UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 21, 2021

Mr. Steven M. Snider
Site Vice President
Oconee Nuclear Station
Duke Energy Carolina, LLC
7800 Rochester Hwy
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 - LICENSE RENEWAL REGULATORY AUDIT REGARDING THE ENVIRONMENTAL REVIEW OF THE SUBSEQUENT LICENSE RENEWAL APPLICATION (EPID NO. L-2021-SLE-0002)

Dear Mr. Snider:

By letter dated June 7, 2021, (Agencywide Documents Access and Management System (ADAMS) Accession Package No. ML21158A193), Duke Energy Carolinas, LLC (Duke Energy) submitted to the U.S. Nuclear Regulatory Commission (NRC) an application for subsequent license renewal of Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55 Oconee Nuclear Station, Units 1, 2, and 3 (ONS), respectively, pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, and part 54 of title 10 of the *Code of Federal Regulations*, "Requirements for renewal of operating licenses for nuclear power plants."

The NRC staff has initiated the environmental review for the subsequent license renewal of ONS, Units 1, 2 and 3. The environmental audit will be conducted remotely by NRC staff due to the COVID-19 public health emergency, during the week of October 11, 2021. The environmental audit activities will be conducted in accordance with the enclosed environmental audit plan (Enclosure 1).

The NRC staff requests the information presented in the environmental audit needs list (Enclosure 2) be made available on the ONS online reference portal (ADAMS Accession No. ML21189A139), to the extent possible, prior to the audit. A draft schedule of tours and meetings is provided in Enclosure 3.

If you have any questions, please contact me via e-mail at Lance.Rakovan@nrc.gov.

Sincerely,

Signed by Rakovan, Lance
on 09/21/21

Lance J. Rakovan,
Senior Environmental Project Manager
Environmental Review License Renewal Branch
Division of Rulemaking, Environmental,
and Financial Support
Office of Nuclear Material Safety
and Safeguards

Docket Nos. DPR-38, DPR-47, and DPR-55

Enclosures:
As stated

cc w/encls: Listserv

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 - LICENSE RENEWAL REGULATORY AUDIT REGARDING THE ENVIRONMENTAL REVIEW OF THE SUBSEQUENT LICENSE RENEWAL APPLICATION (EPID NO. L 2021 SLE 0002)

DATED: September 21, 2021

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ADAMS Accession No.: ML21263A031

OFFICE	NE/PM:ELRB:REFS	LA:REFS/ERMB	BC:ELRB:REFS	NE/PM:ELRB:REFS
NAME	LRakovan	SFigueroa	RElliott	LRakovan
DATE	9/14/2021	9/16/2021	9/17/2021	9/21/2021

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Audit Plan

Subsequent License Renewal Environmental Review Oconee Nuclear Station, Units 1, 2, and 3

October 12-15, 2021

Division of Materials and License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission

Enclosure 1

SUBSEQUENT LICENSE RENEWAL ENVIRONMENTAL AUDIT PLAN
OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

1. Background

By letter dated June 7, 2021, (Agencywide Documents Access and Management System (ADAMS) Accession Package No. ML21158A193), Duke Energy Carolinas, LLC (Duke Energy) submitted to the U.S. Nuclear Regulatory Commission (NRC) an application for subsequent license renewal of Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55 Oconee Nuclear Station, Units 1, 2, and 3 (ONS), respectively. The staff is reviewing the information in the environmental report (ER) of the subsequent license renewal application (SLRA) per Title 10 of the *Code of Federal Regulations* (10 CFR) Part 51.

The NRC staff is conducting an environmental audit of the ONS site to improve understanding, to verify information, and to identify information for docketing to support the preparation of the environmental impact statement. Specifically, the NRC staff will be identifying pertinent environmental data, reviewing the facility, and seeking clarifications regarding information provided in the ER.

2. Environmental Audit Bases

License renewal requirements for environmental reports are specified in 10 CFR Part 51, “Postconstruction environmental reports.” As specified by 10 CFR 51.53(c): *Operating license renewal stage*, “(1) Each applicant for renewal of a license to operate a nuclear power plant under part 54 of this chapter shall submit with its application a separate document entitled "Applicant's Environmental Report—Operating License Renewal Stage." Review guidance for the staff is provided in NUREG–1555, Supplement 1, Revision 1, “Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Supplement 1 – Operating License Renewal.”

The NRC staff is required to prepare a site-specific supplement to NUREG–1437, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants.” During the scoping process required in 10 CFR Part 51, NRC staff is required to define the proposed action, identify significant issues which must be studied in depth, and to identify those issues that can be eliminated from further study.

3. Environmental Audit Scope

The scope of this environmental audit is to identify new and significant issues and issues which can be eliminated from further study. The NRC staff will also identify environmental resources that must be described and evaluated in the Supplemental Environmental Impact Statement. Audit team members will review the documents and other requested information made available on the ONS online reference portal Identified on the environmental audit needs list (Enclosure 2) and discuss any questions and additional information needs with the applicant’s subject matter experts.

4. Information and Other Material Necessary for the Environmental Audit

As identified on the environmental audit needs list (Enclosure 2).

5. Environmental Audit Team Members and Resource Assignments

The environmental audit team members and their assignments are shown in the table below.

