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BOARD OF PUBLIC UTILITIES
TRENTON, NJ

VIA ELECTRONIC DELIVERY & OVERNIGHT MAIL

Aida Camacho-Welch, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, Suite 314
P.O. Box 350
Trenton, New Jersey 08625-0350

Re: In the Matter of the Implementation of L. 2018, c.16 Regarding the Establishment of a Zero Emission Certificate Program for Eligible Nuclear Power Plants, *et al.*, BPU Docket No. E018080899

Re: Application for the Receipt of Zero Emission Credits of Hope Creek Generating Station Submitted In the Matter of the Implementation of L. 2018, c.16 Regarding the Establishment of a Zero Emission Certificate Program for Eligible Nuclear Power Plants, BPU Docket No. E018121337

Re: Application for the Receipt of Zero Emission Credits of Salem 1 Generating Station Submitted In the Matter of the Implementation of L. 2018, c.16 Regarding the Establishment of a Zero Emission Certificate Program for Eligible Nuclear Power Plants, BPU Docket No. E018121338

Re: Application for the Receipt of Zero Emission Credits of Salem 2 Generating Station Submitted In the Matter of the Implementation of L. 2018, c.16 Regarding the Establishment of a Zero Emission Certificate Program for Eligible Nuclear Power Plants, BPU Docket No. E018121339

Dear Secretary Camacho-Welch:

PSEG Nuclear LLC ("PSEG" or "PSEG Nuclear") submits this letter in response to the comments filed by certain intervenors and participants¹ in these proceedings. The intervenors

¹ PSEG Nuclear responds to certain allegations of the Division of Rate Counsel ("Rate Counsel"), the PJM Independent Market Monitor ("IMM"), the PJM Power Providers ("P3") and the New Jersey Large Energy Users Coalition ("NJLEUC"). PSEG Nuclear, however, did not respond to every allegation. Notably, the IMM has continued in its refusal to produce its comments to PSEG, which continues to leave PSEG without an unredacted version of the IMM's submittal. Having still not received the unredacted version at the time of this submission, PSEG reserves its right to seek an order to strike the IMM's comments in their entirety as an

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and participants oppose the applications submitted by PSEG Nuclear and attempt to convince the Board of Public Utilities (“BPU”) that PSEG Nuclear’s applications should be rejected. That is not surprising, as these same entities opposed the ZEC Act² and many of the same incorrect and erroneous facts and arguments that they have submitted to the BPU in this proceeding were already made to the New Jersey Legislature during the consideration of the ZEC Act. To ensure that the BPU has before it accurate information upon which to consider the applications, PSEG submits these comments to aid the BPU in its evaluation of PSEG Nuclear’s pending applications for Zero Emission Certificates (“ZECs”).

The BPU has before it the applications of three nuclear power plants that represent the largest source of carbon free electricity in the State of New Jersey, and in April the BPU will decide whether those three plants have satisfied the standard established by the ZEC Act. The ZEC Act constitutes clear and irrefutable recognition of the importance of nuclear generation to the State of New Jersey and sets forth an unambiguous process for the BPU to utilize in order to implement the legislative mandate.

Based on the actions of the BPU in this proceeding to date and the significant effort and resources that the BPU is applying to this docket, there is no doubt that the BPU appreciates the significance of the process and the decision that it has before it. The BPU’s decision will determine whether the Salem 1, Salem 2, and Hope Creek nuclear power plants continue to operate for the next three years. If the BPU determines that the plants should receive ZECs, then

improper *ex parte* communication with the BPU. Accordingly, PSEG Nuclear’s failure to address any particular allegation should not be construed as acceptance or agreement.

² L. 2018, c. 16 (codified at N.J.S.A. 48:3-87.3-7) (“ZEC Act”).

the BPU will in three years be faced again with the decision to evaluate the applications submitted and the new facts upon which to make such a decision. As the BPU fully understands, the decision before it is not whether the ZEC Act should be made into law (that decision was already made), nor is the BPU faced with the decision as to whether the applicants might receive benefits from yet unknown sources for their environmental or fuel diversity attributes (the ZEC Act provides numerous consumer protections to enable the BPU to consider and act on such scenarios in the future). Rather, the decision before the BPU at this time is whether the PSEG Nuclear applications have satisfied the specific criteria of the ZEC Act.

As demonstrated in the applications and the responses to data requests, and as set forth below, PSEG Nuclear respectfully asserts that it has fully demonstrated that its applications seeking the receipt of ZECs should be granted as to all three plants. In the event that the BPU believes that there is any doubt or uncertainty as to the eligibility of all three nuclear plants, PSEG Nuclear encourages the BPU to request additional information on such items to enable PSEG Nuclear to clarify any open issue, or if the BPU determines that it would be helpful to its evaluation, PSEG Nuclear encourages the BPU to hold hearings to the extent necessary prior to its decision in April of 2019. As demonstrated by the voluminous and detailed information provided to the BPU in our applications and supporting documents, PSEG is committed to ensuring that the BPU has all necessary information to make this important decision.

I. Executive Summary

Throughout these comments, PSEG responds to numerous comments filed by intervenors and participants on its applications. PSEG Nuclear respectfully submits that its applications have fully complied with all of the requirements of the ZEC Act, and that the information provided

fully and unequivocally demonstrates that the three plants are eligible and should be selected for ZECs. Further, none of the comments of the intervenors or participants provides a basis to reject the applications.

PSEG Nuclear's reply comments underscore four points that support a clear basis to approve our applications:

First, the submitted applications provide complete responses to all application elements identified in the BPU's order and demonstrate, conclusively, that the financial and environmental standards are met. The applications conclusively substantiate that the plants will not cover their costs and risks as defined in the ZEC Act. Further, the loss of the nuclear plants would set New Jersey back by a decade in achieving its carbon reduction goals and would place New Jersey in severe jeopardy of complying with ozone standards.

Second, most of the objections raised by intervenors and participants should be rejected out-of-hand, as obvious attempts to reopen issues that the New Jersey legislature and Governor Murphy decided when the ZEC Act became law. These include allegations such as that the BPU should take account of past stranded cost payments, that only a small portion of future capital expenditures qualify as "costs," and that the units should be willing to operate as long as they cover "going forward" costs. These assertions are inconsistent with the terms of the ZEC Act and should be disregarded in their entirety.

Third, to the limited extent that the intervenor and participants' comments on financial matters are within the scope of the ZEC Act, Rate Counsel, the IMM, and P3 have failed to make dents in PSEG's submittals. Rather, the intervenor/participant submittals contain numerous errors. Notably, the submittals overstate projected energy revenues by confusing "on peak"

prices with “around the clock” prices, ignore significant basis differentials between hub prices and prices at the plant busses where the plants are paid, and cherry-pick time periods when price projections are made for revenue calculations. Even more egregiously, Rate Counsel and the IMM zero-out risks completely, notwithstanding the express recognition of both “operational risk” and “market risk” in the ZEC Act.

Fourth, PSEG Nuclear has decided, as confirmed by the independent Board of Directors of Public Service Enterprise Group Incorporated, that Hope Creek, Salem 1, and Salem 2 will be retired unless they are all awarded ZECs.

PSEG Nuclear is confident that, after applying the ZEC Act requirements to PSEG Nuclear’s applications, the BPU will conclude that each of the plants should be awarded ZECs.

II. PSEG Nuclear Has Fully Complied With The ZEC Act Requirements And The Requirements Of The BPU, And Has Demonstrated That It Satisfies Those Requirements And That Their Applications for ZECs Should Be Granted.

PSEG Nuclear respectfully submits that its applications seeking ZECs for the Hope Creek, Salem 1, and Salem 2 plants have fully complied with all the requirements of the ZEC Act as well as all of the ZEC application requirements promulgated by the BPU. The comments of the intervenors and participants in this proceeding are comprised largely of assertions that conveniently ignore the existence of the ZEC Act itself, and otherwise provide no credible basis to deny PSEG Nuclear’s applications.

The financial information PSEG Nuclear has provided demonstrates unequivocally that the units will not cover their costs and risks in the absence of a material financial change. Consistent with this evaluation of the plants’ economics, and absent the receipt of ZECs by all

three units or some other material financial change, PSEG will close all three plants within the next three years. In fact, the reality is that plant closures would actually occur well prior to the end of the three year period. PSEG Nuclear would take all necessary steps to retire all of these plants at or prior to their refueling outages scheduled for the Fall 2019 in the case of Hope Creek, Spring 2020 in the case of Salem 2, and Fall 2020 in the case of Salem 1. This decision is informed by extensive internal and independent analysis and is demonstrated in the materials requested by, and provided to, the BPU. While the closure of the plants will have material detrimental impacts on air quality in New Jersey, and will adversely impact the regional economy in the vicinity of the plants, the decision to retire is clear and straightforward from an economic standpoint, consistent with PSEG's decision-making processes that resulted in PSEG's shut-down of its Hudson and Mercer coal units in 2017. While the commenters opposing PSEG Nuclear's applications may believe that the company is bluffing, the reality is that after years of analysis, this difficult decision already has been made. Whether the plants continue to operate or retire is now in the hands of the BPU.

