO_2 and NOx emissions, accept my updates to the PCT, PAC, and RIM tests, accept a 3.0% discount rate as

appropriate for the SCT, accept the methodology, calculations, and results of the updated CBA as appreciate, and reject the findings of Dr. Hausman and Dr. Dismukes, as described throughout my testimony.

Q. Does this conclude your testimony?

A. Yes. However, I reserve the right to update this testimony to account for additional information I may receive. Thank you.

Isaac Gabel-Frank
Vice President

Overview of Experience

Isaac Gabel-Frank, Vice President at Gabel Associates, has over 9 years of experience supporting complex energy issues related to cost-benefit analysis, energy efficiency and renewables, energy project development, economic and tariff analysis, electric vehicles, regional transmission organizations (RTOs), and energy procurement. Mr. Gabel-Frank has also submitted expert testimony in matters regarding the cost effectiveness of energy efficiency.

Mr. Gabel-Frank is an expert on cost-benefit analytics and has supported a multitude of clients in quantifying cost and benefit dynamics related to the economic impact of energy projects. This includes past and present work for Federal agencies, state and local governments, school districts, and private sector clients on energy efficiency, renewable energy, cogeneration, and traditional generation projects. Mr. Gabel-Frank also performs sensitivity analysis to help identify risk boundaries and market deviations. This analysis is critical to investment decisions as it allows clients to understand the full value proposition associated with energy initiatives.

He is currently supporting energy efficiency filings on behalf of various New Jersey utilities. He has also served the role as an expert witness and provided testimony to support the filings.

Mr. Gabel-Frank has also performed in-depth project valuation and levelized cost of energy studies to support a proposed asset transaction.

In addition, he is extremely knowledgeable on RTO issues and actively monitors activities related to energy and capacity markets, energy efficiency, demand response, ancillary services, interconnection, and general grid issues. Mr. Gabel-Frank helps clients formulate and strategize positions on current PJM rules as well as provides analysis on potential market changes. This includes development of offer and bid strategies for energy efficiency, demand response, renewable, and traditional generation resources into the PJM market.

He was a key contributor in the development of the Analytical Likelihood of Availability and Non-Performance Risk (ALAN) model, a proprietary stochastic modeling tool that computes the exposure of capacity resources within the PJM and ISO-NE footprints. ALAN uses resource outage data as well expected performance assessment event information to determine the probabilistic coincidence of outages and performance assessment events.

Mr. Gabel-Frank assists in the development of numerous renewable and energy efficiency projects including in-depth economic, technical, and utility tariff analysis, which incorporates long-term utility and energy forecasts. He has developed various tariff models from the ground up, which are customized to reflect the specific parameters of each project. He is also skilled at calculating energy savings associated with various project structures. As a result of his strong analytical skill set, Mr. Gabel-Frank has served an integral role on various progressive projects throughout the region.

He supports solar projects through the request for proposal (RFP) process as well as reviews utility tariffs and performs cost/benefit analysis. He is also knowledgeable on the solar renewable energy certificate (SREC) market.

He has specialized knowledge on demand response programs and can effectively support clients in evaluating this revenue opportunity. Mr. Gabel-Frank also developed a model that calculates energy savings and potential rebates associated with energy efficiency projects.

Professional Qualifications

BA., Economics, Political Science, English Writing
University of Pittsburgh, 2009

gabel associates

Years of Experience: 9+

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 Nos. GO18101112 & EO18101113

Division of Rate Counsel RESPONSE to Public Service Electric and Gas Company

Witness: David E. Dismukes

PS-RC-DED-23

Referencing page 15, lines 13-18 of Dr. Dismukes's Direct Testimony, please confirm or deny that it is Dr. Dismukes's position that all externality costs associated with carbon emissions are captured in RGGI allowance prices. If confirmed, please explain why the current RGGI prices are much lower than the peer reviewed estimates of social cost of carbon presented in Schedule DED-1. If denied, please explain what externality costs are likely not captured in RGGI market allowance prices.

RESPONSE:

Deny. An example of externality costs not captured in the RGGI market could include reductions in operating costs, fuel savings, and GHG emissions to name a few.

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 Nos. GO18101112 & EO18101113

Division of Rate Counsel RESPONSE to Public Service Electric and Gas Company

Witness: David E. Dismukes

PS-RC-DED-26
Referencing page 23, line 16 to page 24, line 5 of Dr. Dismukes's Direct Testimony, please provide any and all examples of other jurisdictions utilizing the ratepayer impact approach described to evaluate cost effectiveness of energy efficiency programs. Please provide all citations, studies, and other supporting documents related to the examples provided.

RESPONSE:

Dr. Dismukes has not performed this analysis. However, it is Dr. Dismukes opinion that ratepayer impacts should be considered when modeling the costs versus benefits of a program since both costs and benefits to ratepayers should be considered when conducting a CBA. Rate impacts are a direct cost that will be incurred by ratepayers and therefore should be considered in a CBA.

