PUBLIC

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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 Plants	)	Docket No. EO18080899
Application for Zero Emission Certificates of Hope Creek Nuclear Power Plant	)	Docket No. EO18121337
Application For Zero Emission Certificates of Salem 1 Nuclear Power Plant	)	Docket No. EO18121338
Application for Zero Emission Certificates of Salem 2 Nuclear Power Plant	)	Docket No. EO18121339

SUPPLEMENTAL COMMENTS

Pursuant to the Notice issued in these proceedings on June 22, 2023 ("Notice"), Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM ("Market Monitor" or "IMM"), submits these supplemental comments. The Market Monitor initially filed comments on July 6, 2023 ("July 6th Comments"). On November 22, 2023, the New Jersey Division of Rate Counsel ("Rate Counsel") filed an additional response to the Notice ("November 22nd Rate Counsel Response"). The instant pleading also responds to the November 22nd Rate Counsel Response.

BACKGROUND

In the Notice, Staff of the New Jersey Board of Public Utilities ("Board") invited written comments regarding Board Staff's ("Staff") revenue review of nuclear power plants selected to receive Zero Emission Certificates ("ZECs") during the Stub Period

(April 18, 2019, through May 31, 2019) and the Initial Eligibility Period (June 1, 2019, through May 31, 2022 which are the three delivery years ended May 31, 2020, May 31, 2021, and May 31, 2022). The Market Monitor intervened and actively participated in each of the proceedings addressed in the Notice, including filing detailed analyses of the petitions to receive ZECs subsidies.[1]

The Notice indicates Staff's preliminary finding that there is "no evidence of double-payment, direct or indirect payments, or credits related to the resilience, air quality, or other environmental attributes associated with electricity generated or sold by Salem 1, Salem 2, or Hope Creek during the Stub Period or the Initial Eligibility Period."

In its July 6th Comments, the Market Monitor presented analysis of all PJM nuclear plants in its state of the market reports, including the referenced plants.[2] The Market Monitor attached the relevant section (Section 7 Net Revenue) of its then latest quarterly state of the market report,[3] which showed (at Table 7-19) that all the referenced nuclear plants received total market payments greater than their total avoidable costs in the calendar years 2020, 2021 and 2022.[4] The Market Monitor noted that it was not possible to fully evaluate the summary Staff conclusion without access to the confidential data provided by the plant owners or the details of the Staff analysis.

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1 *See* Market Monitor, Analysis of NJ Zero Emissions Certificate (ZEC) Applications, Docket No. EO18080899 (January 31, 2019); Market Monitor, Analysis of NJ Zero Emissions Certificate (ZEC) Applications, Docket Nos. EO18080899, ER20080577, ER20080578 & ER20080579 (January 29, 2021).

2 The state of the market reports for PJM can be found on the Monitoring Analytics, LLC webpage at <*http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2023.shtml*> .

3 *See* the Market Monitor's 2023 Quarterly State of the Market Report for PJM: January through March, Section 7: Net Revenues (May 11, 2023).

4 *Id.*, Table 7-19 at 441.

On July 5, 2023, the New Jersey Division of Rate Counsel filed comments explaining that the process for review of double payments has not been properly implemented and requesting access to the confidential information provided by the companies that is the basis for the preliminary finding.

The Market Monitor also requested that the confidential information provided by the companies be provided to the Market Monitor and that there be time permitted to evaluate the information.

SUPPLEMENTAL COMMENTS

Under the ZEC statute, nuclear plants selected to receive ZECs are required to:

> certify annually that the nuclear power plant does 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 nuclear power plant to retire, except for any payment or credit received under the provisions of this act; …[5]

The ZEC statute further provides:

> To ensure that a selected nuclear power plant shall not receive double-payment for its fuel diversity, resilience, air quality, or other environmental attributes, the board shall annually determine the dollar amount received by the selected nuclear power plant in an energy year pursuant to 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

[5] N.J.S.A. 48:3-87.5(e)(4).

> other action, or a regional compact referenced in paragraph (4) of subsection e. of this section.[6]

A Board determination that double payments have been received would result in a reduction of ZECs payments.[7]

On October 19, 2023, the Market Monitor received the confidential data from PSEG, but not from Constellation.[8] The Market Monitor analyzed the PSEG data and data obtained from PJM systems and reached conclusions about the economic results for the referenced nuclear plants in New Jersey.