Discipline	Team Members
Environmental Review Supervisor	Robert Elliott
Environmental Project Manager	Lance Rakovan
Land Use and Visual	Caroline Hsu/Jeff Rikhoff
Air Quality	Nancy Martinez
Meteorology and Climatology	Nancy Martinez
Noise	Nancy Martinez
Geologic Environment (Soils and Geologic Hazards)	Kevin Folk
Surface Water	Kevin Folk/Nancy Martinez
Groundwater (Hydrology and Hydrogeology)	Lifeng Guo/Kevin Folk
Terrestrial (Land Cover and Habitat)	Caroline Hsu/Briana Arlene
Aquatic	Briana Arlene/Caroline Hsu
Section 7 Consultation with NMFS for ESA and EFH	Briana Arlene/Caroline Hsu
Section 7 Consultation with FWS	Briana Arlene/Caroline Hsu
Historic and Cultural Resources (Section 106 Consultation)	Nancy Martinez/Bob Hoffman
Socioeconomics	Caroline Hsu/Jeff Rikhoff
Human Health	Don Palmrose/Beth Alferink
Postulated Accidents	Phyllis Clark
Environmental Justice	Caroline Hsu/Jeff Rikhoff
Waste Management (rad and non-rad)	Phyllis Clark
Cumulative Impacts	Bob Hoffman
Uranium Fuel Cycle	Phyllis Clark
Termination of Operations and Decommissioning	Beth Alferink/Kevin Folk
Greenhouse Gases/Climate Change	Nancy Martinez/Kevin Folk
Replacement Power Alternatives	Bob Hoffman
Spent Nuclear Fuel	Phyllis Clark
Draft EIS Tables 4.1 and 4.2	Nancy Martinez
Severe Accident Mitigation Alternatives	Jerry Dozier, NRC/NRR

6. Logistics

The environmental audit will be conducted remotely due to the COVID-19 public health emergency, from October 12-15, 2021. An entrance meeting will be held with plant management at the beginning of the audit. An exit meeting will be held at the end of this audit.

7. Special Requests

The NRC staff requests that the applicant make available on the ONS online reference portal, the information identified on the environmental audit needs list (Enclosure 2). ONS staff who are subject matter experts in the disciplines identified on the environmental audit needs list should be available for interviews and tours.

8. Deliverables

An audit summary report will be issued by NRC staff within 90 days from the end of the environmental audit.

LICENSE RENEWAL ENVIRONMENTAL AUDIT NEEDS LIST
OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

Please be prepared to discuss the following issues and make the following available during the environmental virtual audit.

Tours

Please provide subject matter experts to lead the following tours:

Title or Number	Features Observed	Essential Participants	Optional Participants
1. General site tour	a. Exterior grounds b. Transmission lines c. Historic and cultural sites d. possible alternative power generation locations e. ISFSI f. Plant views from publicly accessible areas	All	
2. Plant intake and discharge tour	a. Cooling water intake structure, intake bays, and intake canal b. Intake structure trash racks and traveling screens, screen wash system (as observable) c. Engineered canal (connecting the Little River and Keowee River watersheds) d. Discharge structure e. Accessible permitted outfall locations f. Chemical treatment ponds	Kevin Folk Lifeng Guo Briana Arlene Donald Palmrose Phyllis Clark Nancy Martinez Caroline Hsu Beth Alferink	
3. Radwaste tour	a. Liquid radwaste system - discharge locations b. Gaseous radwaste system - discharge locations	Phyllis Clark Don Palmrose Lifeng Guo Beth Alferink	
4. Groundwater tour	a. Monitoring wells, dewatering and extraction wells b. Site landfill	Lifeng Guo	
5. Visual Resources	Photos of Oconee from publicly accessible areas where plant structures or operations are visible. Specifically, please provide the following: a. Photos of Oconee structures visible from public roads (for example E. Pickens Highway or Rochester Highway). b. Photos of Oconee taken from publicly accessible areas of Lake Keowee. c. Photos of Oconee taken from Old Pickens Presbyterian Church d. Photos of Oconee taken from any other publicly accessible area where plant structures or operations are visible	Caroline Hsu	

Audit Meetings

Please provide for breakout meetings with the subject matter expert(s) and/or the contractor(s) responsible for the following topics who can also discuss the corresponding information requests as described in the Questions and Documents Needs section below. These meetings will be used as needed to resolve or clarify any outstanding data needs or questions arising from the environmental audit.

- Aquatic resources, terrestrial resources, special status species and habitats (can be combined into one ecology meeting or separated out, depending on applicant and contractor availability).
- Surface water hydrology including surface water withdrawals (e.g., circulating water and service water systems), effluent discharges, and water quality monitoring (can also be combined with aquatic resources).
- Replacement power alternatives.
- Land use and visual resources.
- Air quality, particularly air permits and emission inventories associated with facility operations, and stationary and mobile sources of air pollutants.
- Socioeconomics, with a specific focus on property tax payments.
- Groundwater hydrology, quality, and impact assessment portions of the ER and the plant's groundwater protection program and affected groundwater resources. Please also discuss the location(s) of onsite landfill and other potential sources, including pipes that may be relevant to impact to groundwater at the site.
- Radiological environmental monitoring program (REMP), liquid (radiological and non-radiological) and gaseous effluent release programs, and waste management (radiological and non-radiological) programs.
- Discussion with plant personnel knowledgeable of radiological protection and radwaste systems (note: From past audit experience, most, if not all, of this information is discussed on the requested tours if the knowledgeable plant personnel participate in those tours. If that will be the case, NRC won't necessarily need separate breakout meetings for the discussions listed below.)

    - Radiation protection program: Overview of the program with emphasis on the ALARA program to control worker radiation exposure (annual dose goals and status). Are there any proposed changes or upgrades to the program being considered during the license renewal term?

    - Radioactive solid waste: review how the plant plans to handle low-level radioactive waste (Class A, B, and C, mixed waste, and spent nuclear fuel) during the license renewal term (onsite storage, potential expansion of storage facilities, and disposal options). Are there any proposed changes or upgrades to the program being considered during the license renewal term?