The comments of the intervenors and participants do not provide an even plausible basis for the BPU to decide that the plants are ineligible for ZECs under the ZEC Act's standards. Intervenors and participants make unfounded and ill-conceived claims in arguing that the statutory criteria are not met. In derogation of legislative directives, intervenors and participants suggest that all risks should be ignored and financial projections should be based on highly optimistic and speculative assumptions. But the BPU should not be distracted by debates about hypothetical scenarios.

III. Most Of The Objections Raised By Intervenors And Participants Should Be Rejected Out-Of-Hand As Obvious Attempts To Reopen Issues That The New Jersey Legislature And Governor Murphy Decided When The ZEC Act Became Law.

The comments submitted by the intervenors and participants are replete with claimed deficiencies in the ZEC Applications, but they are really nothing more than attempts by the intervenors and participants to challenge the ZEC Act provisions enacted by New Jersey legislature and Governor Murphy. The BPU should not be distracted by these out-of-scope claims and should focus, instead, on what the New Jersey legislature decided needed to be addressed. The Commenters' out-of-scope claims include:

- *Erroneous claims that the BPU should consider past period revenues in determining projected financial viability:* A persistent theme in the comments is that past period revenues received by the units, such as stranded cost payments attributable to the plants and excess deferred income taxes associated with past plant output under the Tax Cuts and Jobs Act of 2017, should be considered in the evaluation of their future financial condition. But the required financial demonstration under the ZEC Act is for “cost projections over the *next* three energy years . . . [showing that the] nuclear power plant is projected to not fully cover its costs and risks”³ The required legislative demonstration of financial need for ZECs appropriately does not take into account of revenues received by the nuclear plants for past periods because past period payments have absolutely no bearing on future investment or operational decisions. No

³ N.J.S.A. 48:3-87.5(a).

competitive business enterprise considers past profits when making decisions about whether to keep an asset in operation. It is only future results that matter.

- *Erroneous claims that a cash-flow methodology is improper for capital improvements in the financial assessments:* Rate Counsel claims that capital investments projected to be made in the three-year forward projection period have to be amortized over their useful life and should not be counted as costs in the year in which they are incurred.⁴ The legislation expressly states that “non-fuel capital expenses” is one of the cost categories covered by the financial demonstration for the three-year projections.⁵ This is proper because plant retirement decisions should be a function of net cash flows expected to be generated by the plants, including consideration of the cost of risks, and should not be based on accounting or rate-making principles.
- *Erroneous claims that operational and market risks are not present:* Commenters also claim that operational and market risks do not reflect an “actual cost.” They assert, for example, that the likelihood of a negative risk outcome is offset by the potential for an off-setting positive outcome and that all risks are already included in the cost of capital available to the plants. This leads Rate Counsel, the IMM, and P3 to wrongly claim that these risks do not exist at all. But the ZEC Act provisions directly contradict them. Operational and market risks are expressly identified in the ZEC Act as representing a “cost . . . that would be avoided by ceasing operations” and are part of the “projected . . .

⁴ Rate Counsel Comments, pp. 25-26.

⁵ *Id.*

costs and risks” to be included in the applicant’s presentations.⁶ The ZEC Act even specifies operational and markets risk components. Indeed, ignoring risks would be as foolish as arguing that commercial entities such as PSEG Nuclear should not expect a return on invested capital.

- *The erroneous claim that only avoidable costs can be considered in the determination of overhead to support the plants:* Rate Counsel and the IMM assert that only overhead costs shown to be “avoidable” can be considered in the financial analysis. In fact, the ZEC Act expressly states that “fully allocated overhead costs” are part of the financial analysis.⁷ This makes sense because the full overhead amounts will be incurred as a reasonable business expense while the plants are in operation. If a share of reasonable overhead costs is ignored, the company’s true financial picture will be obscured. In any event, as the applications demonstrate, most overhead costs are avoidable.
- *The erroneous claims that the ZEC Act financial analysis contemplates that the plants will remain in operation if they recover sufficient revenues to exceed a portion of their going forward costs:* Commenters contend that the plants will not retire if they recover sufficient revenues to exceed their avoidable costs excluding avoidable risks. When a nuclear plant retires, the associated risks are eliminated, so risk is an avoidable cost. Further, more than 95% of the total costs identified in the applications are avoidable.⁸

⁶ *Id*

⁷ *Id*.

⁸ See IUD-5.

Recovering a portion of going forward costs is not the standard for the financial evaluation under the ZEC Act. The ZEC Act correctly recognizes the need for projected revenues to cover all costs identified *plus* either the operational and market risks or a risk-adjusted cost of capital. Just to cover avoidable costs *excluding* avoidable risk is not sufficient to justify the future operation of a nuclear power plant. PSEG would fail in fulfilling its fiduciary responsibilities to shareholders if it were to ignore risks in its decision-making.

- *The erroneous claim that the BPU has the discretion under the ZEC Act to adopt policies to favor gas-fired generation in lieu of preserving at-risk nuclear power plants:* P3 suggests that the BPU should, instead of implementing the ZEC Act, adopt a policy of incentivizing state-of-the-art combined-cycle plants to lower carbon emissions⁹. The ZEC Act is intended to “preserv[e] and expand[] zero-emission electricity generation within and outside the State” and is described as a “program that recognizes and compensates nuclear energy generators in a manner similar to other non-emitting energy generation resources.”¹⁰ P3’s suggestion that the BPU pursue another policy designed to promote gas-fired generation is not even remotely tenable and would absolutely defeat the purpose of the ZEC Act, which is designed to preserve zero emission generation for New Jersey residents.
- *The erroneous claim by the IMM that the concern of the legislature about retaining fuel diversity for New Jersey can be satisfied by PJM resources remote from the borders of*

⁹ See P3 Comments, Affidavit of Dr. Paul Sotkiewicz, pp 11-13 (“Sotkiewicz Affidavit”).

¹⁰ N.J.S.A. 48:3-87.3(b)(5).

the State: The IMM contends that the loss of the Hope Creek, Salem 1, and Salem 2 plants will not materially affect the fuel diversity of the generation mix serving New Jersey residents because New Jersey residents can rely generically upon remote, out-of-state PJM resources.¹¹ But the ZEC Act makes clear that the concern of the New Jersey legislature regarding fuel diversity was not focused on PJM's overall generation mix. Instead, the legislature's concern was that "increased reliance on natural gas-fired generation will render the electric generation and delivery systems less resilient and more vulnerable to the impacts of extreme winter weather events, natural gas pipeline accidents, and other factors *affecting the deliverability of natural gas to electric power generating stations in and around the State.*"¹² The IMM's analysis does not even purport to address the issues identified in the ZEC Act – it does not address New Jersey specifically and does not address the impact of extreme and emergency events affecting fuel deliveries into the State.

- *The erroneous claim that financial data obtained from the Environmental Protection Agency ("EPA") and the Energy Information Administration ("EIA") should match the financial analysis mandated by the ZEC Act:* P3 attempts to rely upon EPA/EIA data to support allegations that the ZEC applications do not meet the ZEC Act financial standards.¹³ But, in fact, the EPA/EIA data is reported differently than the ZEC Act mandated analysis. For example, in the EPA/EIA data, only avoidable costs are

¹¹ See IMM Comments, p. 26-28.

¹² N.J.S.A. 48:3-87.3 (b)(3) (emphasis added).

¹³ P3 Comments, Sotkiewicz Affidavit, pp. 7-8 ("Sotkiewicz Affidavit").

considered, capital costs are not included and the costs of risks are not reported. There is no reason why the two data sets should match.¹⁴

IV. On Financial Matters, The Intervenor/Participant Submittals Contain Numerous Errors.

Rate Counsel maintains that the operational and market risks are not properly stated in the applications and asserts that they are “speculative.”¹⁵ According to Rate Counsel, these are “cost ‘cushions’” and not an “actual cost.”¹⁶ Rate Counsel maintains that the risks are “one-sided” and that, if recognized, would improperly “guarantee” payments to unregulated businesses. The P3 makes a similar claim that all risks are reflected in the cost of capital and thus that operational and market risk should not be separately recognized.¹⁷ And the IMM just states that they should not be considered.¹⁸ But Rate Counsel, the IMM, and P3 are all wrong with respect to both the statutory construction of the ZEC Act and commercial realities.

As noted above, the ZEC Act explicitly recognizes these risks and identifies them as “costs” to be included in the financial analysis. Ignoring or trivializing them as Rate Counsel, the IMM, and P3 attempt in their comments is expressly at odds with the legislative design. The ZEC Act provides that applicants may show either that they are not covering their risk-adjusted cost of capital *or* that they are not projected to fully cover their costs and risks. Further, this is

¹⁴ Other errors in P3’s discussion of EPA/EIA costs are also evident. For example, fuel costs are understated and fixed operation and maintenance costs do not appear to be escalated to reflect current year dollars.

¹⁵ Rate Counsel Comments, Affidavit of Andrea C. Crane, p. 9 (“Crane Affidavit”).

¹⁶ *Id.*

¹⁷ See P3 Comments, Sotkiewicz Affidavit, P 17.

