

January 13, 2011

Mr. John Elnitsky
Vice President, Nuclear Plant Development
Progress Energy Carolinas, Inc.
P.O. Box 14042
Saint Petersburg, FL 33733

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE ENVIRONMENTAL
REVIEW OF THE COMBINED LICENSE APPLICATION FOR THE SHEARON
HARRIS NUCLEAR POWER PLANT, UNITS 2 AND 3

Dear Mr. Elnitsky:

This letter transmits to Progress Energy Carolinas, Inc. (PEC), requests for additional information (RAI) needed to support the environmental review of the Shearon Harris Nuclear Power Plant, Units 2 and 3 combined licenses application.

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed PEC's 2010 Integrated Resource Plan and completed their initial assessments. As a result the NRC staff is issuing RAIs necessary for the staff to complete the environmental review for the topics of Need for Power, Alternative Systems Needs, and GIS Data Needs. Enclosure 1 contains the new RAIs under each review topic. The NRC requests within 30 days of receipt of the RAIs that a proposed schedule for transmittal of the requested information will be provided to the NRC so the NRC staff can assess the allocation of resources.

Should you have any questions or need additional clarification, I can be reached at 301-415-3803, or via e-mail to Donald.Palmrose@nrc.gov.

Sincerely,

/RA/

Donald E. Palmrose, PhD
Senior Project Manager
Environmental Projects Branch 3
Division of Site and Environmental Reviews
Office of New Reactors

Docket Nos.: 52-022 and 52-023

Enclosure:
As Stated

cc: See next page

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NRO-002

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DATE	12/13/2010	12/13/10	12/23/10	01/13/11	1/13/11

OFFICIAL RECORD COPY

Letter to John Elnitsky from Donald E. Palmrose dated January 13, 2011.

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UNITED STATES NUCLEAR REGULATORY COMMISSION
PROGRESS ENERGY CAROLINAS, INC.
REQUEST FOR ADDITIONAL INFORMATION FOR THE ENVIRONMENTAL REVIEW
OF THE COMBINED LICENSE APPLICATION FOR
THE SHEARON HARRIS NUCLEAR POWER PLANT, UNITS 2 AND 3
DOCKET NOS. 52-022 AND 52-023

Need For Power

Revision 2 of the Environmental Report (ER) for the Combined License application provided by Progress Energy Carolinas, Inc. (PEC), has in Section 1.0 the following:

“The proposed project is the development of new baseload generating capacity to supply electricity to PEC’s service area, using advanced technology to produce reliable generation that is located proximate to its major customer base and that minimizes overall impacts to the environment.”

The ER further presents in Chapter 1 that the new baseload generating capacity using advanced technology would be from two units of the Westinghouse Electric Company, LLC’s (Westinghouse) AP1000 reactor with an electrical output of at least 1000 megawatt electric (MWe) per unit. Thus, the total new baseload generation in the Combined License application is for at least 2000 MWe. However, the 2010 Integrated Resource Plan (IRP) submitted on September 13, 2010 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML103350462), to the North Carolina Utilities Commission and the South Carolina Utilities Commission does not specifically identify the need for a total of 2000 MWe of new nuclear baseload generation capacity nor does the IRP specifically identify the Shearon Harris site as the location for any of the new baseload generation needed out to 2025.

RAI Number	Question Summary (RAI)	Full Text (supporting information)
1.1.7-1 NUREG-1555 Section 1.1 (The Proposed Project) 10 CFR 51, Subpart A	Provide in ER Section 1.1.7, Construction Start Date, the new proposed dates for the start and completion of major activities for the proposed action.	The Environmental Impact Statement (EIS) must contain basic information on the proposed project by concisely describing the proposed action. The dates for the start and completion of major activities provides basic information needed by the staff to properly present to the public the timing of the impacts presented in other chapters of the EIS.

RAI Number	Question Summary (RAI)	Full Text (supporting information)
8.0-1 NUREG-1555 Chapter 8 (Need for Power) 10 CFR 51.71, 10 CFR 51, Appendix A(4)	Provide an updated ER Chapter 8 based on the latest documents from other organizations and governmental agencies such as the North Carolina Utilities Commission.	Revision 2 of the ER contains several references and analysis based on organizations or governmental agencies involved with regulating electricity supply and transmission in the Carolinas region. These documents are several years old and may have been superseded since the submission of the original application. The staff requests PEC review and appropriately update Chapter 8 to the latest information.
8.3-1 NUREG-1555 Sections. 8.3 (Power Supply) and 8.4 (Assessment of Need for Power) 10 CFR 51.71	Provide a detailed accounting of the need for baseload capacity in the form of a baseload capacity forecast to accompany the peakload forecast from the current Sept. 13, 2010 IRP. Provide the projected baseload demand from the present to 3 years after initial commercial operation of the proposed units. Prepare a table showing baseload demands, baseload capacities, and resulting deficit or surplus (see Table 8.4-1 on p. 8.4-10 of NUREG-1555, rev. 1, for an example) and a table showing peakload responsibilities, accredited generating capacities, and resulting reserve margin (see Table 8.4-2 on p. 8.4-11 for an example).	The staff needs this information and/or clarification from PEC to complete the need for power assessment.
8.3-2 NUREG-1555 Sections. 8.3 (Power Supply) and 8.4 (Assessment of Need for Power) 10 CFR 51.71	Of the Alternative Plans for Scenario Analysis offered as part of the 2010 IRP, Progress indicates that the least favorable Plan is that which includes the proposed project (pgs. A-5 through A-11), and does not offer an alternative or a forecast that appears to include the proposed project.	Describe and explain if and how the proposed project would fit into any generation scenario that would be preferable to Plan C.