- Radioactive gaseous and liquids effluents: review how the plant processes radioactive effluents to maintain radiation doses to the public to levels that are ALARA. Are there any proposed changes or upgrades to the program being considered during the license

renewal term?

- Transmission line clearance, electric shock safety programs, and any updates on microbiological hazards since submission of the subsequent license renewal environmental report (can be combined with ecology meeting).
- The status of projects and actions contributing to cumulative impacts.

Questions and Document Needs

Specific questions, requests, and document needs are provided below by resource area.

Replacement Power Alternatives (Bob Hoffman**)**

Audit Needs

ALT-1 Section 2.6.2 of the ER indicates that Duke Energy relied upon the 2020 Integrated Resource Plan (IRP) for screening, selecting, and evaluating replacement power alternatives for ONS. The NRC staff notes that South Carolina Public Service Commission rejected portions of that IRP, and that Duke Energy subsequently filed a revised IRP on August 27, 2021 that includes additional scenarios for meeting system generation needs. Please identify how the revised IRP affects the underlying bases discussed in Section 7.2.1 supporting Duke's selection of the range of reasonable alternatives to ONS relicensing, as well as the bases currently discussed in Section 7.2.2 for not considering greater use of renewable energy sources.

ALT-2 Section 7.2.3.2.1 states that "Duke Energy assumes that the onsite area proposed for the NGCC alternative, a total of 100 acres, would be sufficient for the siting the SMR facility." Please provide the numerical basis supporting this assumption.

ALT-3 Using maps of ONS and the W.S. Lee Station, as applicable, please identify the proposed locations of the replacement power alternatives discussed in Section 7.2.1. and Table 8.0-2.

Document Needs

None

Land Use and Visual Resources (Caroline Hsu/Jeff Rikhoff)

Audit Needs

LU-1 Section 3.1.4 of the ER discusses near future changes at Oconee including the installation of five new security towers.

a. Describe the staged plans for development and completion of the five new

security towers. When will construction commence and when will the towers be completed?

b. Where on the site will the five new security towers be located? Provide a map showing locations.

c. How much land will be cleared/disturbed for construction (including staging) of each tower? What are the current land use categories of these lands?

d. How much land will be permanently cleared for the operation of each tower? What are the current land use categories of these lands?

e. Provide information about the revegetation plan after construction is completed.

f. What will be the height or heights of the new security towers?

g. Section 4.12.1 states the new security towers could potentially be seen from offsite locations. From which offsite publicly accessible areas might the security towers be visible? What will be the visual impacts and how will they be mitigated?

LU-2 Section 3.1.4 of the ER discusses near future changes at Oconee including the installation of new watercraft barrier below Keowee Hydro Dam.

a. Provide a map showing the location of the new watercraft barrier.

b. Describe staged plans for development and completion of the watercraft barrier. When will the project commence and when will it be completed?

c. How much land will be required for construction (including staging) for the watercraft barrier? What is the current land use category of this land?

d. How much land will be permanently cleared for the operation of the new watercraft barrier? What is the current land use category of this land?

LU-3 Section 3.1.4 of the ER states that the onsite ISFSI configuration was recently expanded to host additional storage units.

a. Provide a map showing the expansion area.

b. When did construction commence and when was this expansion completed?

c. What was the total area land cleared for construction (including staging) of the ISFSI expansion? What was the previous land use category of that land?

d. What was the total area of land permanently cleared for the ISFSI expansion? What was the previous land use category of that land?

e. Were any wetlands impacted during the construction or operation of the

ISFSI expansion?

f. Provide information on the revegetation plans for the project.

LU-4 Section 4.1.2 of the ER states that expansion of the storage capacity for spent nuclear fuel is a possibility to accommodate spent nuclear fuel generated during the SLR term. Regarding the possible need to build or expand onsite nuclear waste storage (e.g., an ISFIS):

a. Where on the ONS site might this expansion be located? Please provide a map if possible.

b. What is the total land area that may be cleared for operation?

c. What is the total land rea that may be disturbed for construction including for staging?

d. Will any of the above land be along stream or water banks or on wetlands?

e. What is the current land use of the land that may be chosen? Will it be previously disturbed? Or some other category?

f. Will the expansion be permitted under the original site-specific ISFSI license (No. SNM-2503)? Under the ONS license (as the second ISFSI is)? Or under a third license?

VIS-1 Section 3.1.1 in the ER states, “The shoreline of Lake Keowee is developed with both vacation and permanent residences, along with campgrounds, boat launch areas, marinas, golf courses, and small retail establishments.” Section 4.12 states that Pickens County Comprehensive Plan classifies that Lake Keowee shoreline as residential and experiencing a high volume of growth. In addition, Section 3.13 states there are nine public lands within a 6-mile vicinity of ONS.

a. Are there any private residences, such as on the Lake Keowee shorefront, from which Oconee buildings or activities may be visible?

b. What is the closest private residence to ONS? How far is it from the site?

c. Are Oconee structures or activities visible from nearby recreation areas or public lands, such as those listed above?

d. Can people boating or recreating on Lake Keowee see Oconee structures or operations?

Document Needs

None

Air Quality and Noise, including Greenhouse Gas Emissions and Climate Change (Nancy Martinez)

Audit Needs

AQN-1 Section 3.3.3.2 of the ER states that for the 2014-2018 time period, ONS did not receive a notice of violation or non-compliance associated with air emissions. Has Duke Energy received notices of violation or non-compliance associated with ONS' air permit since 2018?

AQN-2 Table 3.3-11 of the ER provides ONS' reported annual air emissions for 2015-2019 for nitrogen oxides, carbon monoxide, and hazardous air pollutants.

a. Identify the air emission sources that are accounted for in this table.
b. Are annual emissions available for sulfur dioxide and particulate matter? If so, please provide.