¹⁸ IMM Comments, pp. 18-21.

not a payment guarantee that will cover potential losses “in all cases” as Rate Counsel contends.¹⁹ Although risks may not always materialize in a particular year or time frame, the fact remains that risks are present when decisions about future operations are made: the risk *could* have resulted in costs being higher or revenues being lower and *could* have caused losses much larger than the estimate. To the extent that costs are higher or revenues are lower than expected, the ZEC payment is not adjusted upward in response, but rather remains fixed and the plant owner thus is still exposed to these risks and still bears the associated costs. Without taking into account the cost of operational and market risks, it would not be reasonable for a plant owner to continue operating.

The claims that operating market risks should be zeroed-out, effectively, amounts to an after-the-fact challenge to the legislative construct and would be wholly inconsistent with the legislative mandate to the BPU. Although PSEG Nuclear did not choose the alternative of showing a risk-adjusted cost of capital, it is clear as a matter of statutory construction that, for the drafters of the ZEC Act, the concepts of “risk-adjusted cost of capital” and “cost of risks” were viewed to be interchangeable.²⁰ The suggestion that PSEG Nuclear should not be compensated at all for the costs of its risks thus is tantamount -- under the statutory construct -- to claiming investors should not receive *any* return on deployed capital.²¹

Further, the Applications provide ample support for the methodologies used to calculate

¹⁹ Rate Counsel Comments, Crane Affidavit p. 10-11.

²⁰ See N.J.S.A. 48:3-87.5 (a).

²¹ P3 effectively contradicts itself. It agrees that market and operational risks should be included in the cost of capital, yet it dismisses them completely as a viable component of cost and risks as recognized under the ZEC Act.

the costs of the risks. Operational risks are estimated to be 10% of the operational costs. The use of a 10% factor for this determination under the ZEC Act is consistent with other situations that required a risk measurement of cost predictability. In the New York ZEC program, for example, operational risks were estimated to be 10% of total costs.²² Similarly, the Federal Energy Regulatory Commission (“FERC”) has approved as just and reasonable a 10% upward adjustment of cost based bids to reflect operational risks associated with unit performance in energy markets. FERC explained that such an adjustment is appropriate to “account for uncertainty in the values of the costs utilized in computing ... cost-based offers before all costs are known.”²³ The calculation of “Avoidable Cost Rates” for the purpose of PJM capacity auctions also allows a 10% adder over the levels of documented costs.²⁴

Consistent with the terms of the ZEC Act, the overall cost of market risks includes both forced outage risk and price volatility risk.²⁵ The methodology employed, which is described in detail in the applications, follows established risk management practices and is consistent with both PSEG’s normal internal practices and the methodology used in other regulatory settings.²⁶

Finally, as shown in the responses to GAIO-18 included in the ZEC applications, the

²² Constellation Energy Nuclear Group, LLC (CENG) Comments in response to the Notice Soliciting Comments and Providing for Technical Conference and Public Statement Hearings issued by the State of New York Public Service Commission on January 25, 2016 in Case 15-E-0302.

²³ *PJM Interconnection, L.L.C.*, 153 FERC ¶ 61289, P 30 (2015).

²⁴ PJM Tariff, Attachment DD, Section 6.8 (“Adjustment Factor equals 1.10 (to provide a margin of error for understatement of costs”).

²⁵ See N.J.S.A. 48:3-87.5 (a).

²⁶ PSEG’s calculation reduces the cost of market risk significantly based on its hedging practices. The calculation of market risk without considering the benefits of hedging would result in a significantly greater value. See IUD-0001.

returns realized by the plants in 2017 (without any consideration of risks) would be considered confiscatory under public utility rate-making standards. It is apparent, based on the values shown in GAIO-18, and considering the projections of financial performance as submitted in the applications, that without an award of ZECs, returns would not justify continuing operations. This provides further confirmation that the inclusion of costs of risks in the ZEC Act was justifiable and reasonable.

V. Misguided Claims Regarding Hedging Are Not Supported By Finance Theory And, If Accepted, Would Show The Plants To Be In Even Greater Financial Distress.

Rate Counsel contends that PSEG Nuclear failed to properly represent its portfolio of hedging contracts because it did not apply its hedged positions directly to the units.²⁷ This argument is incorrect. First, it is important to note that PSEG Nuclear provided its hedging contracts as part of its applications.²⁸ Second, in its applications, PSEG Nuclear explained how the hedging contracts are utilized and demonstrated that if they were used in the manner suggested by Rate Counsel, they would actually result in a reduction of the revenues of the nuclear plants not an increase.²⁹

As PSEG Nuclear explained in its application, the nuclear plants are hedged as part of the portfolio of generating assets owned by the subsidiaries of PSEG Power. Accordingly, PSEG Energy Resources and Trade LLC, the PSEG corporate entity responsible for hedging, does not enter into specific contracts to hedge the nuclear plants' output. There is no basis for Rate

²⁷ See Rate Counsel Comments, Crane Affidavit, pp. 20-21.

²⁸ See SSA-30.

²⁹ See ZECJ-FIN-7.

Counsel's claim that hedging positions should be ascribed to particular generators.

Moreover, hedging in the manner suggested by Rate Counsel would skew valuation of the PSEG generating fleet irrationally because it would arbitrarily assign profit or loss to particular units and thus render meaningless performance measurements for individual plants. Instruments used for portfolio hedging are not tied to any particular plant and remain in place irrespective of whether a given plant retires. Because of this, hedging contracts are *neither* a lost benefit (if in the money) nor an avoidable cost (if out of the money) linked to plant retirement decisions.

In any event, if Rate Counsel's recommendations were followed, they would show the plants to be in even greater financial need than demonstrated in the applications. As shown in response to question ZECJ-FIN-7, the net mark-to-market position under the hedging agreements shows losses. If applied to the nuclear plants, the result would be a *reduction* in expected revenues.³⁰

The overall approach taken by PSEG Nuclear in its applications regarding hedging practices was the most conservative approach possible, in that it minimized the reported cost levels. PSEG Nuclear did not apply the negative hedge contract positions to the revenue calculations, and it did recognize the risk mitigation impact of existing hedges and expected future hedges in the cost of market risk calculations. If PSEG had included hedges in the revenue projections or omitted hedges from the cost of risk calculation, the financial condition of

³⁰ See ZECJ-FIN-7.

the plants would have appeared to be worse than as portrayed in the submitted applications.³¹

VI. Modeling Retirement Of Individual Applicant Units To Determine Financial Impacts On Remaining Unit(s) Would Be: (i) Evidence Of Illegal Market Manipulation; (ii) Inconsistent With The ZEC Act; And (iii) Significantly Reduce Carbon Free Generation In The State Of New Jersey.

Rate Counsel contends that PSEG Nuclear should have modeled the retirement of one or more units at the Artificial Island site as a condition for receiving ZECs, essentially for the purpose of showing that if PSEG Nuclear retired one of the nuclear units that it would make more money at the other two.³² Rate Counsel suggests that if PSEG Nuclear retired one (or two) units at the site, that the second (or third) unit would be sufficiently profitable because wholesale prices would increase sufficiently, such that it would continue to operate without ZECs.³³ Rate Counsel's scenario thus assumes that at least one and possibly two units at the site would necessarily be retired.

First, if accepted, Rate Counsel's contention would expose PSEG to potential claims that it was seeking to exercise market power. It is well settled under the antitrust laws, as well as FERC precedent, that withholding the output (through physical or economic actions) of particular units in the owner's fleet of generators for the purpose of raising prices that advantage other generating units in that fleet would be illegal.

Second, Rate Counsel's contention would be inconsistent with both the express terms of the ZEC Act, as well as undermine the ZEC Act's goals. The ZEC Act provides that an applicant

³¹ See SSA-30.

³² IMM Comments, p. 29; Fagan/Chang Affidavit, p. 33.

³³ *Id.*

must demonstrate that its plant can meet the stated financial need requirements. PSEG Nuclear has met this obligation by making three applications, each of which shows the individual financial condition of that plant. These demonstrations satisfy the statutory requirements, subject to review by the BPU to determine their accuracy. But nothing in the ZEC Act requires an applicant to assume the retirement of its generating units (or generating units of others if they were to apply) that are contended to meet the financial eligibility standards for an award of ZECs. Indeed, Rate Counsel's claim that an applicant should be required to undertake such an analysis leads to the incongruity of requiring an applicant to assume that it does not qualify for the receipt of ZECs when presenting an application that demonstrates that it does.

Also, if Rate Counsel's claim were accepted, the achievement of ZEC Act goals would be systematically thwarted – by the early retirement of carbon free nuclear generation.

Finally, the analysis proposed by Rate Counsel would be a useless undertaking. PSEG Nuclear has already indicated that the independent Board of Directors of Public Service Enterprise Group has determined to retire all three plants unless *each* plant is awarded ZECs. Given this determination, no purpose would be served by undertaking the analysis that Rate Counsel advocates.

VII. The Inclusion Of Reasonably Anticipated Capital Expenditures As Ongoing Costs Of Operations Is Sanctioned By The ZEC Act And Is Commercially Sound.

