

UNITED STATES OF AMERICA  
 NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 52-043-ESP
PSEG POWER, LLC AND PSEG	)	
NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	March 11, 2016

NRC STAFF TESTIMONY RELATED TO JANUARY 27, 2016 ORDER  
TOPIC 1: NRC STAFF BASES FOR FINDINGS IN 10 CFR 52.24(a)

**Q1: Please state your name, occupation, employer, and professional qualifications.**

**A1:** (PC) My name is Prosanta Chowdhury. I am a Project Manager in Licensing Branch 1, Division of New Reactor Licensing (DNRL), Office of New Reactors (NRO), U.S. Nuclear Regulatory Commission (NRC). A statement of my professional qualifications is included in Exhibit (Ex.) NRC002.

(AF) My name is Allen Fetter. I am a Project Manager in the Environmental Projects Branch, DNRL, NRO, NRC. A statement of my professional qualifications is included in Ex. NRC002.

(BJM) My name is Bruce J. Musico. I am a Senior Emergency Preparedness Specialist in the New Reactor Licensing Branch, Division of Preparedness and Response, Office of Nuclear Security and Incident Response, NRC. A statement of my professional qualifications is included in Ex. NRC002.

**Q2: Please describe your responsibilities with regard to the Staff's review of the PSEG Site Early Site Permit (ESP) application.**

**A2:** (PC) As the NRC lead Project Manager, I was responsible for coordinating all aspects of the Staff's safety review of the PSEG Site ESP application. I was also responsible for coordinating the Staff's presentation of safety evaluations to the Advisory Committee on Reactor Safeguards (ACRS), and publication of the Final Safety Evaluation Report (FSER) (Ex. NRC003).

(AF) As the NRC environmental Project Manager, I was responsible for managing all aspects of the Staff's environmental review of the PSEG Site ESP application and the associated preparation of the Final Environmental Impact Statement (FEIS) (Ex. NRC004A, NRC004B, and NRC004C). I was also responsible for coordinating with the U.S. Army Corps of Engineers (USACE) as a cooperating agency and with other Federal and State entities to ensure that NRC met its obligations under the National Environmental Policy Act (NEPA), the Endangered Species Act, and the National Historic Preservation Act.

(BJM) I served as NRC's technical reviewer of the complete and integrated emergency plan including associated inspections, tests, analyses, and acceptance criteria (ITAAC), in support of the PSEG Site suitability review, and prepared the Staff's FSER for Section 13.3, "Emergency Planning" (Ex. NRC003).

**Q3: What is the purpose of your testimony?**

**A3:** (PC, AF, BJM) The purpose of our testimony is to describe the bases that support the applicable findings in 10 CFR 52.24(a) with respect to the issuance of an ESP for the PSEG Site.

**Q4: Why did the Staff conclude that the ESP application met the applicable standards and requirements of the Atomic Energy Act (AEA) and the Commission's regulations?**

**A4:** (PC) The Staff conducted the safety review of the PSEG Site ESP application against the applicable regulations in Title 10 of the *Code of Federal Regulations* (CFR), Parts 20, 50, 52, 73, and 100. The Staff performed its safety review and evaluation using applicable portions of the Standard Review Plan (SRP) (NUREG-0800), Interim Staff Guidance (ISG) documents, Regulatory Guides (RGs), bulletins, generic letters, and other applicable NUREGs. On the basis of its evaluation and its independent analyses as discussed in the FSER (Ex. NRC003), the Staff concludes that within the scope of 10 CFR Part 52, Subpart A, the PSEG Site ESP application (Ex. PSEG004A – PSEG004AC) satisfies the applicable standards and requirements of the AEA and of the Commission's regulations set out in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," and its appendices, and 10 CFR Part 100, "Reactor Site Criteria."

**Q5: Were any notifications to other agencies or bodies required for the safety review?**

**A5:** (PC) No, within the scope of the ESP safety review, there are no required notifications to other agencies or bodies. As discussed below in the response to Question 6, however, the NRC did publish the required availability, docketing, and hearing notices for the ESP application.