AQN-3 Section 3.4 of the ER identifies that ONS did not receive noise complaints during the 2014-2018 time period. Has ONS received noise complaints since 2018?

AQN-4 Identify the primary off-site noise sources in the immediate vicinity of ONS.

Document Needs

AQN-5 Provide a copy of annual updates and emission statement reports pertaining to ONS' air permit submitted to the South Carolina Department of Health and Environmental Control (SCDHEC) for the last 5 years.

Geologic Environment (Kevin Folk**)**

Audit Needs

None

Document Needs

None

Water Resource – Groundwater (Lifeng Guo/Kevin Folk**)**

Audit Needs

GW-1 Provide a more legible print of Figure 3.5-3b, 3.5-3c, 3.5-3d and 3.5-3e.

GW-2 Provide a list and status update on all potable groundwater supply wells installed on the ONS property. As indicated in Sec. 3.6.3.2 of ER, none have been used within the last 10 years; they have all been abandoned or are being assessed for abandonment.

GW-3 A site landfill is indicated in Figure 2.2-3 (ONS wastewater flow Path). Provide the landfill location in Figure 3.6-6b (ONS potentiometric surface, deep groundwater elevation).

GW-4 Discuss any significance regarding the "deep" and "shallow" portions of aquifer as reflected by their water level elevation data at the ONS site. Groundwater contour maps are prepared based the deep elevations (Figure 3.6-6b of ER) and shallow elevations (Figure 3.6-6a of ER). Clarify that the site groundwater needs to be differentiated or analyzed differently between the shallow and the deep aquifer(s) at the site.

Document Needs

GW-5 As referenced in Sec.3.6.2.4, provide documentation describing the ONS groundwater protection program implemented since 2007, including site procedures.

GW-6 As indicated in Figure 2.2-3, provide document(s) related to its nature of the landfill and significance with respect to groundwater impact and monitoring.

GW-7 Provide reference(s) describing the site hydrogeological conceptual model, including contaminant sources and groundwater monitoring well design considerations. It's noted that: 1) monitoring wells are designated as A-series, GM-series, DMW-series, SMW-series, and MW-series; and 2) approximately half of the groundwater monitoring wells (A-series) are located around Chemical Treatment Ponds 1, 2 and 3 (CTPs).

Water Resource – Surface Water (Kevin Folk/Nancy Martinez**)**

Audit Needs

SW-1 Provide a status update on SCDHEC's review of Duke's National Pollutant Discharge Elimination System (NPDES) permit renewal application submitted in March 2013. Discuss any outstanding issues/problems with issuance of the renewed permit and the expected timing of permit renewal.

SW-2 Provide an update on Duke's plans to renew NPDES general permit coverage for permit nos. SCG16006 (expired 3/31/21) and SCR000074 (expires 9/31/21) (ER Table 9.1-1).

SW-3 Clarify (illustrate as necessary) the location of Oconee's B5B intake in relation to the primary intake structure and canal.

SW-4 The ER summarizes notices of violation that have been issued to Oconee for the period 2014-October 2020 (ER Sections 3.6.1.2.5, 4.9.1.4, 9.3) with respect to wastewater and related discharges. As applicable, provide an updated summary of and describe any Notices of Violation; nonconformance notifications; or related infractions received from regulatory agencies associated with permitted effluent

discharges, sanitary sewage systems, groundwater or soil contamination, as well as any involving spills, leaks, and other inadvertent releases (e.g., petroleum products, chemicals, or radionuclides) received since October 2020. Provide copies of relevant correspondence to and from the responsible regulatory agencies.

SW-5 Provide an update to Oconee's surface water withdrawal summary to include data for calendar years 2019 and 2020 (ER Section 3.6.3.1, Table 3.6-4a).

SW-6 Clarity (illustrate as necessary) the location of the discharge point of the liquid radwaste system to the Keowee Hydro Station tailrace as described in ER Section 2.2.6.1 and elsewhere in the ER.

Document Needs

SW-7 As referenced in ER Section 2.2.3.5 and elsewhere, provide an illustration, if available, of the configuration of the skimmer wall and intake structure.

SW-8 March 2013 NPDES permit renewal application submitted to SCDHEC (referenced in ER Section 4.6.2.4).

SW-9 Surface Water Withdrawal Permit (Permit No. 37PN001; listed in ER Table 9.1.1 and discussed in ER Section 2.2.3.5).

SW-10 Significant industrial wastewater permit (Permit No. IW-000003; listed in Table 9.1.1 and discussed in ER Section 2.2.3.5).

Terrestrial Resource (Caroline Hsu**)**

Audit Needs

TER-1 Section 3.7.7.2 in the ER states that Duke Energy monitors avian mortality on the ONS site and reports these to the migratory bird hotline. Provide available ONS avian mortality records from the past 10 years.

TER-2 Section 3.7.2.6 of the ER mentions selective herbicide application for transmission corridor maintenance. Section 3.7.5 states that Duke Energy has an herbicide/pesticide management plan for invasive species. Provide more information on Duke Energy's use of herbicides in ground maintenance and for invasive species. Are there procedures for recognizing and avoiding rare, endangered, or threatened plant species? Provide any guidance documents, if available.

TER-3 Has Duke Energy performed or contracted any ecological surveys for State-protected species or their habitats on the ONS site within the past 10 years? If so, please provide copies of such surveys.

TER-4 Is Duke Energy aware of any ecological surveys for State-protected species or their habitats performed by other organizations (e.g., Federal, State, or local agencies, non-profit organizations, educational institutions, etc.) on or in the

vicinity of the ONS site within the past 10 years? If so, please provide copies of such surveys.