The November 22nd Rate Counsel Response reports (at 4) that that there is "no indication that PSEG Nuclear received any direct or indirect payments, other than ZECs, for the nuclear units' fuel diversity, resilience, air quality or other environmental attributes." However, the response stated (at 4–5) that the information provided was incomplete for both the first and second ZECs periods, and recommended (at 5–6) that (i) "both PSEG Nuclear and Constellation should be directed to provide Rate Counsel and the IMM with complete copies of their submissions to the Board," (ii) "[a]ny submissions from Constellation should be provided … immediately," (iii) Board Staff should adhere to the applicable timelines, and (iv) "PSEG Nuclear should be directed to provide copies of [additional] reports" submitted to the Board, without redaction. The Market Monitor agrees with each of Rate Counsel's recommendations.

Based on a review of the identified information, the Market Monitor's determination is that there is no evidence of the receipt of double payment, as defined in

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6 N.J.S.A. 48:3-87.5(i)(3).

7 *See id.*

8 PSEG provided avoidable cost data for the three Energy Years (delivery years in the PJM Capacity Market) ending May 31, 2020, May 31, 2021, and May 31, 2022.

the ZEC statute, for fuel diversity, resilience, air quality, or other environmental attributes by Salem 1, Salem 2, or Hope Creek during the Stub Period or the Initial Eligibility Period. The Market Monitor did not assess whether there was an increase in net revenues resulting from the application of RGGI to units that affected the LMPs received by the nuclear plants during this period.

The Market Monitor also concludes that each of the referenced New Jersey nuclear plants received net revenues from the market in excess of the units' avoidable costs. The ZEC payments added to those excess revenues and were a form of double payment, although this is not the definition of double payment in the ZECs statute.

The Market Monitor compared net revenues to avoidable costs in three ways: using PSEG's definition of avoidable cost; using PSEG's definition of avoidable cost excluding selected, identified items that are not avoidable costs; and using the operating costs from the Nuclear Energy Institute, which is also the definition of avoidable costs used in the Market Monitor's state of the market reports. The definition used in the state of the market reports includes major maintenance despite the fact that PJM's tariff definition of avoidable costs excludes major maintenance. Major maintenance is clearly an avoidable cost based on economic logic. The results from the state of the market reports are included in the Appendix.

Based on the net revenues and avoidable costs provided by PSEG for Hope Creek 1, Salem 1, and Salem 2 for the Initial Eligibility Period, Hope Creek 1 and Salem 2 received net revenues in excess of avoidable costs without ZECs revenues, while Salem 1 did not cover its avoidable costs without ZECs revenue.[9]

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[9] Energy and capacity revenues for Salem 1 and Salem 2 are for the entire unit and include both PSEG's and Constellation's share.

Those conclusions depend on the definition of net revenue and avoidable costs. The Market Monitor agrees that PSEG has calculated market revenues correctly. The Market Monitor does not agree that PSEG has calculated avoidable costs correctly. Not all of the costs provided by PSEG are actually avoidable costs. The Market Monitor explained these issues in detail in its report to the Board in the ZECs review proceeding.[10] Avoidable costs include, for example, operation and maintenance expense but do not include the return on and of capital and do not include allocated overhead costs. Appendix A Table 1, Appendix A Table 2, Appendix A Table 3 and Appendix A Table 4 show the avoidable costs provided by PSEG. If spent fuel[11] and the cost of working capital[12] are excluded as avoidable costs, all three units' net revenues exceeded their avoidable costs over the three year period by {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL}, without including ZECs revenue. Each of these tables uses the definition of the 2019 Energy Year as the 12 months ended May 31, 2020, the 2020 Energy Year as the 12 months ended May 31, 2021, and the 2021 Energy Year as the 12 months ended May 31, 2022.

Using the PSEG definition of avoidable costs, Hope Creek 1 covered its avoidable costs over the three year period with an excess of {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL} without ZECs revenue. With ZECs revenue, the Hope Creek 1 excess was {BEGIN CONFIDENTIAL} REDACTED. {END CONFIDENTIAL}

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10 See Market Monitor, Analysis of NJ Zero Emissions Certificate (ZEC) Applications, Docket No. EO18080899 (January 31, 2019); Market Monitor, Analysis of NJ Zero Emissions Certificate (ZEC) Applications, Docket Nos. EO18080899, ER20080577, ER20080578 & ER20080579 (January 29, 2021).

