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BOARD OF PUBLIC UTILITIES

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BOARD OF PUBLIC UTILITIES
TRENTON, NJ

BEFORE THE NEW JERSEY BOARD OF PUBLIC UTILITIES

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

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Docket No. EO18080899

Pursuant to the Notice issued in the above referenced docket on September 11, 2018, Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM¹ ("Market Monitor"), submits these comments.

I. BACKGROUND

New Jersey generation is part of the PJM market. New Jersey citizens have benefitted from being part of the PJM market. The costs of generation have been below the costs of generation that would result from a regulated cost of service approach. New Jersey chose to cede authority over generation to FERC regulated markets as a substitute for state cost of service regulation. New Jersey can choose to reverse that decision whenever it wants and to reassert control over the regulation of generation.

New Jersey and PSEG chose competition and markets over cost of service regulation in 1996 and 1997 as the new PJM markets were established and filed with the Federal Energy Regulatory Commission (FERC). New Jersey and PSEG chose competition and markets in order to reduce costs for New Jersey customers because competition would be

¹ Capitalized terms used herein and not otherwise defined have the meaning used in the PJM Open Access Transmission Tariff ("OATT"), the PJM Operating Agreement ("OA") or the PJM Reliability Assurance Agreement ("RAA").

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more effective than regulation in ensuring efficient outcomes and providing incentives for innovation. In markets, investors take the risks associated with investing in and operating generating plants and investors receive the profits associated with investing in and operating generating plants. In markets, investors make the decisions about which generating plants to build and which generating plants to retire, based on market incentives.

The goal of competition in the wholesale power markets is to provide customers wholesale power at the lowest possible price, but no lower. The PJM market works. The PJM market brings customers the benefits of competition. The PJM market has worked for New Jersey customers and generation owners. But the PJM market faces new challenges that threaten the viability of competitive markets, including the threat of subsidies to existing units. ZECs are such a subsidy.

A benefit of competitive power markets is that they are dynamic, flexible and resilient. The PJM market has resulted in a reliable system despite significant changes in underlying market forces. Technical innovation and significantly lower gas costs have been key market forces. In PJM, there have been substantial unit retirements and there has been substantial new market entry as a result of market forces. In New Jersey, there have been both unit retirements and new market entry based on market signals. The PJM market design has worked flexibly to address both market exit and entry without preferences for any technologies. The result of new entry has been lower costs and increased reliability.

Nuclear and coal plants face strong competitive pressures in the PJM markets as a result of low gas prices and efficient combined cycle units, including new combined cycle units in New Jersey. But there is no evidence that PSEG's nuclear plants are uneconomic and facing a retirement signal from the PJM markets. A plant is economic if it covers the annual expenditures required to operate the unit because it is more profitable to continue to operate the plant than to shut it down. The PSEG units are economic and expected to be economic in the foreseeable future based on market data.

The ZEC approach is a response to the success of the competitive PJM markets. Competition has resulted in low prices in PJM. Prices are not too low in PJM. There is no market design problem that requires subsidies.

In a market, investment and retirement decisions are made solely by private investors. PSEG has indicated that management may decide to shut down Hope Creek or Salem or both plants because management, on behalf of shareholders, does not believe that the units are economic and will not be economic in the future. PSEG has not explained why it is in customers' interest to subsidize uneconomic plants when it is not in its shareholders' interests to do so. Further, PSEG has not explained why it is in customers' interest to subsidize economic plants.

Standard economics indicates that units receive a retirement signal from the market when revenues are not high enough to cover annual avoidable costs, also called operating costs or going forward costs. There is no evidence that the PSEG plants face a retirement signal from the PJM markets. The PSEG units are economic and expected to be economic in the foreseeable future based on market data.²

II. COMMENTS

A. Responses to Comments Solicited by the Board.

1. What specific metrics should the Board utilize to determine if a nuclear power Unit ("Unit") should be deemed eligible for ZEC credits?

The Board should rely on metrics rooted in fundamental market economics. Net going forward cost is the only metric that the Board needs to use to determine whether a nuclear power Unit requires a subsidy in the form of ZEC credits. A plant is economic if it covers and is expected to cover the annual expenditures required to operate the unit because it is more profitable to continue to operate the plant than to shut it down. When

² Monitoring Analytics, LLC. *2018 Quarterly State of the Market for PJM: January through June* (August 9, 2018) at 325.

plants are covering and expected to cover their going forward costs (avoidable costs or ACR) the plants are receiving a market signal to remain in business. Plant owners are better off continuing to operate the units rather than retiring them under those circumstances. When plants are not covering and not expected to cover their going forward costs the units are receiving a retirement signal from the market. Plant owners are better off retiring the units than continuing to operate them under those circumstances.