TER-5 Has Duke Energy performed or is Duke Energy aware of any ecological surveys performed for birds protected by the Migratory Bird Treaty Act or the Bald and Golden Eagle Act or their habitats on the ONS site within the past 10 years? If so, provide copies of such surveys.

TER-6 Section 3.1.4 of the ER states that the onsite ISFSI configuration was recently expanded to host additional storage units.

a. Besides the acoustic bat surveys conducted in 2012 and 2015, were any other ecological surveys performed for the ISFSI expansion projects (e.g., surveys for State-listed animal or plants species)? Is so, provide these surveys.
b. Were any State-listed plant or animal species or their habitats impacted by the construction or operation of the ISFSI expansion project?

TER-7 Describe ONS's Migratory Bird Depredation Permit MB48760D-0 for black vultures and turkey vultures. The permit described in the ER expired on 3/31/21. Was the permit renewed or reissued? What does the permit allow? Why was the permit necessary?

Document Needs

TER-8 Section 3.7.7.3 in the ER states that Duke Energy contracted an acoustic bat survey in 2015 to determine if the northern long-eared bat was present onsite before commencing timber removal and construction of ISFSI expansion. Provide the 2015 bat survey report.

TER-9 Section 3.7.7.3 in the ER states that acoustic bat surveys were conducted around Lake Keowee and ONS during April, July, and October of 2012. Provide the 2012 bat survey reports.

TER-10 Migratory Bird Special Purpose Utility Permit (SPUT) MB000257-0.

TER-11 Migratory Bird Depredation Permit MB48760D-0 for black vultures and turkey vultures. This permit expired 3/31/21. Was it reissued or renewed? If so, provide the most recent permit as well.

TER-12 Sections 2.2.5.3 and 4.5.12.1 state that Duke Energy has a corporate avian protection plan. Provide this avian protection plan.

TER-13 Herbicide/pesticide management plan (as referenced in TER-2).

Aquatic Resources (Briana Arlene**)**

Audit Needs

AQ-1 Section 3.7.1.1 of the ER states, “Impacts from the thermal plume have been determined to be minimal and to not negatively impact the aquatic biological community of Lake Keowee.” The citation provided for this statement is a 2016 Federal Energy Regulatory Commission (FERC) environmental assessment (EA) (cited as “FERC 2016a” in the ER). The NRC staff reviewed this EA but were unable to locate the source of this statement concerning thermal impacts. Provide a section and/or page citation to where in the EA FERC makes this determination.

Document Needs

AQ-2 The ER describes several aquatic ecology studies but does not include specific citations to these studies in the reference list. Provide citations for and copies of the following studies and reports:

a. Impingement study conducted from 2006–2007 (described in ER Sections 3.7.1.1, 3.7.7.1, and 4.6.1.4).

b. Entrainment study conducted from 2016–2017 (described in ER Sections 3.7.1.1, 3.7.7.1, and 4.6.1.4).

c. Reports required by 40 CFR 122.21(r)(2)-(13) that were submitted to the State in November 2020 (described in ER Section 3.7.7.1)

d. Thermal studies conducted from 2012–2019 (described in ER Section 3.7.7.1 and 4.6.2.4).

e. March 23, 2013, NPDES permit renewal application (described in ER Section 9.5.3.2).

f. Clean Water Act 316(a) study included in the March 23, 2013, NPDES permit renewal application submission (described in ER Section 9.5.3.2)

AQ-3 Section 3.7.1.1 of the ER states, “Duke Energy determined that the average water velocities in front of the generation intakes were below 1.0 feet per second (fps) with one unit generating and only slightly greater than 1.0 fps with two units generating.” The citation given for this statement is FERC’s 2016 EA (FERC 2016a). The EA references the following document for this information. Please provide a copy of this document, if available.

Rodriguez, M.S. 2013a. Chapter 2, The pelagic forage fish community of Lake Jocassee, South Carolina: Relationships to operations at Jocassee and Bad Creek Pumped Storage Stations Fall 1997 – Spring 2013. Huntersville, NC. September 2013.

Special Status Species & Habitats (Briana Arlene**)**

Audit Needs

SSH-1 Section 3.7.7.3 mentions acoustic bat surveys that Duke Energy conducted around Lake Keowee in 2012 in support of a FERC license for the Keowee-Toxaway Hydroelectric Project. The referenced EA (FERC 2016a) provides little additional details on these surveys. If available, please provide more information on the materials, methods, and results of these surveys or, alternately, as noted below, copies of the surveys themselves.

Document Needs

SSH-2 Sections 3.7.7.3 and 4.6.6.4.2 of the ER describe an acoustic bat survey conducted in 2015, but no specific citation to this survey appears in the reference list. Provide a copy of this survey.

SSH-3 Sections 3.7.8.1.4 through 3.7.8.1.8 reference 2012 biological surveys conducted by Duke Energy. Provide copies of these surveys.

SSH-4 Provide copies of any responses that Duke Energy received to its threatened and endangered species letters contained in Attachment C of the ER.

Historic and Cultural Resources (Bob Hoffman/Nancy Martinez**)**

Audit Needs

HCR- 1 On November 11, 2019, Duke Energy issued letters to the South Carolina Department of Archives and History (SCDAH), and Federally- and State-recognized Tribes regarding ONS's subsequent license renewal application. Provide copies of any correspondence or communications that Duke Energy has had with these parties subsequent to issuance of the November 11, 2019, letters. If meetings or teleconferences were held, please provide a brief summary of these discussions.

