

# PLAN FOR ENVIRONMENTAL AUDIT RELATED TO THE CLINCH RIVER NUCLEAR SITE EARLY SITE PERMIT APPLICATION

## **Background**

Tennessee Valley Authority submitted the Part 3 Environmental Report (ER) as part of its Clinch River Nuclear Site (CRNS) Early Site Permit (ESP) application. In preparation for the audit, the staff reviewed the data and information within the corresponding context of the ER and identified information needs that would promote a better understanding of the detailed analysis and bases underlying the application.

In conjunction with the audit, several members of the staff and contractor, Pacific Northwest National Laboratory (PNNL), will visit the proposed site location and surrounding area (Attachment 1) to become familiar with the site layout and surrounding features. This will also provide the staff an opportunity to discuss the information needs identified during the staff's initial review of the application and associated ER sections (Attachment 2) with the applicant's subject matter experts (SMEs), staff and contractors. During the audit, the staff will discuss a wide range of environmental matters related to ground and surface water, terrestrial and aquatic ecology, land use, socioeconomics, environmental justice, non-radiological health and non-radiological waste, alternatives, cultural resources, meteorology and air quality and transmission lines. The audit will allow the staff to better understand the site and modeling results in order to draw appropriate conclusions. It will also assist the staff in identifying subsequent requests for additional information that might be needed to allow the staff to conduct a complete review of the CRNS ER.

## **Regulatory Audit Bases**

Staff activities will be based on:

- NRO-REG-108, *Regulatory Audits*; and Title 10 of the Code of Federal Regulations,
- 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Function
- 10 CFR Part 52, *Licenses, Certifications, and Approvals for Nuclear Power Plants*
- 10 CFR Part 100, *Reactor Site Criteria*
- NUREG-1555, *Standard Review Plans for Environmental Reviews for Nuclear Power Plants*
- NUREG/BR-0298, *Brochure on Nuclear Power Plant Licensing Process*
- Regulatory Guide 4.2, *Preparation of Environmental Reports for Nuclear Power Stations (Supplement 1)*
- Regulatory Guide 4.7, *General Site Suitability Criteria for Nuclear Power Stations*
- *Fact Sheet on Nuclear Power Plant Licensing Process*
- Regulatory Guide 1.206, *Combined License Applications for Nuclear Power Plants*

- *Nuclear Regulatory Commission Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions*

### **Regulatory Audit Scope or Methodology**

The audit will focus on the CRNS ESP application and supporting documentation.

### **Information and Other Material Necessary for the Regulatory Audit**

Audit materials with accession numbers are available through the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible at <http://www.nrc.gov/reading-rm/adams.html>.

<b><u>Document Title</u></b>	<b><u>ADAMS Accession No(s) or Web site</u></b>
Clinch River Nuclear Site Early Site Permit Application, Part 2, Site Safety Analysis Report	ML16144A074
Clinch River Nuclear Site Early Site Permit Application, Part 3, Environmental Report	ML16144A145
Clinch River Nuclear Site Early Site Permit Application, Part 5, Emergency Plan	ML16144A150
Clinch River Nuclear Site Early Site Permit Application, Part 6, Exemptions and Departures	ML16144A151
Early Site Permit Application—Clinch River Nuclear Site Web site	<a href="http://www.nrc.gov/reactors/new-reactors/esp/clinch-river.html">http://www.nrc.gov/reactors/new-reactors/esp/clinch-river.html</a>
Calculation Input and Output Files in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16180A307
Siting Study in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16188A075
Hydrology Information and Calculation Input and Output Files in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16216A115, ML16280A065, ML16280A066, ML16344A085.
Atmospheric Dispersion Calculation Input and Output Files in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16216A109
Environmental Alternatives Supplemental Items in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16252A182
Geologic and Geotechnical Information in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16302A176
Information on Cumulative Radiological Health Impacts in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16340A259
Meteorological Information in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16340A256

<u>Document Title</u>	<u>ADAMS Accession No(s) or Web site</u>
Information on Radiation Protection and Accident Consequences in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16340A258
Information on Alternate Cooling Water Systems in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16344A061
Information on Terrestrial Ecology in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16348A552
Site Selection Information in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16350A429
Aquatic Ecology Information in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16356A485
Environmental Protection Plan Information in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16363A378
Letter from TVA to NRC, CNL-16-191, "Clinch River – Submittal of Supplemental Information Regarding Hydrology in Support of Early Site Permit Application" December 8, 2016	ML16344A085
Letter from TVA to NRC, CNL-16-191, "Submittal of Supplemental Information Regarding Radiation Protection and Accident Consequences in Support of Early Site Permit Application for Clinch River Nuclear Site," December 8, 2016	ML16340A258
Letter from TVA to NRC, CNL-16-191, "Clinch River Nuclear Site - Submittal of Groundwater Calculation Input and Output Files in Support of Early Site Permit Application for Clinch River Nuclear Site," September 29, 2016	ML16280A066
Letter from TVA to NRC, CNL-16-191, "Submittal of Hydrology Calculation Input Files in Support of Early Site Permit Application for Clinch River Nuclear Site," September 29, 2016	ML16280A065
Letter from TVA to NRC, CNL-16-191, "Submittal of Hydrology Calculation Input and Output Files in Support of Early Site Permit Application for Clinch River Nuclear Site," July 28, 2016	ML16216A115
Information Needs	See Attachment 2

## **Audit Team**

The Environmental Project Managers for the audit are Tamsen Dozier and Patricia Vokoun. Audit team members are listed in the table below.

<b>Technical Resource Area</b>	<b>PNNL</b>	<b>NRC</b>
Site and Technical/Regulatory Overview	Bruce McDowell / Kim Leigh	Tamsen Dozier, Pat Vokoun
Chapter Three (Plant Description)	Nancy Kohn	Jack Cushing
Chapter Seven (Cumulative Impacts)	Bruce McDowell	Jack Cushing
Alternative Sites	Katie Cort	Andy Kugler
Alternative Systems	Philip Meyer	Andy Kugler
Land Use	Dave Anderson	Peyton Doub
Hydrology (SW)	Philip Meyer	Mohammad Haque
Hydrology (GW)	Philip Meyer	Daniel Barnhurst
Aquatic Ecology	Becky Krieg	Peyton Doub
Terrestrial Ecology	Jim Becker	Peyton Doub
SocioEconomics and Environmental Justice	Dave Anderson	Daniel Mussatti
Cultural/Archaeological	Ellen Kennedy	Jennifer Davis
Meteorology/Air Quality	Julia Flaherty	Laura Quinn-Willingham
Non-rad Human Health	Lara Aston	Daniel Mussatti
Non-rad Waste	Lara Aston	Daniel Mussatti
Health Physics	Michael Smith/Eva Mart	Eva Hickey
Fuel Cycle and Decommissioning	Michael Smith/Eva Mart	Eva Hickey/Don Palmrose
Transportation (6.2)	Steve Maheras	Donald Palmrose
Accidents	Bruce Napier/Eva Mart	Donald Palmrose

## **Logistics**

The audit will consist of two parts: 1) face-to-face meeting at Tennessee Valley Authority's Knoxville, Tennessee office at 400 Summit Hill Drive, and 2) additional teleconference audit discussions if needed. Any teleconference audit discussion will occur within the May 15, 2017 through May 31, 2017, audit duration.

The proposed schedule for the audit is as follows:

**Monday, May 15, 2017**

- 7:45 am – Staff arrives
- 8:00 am – Introduction of audit attendees and discussion of audit objectives, logistics, and the audit schedule
- 8:30 am – Staff begins review of data and documentation
- 12:00 pm – Break for lunch
- 1:00 pm – Staff resumes review of data and documentation
- 4:00 pm – Staff closeout (tentative)
- 5:00 pm – Exit briefing (tentative)
- 6:00 pm – Staff departs (tentative)
- 8:30 pm – Staff offsite check-in meeting

**Tuesday, May 16, 2017**

- 7:30 am – Staff arrives
- 8:00 am – Introduction of audit attendees and discussion of audit objectives, logistics, and the audit schedule
- 9:00 am – Staff begins review of data and documentation
- 12:00 am – Break for lunch
- 1:00 pm – Staff resumes review of data and documentation
- 4:00 pm – Staff closeout (tentative)
- 5:00 pm – Exit briefing (tentative)
- 6:00 pm – Staff departs (tentative)

**Wednesday, May 17, 2017**

- 8:00 am – CLNR Site Visit
- 12:00 pm – Break for lunch
- 1:00 pm – ORR Alt Site 2 visit
- 3:30 pm – ORR Alt Site 8 visit
- 5:30 pm – Travel to Knoxville
- 8:30 pm – Staff offsite closeout meeting

**Thursday, May 18, 2017**

- 7:45 am – Staff arrives
- 8:00 am – Status of Audit Activities and Information Need Closeout
- 8:30 am – Staff begins review of data and documentation
- 12:00 pm – Break for lunch
- 1:00 pm – Staff resumes review of data and documentation
- 4:00 pm – Staff closeout (tentative)
- 4:00 pm – Exit briefing (tentative)
- 5:30 pm – Staff departs (tentative)

**Friday, May 19, 2017**

8:30 am – Project Audits Exit briefing (tentative)

10:00 am – Staff departs (tentative)

Offsite Visits

**Special Requests**

The staff has requested that each audit team member receive a copy of any summary material including the results of the new information process, and that a computer with all documentation gathered by TVA in support of the new information process be available for staff use. Wireless Internet access, several disks of the ER references for the NRC/PNNL SMEs and proprietary documents (e.g., calculation documents) should be available.