11 PSEG stopped incurring a $/MWh charge for the cost of disposing of its spent nuclear fuel in May 2014 when development of the Yucca Mountain nuclear waste repository ceased. The spent fuel charge has been zero since 2015.

12 The interest cost of working capital is not part of avoidable costs. Cash working capital is typically treated as a rate base item in utility rate cases.

If spent fuel and the cost of working capital are excluded as avoidable costs, Hope Creek 1 covered its avoidable costs over the three year period with an excess of {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL}, without ZECs revenue. With ZECs revenue, the Hope Creek 1 excess was {BEGIN CONFIDENTIAL} REDACTED. {END CONFIDENTIAL}

Using the PSEG definition of avoidable costs, Salem 1 did not cover its avoidable costs over the three year period with a shortfall of {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL} without ZECs revenue. With ZECs revenue, the Salem 1 excess was {BEGIN CONFIDENTIAL} REDACTED. {END CONFIDENTIAL}

If spent fuel and the cost of working capital are excluded as avoidable costs, Salem 1 covered its avoidable costs over the three year period with an excess of {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL} without ZECs revenue. With ZECs revenue, the Salem 1 excess was {BEGIN CONFIDENTIAL} REDACTED. {END CONFIDENTIAL}

Using the PSEG definition of avoidable costs, Salem 2 covered its avoidable costs over the three year period with an excess of {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL} without ZECs revenue. With ZECs revenue, the Salem 2 excess was {BEGIN CONFIDENTIAL} REDACTED. {END CONFIDENTIAL}

If spent fuel and the cost of working capital are excluded as avoidable costs, Salem 2 covered its avoidable costs over the three year period with an excess of {BEGIN CONFIDENTIAL} REDACTED, {END CONFIDENTIAL} without ZECs revenue. With ZECs revenue, the Salem 2 excess was {BEGIN CONFIDENTIAL} REDACTED. {END CONFIDENTIAL}

In total, Hope Creek 1, Salem 1, and Salem 2 received ZEC payments of {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL} for the three years of the Initial Eligibility Period plus {BEGIN CONFIDENTIAL} REDACTED {END CONFIDENTIAL} for the Stub Period (not shown).[13] There is no evidence of double payment for fuel diversity, resilience, air quality, or other environmental attributes for the three years of the Initial Eligibility Period. The three units together received net revenues significantly in excess of avoidable costs, even under the PSEG definition, including excess for Hope Creek and Salem 2 and a shortfall for Salem 1. The three units together and individually received net revenues significantly in excess of correctly defined avoidable costs.

Potential sources of double payments for fuel diversity, resilience, air quality, or other environmental attributes include RGGI, NJ State Manufacturing Equipment Investment Tax Credit, and the Inflation Reduction Act Zero Emission Nuclear Power Production Credit.[14]

Regional Greenhouse Gas Initiative (RGGI). NJ's participation in RGGI is not a payment directly to the nuclear plants for fuel diversity, resilience, air quality, or other environmental attributes and therefore does not create a double payment under the ZECs statute. The participation of New Jersey and units from other PJM states in RGGI increased energy prices and that increased net revenues to the nuclear plants. The Market Monitor has not estimated that impact.

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13 ZECs price of $10.00/MWh from the Implementation of L. 2018, c. 16 Regarding the Establishment of a Zero Emission Certificate Program for Eligible Nuclear Power Plants; Application for Zero Emission Certificates of Salem 1 Nuclear Power Plant; Application for Zero Emission Certificates of Salem 2 Nuclear Power Plant; Application for Zero Emission Certificates of Hope Creek Nuclear Power Plant, Order Determining ZEC Price for Stub Period and Energy Years 2022, 2021, and 2022, BPU Docket Nos. EO18080899, EO18121338, EO18121339, & EO18121337, Order dated August 17, 2022.

14 *See* Inflation Reduction Act 2022, P.L. 117-169: Sect. 13105 Zero-Emission Nuclear Power Production Credit.