HCR-2 Table 3.8.1 of the ER identifies 18 archeological sites and historic properties that are listed on the National Register of Historic Properties (NRHP), eligible or potentially eligible for listing, or are in very close proximity to ONS. Section 3.8 of the ER states that there is a total of 99 archaeological resources and five architectural resources within a six-mile radius of ONS. Provide the full listing of archeologic sites and historic properties supporting this statement in a comparable format to that presented in Table 3.8.1.

HCR-3 Appendix D of the ER includes correspondence from the SCDAH dated December 5, 2019, recommending in part, that Duke Energy:

1) evaluate ONS structures for NRHP eligibility once they reach 50 years of age; and
2) develop a cultural resource management plan for the evaluation of the associated structures for NRHP eligibility, a plan for conducting cultural resources surveys if ground-disturbing activities are proposed, and any avoidance and buffering measures that are in place.

Identify any actions Duke Energy has taken or has planned in response to the SCDAH recommendations, and the relationship of these actions to the Cultural Resources Program discussed in Section 3.8.6 of the ER.

Document Needs

HCR-4 Provide a copy of the Cultural Resources Program and/or Integrated Cultural Resources Management Plan identified in Section 3.8.6 of the ER.

Socioeconomics (Nancy Martinez**)**

Audit Needs

SOC-1 Section 3.9.5 of the ER states that Duke Energy has contested the State of South Carolina's decision that a power company qualifies as a manufacturer under the property tax exemption (SC Revenue Ruling #18-13). Provide a status update pertaining to this contention.

SOC-2 Table 3.9-2 of the ER provides annual property tax paid by Duke Energy for 2015-2019. The annual property tax paid presented in Table 3.9-2 differs from the annual property tax payment presented in Oconee County Comprehensive Annual Financial Reports for 2014-2015 (Oconee County 2019g), 2015-2016 (ER reference Oconee County 2019h), 2016-2017 (ER reference Oconee County 2019i), and 2017-2018 (ER Reference: Oconee County 2019f). For example, Table 3.9-2 identifies that for year 2015, the property tax payment was $30,020,644. However, Oconee's County Comprehensive Annual Financial Report for the fiscal year ending June 30, 2015 (see Note 13 of the financial report), identifies that Duke Energy paid $27 million in property taxes. Provide an explanation for the differences in property tax payments presented in the ER and Oconee's County Comprehensive Annual Financial Report for 2015-2018.

SOC-3 Section 3.9.5 of the ER discuses property taxes Duke Energy paid on behalf of ONS to Oconee County. Besides Oconee County property tax payments, describe and provide other annual support payments (e.g., emergency preparedness payments) provided to Oconee County, local organizations, communities, or jurisdictions on behalf of ONS.

SOC-4 Section 2.5 of the ER states that during refueling outages, the workforce typically consists of 800 to 900 contingent workers onsite. Section 2.5 of the ER also states that the 2020 workforce at the ONS site consists of 1,936 persons, including 698 ONS full-time employees and additional 1,238 persons that include contingent and outage workers. Of the 1,238 workers, provide the number that were non-outage contract workers and those that were outage workers.

SOC-5 Section 3.9.5 of the ER identifies that Duke Energy employees and the Duke Energy Foundation community grants have contributed over $109,000 to Oconee County. Clarify if this contribution was for a specific year or cumulative across multiple years.

Document Needs

None

Human Health, including Microbiological Hazards (Don Palmrose/Beth Alferink**)**

Audit Needs

HH-1 Request Duke staff be available to discuss the clearance evaluation that was performed on all three lines from ONS building to ONS switchyard, namely the in-scope transmission lines (see HH-6).

HH-2 Request Duke staff be available to brief staff on Oconee's electrical safety program along with related OSHA regulations that are implemented at the site (see HH-7).

HH-3 If there are any updates since the submission of the SLR ER concerning waterborne diseases in the vicinity of the plant, request they be made available and discussed with Duke staff [To be coordinated with NRC's ecology audit meetings].

Document Needs

HH-4 This ER Section 3.10.1 reference's webpage does not appear to be available on-line:

Hains, J. 2016. "What Lurks in that Water?" The Sentinel, Official Newsletter of Friends of Lake Keowee Society. September-October 2016. Retrieved from http://folkskeowee.org/application/files/2914/9157/5821/Sept-Oct-Sentinel-2016.pdf (accessed July 19, 2019).

HH-5 ER Section 3.10.3, Radiological Hazards, references NUREG-0713, Vol. 39. March 2019 for occupational exposure data. However, NUREG-0713, Vol. 40. March 2020 should have been readily available when the ER was developed. Request Duke provide any changes to ER Section 3.10.3 based on NUREG-0713, Vol. 40.

HH-6 Provide for staff review the clearance evaluation that was performed on all three lines from ONS building to ONS switchyard (see ER Section 4.9.2.4 on page 4-47)

HH-7 Provide the appropriate pages from the corporate nuclear standards manual, and associated fleet and site-specific procedures, for work with and near energized electrical equipment and lines (see ER Section 4.9.2.4 on page 4-47)

Postulated Accidents (Phyllis Clark**)**

Audit Needs

None

Document Needs

None

Environmental Justice (Nancy Martinez**)**

Audit Needs

EJ-1 Section 3.11.3 of the ER states that no subsistence studies have been conducted, but plant staff living and working in the area are not aware of any cases of subsistence activity in the vicinity of ONS. Discuss the process Duke Energy used for seeking information from plant staff (e.g., interviews) regarding subsistence activity.

Document Needs

None

Waste Management (rad and non-rad) (Phyllis Clark**)**

Audit Needs

WM-1 Section 3.6.4.2.1, History of Radioactive Releases, in the ER states that between 2014 and October 2020, there were no unplanned liquid releases. However, the ER stated that there was one event meeting the criteria for voluntary notification per NEI 07-07 that occurred at ONS in 2014. The ER states that the event was documented in PIP 0-14-5180. Please provide documents detailing the event and corrective actions put in place to prevent a reoccurrence including procedures developed or enhanced as a result of this event.

