

**Site-Specific Environmental Impact
Statement
Scoping Process**

Second Summary Report

**Oconee Nuclear Station
Units 1, 2, and 3
Seneca, SC**

February 2024



**U.S. Nuclear Regulatory Commission
Rockville, Maryland**

Introduction

By letter dated June 7, 2021, (Agencywide Documents Access and Management System (ADAMS) Accession Package No. [ML21158A193](#)), Duke Energy Carolinas, LLC (Duke Energy) submitted an application for subsequent license renewal of Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55 for Oconee Nuclear Station, Units 1, 2, and 3 (Oconee Station) to the U.S. Nuclear Regulatory Commission (NRC) 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* (10 CFR), “Requirements for renewal of operating licenses for nuclear power plants.”

Subsequently, the Commission directed the NRC staff to prepare an updated Generic Environmental Impact Statement (GEIS) applicable to subsequent license renewal but afforded applicants the option of supplementing their environmental reports and proceeding in a site-specific manner, as discussed in Commission Orders CLI-22-02 and CLI-22-03. Accordingly, Duke Energy completed and submitted a site-specific subsequent license renewal environmental report supplement for Oconee Station, “Subsequent License Renewal—Appendix E Environmental Report Supplement 2” (ML22311A036), on November 7, 2022.

Oconee Station is in Seneca, SC, about 30 miles west of Greenville, SC. In its application, Duke Energy requests subsequent license renewal for a period of 20 years beyond the dates when the current renewed facility operating licenses expire. Specifically, the new expiration dates, if approved, would be February 6, 2053, for Oconee Station, Unit 1; October 6, 2053, for Oconee Station, Unit 2; and July 19, 2054, for Oconee Station, Unit 3.

The purpose of this report¹ is to provide a concise summary of the determination of the scope of the NRC staff’s environmental review of this application, incorporating stakeholder input. This report will briefly summarize the issues identified by the scoping process associated with the NRC staff’s review of Duke Energy’s subsequent license renewal application.

This report is structured in five sections:

- A. The Second Oconee Station Public Scoping Period
- B. Scoping Process and Objective
- C. Summary of Comments Provided
- D. Significant Issues Identified
- E. Determinations and Conclusions

A. The Second Oconee Station Public Scoping Period

Background

The Duke Energy application and all other public documents relevant to the Oconee Station subsequent license renewal are available in the NRC’s Web-based ADAMS, which is accessible at <http://www.nrc.gov/reading-rm/adams.html>. Persons who encounter problems in accessing

¹ The NRC’s requirements for conducting the scoping process and for preparing a scoping summary report are found at 10 CFR 51.29, “Scoping-environmental impact statement and supplement to environmental impact statement.”

documents in ADAMS should contact the NRC's Public Document Room (PDR) reference staff by telephone at 1-800-397-4209 or 301-415-4737, or by e-mail at pdr.resource@nrc.gov.

For additional information, the NRC staff has made available a website with specific information about the Oconee Station subsequent license renewal application at: <https://www.nrc.gov/reactors/operating/licensing/renewal/applications/oconee-subsequent.html>.

This website includes application information, the licensing review schedule, opportunities for public involvement, project manager information, and other relevant information. In addition, important documents are available at the Federal rulemaking Web site, <https://www.regulations.gov/>, under Docket ID NRC-2021-0146.

As part of its application, Duke Energy submitted an environmental report (ER) to the NRC, available at ADAMS Package Accession No. [ML21158A193](#). Duke Energy prepared the ER in accordance with 10 CFR Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions," which contains NRC's requirements for implementing the National Environmental Policy Act of 1969, as amended (NEPA).² On November 7, 2022, Duke Energy supplemented its ER by submitting the "Subsequent License Renewal—Appendix E Environmental Report Supplement 2".

The NRC staff intends to prepare a draft Oconee Station site-specific EIS for public comment. Due to the expansion of the scope of the environmental review, the NRC staff conducted an additional limited scoping process to gather information necessary to prepare a site-specific EIS to evaluate the environmental impacts of subsequent license renewal for Oconee Station. The subsequent renewed operating licenses would authorize the applicant to operate Oconee Station for an additional 20 years beyond the period specified in each of the current licenses.