**Q6: Please describe some of the important notices or communications associated with the safety review that the Staff provided to the public and other stakeholders.**

**A6:** (PC) Consistent with the applicable NRC regulations, policy, and best practice, the Staff made the following notifications:

- May 6, 2010 - Conducted a Government-to-Government Meeting with the States of New Jersey (NJ) and Delaware (DE), the Salem County (NJ) Freeholder Board, U.S. Department of Homeland Security, and U.S. Environmental Protection Agency (EPA) to discuss NRC's role in the review of an Early Site Permit application for a potential nuclear unit at the proposed PSEG Site in Lower Alloways Creek Township, Salem County, New Jersey (adjacent to the existing Salem and Hope Creek nuclear power plants) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100990105);
- June 4, 2010 – Issued letter to the Federal Emergency Management Agency (FEMA) requesting FEMA's review of an ESP application from PSEG for the PSEG Site (ADAMS Accession No. ML101550100);
- June 14, 2010 - Issued Federal Register Notice of Receipt and Availability of Application for an Early Site Permit (ADAMS Accession No. ML101590720);
- August 4, 2010 - Issued Federal Register Notice on Acceptance for Docketing of an Application for an Early Site Permit for the PSEG Site (ADAMS Accession No. ML102010722);

- November 1, 2010 - Issued Federal Register Notice of Hearing, Opportunity to Petition for Leave to Intervene, and Associated Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information and Safeguards Information for Contention Preparation (ADAMS Accession No. ML102460046);

**Q7: Were any notifications required or made for the environmental review?**

**A7:** (AF) Yes, as addressed below, the Staff followed the notice requirements of 10 CFR 51.26, 51.27, 51.116, 51.117, and 51.118. The Staff also followed the FEIS distribution requirements of 10 CFR 51.74, 51.77, and 51.93.

- October 8, 2010 – Issued Federal Register Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process (ADAMS Accession No. ML102710517);
- Published notices of PSEG Site ESP EIS scoping meetings in NJ on October 29 and 31, and November 2 and 3, 2010, in Today’s Sunbeam (NJ); on November 2 and 3, 2010, in News of Cumberland County (NJ); on October 31 and November 2, 2010, in Gloucester County Times (NJ); and on October 31, and November 2 and 3, 2010, in The News-Journal (Wilmington, DE);
- August 18, 2014 – Issued Federal Register Notice of Availability the Draft Environmental Impact Statement for an Early Site Permit (ESP) for the PSEG Site, Public Meeting and Request for Comment (ADAMS Accession No. ML14225A719);
- Published notices of PSEG Site ESP Draft EIS (DEIS) public meetings in NJ on September 17, 24, and 28, 2014, in the South Jersey Times (NJ) and in The News-Journal; and on September 30, 2014, in the Cumberland and Salem Guide (NJ);
- Published notices of PSEG ESP DEIS public meetings in DE on October 17, 20, and 21, 2014, in The News-Journal; and on October 23, 2014, in the Middletown Transcript (DE);
- November 13, 2015 – Transmitted the FEIS to EPA and issued Federal Register Notice of Availability the Final Environmental Impact Statement for an Early Site Permit (ESP) for the PSEG Site (ADAMS Accession No. ML15259A346).

The Staff concludes that, for the purposes of issuing an ESP for the PSEG Site, adequate announcements and notifications have been made.

**Q8: How did the Staff’s safety evaluation and findings support a finding that there is reasonable assurance that the PSEG Site is in conformity with the provisions of the Act, and the Commission’s regulations?**

**A8:** (PC) The Staff reviewed information provided by the Applicant to ensure there is reasonable assurance that the proposed PSEG Site is in conformity with the provisions of the Act, and the Commission’s regulations, and in particular, the applicable requirements in 10 CFR Parts 20, 50, 52, 73, and 100. The Staff’s review included information submitted by the Applicant in its Site Safety Analysis Report and other portions of the application, including the emergency plan, and the Quality Assurance Program Description.

In areas where the Staff found that the information submitted initially needed to be clarified or supplemented to allow the Staff to reach a reasonable assurance conclusion, the Staff issued requests

for additional information to the Applicant to obtain sufficient information. The Staff reviewed the Applicant's responses to ensure that the additional information provided was sufficient to support the Staff's conclusion. Where necessary, the Applicant provided supplemental responses. In addition, the Staff also conducted audits, as deemed necessary, of the Applicant's records and calculations, and performed its own confirmatory calculations, as deemed necessary, to verify the Applicant's statements as well as substantiate the Staff's judgment and conclusions.

In some cases, the Staff's "reasonable assurance" finding required the imposition of permit conditions and ITAAC as part of the permit. Appendix A to the FSER lists the Staff's proposed permit conditions, including those that are associated with the requirements resulting from the Fukushima Near-Term Task Force Recommendations, and the ITAAC. The basis for each permit condition appears in the technical evaluations documented in the FSER (Ex. NRC003).

On the basis of its review of the application and its findings as documented in the FSER, the Staff concludes that, subject to limitations and conditions proposed by the Staff in the FSER (Ex. NRC003) for inclusion in any ESP that might be issued, there is reasonable assurance that the proposed PSEG Site is in conformity with the provisions of the Act, and the Commission's regulations.