A hydrology tour with Tennessee Department of Environmental and Conservation and Oak Ridge National Laboratory staff is planned separately.

**Deliverables**

The staff will develop and issue an audit report in accordance with NRO-REG-108 that will be placed in ADAMS within 90 days of the completion of the audit.

**Reference**

U.S. Nuclear Regulatory Commission (NRC). 2009. *Regulatory Audits*. NRO-REG-108, Washington, D.C.

**ATTACHMENT 1**  
**CRNS – SITE VISIT AND RECONNAISSANCE**

During the Site Visit, staff would like to view and reconnoiter:

- The CRNS for viewing the bend in the Clinch River and the surrounding topography that controls routing of flood flows;
- During the audit, the staff would like to visit the general features of the Clinch site proper (including the Barge area) and 2 Oak Ridge Reservation alternative sites.
- In addition, staff would like a radiological tour including the MEI locations for residence, garden, milk.
- The Aquatic Ecologists would like to observe the intake, discharge, barge unloading facility location and Melton Dam.
- The bridges bounding the CRNS (Highway 58 Bridge downstream and Highway 95 Bridge upstream
- The Norris Dam, Melton Hill Dam, the Douglas (and its saddle dams) Dam, and the Cherokee Dam sites with an SME to provide an overview of the hydraulic characteristics and identification of analyzed hypothetical dam failure locations;
- Proposed cut/fill areas for the CRNS project and, existing backfill and backfilled areas of the former CRBR site activities;
- Cut bank patterns along the curved portions of the Clinch River adjacent to the site;
- Formation and/or unit outcrops on and/or adjacent to the CRNS and general locations of monitoring wells and well clusters;
- Areas of seeps and springs related to groundwater flow patterns and, topographic depressions or ponds at the CRNS; and,
- Area of the planned discharge structure (CR River Mile 15.5) outfall and locations of postulated cooling water intakes and, the postulated receptor locations.

**ATTACHMENT 2**  
**CRNS – Environmental Review Site Audit Information Needs**

Info Needs #	Info Needed	SME Name	ER Section
Accidents			
ACC-01	Make available a knowledgeable expert to discuss and describe the small modular reactor (SMR) loss-of-cooling accident (LOCA), including how the SMR LOCA differs from a standard pressurized-water reactor (PWR) LOCA.	D. Palmrose, E. Mart	7.1.2
ACC-02	Provide, for staff examination, the vendor design-basis accident (DBA) calculation that forms the basis for the surrogate SMR dose calculation (via a scaling factor).	D. Palmrose, E. Mart	7.1.3
ACC-03	Make available a knowledgeable expert to discuss the basis for the DBA dose calculation assumptions including those related to breathing rates and uncertainties (e.g., whether the vendor DBA doses were calculated for the reactor design-power level plus a margin for uncertainty). The Environmental Report (ER) does not discuss the dose calculation assumptions other than stating that the doses were obtained by scaling vendor DBA results.	D. Palmrose, E. Mart	7.1.3
ACC-04	Provide, for staff examination, the various vendor probabilistic risk assessment (PRA) documents that were used as the basis for the PRA results presented in ER Section 7.2-2 to help the staff understand the PRA results.	D. Palmrose, E. Mart	7.2-1
ACC-05	Make available a knowledgeable expert to discuss the various vendor-supplied PRA documents to help the staff understand the PRA assumptions and bases, including the core damage frequency (CDF) of 4.65E-08 per Ryr, the relative frequencies for the release categories, and the how the six release categories were developed.	D. Palmrose, E. Mart	7.2-1



Info Needs #	Info Needed	SME Name	ER Section
ACC-06	Make available a knowledgeable expert to discuss the analyses and measures the Tennessee Valley Authority (TVA) has taken, or will take at the combined operating license (COL) submittal stage, to address other at-power and low-power/shutdown initiating events. The ER only evaluates internally initiated events.	D. Palmrose, E. Mart	7.2-1
ACC-07	Make available a knowledgeable expert to discuss externally initiated events (e.g., external flooding and seismic events). TVA's ER does not address potential probability-weighted consequences (i.e., risk) from externally initiated events.	D. Palmrose, E. Mart	7.2-1
ACC-08	Provide sources of information for the input parameters in ATMOS and make available a knowledgeable expert to discuss the computation of severe accident consequences using MACCS to help the staff understand the bases for the input parameters in ATMOS (including release fractions, deposition velocities, reactor building geometries, and weather).	D. Palmrose, E. Mart	7.2.2
ACC-09	Provide sources of information for input parameters in EARLY and make available a knowledgeable expert to discuss the computation of severe accident consequences using MACCS to help the staff understand the bases for the input parameters in EARLY (including emergency response measures assumed).	D. Palmrose, E. Mart	7.2.2
ACC-10	Provide sources of information for the meteorological input file and make available a knowledgeable expert to discuss the meteorological data, the basis for selecting mid-2012 through mid-2013 as a representative year, and how this time period compares to other years.	D. Palmrose, E. Mart	7.2.2

Info Needs #	Info Needed	SME Name	ER Section
ACC-11	<p>Make available a knowledgeable expert to discuss emergency planning and assumed response scenarios applied in the MACCS input including the basis for the assumption of a 2 mi emergency planning zone (EPZ) when current U.S. Nuclear Regulatory Commission (NRC) guidance is for a 10 mi EPZ. Note that the environmental finding for severe accidents is derived in part from a comparison of the offsite risks of a severe accident at the current generation of reactors with a 10 mi EPZ to the offsite risks for the proposed action.</p>	D. Palmrose, E. Mart	7.2.2
ACC-12	<p>Provide sources of information for the input parameters in the MACCS site file and make available a knowledgeable expert to discuss the population inputs, their bases, and the source of the information (e.g., latest version of SECPOP applying 2010 U.S. Census Bureau data) to help the staff understand whether the values are consistent with those provided in the ER Chapter 2.</p>	D. Palmrose, E. Mart	7.2.2
ACC-13	<p>Provide sources of information for input parameters in the MACCS site file and make available a knowledgeable expert to discuss:</p> <ul style="list-style-type: none"> <li>• population inputs, their bases, and the source of the information (e.g., latest version of SECPOP applying 2010 U.S. Census Bureau data) to help the staff understand whether the values are consistent with those provided in ER Chapter 2</li> <li>• land-use values in SITE, to help the staff understand the values, including whether they are consistent with the info in ER Chapter 2 and whether the values were adjusted for any potential land-use changes.</li> </ul>	D. Palmrose, E. Mart	7.2.3.1

Info Needs #	Info Needed	SME Name	ER Section
ACC-14	Provide sources of information and make available a knowledgeable expert to discuss the individual economic input values used in input file CHRONIC for MACCCS and their bases to help the staff understand the severe accident cost impacts, including evacuation costs, values of crops contaminated and condemned, value of milk contaminated and condemned, cost of property decontamination, and indirect costs resulting from loss of property. The ER provides one economic risk value (29.3 \$/Ryr) but does not provide a justification for the values assumed.	D. Palmrose, E. Mart	7.2.3.1
ACC-15	Make available a knowledgeable expert to discuss the locations of nearby bodies of water and potential locations where water is withdrawn from the Clinch River for both drinking water and crop irrigation.	D. Palmrose, E. Mart	7.2.3.3
ACC-16	Make available a knowledgeable expert to discuss if TVA is considering any additional sensitivity calculations such as those discussed in CLI-16-07.	D. Palmrose, E. Mart	7.2.4 and 7.2.5
ACC-17	Make available a knowledgeable expert to discuss the MACCS calculation results.	D. Palmrose, E. Mart	7.2.4 and 7.2.5
Aquatic Ecology			
AE-01	Provide a knowledgeable expert to discuss potential impacts to aquatic biota and habitats in the vicinity of the proposed locations for the intake and discharge structures and the barge/traffic area on the Clinch River.	P. Doub R. Krieg	2.4.2; 4.3.2; 5.3.2
AE-02	Provide a knowledgeable expert to discuss the process (if any) that TVA uses to avoid bodies of water and aquatic species and habitats during placement of new transmission lines (including underground lines) or work on existing transmission lines. For	P. Doub R. Krieg	2.4.2; 4.3.2

Info Needs #	Info Needed	SME Name	ER Section
	those areas where perennial, intermittent, and ephemeral streams and ponds will be subject to permanent or temporary disturbance on the CRN site and barge/traffic area from placement of new transmission lines or work on existing transmission line corridors, identify the location and provide a description of disturbance and any technology or procedures used to limit the disturbance to aquatic.		
AE-03	This is same as TE-08. Provide a knowledgeable expert who can discuss the status of TVA's correspondence with U.S. Fish and Wildlife Service (FWS) regarding Federally listed important species and habitats and TDEC – Division of Natural Heritage and Tennessee Wildlife Resources Agency regarding State-listed important species and habitats. Provide any correspondence to or from these agencies.	P. Doub R. Krieg	4.3.2
AE-04	ER Section 6.5.2.3 states that TVA would repeat aquatic field studies following construction in order to collect at least 1 year of preoperational and/or operational data for comparison to the baseline data. Provide a knowledge expert to discuss the purpose, location and objectives of these proposed studies that are characterized in the ER as being a “subset of the site preparation field studies”.	P. Doub R. Krieg	6.5.2.3
AE-05	Provide a knowledgeable expert who can accompany staff to ORR Sites 2 and 8 to discuss aquatic ecology issues in the field for those two alternative sites. The staff does not consider it necessary to revisit the Redstone site but would still like to meet with a knowledgeable expert to discuss aquatic ecology issues associated with the	P. Doub R. Krieg	9.3.5.2