NJ State Manufacturing Equipment Investment Tax Credit. This tax credit is not a payment for fuel diversity, resilience, air quality, or other environmental attributes and therefore does not create a double payment under the ZECs statute.

Inflation Reduction Act Zero Emission Nuclear Power Production Credit. The IRA was not in effect during the relevant time period.[15] Any such payments in the future would be a payment for fuel diversity, resilience, air quality, or other environmental attributes. The IRA Zero Emission Nuclear Power Production Credit will begin in 2024 and run through 2032.

15 Inflation Reduction Act 2022: P.L. 117-169. Sect. 13105 Zero-Emission Nuclear Power Production Credit.

CONCLUSION

The Market Monitor respectfully requests that the New Jersey Board of Public Utilities afford due consideration to these comments.

Respectfully submitted,

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Appendix A

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Appendix B

Additional Analysis

The 2023 Quarterly State of the Market Report: January through September, Section 7: Net Revenue, includes details of the economic performance of all PJM nuclear plants using only public information, by calendar year. For nuclear plants, all calculations are based on publicly available data in order to avoid revealing confidential information. Historical 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 capacity market Base Residual Auction locational clearing price. Unforced capacity is determined using the annual class average EFORd rate.

The analysis of nuclear plants includes annual operating costs and incremental capital expenditures from the Nuclear Energy Institute (NEI) based on NEI's calculations of average costs for all U.S. nuclear plants.[16] [17] The analysis includes the most recent operating cost data and incremental capital expenditure data for single unit plants and multi unit plants published by NEI, for 2021.[18]

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16 Operating costs from: Nuclear Energy Institute (October 2022). "Nuclear Costs in Context," <https://www.nei.org/CorporateSite/media/filefolder/resources/reports-and-briefs/2022-Nuclear-Costs-in-Context.pdf>. Individual plants may vary from the average due to factors such as geographic location, local labor costs, the timing of refueling outages and other unit specific factors. This is the most current NEI data available.

17 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.

18 NEI also provides average costs by plant run by operators with one plant or multiple plants, by market, and by type of nuclear reactor. Plants run by operators with multiple plants have lower average costs than plants run by operators with a single plant. Plants participating in wholesale markets have lower average costs than plants in regulated markets. PWR reactors have lower average generating costs than BWR reactors.

In 2020, no PJM nuclear plants covered their fuel costs, operating costs, and incremental capital expenditures from PJM markets, as a result of lower energy prices.[19] In 2021 and 2022, both Hope Creek and Salem covered their fuel costs, operating costs, and incremental capital expenditures from PJM markets, as a result of higher energy prices. The net revenues for all three units significantly exceeded avoidable costs for the three year period. (See Appendix B Table 1 and Appendix B Table 2.)

Appendix B Table 1 Nuclear unit surplus (shortfall) based on public data: Hope Creek 1

Hope Creek (Calendar Year) ($/MWh)	2018	2019	2020	2021	2022
Average DA LMP	$32.93	$22.45	$17.32	$30.16	$61.81
Capacity Revenue	$7.98	$7.24	$7.05	$7.59	$5.48
Ancillary Revenue	$0.47	$0.47	$0.47	$0.47	$0.47
Total Revenue	$41.38	$30.16	$24.85	$38.22	$67.76
NEI Costs	($29.07)	($28.38)	($27.03)	($27.18)	($27.18)
Surplus (Shortfall) ($/MWh)	$12.3	$1.8	($2.2)	$11.0	$40.6

Appendix B Table 2 Nuclear unit surplus (shortfall) based on public data: Salem 1 & 2

Salem 1 & 2 (Calendar Year) ($/MWh)	2018	2019	2020	2021	2022
Average DA LMP	$32.90	$22.43	$17.32	$30.12	$61.76
Capacity Revenue	$7.98	$7.24	$7.05	$7.59	$5.48
Ancillary Revenue	$0.35	$0.35	$0.35	$0.35	$0.35
Total Revenue	$41.22	$30.01	$24.72	$38.06	$67.59
NEI Costs	($29.07)	($28.38)	($27.03)	($27.18)	($27.18)
Surplus (Shortfall) ($/MWh)	$12.2	$1.6	($2.3)	$10.9	$40.4

19 See the *2020 State of the Market Report for PJM*, Section 3: Energy Market.