

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Paul S. Ryerson, Chairman  
Dr. Gary S. Arnold  
Dr. Craig M. White

In the Matter of  PSEG POWER, LLC AND PSEG NUCLEAR, LLC  (Early Site Permit Application)
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Docket No. 52-043-ESP

ASLBP No. 15-943-01-ESP-BD01

January 6, 2016

MEMORANDUM AND ORDER

(Second Set of Board Questions and Associated Administrative Directives)

In accordance with the Initial Scheduling Order, the parties shall respond, on or before January 28, 2016 to the Board's written questions attached hereto, which primarily concern the FEIS.<sup>1</sup> The parties are reminded that, pursuant to that Order, "[t]he parties' written answers shall, for each question, identify the responding subject matter expert(s) or individual(s), and shall be submitted in exhibit form, under oath, so that they are suitable for receipt into evidence without the necessity of the personal appearance of each expert or individual."<sup>2</sup>

To avoid potential confusion, if associated attachments are submitted with the answers, they should be labeled as "attachments" and not as "exhibits." The NRC's E-Filing system treats pre-filed written testimony and exhibits that are submitted in connection with an

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<sup>1</sup> Licensing Board Order (Initial Scheduling Order) (Nov. 16, 2015) at 4 (unpublished).

<sup>2</sup> Id. at 3.

evidentiary hearing differently from other submissions.<sup>3</sup> Instructions concerning the submission of such pre-filed hearing exhibits will be provided at the appropriate time in a subsequent order.

Because the NRC Staff is responsible for preparing the FEIS, and consistent with the Board's role in this uncontested proceeding (that is, to consider the sufficiency of the NRC Staff's review of the Application), most of the Board's questions are directed primarily to the NRC Staff. As appropriate, however, answers to the Board's questions should be submitted both by the NRC Staff and by the Applicant. To the extent practicable, the parties are encouraged to coordinate their responses so as to avoid repetition.

It is so ORDERED.

FOR THE ATOMIC SAFETY  
AND LICENSING BOARD

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Paul S. Ryerson, Chairman  
ADMINISTRATIVE JUDGE

Rockville, Maryland  
January 6, 2016

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<sup>3</sup> See 10 C.F.R. § 2.304(g).

## **Attachment A**

### **(SER-Related Questions)**

#### **SER section 2.5.1.2.1.4.2 Principal Tectonic Structures**

1. On page 2-208 Staff summarizes the scheme used by Crone and Wheeler (2000) to classify the 17 potential Quaternary tectonic features that occur within the site region. Sixteen of these are “Class C Features,” in which geologic evidence is insufficient to demonstrate the existence of a tectonic fault or Quaternary deformation associated with the feature. What is the significance of the Crone and Wheeler classification for demonstrably active seismic zones? Does a Class C designation imply that earthquakes in the Lancaster seismic zone could not pose a potential hazard to structures at the PSEG ESP site?
2. On page 2-210 Staff, citing the applicant, notes that the Cacoosing earthquake in the Lancaster Seismic Zone “. . . was anthropogenic (i.e., the result of human activities related to quarrying), rather than tectonic, in origin.” Clarify what is meant by this statement; specifically, what role, if any, did tectonic stresses play in producing the destructive energy associated with this earthquake?

### **(FEIS-Related Questions)**

#### **FEIS section 1.1.3 NRC ESP Application Review**

3. Explain the measures taken to verify the accuracy of PSEG’s Environmental Report to the extent it has been relied on as a primary source for the NRC Staff’s analysis.

#### **FEIS section 2.2 Land Use**

4. Staff states: “Section 2.2.1 describes land use on the site and in the vicinity, defined as the area encompassed within a 6-mi radius of the site.”

Why is a 6-mile radius used? Is this a standard value or chosen specifically for this site? If it is a standard value, why is it appropriate for this site? If it is a value chosen specifically for this site, what was that choice based upon?

#### **FEIS section 2.2.1 The Site and Vicinity**

5. On page 2-10 Staff states, “Figure 2-6 depicts the jurisdictional wetlands (considered important terrestrial habitat) on the PSEG Site. The printed version of this figure may not be legible; however, the electronic version is viewable when zoomed in.”