Rate Counsel claims that anticipated capital expenditures should not be included in the financial analysis of the plants as a current expense.³⁴ According to Rate Counsel, these amounts should be amortized over their accounting lives consistent with “traditional

³⁴ Rate Counsel Comments, p. 22-24.

ratemaking.”³⁵

Rate Counsel’s contentions are misplaced. First, even the IMM agrees that capital expenditures should be treated as expenses for the purpose of the financial analysis. As the IMM states in its comments: “The IMM analysis treats the annual capital expenditures included in PSEG’s operating costs as expenses rather than the usual accounting treatment of capital expenditures which would recognize that they are recovered over the life of the asset.”³⁶ Second, the ZEC Act specifies that expenditures for “non-fuel capital costs” should be included in the financial analysis for the specified three-year study period.³⁷ Rate Counsel’s contention thus flies in the face of the statutory language. In addition, the ZEC applications do not constitute “traditional ratemaking.” Principles of ratemaking might be applicable if the current issue before the BPU was the determination of a utility rate for the physical useful lives of the plants under a traditional cost-of-service regime, with a recovery period extending for the full physical life of the asset. That is not the situation here, nor is that situation contemplated by the ZEC Act. Instead, the purpose of the financial evaluation under the ZEC Act is to determine whether the applicant’s nuclear plants have demonstrated that they will retire within the next three years absent receiving ZECs or other material financial change.³⁸

³⁵ *Id.*

³⁶ IMM Comments, pp. 22-23.

³⁷ See N.J.S.A. 48:3-87.5 (a).

³⁸ If Rate Counsel’s claim that “traditional ratemaking” practices should be followed in the treatment of capital expenditures were accepted, it would also be appropriate to include the ongoing amortization of past capital expenditures as part of the costs considered in the analysis, despite these costs being sunk. PSEG’s analysis of the future financial viability of the plants has appropriately excluded these costs, but their inclusion within the traditional ratemaking cost of service ratemaking approach serves to demonstrate why such a framework is not appropriate in this proceeding.

Rate Counsel further maintains that PSEG Nuclear has not sufficiently supported the need for expenditures identified as “unallocated future projects.”³⁹ This claim is also unavailing. PSEG Nuclear has been operating these nuclear units since the 1970s and 1980s. With the perspective of this experience and in recognition of the age of the plants, PSEG Nuclear can reasonably predict the required type and amount of capital expenditures that are needed to operate the plants in a safe and reliable manner. Nonetheless, actual capital expenditures may turn out to be higher than these estimates due to operational risks. As shown by the level of historical capital expenditures, the levels estimated for the three-year ZEC period covered by these applications are reasonable. In addition, Rate Counsel’s assertion that decisions regarding capital expenditures should not follow normal replacement practices is baseless. Following normal practices is necessary to assure that safety standards are met and that the plants can operate reliably. Unless normal practices are followed, there can be no assurance that selected plants be will be capable of providing the benefits that the ZEC Act contemplates.

VIII. The ZEC Act Does Not Limit The Financial Analysis To “Going Forward” Or “Avoidable” Costs, Expressly Authorizes Applicants To Consider Their Fully Allocated Overhead Costs and Includes Spent Fuel Costs Within The Financial Analysis As A Necessary Cost Of Running A Nuclear Plant.

The IMM makes the broad claim that the ZEC Act only allows consideration of “going forward” or “avoidable costs,” and excludes both avoidable risks and non-avoidable overhead costs in the financial determinations under the ZEC Act.⁴⁰ The IMM’s contention is that as long as a plant covers its avoidable cost excluding avoidable risks, the economically rational choice is

³⁹ Rate Counsel Comments, p. 24.

⁴⁰ IMM Comments, p. 2.

to remain in operation. Not only is this position inconsistent with the ZEC Act, this view is also flawed for failing to reflect commercial realities. When a plant retires, the associated risks are avoided and hence it is an avoidable cost. Operation of a heavily regulated and complex nuclear power plant in a competitive power market is far from a risk-free investment. In IUD-0001, PSEG Nuclear has quantified the costs of Operational and Market risks consistent with the ZEC Act provisions. For completeness, PSEG Nuclear also specified in its response to this data request which costs and risks are avoidable and such costs represent more than 95% of total costs, so the difference is small.⁴¹ The PSEG Board of Directors has concluded that, in the absence of a separate material financial change, the plants will be permanently deactivated within three years, unless all three plants receive ZECs. This is consistent with rational, economic decision making, and is reflected in the ZEC Act itself.

Rate Counsel and the IMM further contend that only “avoidable” overhead costs should be considered in the financial analysis.⁴² This assertion is directly contradicted by the ZEC Act’s requirement that the financial analysis should take account of “fully allocated overhead costs,” which conclusively overrides Rate Counsel’s and IMM’s objections.⁴³

Finally, Rate Counsel contends that Spent Fuel costs should not be included because the legal obligation to pay the charge to DOE was suspended in 2014.⁴⁴ Rate Counsel concludes

⁴¹ See IUD-5.

⁴² Rate Counsel Comments, pp. 25-26.

⁴³ N.J.S.A. 48:3-87.5 (a).

⁴⁴ Rate Counsel Comments, p. 25.

that these costs “are not being incurred.”⁴⁵ Rate Counsel’s contentions, however, miss the point entirely. Pursuant to the Nuclear Waste Policy Act, while the federal government is responsible to provide for the disposal of spent nuclear fuel and high-level waste, PSEG Nuclear is responsible for paying the costs of such disposal. It is unrealistic to expect that this type of handling will be done for free. While it is accurate that the DOE charge is currently suspended, it is indisputable that it will be necessary to store and ultimately dispose of the spent nuclear fuel and that the level of the DOE charge – an amount determined by a federal government agency – is a reasonable proxy for that cost. Accordingly, because the continued operation of a nuclear plant creates additional spent fuel, the spent-fuel handling cost is “incurred” when the plant runs, and it is thus appropriate to treat the inescapable expense of handling spent fuel as an on-going cost of operations.

IX. Intervenor And Participants Rely On Numerous Errors Such As: Overstating Projected Energy Revenues By Confusing “On Peak” Prices With “Around The Clock” Prices; Ignoring Significant Basis Differentials Between Hub Energy Prices And The Plant Busses Where The Plants Are Paid, Cherry-Picking When Energy Price Projections Are Made; And Using Contrary-To-Reality Values For Capacity.

a. Commenters’ Witnesses Use Invalid Energy Price Projections.

Rate Counsel witnesses, Bob Fagan and Maximilian Chang (Fagan/Chang), purport to show that PSEG Nuclear underestimates forward energy prices in its applications and thus overstates the need for ZEC payments.⁴⁶ They provide a graph that they claim shows “Actual” PJM West prices compared with the PJM West prices used by PSEG Nuclear. According to this

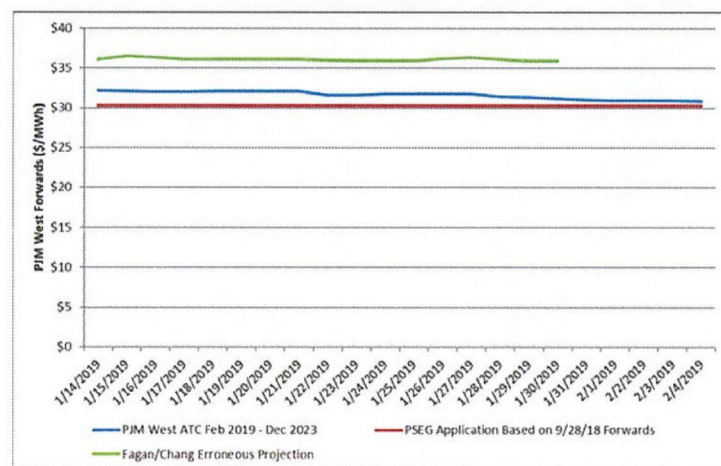
⁴⁵ *Id.*, p. 25.

⁴⁶ Rate Counsel Comments, Fagan/Chang Affidavit, pp. 19-24.

graph, “Actual” prices are approximately \$6/MWh higher than prices PSEG Nuclear used. This presentation, however, is clearly erroneous. In an “apples to oranges” comparison, Fagan/Chang have depicted *On-Peak* PJM West energy price sourced from the Chicago Mercantile Exchange as “Actual” prices, and have contrasted those to *Around-The-Clock* (“ATC”) PJM West energy prices used by PSEG Nuclear.⁴⁷ On-Peak prices are always higher than ATC prices.⁴⁸ Further, because nuclear plants operate according to a consistent hourly schedule, 24 hours a day, the use of ATC prices and not On-Peak prices is clearly appropriate.

When this error is corrected, the comparison that Fagan/Chang apparently intended to make appears as follows:

Average Monthly PJM West Forwards (Feb 19- Dec 23)



This data shows that prices increased slightly after September 28, 2018 (the date PSEG used for

⁴⁷ Rate Counsel Comments, Fagan/Chang Affidavit, p. 21, n. 26.