Net going forward costs are calculated by calculating gross going forward costs and then calculating the forward looking revenues that the Unit can expect to receive from the PJM market. Those revenues include capacity market revenues which are known for the next three years and energy market revenues based on expected output and forward market LMPs at the bus of the nuclear plant.³ Net going forward costs equal gross going forward costs less market revenues. If calculated net going forward costs are zero or negative, going forward costs are covered by market revenues and the Unit is economic without subsidies.

Given the requirement in N.J.S.A. 48:3-87.5(e)(3) that one condition to receive ZECs is that the Unit "demonstrate to the satisfaction of the board" ... "that the nuclear power plant will cease operations within three years unless the nuclear power plant experiences a material financial change;" the Unit owner needs to demonstrate that the Unit is not expected to cover its going forward costs from market revenues.

Expected revenues should include capacity market revenues at the locational clearing price for the Unit in the Base Residual Auction regardless of whether the Unit cleared in the PJM capacity market auction. Clearing the PJM capacity auction is the direct responsibility of the owner of the Unit. Failure to clear the auction is the direct responsibility of the owner of the Unit. The owner of the Unit should not be permitted to impose any lack of capacity market revenues on New Jersey ratepayers as a cost in the

³ Nuclear plant net revenues also include reactive capability revenues.

form of an increased subsidy level. That cost belongs to the Unit owner and its shareholders.

2. Referencing N.J.S.A. 48:3-87.5(a) and (e)(3), how should the risk-adjusted cost of capital for a Unit be determined?

No risk adjustment to the cost of capital is required or appropriate. Any risks associated with operating the Units is already fully incorporated in the cost of capital to the Unit owners. It would be ironic and counterproductive to define a higher target rate of return for a Unit in order to justify a subsidy which will reduce the Unit's risk and thus its required rate of return and cost of capital.

The financial condition of the PSEG Units was worse in 2016 and 2017 than it will be over the next four years based on market data.⁴

No target rate of return should be considered a relevant metric for eligibility for ZECs. If the goal is to ensure that the units receive the appropriate incentive to continue operating or to sell the units to an owner who will continue operating them under the defined conditions, the only relevant metric is net going forward costs. The Units remain units in a competitive wholesale power market and are not guaranteed a rate of return. In a market, investors receive the upside and are at risk for the downside.

3. Referencing N.J.S.A. 48:3-87.5(a), the Act requires the Board to consider the cost of "operational risks" and "market risks" for Units. What information should or should not be included in these two categories?

Compensation for operational risk and market risk is already included in the market prices in the PJM markets. All PJM units face operational risk and market risk. New economic generation continues to enter the PJM market based on market prices and expected revenues.

⁴ Monitoring Analytics, LLC, *2018 Quarterly State of the Market Report for PJM*, Vol. 2, Section 7: Net Revenue, Table 7-16 and Table 7-18.

- 4. Referencing N.J.S.A. 48:3-87.5(a) and (e)(3), what specific financial information should the Board request that Units applying for the ZEC program provide?**

The Board should request that the Units applying for the ZEC program provide the data that the Units provided to the Nuclear Energy Institute (NEI) when responding to the NEI's survey used to compile the NEI's Reports and an update to that data.⁵

Given that the NEI data is based on all the nuclear plants in the United States, the reported NEI going forward costs are likely to be biased high for PJM nuclear plants, given that not all nuclear plants face the strong market incentives to be efficient that are faced by nuclear plants in PJM. If the NEI going forward costs are biased high, the resultant financial condition of the nuclear plants is biased downward.

- 5. Referencing N.J.S.A. 48:3-87.5(e)(2), what information should be provided to the Board to demonstrate that the Unit makes a significant and material contribution to the air quality in the state? What information should be provided to demonstrate that the Unit minimizes harmful emissions that adversely affect the citizens of the state? What information should a Unit provide to demonstrate that, if the Unit were to be retired, the retirement would significantly and negatively impact New Jersey's ability to comply with State air emissions reduction requirements?**

The Board should evaluate the likely replacement of any nuclear energy from the New Jersey Units. That replacement is most likely to be from a combination of high efficiency gas fired combined cycle plants and renewable energy. Maintaining nuclear plants at a defined level of New Jersey annual load could actually prevent the increased use of renewable energy in New Jersey.

⁵ The 2017 Report is: Nuclear Energy Institute (August 2017) "Nuclear Costs in Context," <https://www.nei.org/CorporateSite/media/filefolder/Policy/Papers/Nuclear-Costs-in-Context.pdf?ext=.pdf>.

