

## **PSEGESPEnveRAIPEm Resource**

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**From:** Fetter, Allen  
**Sent:** Thursday, September 20, 2012 3:04 PM  
**To:** PSEGRAIResponses@pseg.com  
**Cc:** PSEGESPEnveRAIPEm Resource; 'Robillard, David L'; 'Mallon, James'; Hsia, Anthony; Silvia, Andrea; Saulsbury, James; Zimmerman, Gregory P.  
**Subject:** PSEG Site ESPA Final RAI Env-12 (eRAI\_6740)  
**Attachments:** PSEG Site ESPA Final RAI Env-12 (eRAI\_6740).pdf

Please find attached RAI Env-12 for the PSEG Site ESP Application. The Env-12 RAI is an aggregate of the rTR draft RAIs that were provided to you on July 20, 2012 as part of a complete table of draft RAIs. At your request, an initial clarification discussion of rTR-11 and rTR-14 was held on August 13, 2012, and was followed by other calls that were finalized on September 13, 2012. No changes were made; hence we are issuing this RAI as final.

The schedule we have established to the review of your application assumes technically correct and complete responses within 30 calendar days of receipt of RAIs. For any RAIs that cannot be responded to within 30 calendar days, it is expected that a date for receipt of this information will be provided to the staff within the 30-day period so that the staff can assess how this information might impact the published schedule.

Please contact me if you have any questions.

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**Sent Date:** 9/20/2012 3:04:13 PM  
**Received Date:** 9/20/2012 3:05:07 PM  
**From:** Fetter, Allen

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**Request for Additional Information Env-12**

Issue Date: 9/20/2012

Application Title: PSEG Site ESP Environmental Review - Docket 52-043

Operating Company: PSEG Power LLC, PSEG Nuclear LLC

Docket No. 52-043

Review Section: ESP EIS 6.0 - Fuel Cycle, Transportation, and Decommissioning

Application Section: ER

QUESTIONS

ESP EIS 6.0-1

rTR-01: Provide an evaluation of the heat load for an irradiated fuel shipment.

Table S-4 of 10 CFR 51.52(c) contains a heat load criterion for irradiated fuel shipments (Heat (per irradiated fuel cask in transit), 250,000 BTU/hr.).

ESP EIS 6.0-2

rTR-05a: Provide transportation accident impacts that account for under-reporting in the state-level accident, fatality, and injury rates in ER Reference 7.4-1.

The reactors proposed do not meet all requirements of 10 CFR 51.52(a); therefore, this information is needed to determine compliance with 10 CFR 51.52(b), which requires that: "...the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport."

Note: Under-reporting of the state-level accident, injury, and fatality rates is discussed in the Comanche Peak EIS (NUREG-1943), Section 6.2.1.3, pp. 6-21.

ESP EIS 6.0-3

rTR-05b: Provide a corrected version of ER Table 7.4-3. The crud release fraction for row 7 in ER Table 7.4-3 (page 7.4-9) should be 2.0E-3 (rather than 2.0E-2).

This corrects an error in the ER. (See original reference NUREG/CR-6672, Table 7.31).

The reactors proposed do not meet all requirements of 10 CFR 51.52(a); therefore this information is needed to determine compliance with 10 CFR 51.52(b), which requires that: "...the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport."

ESP EIS 6.0-4

rTR-06: Provide a detailed transportation analysis for the four alternative sites identified in the ER: Site 4- 1, Site 7-1, Site 7-2, and Site 7-3.

Transportation impacts for the alternative sites are not provided in ER Sections 3.8, 5.7.2, 7.4, or 9.3.

10 CFR 51.50(b)(1) states that "The environmental report must include an evaluation of alternative sites to determine

whether there is any obviously superior alternative to the site proposed.”

#### ESP EIS 6.0-5

rTR-08: Provide the number of shipments of unirradiated fuel, irradiated fuel, and radioactive waste normalized to the 1100 MW(e) reference reactor with a capacity factor of 0.8. Also, state and justify the assumptions used in the calculations when determining the aforementioned number of shipments.

The impacts in Table S-4 of 10 CFR 51.52(c) are based on an 1100 MW(e) reactor with a capacity factor of 0.8, and specific container capacities. Normalization of the shipments is needed to compare impacts on an equal basis.

The reactors proposed do not meet all requirements of 10 CFR 51.52(a); therefore, this information is needed to determine compliance with 10 CFR 51.52(b), which requires that: “...the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport.”