⁴⁸ On Peak prices represent the price for the 16 hours of peak demand for each *business* day and constitute approximately 46% of the total hours in a given year. Around-the-Clock or “ATC” prices represent the average price for all hours. Because output from nuclear power plants is basically uniform across all hours of the day, “Around-the-Clock” prices are the appropriate benchmark to consider.

pricing in its applications), but it also shows that forward prices have been trending down to nearly that same price level, with the most recent prices less than 2% different than the September 28, 2018 values, compared to the 21% higher that Fagan/Chang calculated using erroneous data.

Fagan/Chang make a similar error when they claim that the 2021 forwards from the BPU's offshore wind guidance document are "13 percent higher than the forwards provided by the Applicants."⁴⁹ While they provide no details in support of this claim, the OREC guidance document shows On Peak and Off Peak pricing for PJM West (and each New Jersey utility zone) for 2021 by month.⁵⁰ Comparing the annual average of these OREC guidance monthly prices (\$34.10 per MWh) to the 2021 annual average ATC price for PJM West supplied in the ZEC applications (\$30.05) results in the OREC prices being 13.5% higher. But again, this is a comparison of On Peak prices to ATC prices, which are always going to be lower since they include Off Peak pricing. The more accurate comparison that Fagan/Chang should have made is the OREC guidance On Peak price (\$34.10) to the ZEC application On Peak price (\$35.13). This would have demonstrated that the OREC guidance pricing is almost 3% *lower* than the prices used in the ZEC applications, not 13% above.

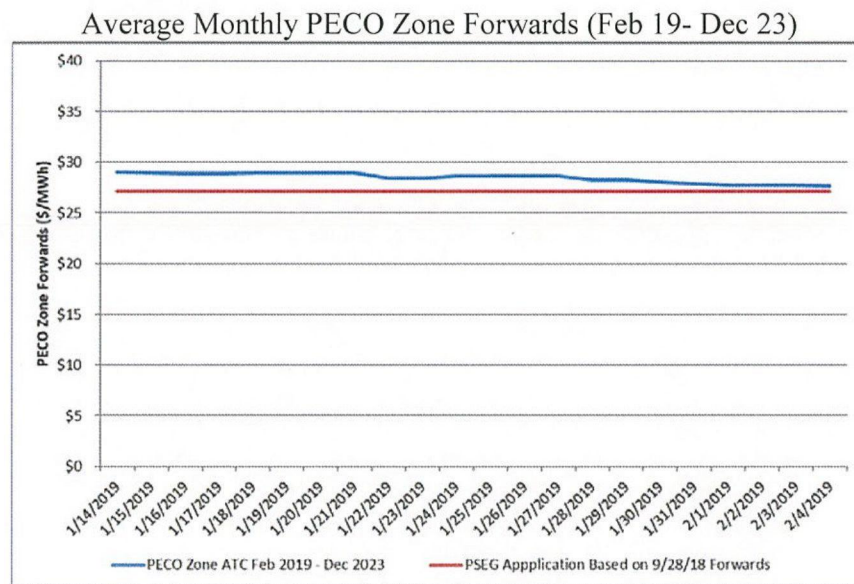
Fagan/Chang further purport to show increases in PECO zone pricing, also used as a reference value in PSEG Nuclear's applications, employing a similar graphic comparison.⁵¹ Fagan/Chang do not appear to commit the same error that occurred with respect to PJM West

⁴⁹ Rate Counsel Comments, Fagan/Chang Affidavit, p. 20.

⁵⁰ Available at: <https://nj.gov/bpu/pdf/boardorders/2018/20180917/9-17-18-8G.pdf>.

⁵¹ Rate Counsel Comments, Fagan/Chang Affidavit, p. 23, Figure 3.

prices. However, the data source they used (which is not identified) does not match the Intercontinental Commodities Exchange (“ICE”) and Nodal Exchange data used by most industry participants. Based on this data, Fagan/Chang’s intended comparison correctly appears as follows:⁵²



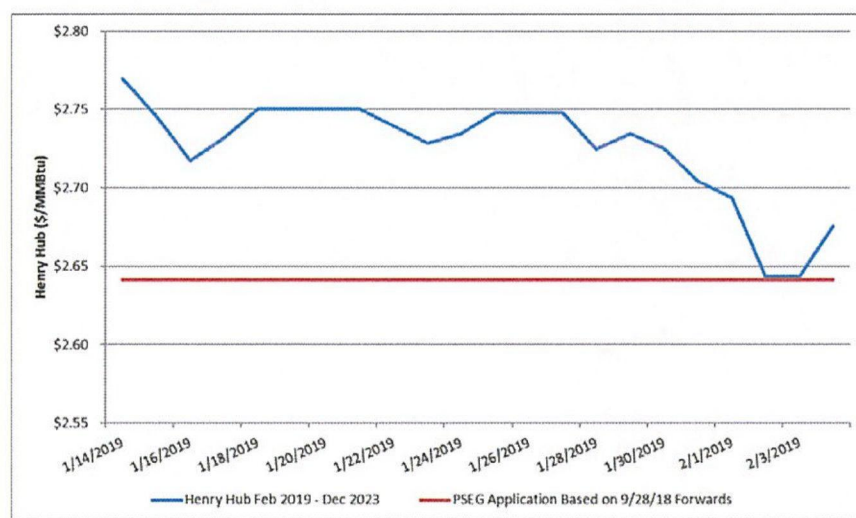
This shows, in a manner similar to the PJM West data, that price increases occurring after September 28, 2018 have trended back to PSEG Nuclear’s application values over the past several weeks. The most recent “Actual” prices are again less than 2% different than the PSEG Nuclear application values. In fact, the price differences are nearly indistinguishable on the graph.

⁵² Fagan/Chang’s graphic portraying their version of this data used a scale that exaggerated the magnitude of the increase. The graph here portrays this information in a more reasonable fashion by using the same scale that Fagan/Change used for the graph depicting PJM West Hub prices.

Fagan/Chang also claim that PSEG Nuclear ignored the impact of natural gas prices on forward energy prices.⁵³ This criticism is simply incorrect. In fact, as widely recognized, forward natural gas prices are a major driver of forward energy prices because gas-fired generators are frequently the marginal units that set price within the PJM footprint. PSEG Nuclear did not utilize forward natural gas prices to *predict* forward energy prices through a model because it used the market-based forward energy prices *directly*. Put another way, gas price impacts are incorporated into the forward energy prices by the views of the market participants who actually set the prices in a competitive market, not by inputting them into a model.

Further, Fagan/Chang's presentation of forward gas prices is misleading. The correct data are as follows:

Average Monthly Henry Hub Forwards (Feb 19- Dec 23)



As depicted here, “Actual” prices have fallen back to within about 1% above the September 28, 2018 prices over the past week.

⁵³ Rate Counsel Comments, Fagan/Chang Affidavit, p. 24.

The P3's witness, Dr. Sotkiewicz, also provides misleading data that doom the credibility of his analysis. He references PJM Eastern Hub prices to estimate energy market revenues for the PSEG New Jersey Nuclear units.⁵⁴ But, at the same time, he acknowledges that he has not addressed the basis differential between the PJM Eastern Hub and the busses at the nuclear plants which actually determine the prices paid to the units. As he states:

I have not addressed the basis differential between Eastern Hub and Salem and Hope Creek as there are no forward price curves or trading at specific busses. And as the forward curves are showing, even the basis differential is changing in the future such that past basis may not be relevant to looking at forward curves with new transmission and gas pipelines going into service.⁵⁵

This admission eviscerates any probative value that could be ascribed to his calculations because the basis differentials are substantial. PJM Eastern Hub to PSEG Nuclear Unit basis for the past three years has been as follows (negative values indicating that PSEG Nuclear Unit bus prices are lower than PJM Eastern Hub):

PJM Eastern Hub to NJ Nuclear Unit Bus Basis	
Year	\$/MWh
2016	\$ (5.13)
2017	\$ (3.47)
2018	\$ (5.11)
Average	\$ (4.57)

Ignoring basis differentials of this magnitude essentially renders his calculations worthless.

Dr. Sotkiewicz's presentations are further undercut by the faulty rationales he uses as justification for not considering substantial basis differentials that have existed for years. Dr.

⁵⁴ P3 Comments, Sotkiewicz Affidavit, pp 20-21

⁵⁵ *Id.*, p. 20, n. 28.

Sotkiewicz correctly notes that there are no forward products for generator-specific busses. That being the case, his further claim that “the forward curves are showing . . . [that] the basis differential is changing” is a non-sequitur. A financial product that does not exist cannot provide evidence of anything. His reasoning is also undermined by his vague references to “new transmission and gas pipelines.” If he is contending that basis differentials for the plants as applied against the Eastern Hub could decline at some future date, he fails to sustain his claim due to the lack of any analysis showing how or when this may occur. Indeed, the factors that Dr. Sotkiewicz claims could reduce the basis differential against the Eastern Hub, by the same token, could just as likely result in lower prices for the Eastern Hub itself. In addition, there is the question of timing. New pipeline construction into New Jersey is highly controversial as illustrated by the proposed “PennEast Pipeline.”⁵⁶ The assumption that significant new pipeline capacity will be completed soon, thus, cannot be sustained.