6. Referencing N.J.S.A. 48:3-87.5(e)(4), the Act requires that eligible Units certify that they do not receive any direct or indirect payment or credit under a law, rule, regulation, order, tariff, or other action of this State or any other state, or a federal law, rule, regulation, order, tariff, or other action, or a regional compact, despite its reasonable best efforts to obtain any such payment or credit, for its fuel diversity, resilience, air quality, or other environmental attributes that will eliminate the need for the Unit to be retired. What should the Board interpret fuel diversity, resilience, air quality, and other environmental attributes to include?

The Board should evaluate whether any rule changes in the PJM markets, including any rule changes that directly result in an increase in energy prices including changes to the operating reserve demand curve or implementation of convex hull pricing, or support required by the U.S. Department of Energy or the FERC provides payment or credit to the Units base on fuel diversity or resilience goals, including higher prices in the PJM capacity market based on technology. Such changes are currently being considered and may be in place at the time of the Board's decision.

7. What information about other benefits, subsidies, or tax implications should be provided to the Board as part of a ZEC application?

Unit owners should be required to provide all information related to other benefits, subsidies or tax reductions received, potentially received or expected to be received by the Units.

8. What forecasts, projections, or estimates should be included, or disallowed, as part of a ZEC application process?

Please see the response to question no. 1.

9. What other information, confidential or not, should the Board request to fully evaluate whether or not a Unit is at risk of closure due to financial hardship?

The Board should review information about the Units: all publicly filed financial information, including that provided to the SEC for example; transcripts of all analysts calls

and other information provided to investors or analysts; all data provided to FERC; all data provided to NEI; all data provided to the U.S. EPA; and all filings with the NRC.

10. What other relevant factors, such as sustainability or long-term commitment to nuclear energy production, should the Board consider and evaluate?

No additional factors require consideration.

11. What factors and expenses should the Board consider in analyzing a Unit's avoided costs if the Unit retires?

The Board should consider accurate measures of avoidable costs, the going forward costs of operating the Unit. The best current measure of avoidable costs is the information provided by the Units to the Nuclear Energy Institute. Avoidable costs associated with retirement are subject to significant misinterpretation. For example, if the Unit's decommissioning fund is fully funded it could be argued that 100 percent of the Unit's costs are avoidable. But such an assertion would ignore the basic point of the economic analysis. The goal of operating the Unit is to make money. If the Unit is making more than the actual going forward costs, its annual out of pocket costs, then the Unit owner is better off operating the unit than not operating the Unit. Decommissioning funds are only relevant once the decision to retire has been made.

12. What information about parent or affiliate companies of the nuclear power plant should be requested for the Board to holistically consider the Unit's financial condition?

Please see the response to question no. 9.

13. Assuming that any Unit is deemed eligible to receive ZECs by the Board, in ranking eligible Units (N.J.S.A. 48:3-87.5(d) through (g)), how should the Board factor each Unit's potential to maximize benefits to New Jersey and to minimize the rate impact on the ratepayers of New Jersey's electric distribution companies?

The Board would minimize the impact to New Jersey ratepayers by selecting the New Jersey units that require, using the Board's metric, the lowest amount of subsidy per year and the shortest period of subsidy.

- 14. Assuming that any nuclear power plant is deemed eligible to receive ZECs by the Board, in ranking eligible Units (N.J.S.A. 48:3-87.5(d) through (g)), how should the Board factor the Unit's physical location (in-state, out-of-state, and specific venue) within PJM?**

The Board would minimize the impact to New Jersey ratepayers by selecting the New Jersey units that require, using the Board's metric, the lowest amount of subsidy per year and the shortest period of subsidy.

- 15. Referencing N.J.S.A. 48:3-87.5(i)(3), how should the Board determine the revenue amount received by any selected nuclear power plant in an energy year for its fuel diversity, resilience, air quality, or other environmental attributes from other sources?**

PJM market revenues compensate nuclear power plants for all relevant attributes including reliability. In addition, the Board should evaluate whether any rule changes in the PJM markets, including any rule changes that directly result in an increase in energy prices including changes to the operating reserve demand curve or implementation of convex hull pricing, or support required by the U.S. Department of Energy or the FERC provides payment or credit to the Units base on fuel diversity or resilience goals, including higher prices in the PJM capacity market based on technology. Such changes are currently being considered and may be in place at the time of the Board's decision.

- 16. Should the application include/allow voluntary commitments as a condition of approval?**

No.