This is not correct. The electronic version is as illegible as the printed version. If practicable Staff shall provide a link to a more readable version.

#### **FEIS section 2.2.2.3 Proposed Access Road**

6. On page 2-18 of the FEIS, Staff states: “PSEG has stated that additional access road capacity is necessary to address future transportation needs for the PSEG Site (PSEG

2015-TN4280). To provide this additional access road capacity, PSEG has designed a three-lane causeway that would be constructed on elevated structures for its entire length through the coastal wetlands.”

Has there been an evaluation of whether improvements to the current access road could provide the additional capacity with fewer environmental impacts? If so, summarize that evaluation.

#### **FEIS section 2.3.4 Water Monitoring**

7. On page 2-52, the Staff indicates that the water supply wells are monitored quarterly for chlorides. What would occur if future saltwater intrusion were discovered? Would PSEG’s state permit from NJDEP be subject to review or possible reduction?

#### **FEIS section 2.4.1.3 Important Terrestrial and Wetland Species and Habitats**

8. On page 2-67, the Staff discusses the Bog Turtle. (See also page 5-24.) The Staff acknowledges that bog turtles were present on the site and within the vicinity between 1972 and 1978. Then the Staff indicates that they were not present between 2009 and 2010. What is the explanation for this loss of the species in this location? Is it due to PSEG’s operations or to some other factor? (See page 4-33: “[!]ntense land uses such as those found on the PSEG Site are not favorable to [the Bog Turtle].”) Additionally, will there be any attempt to monitor for this species during future construction?
9. On page 2-78 and 79, a similar situation to the Bog Turtle exists with the Eastern Tiger Salamander. It once existed on the Artificial Island and is now absent. Is there an explanation for this finding in the most recent ecological survey? Additionally, will there be any attempt to monitor for this species during future construction?

#### **FEIS Table 2-12. Federally and State-Listed Species in the Vicinity of the PSEG Site and Existing Transmission Corridors**

10. The draft EIS included in this table the Leatherback sea turtle and the Hawksbill sea turtle. The FEIS did not include these turtles. Staff shall explain their deletion from the table.

#### **FEIS Table 2-21. Annual Unemployment Rates**

11. This table lists unemployment rates from selected counties for several years. The most recent year shown is 2011. This was during an economic slump from which the economy has generally recovered, so the 2011 data might not be indicative of current conditions. Was consideration given to updating this table?

#### **FEIS section 2.7.1.1 Paleo-Indian Period**

12. Staff shall confirm that the reference on page 2-159 to “the last age” should be to “the last ice age.”

### **FEIS section 4.1.2 Offsite Areas**

13. On pages 4-11 and 12, the Staff states that “building the proposed causeway would not be part of the NRC-authorized construction activities at the PSEG Site.” (See also pages 4-83 and 84.) Staff shall confirm that the causeway is not a component of the NRC’s NEPA review and that the extensive discussion of the causeway is largely a result of NRC’s collaboration with USACE in preparing the FEIS.

### **FEIS section 4.3.1.1 Terrestrial and Wetland Resources – Site and Vicinity**

14. On page 4-27 Staff notes that most of the wetland areas that would be impacted by future construction are near monocultures dominated by the invasive non-native common reed Phragmites. Could construction activities in Phragmites-dominated wetlands facilitate the spread of this species to nearby wetlands with more desirable plant communities? If so, will special procedures be followed to reduce the likelihood of this happening?
15. On page 4-27, the Staff indicates that close to 100 acres of wetlands would be temporarily disturbed during construction activities. Would these areas be recovered post-construction? If so, how?
16. On page 4-29, the Staff states that “[s]ome direct loss of less mobile species . . . would be expected.” This includes “small rodents, amphibians, and turtles.” Does this statement increase the need to explain the current absence of the Bog Turtle and Eastern Tiger Salamander from this location?