Finally, market revenue projections made by the IMM also miss the mark. They rely upon forward market price data collected in late December.⁵⁷ The higher prices apparently shown in those calculations have also recently dissipated as depicted above.

b. The IMM’s Claim That Capacity Revenues Should Be Calculated Assuming That The Full Capacity Of Salem/Hope Creek Cleared In The Base Residual Auction Is Invalid; Capacity Revenues For The Next Three Years Are Already Known And IMM’s Suggestion Is Inconsistent With Those Known Results.

Rather than accurately reflecting the actual expected future capacity revenues of the Salem and Hope Creek plants, the IMM claims that future capacity revenues should be

⁵⁶ See e.g., “Concerned Citizens Against the Pipeline,” (<https://www.stoppenneast.org/>)

⁵⁷ IMM Comments, p. 12.

calculated assuming that the full capacity of each unit cleared in the Base Residual Auction (“BRA”), even if any portions of the units either did not clear in the BRA or cleared at a different price in a subsequent incremental capacity auction.⁵⁸ This is inappropriate for two reasons. Most fundamentally, the IMM’s adjustment assumes an alternate reality in which the capacity revenues for Salem and Hope Creek are something other than the actual cleared amount of forward-looking capacity revenue for the plants from actual PJM auctions. This alternate reality does not accurately describe the actual future capacity revenues of the plants which are known for the next three years as the auctions have already occurred.

Further, the IMM’s adjustment is inconsistent with the economics faced by PSEG Nuclear in evaluating the continued operation of the units. If the nuclear plants do not receive ZECs and retire, the capacity replacement obligation for years in which the BRA already has been run would be based on the actual cleared MWs and the actual prices at which each MW cleared. These are known amounts as the auctions have already occurred. The hypothetical cleared quantity and revenue estimates calculated by the IMM which assume that, contrary to reality, the entire unit cleared in the BRA, simply do not make sense.

X. Commenters’ Claims That Changes In PJM’s Energy Market Design Will Result In Significant Additional Revenues Are Highly Speculative And Irrelevant.

Rate Counsel, the IMM, and P3 all contend that BPU should take into account additional revenues that the nuclear plants supposedly will receive in the event that certain market changes are adopted.⁵⁹ They claim that the units do not need ZEC payments because they will eventually

⁵⁸ *Id.*, p.15.

⁵⁹ See Rate Counsel Comments pp. 36-41, IMM Comments pp. 3-4, and P3 Comments, pp. 8-9.

receive higher energy and capacity market revenues and that PSEG Nuclear should be content to wait for these changes to occur. The decision before the BPU in this proceeding is with respect to the first review period under the ZEC Act. Unlike New York and Illinois which committed to ZECs awards for substantially longer time periods, the ZEC Act provides the BPU with three year review periods to determine eligibility, as well as the ability to reduce the ZEC value in the last year of the first eligibility period (when certain conditions are met) and to reduce the ZECs at any time if the selected units receive compensation from another source for their environmental or fuel security attributes. The intervenors and participants conveniently ignore these consumer protections in the ZEC Act.

Further, the suggestion that such significant changes will occur in the energy market to extent that they are commercially reasonable, they are already reflected in forward energy market prices. As the IMM correctly states in its comments: “Liquid forward prices provide the best indication of expected prices because they incorporate the expectations of more market participants.”⁶⁰ The claims of Rate Counsel, the IMM, and P3 that PJM capacity and energy market prices can be expected to be higher at some future date, based on uncertain market design changes now under consideration are not consistent with the principle that market forwards are the best indicator of expected future prices. If these market design changes are likely to occur, their impact will already be reflected in the forward prices. If they are not likely to occur, they will not. Accordingly, the BPU should base its decision – as PSEG Nuclear has done – on the hard data before it at this particular time. If, over time, additional revenues actually materialize, appropriate steps can be taken then as provided for in the ZEC Act.

⁶⁰ IMM Comments, p. 11.

- a. **Ironically, Rate Counsel And The IMM Claim That Prospective Changes To Market Design In The PJM Markets Will Substantially Increase Revenues To The Salem And Hope Creek Plants While They Actively Oppose Those Changes; Because Of Their Opposition And Other Hurdles, The Extent To Which These Proposals Could Benefit The Hope Creek And Salem Units Is Highly Speculative.**

Commenters identify a number of matters that they claim will result in higher future prices: (i) potential changes in capacity market design to accommodate state policies; (ii) potential capacity or energy market changes to address fuel security concerns; (iii) potential changes to price-setting mechanisms for “fast start” generating units; (iv) potential changes allowing operation and maintenance costs to be included in “cost-based” bids; and (v) potential changes to reserves and energy prices.⁶¹ However, for all of these matters, it is unclear whether they will be implemented and, if implemented, their impact and timing remain uncertain, as shown below:

- Claimed changes to capacity market design elements are simply irrelevant because capacity prices for the first ZEC eligibility period have already been determined.
- Proceedings that could result in payments for fuel security are in a nascent stage. A DOE initiative, resulting in a rulemaking at FERC, was unsuccessful. A current FERC proceeding has been inactive. In addition, PJM recently issued a whitepaper in which it determined that there was no immediate need to address fuel security in PJM. A PJM stakeholder process is supposed to start in the Spring but, at best, is not expected to complete deliberations for almost a year. The IMM and the BPU have been opposed to all of these efforts.
- The fast start pricing initiative, which began with a notice of proposed rule-making by FERC in 2016,⁶² has now been pending before FERC for more than two years without a final resolution. The fast start pricing proposal is opposed by many parties, including the IMM and the BPU.

⁶¹ See Rate Counsel Comments, pp. 36-41, IMM Comments, pp. 3-4, and P3 Comments, pp. 8-9.

⁶² *Fast-Start Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 81 Fed. Reg. 96,391 (Dec. 30, 2016), FERC Stats. & Regs. ¶ 32,720, at PP 3, 36-37 (2016).

- The pending filing before FERC to allow the inclusion of O&M costs in cost-based bids was brought by PJM under FPA Section 206 on October 29, 2018. On January 15, 2019, FERC issued a deficiency letter regarding PJM's filing. This change was proposed as part of the PJM quadrennial review seeking implementation for June of 2022; if adopted, it is not expected there will be changes in the energy market offers before June 2022 – beyond the period of the ZEC awards at issue in these proceedings. Also, this change is opposed by the IMM and BPU.
- The PJM Board of Managers recently directed PJM staff to make changes to the design of the PJM reserves and energy markets. PJM is expected to file tariff changes with FERC under FPA Section 206 in March. PJM projects that a proposal along these lines could be enacted as early as mid-2020 but, given past experience and the high level of controversy surrounding this proposal, there is no certainty that these changes will be made and if they are made, when they will be made. Further, implementation of this proposal would actually be expected to significantly decrease capacity market payments. In fact, the IMM's proposal for implementation would deduct any additional revenues associated with this proposal for periods already covered by completed capacity auctions, *i.e.* June 2019 to May 2022 – which creates the potential that some of the capacity revenues projected in the applications would not materialize if the proposal moves forward quickly.⁶³ The IMM and the BPU are expected to be opposed to PJM's filing at FERC. Also, Rate Counsel voted against adoption of a version of the proposal at a recent PJM meeting where it failed to achieve the necessary level of votes to be filed under FPA Section 205.

There is substantial uncertainty regarding the proposals in each of these proceedings as to what impact, if any, they will have on the Salem and Hope Creek plants. Indeed, many parties, including the BPU, the IMM, and Rate Counsel are actively opposing these efforts, and the outcome at FERC/DOE cannot be determined at this time. For example, the pending FERC docket in which capacity market changes are under consideration commenced with a complaint filed on March 21, 2016 – nearly three years ago. Further, changes in PJM's software architecture to implement market design changes frequently can take years to complete. Even if additional wholesale market design changes are eventually adopted, the ZEC Act provides the

⁶³ See Scarcity Revenue True-up, January 17, 2019, presentation by Monitoring Analytics to Energy Price Formation Senior Task Force (<https://www.pjm.com/-/media/committees-groups/task-forces/epfstf/20190117/20190117-item-05a-imm-scarcity-revenue-true-up-updated.ashx>)

BPU with the ability to consider these revenues in a future review period.

- b. The ZEC Act Includes Numerous Consumer Protection Provisions Designed To Address Potential Wholesale Market Improvements And The Potential For Federal Government To Develop An Energy Policy That Values Carbon Free Generation; Until Then New Jersey Has Taken A Strong Step To Protect Against The Loss Of Carbon Free Nuclear Generation That Benefits The State and Its Residents.**

The ZEC Act provides significant consumer protections that anticipated the possibility that wholesale market design could improve and potentially eliminate the risk of the early retirement of nuclear plants and for the potential that a new federal or regional scheme could be put in place that compensates the nuclear plants for their environmental and fuel diversity attributes. First, the ZEC Act allows the BPU to implement an immediate reduction if a ZEC recipient begins to receive payments from other sources for the environmental or fuel security attributes of a selected plant. As stated in the Act: “To the extent that the Board determines that a selected nuclear plant receives revenues for its fuel diversity, resilience, air quality, or other environmental attributes, the Board shall immediately reduce the number of ZECs on a prospective basis consistent with the level of such revenues.”⁶⁴ Accordingly, for example, if FERC or DOE were to adopt a payment mechanism for nuclear plants to be compensated for their fuel security characteristics, those amounts would be deducted from the ZEC payment amounts.