RAI Number	Question Summary (RAI)	Full Text (supporting information)
8.3-3 NUREG-1555 Sections 8.3 (Power Supply) and 8.4 (Assessment of Need for Power) 10 CFR 51.71	Provide a forecast which includes proposed commercial start dates for the proposed project, the capacity that Progress would anticipate owning and dispatching within their service territory, and the disposition of the remaining capacity should Progress not use 100% of the proposed project.	If the 50% capacity of an ALWR in 2024 and 2027 of Plan C (pg. A-5 in the 2010 IRP) represents the proposed Harris units, provide a detailed accounting of your planned use for the other 50% of the capacity of the proposed Harris Units.

Alternative Systems Needs

Section 102(1)(c)(iii) of NEPA requires consideration of alternatives. In addition to consideration of alternative energy sources and alternative sites, the NRC staff also evaluates alternative systems. The 'system alternatives' are limited to those structures, systems or components that have a major interface with the environment. Cooling towers, cooling ponds, water sources, intakes, discharges, and water treatment systems are examples of structures or systems with a major interface with the environment.

The depth of the NRC staff's analysis is related to the magnitude of plausible adverse impacts that are identified early in the review process by the staff. Per Environmental Standard Review Plan (ESRP) 9.4, when the staff postulates plausible adverse impacts that are considered likely to be greater than SMALL, the staff is required to perform a semi-quantitative tradeoff analysis of alternative systems. While the staff has not made a final impact determination at this point in their review, due to the significant abiotic and biotic changes in Harris Reservoir as a result of the construction and operation of two additional units at the Harris Site, the staff has postulated plausible impacts that may be greater than SMALL and is performing a quantitative assessment of alternative cooling systems.

RAI Number	Question Summary (RAI)	Full Text (supporting information)
9.4-3 NUREG-1555 Section 9.4 (Alternative Plant and Transmission Systems) Section 9.4.1 (Heat Dissipation Systems) 9.4.2 (Circulating Water Systems)	Provide an evaluation of the following system alternatives, conditions, and associated combinations: - Pool elevation changes: 20 ft rise; 15 ft rise; 10 ft rise; 5 ft rise; 0 ft rise - Release strategies: High; medium; low; and normative (based on Buckhorn IFIM) - Timing of withdrawal from Cape Fear; High flow only; in excess of monthly median flow; lower	The NRC ESRP, Sections 9.4.1 and 9.4.2 describe the evaluation of alternative systems, in comparison with the proposed system, to identify those systems that are 1) environmentally preferable to the proposed system and 2) environmentally equivalent to the proposed system.

RAI Number	Question Summary (RAI)	Full Text (supporting information)
10 CFR 51.45(b)(3) 10 CFR 51, Subpart A	flow (based on Cape Fear IFIM). High flow is defined as flow greater than the maximum of the monthly median flows. • Cooling water demand: conventional wet tower for proposed nuclear; hybrid tower for proposed nuclear; dry tower with proposed nuclear; and an equivalent MWe output combined cycle plant water demand using conventional wet tower Evaluation of these alternatives requires a time series of various metrics for two extended periods of record. These extended periods of records should be at least the license period of forty years: • The first extended period of record will reflect streamflow conditions in the Cape Fear River and the inflows into Harris Reservoir at the beginning of operation • The second period of record will reflect streamflow conditions at the end of the license period. The time series of the following metrics are to be provided. Time increments should be a minimum of monthly. The maximum (or minimum) values to be provided are those that occur within the monthly increment. • Pool elevation • Maximum tritium concentration in Harris Reservoir outside the mixing zone and wherever the maximum occurs in Harris Reservoir for each time increment • Normalized Cape Fear water quality response. The normalization is to be with respect to the 0 ft rise condition with existing inflows and existing	The consideration of alternatives is the essence of the NEPA process. The review contributes to the consideration of alternatives by addressing alternative means of heat dissipation and cooling water circulation to determine if there is an obviously superior method in terms of environmental impacts (ecology, land use, socioeconomics, cultural, etc.) and economic costs when compared to the proposed system The future conditions should explicitly consider changes in streamflow due to increased water demand and climate change. The staff acknowledges uncertainty in future conditions but a reasonable effort to bracket these changes is necessary to support the staff's review. The staff needs these metric values over an extended time series in order to adequately understand the temporal patterns of variability over a range of hydrologic conditions.