Info Needs #	Info Needed	SME Name	ER Section
	Redstone site. This is related to TE-20.		
Alternative Sites			
ALT-01	Provide a knowledgeable expert on the alternative siting process who can discuss "key criteria" (definitions and application) used to assess candidate areas, potential sites, and candidate sites.	K. Cort, A. Kugler	9.3.1
ALT-02	Table A.5 of the Site Selection Report states that candidate area, Columbus Air Force Base, was "Deferred from further consideration due to inadequate cooling water availability" which is reported to be "LESS THAN 1,300 cfs" in the same table. It would appear in Figure A.6, however, that multiple gaging stations near Columbus Air Force Base have water availability >1,300 cfs. Please provide a knowledgeable expert who can discuss water availability in this region and process that went into eliminating Columbus Air Force Base as a candidate area.	K. Cort, A. Kugler	Site Selection Report, pages A-11 and A-12, ER Section 9.3.1, page E1 A2-7.
ALT-03	Section 5.1 of the TVA Site Selection Report refers to Electric Power Research Institute's (EPRI's) <i>Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities (2015)</i> , as the basis for criteria used to evaluate the alternatives. Because this document is not publically available, NRC staff cannot view it. A copy of this guide should be available for review during the site audit.	K. Cort, A. Kugler	TVA Site Selection Report, Section 5.1, page 21
ALT-04	To help facilitate our discussion of the site-selection process and to provide additional perspective related to the selection of candidate	K. Cort, A. Kugler	Figure 9.3-4 and 9.3-5 of on pages E1

Info Needs #	Info Needed	SME Name	ER Section
	<p>sites, it would be helpful to have a map that identifies the location of Potential Redstone Site 13 (which scored the highest under ecological criteria for Redstone area) in proximity to Redstone Site 12. Likewise, it would be helpful to view a map that identifies the location of potential Oak Ridge Reservation (ORR) Site 10 (which tied for the highest ecological) relative to ORR candidate sites.</p>		A2-129 and E1 A2-130.
ALT-05	<p>Section 2.5.1.5 "Population Density," of the Clinch River ER defines population density in terms of the NUREG-1437 sparseness classifications using a 20-mi radius around the site, or a 1,247 square mile (sq. mi) area. Text from this section of the ER is as follows: "A total of 331,238 people live within 20 mi of the CRN Site (Tables 2.5.1-3 and 2.5.1-5). A 20-mi radius area contains 1257 sq. mi; therefore the population density is approximately 264 persons per sq. mi. This population density is classified as a Category 4 sparseness (greater than or equal to 120 persons per sq. mi within 20 mi)."</p> <p>To facilitate a similar comparison of population density around the alternatives sites, it would be helpful to have a similar calculation (i.e., calculation of persons per sq. mi in the 1,257 sq. mi around the site) of population density available for ORR Site 8 (assuming adjacent Site 2 would be similar to the CRR calculations) and Redstone Site 12.</p>	K. Cort, A. Kugler	ER SECTION 2.5.1.5, ER pop estimates on E1 A2-33 and E1 A2-43
ALT-06	<p>Provide a knowledgeable expert able to discuss more detailed characteristics of alternative heat dissipation system alternatives, as described in ESRP 9.4.1 review procedures. Clarify the difference between Natural Draft Cooling</p>	P. Meyer, A. Kugler	9.4.1

Info Needs #	Info Needed	SME Name	ER Section
	<p>Towers and Wet Natural Draft Cooling Towers discussed in ER Sections 9.4.1.2 and 9.4.1.2.2.</p> <p>ESRP 9.4.1 directs the staff's analysis of alternatives to the applicant's proposed heat dissipation system. Factors the staff is directed to consider in an initial screening of alternatives are land use, water use, and legislative or regulatory restrictions. Economic factors are not considered in the staff's initial screening. For alternatives that are not obviously unsuitable for use at the proposed site, and thus not eliminated by the initial screening, the staff considers more detailed characteristics of the alternatives' land use and water use as well as other environmental factors, including atmospheric effects, thermal and physical effects, noise levels, and aesthetic and recreational benefits. For any alternative that is shown to be environmentally preferable, the staff considers economic-cost factors.</p> <p>To facilitate the staff's analysis, provide the following information for the specified alternative heat dissipation systems.</p> <ul style="list-style-type: none"> <li>• wet natural draft cooling towers: land use required, water use required, and any legislative or regulatory restrictions for the use of this alternative</li> <li>• dry cooling towers: land use required, water use required, and any legislative or regulatory restrictions for the use of this alternative</li> <li>• wet/dry (hybrid) cooling towers: land use required, water use required (unless one-third to one-half of a wet cooling tower is the most precise estimate</li> </ul>		

Info Needs #	Info Needed	SME Name	ER Section
	<p>available), and any legislative or regulatory restrictions for the use of this alternative</p> <ul style="list-style-type: none"> <li>• spray ponds: water use required, and any legislative or regulatory restrictions for the use of this alternative.</li> </ul>		
Cultural Resources			
CR-01	<p>Provide a knowledgeable TVA archaeologist to discuss the historic and cultural resources located within the onsite and offsite archaeological and architectural APEs, as described in Section 2.5.3 of the ER and in the Programmatic Agreement (PA). Staff would also like to discuss potential impacts to historic and cultural resources from the proposed action as they are currently understood and as described in Sections 4.1.7 and 5.1.3 of the ER. Be prepared to discuss associated NHPA Section 106 consultation activities conducted by TVA. The staff would also like to discuss additional offsite areas that have not been addressed in the ER or the PA (e.g., transmission lines, borrow pit areas, and other areas) to understand the process TVA will use for assessing impacts to historic and cultural resources for these areas. NRC staff will be meeting with TN SHPO and may have follow-on questions for TVA.</p>	J. Davis, E. Kennedy	2.5.3, 4.1.7 and 5.1.3
CR-02	<p>The Programmatic Agreement (PA) provides a process for adjusting the undertaking and the APE. Provide a knowledgeable expert who can discuss the process TVA will implement to keep NRC informed of updates concerning its Section 106 consultation specifically changes in the undertaking, modifications to the APE, updated and ongoing correspondence with SHPO and</p>	J. Davis, E. Kennedy	4.1.3 and TVA PA



Info Needs #	Info Needed	SME Name	ER Section
	<p>Tribes, historic and cultural resource updates such as the Melton Hill NRHP paperwork. Copies of any updated documentation, not previously submitted to NRC, should be made available for review during the site audit. This includes, but it not limited to, correspondence with consulting parties, any changes to the APE, maps and cultural resource investigations.</p>		
CR-03	<p>Please make available copies of the following reports and references for review during the site audit:</p> <ul style="list-style-type: none"> <li>• Appendix E of the PA (Reed et. al 2011)</li> <li>• Complete TRC 2011 architectural resources letter report (Karpyneć 2011) referenced and enclosed in TVA's May 20, 2015 letter to Tennessee Historical Commission. A management summary consisting of the first three pages of this report were provided to the staff.</li> <li>• Reference 2.5.3-67. Tennessee Valley Authority, "Clinch River Small Modular Reactors Project, APE Expansion to Include Melton Hill Dam, Roane County, Tennessee," August 18, 2016.</li> <li>• Schroedl 1990 <i>Archaeological Research at 40RE107, 40RE108, and 40RE124</i>. University of Tennessee Department of Anthropology Report of Investigations 49 and Tennessee Valley Authority Publications in Anthropology 53.</li> </ul>	J. Davis, E. Kennedy	2.5.3, 4.1.3, and TVA PA
CR-04	<p>TVA's May 20, 2015, letter to the Tennessee Historical Commission (referenced in Appendix A of the ER, pages A47-54), describes a desk top and field study completed to identify architectural resources located within the architectural</p>	J. Davis, E. Kennedy	2.5.3, 4.1.3, Appendix A

Info Needs #	Info Needed	SME Name	ER Section
	<p>APE. Provide a knowledgeable expert to discuss the methods and results of this study.</p> <ul style="list-style-type: none"> <li>• Did TVA notify or engage interested persons as part of this study and make the documentation available to the public? According to Tennessee Historical Commission's May 27, 2015 response to TVA (referenced in Appendix A of the ER page A-55), the Tennessee Historical Commission states that TVA should do this.</li> <li>• Did TVA conduct a records search of the TN Historical Commission files to confirm if previously identified architectural resources are located within the architectural APE?</li> <li>• Confirm if Resource 1 and 2 are the same as 40RE1439 (Smith Place), located on the Tennessee Historical Commission above-ground resources viewer.</li> <li>• Will the historic roads described in Section 2.5.3.5 of the ER be evaluated formally as part of the architectural resources analysis and incorporated into the PA?</li> <li>• Clarify why an architectural APE was defined only as a half mile around land clearing areas and not around the archaeological APE for both the CRN site and the barge area.</li> </ul>		
CR-05	<p>TVA has executed a PA for the Clinch River SMR project which addresses TVA's NHPA Section 106 responsibilities for the CRN ESP. Provide a knowledgeable expert to discuss the following:</p> <ul style="list-style-type: none"> <li>• The PA does not cover operational impacts. Does TVA have operational procedures in</li> </ul>	J. Davis, E. Kennedy	4.1.3 and 5.1.3