B. Scoping Process and Objectives

The NRC staff issued a notice of intent (NOI) to conduct a supplemental scoping process and prepare a draft EIS in the *Federal Register* (87 FR 77643) on December 19, 2022. The NRC staff requested input from members of the public, by providing scoping comments by January 18, 2023. The NOI informed stakeholders about the NRC staff's intent to prepare a plant-specific supplement to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants—Final Report (NUREG-1437, Revision 1) (the GEIS) and provided the public with an opportunity to participate in the environmental scoping process. The NRC sought public comment on the appropriate scope of the environmental review. A second *Federal Register* notice extending the scoping period to February 2, 2023 (88 FR 2645), was published on January 17, 2023.

The second scoping process provided an opportunity for members of the public to propose environmental issues to be addressed in the site-specific EIS and to highlight public concerns and issues. In accordance with 10 CFR 51.29(b), this scoping summary report provides a concise summary of the determinations and conclusions reached as a result of the scoping process. The NRC's objectives of the scoping process were to:

- Define the proposed action, which is to be the subject of the site-specific EIS.

² The NRC's requirements for an environmental report supporting a license renewal application are found at 10 CFR 51.53(c)(3).

- Gather data on the scope of the site-specific EIS and identify the significant issues to be analyzed in depth.
- Identify and eliminate from detailed study those issues that are peripheral or are not significant or were covered by prior environmental review.
- Identify any environmental assessments and other environmental impact statements (EIS) that are being or will be prepared that are related to, but are not part of, the scope of the supplement to the site-specific EIS.
- Identify other environmental review and consultation requirements related to the proposed action.
- Indicate the relationship between the timing of the preparation of the environmental analyses and the Commission's tentative planning and decision-making schedule.
- Identify any cooperating agencies and, as appropriate, allocate assignments for preparation and schedules for completing the site-specific EIS to the NRC and any cooperating agencies.
- Describe how the site-specific EIS will be prepared, including any contractor assistance to be used.

The NRC staff's determinations and conclusions regarding the above objectives are provided in Section E below.

C. Summary of Comments Provided

During the second scoping period (86 FR 43684), the NRC received comments that provided input for the site-specific EIS. The NRC received comment submissions from three individuals. The staff reviewed all written material received to identify individual comments. Each comment was marked with a correspondence ID, a unique identifier consisting of the comment source and a comment number (specified in Table A-1). For example, Comment 3-1 would refer to the first comment from the third comment source. This unique identifier allows each comment to be traced back to the source where the comment was identified. Comments were consolidated and categorized according to a resource area or topic. Appendix A, Table A-1 provides a list of commenters who provided comment submissions (i.e., non-form letter submissions) identified by name, affiliation (if stated), the correspondence identification (ID) number, the comment source, and the ADAMS Accession Number of the source.

A summary of the comments is provided in Appendix B. Comments were grouped based on being in scope or out of scope, and comments with similar themes were further sub-grouped to capture the resources concerned. Each comment submittal was uniquely identified and when a submittal addressed multiple issues, the submittal was further divided into separate comments with tracking identifiers. Table B-1 identifies the distribution of comments received by resource area or topic.

D. Significant Issues Identified

The NRC staff delineated and grouped comments according to resource area/topic (see Appendix B).

The NRC staff reviewed all comments and determined if the comment/issues received fall into three different categories: general in nature, outside scope (beyond the scope of the subsequent license renewal environmental review), or relevant (the comment/issue is applicable to the environmental review). The NRC staff considered all relevant in-scope comments as part of this review and has determined that the significant issues identified during the scoping period include the following areas:

Greenhouse Gas Emissions and Climate Change

- A commenter requested that the EIS include the recent and up-to-date research on climate change (Comment 2-9).
- The Environmental Protection Agency (EPA) requests that the EIS address the impacts of increased storm activity and intensity due to climate change, particularly the impact on environmental justice communities (Comment 3-4).

E. Determinations and Conclusions

(1) Define the proposed action

The NRC's proposed action in this instance is to determine whether to renew the Oconee Station operating licenses for an additional 20 years.