### **FEIS section 4.3.1.4 Potential Mitigation Measures for Terrestrial Impacts**

17. As referenced beginning on page 4-40, when will the USACE make a mitigation determination regarding this matter, particularly regarding wetlands resources?
18. Explain in more detail how “an approved wetland restoration and/or rehabilitation program” (page 4-41) might be instituted and enforced.
19. On page 4-42 Staff states “Wetland mitigation plan details would primarily be guided by conditions established under CWA Section 404 permits issued by the USACE or the NJDEP Land Use Regulation Program and Section 401 water-quality certifications issued by NJDEP. Therefore, specific wetland mitigation efforts could be determined as part of such authorizations (PSEG 2015-TN4280).” What role does the NRC have in ensuring that loss of wetland resources caused by future construction will be minimized and, if necessary, mitigated?
20. In the first paragraph of page 4-43, Staff states: “Mannington Meadow is a large enough area (3,800 ac) to provide good mitigation opportunities; however, much of it is in private, State, or Federal ownership (PSEG 2015-TN4280).”

Is not virtually all property in either “private, State, or Federal ownership”? Is there meaning to this sentence that is not immediately obvious?

### **FEIS section 5.2.2.1 Surface-Water-Use Impacts**

21. On page 5-8, the Staff indicates that third-party rights to Merrill Creek Reservoir can be obtained as required. What is the process to acquire these rights?

### **FEIS section 5.3.1.1 Terrestrial and Wetland Resources – Site and Vicinity**

22. On page 5-18 Staff states that dissolved solids in vapor plumes and drift from new LMDCT cooling towers have the potential to damage some plants. Modeling conducted by PSEG and confirmed by the Staff shows that maximum salt deposition rate is 1.31 kg/ha/mo, which is within the rate described by NUREG-1555 as generally not damaging to plants. On page 7-21 of Section 7.3.1.1 the Staff notes that other facilities, including HCGS, would have similar effects. What is the cumulative maximum salt deposition rate from all sources, including the proposed new PSEG facility, in the area downwind from the PSEG site shown on Figure 5-3? Is this value within the rate described by NUREG-1555 as generally not damaging to plants?

### **FEIS Table 5-1. Maximum Predicted Salt Deposition Rate**

23. On page 5-18, Table 5-1 shows the maximum salt deposition for a LMDC tower is in an easterly direction, but that maximum salt deposition for a natural draft cooling tower occurs in a northerly direction. Why does the type of tower used affect the direction of maximum salt deposition?

### **FEIS Table 5-2. Ambient Noise Levels at HCGS and SGS in February 2009**

24. Table 5-2 on page 5-20 shows that ambient noise at night is typically similar to ambient noise during the day. The two exceptions to this are locations 3 (open area adjacent to high-use onsite road) and 6 (open area near Delaware River shoreline). In these two areas, nighttime noise levels are higher than daytime noise levels. Are these higher nighttime noise levels due to human activities or are they from natural sources?

### **FEIS section 5.3.2.1 Aquatic Resources–Site and Vicinity**

25. On page 5-38, the Staff asserts that cold shock is less likely to occur at a multi-unit plant. Are there other favorable environmental consequences (apart from positive economic impacts) that are likely to occur from construction of an additional reactor or reactors on Artificial Island?

### **FEIS section 5.12 Measures and Controls to Limit Adverse Impacts During Operation**

26. On the bottom of page 5-118 one example of “measures to minimize impacts and protect the environment” is given as “using BMPs for construction and preconstruction activities.” Are using “BMPs for construction and preconstruction activities” expected to limit adverse impacts during operation?

### **FEIS section 6.2.1 Transportation of Unirradiated Fuel**

27. This section calculates radiological and nonradiological impacts of transporting new fuel under normal and accident conditions. The shipping of new fuel is shown to be so innocuous that one might reasonably question the value of the effort put into these calculations. For future environmental impact assessments, can this evaluation be performed in a generic manner?
28. On page 6-25, concerning new fuel radiation levels, Staff states: "Assuming conservatively that the external dose rate at 2 m (6.6 ft) is at the maximum allowed by regulations (10 mrem/hr), the dose rate at 1 m (3.3 ft) is about 14 mrem/hour (Weiner et al. 2008-TN302)."

This indicates that at 1 meter the dose rate is greater than the dose rate at 2 meters by a factor of 1.4. On page 6-26, also concerning new fuel radiation levels, the Staff states:

This scenario addresses potential traffic interruptions that could lead to a person being exposed to a loaded shipment for 1 hour at a distance of 4 ft. The NRC staff's analysis assumed this exposure scenario would occur only one time to any individual, and the dose rate was at the regulatory limit of 10 mrem/hour at 2 m (6.6 ft) from the shipment. The dose to the MEI was calculated in DOE (2002-TN1236) to be 16 mrem.