Info Needs #	Info Needed	SME Name	ER Section
	<p>place such as inadvertent discovery plans or management plans to avoid impacts to historic and cultural resources during operation? If so, please make available a copy of plans or procedures for review during the site audit.</p> <ul style="list-style-type: none"> <li>• The Hensley Cemetery (40RE588), determined ineligible, is located in the archaeological APE but is not included in the PA as a site recommended for avoidance. Provide a knowledge expert to describe any additional procedures TVA may have in place to protect impacts to the Hensley Cemetery during construction and operation.</li> </ul>		
CR-06	<p>Pursuant to NEPA, as a federal land managing agency, TVA has the responsibility to comply with other federal cultural resource protection laws such as AIRFA, ARPA, AHPA, NAGPRA and NHPA Section 106 and 110 during the course of operation of the CRN. Provide a knowledgeable expert to discuss the following:</p> <ul style="list-style-type: none"> <li>• Clarify current location disposition of human remains associated with archeological site 40RE124 and any plans for inventory and repatriation under NAGPRA. Make available a copy of NAGPRA procedures during the site audit.</li> <li>• Clarify current location and curation of archaeological artifacts associated with archaeological sites located on the CRN Site. Clarify if TVA has procedures in place regarding curation of artifacts recovered during past and present archaeological</li> </ul>	J. Davis, E. Kennedy	4.1.3 and 5.1.3

Info Needs #	Info Needed	SME Name	ER Section
	<p>investigations. Make available a copy of curation procedures during the site audit.</p> <ul style="list-style-type: none"> <li>• Make available a copy of ARPA procedures (e.g. archaeological site protection, looting prevention, public education) during the site audit.</li> <li>• Make available a copy of NHPA compliance procedures during the site audit.</li> </ul>		
CR-07	<p>Provide a knowledgeable expert to discuss historic and cultural resource investigations and any historic and cultural resources located on the alternative sites at Oak Ridge. Make available copies of the architectural and archaeological resource survey reports referenced in Johnson 2016 that have not been previously provided.</p>	J. Davis, E. Kennedy	9.3.5.2.7
Hydrology			
HY-GW-01	<p>Average annual precipitation is given as 50 in./yr, with average annual runoff of 25 to 30 in./yr. Provide information related to and a knowledgeable expert to discuss estimates of the average annual evapotranspiration and groundwater recharge in the vicinity of the CRN Site.</p>	D. Barnhurst, P. Meyer	2.3.1.2.1.1
HY-GW-02	<p>The estimate of well yields in the region is a very wide range (1 to 2,500 gpm). Provide information related to and a knowledgeable expert to discuss an estimate of well yields in the vicinity of the CRN Site and the basis for that estimate.</p>	D. Barnhurst, P. Meyer	2.3.1
HY-GW-03	<p>The conceptual model of groundwater flow describes 90 percent of subsurface flow occurring in a shallow stormflow zone and less than 2 percent of flow occurring in the deeper aquifer (as shown in Figure 2.3.1-23). Provide a knowledgeable expert to explain how this conceptual model is</p>	D. Barnhurst, P. Meyer	2.3.1

Info Needs #	Info Needed	SME Name	ER Section
	<p>consistent with the regional well yield estimates of up to 2,500 gpm, whether this conceptual model of groundwater flow is consistent with the well yield estimates for the vicinity of the CRN Site, and the estimated thickness of the stormflow zone across the CRN Site and the basis for this estimate. The ER states that the primary differences between the ORR and CRN Sites are in the stormflow and vadose zones at the CRN Site. The extensive excavation and reworking of unconsolidated and weathered bedrock materials associated with the Clinch River Breeder Reactor Project (CRBRP) site preparation has either significantly modified or obliterated these zones at the CRN Site. Provide a knowledgeable expert to explain how the ORR conceptual model of groundwater flow was revised to reflect the modification or obliteration of the stormflow and vadose zones at the CRN Site.</p>		
HY-GW-04	<p>Provide for staff examination at the audit a figure of the data presented in Figure 2.3.1-24, but broken out by type of test (e.g., slug, packer, pump, and tracer) instead of all lumped together. The ORR data appears to be mainly from the Conasauga Group hydrogeologic units, which do not seem to play a major role in the CRN Site groundwater. Provide a knowledgeable expert to explain how the ORR data from the Conasauga Group are relevant to the CRN Site characterization of the Chickamauga and Knox Groups. Provide for staff examination at the audit a data report, if available, with graphical fits of test analysis results for borehole packer, and slug tests for CRN Site data.</p>	D. Barnhurst, P. Meyer	2.3.1

Info Needs #	Info Needed	SME Name	ER Section
HY-GW-05	Provide a knowledgeable expert to clarify what geologic units on ER Figure 2.3.1-22 are indicated by the use of the term "ORR aquitards".	D. Barnhurst, P. Meyer	2.3.1
HY-GW-06	ER Section 2.3.1.2.1.3.1 refers to CRBRP wells likely to have been destroyed or removed. Provide a knowledgeable expert to explain what is meant by destroying or removing wells, and to explain whether the destroyed or removed wells could provide preferential pathways for contaminant transport and whether that would be of concern.	D. Barnhurst, P. Meyer	2.3.1
HY-GW-07	Provide a knowledgeable expert to explain the bearing designations used in ER Section 2.3.1.2.1.3.1, and elsewhere (e.g., N25degW 80degSW).	D. Barnhurst, P. Meyer	2.3.1
HY-GW-08	ER Section 2.3.1.2.1.3.1 refers to fluctuations in groundwater levels of as much as 20 ft. Provide a knowledgeable expert to identify the period of data to which these observed fluctuations correspond.	D. Barnhurst, P. Meyer	2.3.1
HY-GW-09	Provide for examination at the audit available CRBRP documentation: an original copy of the Preliminary Safety Analysis Report (with sharp/readable figures), and any available site investigation reports or construction reports showing photos of the excavation.	D. Barnhurst, P. Meyer	2.3.1
HY-GW-10	Lincolnshire and Blackford formations are both said to be aquitards in Fig. 2.3.1-22. Provide a knowledgeable expert to explain why the pumping test was conducted in units that are aquitards.	D. Barnhurst, P. Meyer	2.3.1
HY-GW-11	The ORR tests resulted in an average effective porosity of 4 percent. Provide a knowledgeable expert to discuss whether the same value of effective porosity was assumed for the CRN Site, and	D. Barnhurst, P. Meyer	2.3.1

Info Needs #	Info Needed	SME Name	ER Section
	<p>whether the porosity value represents the effective porosity of the rock matrix, or the effective porosity of the rock matrix + fractures.</p> <p>Most of the porosity measurements cited in the ER were from the Conasauga Group. Provide a knowledgeable expert to explain how these measurements are relevant to the CRN Site which appears to consist primarily of the Chickamauga and Knox Groups.</p>		
HY-GW-12	<p>Table 2.3.1-3 lists Newala as one of the geologic units. This unit does not appear to be in Figure 2.3.1-22 or described in the ER. This unit is discussed in the site safety analysis report (SSAR). Provide a knowledgeable expert to confirm the identification of the Newala unit, and to describe how the ER was reviewed for consistency with the SSAR.</p>	D. Barnhurst, P. Meyer	2.3.1
HY-GW-13	<p>Provide for staff examination at the audit the results of the survey TVA conducted (completed in June 1973) to locate wells and springs within a two-mile radius of the site (Reference 2.3.2-8). Provide a knowledgeable expert to explain how this survey is adequate to describe current and anticipated future groundwater use within the vicinity of the CRN Site.</p> <p>Provide a knowledgeable expert to discuss the locations (including well depths) and rates of use for present and known future offsite groundwater users within the vicinity of the CRN Site, including individual domestic users.</p>	D. Barnhurst, P. Meyer	2.3.2
HY-GW-14	<p>ER Section 2.3.2.2.2 cites reference 2.3.2-14 in stating, <i>Approximately 2/3 of the community public water systems using ground water in Middle and East Tennessee have had at least one source determined</i></p>	D. Barnhurst, P. Meyer	2.3.2

Info Needs #	Info Needed	SME Name	ER Section
	<p><i>under the direct influence of surface water. This means that these sources of groundwater are located close enough to a source of surface water to receive direct surface water recharge and are thus considered at risk from surface water contaminants and pathogens.</i></p> <p>Provide a knowledgeable expert to discuss whether TVA considers this issue to be a concern for any groundwater users located in the vicinity of the CRN Site.</p>		
HY-GW-15	<p>Provide a knowledgeable expert to discuss estimates of excavation dewatering flow rates, and the magnitude/extent of dewatering effects on groundwater levels and on groundwater discharge to springs, streams, ponds, and wetlands.</p>	D. Barnhurst, P. Meyer	4.2.1
HY-GW-16	<p>Provide a knowledgeable expert to discuss TVA's plans for following the groundwater monitoring guidance of NEI 07-07.</p>	D. Barnhurst, P. Meyer	6.3 & 6.6
HY-SW-01	<p>Provide information related to and a knowledgeable expert to discuss whether Figure 2.3.1-10 (based on 2004-2013 data) is reflective of the long-term variability of the Watts Bar reservoir elevation, and to discuss a long-term characterization of Clinch River elevation at the CRN Site.</p>	M. Haque, P. Meyer	2.3
HY-SW-02	<p>Provide information related to and a knowledgeable expert to explain how TVA is addressing the floodplain management requirements described in Executive Order 11988, as amended by EO13690.</p>	M. Haque, P. Meyer	2.3
HY-SW-03	<p>Provide information related to and a knowledgeable expert to discuss statistical characterization of the direction and magnitude of Clinch River flow at the CRN discharge location based on long-term data.</p>	M. Haque, P. Meyer	2.3