⁶⁴ N.J.S.A 48:3-87.5(i)(3).

Second, the ZEC Act provides the BPU with the right to modify the \$0.004/kWh charge as early as during the third year of the first ZEC payment term if the BPU decides not to continue the program. The BPU also has the authority to modify the \$0.004/kWh charge at the beginning of the second three-year ZEC payment term and in subsequent periods under certain defined conditions. As provided in the ZEC Act, while the \$0.004/kWh is set for the first period of the ZEC, the initial \$0.004/kWh rate is not fixed immutably and can be adjusted downward in certain defined situations so that ZECs “remain affordable to New Jersey retail distribution customers” provided that the BPU determines that the reduced rate “will nonetheless be sufficient to achieve the State’s air quality and other environmental objectives by preventing the retirement of the nuclear power plants that meet the eligibility criteria established pursuant to subsections d. and e. of this section.”⁶⁵

c. The Value To New Jersey Of Preserving The Salem And Hope Creek Plants Could Increase If the Proposed Market Reforms Are Implemented.

The Brattle report, sponsored by PSEG and Exelon, found that retirement of the plants would be expected to increase charges to New Jersey consumers by about \$400M annually, a determination that has not been disputed by any of the intervenors or participants. But several of the pending or proposed market design proposals, if adopted, would be expected to result in higher energy prices in New Jersey during times of shortage, *e.g.*, the “fast start” pricing proposal and the “operating reserve demand curve” proposal. If the nuclear plants are retired, the likelihood that such conditions could occur in New Jersey will be increased so that the adverse impact of these changes on the State would be magnified and borne by ratepayers.

⁶⁵ N.J.S.A 48:3-87.5(j)(3)(a); N.J.S.A 48:3-87.5(j)(3)(c).

PSEG Nuclear has not attempted to calculate the incremental beneficial impacts of retaining the nuclear plants if the identified reforms are adopted but, given the factors discussed above, they would be expected to increase the \$400M in savings identified by Brattle. However, the expectation of additional savings to consumers associated with the preservation of the nuclear plants if the market changes are implemented prior to the end of the initial three-year ZEC payment term should be acknowledged.

XI. There Are No Hurdles That Would Prevent PSEG Nuclear From Retiring The Hope Creek And Salem Plants Within The Next Three Years; Indeed, If the Plants Are Not Awarded ZECs, They Will Be Retired Well Before That Time.

Rate Counsel and P3 claim that the Hope Creek and Salem plants cannot retire within the next three years because they have capacity commitments to PJM under the Reliability Pricing Model (RPM), have significant penalty risk under the Capacity Performance construct, and have commitments to supply Basic Generation Service with New Jersey. These claims are simply incorrect.

As PSEG Nuclear has demonstrated in its application and in discovery responses, the RPM mechanism allows units with capacity commitments to replace retired resources with other resources.⁶⁶ This can occur through the substitution of capacity resources within the same portfolio, through bilateral contracts, and through participation in Incremental Capacity Auctions. PSEG has significant experience in the capacity market and would have the ability to utilize each of these options. As shown in response to IUD-0002, the anticipated cost of obtaining replacement capacity would not preclude PSEG Nuclear from retiring all three units within the next three years. Further, because PSEG Nuclear would obtain replacement capacity

⁶⁶ See IUD-0002

to cover its RPM obligation, the risk of penalties under a Capacity Performance event also would be mitigated.

The additional claim that PSEG's commitments to supply BGS service would have an impact on a retirement decision is also incorrect. The BGS contracts used by the electric distribution companies in New Jersey do not identify any specific generating sources and do not require suppliers to show any particular source of supplies. In fact, over the years, BGS has been routinely supplied by entities that do not own *any* plants or that only own plants remote from New Jersey. There is no reason why BGS obligations cannot be sourced entirely from the PJM markets by an entity that lacks any New Jersey or PJM generation, let alone from other plants in PSEG Power's generating portfolio.

XII. Criticisms Of The Environmental Analysis Prepared By PA Consulting And ERM Consulting Are Unfounded.

Rate Counsel claims that the environmental modeling submitted by PSEG Nuclear fails to make certain demonstrations under the ZEC Act⁶⁷ – apparently directed at the ZEC Act requirement that retirement “would significantly and negatively impact New Jersey’s ability to comply with State air emissions reduction requirements.”⁶⁸ Essentially, their criticisms amount to three claims. First, Rate Counsel asserts that the 2020 limit of the Global Warming Reduction Act (“GWRA”) could be achieved without the three nuclear plants. Second, Rate Counsel claims that the predicted adverse impacts on ozone are too small to be considered “significant.” Third, Rate Counsel claims that the studies submitted by PSEG Nuclear fail to give adequate

⁶⁷ See Rate Counsel Comments, pp. 42-46.

⁶⁸ N.J.S.A 48:3-87.5(e)(2).

consideration to the impact of new zero emission resources. None of these criticisms is sustainable.

The GWRA calls for a reduction of economy-wide greenhouse gas emissions to below the 1990 level of 125.6 million metric tons of carbon dioxide equivalent (“MMTCO₂e”) by 2020, and 80% below 2006 levels by 2050. The first flaw in Rate Counsel’s claim is it ignores that New Jersey has a 2050 goal for carbon reduction, as well as a 2020 goal. In conformance with GWRA requirements, the New Jersey Department of Environmental Protection conducted four hypothetical scenarios that represent possible outcomes for 2050. All four scenarios include the continued operation of the Salem and Hope Creek plants.⁶⁹ Rate Counsel also ignores evidence that carbon emissions are on the rise. A recent report from the Rhodium Group estimates that U.S. carbon dioxide (CO₂) emissions *increased* by 3.4 percent in 2018.⁷⁰ A new inventory report on New Jersey’s emissions can be expected to follow this national trend. The closure of the Salem and Hope Creek nuclear plants thus may eliminate any headroom that is currently perceived as available for meeting the 2020 goal.

Rate Counsel’s claim that ozone reductions are not “significant” is similarly unavailing. As a starting point, it is important to note that New Jersey has *never* achieved federal National Ambient Air Quality Standards (“NAAQS”) for ozone.⁷¹ This means that New Jersey needs to maintain progress towards meeting the 2015 ozone NAAQS of 70 parts per billion (ppb) (2015

⁶⁹ <https://www.state.nj.us/dep/aqes/sggi.html>

⁷⁰ <https://www.rhg.com/research/preliminary-us-emissions-estimates-for-2018/>

⁷¹ The New York-Northern New Jersey-Long Island, NY-NJ-CT area (Northern New Jersey) is designated as moderate nonattainment and must meet the 2015 ozone standard by June 2024. The Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE area (Southern New Jersey) is designated as marginal nonattainment and must meet the 2015 ozone standard by June 2021.

ozone standard) – not move backwards as Rate Counsel apparently contends is acceptable. Rate Counsel also fails to acknowledge the substantial challenges facing New Jersey in meeting the NAAQS for ozone. Options for reducing in-state production of ozone are becoming increasingly limited,⁷² and the transport of emissions from upwind states continues. In fact, in November of 2017, EPA proposed to “bump up” the classification of the Northern New Jersey area from moderate nonattainment to serious nonattainment for the 2008 ozone NAAQS of 75 ppb (2008 ozone standard).

Closure of the Salem and Hope Creek nuclear plants will result in increased generation from fossil fuel-fired electric generating units located in upwind states at a time when ozone standards are becoming more stringent, “low hanging fruit” options to reduce ozone production within the State have been exploited, and EPA is refusing to impose obligations on upwind states. Given these factors and understood in context, the increases identified in the PA Consulting and ERM Reports clearly are “significant” in terms of meeting New Jersey’s goals.

Rate Counsel’s final assertion that the studies submitted by PSEG Nuclear fail to adequately take account of the development of new zero carbon resources also falls flat. As noted in the PA Consulting report provided as part of PSEG Nuclear’s applications, an assumption was included that the RPS standards of all states in the PJM footprint will be met. In addition, Rate Counsel’s claim that New Jersey offshore wind will be operational during the three-year term covered by these applications is not realistic. As explained by Dr. Dean Murphy at the October 11, 2018 hearing on the ZEC program:

It would take about ten years at the rate that’s in the current RPS plan for

⁷² See ZECJ-ENV-0001, ERM Consulting Report, “Impacts of PSEG Nuclear Unit Shutdowns on New Jersey’s Ozone Attainment Goals,” pp. 9, 27.

renewables to grow to the point to where they could just replace the lost nuclear plants which would get us back to where we started: Ten years with no progress. In fact, backward progress because there would be additional emissions during the time that the renewables were smaller than the nuclear plants they are trying to replace.⁷³

As indicated by Dr. Murphy, the retirement of the plants would be a damaging backwards step in the achievement of New Jersey's environmental goals for the reduction of carbon and ozone. This is further illustrated by the most recent Electric Power Monthly report released by the U.S. Energy Information Administration on January 25, 2019. Nuclear generation in New Jersey decreased from 2,664,000 MWhs in November, 2017 to 2,177,000 in November, 2018, while generation from natural gas plants increased from 2,307,000 MWhs to 2,829,000 MWhs in the same months.⁷⁴ This is a shift of ~20% of electric generation from nuclear to natural gas as a result of the shutdown of Exelon's Oyster Creek plant in September of 2018.