(2) Identify the scope of the statement and significant issues to be analyzed in the site-specific EIS

The environmental consequences of license renewal include: (1) impacts associated with continued operations and refurbishment activities similar to those that have occurred during the current license term; (2) impacts of various alternatives to the proposed action; (3) impacts from the termination of nuclear power plant operations and decommissioning after the license renewal term (with emphasis on the incremental effect caused by an additional 20 years of operation); (4) impacts associated with the uranium fuel cycle; (5) impacts of postulated accidents (design basis accidents and severe accidents); (6) cumulative impacts of the proposed action; and (7) resource commitments associated with the proposed action, including unavoidable adverse impacts, the relationship between short-term use and long-term productivity, and irreversible and irretrievable commitment of resources.

The significant issues identified in this scoping report will be considered in the development of the draft site-specific EIS in accordance with 10 CFR 51.29, "Scoping-environmental impact statement and supplement environmental impact statement", and 10 CFR 51.70, "Draft environmental impact statement-general". NRC also follows the guidance document of Standard Review Plans for Environmental Reviews for Nuclear Power Environmental Standard Review Plan, NUREG-1555 to ensure compliance with all applicable regulations and NRC policies and procedures.

The NRC staff will consider the impacts of continued operations on climate change and the impacts of climate change on environmental resources (e.g., water resources, air quality) that

may be directly impacted by continued operation and refurbishment during the license renewal term in Chapter 3 of the EIS. The EIS will consider greenhouse gas emissions impacts on climate change from continued operations associated with license renewal. Additionally, the EIS will consider the most recent findings in climate change reports (e.g., the U.S. Global Change Research Program, the Intergovernmental Panel on Climate Change) and climate change effects on environment resource conditions.

(3) Identify and eliminate from detailed study issues which are peripheral or are not significant or which have been covered by prior environmental review

Plant-specific design basis are not re-evaluated as part of license renewal. Site-specific environmental conditions are considered when siting nuclear power plants. This includes the consideration of meteorological and hydrologic siting criteria, including PMP criteria, as set forth in 10 CFR Part 100, "Reactor Site Criteria." NRC regulations require that plant structures, systems, and components important to safety be designed to withstand the effects of natural phenomena, such as flooding, without loss of capability to perform safety functions. Further, nuclear power plants are required to operate within technical specifications in accordance with the NRC operating license, including coping with natural phenomena hazards. The NRC conducts safety reviews prior to allowing licensees to make operational changes due to changing environmental conditions.

The EPA requested that the NRC should use the SLOSH model to predict storm surge and sea level rise. However, the basin coverage of the SLOSH model does not encompass the Oconee site or its vicinity. Furthermore, given the location of Oconee Station, storm surge is not expected to affect the site or vicinity.

The NRC will not consider or evaluate the climate change impacts on Oconee Station operations or impacts to the probable maximum precipitation (PMP) and probable maximum flood (PMF) in the EIS as these are outside the scope of the subsequent license renewal environmental review. The environmental review documents the potential effects of continued nuclear power plant operation on the environment.

In addition, the NRC staff received a number of comments that were either general in nature or otherwise beyond the scope of the subsequent license renewal environmental review. These included comments from organizations and individuals generally in support of or against the Oconee Station subsequent license renewal. The NRC staff will describe in Chapter 3 of the site-specific EIS the following topics mentioned in these comments: aquatic resources, environmental justice, groundwater resources, surface water resources, and radioactive waste. Finally, the NRC staff will not consider or evaluate any issues in the site-specific EIS which do not pertain to the staff's environmental evaluation or are beyond the scope of the subsequent license renewal review.

NRC staff will not consider comments designated as out of scope in Appendix B as part of this action.

(4) Identify related environmental assessments and other environmental impact statements

The NRC staff did not identify any environmental assessments under preparation or soon to be prepared which relate to, but are not within the scope of, the site-specific EIS. Previously completed EISs will be used in the preparation of the Oconee Station subsequent license

renewal site-specific EIS, as appropriate, including the GEIS and the supplemental EIS for the initial license renewal of Oconee Station (ADAMS Accession No. [ML003670518](#)).

(5) Other environmental review and consultation requirements

Consistent with 36 CFR 800.8(c), the staff is consulting with five Federally recognized American Indian Tribes, the South Carolina State Historic Preservation Office, and the Advisory Council on Historic Preservation to fulfill its Section 106 obligations under the National Historic Preservation Act. In accordance with the NRC Tribal Policy Statement, the staff has also invited one State recognized Tribe to comment on this undertaking.