Info Needs #	Info Needed	SME Name	ER Section
HY-SW-04	Provide, for staff examination at the audit, a copy of the hydrothermal task force report.	M. Haque, P. Meyer	2.3.1
HY-SW-05	Provide for staff examination at the audit a non-redacted copy of reference 2.3.2-1, Regional Surface Water Use Study.	M. Haque, P. Meyer	2.3.2
HY-SW-06	Provide a knowledgeable expert to: <ul style="list-style-type: none"> <li>• describe the Tennessee Department of Environment and Conservation (TDEC) state water registration requirements mentioned in ER Section 2.3.2.1.2,</li> <li>• discuss any issues or concerns that may arise that would challenge the reasonable assurance that water from the Clinch River arm of the Watts Bar reservoir would be available for the proposed plant, and</li> <li>• discuss TVA's plan to manage severe drought conditions and explain what triggers drought management plan implementation.</li> </ul>	M. Haque, P. Meyer	2.3.2
HY-SW-07	Provide information related to and a knowledgeable expert to discuss use rates for recreation and navigation. Provide information on navigation regulations/requirements/restrictions	M. Haque, P. Meyer	2.3.2
HY-SW-08	ER Table 2.3.3-16 (Sheet 1 or 3) provides a maximum dissolved oxygen value of 359 mg/L. Provide a knowledgeable expert to confirm whether this is an error and to provide a correct value.	M. Haque, P. Meyer	2.3.3
HY-SW-09	The ER states that no dredging during building will be required, but underwater excavation would be required. Provide information related to and a knowledgeable expert to explain the difference between these activities, whether there will be any spoils produced as a result of the	M. Haque, P. Meyer	4.2.1

Info Needs #	Info Needed	SME Name	ER Section
	<p>underwater excavation, the estimated volume of any excavated materials (if spoils would be produced), and the estimated duration of in-water construction. Provide information related to and a knowledgeable expert to discuss the potential for non-rad and rad contaminants in the excavated sediments, TDEC sediment monitoring requirements, required actions if contamination is detected, anticipated control measures to minimize sediment disturbance/water-quality degradation, and the disposal of any spoils.</p>		
HY-SW-10	<p>Provide information related to and a knowledgeable expert to discuss estimates of water use during building for concrete batch plant use and for potable/sanitary water use, and to compare plant construction water use to City of Oak Ridge water supply capacity and current/future demands on that supply.</p>	M. Haque, P. Meyer	4.2.2
HY-SW-11	<p>Whiteoak Dam is listed in Table 4.7-1. Provide a knowledgeable expert to discuss whether there is any potential cumulative impact with building or operating the plant in the event of an uncontrolled release from Whiteoak Dam (e.g., flooding that washes water and contaminated sediments into the Clinch River).</p>	M. Haque, P. Meyer	4.7
HY-SW-12	<p>Provide information related to and a knowledgeable expert to discuss the following with respect to water use.</p> <ul style="list-style-type: none"> <li>• Plant water-use impacts will be local to the CRN Site; thus, evaluating plant water use with respect to water use over the entire Tennessee River watershed is less important than evaluating it with respect to</li> </ul>	M. Haque, P. Meyer	5.2.2

Info Needs #	Info Needed	SME Name	ER Section
	<p>uses in the vicinity of the CRN Site. Provide a knowledgeable expert to discuss potential local impacts.</p> <ul style="list-style-type: none"> <li>• Consumptive use is of equal or greater importance to impacts than withdrawals. Provide a knowledgeable expert to describe consumptive water use in the vicinity of the site. The stated transition from once-through cooling to closed-cycle cooling for thermoelectric power generation will increase consumptive demand in the region. Provide a knowledgeable expert to discuss whether this is reflected in the future consumptive-use estimates.</li> <li>• Projected changes in water use are provided to 2030 based on 2000 data. Provide a knowledgeable expert to discuss longer-term projections in water use based on more recent data, if available.</li> <li>• Flow conditions are variable; thus, impacts will also be variable. Provide a knowledgeable expert to discuss the effects of low-flow conditions on water-use impacts.</li> </ul>		
HY-SW-13	<p>ER Section 5.2.2 states, "the characteristics and constituents of the plant discharge still are proposed to be managed within the water quality criteria specified in the plant National Pollutant Discharge Elimination System (NPDES) permit." Provide a knowledgeable expert to explain whether this is an assertion, a commitment, or the result of an analysis.</p>	M. Haque, P. Meyer	5.2.2
HY-SW-14	<p>Provide information related to and a knowledgeable expert to discuss whether any maintenance dredging</p>	M. Haque, P. Meyer	5.3.1

Info Needs #	Info Needed	SME Name	ER Section
	for the intake or discharge will be required during operation, the required permitting for such dredging, and the location where dredged spoils would be disposed.		
HY-SW-15	Provide for staff examination at the audit any discharge thermal effects modeling report(s) (hydrodynamic model, CORMIX, CE-QUAL-W2).	M. Haque, P. Meyer	5.3.2
HY-SW-16	<p>(Alternatives) Provide a knowledgeable expert to discuss the water-related aspects of the alternative sites, including such issues as:</p> <ul style="list-style-type: none"> <li>• Water resources affected by transmission line and pipeline construction, intake and discharge construction, and operational dredging.</li> <li>• Site-specific hydrogeological differences, differences in recharge, and site-specific groundwater discharge areas.</li> <li>• Local surface-water and groundwater users, including individual domestic users.</li> <li>• Past, present, and reasonably foreseeable future projects at each site potentially contributing to cumulative water-use and water-quality impacts.</li> <li>• Site-specific recreational and navigational water use.</li> <li>• Any specific water-related regulations/restrictions related to the Wheeler National Wildlife Refuge.</li> </ul>	M. Haque, D. Barnhurst, P. Meyer	9.3.5

Info Needs #	Info Needed	SME Name	ER Section
HY-SW-17	ER Sections 4.7.3 and 5.11.3 state that climate change effects on site hydrology may result in induction of groundwater flow beneath the Clinch River. Provide a knowledgeable expert to explain how the identified climate change effects are anticipated to change groundwater flow sufficiently to result in flow beneath the river. Provide for staff examination at the audit any report(s) or other documentation of TVA's evaluation of future climate change within the Tennessee River Valley and the potential effects of future climate change on TVA operations.	M. Haque, D. Barnhurst, P. Meyer	4.7.3 & 5.3.11
Land Use			
LU-01	Provide high-resolution digital scans of aerial photographs of the original Clinch River Breeder Reactor construction site and areas adjoining areas of the ORR, including what is now designated as the BTA. The photos would ideally illustrate the full extent of land disturbance from that activity, including development of the associated barge and rail facilities and access/haul roads.	P. Doub, D. Anderson	2.2.1
LU-02	Provide information describing floodplain mapping and characteristics for the site and for offsite affected land areas including transmission line corridors. Describe the expected impacts of any preconstruction activities to floodplains.	P. Doub, D. Anderson	2.2
LU-03	Provide a knowledgeable expert who can discuss land use, regional planning, and zoning issues for the City of Oak Ridge, TN and Anderson and Roane Counties, TN. Has the city or either of the counties established zoning for the site or adjoining lands, including lands opposite the site on the Clinch River? Is the site addressed in	P. Doub, D. Anderson	2.2

Info Needs #	Info Needed	SME Name	ER Section
	other regional land use plans (e.g., ORR Ten-Year Plan)?		
LU-04	Provide information regarding special land-use classifications (e.g., Native American or military reservations, wild and scenic rivers, state and national parks, national forests, wildlife refuges, and wilderness areas) on or adjacent to proposed transmission line corridors or routes or locations for other proposed offsite facilities. This includes transmission line segments subject to being rebuilt, re-conducted, or uprated. Also, please address the Redstone and ORR 2 and 8 alternative sites.	P. Doub, D. Anderson	2.2; 4.1.1; 9.3.5.2
LU-05	Discuss encroachment by the project into TVA Zone 3 – Sensitive Resource Management along the Clinch River and associated conflicts with TVA land use policy. Is a zoning change or a variance needed?	P. Doub, D. Anderson	2.2.1
LU-06	Provide a knowledgeable expert who can discuss potential land disturbing activities associated with rebuilding, reconducting, and uprating offsite transmission lines, including access issues and effects on existing land uses.	P. Doub, D. Anderson	4.1.2
LU-07	Provide electronic copy of GIS layers used to develop Figures 2.1-2, 2.2-1, 2.2-2, 2.2-3, 2.2-4, 2.2-5, and 4.1-1.	P. Doub, D. Anderson	2.2.2; 4.1.2
LU-08	ER Page 2.2-3 discusses the "Farmland Conversion Impact Rating" and Form AD-1006, which is included in Appendix A of the ER, page A-11. That form indicates that 1131 acres of land at the CRN site are expected to be converted as a result of the Clinch action. That is an area larger than the site itself	P. Doub, D. Anderson	2.2.2.1