**Q9: Is the Applicant technically qualified to engage in any activities authorized by the ESP?**

**A9:** (PC) The applicant did not request authorization to perform any activities requiring previous NRC approval (i.e., it did not include a request for a Limited Work Authorization (LWA) to undertake construction activities regulated by the NRC). Therefore, no technical qualifications finding regarding such activities is necessary at the ESP stage. An applicant's technical qualification to engage in NRC authorized activities would be evaluated in conjunction with the review of a subsequent LWA, Construction Permit, or Combined License (COL) application. With respect to the activities necessary to prepare the ESP application, the Applicant demonstrated its technical qualifications. In FSER Chapter 17 (Ex. NRC003), the Staff concluded that the Applicant's Quality Assurance Program Description satisfies all applicable NRC requirements regarding preparation of the application. In addition, as noted in FSER Chapter 1 (Ex. NRC003), the Applicant has extensive experience as a commercial nuclear plant owner and operator of the Hope Creek Generating Station and Salem Nuclear Generating Station. Therefore, for all these reasons, the Applicant is technically qualified to receive an ESP under 10 CFR 52.24(a)(4).

**Q10: Were the ITAAC, applicable within the scope of an ESP and proposed by the Applicant, found to be sufficient, along with any other requirements, in support of a reasonable assurance finding?**

**A10:** (PC, BJM) Within the scope of an ESP application that does not seek an LWA, the only ITAAC are those that pertain to emergency planning (EP ITAAC). As part of the ESP application, the Applicant submitted a complete and integrated emergency plan and associated EP ITAAC (Ex. PSEG004AC). These ITAAC are the same as those that would be included in a COL. The Staff used guidance provided in SRP (NUREG-0800) Sections 13.3, "Emergency Planning," and 14.3.10, "Emergency Planning - Inspections, Tests, Analyses, and Acceptance Criteria," to review the Applicant's EP ITAAC. The Staff's review of the Applicant's EP ITAAC is addressed in the applicable subsections of FSER Section 13.3.4, "Technical Evaluation" (Ex. NRC003). The Staff reviewed the individual EP ITAAC in the context of the EP-related subject to which they apply. The complete listing of EP ITAAC, approved by the Staff, is provided in Table 13.3-1, "PSEG Site ITAAC," of FSER Section 13.3 (Ex. NRC003). With regard to the PSEG Site Emergency Plan (Ex. PSEG004AC), the Staff found the Applicant's EP ITAAC necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility that references the ESP has been

constructed and will be operated in conformity with the license, the applicable provisions of the Act, and the Commission's applicable rules and regulations.

**Q11: How did the Staff establish, within the scope of an ESP, that issuance of a permit to the Applicant will not be inimical to the common defense and security or to the health and safety of the public?**

**A11:** (PC) The Staff reviewed the PSEG Site ESP application to assure that issuance of an ESP will not be inimical to the common defense and security or to public health and safety. Specifically, the Staff evaluated the Applicant's analysis and conclusions about site-specific conditions, including the geography and demography of the site; nearby industrial, transportation, and military facilities; site meteorology; site hydrology; and site geology, seismology, and geotechnical engineering. The Staff also evaluated the Applicant's complete and integrated emergency plan. The Staff determined that within the scope of an ESP application, the Applicant has submitted necessary and sufficient information in the above areas of review. Further, the Staff evaluated information in the ESP application regarding physical security, and concluded that the Applicant provided sufficient technical basis to demonstrate that the site characteristics and potential hazards do not present impediments that would preclude the development of adequate security plans and measures, and the site is such that adequate security plans and measures can be developed consistent with the requirements in 10 CFR 100.21(f). The Staff is also not aware of any information presenting inimicality concerns. The Staff also notes, as documented in FSER Chapter 1 (Ex. NRC003), that PSEG Nuclear, LLC, PSEG Power, LLC and its parent, Public Service Enterprise Group Incorporated, are not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government.

On the basis of its review of the application, as discussed above, the Staff concludes, as documented in the FSER, that in all areas of review within the scope of an ESP application, the Applicant complied with applicable regulatory requirements in 10 CFR Parts 20, 50, 52, 73, and 100, and that issuance of an ESP for the PSEG Site will not be inimical to public health and safety or the common defense and security (Ex. NRC003).

**Q12: Was the Staff required to make any additional findings pursuant to 10 CFR 52.24(a)?**

**A12:** (AF) Yes, 10 CFR 52.24(a)(8) provides that the Board must also find that the findings required by subpart A of 10 CFR Part 51 have been made. As discussed below, the Staff has established a basis to conclude that, for the purpose of issuing an ESP for the PSEG Site, the environmental review has been adequate to support the applicable findings set forth in 10 CFR 51.105(a) including:

- (1) Determine whether the requirements of Sections 102(2) (A), (C), and (E) of NEPA and the regulations in Subpart A of 10 CFR Part 51 have been met.

The Staff reviewed the application and evaluated it against the applicable regulations in 10 CFR Parts 50, 51, 52, and 100. The Staff performed this evaluation using applicable portions of the Environmental Standard Review Plan (NUREG-1555), issued in 2000, and updated in 2007, and ISG documents, RGs, and generic letters.

In accordance with NEPA Section 102(2)(A) (42 U.S.C. Section 4332(2)(A)), the Staff prepared the FEIS (NUREG-2168) based on its independent assessment of the information provided by the Applicant and information developed independently by the Staff, including through consultation with other agencies. The Staff's technical analysis used a systematic, interdisciplinary approach to integrate information from many fields, including the natural and social sciences as well as the environmental design arts.

In accordance with NEPA Sections 102(2)(C)(i-v) (42 USC Section 4332(2)(C)(i-v), the FEIS for the PSEG Site ESP addresses: (1) the environmental impact of the proposed action, (2) any unavoidable adverse environmental effects, (3) alternatives to the proposed action, (4) the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity, and (5) any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented (Ex. NRC004A, NRC004B, and NRC004C).

As supported by correspondence presented in Appendix F, "Key Consultation Correspondence," of the FEIS (Ex. NRC004C), the Staff concludes that it fulfilled the requirement of NEPA Section 102(2)(C) by consulting with and obtaining comments from other Federal agencies with jurisdiction by law or special expertise (see 42 USC Section 4332(2)(C)). The Staff also fulfilled the requirement of NEPA Section 102(2)(C) by making copies of the DEIS and FEIS available for public inspection. The USACE fully participated with the NRC in preparing this EIS as a cooperating agency and participated collaboratively on the review team under the Commission's Memorandum of Agreement with the USACE.

The Staff concludes that the FEIS demonstrates that the Staff adequately considered alternatives to the proposed action to the extent that it involves unresolved conflicts concerning alternative uses of available resources, consistent with the requirements of NEPA Section 102(2)(E) (42 USC Section 4332(2)(E)). The alternatives considered in the FEIS include the no-action alternative, energy alternatives, alternative sites, and system design alternatives.

For the reasons given above, the Staff also concludes that its review comports with the NRC's requirements in 10 CFR Part 51, Subpart A. The Staff concludes that the environmental findings in the FEIS constitute the "hard look" required by NEPA and have reasonable support in logic and fact.

(2) Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken.

The Applicant elected to include, as was its option under 10 CFR 51.45(c), an analysis considering the economic, technical, and other benefits and costs of the proposed action. Therefore, Section 10.6 of the FEIS, "Benefit-Cost Balance," of the FEIS (Ex. NRC004B) provides the Staff's analysis of the benefit-cost balance. The Staff concluded that "building and operating a new nuclear power plant, with mitigation measures identified by the review team, would accrue benefits that most likely would outweigh the economic, environmental, and social costs. The accrued benefits of building and operating a new nuclear power plant at the PSEG Site would also outweigh the costs of construction, preconstruction, and operation of a new nuclear power plant at the PSEG Site."

(3) Determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the ESP should be issued, denied, or appropriately conditioned to protect environmental values.

As noted above, in its FEIS, the Staff considered the benefit-cost balancing as well as reasonable alternatives. Based on that analysis, the Staff recommends that the ESP be issued. The Staff based its recommendation on: (1) the Environmental Report (ER) submitted by

PSEG, (2) consultation with Federal, State, Tribal, and local agencies, (3) the review team's own independent review, (4) the Staff's consideration of public comments, and (5) the assessments summarized in the FEIS, including the potential mitigation measures identified in the ER and in the FEIS (Ex. NRC004B). In addition, in making its recommendation, the Staff determined that none of the alternative sites assessed is environmentally preferable or obviously superior to the PSEG Site. The Staff also determined that none of the reasonable energy alternatives and none of the reasonable system design alternatives were environmentally preferable to those proposed.

The NRC's determination is independent of the USACE's determination of a "least environmentally damaging practicable alternative" under the Clean Water Act (CWA) Section 404(b)(1) guidelines and its required public interest review (PIR). The USACE's independent regulatory permit decision documentation will reference relevant analyses from the FEIS and, as necessary, include a supplemental PIR; CWA Section 404(b)(1) evaluation; cumulative impact analysis; compensatory mitigation plan that is in accordance with 33 CFR Part 332, "Compensatory Mitigation for Losses of Aquatic Resources"; and other information and evaluations that may be outside the NRC's scope of analysis and not included in the FEIS, but that are required by the USACE to support its permit decision.

(4) Determine, in an uncontested proceeding, whether the NEPA review conducted by the Staff has been adequate.

The Staff conducted an independent evaluation of the application; developed independent, reliable information; and conducted a systematic, interdisciplinary review of the potential impacts of the proposed action on the human environment and reasonable alternatives to the Applicant's proposal. Before development of the DEIS, the Staff issued a notice of intent and invited the public to provide any information relevant to the environmental review. The Staff also provided opportunities for governmental and general public participation during the public meetings on the DEIS and used publicly available guidance in the development of its FEIS.

The Staff considered the purpose of and need for the proposed action, the environment that could be affected by the action, and the consequences of the proposed action, including mitigation that could reduce impacts. The FEIS considered the no-action alternative, energy alternatives, alternative sites, system design alternatives, and the potential impact of conservation measures in determining the demand for power and consequential need for additional generating capacity. The FEIS compared the alternatives to the proposed action. The Staff considered any adverse environmental effects that could not be avoided should the proposed action be implemented, the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources that would be involved in the proposed project (Ex. NRC004A and NRC004B).

The NRC filed the DEIS with the EPA for its review, consistent with its requirements in Section 309, "Policy Review," of the Clean Air Act (see 42 U.S.C. Section 7609). The Staff considered all comments received on the DEIS and, in Appendix E to the FEIS, described the manner in which each comment was dispositioned.

On these bases, the Staff concludes that, for the purpose of issuing the ESP, it conducted a thorough and complete environmental review that was sufficient to meet the requirements of NEPA and adequate to inform the NRC's action on the ESP request. In addition, pursuant to 10 CFR 51.102 and 51.103(a)(1)-(4), the Staff has prepared a draft Summary Record of Decision (ROD) (Ex. NRC005) to

accompany its action on the ESP application. As permitted by 10 CFR 51.103(c), this draft Summary ROD incorporates by reference materials contained in the FEIS.

**Q13: Does this complete your testimony?**

**A13:** (PC, AF, BJM) Yes.



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NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	March 9, 2016

AFFIDAVIT OF PROSANTA CHOWDHURY

I, Prosanta Chowdhury, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications (Ex. NRC002) are true and correct to the best of my knowledge and belief. I attest to the accuracy of my testimony and endorse its inclusion into the record of this proceeding.

**Executed in Accord with 10 CFR § 2.304(d)**

Prosanta Chowdhury  
Project Manager  
Division of New Reactor Licensing  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Mail Stop T6- E55  
Washington, DC 20555-0001  
(301) 415-1647  
Prosanta.Chowdhury@nrc.gov

Executed at Rockville, Maryland  
This 9th day of March, 2016

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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NUCLEAR, LLC	)	ASLBP No. 15-943-01-ESP-BC01
	)	
(Early Site Permit Application)	)	March 11, 2016

AFFIDAVIT OF ALLEN FETTER

I, Allen Fetter, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications (Ex. NRC002) are true and correct to the best of my knowledge and belief. I attest to the accuracy of my testimony and endorse its inclusion into the record of this proceeding.

**Executed in Accord with 10 CFR § 2.304(d)**

Allen Fetter  
Senior Project Manager  
Division of New Reactor Licensing  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Mail Stop T6-E55  
Washington, DC 20555-0001  
(301) 415-8556  
Allen.Fetter@nrc.gov

Executed at Rockville, Maryland  
This 11th day of March, 2016

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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AFFIDAVIT OF BRUCE J. MUSICO

I, Bruce J. Musico, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications (Ex. NRC002) are true and correct to the best of my knowledge and belief. I attest to the accuracy of my testimony and endorse its inclusion into the record of this proceeding.

**Executed in Accord with 10 CFR § 2.304(d)**

Bruce J. Musico  
Senior Emergency Preparedness Specialist  
Division of Preparedness  
Office of Nuclear Security and Incident Response  
U.S. Nuclear Regulatory Commission  
Mail Stop 9-A44  
Washington, DC 20555-0001  
(301) 287-3724  
Bruce.Musico@nrc.gov

Executed at Rockville, Maryland  
This 9th day of March, 2016