Concurrent with its NEPA review, the NRC staff is consulting with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act of 1973, as amended, to evaluate the potential impacts of the operation of Oconee Station for an additional 20 years on endangered and threatened species and their critical habitat.

(6) Indicate the relationship between the timing of the preparation of environmental analyses and the Commission's tentative planning and decision-making schedule

The NRC staff plans to issue a draft site-specific EIS for public comment in January 2024. The 45-day comment period will offer an opportunity for participants, such as the applicant; interested Federal, State, and local government agencies; Tribal governments; local organizations; and members of the public to provide further input to the agency's environmental review process. The draft site-specific EIS comments will be considered in the preparation of the final site-specific EIS, which NRC staff anticipates issuing in August 2024. The NRC staff documented its safety review in a safety evaluation report (SER) in December 2022 ([ML22349A145](#)). The findings in the site-specific EIS and the SER will be considerations in the NRC's decision to issue or deny the subsequent license renewal.

(7) Identify Cooperating Agencies

There were no cooperating agencies for this report.

(8) Describe the means by which the environmental impact statement will be prepared, including any contractor assistance to be used.

Upon completion of the scoping process, the NRC staff will compile its findings in a draft site-specific EIS. The draft site-specific EIS will be made available for public comment. Once public comment period is complete, the NRC staff will amend the draft site-specific EIS, as appropriate, and a final site-specific EIS will be prepared and published.

The NRC will then prepare and provide a Record of Decision in accordance with 10 CFR 51.102 and 10 CFR 51.103.

Appendix A

List of Commenters

Table A-1. Individuals Providing Comments During the Scoping Comment Period

Commenter	Affiliation (if stated)	Correspondence ID	Comment Source	ADAMS Accession Number
Curran, Diane	Harmon, Curran, Spielberg & Eisenberg, LLP	1	Email	ML23026A046
Curran, Diane	Harmon, Curran, Spielberg & Eisenberg, LLP	2	Email	ML23034A101
Long, Larry	U.S. Environmental Protection Agency (EPA)	3	Email	ML23031A054

Appendix B

Analysis of Comments Received During the Scoping Period

Table B-1. Distribution of Comments by Resource Area or Topic

Resource Area/Topic	Number of Comments Received
Accidents-Severe Accident Mitigation Alternatives (SAMA)	5
Ecology-Aquatic Resources	1
Environmental Justice	1
Greenhouse Gas Emissions and Climate Change	3
Hydrology-Groundwater Resources	1
Hydrology-Surface Water Resources	1
Process - NEPA	4
Process-Licensing Action	3
Waste Management-Radioactive Waste	1
Outside Scope - Aging Management	1
Outside Scope - Safety	5

B.1 Comments on the Resource Areas

The comments included below are reproduced as provided by the commenter.

B.1.1 Comments Concerning Accidents-SAMAs

Comment Summary: Several comments requested that an independent accident analysis be completed for Oconee Station because the NRC and applicant may not rely on the 2013 License Renewal GEIS without an independent analysis. One comment requested an independent analysis be completed for the core damage frequency. One comment requested that external risks be reviewed and updated. One comment requested that an evaluation of low power and shutdown configurations at Oconee Station be reviewed to determine if environmental impacts meet the NEPA requirements. One comment requested a new analysis of severe accident mitigation alternatives at Oconee Station.

Comments: (2-3) (2-4) (2-5) (2-6) (2-11)

Comment: The scope of the EIS should include an independent evaluation of Duke's claim in Environmental Report Supp. 2 that: The "impacts" [sic] of severe accidents is addressed in the 2013 GEIS, where the NRC confirmed the findings of the 1996 GEIS are still valid and concluded that "the probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are SMALL for all plants."¹⁰

¹⁰ *Id.*, § 4.15.1.1.2 at page 100 of 109.

As discussed above, the Commission's decision in CLI-22-2 precludes Duke or the NRC from relying on the 2013 GEIS without an independent analysis.¹¹ The NRC should conduct an independent evaluation of whether this finding from the 2013 GEIS is supportable.

¹¹ *Id.*, slip op. at 2 ("We hold that the 2013 GEIS does not cover the subsequent license renewal

period ...")