<b>Info Needs #</b>	<b>Info Needed</b>	<b>SME Name</b>	<b>ER Section</b>
	(935 ac). Please clarify the acreage of CRN site areas expected to be disturbed.		
Meteorology			
MET-01	Provide a knowledgeable expert to discuss onsite meteorological data collection.	K. Quinlan, L. Willingham, J. Flaherty	2.7, 6.4
MET-02	Provide a knowledgeable expert to discuss dispersion modeling with PAVAN, XOQDOQ, and CALPUFF.	K. Quinlan, L. Willingham, J. Flaherty	2.7
MET-03	Provide monthly mixing height data, including frequency and duration of inversion conditions and the methods used to provide the estimates and an assessment of these values relative to their effect on air quality and/or dispersion.	K. Quinlan, L. Willingham, J. Flaherty	2.7
MET-04	Provide monthly summaries of atmospheric stability.	K. Quinlan, L. Willingham, J. Flaherty	2.7
MET-05	Provide the reactor-specific and site-specific greenhouse gas emissions estimates for different stages of the complete plant lifecycle. No construction/preconstruction estimates are in the application. (Per ISG-26 Attachment 1).	K. Quinlan, L. Willingham, J. Flaherty	2.7
Non-Rad			
NR-01	Provide a knowledge expert and supporting documentation to discuss quantities of nonradiological waste that would be generated by the proposed project.	D. Mussatti, L. Aston	3.6
NR-02	Provide a knowledgeable expert and supporting documentation to discuss existing TVA procedures for offsite waste disposal. Also, provide a copy of the TVA Waste Minimization Plan.	D. Mussatti, L. Aston	2.2; 2.5.2; 7.2; 3.6.3.3; 5.9; 5.11; 6.4
NR-03	Provide a knowledgeable expert and supporting documentation to discuss existing TVA worker safety procedures (i.e., Environmental Safety and Health [ES&H] plan) for protecting workers during construction and operation (ex. for	D. Mussatti, L. Aston	5.10

Info Needs #	Info Needed	SME Name	ER Section
	digging around live underground transmission lines).		
Rad Health			
RH-01	Make available a knowledgeable expert to describe the liquid and gaseous radioactive waste-management and effluent-control systems, including sources of liquid and gaseous waste material, principal release points for radioactive materials to the environment, and identification of direct radiation sources.	M. Smith, E. Hickey	3.5
RH-02	To help the NRC staff understand the basis for the normal liquid and gaseous effluent source terms, make available a knowledgeable expert to discuss the basis for the source term given in ER Tables 3.5-1 to 3.5-5 (and expanded upon in the Supplement CNL-16-191 Attachment 2) including: 1) basis for lowering activity of certain radionuclides when deemed overly conservative; 2) maximum number of units and power assumed in source term generation for each of the four SMR technologies considered; and 3) basis for increasing the liquid effluents from one vendor by 10 percent.	M. Smith, E. Hickey	4.5.3.2
RH-03	Make available a knowledgeable expert to clarify whether construction workers are considered members of the public or radiation workers, because there appears to be conflicting information in Sections 4.5.2.1 and 4.5.5. Section 4.5.2.1 states: " <i>Personnel installing additional NuScale reactor units after the initial units start up are not considered construction workers for the purpose of this analysis.</i> " Section 4.5.5 states: " <i>Therefore, for the purposes</i>	M. Smith, E. Hickey	4.5.2.1 and 4.5.5



Info Needs #	Info Needed	SME Name	ER Section
	<i>of radiation protection, the CRN Site construction workers are considered to be members of the general public."</i>		
RH-04	Make available a knowledgeable expert to discuss the basis for the assumptions related to computation of direct doses to the construction workers, including assumed distances, operating reactor configurations, and shielding.	M. Smith, E. Hickey	4.5.3.1
RH-05	To help the NRC staff understand the basis for the selected input values in GASPARG, make available a knowledgeable expert to discuss the basis for the various input parameters used in GASPARG in computing construction worker dose. Also provide any sources of information outside of NRC RG 1.109 that support the basis for GASPARG input parameters.	M. Smith, E. Hickey	4.5.3.2
RH-06	To help the NRC staff understand the basis for the selected input values in GASPARG and LADTAP in computing public doses, make available a knowledgeable expert to discuss the basis for the various input parameters used in computing doses to the public including why ingestion of goat's milk was not considered. Also provide a list of any sources of information outside of NRC RG 1.109 that support the basis for GASPARG and LADTAP input parameters.	M. Smith, E. Hickey	5.4.2.1 and 5.4.2.2
RH-07	Provide what the present and known future locations are from which a person can obtain aquatic food, drinking water, and nearest present and future Clinch River shoreline locations for recreational use.	M. Smith, E. Hickey	5.4.2.1
RH-08	Provide a knowledgeable expert to explain which X/Q values from Table 2.7.6-10 were applied in the computation of Table 5.4-10 doses and whether the entire plume was	M. Smith, E. Hickey	5.4.3

Info Needs #	Info Needed	SME Name	ER Section
	assumed to deplete in the determination of ground deposition for the computation of external doses.		
RH-09	Make available a knowledgeable expert to discuss the dose results to each of the public receptors and discuss the population doses.	M. Smith, E. Hickey	5.4.3
RH-10	Make available a knowledgeable expert to discuss the status and plans for a Radiological Environmental Monitoring Program (REMP).	M. Smith, E. Hickey	6.2
RH-11	Organize a brief driving tour (1-2 hours) for up to four individuals to visit areas of interest to radiation health specialists, for example, the maximally exposed individual (MEI) location and other assumed receptor locations at least 5 mi from the site (i.e., nearest residence, milk animals if in 5 mi, meat animal, vegetable gardens larger than 50 sq m), nearby water recreational areas, and proposed locations for environmental radiation monitors.	M. Smith, E. Hickey	5.4.2.1 and 5.4.2.2
RH-12	Make available a knowledgeable expert to discuss impacts from facilities that could contribute to radiological cumulative impacts including: 1) what type of facility "American Nuclear Corporation" operates; 2) which facilities did not respond to DOE's request for information regarding the potential radiation doses to the public from their operations; 3) distinctions made in CNL-16-171 between ORR facilities; and 4) details in CNL-16-171 Table 4.7-1.	M. Smith, E. Hickey	7.8
Socioeconomics			
SE-01	Provide a knowledgeable expert able to discuss and clarify supplemental information to the ER, presented in TVA correspondence CL-16-190, dated Dec 15, 2016. Specifically, clarify onsite	D. Mussatti, Anderson	5.8

Info Needs #	Info Needed	SME Name	ER Section
	workforce estimates with respect to the potential for operations staff, outage staff, and construction staff all being employed simultaneously. This information is needed to estimate the peak onsite workforce expected.		
SE-02	Provide updated quantitative information describing the tax equivalent payments as a proportion of county revenues for the affected counties. Provide updated characterization of expected local expenditures for construction and operations activities to provide context for local versus nonlocal purchases of products and services. Describe the expected sales and use tax impacts of the local-area and Tennessee-based project expenditures.	D. Mussatti, D. Anderson	4.4.3, 5.4.3
Site Overview/ Plant Description			
STO-01	Provide a knowledgeable expert who can describe the site-related design parameters of the plant parameter envelope (PPE). For example, ER Table 3.1-2, Site-Related Design Parameters, includes structure heights, but not embedment or excavation depths. Table 3.1-2 does not include any values for “acreage” line items (cooling towers, operational plant, laydown areas). Provide the maximum (bounding) excavation depth relative to the site grade and the bounding acreage values for the listed items.	J. Cushing, N. Kohn	3.1
STO-02	Provide a knowledgeable expert who can describe the plans for construction-related facilities and activities (e.g., concrete batch plants, stormwater management, laydown areas). The expert should be prepared to discuss possible	J. Cushing, N. Kohn	3.3, 3.6, 3.9

Info Needs #	Info Needed	SME Name	ER Section
	locations and size(s), timeframe of use, water needs, permitting needs.		
STO-03	Provide a knowledgeable expert who can describe the railroad refurbishments that would be necessary to support the CRN project. The expert should be prepared to describe nature and extent of refurbishment activities, as well as anticipated use of rail transportation during construction and operation.	J. Cushing, N. Kohn	3.9
STO-04	<p>Provide a knowledgeable expert who can describe the site-preparation/construction activities, including affected areas, general durations and sequencing, and erosion- and sediment-control best management practices (BMPs). Information is needed, to the extent known, regarding the following:</p> <ul style="list-style-type: none"> <li>• new roads that would be constructed vs. utilization/upgrade of existing roads on the site (e.g., to intake, discharge, and laydown areas), including the locations of routes, culverts, and bridges and whether the area required is accounted for in the disturbed acreage total;</li> <li>• the approximate length, location, and degree of disturbance associated with the potable-water and municipal wastewater pipelines, and excavation dewatering rates and discharge method.</li> </ul>	J. Cushing, N. Kohn	3.9
STO-05	Provide a knowledgeable expert who can describe the plant water sources and use during construction and operation. The expert should be prepared to discuss the assumptions behind the PPE (ER Table 3.1-2) and water-use diagram	J. Cushing, N. Kohn	3.1, 3.3