WM-2 Section 3.6.4.2.1, History of Radioactive Releases, in the ER states that there were no unplanned gaseous offsite releases of radioactive effluents from 2016 to October 2020. However, the ER states that there have been two unplanned gaseous releases in 2014 and 2015. Please provide documents detailing the event and corrective actions put in place to prevent a reoccurrence including procedures developed or enhanced as a result of this event. In addition, please provide release permits 2014-056 and 2015-004.

WM-3 Confirm that there were no inadvertent radioactive liquid or gaseous releases between 2014 and 2018.

WM-4 Confirm that there have not been any reportable unplanned releases of radioactive materials that would trigger a notification requirement since the ER was written.

WM-5 Based on the NRC staff's review of Section 3.6.4.2.2 of the ER there were no reportable inadvertent nonradioactive releases that would be classified as an incidental spill occurring between 2014 and 2018. Please confirm that there have not been any reportable spills that have occurred since the ER was written.

WM-6 ONS is subject to the reporting provisions of 40 CFR 110 as it relates to the discharge of oil in such quantities as may be harmful pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act. Any discharges of oil in such quantities that may be harmful to the public health or welfare or the environment must be reported

to the U.S. Coast Guard (USCG) National Response Center. Based on NRC Staff's review of Section 9.5.3.6 of the ER, between 2014 and October 2020, two spills were reported to the National Response Center. The spills are attributable to Keowee Hydro operations rather than ONS operations. The first spill involved the release of appropriately five gallons of lubricating oil from the Keowee Hydro Station to the Keowee tailrace on July 20, 2014. The second spill involved the release of appropriately four ounces of hydraulic oil while testing a submersible hydraulic pump adjacent to the Keowee Hydro Station spillway on February 8, 2018. Confirm that there have not been any reportable discharges that would trigger this notification requirement since the ER was written.

WM-7 ONS is classified as a small quantity generator of hazardous waste and is subject to the Resource Conservation and Recovery Act (RCRA) and specific SCDHEC regulations contained in SCR. 61-79 and 61-107. As a generator of hazardous waste, ONS also maintains a hazardous waste generator identification number. Section 9.5.13.1 of the ER states the SCDHEC hazardous waste regulations compliance inspection in April 2018 noted deficiencies. Duke Energy implemented corrective actions and a CEI/follow-up review letter was issued by the SCDHEC in June 2018 stating that all deficiencies previously noted had been corrected and that ONS was considered to be in compliance. Provide the inspection report for the April 2018 inspection and related corrective actions documents.

WM-8 ONS is subject to the reporting provisions of 40 CFR 262.34(d)(5)(iv)(C) as it relates to a fire, explosion, or other release of hazardous waste which could threaten human health outside the facility boundary or when the facility has knowledge that a spill has reached surface water. Any such events must be reported to the USCG National Response Center. Based on the NRC staff's review of Section 9.5.13.2, between 2014 and October 2020, there have been no reportable spills of hazardous waste. Confirm that there have not been any reportable spills of hazardous waste since the ER was written.

WM-9 Based on the NRC staff's review of Section 9.5.13.6 of the ER, between 2014 and October 2020, there have been no reportable releases of a regulated substance from an underground storage tank containing a petroleum product or hazardous substance. ONS is subject to the reporting provisions of the SC R. 61-92.280.60 for reporting the release of a regulated substance from an underground storage tank (UST) containing a petroleum product or hazardous substance. Any such events must be reported to the SCDHEC. ONS has eight USTs onsite. One 550-gallon UST stores waste oil and seven USTs ranging from 1,000-gallon to 12,000-gallon capacity are located at the onsite garage. The USTs contain motor oil, waste oil, gasoline, and diesel fuel, and are licensed with the SCDHEC Division of UST Management. Confirm that there have not been any reportable releases at ONS that have triggered this notification requirement since the ER was written.

WM-10 Licensees are required to consider pollution prevention measures as dictated by the Pollution Prevention Act (Public Law 101 5084) and the Resource Conservation and Recovery Act of 1976, as amended (Public Law 94 580). RCRA governs the disposal of solid waste. Section 9.5.14 states that procedural measures are in place to minimize hazardous waste generated. Please provide the specific procedural measures referred to in Section 9.5.14.

Document Needs

WM-11 Release Permit 2014-056 (Referenced in Section 3.6.4.2.1 in ER).

WM-12 Release Permit 2015004 (Referenced in Section 3.6.4.2.1 in ER).

WM-13 Waste minimization procedure(s) referenced in Section 9.5.14 of the ER that supports the Pollution Prevention Act and waste minimization.

WM-14 Piping and instrumentation diagrams/drawings and photos that are highlighted/marked showing the flow paths for releases and rad and non-rad waste paths.

WM-15 General system drawings and photos, specifically waste management systems including storage facilities.

Spent Nuclear Fuel (Phyllis Clark**)**

Audit Needs

SNF-1 Provide an estimate of the number of years of operation ONS has before the ISFSI reaches its full capacity and a new ISFSI pad would need to be constructed if the current spent fuel management conditions continue.

Document Needs

None

Fuel Cycle (Phyllis Clark)

Audit Needs

None

Document Needs

None

Terminating Power Plant Operations and Decommissioning (Kevin Folk/Beth Alferink**)**

Audit Needs

None

Document Needs

None

Cumulative Impacts (Bob Hoffman**)**

Audit Needs

CI-1 Provide name, description, location, and status of any additional past, present, or reasonably foreseeable projects or actions that have been identified since the ER was prepared.