In this context, the NRC should address the inconsistency between Duke's "SMALL" risk finding and the high accident risks risk documented in the License Renewal GEIS, Supplement 2: internal events at 6.3E-5 per year (Table5-3), fire risk as 6.1E-5 per year Draft Revised License Renewal GEIS (Table E.3-10) and the seismic risk as 5.7E-5 per year Draft Revised License Renewal GEIS (Table E.3-11).¹² These risks -- coupled with the unquantified but substantial risks from low power shutdown (LPSD) and other hazards including the ignored flooding risk -- total well above 1E-4 per year. Reg. Guide 1.174 Rev. 3 "describes an approach that is acceptable to the [NRC Staff] for developing risk-informed applications for a licensing basis change that considers engineering issues and applies risk insights."¹³ RG-1.174's Figure 5 "Acceptance guidelines for CDF and LERF" describes a Region I where "no changes [are] allowed."¹⁴ The Region I lower limit on delta CDF is at approximately 1E-5 per year. To approve subsequent license renewal for the Oconee reactors, the NRC must compare the environmental risks of three permanently shutdown reactors with the risks of continuing to operate the three reactors with a total operating plant risk of greater than 1E-4. Thus, this change in risk exceeds the NRC RG-1.174 guidance. The NRC should address the environmental significance of this issue, including whether the accident risks posed by continued operation are so high as to warrant denial of the subsequent license renewal application.

¹² *Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants* (Final Report), Supplement 2 Regarding Oconee Nuclear Station, NUREG-1437, Supp.2 (Dec.1999) (ML003670637).

¹³ Regulatory Guide 1.174 Revision 3, "An Approach for Using PRA in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" at 1 (Jan. 2018) (ML17317A256) ("RG-1.174 Rev. 3).

¹⁴ *Id.* at 27. (2-3 [Curran, Diane])

Comment: In the Environmental Report Supp. 2, Duke states that the "core damage frequency (CDF) is comparable and slightly lower than the initial license renewal analysis."¹⁵ The NRC should independently verify this assertion. If the NRC relies on it, all supporting analyses should be referenced and made accessible to the public.

¹⁵ *Id.*, § 4.15.1.2.2 at page 102 of 109. (2-4 [Curran, Diane])

Comment: In the Environmental Report Supp. 2, Duke states that: "Improvements in safety at ONS since the initial license renewal analysis have provided significant risk reduction but have been offset by refinements in PRA methodology and conservative analysis assumptions."¹⁶ The statement effectively acknowledges that the understanding of the external event risk has increase since the initial license renewal. This increase in external event risk is consistent with information published in the draft revised License Renewal Generic Environmental Impact Statement (NUREG-1437, Dec. 2022) (Draft Rev. 2 License Renewal GEIS). Table E.3-10, for instance, shows that the understanding of fire risk has increased from 4.5E-6 to 6.1E-5 per year, a more than doubling. In addition, Table E.311 indicates that the understanding of seismic risk has increased from 3.9E-5 to 5.7E-5 per year, a 50% increase. The footnotes to these tables show that these new risk evaluation values derive from post-1999 amendments to the Oconee operating licenses. Therefore, it appears reasonable to assume these values include all the plant improvements at the time of the license amendment requests. NRC should incorporate these substantial increases in risk into its assessment.

¹⁶ *Id.*, § 4.15.1.2.2 at page 103 of 109.

Further, the NRC should verify and document all aspects in which it deems accident risks to have increased or decreased. Broad assertions by Duke that combine risk increase and decrease or claim that one offsets the other must be evaluated with a quantitative analysis. The NRC should also document changes in risk from physical changes to the plant, equipment, process, etc. and changes simply from changes in PRA methods (which have no impact on the risks to the public). (2-5 [Curran, Diane])

Comment: In the Environmental Report Supp. 2, Duke asserts that SECY 97-168 documents the industry improvements in low power and shutdown (LPSD) implement throughout the industry.¹⁷ But SECY-97-168 was written in 1997 and discusses improvements that predate it. In fact, most of the improvements were incorporated prior to the 1996 License Renewal GEIS. Thus, the Staff should not give credit to these measures for reducing risks previously evaluated in the 1996 License Renewal GEIS and the revised 2013 License Renewal GEIS.

