

**IN THE MATTER OF THE APPLICATION OF PSEG NUCLEAR, LLC AND EXELON
GENERATION COMPANY, LLC FOR THE ZERO EMISSION CERTIFICATE
PROGRAM–SALEM UNIT 1**

DOCKET NO. ER20080557

**IN THE MATTER OF THE APPLICATION OF PSEG NUCLEAR, LLC AND EXELON
GENERATION COMPANY, LLC FOR THE ZERO EMISSION CERTIFICATE
PROGRAM–SALEM UNIT 2**

DOCKET NO. ER20080558

**IN THE MATTER OF THE APPLICATION OF PSEG NUCLEAR, LLC FOR THE
ZERO EMISSION CERTIFICATE PROGRAM–HOPE CREEK**

DOCKET NO. ER20080559

**Response of the Independent Market Monitor for PJM
to Cross Examination Questions Received from PSEG Nuclear, LLC**

All responses were completed on February 26, 2021, under the supervision of Dr. Joseph Bowring.

ENERGY REVENUES

ZEC2-IMM-XQ-0001

- a. Page 21 of the IMM Report states, “given ongoing developments in the PJM energy market and the fact that energy market prices in 2020 were at all time lows and are expected to increase, the correct value of risk to include in the subsidy evaluation is negative.”
 - i. Does witness IMM admit that PSEG’s applications are based on forward prices that are higher than 2020 spot prices that are referred to above on page 21 of the IMM Report?

Response

PSEG did not provide the updated forward curves used by PSEG in its updated revenue calculations. It is not clear what is meant by 2020 spot prices. The IMM Report is fully transparent about the forward prices used. The forward prices used in the IMM Report can be easily replicated from publicly available sources.

PSEG provided updated energy revenues and generation for Hope Creek January 22, 2021, using forward curves as of September 30, 2020 in the file Staff-PS_Staff-PS-0011-UPDATE_11-updated-answer-Confidential.xlsx. The implied LMP calculated by taking PSEG’s Hope Creek

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energy revenues and dividing by PSEG’s Hope Creek projected generation are lower than the forward prices used by the IMM from January 4, 2021 and shown in Table 12 of the IMM report.

- b. Pages 11–12 of the IMM Report show a “difference in generation” of [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL] MW for Hope Creek. How does this analysis account for the fact, as shown in HC-GAIO-0012, that the planned outage at Hope Creek in 2024 is [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL] days while planned outages in 2021, 2022, and 2025 are [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL] days each?

Response

For Hope Creek 1, PSEG’s projected generation in years with refueling outages is lower than the average generation in 2009, 2010, 2012, 2013, 2015, 2016, 2018 and 2019, all of which were years with refueling outages. PSEG’s projections for years without refueling outages are also lower than the historical average of 2008, 2011, 2014, and 2017, all of which were years without refueling outages. As a result, PSEG’s overall projected generation is lower than projected generation based on the unit’s actual 12 year historical generation.

CAPACITY REVENUES

ZEC2-IMM-XQ-0002

- a. Please state how, in the IMM’s opinion, utilizing historical RPM pricing incorporates the following known inputs:
 - i. The impact of PJM’s changes to the cost of new resources in EMAAC, manifested through the calculation of Net Cost of New Entry (“CONE”);
 - ii. The impact of PJM shifting the demand curve lower by 1%;
 - iii. Increases in import capability for resources into EMAAC, manifested through the calculation of the capacity emergency transfer limit (“CETL”).

Response

The capacity market (RPM) prices are not known for any period after May 31, 2022, because PJM has not yet run capacity market auctions for later delivery years. Historical RPM pricing is the best basis for estimating future RPM prices.

COSTS AND RISKS

ZEC2-IMM-XQ-0003

- a. Isn’t it true that PSEG remains obligated under federal law to pay for the removal of spent fuel from the Salem and Hope Creek facilities?

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Response

It is not clear. For example, please refer to the experience with spent fuel costs for the retired Oyster Creek nuclear plant.

- b. The IMM relies on Electric Utility Cost Group (“EUCG”) cost data in its report (pp. 26–28) to adjust PSEG’s cost data.
 - i. Does the IMM believe the ZEC Act requires the Board to rely on EUCG cost data in evaluating eligibility for ZECs?

Response

No.

- ii. Does the IMM admit there is no reference to EUCG data in the ZEC Act?

Response

Yes.

- iii. Does the IMM agree that the EUCG cost data does not fully reflect “fully allocated overhead costs” as referenced in the ZEC Act?

Response

No.

- c. The IMM testimony references NEI’s “Nuclear Costs in Context,”[n.1: Nuclear Energy Institute (October 21, 2020). “Nuclear Costs in Context,” <<https://www.nei.org/CorporateSite/media/filefolder/resources/reports-and-briefs/Nuclear-Costs-in-Context.pdf>>.] which states: “The cost data does not represent the full costs of operations as it does not include market and operational risk management (including but not limited to revenue uncertainty, equipment malfunctions and regulatory changes), property taxes, spent fuel storage costs, or returns on investment that would be key factors in decisions about whether to continue operating a particular station. Also not included in the EUCG data are costs that could be relevant for other considerations such as depreciation or interest costs.” Does the IMM acknowledge that the EUCG data excludes:
 - i. “market and operational risk management”;
 - ii. “spent fuel storage costs”;
 - iii. “property taxes”;
 - iv. “returns on investment that would be key factors in decisions about whether to continue operating a particular station.”

