PSEG Nuclear, LLC
ZEC2 - SALEM I
Docket No: ER20080557

Response to Discovery Request: SI-GAIO-0010
Date: 10/1/2020

Question:
Explanation of whether receipt of the ZECs will have any impact on the Unit's participation in the wholesale markets. If so, how? (Response must be both quantitative and qualitative and include discussion of anticipated impact on the BGS auction and a comparison of costs and benefits.) For Units currently receiving ZECs, explain and show how receipt has impacted the Unit's participation in wholesale markets.

Attachments Provided Herewith: YES

Response:
If the applicant units do not receive ZECs and there is no material financial change, PSEG Nuclear, LLC ("PSEG Nuclear") would cease operation of the Unit. If ZECs are awarded, the applicant Unit could remain in operation, absent any conditions that would excuse such obligations as provided for in the ZEC Act, and would be capable of participating in wholesale energy and capacity markets consistent with PSEG's business judgment and to the extent permitted by PJM rules and requirements. Because the Unit is currently receiving ZECs, the Unit has been able to participate in the wholesale energy and capacity markets through the first eligibility period (through May 31, 2022). The receipt of ZECs since April 2019 has not impacted our bid levels for these Units.

The BGS auction is a competitive procurement of full requirements supply for customers who have not switched to third party suppliers. PSEG Nuclear cannot predict how BGS auction participants will view the receipt of ZECs by the Unit in preparing their bids for the BGS auctions. But assuming that the expectation of BGS market participants is that the Unit's impact on future market conditions will be similar to the Unit's past impact, a 2017 report prepared by the Brattle Group provides a useful analysis of the impacts of New Jersey nuclear plant retirements.[1]

The Brattle report, sponsored by PSEG and Exelon Generation, evaluated the impact on consumers in New Jersey of all three units located at the Artificial Island site – Hope Creek, Salem 1 and Salem 2 – simultaneously ceased operation. Brattle determined that the retirement of Hope Creek, Salem 1 and Salem 2 would result in a $4.99/MWh price increase in New Jersey. This would represent an increase of about $400 million per year in electricity costs to New Jersey consumers.

[1] *See* "Salem and Hope Creek Nuclear Power Plants' Contribution to the New Jersey Economy," November 2017, Mark Beckman, Ph.d., Dean Murphy, Ph.d. included as an attachment.

Brattle did not evaluate the impact of a single unit retirement, but it can be assumed that the incremental price impact is roughly proportional to the unit capacity. Salem 1 has 1,170 MW nameplate capability out of total of 3,649 MWs of nameplate capability at the site or about 32% of the total. This represents a share of about $128 M of the $400 M per year rate increase calculated by Brattle.

The Salem 1 cost impact can also be allocated to BGS load. The chart below, compiled from information available from the BGS website, represents the quantity of MW capacity obligations associated with BGS compared with the total of MW capacity obligations for all the electric utilities in New Jersey:

Zone	Total Retail	Total BGS
AECO	2,271	1,496
JCPL	5,546	3,328
PSEG	9,462	5,977
RECO	360	250
Total	17,639	11,051
based on peak load allocation as of 6/1/20		

Using the values in the chart, 11,051 MWs out of 17,639 MWs or about 63% of total State-wide load consists of BGS load. Accordingly, an estimate of impact on BGS load associated with Salem 1 ceasing operations would be about 63% of $128 M of total estimated Salem 1 impact or a yearly increase of about $81 M per year representing Salem 1 impact on BGS.[2]

The level of ZEC costs can also be allocated to Hope for comparison. Because the level of ZEC payments are a function of deliveries, ZEC obligations should be allocated based on consumption. The chart below shows that the MWhs consumed by BGS customers is 54% of the total New Jersey Retail load for the 2017/2018 delivery year:

PJM Load PY'19-20			
Zone	Total Retail	Total BGS	
AECO	8,945,358	5,134,036	
JCPL	20,837,611	10,770,229	
PSEG	41,431,500	22,148,572	
RECO	1,381,260	844,120	
Total	72,595,728	38,896,957	
based on aggregate load data found on BGS Auction website			
For the period June 1, 2019 to May 31, 2020			

[2] The use of capacity values to allocate savings is consistent with the Brattle report finding that majority of the impacts on power prices in New Jersey associated with the retirement of the plants occurred in the capacity market. *Id.*, p. 9 ([“T]he capacity price effect accounts for over half of the total electricity price effect in PJM-East [which includes New Jersey].”)

In our response to SSA-2, PSEG Nuclear calculated that the total amount paid to Salem 1, assuming that all three plants at Artificial Island were selected for receipt of ZECs, would be expected to average about $88 M a year over the 2022/2023, 2023/2024 and 2024/2025 delivery years (which covers two years of the next BGS auction period).

Applying the 54% allocation factor for BGS load would result in a dollar allocation to BGS customers of about $48 M a year for Salem 1. By contrast, the Brattle study indicates that given the price increase anticipated from not having the nuclear units available, the cost of serving BGS load would increase by about $81 M per year if Salem 1 ceased operation. Accordingly, the retention of Salem 1 would result in a savings to BGS customers of about $33 M a year.