¹⁷ *Id.*, § 4.15.1.1.2 at page 104 of 109 (citing SECY-97-168, Issuance for Public Comment of Proposed Rulemaking for Shutdown and Fuel Storage Pool Operation (December 11, 1997) (ML003752569)).

Duke also states that: "[T]he offsite consequences of severe accidents, considering low power and shutdown events, would not exceed the impacts predicted in the 1996 GEIS."¹⁸ But the LPSD impacts were not explicitly addressed in the 1996 GEIS. Moreover, Duke ignores the fact that for much of a refueling outage the Oconee containment is open directly to the environment when the containment equipment hatch is opened, supplying an unmitigated release path from core damage events to the environment. The NRC should evaluate these LPSD configurations to determine if the environmental impacts meet the NEPA requirements. (2-6 [Curran, Diane])

Comment: The EIS should address new and significant information, which has become available since publication of the 2013 revised License Renewal GEIS, showing that the past environmental analyses on which Duke relies are now demonstrably wrong, and that the risk of a core melt accident during a second license renewal term is significant and must be addressed.

In particular, NRC's most recent risk analysis, shows that the likelihood of a core melt accident caused by a random failure of the Jocassee Dam, which lies twelve miles above Oconee, is 2E-4 per year which is 30 times higher than presented in Duke's Environmental Report.²⁰ This new and significant information demonstrates that Duke erred by concluding that operation of Oconee for an additional license term will have no significant environmental impacts. It also demonstrates that Duke's analysis of Severe Accident Mitigation Alternatives (SAMAs) is incorrect and should be done again using reasonable and up-to-date assumptions.²¹

²⁰ See "Technical Basis for Allowing ONS to Remain in Operation through November 2010," August 12, 2009 (ML090570117).

²¹ Hearing Request and Petition to Intervene by Beyond Nuclear and Sierra Club and Petition for Waiver of 10 C.F.R. §§ 51.53(c)(3)(i), 51.71(d), and 51.95(c)(1) to Allow Consideration of Category 1 NEPA Issues (Sept. 27, 2021). See also enclosed expert report by Jeffrey T. Mitman, *NRC Relicensing Crisis at Oconee Nuclear Station: Stop Duke From Sending Safety Over the Jocassee Dam* (Sept. 2021) ("Mitman Report"). (2-11 [Curran, Diane])

Response: SAMA is discussed in Appendix F of the draft site-specific EIS.

B.1.2 Comments Concerning Ecology-Aquatic Resources

Comment Summary: The EPA stated that the Clean Water Act Section 404(b)(1) information be included in the EIS for Oconee Station.

Comment: (3-7)

Comment: To support wetland and stream mitigation decisions and to help South Carolina Department of Health and Environmental Control (SCDHEC) evaluate potential stream impact requirements for the Clean Water Act (CWA) Section 401 Water Quality Certification, information regarding CWA Section 404(b)(1) should be included in the EIS. Providing adequate wetland and stream information within the NEPA process can help to streamline the final environmental review and permitting processes for these resources. (3-7 [Long, Larry])

Response: Ecology-Aquatic Resources is discussed in Section 3.7 and 3.8 of the draft site-specific EIS.

B.1.3 Comments Concerning Environmental Justice

Comment Summary: The EPA stated that the EIS for Oconee Station should be consistent with Executive Order 12898 and include an analysis of the communities with environmental justice concerns, which are located within the vicinity of the proposed project area or are potentially affected by the proposed project. The EPA recommended direct involvement with these communities through the decision-making process.

Comment: (3-11)

Comment: Executive Order (E.O.) 12898 directs federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority, low-income, tribal, and indigenous populations. The EIS should include an analysis that is consistent with E.O. 12898. The analysis should indicate whether people of color, low income, tribal, and indigenous populations reside within the vicinity of the proposed project area. It would also be helpful to include a current map depicting the population demographics near the facility.

Assessing data using EJScreen (<https://www.epa.gov/ejscreen>), the EPA's nationally consistent environmental justice (EJ) screening and mapping tool, is a useful first step in understanding or highlighting geographic locations that may need further review or outreach. The tool provides information on environmental and socioeconomic indicators as well as pollution sources, health disparities, critical service gaps, and climate change data. The tool can help identify potential community vulnerabilities by calculating EJ Indexes and displaying other environmental and socioeconomic information in color-coded maps and standard data reports.