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Response

The EUCG costs, as included in the IMM analysis, correctly incorporate the plants' avoidable or going forward costs. The IMM addresses risk separately in the IMM Report.

- d. The IMM Report on page 27 states that "NEI describes the costs submitted to EUCG and reported by NEI as: 'Total generating costs include capital, fuel and operating costs — all the costs necessary to produce electricity from a nuclear power plant.'"
 - i. Does the IMM admit that, PSEG's restated submissions to the EUCG for 2017 and 2018, and PSEG's statement of costs for 2019, each included allocated support services costs?

Response

These costs are not operating costs of the units, were not initially submitted to EUCG as operating costs and should not be paid by ratepayers through subsidies as if they were operating costs.

- ii. Does the IMM admit that EUCG procedural guidance requires submissions to include allocated support services costs?

Response

No.

- iii. Does the IMM acknowledge that the ZEC Act indicates that "fully allocated overheads" should be included as costs?

Response

No.

- iv. Does the IMM admit that the IMM's "EUCG adjustment" removes "fully allocated overheads" from the calculation of each respective plant's financial need?

Response

No.

- e. Does the IMM acknowledge that the interest cost on working capital is a cost?

Response

Interest cost on working capital is not a going forward cost.

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- f. Does the IMM acknowledge that PSEG would not incur interest costs on working capital if the plants cease operation?

Response

It is not clear.

- g. The IMM states that the IMM “uses net avoidable costs as the relevant metric” for evaluating whether a plant is fully covering its costs and risks.
 - i. Does the IMM admit that “net avoidable costs” does not include “market risk” as that term is described in the ZEC Act?
 - ii. Does the IMM admit that “net avoidable costs” does not include “operating risk” as that term is described in the ZEC Act?
 - iii. Does the IMM admit that “net avoidable costs” does not include “fully allocated overhead costs” as that term is described in the ZEC Act?

Response

See prior answers.

- h. The IMM identifies three decisions made by FERC that will “increase energy market offers and prices”: “changes to the definition of operation and maintenance expenses that can be included in energy market offers; implementing fast start pricing; and implementing changes to reserve pricing.”
 - i. In the IMM’s opinion, are these FERC decisions known to market participants?

Response

Yes.

- ii. When energy traders buying and selling forward energy contracts decide on their bid or ask prices and try to take into account all available market information, do they take account of FERC’s decisions to change the market rules?

Response

It is likely that market participants evaluate all information known to them, but the weights assigned to each element of that information are unknown.

- iii. In the IMM’s opinion, is it likely that market participants would ignore known information when trading forward energy contracts?

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Response

It is likely that market participants evaluate all information known to them, but the weights assigned to each element of that information are unknown.

- i. The IMM's testimony states that the change to the definition of operation and maintenance expenses that can be included in energy market offers was approved by FERC in April 2019. Is it the IMM's position that energy traders have ignored the likely price effects of this change when buying and selling forward energy contracts?

Response

See prior answers.

- j. The IMM's testimony states that FERC approved fast-start pricing in an order issued in December 2020. Is it the IMM's position that until fast-start pricing is actually implemented, energy traders will ignore the likely price effects of this change when buying and selling forward energy contracts?

Response

See prior answers.

- k. The IMM's testimony states that FERC implemented changes to the reserve pricing in Orders issued in December 2019 and April 2020. Is it the IMM's position that until these changes are implemented in May 2022, energy traders will ignore the likely price effects of these orders when buying and selling forward energy contracts?

Response

See prior answers.

- l. Is the IMM's estimate of the impacts of these FERC decisions known to the market?

Response

See prior answers.

- m. At page 3, the IMM Report states that changes in market rules and/or inputs resulting from FERC decisions will have an effect on energy prices going forward. At pages 16–17, the IMM uses a “three year historical average” to calculate capacity revenues, which the IMM asserts is “the best metric.”

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- i. Please confirm that, if capacity revenues are calculated using a “three year historical average,” the calculated revenues would not reflect the impact of any changes in market rules.
- ii. Is it the IMM’s opinion that changes in market rules will impact expected energy revenues, but not expected capacity revenues?

Response

The historical capacity market prices are the best basis for estimating future capacity market prices. That means that the future prices, regardless of the reasons for those prices, are best estimated using historical data for the market.

- n. In the resource adequacy process on price changes due to Operating Reserve Demand Curve (“ORDC”), the IMM commented, “Further, PSEG and Exelon ignore the fact that PJM’s recently approved ORDC will significantly increase energy market prices and that these increases will be reflected in forward prices when traders are confident that the ORDC will be implemented.” “Answer of PJM Independent Market Monitor,” Investigation of Resource Adequacy Alternatives, BPU Docket No. EO20030203, p. 4 (July 15, 2020). Is it the IMM’s position that energy traders have ignored the likely price effects of this change when buying and selling forward energy contracts?