	Nominal $ Benefits per Ton			Emission Tons per MWh		
Year	CO_2	SO_2	NOx	CO_2	SO_2	NOx
2019	55.0	69,219.4	10,156.1	0.4791	0.0009	0.0004
2020	57.9	72,187.2	10,467.1	0.4828	0.0008	0.0003
2021	59.5	75,348.0	10,919.3	0.4776	0.0008	0.0003
2022	62.4	78,532.0	11,374.5	0.4737	0.0008	0.0003
2023	65.5	81,769.4	11,837.1	0.4713	0.0008	0.0003
2024	68.5	85,033.2	12,303.2	0.4712	0.0009	0.0003
2025	71.7	88,345.2	12,776.1	0.4739	0.0009	0.0003
2026	74.9	91,747.7	13,261.7	0.4744	0.0010	0.0004
2027	78.2	95,254.6	13,762.2	0.4787	0.0010	0.0004
2028	81.6	98,847.9	14,274.8	0.4809	0.0010	0.0004
2029	83.5	102,535.8	14,800.8	0.4869	0.0011	0.0004
2030	87.0	106,269.3	15,333.1	0.4975	0.0012	0.0004
2031	90.7	110,128.2	15,883.1	0.4930	0.0012	0.0004
2032	94.4	114,151.7	16,456.3	0.4982	0.0012	0.0004
2033	98.4	118,337.8	17,052.4	0.4977	0.0012	0.0004
2034	102.4	122,682.3	17,670.8	0.4904	0.0012	0.0004
2035	106.6	127,218.8	18,316.4	0.4919	0.0012	0.0004
2036	111.0	131,954.2	18,990.0	0.4951	0.0012	0.0004
2037	115.5	136,864.3	19,688.2	0.4890	0.0012	0.0004
2038	120.2	141,955.6	20,411.8	0.4915	0.0012	0.0004
2039	125.0	147,247.0	21,163.5	0.4916	0.0011	0.0004
2040	130.0	152,735.6	21,942.9	0.4863	0.0011	0.0004
2041	135.2	158,428.9	22,751.1	0.4867	0.0011	0.0004
2042	138.3	164,334.3	23,588.9	0.4885	0.0011	0.0004
2043	143.8	170,459.9	24,457.7	0.4841	0.0011	0.0004
2044	149.5	176,813.7	25,358.4	0.4872	0.0011	0.0004
2045	155.5	183,404.5	26,292.4	0.4889	0.0011	0.0004
2046	161.7	190,240.9	27,260.7	0.4836	0.0011	0.0004
2047	168.1	197,332.1	28,264.6	0.4850	0.0011	0.0004
2048	174.8	204,687.6	29,305.6	0.4865	0.0011	0.0004
2049	181.7	212,317.4	30,384.9	0.4821	0.0011	0.0004
2050	189.0	220,231.5	31,503.9	0.4841	0.0011	0.0004

Emission $ Benefits per kWh

CO_2	SO_2	NOx
0.0264	0.0602	0.0036
0.0280	0.0604	0.0036
0.0284	0.0615	0.0037
0.0296	0.0652	0.0038
0.0309	0.0690	0.0040
0.0323	0.0739	0.0041
0.0340	0.0818	0.0044
0.0355	0.0880	0.0047
0.0374	0.0950	0.0049
0.0393	0.1034	0.0052
0.0406	0.1113	0.0055
0.0433	0.1228	0.0059
0.0447	0.1285	0.0062
0.0471	0.1361	0.0065
0.0490	0.1401	0.0067
0.0502	0.1427	0.0068
0.0525	0.1478	0.0070
0.0550	0.1544	0.0073
0.0565	0.1583	0.0075
0.0591	0.1646	0.0078
0.0614	0.1691	0.0080
0.0632	0.1743	0.0082
0.0658	0.1793	0.0085
0.0675	0.1861	0.0088
0.0696	0.1930	0.0091
0.0729	0.2022	0.0095
0.0760	0.2097	0.0098
0.0782	0.2165	0.0101
0.0815	0.2242	0.0104
0.0850	0.2323	0.0108
0.0876	0.2413	0.0111
0.0915	0.2497	0.0115

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 Nos. GO18101112 & EO18101113

Division of Rate Counsel RESPONSE to Public Service Electric and Gas Company

Witness: David E. Dismukes

PS-RC-DED-18

Referencing page 9, lines 2-3 of Dr. Dismukes's Direct Testimony, please provide all studies and academic papers that support Dr. Dismukes's statement that three to four percent are commonly employed societal discount rates. For any academic papers behind pay walls, please provide pdf versions of such papers.

RESPONSE:

See attached documents. For example, the White House Office of Management and Budget ("OMB") publishes Circular No. A-4, which provides when examining the effects of regulation that do not fall exclusively or primarily on the allocation of capital, such as the effect on private consumption due to higher consumer prices for goods and services, the OMB may use a three percent "societal" discount rate. As the Company is aware, the EPA also uses a 3 percent discount in estimating future costs and benefits.

PS-RC-DED-18 OMB Circular No. A-4.pdf

PS-RC-DED-18 CSAPR, Final 2016.pdf

PS-RC-DED-18 EPA-Discounting Future Benefits and Costs.pdf; also available at: https://www.epa.gov/sites/production/files/2017-09/documents/ee-0568-06.pdf

Creedy, J. and Passi, H. Public Sector Discount Rates.pdf