Info Needs #	Info Needed	SME Name	ER Section
	(ER Figure 3.3-1). Clarification is needed regarding "normal" (Table 3.1-2) or "average" (Figure 3.3-1) use rates, whether "miscellaneous raw water users" includes service water system/ultimate heat sink use (Figure 3.3-1), and the "negligible" consumptive uses (ER Section 3.3.1).		
STO-06	Provide a knowledgeable expert to discuss the maps and figures in the ER. Of particular interest are those related to plant layout, offsite structures, offsite transmission lines, and the associated affected areas. Publication-quality files of selected ER figures are needed for reproduction in the environmental impact statement (EIS) (sized for 8.5 x 11 in. page, resolution at least 300 dpi, in .png or .tif format). The geographic information system (GIS) shapefiles that were used for certain analyses and/or to generate certain early site permit (ESP) application figures are also needed.	J. Cushing, N. Kohn	Most sections
STO-07	Provide a knowledgeable expert who can describe the transmission system changes that would be necessary to support a nuclear plant on the CRN Site. The expert should be prepared to discuss the affected segments (e.g., reconcile segments listed in ER Table 3.7-1 with those shown on Figure 3.7-7) and the types of upgrade activities that are planned.	J. Cushing, N. Kohn	3.7
STO-08	Provide a knowledgeable expert who can describe the effluent discharge system, including the holding pond (i.e., construction/lining materials and estimated evaporation rates).	J. Cushing, N. Kohn	3.3, 3.4.2.2, 3.9

Info Needs #	Info Needed	SME Name	ER Section
STO-09	Provide a knowledgeable expert to discuss the connection between the Clinch River Site and the Bethel Valley Substation. Section 3.7.1 states that the Clinch River project includes installation of an underground 69-kV transmission line at the Cinch River Site to the Bethel Valley Substation. Chapter 1 includes the statement “A new 69-kV underground transmission line (approximately 5 mi) <u>could</u> be constructed to connect the CRN Site switchyard via 500-kV to 69- kV transformers to the Bethel Valley Substation.” The underground transmission line is critical to TVA’s stated objectives.	T. Dozier, B. Mcdowell	3.7.1; 1.1
STO-10	Provide a knowledgeable expert to discuss TVA’s criteria for choosing alternative sites including supplying federal mission-critical loads with reliable power from generation and transmission that is less vulnerable to supply disruption from intentional destructive acts and natural phenomena.	T. Dozier, B. Mcdowell	9.3
STO-11	Provide a knowledgeable expert to discuss Table 1.2-1 and 1.2-2. These sections list authorizations required for ESP and authorizations required for preconstruction, construction, and operation. The tables list the responsible agency and the applicable regulation. Table 1.2-1 lists ESP authorizations required <i>prior</i> to NRC issuance of an ESP [ <i>emphasis added</i> ]. Provide a knowledgeable expert to discuss: State or local authorization need for transportation infrastructure (i.e., road, rail, and barge); Migratory Bird Act/Executive Order 13186 - Responsibility of Federal Agencies to Protect Migratory Birds; permit for sewage to Oak Ridge Public Works;	T. Dozier, B. Mcdowell	1.2

Info Needs #	Info Needed	SME Name	ER Section
	emergency response plan; county permits; other authorizations prior to issuance of an ESP. Discuss the authorizations required at each stage of the project, ESP, preconstruction, construction, and operation.		
STO-12	Provide a knowledgeable expert to discuss the Environmental Protection Plan (EPP) submitted in December 2016. In addition, provide a knowledgeable expert to discuss controls the measures and controls to limit potential impacts during construction, particularly with regard to terrestrial, cultural, and historic resources.	P. Vokoun, B. Mcdowell	EPP, 4.6
STO-13	Provide a knowledgeable expert to discuss a list that separates the preconstruction and construction impacts (10 CFR 51.45(c)) and assigns to each type of impact (e.g., land use and surface water) an approximate percentage of the overall impacts and the basis for this estimation.	T. Dozier, B. Mcdowell	4.0
Terrestrial Ecology			
TE-01	Provide GIS layers used to create ER Figures 2.4.1-1 and 4.3-1. Provide habitat layers for the BTA, as they do not appear in ER Figure 4.3-1.	J. Becker, P. Doub	2.4.1, 2.2
TE-02	Provide a knowledgeable terrestrial resources expert to discuss TVA's planning assumptions for uprating, reconductoring, and rebuilding offsite transmission lines, and available information on important species and habitats from TVA's Natural Heritage Database. The expert should be prepared to discuss any need for additional clearing or widening of rights-of-way, possible effects on wetlands or other waterways within or adjacent to rights-of-way, and	J. Becker, P. Doub	2.4.1.6, 3.7.3.8, related TE supplemental information

Info Needs #	Info Needed	SME Name	ER Section
	possible effects on plants and wildlife using affected right-of-way lands.		
TE-03	Provide a copy of TVA's document titled <i>A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities</i> .	J. Becker, P. Doub	2.4.1.6
TE-04	Provide a knowledgeable terrestrial resources expert who can discuss the timing of botanical surveys on the CRN Site and BTA. Also provide, if available, the possible prior plant surveys in the BTA that were alluded to in ER Section 2.4.1.1 on page 2.4.1-4.	J. Becker, P. Doub	2.4.1.1 (page 2.4.1-4)
TE-05	Provide a knowledgeable expert who can discuss the following statement made in the results section of the CRN terrestrial animal study on page 22, "Although studies on use of [bat] habitat during summer are few (but currently underway)..." Provide information on any bat studies on or offsite referred to by the above statement (in addition the two TVA studies on the CRN Site and the BTA).	J. Becker, P. Doub	2.4.1.1, CRN terrestrial animal study (page 22)
TE-06	Provide a knowledgeable expert who can discuss the status of TVA's correspondence with the U.S. Army Corps of Engineers (USACE) and TVA's eventual plans for obtaining a USACE jurisdictional determination and submitting a joint permit application for wetland impacts. The staff understands that such plans may not be developed in detail until an application is made for a COL.	J. Becker, P. Doub	2.4.1.2 (Table 2.4.1-3)
TE-07	ER Section 2.4.1.6 states that "Federally or state-listed plant species are not known to occur in the terrestrial communities within this ROW." This refers to the approximate 5 mi length where a 69 kV underground line would be	J. Becker, P. Doub	2.4.1.6



Info Needs #	Info Needed	SME Name	ER Section
	installed within the existing 500 kV right-of-way (ROW) between the CRN Site and the Bethel Valley Substation. There is no reference for this statement. Provide a knowledgeable expert who can provide a reference for the absence (or alternatively presence) of important species and/or habitats and wetlands in this 500 kV ROW.		
TE-08	Provide a knowledgeable expert who can discuss the status of TVA's correspondence with U.S. Fish and Wildlife Service (FWS) regarding Federally listed important species and habitats, TDEC – Division of Natural Heritage, and Tennessee Wildlife Resources Agency regarding State-listed important species and habitats. Provide any correspondence to or from these agencies.	J. Becker, P. Doub	2.4.1.5
TE-09	The 2006 Oak Ridge Reservation document titled "Physical Characteristics and Natural Resources" (by Patricia Dreyer Parr and Joan F. Hughes) identifies a large area in the northeast portion of the CRN Site as having a very high biological significance ranking (BSR-2) (Figure 12 in the document) and as providing confirmed and potential habitat for rare plants and wildlife (Figure 13 in the document). Provide a knowledgeable expert who can discuss and map this area.	J. Becker, P. Doub	2.4.1.3
TE-10	ER Section 4.3.1.1 generically speaks to TVA's construction BMPs but provide no reference for these, nor does it describe them in detail. Identify and briefly describe each specific BMP and provide the reference for TVA's construction BMPs.	J. Becker, P. Doub	4.3.1

Info Needs #	Info Needed	SME Name	ER Section
TE-11	Provide a copy of the report of the offsite bat study TVA was involved in and which was underway during pre-application meetings with the NRC. This study was investigating the potential effects of human disturbance on summer roosting gray bats. If the report is unavailable because the study is still ongoing, provide a knowledgeable expert who can discuss the study's status and the future availability of the report.	J. Becker, P. Doub	none
TE-12	ER Section 2.4.1.6 states, "The new 161-kV ROW overlaps areas to be cleared for facility construction except for approximately 1200 ft at the southern end of the new ROW." It appears in ER Figures 3.7-1 and 4.3-1 that the southern 1,200 ft of disturbance for the new 161 kV ROW may not have been accounted for. Provide a knowledgeable expert who can confirm whether the disturbance footprint of the southern 1,200 ft of the new 161 kV ROW is accounted for in Table 4.3-1.	J. Becker, P. Doub	2.4.1.6
TE-13	Expand ER Table 4.3-1 to quantify permanent and temporary land area disturbances by habitat type for the BTA and for the footprint of disturbance for the underground transmission line to the Bethel Valley Substation. Although Page 4.3-5 of the ER states that there are no wetlands present along the route for the underground transmission line, topography suggests the possible presence of multiple small streams and associated wetlands in swales along the route.	J. Becker, P. Doub	4.3.1
TE-14	ER Section 3.7.1 indicates expansion of the 161 kV Bethel Valley Substation to receive 69 kV underground transmission line. The substation expansion is not accounted for in the terrestrial	J. Becker, P. Doub	3.7.1 and 4.3.1