- 17. Please discuss how the recently issued FERC Order regarding the PJM Capacity Market, Docket Nos. EL16-49, ER18-1314, and EL18-178, relates to or otherwise impacts the Board's consideration of the ZEC program?**

Under some approaches to subsidies under the cited dockets, Units receiving ZECs could be worse off than if they did not receive ZECs. For example, if Units receiving ZECs do not clear in the capacity market as a result, the Units will be worse off by the amount of the lost capacity market revenues and the required subsidy could be substantially larger

than if no ZECs were provided in the first place. The point of the cited dockets is to protect the competitive PJM capacity markets from the impact of nonmarket payments like ZECS.

Under the Market Monitor's approach to the cited dockets, nuclear plants would clear in the capacity auctions if the offers of the units were competitive, meaning that the offers were equal to net going forward costs, and the offers cleared.

B. Additional Comments

Table 1 shows PJM energy prices (LMP), capacity prices (BRA), and annual fuel, operating and capital expenditures for the 2018 through 2020 period for the New Jersey Units.⁶ The LMPs are based on forward prices with a basis adjustment for the specific plant locations.⁷ The 2018 LMPs include day-ahead prices through June 2018 and forward prices for July through December 2018. The capacity prices are known based on PJM capacity auction results and assume that the plant cleared its full unforced capacity at the BRA locational clearing price.⁸ The fuel and operating costs are the 2017 NEI fuel and operating costs and the capital expenditures are 100 percent of the NEI 2017 incremental capital expenditures.⁹

⁶ All calculations are based on publicly available data in order to avoid revealing confidential information. Nuclear unit revenue is based on day-ahead LMP at the relevant node. Nuclear unit capacity revenue assumes that the unit cleared its full unforced capacity at the BRA locational clearing price. Unforced capacity is determined using the annual class average EFORD rate.

⁷ Forward prices on July 2, 2018. Forward prices are reported for PJM trading hubs which are adjusted to reflect the historical differences between prices at the trading hub and prices at the relevant plant locations. The basis adjustment is based on 2017 data. This analysis was included in the Monitoring Analytics, LLC, *2018 Quarterly State of the Market Report for PJM*, Vol. 2, Section 7: Net Revenue.

⁸ Unforced capacity is determined using the annual class average EFORD rate.

⁹ Operating costs from: Nuclear Energy Institute (August, 2018). Individual plants may vary notably from the average due to factors such as geographic location, local labor costs, the timing of refueling outages and other unit specific factors.

Table 2 and Table 3 show the surplus or shortfall that would be received net of avoidable costs and incremental capital expenditures by year, based on forward prices, for the 2018 through 2021 period, on a per MWh basis and a total dollar basis. The purpose of the forward analysis is to evaluate whether current forward prices are consistent with nuclear plants covering their annual avoidable costs over the next three years. While the forward capacity market prices are known, actual energy prices will vary from forward values.

Based on forward prices for energy and the known forward prices for capacity, both New Jersey nuclear plants would cover their annual avoidable costs over the next four years (2018 through 2021).¹⁰

Table 1 Forward prices in PJM energy and capacity markets and annual costs

	ICAP (MW)	Average Forward LMP (\$/MWh)				BRA Capacity Price (\$/MWh)				2017 NEI Costs (\$/MWh)		
		2018	2019	2020	2021	2018	2019	2020	2021	Fuel	Operating	Capital
Hope Creek	1,161	\$31.74	\$28.64	\$27.67	\$26.88	\$7.52	\$6.79	\$6.61	\$7.25	\$6.46	\$18.55	\$6.02
Salem	2,332	\$31.70	\$28.62	\$27.65	\$26.86	\$7.52	\$6.79	\$6.61	\$7.25	\$6.46	\$18.55	\$6.02

Table 2 Nuclear unit forward annual surplus (shortfall) in \$/MWh

	Surplus (Shortfall) (\$/MWh)			
	2018	2019	2020	2021
Hope Creek	\$8.23	\$4.40	\$3.25	\$3.10
Salem	\$8.19	\$4.38	\$3.23	\$3.08

Table 3 Nuclear unit forward annual surplus (shortfall) (\$ in millions)

	Surplus (Shortfall) (\$ in millions)			
	2018	2019	2020	2021
Hope Creek	\$83.7	\$44.8	\$33.0	\$31.5
Salem	\$167.3	\$89.5	\$65.9	\$62.9

¹⁰ The NEI costs for Hope Creek were treated as that of a two unit configuration because the unit is located in the same area as Salem 1 & 2. The net surplus of Hope Creek is sensitive to the accuracy of this assumption.

III. CONCLUSION

The Market Monitor respectfully requests that the Commission afford due consideration to these comments as it resolves the issues raised in this proceeding.

Respectfully submitted,



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Dated: October 22, 2018

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Eagleville, Pennsylvania,
this 22nd day of October, 2018.



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