CI-2 ER Section 3.1.4 indicates that several projects are planned or under construction on or near ONS. Please indicate the current status of the following projects:

a) Implementation of ONS thermal margin recapture uprates of 15 MWe per unit;
b) Upgrades to add 335 MWe to the Bad Creek pumped storage hydro station;
c) Installation of a water intake on Lake Keowee for the City Walhalla;
d) Installation of new shoreline rock barrier and fencing at the Lake Keowee Fall Creek Landing Site.

Document Needs

None

Severe Accident Mitigation Alternatives (Jerry Dozier**)**

Audit Needs

SAMA-1 Section 4.15.2 (page 4-74) of the ER provides a general discussion of the core damage frequency (CDF) reductions at Oconee. The staff would like to better understand the probabilistic risk assessment revisions and changes to the risk models since the 40-to-60-year license renewal application (focusing on changes made at the plant that have significantly reduced or increased risk) and some of the quantitative results supporting the general discussion. The staff is particularly interested in understanding the statement, “Improvements in safety at ONS since the previous SAMA analysis have been offset by refinements in PRA methodology and quality (e.g., treatment of dependency between human actions)”

SAMA-2 The staff would like to better understand the conservatisms in the Oconee Seismic and Fire PRA models.

SAMA-3 NEI 17-04 Section 3.1 “Data Collection” specifies:

> “Use the latest risk models that are available for internal events (including internal flooding) and for each of the external events contributors identified for evaluation in NEI 05-01 [“Severe Accident Mitigation Alternatives (SAMA) Analysis Guidance Document,” Revision A, November 2005].”

NEI 05-01 specifies:
"The IPEEE [Individual Plant Examination of External Events] identified the highest risk externally initiated accident sequences and potential means of reducing the risk posed by those sequences. Typically, the following external events were evaluated:

1. Internal fires
2. Seismic events
3. Other external events such as high wind events, external flooding, transportation and nearby facility accidents"

Explain how "Other external events such as high wind events, external flooding, transportation and nearby facility accidents" were considered in the Oconee SAMA New and Significant Evaluation. Discuss recommendations to reduce risk due to each of these external events.

SAMA-4 Be prepared to discuss any Oconee or other facility external event SAMAs evaluated.

SAMA-5 What are the hazards included in the CDF used in ER Table 4.15-2.

SAMA-6 Section 4.15.2 of the Oconee ER indicates that at the time of the ONS SLR submittal, no power uprate has been implemented at ONS. Other parts of the ER indicate that a measurement uncertainty recapture power uprate (MUR) is anticipated. What is the potential impact on the SAMA analysis?

Reference: Duke. 2020a. Duke Energy Carolinas, LLC, Oconee Nuclear Station, Units 1, 2 and 3, Renewed Facility Operating Licenses Numbers DPR-38, DPR-47, and DPR-55 Docket Numbers 50-269, 50-270, and 50-287, License Amendment Request for Measurement Uncertainty Recapture Power Uprate. February 19, 2020. ADAMS Ascension No. ML20050D379.

SAMA-7 Section 4.15.2 provides a summary of the information assessed for new and significant information. Did Duke evaluate all of the items provided in the 2013 GEIS SAMA Summary Table E-19 (including low power, uncertainties, and the BEIR Report)?

SAMA-8 Be prepared to briefly discuss the population increase as it relates to being within the values evaluated in the GEIS.

SAMA-9 As provided in the updated 2013 GEIS, peak fuel burnup was considered new information. What is the anticipated peak fuel burnup at Oconee?

SAMA-10 Tables E4.15-1 and E4.15-2 of the ER provide the groupings and reduction in maximum benefit of SAMAs. Of particular interest is the reductions approaching or greater than 50 percent. Please be prepared to discuss these results.

SAMA-11 Section 4.15.1, Category 1 Issue—Design-Basis Accidents of the ER concludes "No new and significant information was identified for this issue." Was there any process or screening for the new information applied to warrant this conclusion?

SAMA-12 For Low Power and Reactor Shutdown Event Information (Section E.3.6 of the 2013 GEIS), please confirm this statement: Surry was evaluated in NUREG-1150 and

NUREG/CR-6144, and Oconee is a similarly designed plant (i.e., they are Westinghouse PWRs with large dry containments); thus, there are no plant configurations in low power and shutdown conditions likely to distinguish Oconee from the evaluated plants such that the assumptions in the 2013 and 1996 GEISs would not apply.

Document Needs

SAMA-13 Provide publicly available references regarding ONS implementation of spent fuel pool orders (EA-12-049) and (EA-12-051) in 2016 and 2017 respectively.

Oconee Nuclear Station Environmental Audit Schedule

Tuesday, October 12, 2021

START	END	ACTIVITY
9:00 am	9:30 am	Entrance meeting between NRC and Duke Energy Carolinas
9:30 am	4:00 pm	Virtual tours/virtual meetings between NRC and Duke Energy Carolinas subject matter experts (SMEs)

Wednesday, October 13, 2021

START	END	ACTIVITY
9:00 am	4:00 pm	Virtual tours/virtual meetings between NRC and Duke Energy Carolinas subject matter experts (SMEs)

Thursday, October 14, 2021

START	END	ACTIVITY
9:00 am	4:00 pm	Virtual tours/virtual meetings between NRC and Duke Energy Carolinas subject matter experts (SMEs)

Friday, October 15, 2021

START	END	ACTIVITY
9:00 am	12:00 pm	Virtual tours/virtual meetings between NRC and Duke Energy Carolinas subject matter experts (SMEs)
2:00 pm	2:30 pm	Exit meeting between NRC and Duke Energy Carolinas