Info Needs #	Info Needed	SME Name	ER Section
	ecology impacts in ER Section 4.3.1. Provide a knowledgeable expert who can discuss the 161 kV Bethel Valley Substation expansion and any associated terrestrial ecology impacts.		
TE-15	ER Sections 2.4.1.6 and 3.7.3.7 do not describe the specific upland and wetland habitats affected offsite by building the 69-kV underground line within the existing 500 kV corridor from the CRN Site to the Bethel Valley Substation. Provide the affected acreage for each upland and wetland habitat affected. If a wetland delineation is not available, other wetland data sources may be suitable for the NRC staff's review.	J. Becker, P. Doub	2.4.1.6 and 3.7.3.7
TE-16	ER Section 3.6.2 indicates the CRN Site currently has a stormwater-management system consisting of stormwater-runoff/collection ponds and piping, and that this system is to be modified to support the CRN SMR Project. Stormwater will be managed in accordance with a site-specific Stormwater Pollution Prevention Plan (SWPPP), which will be developed and may use existing ponds and include one or more new ponds. Provide a knowledgeable expert who can discuss TVA's plan for a SWPPP and how this may affect wetlands, streams, uplands, etc.	J. Becker, P. Doub	3.6.2
TE-17	ER Section 4.3.1.2 indicates potential impacts to wetlands in the BTA and postpones quantification of impacts to the COL stage. Provide a knowledgeable expert to discuss any additional information on wetland impacts in the BTA.	J. Becker, P. Doub	4.3.1.2
TE-18	Provide the Seasonal and Annual Cooling Tower Impact (SACTI) report.	J. Becker, P. Doub	5.3.3.1

Info Needs #	Info Needed	SME Name	ER Section
TE-9	ER Section 5.3.3.1.3 and Table 5.3-5 indicate that damaging levels of salt deposition occur out to 200 to 300 m west of the cooling towers, within which natural vegetation (forest and herbaceous) occurs. Provide a figure of salt deposition isopleths depicting where salt deposition drops to below damaging levels (1,000 kg/km <sup>2</sup> /mo), overlay that information on site vegetation, and derive area estimates of affected habitat types.	J. Becker, P. Doub	5.3.3.1.3
TE-20	ER Section 6.5.1.2 indicates additional monitoring of terrestrial plant and animal communities during construction and preoperational phases is not proposed. However, it also states that TVA would repeat field studies performed during the site-preparation monitoring program for the period following construction in order to collect at least 1 year of preoperational and/or operational data for comparison to the baseline data. Provide a knowledge expert that can resolve this apparent contradiction and discuss planned preoperational/operational monitoring.	J. Becker, P. Doub	6.5.1.2
TE-21	ER Section 4.3.1.6 states that relocation of the 161 kV onsite transmission line is likely to displace an osprey nest that has been built on a tower in this area. ER Section 6.5.1.2 calls for monitoring the nest if active during construction. Provide a knowledgeable expert to discuss how monitoring comports with Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds (cited in ER Section 6.5.1.2 in support of monitoring the osprey	J. Becker, P. Doub	4.3.1.6 and 6.5.1.2

Info Needs #	Info Needed	SME Name	ER Section
	nest) given that the nest will be displaced.		
TE-22	ER Section 9.3.5 describes terrestrial resources generically across large spatial scales without providing site-specific information on habitat presence or disturbance at each alternative site. TVA provided in its December 15, 2016 "Submittal of Supplemental Information Related to Site Selection in Support of the Early Site Permit Application for Clinch River Nuclear Site" figures which depict some infrastructure associated with the alternative sites, ORR Site 2 (Figure 9.3-6), ORR Site 8 (Figure 9.3-7), and Redstone Arsenal (Figure 9.3-8). These figures depict potential cooling water connectors at all 3 alternative sites, and a potential offsite transmission line at Redstone Arsenal. Provide a knowledgeable expert who can discuss whether these figures depict all major offsite appurtenances that would be needed (e.g., to connect to the local electric grid and satisfy heavy-haul needs [e.g., roads, railway, barge]) and that would be required by local site conditions if the SMR project from the CRN Site were to be located there. Once all offsite appurtenances have been identified, overlay the footprint of each alternative site on habitat types and calculate anticipated acreages for upland and wetland habitats that would be disturbed at each site.	J. Becker, P. Doub	9.3.5
TE-23	Provide a knowledgeable expert to discuss how the terrestrial ecology criteria fit into the site-selection process.	J. Becker, P. Doub	9.3

Info Needs #	Info Needed	SME Name	ER Section
TE-24	The 2006 Oak Ridge Reservation document titled "Physical Characteristics and Natural Resources" (by Patricia Dreyer Parr and Joan F. Hughes) identifies a large area in the northeast portion of the CRN Site as having a very high biological significance ranking (BSR-2) (Figure 12 in the document) and as providing confirmed and potential habitat for rare plants and wildlife (Figure 13 in the document). Provide a knowledgeable expert who can discuss these designations relative to the identified area on the CRN Site.	J. Becker, P. Doub	none
Transportation			
TR-01	Make available a knowledgeable expert to discuss the estimate of the heat load in a spent fuel shipping cask and to compare the result to 10 CFR 51.52 Table S-4 conditions (i.e., 250,000 Btu/hr [ $\sim$ 73 kW]).	S. Maheras, D. Palmrose	5.7.2
TR-02	Make available a knowledgeable expert to discuss the estimate of 492 shipments of unirradiated fuel listed in Table 5.7-6 of the ER.	S. Maheras, D. Palmrose	5.7.2
TR-03	Make available a knowledgeable expert to discuss the estimate of 46 shipments of irradiated fuel listed in Table 5.7-7 of the ER.	S. Maheras, D. Palmrose	5.7.2
TR-04	Make available a knowledgeable expert to discuss the normalization of shipments discussed in Section 3.8, and in Tables 5.7-6 and 5.7-7 of the ER.	S. Maheras, D. Palmrose	5.7.2
TR-05	Make available a knowledgeable expert to discuss the respirable fractions applied in the RADTRAN computer code runs used to estimate radiological transportation accident risks.	S. Maheras, D. Palmrose	7.4
TR-06	Make available a knowledgeable expert to discuss the accident, fatality, and injury rates in Table 7.4-1 of the ER.	S. Maheras, D. Palmrose	7.4

Info Needs #	Info Needed	SME Name	ER Section
TR-07	Make available a knowledgeable expert to discuss the distances and population densities used in the RADTRAN computer code runs used to estimate routine transportation impacts and transportation accident risks.	S. Maheras, D. Palmrose	5.7.2 and 7.4
TR-08	Make available a knowledgeable expert to discuss the incorporation of doses at stops into calculation of routine radiation doses to the general public-onlookers and radiation doses to the general public-along the route. For example, see Section 6.2.2.1 and Figure 6-2 in the Environmental Impact Statement for an Early Site Permit (ESP) at the PSEG Site (ML15316A072).	S. Maheras, D. Palmrose	5.7.2
TR-09	Make available a knowledgeable expert to discuss the references for data quoted in the Sections 5.7.2 and 7.4 of the ER.	S. Maheras, D. Palmrose	5.7.2, 7.4
TR-10	Make available a knowledgeable expert to discuss the estimates of routine doses from radioactive waste shipments.	S. Maheras, D. Palmrose	5.7.2
TR-11	Make available a knowledgeable expert to discuss the package dimensions used in the RADTRAN computer code runs used to estimate routine doses from unirradiated fuel and radioactive waste.	S. Maheras, D. Palmrose	5.7.2
TR-12	Make available a knowledgeable expert to discuss the traffic density data used in the RADTRAN computer code runs used to estimate routine doses from unirradiated fuel and irradiated fuel.	S. Maheras, D. Palmrose	5.7.2
TR-13	Make available a knowledgeable expert to discuss the amounts of construction materials that would be used to construct the four SMRs considered in the ER.	S. Maheras, D. Palmrose	10.2.2.1
TR-14	Make available a knowledgeable expert to discuss transportation routing and the routine	S. Maheras, D. Palmrose	5.7.2 and 7.4

Info Needs #	Info Needed	SME Name	ER Section
	transportation impacts and transportation accident risks for the four alternative sites.		
TR-15	Make available a knowledgeable expert to discuss all nearby existing/proposed projects or activities that could potentially contribute to cumulative impacts of traffic and transportation if a new nuclear power plant is constructed at the Clinch River site or at the alternative sites.	S. Maheras, D. Palmrose	4.7, 5.11
TR-16	Make available a knowledgeable expert to discuss the estimate of 61 shipments of radioactive waste listed in Table 5.7-7 of the ER.	S. Maheras, D. Palmrose	3.8
Uranium Fuel Cycle/ Decommissioning			
UFC-01	Make available a knowledgeable expert to discuss the basis for scaling Table S-3 of 10 CFR 51.51 by 0.98 for the surrogate SMR plant. The basis is given in Section 5.7.1 where it provides two MWe powers for the Table S-3 reference plant. It states, "As provided in Table 3.1-2, Item 16.6, the maximum net power output of the SMRs at the CRN Site is 800 MWe. Table 3.1-2, Item 16.4, provides a station capacity factor of 98 percent resulting in an effective net power output 784 MWe. The ratio of the effective net power output value for the SMRs described by the PPE (784 MWe) to the net electrical output for the 1000 MWe reference plant (800 MWe) provides a scaling factor of 0.98 to convert reference plant values to project-specific values at the CRN Site."	E. Hickey, M. Smith	5.7