When normalizing the shipments, consider for the following:

1. Provide the number of unirradiated fuel shipments accounting for the initial core loading.
2. Provide the number of irradiated fuel shipments using a shipping container capacity of 0.5 MTU/container.
3. Provide the number of radioactive waste shipments using a capacity of 82.6 ft<sup>3</sup>/shipment (2.34 m<sup>3</sup>/shipment).

#### ESP EIS 6.0-6

rTR-09a: Provide a consistent value for the Plant Parameter Envelope (PPE) value for the capacity factor.

The PSEG Site Safety Analysis Report (SSAR) (page 1.3-16) states that the PPE value for the capacity factor is 0.963; however, ER Table 5.7-1 (page 5.7-17) states that the PPE value for the capacity factor is 0.95.

The reactors proposed do not meet all requirements of 10 CFR 51.52(a); therefore, this information is needed to determine compliance with 10 CFR 51.52(b), which requires that: “...the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport.”

#### ESP EIS 6.0-7

rTR-11: Provide capacity factors for the ABWR, AP1000, US EPR, and US- APWR.

The NRC staff needs this information to determine that the PPE value for the capacity factor used in the transportation analysis is reasonable.

10 CFR 51.50(b)(2) states that “The environmental report may address one or more of the environmental effects of construction and operation of a reactor, or reactors, which have design characteristics that fall within the site characteristics and design parameters for the early site permit application, *provided however*, that the environmental report must address all environmental effects of construction and operation necessary to determine whether there is any obviously superior alternative to the site proposed...”

The reactors proposed do not meet all requirements of 10 CFR 51.52(a); therefore, this information is needed to determine compliance with 10 CFR 51.52(b), which requires that: “...the statement shall contain a full description and

detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport.”

#### ESP EIS 6.0-8

rTR-12: Provide revised text in ER Section 5.7.2.1.3, Fuel Enrichment, to reflect NRC’s position that NUREG- 1437 can only be used to justify enrichments greater than 4 weight percent for license renewals and cannot be used to justify enrichments greater than 4 weight percent for new reactors.

The reactors proposed do not meet 10 CFR 51.52(a)(2); therefore, this information is needed to determine compliance with 10 CFR 51.52(b) requires that: “...the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport.”

NUREG-1437 (NRC 1996; NRC 1999) cannot be used as the initial licensing basis for new reactors. See also ESRP 5.7.2, Revision 1, page 5.7.2-3.

“...the NRC has generically considered the environmental impacts of spent nuclear fuel with U-235 enrichment levels up to 5% and irradiation levels up to 62,000 megawatt-days per metric ton and found that the environmental impacts of spent nuclear fuel transport are bounded by the impacts listed in Table S-4 provided that more than 5 years has elapsed between removal of the fuel from the reactor and shipment of the fuel offsite (NRC 1996; NRC 1999). **However, these analyses cannot serve as the initial licensing basis for new reactors.**” (emphasis added)

U.S. Nuclear Regulatory Commission (NRC). 1996. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. NUREG-1437, Washington, D. C.

U.S. Nuclear Regulatory Commission (NRC). 1999. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*, Main Report, Section 6.3—Transportation, Table 9.1 Summary of findings on NEPA issues for license renewal of nuclear power plants. NUREG-1437 Vol. 1, Addendum 1, Washington, D.C.

#### ESP EIS 6.0-9

rTR-13: Provide revised text in ER Section 5.7.2.1.5, Average Fuel Burnup, to reflect NRC’s position that NUREG- 1437 can only be used to justify burnups greater than 33,000 MWd/MTU for license renewals and cannot be used to justify burnups greater than 33,000 MWd/MTU for new reactors.

Full Text (Supporting Information) is identical to that for rTR-13 (immediately above).

#### ESP EIS 6.0-10

rTR-14: Provide radionuclide inventories (Ci/MTU) for the ABWR, AP1000, and US EPR.

The NRC staff needs additional information to determine that the PPE value for the radionuclide inventory, which is based on the US- APWR, used in the transportation analysis in ER Table 7.4-2 (page 7.4-8) is reasonable.

10 CFR 51.50(b)(2) “The environmental report may address one or more of the environmental effects of construction and operation of a reactor, or reactors, which have design characteristics that fall within the site characteristics and design parameters for the early site permit application, *provided however*, that the environmental report must address all environmental effects of construction and operation necessary to determine whether there is any obviously superior alternative to the site proposed...”

The reactors proposed do not meet all requirements of 10 CFR 51.52(a); therefore, 10 CFR 51.52(b) requires that:

“...the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport.”