Rate Counsel's further claim that increased energy efficiency expected under bill A-3723 should have been considered is also unsustainable.⁷⁵ Because none of the electric utilities in the State has yet begun to implement the usage reductions described in the law, and compliance is not required until five years after commencement of the programs, it would not be reasonable to assume the achievement of significant gains in energy efficiency during the period covered by these ZEC applications. Moreover, the target for the energy efficiency goal under bill A-3723 is only 2% of demand; it is not possible for the impact of the energy efficiency program to offset the loss of zero-emission resources that currently provide almost 40% of electric generation in

⁷³ See Comments of Dr. Dean Murphy, Brattle Group, October 11, 2018 Hearing (New Brunswick), p. 69, ll. 16-24.

⁷⁴ <https://www.eia.gov/electricity/monthly/index.php>

⁷⁵ Rate Counsel Comments, p.44.

New Jersey.

Finally, Rate Counsel's claim appears to be premised on the misconception that State-mandated programs to increase zero-emission resources are somehow intended to replace retiring nuclear plants. This is simply not true, and certainly not what is provided for in the ZEC Act. All of the zero-carbon sources identified by Rate Counsel are enabled in specific quantities by various New Jersey subsidy programs. As such, they will enter the market at the time and quantity specified by those programs, regardless of whether or not the New Jersey nuclear plants retire or remain.

XIII. The Level Of The ZEC Act Payments Is Not At Issue In This Proceeding.

Rate Counsel continues to contend incorrectly that the BPU has the authority to reduce the \$0.004/kWh non-bypassable ZEC distribution charge to New Jersey customers at the time of the ZEC applications. Rate Counsel's claims are unfounded as a matter of law. While the BPU does have authority to modify the \$0.004/kWh charge under certain circumstances defined in the ZEC Act and described above, the ZEC Act does not authorize a change in the ZEC rate at this time.

In fact, the BPU has already acknowledged this fact as shown by the following "Question and Answer" posted on the BPU's website:

Q: Can the Board adjust the amount of the ZEC awards and rates collected?

A. If ZECs are awarded, *at the end of the first three-year ZEC period* the law provides that the Board has the discretion to reduce the \$.004 per kilowatt-hour charge if that amount is unnecessary to maintain the State's air quality and environmental objectives. Additionally, the BPU has the authority to evaluate whether any plants continue to be eligible for ZEC payments in the subsequent three-year period. *In the event that the Board determines no nuclear units are eligible for a subsequent three-year period, the Board may also reduce the per*

*kilowatt-hour charge in the final Energy Year of the initial eligibility period as appropriate.*⁷⁶

As clearly reflected here, the BPU has discretion to change the amount of the ZEC payment but only “at the end of the first three year ZEC period” or “[i]n the event that the BPU determines no nuclear units are eligible for a subsequent three-year period, the BPU may also reduce the per kilowatt-hour charge in the final Energy Year of the initial eligibility.” But the BPU has no authority to change the amount of the ZEC payment during initial application process.

Moreover, this reading of the ZEC Act is uncontestably correct. It is undisputable that under New Jersey law, rate-setting is a legislative function,⁷⁷ and that the BPU’s authority to set rates is determined by the scope of the grant made by the legislature.⁷⁸ Under the ZEC Act, the BPU has been given authority to change the \$0.004/kWh charge, but only at specified times and under specified circumstances as described in the ZEC Act. Nothing in the ZEC Act, however, authorizes the BPU to modify the \$0.004 kWh charge at the beginning of the first eligibility period as part of the application process. Because the BPU can have no more authority than that granted by the New Jersey’s legislature, Rate Counsel’s claim is without legal basis.

⁷⁶ (emphasis added) available at: <https://www.bpu.state.nj.us/bpu/pdf/publicnotice/ZEC%20Application%20QA.pdf>

⁷⁷ See e.g., *Alexander v. New Jersey Power & Light Co.*, 122 A.2d 339, 342 (1956) (NJ Supreme Court “[i]nvoking the basic doctrine that rate-making is a legislative . . . function”) (internal quotations omitted); *Atlantic City Sewerage Co. v. Board of Public Utility Com’rs*, 128 N.J.L. 359, 364 (1942) (“Rate making is essentially a legislative function.”); *Petition of Public Service Elec. and Gas Co.*, 699 A.2d 1224, 1233 (N.J. Super. 1997) (“Our Supreme Court has observed that rate making is a legislative . . . function”) (internal quotations omitted).

⁷⁸ See e.g., *Petition of Public Service Coordinated Transport*, 74 A.2d 580, 589 (1950) (“For the delegation of the legislative function [of rate-making] to be valid under our Constitution it is essential that adequate standards be prescribed by the Legislature and adhered to by its agent, in this instance the BPU.”); *Atlantic City Sewerage Co. v. Board of Public Utility Com’rs*, 128 N.J.L. 359, 368 (1942) (“Agencies to whom this legislative power [to set rates] has been delegated are free, within the ambit of their statutory authority, to make the pragmatic adjustments which may be called for by particular circumstances.”)

Rate Counsel's claims regarding constitutional requirements are equally unavailing. The ZEC Act contains more than adequate consumer safeguards to assure satisfaction of any due process constitutional requirements that conceivably might apply. First, the ZEC Act itself demonstrates the reasonableness of the \$0.004/kWh rate, which obviates any potential claim that the level of the rate could be deemed to be excessive. Specifically, the ZEC Act specifies that the "retail distribution . . . charge in the amount of \$0.004 per kilowatt-hour . . . reflects the emissions avoidance benefits associated with the continued operation of selected nuclear power plants."⁷⁹ The legislative findings offer further explanation and justification as follows:

The zero emission certificate program set forth in this act is structured such that its costs are guaranteed to be significantly less than the social cost of carbon emissions avoided by the continued operation of selected nuclear power plants, ensuring that the program does not place an undue financial burden on retail distribution customers. The 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. Carbon emissions avoided by selected nuclear power plants are but one component of their emissions avoidance benefits.⁸⁰

The reasonableness of the \$0.004/kWh rate is *not* a function of the financial condition of the nuclear plants that receive the payments – as contended by Rate Counsel – but rather is a function of the social cost of carbon that customers are paying to avoid the degradation of the air they breathe.

The ZEC Act includes substantial consumer protections to assure that customers are not burdened with unnecessary ZEC costs. The ZEC Act requires the submittal of detailed financial demonstrations regarding the plants at risk of retirement. These demonstrations must show that a

⁷⁹ N.J.S.A 48:3-87.5(j)(1).

⁸⁰ N.J.S.A 48:3-87.3(b)(8).

potential ZEC recipient will fail to earn sufficient revenues to cover its costs and risks. Further, the plant must certify that, in absence of a material financial change, it will retire within the next three years. The ZEC Act is designed to ensure that ratepayers do not make ZEC payments except when truly needed to retain the environmental and fuel diversity attributes of the generation fleet serving New Jersey identified as essential by the legislature. And as noted above, the authorization for modifying rates provided to the BPU under the ZEC Act also provides significant consumer protections.

The BPU has no legal authority to add a rate review process not specified in the law. In sum, Rate Counsel's claims regarding the need (or ability) of the BPU to change the amounts paid to ZEC recipients in these application proceedings are baseless.

XIV. Conclusion

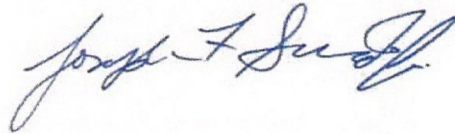
The various assertions and allegations in the comments submitted by the intervenors and participants in this matter have not provided the BPU with any legitimate basis to contest the detailed, credible, and accurate data submitted by PSEG in its applications for its Hope Creek, Salem 1, and Salem 2 units. As set forth in detail above, a surprisingly significant portion of the comments submitted are attempts to rehash pre-ZEC Act arguments and/or ask the BPU to essentially ignore the legislation and instead focus on out-of-scope arguments. Significant other portions of the comments are incorrect for other noted reasons. At their core, the comments submitted by the intervenors and participants fail to undermine the PSEG Nuclear applications which, in contrast, have followed the ZEC Act, and have amply demonstrated that an award of ZEC payments is appropriate for each of PSEG Nuclear's three units.

Aida Camacho-Welch, Secretary

February 14, 2019

PSEG Nuclear appreciates the opportunity to clarify the record for the BPU via this response.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Joseph F. Accardo Jr.", written in a cursive style.

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