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	consumptive uses. Variability of Cape Fear River water quality is to be included at a monthly time interval, as supported by the available data. ○ For total phosphorus, total nitrogen, and a conservative tracer, provide a maximum of the volumetric-weighted average concentrations for Harris Reservoir for each time increment. ○ For chlorophyll a, provide the maximum concentration wherever it occurs outside the mixing zone in Harris Reservoir for each time increment. ○ For dissolved oxygen, provide the minimum surface layer concentration wherever it occurs in Harris Reservoir. For the specified system alternatives, conditions, and associated combinations: • Quantify the amount and type of aquatic, wetland, and terrestrial habitats that would be temporarily or permanently lost under each operating pool elevation. • Evaluate the temporary and permanent loss of aquatic, wetland, and terrestrial habitat that would result from construction of the specified system alternatives. • Evaluate the magnitude and periodicity of expected water level fluctuations along the reservoir shoreline • Evaluate the magnitude and timing of cooling tower drift and salt deposition • Evaluate potential impacts to wildlife resulting from 1) collisions with structures and cooling towers, 2) noise, and 3) lighting.	

GIS Data Needs

The NRC Environmental Standard Review Plan (ESRP), Section 3.1, defines requirements for the description of the planning, layout, and appearance of a proposed plant, existing station structures, and related offsite structures. Chapter 3 of the draft environmental impact statement (DEIS) will include several Site Layout and Plant Design figures, the information from which is used and referenced throughout the DEIS. The GIS data will be used to create comprehensive figures, using preferred usage and naming terminology consistent with that in other chapters. A review was performed of the available GIS data layers for the Harris DEIS. This review identified several cases where the staff does not currently have the GIS data necessary to support discussions of the existing environment and impacts in the DEIS. For example, the GIS data can be used to perform verification analyses of the applicant's ER modeling results and supports the grayscale reproducibility requirements for NRC publications.

RAI Number	Question Summary (RAI)	Full Text (supporting information)
3.1-1 NUREG-1555 Section 3.1 (External Appearance and Plant Layout) 10 CFR 51, Subpart A	Provide GIS data, and associated metadata, for the following features: <u>Existing Layout Features Needed:</u> • HNP-1 (and HAR 2) 230-kV switchyard (ESRP 3.7; ER Fig 3.1-3 and/or Fig 4.0-2) • HNP-1 blowdown piping and discharge pipeline (ER Fig 3.1-3) • Any existing dredged material and other spoils storage areas <u>Construction & Preconstruction Layout Features Needed:</u> • Current update of GIS data already provided if it has changed since November 2008 (e.g., any changes in proposed layout of buildings, roads, rail lines, pipelines, transmission lines, etc.) • Proposed new roads (e.g. new main access road (ER Fig 4.0-11), construction access road). These need to be differentiated from existing roads. • Locations of proposed improvements to existing roads on site and immediate vicinity • Disturbed area polygons for entire project	The Environmental Impact Statement (EIS) must contain basic information on the layout, landscaping, and architectural features of the proposed project and any existing station structures. The requested data provides basic information needed by the staff to form an adequate basis for analysis of various land-use and socio-economic impacts, as well as other technical disciplines. In addition, the requested GIS data will enhance the analysis of potential impacts and allow for verification of applicant modeling and impact assessment results. The preferred GIS format for this data is a file geodatabase or shapefiles; however staff can handle any ESRI compatible GIS format.

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	(construction and preconstruction), including modifications to roads & facilities related to raising Harris Reservoir. This would include the areas described and shown on maps provided in the June 5, 2009 Supplement 2 to NRC RAIs, 001 Attachment 4.3.1-2A Figures 1 through 12. (ER Figs 4.0-7, 4.0-8, 4.0-9) • Laydown area(s), assembly area(s), construction parking area(s), spoils stockpile or disposal areas (construction utilization plan) • Concrete mixing facilities • Harris Reservoir water level contour data between 220 and 240 ft NGVD29, (e.g. 220 ft, 225 ft, 230 ft, 235 ft, 240 ft) <u>Final (Post-Construction) Site Layout Features Needed:</u> • Any update to footprint of Cape Fear Makeup Water system (ESRP 3.3; Figs 4.0-4, 4.0-5) • Any permanent structures not included in GIS data already provided (or those modified since November 2008) • Permanent parking area(s) • Unit 2 and 3 intake structure (ESRP 3.4.2; Figs 3.1-3, 4.0-2) • HAR 3 230-kV switchyard and transmission lines connecting it to existing transmission system, including between HAR 3 and HNP-1/HAR 2 switchyard if proposed (ESRP 3.7) • Updates to transmission lines connecting HNP-1/HAR 2 switchyard to existing transmission system (ESRP 3.7)	

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	<u>Other GIS Layers Needed:</u> • GIS data used to generate the Wetland Delineation map shown in ER Rev 2, Chapter 2 Appendix, or most recent update. • Areas surveyed for threatened and endangered species • Existing and proposed transmission line ROW between switchyards and first existing substation (all transmission that is part of single & complete project)-(these usually appear in Figures 2.1 Location or 2.2 Land Use) In addition to GIS data and associated metadata for these pre-construction and construction features, provide a tabular summary that lists the features, the associated acreages that will be impacted, and identifies whether the impacts will represent a temporary or permanent loss of habitat.	