Response

See prior answers.

- o. At page 22 of the IMM Report, the IMM states that “PSEG has the capability to manage the risks of price fluctuations and does manage that risk.” Does the IMM admit that PSEG has accounted for hedges in its cost of market risk calculations?

Response

The IMM cannot verify how and to what extent PSEG has accounted for hedges, but it is clear that PSEG’s risk calculations are not correct, as stated in the IMM Report.

- p. The ZEC Act defines “operational risks” to include “the risk that operating costs will be higher than anticipated because of new regulatory mandates or equipment failures.”
 - i. Does the IMM agree that, while a nuclear plant is operating, it faces the risk that costs may increase as a result of new regulatory mandates?

Response

Costs may increase or decrease. See the IMM Report for more details.

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- ii. Does the IMM agree that a new regulatory mandate that impacts the cost to operate a nuclear power plant could be issued at any time?

Response

Regulatory related costs may increase or decrease. See the IMM Report for more details

- iii. Does the IMM agree that, while a nuclear plant is operating, it faces the risk that costs may increase as a result of equipment failures?

Response

Costs may increase or decrease. See the IMM Report for more details.

- iv. Does the IMM agree that a major component of a nuclear power plant could unexpectedly require repair or replacement at any time?

Response

Costs may increase or decrease. See the IMM Report for more details.

- v. Does the IMM agree that, after a nuclear plant ceases operation, it no longer faces the risk that costs may increase as a result of equipment failures

Response

Yes.

- q. The ZEC Act defines “operational risks” to include “the risk that per megawatt-hour costs will be higher than anticipated because of a lower than expected capacity factor.”
 - i. Does the IMM agree that when a nuclear plant is operating it faces the risk of an unanticipated outage?

Response

Yes.

- ii. Does the IMM agree that if a nuclear plant experiences an unanticipated outage, its per-MWh costs will be higher than they would have been without the outage?

Response

Yes.

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- iii. Does the IMM agree that after a nuclear plant ceases operation, it no longer faces the risk of an unanticipated outage?

Response

Yes.

- iv. Does the IMM agree that with nuclear plants generally running at all available hours other than refueling outages, that are unavoidable, with forced outage rates in the single digits, there is more downside risk than upside risk?

Response

No.

- r. The ZEC Act defines “market risks” to include “the risk of a forced outage and the associated costs arising from contractual obligations.”
 - i. Does the IMM agree that, while a nuclear plant is operating, it faces the risk that a forced outage may occur?

Response

Yes.

- ii. Does the IMM agree that, all things equal, when a large baseload generating unit experiences a forced outage, prices tend to rise?

Response

No. The impact on prices from specific outages is fact specific and a general statement cannot be made.

- iii. Does the IMM agree that, after a nuclear plant ceases operation, its owner or operator no longer faces the risk that a forced outage may occur?

Response

Yes.

- s. The ZEC Act defines “market risks” to include “the risk that output from the nuclear power plant may not be able to be sold at projected levels.”
 - i. Does the IMM agree that, while a nuclear plant is operating, it faces the risk that its output may not be able to be sold at its generator bus at projected levels?

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Response

Question is unclear. The plant's output will always be sold.

- ii. Does the IMM agree that forward energy prices in PJM have generally come down over time in the past ten years?

Response

No.

- iii. Does the IMM agree that, after a nuclear plant ceases operation, it no longer faces the risk that its output may not be able to be sold at projected levels?

Response

Yes.

- t. The IMM analyzes the impact of the plant retirements on fuel diversity “for all PJM energy generation.”
 - i. Did the IMM analyze the impact of the plant retirements on fuel diversity in New Jersey?

Response

The IMM provided analysis of fuel diversity in the IMM Report.

- ii. Did the IMM analyze the impact of the plant retirements on fuel diversity in EMAAC?

Response

The IMM provided analysis of fuel diversity in the IMM Report

ERRORS IN DATA

ZEC2-IMM-XQ-0004

- a. In Table 1 on page 6 of the IMM Report, the table purports to reflect 2019–2020 energy year (June 2019 through May 2020) ZEC revenues in the line item labeled “ZECs” under “Revenues.” However, the values for the 2019–2020 energy year appear to include ZEC amounts from the April and May 2019 “stub period” which is outside the 2019–2020 energy year. Please reference the details in PSEG’s response to RCR-PS-xx-E-0003 for further details on the ZEC revenue for the 2019–2020 energy year versus the “stub period” in April to May

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2019. And, please correct the referenced table to reflect the correct values for the ZEC revenues for the 2019–2020 energy year.

Response

Removing ZEC revenues from the one month “stub period” results in an operating profit for the period June 2019-May 2020 for the three nuclear plants of [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL], or [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL]. After adjusting operating costs for interest charges and EUCG adjustments, the adjusted operating profit is [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL], or [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL].