Nuclear Development
244 Chestnut Street, Salem, NJ 08079

PSEG
Power LLC

ND-2012-0024
March 29, 2012

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: **PSEG Early Site Permit Application**
Docket No. 52-043
Response to Request for Additional Information, RAI No. 59, Population Distribution

References:

1) PSEG Power, LLC letter to USNRC, Application for Early Site Permit for the PSEG Site, dated May 25, 2010

2) RAI No. 59, SRP Section: 02.01.03 – Population Distribution, dated March 1, 2012 (eRAI 6255)

3) PSEG Power, LLC letter to USNRC, ND-2011-0039, PSEG Power, LLC, Response to Request for Additional Information, RAI No. 21, Population Distribution, dated June 7, 2011

The purpose of this letter is to respond to the request for additional information (RAI) identified in Reference 2 above. This RAI addresses Population Distribution, as described in Subsection 2.1.3 of the Site Safety Analysis Report (SSAR), as submitted in Part 2 of the PSEG Site Early Site Permit Application, Revision 0.

Enclosure 1 provides our response for RAI No. 59, Question No. 02.01.03-7. Enclosure 2 includes the revisions to SSAR Subsection 2.1.3 resulting from our response to RAI No. 59, Question No. 02.01.03-7. Enclosure 3 includes the new regulatory commitments established in this submittal.

If any additional information is needed, please contact David Robillard, PSEG Nuclear Development Licensing Engineer, at (856) 339-7914.

D079
NRO

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 29th day of March, 2012.

Sincerely,

James Mallon
Early Site Permit Manager
Nuclear Development
PSEG Power, LLC

Enclosure 1: Response to NRC Request for Additional Information, RAI No. 59, Question No. 02.01.03-7, SRP Section: 02.01.03 – Population Distribution
Enclosure 2: Proposed Revisions, Part 2 – Site Safety Analysis Report (SSAR), Subsection 2.1.3 - Population Distribution
Enclosure 3: Summary of Regulatory Commitments

cc: USNRC Project Manager, Division of New Reactor Licensing, PSEG Site (w/enclosures)
USNRC Environmental Project Manager, Division of Site and Environmental Reviews (w/enclosures)
USNRC Region I, Regional Administrator (w/enclosures)

PSEG Letter ND-2012-0024, dated March 29, 2012

ENCLOSURE 1

RESPONSE to RAI No. 59

QUESTION No.
02.01.03-7

Response to RAI No. 59, Question 02.01.03-7:

In Reference 2, the NRC staff asked PSEG for information regarding the Population Distribution, as described in Subsection 2.1.3 of the Site Safety Analysis Report. The specific request for Question 02.01.03-7 was:

> *10 CFR 52.17(a)(1)(viii), 10 CFR 100.21(h), NUREG-0800, SRP Section 2.1.3, Subsection III (Review Procedures), item 5 (Population Density) establish the need for an evaluation of the population density in the vicinity of the site. Regulatory Position C.4 of Regulatory Guide (RG) 4.7 specifies, among other things, a threshold population density criterion of 500 persons per square mile (per/sq-mi) averaged over any radial out to 20 miles.*
>
> *In a June 7, 2011, response to RAI No. 21, Question 02.01.03-1, the applicant provided information pertaining to item (e) and stated that the 2018 population density at 20 miles is 494 per/sq-mi. This projection approaches the criteria provided in RG 4.7 (500 per/sq-mi).*
>
> *The applicant also stated that an Alternative Site Evaluation was performed in support of the siting determination for the Early Site Permit effort, and made a reference to the Environmental Report (ER), Section 9.3. In addition to this reference, the staff requests that the applicant also present rationale and justification in the selection of this high population density site, by providing information regarding the Alternative Site Evaluation analysis summary and conclusion in SSAR, Section 2.1.3. of the application.*

PSEG Response to NRC RAI:

As requested, a summary of the Alternate Site Evaluation discussed in detail in ER Section 9.3, will be added to SSAR Subsection 2.1.3.6.

Associated PSEG Site ESP Application Revisions:

Enclosure 2 includes a markup of the proposed revisions to SSAR Subsection 2.1.3.6 per RAI No. 59, Question 02.01.03-7, which supersedes RAI No. 21, Question 02.01.03-1 "Insert 2", as provided in Enclosure 2 of Reference 3.

PSEG Letter ND-2012-0024, dated March 29, 2012

ENCLOSURE 2

Proposed Revisions

Part 2 – Site Safety Analysis Report (SSAR)
Subsection 2.1.3 – Population Distribution

Marked-up Page
2.1-8

RAI No. 21, Question 02.01.03-1
Insert 2

population projections are compared to hypothetical cumulative populations based on population densities of 500 and 1000 people per sq. mi.

RAI No. 59, Question 02.01.03-7
Insert 1

~~NRC Regulatory Guide (RG) 4.7, *General Site Suitability Criteria for Nuclear Power Stations*, April 1998, and NUREG-0800 recommend that the population density within 20 mi. of a proposed plant site not exceed 500 people per sq. mi. at the time of initial site approval and 5 years thereafter. For the new plant, the projected first year of operation (2021) is considered to represent the period 5 years after initial site approval. As shown in Figure 2.1-22, the projected population density in 2021 is well below 500 people per sq. mi. out to 15 mi. from the PSEG Site. Between 15 and 20 mi. from the site, the projected population density is closer to 500 people per sq. mi. but continues to be below the recommended density. At 20 miles the projected 2021 population density is 497 people per sq. mi.~~

~~RG 1.70, *Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants, LWR Edition*, November 1978, states that the cumulative population density within 30 mi. of a proposed plant site should be compared to a density of 500 people per sq. mi. for the initial year of plant operation and 1000 people per sq. mi. for the last year of plant operation. As shown in Figure 2.1-22, the projected population density in 2021 is comparable to 500 people per sq. mi. for the distance out to 30 mi. from the PSEG Site. The projected population density in 2061 and 2081 is well below 1000 people per sq. mi. for the area out to 30 mi. from the PSEG Site. At 30 miles the projected 2081 population density is 782 people per sq. mi.~~

2.1.4 REFERENCES

2.1-1 The Delaware Population Consortium (DPC), Annual Population Projections Data Tables, Version 2008.0 (Excel), http://stateplanning.delaware.gov/information/dpc_projections.shtml, October 31, 2008, accessed May 18, 2009.

2.1-2 KLD Engineering, P.C., Salem and Hope Creek Nuclear Generating Stations, Development of Evacuation Time Estimates, Commack, New York, 2009.

2.1-3 Manta, profile based on data provided by Dun and Bradstreet accessed on June 11,2009:
Air Liquide America LP http://www.manta.com/company/mm77bp3,
Autotype Holdings (USA), Inc. http://www.manta.com/company/mm2s0m1,
Delstar Technologies, Inc. http://www.manta.com/company/mm29ctk
Letica Corporation http://www.manta.com/company/mmi9wv0
Memorial Hospital of Salem County, Inc.
http://www.manta.com/coms2/dnbcompany_dy11qv

2.1-4 Maryland State Data Center, 2009 Population Projections, Projections by Type for All Counties - Historic Census 1970 to 2000, Projected 2005 to 2030, Population Projections: XLS, http://www.mdp.state.md.us/msdc/dw_Popproj.htm, accessed May 18, 2009

2.1-5 National Park Service. Division of Economics U.S. Fish and Wildlife Service, "Banking on Nature 2004," September 2005. Division of Economics U.S. Fish and

RAI No. 21, Question 02.01.03-1(b), Insert 1

Other potentially significant sources of transient population between 10 and 50 mi. from the PSEG Site include Christiana Mall, a shopping mall located in Newark, Delaware, that reports approximately 17,000,000 annual visitors; and Delaware Park, a casino and racetrack located in Wilmington, Delaware, that reports approximately 2,900,000 annual visitors.

Replace RAI No. 21, Question 02.01.03-1, Insert 2 with RAI No. 59, Question 02.01.03-7 Insert 1

~~RAI No. 21, Question 02.01.03-1, Insert 2~~

USNRC Regulatory Guide (RG) 1.70 states that the residential population density within 30 mi. of a proposed plant site should be compared to a density of 500 people per sq. mi. for the initial year of plant operation and 1000 people per sq. mi. for the last year of plant operation. As shown in Figure 2.1-22, the projected population density in 2021 is comparable to 500 people per sq. mi. for the entire distance out to 30 mi. from the PSEG Site. At 20 mi. the projected 2021 residential population density is 497 people per sq. mi., and at 30 mi. the projected 2021 residential population density is 508 people per sq. mi. Figure 2.1-22 also shows that the projected population density in 2061 and 2081 is well below 1000 people per sq. mi. for the entire area out to 30 mi. from the PSEG Site. At 30 mi. the projected 2081 population density is 782 people per sq. mi.

RG 4.7 and NUREG-0800 recommend that the population density, including weighted transient populations, at all radial distances within 20 mi. of a proposed plant site not exceed 500 people per sq. mi. at the time of initial site approval and 5 years thereafter. For the PSEG Site, the expected year of initial site approval is expected to be 2013, and the year 5 years after initial site approval is expected to be 2018. Consistent with RG 4.7, transient populations identified within 20 mi. of the PSEG Site are weighted according to the percentage of each day the populations could reasonably be expected to be present in the area, and these weighted populations are added to the residential populations projected for 2013 and 2018. The resulting population density at 20 mi. from the PSEG Site is 477 people per sq. mi. in 2013 and 494 people per sq. mi. in 2018. As illustrated in Figure 2.1-22, the population density is lower at all distances closer to the site than at 20 mi.; therefore, it is clear that all radial distances within 20 mi. comply with the RG 4.7/NUREG-0800 guideline for the years 2013 and 2018.

Although the 2013 and 2018 population densities, including weighted transient populations, are below 500 people per sq. mi. at all radial distances out to 20 mi., the 2018 density at 20 mi. approaches the criteria provided in RG 4.7 and NUREG-0800. Given that the population density is close to the criteria, PSEG did consider population density in the Alternative Site Evaluation performed in support of the siting determination for the Early Site Permit effort. As reported in Part 3 of the PSEG ESP Application, Environmental Report, Section 9.3, the PSEG Site was selected as the Proposed Site on the basis of a comprehensive site selection study. This study considered numerous safety, environmental and economic factors, including the population density in the area surrounding each Candidate Site. Based on the site selection study, the PSEG Site was found to have significant safety and environmental advantages compared with the other Candidate Sites.

RAI No. 59, Question 02.01.03-7, Insert 1

USNRC Regulatory Guide (RG) 1.70 states that the residential population density within 30 mi. of a proposed plant site should be compared to a density of 500 people per sq. mi. for the initial year of plant operation and 1000 people per sq. mi. for the last year of plant operation. As shown in Figure 2.1-22, the projected population density in 2021 is comparable to 500 people per sq. mi. for the entire distance out to 30 mi. from the PSEG Site. At 20 mi. the projected 2021 residential population density is 497 people per sq. mi., and at 30 mi. the projected 2021 residential population density is 508 people per sq. mi. Figure 2.1-22 also shows that the projected population density in 2061 and 2081 is well below 1000 people per sq. mi. for the entire area out to 30 mi. from the PSEG Site. At 30 mi. the projected 2081 population density is 782 people per sq. mi.

RG 4.7 and NUREG-0800 recommend that the population density including weighted transient populations, at all radial distances within 20 mi. of a proposed plant site not exceed 500 people per sq. mi. at the time of initial site approval and 5 years thereafter. For the PSEG Site, the expected year of initial site approval is expected to be 2013, and the year 5 years after the initial site approval is expected to be 2018. Consistent with RG 4.7, transient populations identified within 20 mi. of the PSEG Site are weighted according to the percentage of each day the populations could reasonably be expected to be present in the area, and these weighted populations are added to the residential populations projected for 2013 and 2018. The resulting population density at 20 mi. from the PSEG Site is 477 people per sq. mi. in 2013 and 494 people per sq. mi. in 2018. As illustrated in Figure 2.1-22, the population density is lower at all distances closer to the site than at 20 mi.; therefore, it is clear that all radial distances within 20 mi. comply with the RG 4.7/NUREG-0800 guideline for the years 2013 and 2018.

Although the 2013 and 2018 population densities, including weighted transient populations, are below 500 people per sq. mi. at all radial distances out to 20 mi., the 2018 density at 20 mi. approaches the criteria provided in RG 4.7 and NUREG-0800. Given that the population density is close to the criteria, PSEG did consider population density in the Alternative Site Evaluation performed in support of the siting determination for the Early Site Permit effort. As reported in Part 3 of the PSEG ESP application, Environmental Report, Section 9.3, the PSEG Site was selected as the Proposed Site on the basis of a comprehensive site selection study as summarized below.

The PSEG Site was one of five Candidate Sites evaluated in detail through both numerical scoring and qualitative evaluations. The numerical scoring covered 40 site characteristics related to nuclear licensing issues, environmental issues, and engineering and economic issues. These numerical scores were summed both in an unweighted form and with weighting factors based on judgments about the relative importance of the site characteristics. The PSEG Site had the highest total scores with both weighted and unweighted scoring. In addition, the PSEG Site had the highest scores on environmental issues, and the second-highest scores for both nuclear licensing issues and engineering/cost issues. No other Candidate Site ranked among the top two sites in all three categories.

In addition to the numerical scoring, PSEG considered several qualitative factors related to the site location. On the basis of this evaluation, the PSEG Site was found to have important advantages compared with the other Candidate Sites, including the following:

- The lowest existing population density in the probable Low Population Zone area, and limited risk of substantial future population growth in the Low Population Zone due to surrounding land use and land cover conditions.
- Abundant existing site data and regulatory knowledge, including detailed geology and seismic data.
- Favorable security considerations, including opportunities for an integrated security strategy and protected area in common with the existing Salem and Hope Creek reactors.
- Existing emergency management infrastructure and support agreements with the states of New Jersey and Delaware, and with Salem and Cumberland counties in New Jersey and New Castle County in Delaware. Existing emergency plans can be used as necessary, and a consistent Emergency Planning Zone can be maintained.
- Significant community and key stakeholder support in Lower Alloways Creek Township and Salem County, New Jersey.
- Minimal community and regional disruptions associated with new transmission lines, pipelines, and road and rail systems as compared with the other Candidate Sites.

In summary, the PSEG Site was selected as the Proposed Site because it was the highest-ranked site using objective numerical criteria and it has significant additional benefits related to the specific site location.

PSEG Letter ND-2012-0024, dated March 29, 2012

ENCLOSURE 3

Summary of Regulatory Commitments

ENCLOSURE 3

SUMMARY OF REGULATORY COMMITMENTS

The following table identifies commitments made in this document. (Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.)

COMMITMENT	COMMITTED DATE	COMMITMENT TYPE	
		ONE-TIME ACTION (YES/NO)	PROGRAMMATIC (YES/NO)
PSEG will revise SSAR Subsection 2.1.3 to incorporate the changes in Enclosure 2 in response to NRC RAI No. 59, Question No. 02.01.03-7.	This revision will be included in a future update of the PSEG ESP application.	Yes	No