This indicates that at 1.22 meters (4 ft) the dose rate is greater than the dose rate at 2 meters by a factor of 1.6. These two statements are inconsistent. The dose rate should increase monotonically as the fuel is approached. So one of the Staff statements appears incorrect. Staff shall resolve this discrepancy.

### **FEIS section 7.3.1.2 Cumulative Impacts to Important Terrestrial and Wetland Species and Habitats**

29. On page 7-24, the Bog Turtle and Eastern Tiger Salamander are referenced in conjunction with transmission line construction. What is the specific "cumulative" impact on these two species as a result of Salem, Hope Creek, a new reactor plant, the proposed causeway, traffic strikes (see page 5-22), and new transmission lines? Although referenced generally on page 7-24, what are the specific proposed BMPs, mitigation proposals, and avoidance strategies that would reduce the cumulative impacts on these two species?

### **FEIS section 7.4 Socioeconomics and Environmental Justice**

30. This section evaluates the cumulative effects of past and present projects upon environmental justice issues. Since the need to perform a cumulative impact assessment derives from NEPA while the need to assess environmental justice does not, why is this section needed? Did the Staff develop insights into environmental justice issues through this evaluation that it could not have developed through other means?

**FEIS section 8.0 Need for Power**

31. The evaluation of the need for power—as well as numerous other evaluations throughout the FEIS—are all based upon a new plant that becomes operational in 2021. As a practical matter, there appears very little chance of this occurring. If an application for a COL or CP is eventually submitted, will all the evaluations based upon an operational date of 2021 be updated? If not, which evaluations will not be updated and why is this acceptable?

**FEIS Table 9-24. Comparison of Cumulative Impacts at the Proposed PSEG Site and Four Alternative Sites**

32. This table compares alternative sites for construction of a new nuclear power plant. This comparison is based upon the cumulative impacts of building and operating a new plant plus the impacts of all other projects, past and present, that have affected the local environment. It seems this comparison has results based more upon what prior projects have done to the environment and less on what effect the current project would have on the environment. (Consider section 7.0 that evaluates cumulative impacts of building and operating a plant at the PSEG site in conjunction with all other past, present and foreseeable future actions. The impacts of NRC related activities are essentially negligible contributors to the cumulative impacts.) Also, it biases the decision in the direction to construct the plant at the location having the most virgin, pristine and pure environment (because cumulative effects there would be less).

Why then are cumulative impacts a better basis for comparison of alternate sites than the impacts of the project itself?

**FEIS section 10.2.1 Unavoidable Adverse Impacts during Construction and Preconstruction**

33. Some of the “actions to mitigate impacts” listed in Table 10-1 are required by law, and some are not. Has Applicant committed to implement some or all of the latter? If some, which? How will compliance be monitored and enforced?

Update status of the “ongoing” consultation between USACE and the New Jersey State Historic Preservation Office, described on page 10-11.

**FEIS section 10.2.2 Unavoidable Adverse Impacts during Operation**

34. Some of the “actions to mitigate impacts” listed in Table 10-2 are required by law, and some are not. Has Applicant committed to implement some or all of the latter? If some, which? How will compliance be monitored and enforced?

Update status of USACE’s consultation with Native American tribes, described on page 10-15.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
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PSEG POWER, LLC ) Docket No. 52-043-ESP  
AND PSEG NUCLEAR, LLC )  
(Early Site Permit Application) )

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **MEMORANDUM AND ORDER (Second Set of Board Questions and Associated Administrative Directives)** have been served upon the following persons by Electronic Information Exchange or by electronic mail.

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PSEG POWER, LLC AND PSEG NUCLEAR, LLC - Docket No. 52-043-ESP  
**MEMORANDUM AND ORDER (Second Set of Board Questions and Associated  
Administrative Directives)**

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[Original signed by Herald M. Speiser ]  
Office of the Secretary of the Commission

Dated at Rockville, Maryland,  
this 6<sup>th</sup> day of January, 2016