If communities with EJ concerns are located within the vicinity of the proposed project area or potentially affected by the proposed project, the EPA recommends the NRC meaningfully involve with direct communications with these communities throughout the decision-making process to help identify potential benefits and burdens associated with relicensing and permitting decisions. Adaptive and innovative approaches to both public outreach and community involvement regarding project issues should take place during the project planning. (3-11 [Long, Larry])

Response: Environmental Justice is discussed in Section 3.12 of the draft site-specific EIS.

B.1.4 Comments Concerning Greenhouse Gas Emissions and Climate Change

Comment Summary: One comment requested that the EIS include the most recent information on climate change. One comment requested that the EIS consider the impacts of increased storm activity and intensity due to climate change, particularly the impact on environmental justice communities. The EPA requested sea level rise to be incorporated into the EIS for Oconee Station using the Sea, Lakes, Overland and Surge from Hurricane (SLOSH) model and a description and rationale if any other models are used.

Comments: (2-9) (3-4) (3-10)

Comment: The EIS for the Oconee reactors must include the most up-to-date research on the rapidly changing climate. (2-9 [Curran, Diane])

Comment: The EIS should also address potential and real impacts associated with direct, indirect, and cumulative impacts associated with future severe storm events including, but not limited to, tornados and hurricanes, along with increased storm intensity due to climate change, and analysis of these severe events on communities with Environmental Justice concerns. (3-4 [Long, Larry])

Comment: The EIS should explain the differences that result from using different storm prediction models as well as the validations of these models. Sea level rise should be incorporated into a discussion with a Sea, Lakes, Overland and Surge from Hurricane (SLOSH) model, which is also used by the National Weather Service and federal agencies when determining storm surge predictions. The EPA recommends that the EIS provide a detailed description of any other model used for determining storm surge and flooding, and the rationale for using another model over the SLOSH model. (3-10 [Long, Larry])

Response: Greenhouse Gas Emissions and Climate Change is discussed in Section 3.14.3 of the draft site-specific EIS.

B.1.5 Comments Concerning Hydrology-Groundwater Resources

Comment Summary: The EPA identified Clean Water Act issues for surface and groundwater that should be addressed in the EIS for Oconee Station.

Comment: (3-3)

Comment: Most notably, Clean Water Act (CWA) issues for surface and groundwater discharges including the potential for releases of radionuclides and hyper-salinity in surface water and groundwater along with groundwater monitoring for radionuclides, underground injection of effluent, spent nuclear fuel storage, contaminant transport and deposition should be address in the EIS. (3-3 [Long, Larry])

Response: Hydrology-Groundwater Resources is discussed in Section 3.5 of the draft site-specific EIS.

B.1.6 Comments Concerning Hydrology-Surface Water Resources

Comment Summary: The EPA requested that the EIS for Oconee Station include a water balance analysis.

Comment: (3-5)

Comment: The EIS should include a water balance analysis and provide additional information from past studies, if any. (3-5 [Long, Larry])

Response: Hydrology-Surface Water Resources is discussed in Section 3.5 of the draft site-specific EIS.

B.1.7 Comments Concerning Process - NEPA

Comment Summary: One comment requested a 30-day extension due to the winter holidays and staff needing time to coordinate a response. One comment stated that the NRC is required to ensure that analyses used in its environmental impact statement are publicly available for Oconee Station. The EPA stated that the EIS for Oconee Station should focus on indirect and cumulative environmental impacts associated with operations of Oconee Station following applicable regulations and guidance. The EPA identified several potential, cumulative, and indirect impacts of concern at nuclear facilities generally.

Comments: (1-1) (2-2) (3-1) (3-2)

Comment: Beyond Nuclear, Inc. ("Beyond Nuclear") and the Sierra Club, Inc. ("Sierra Club") (collectively "Organizations") respectfully request that the Nuclear Regulatory Commission ("NRC") extend the deadline for public comment on the *Notice of Intent to Conduct Scoping Process and Prepare Environmental Impact Statement; Duke Energy Carolinas, LLC; Oconee Nuclear Station, Units 1, 2, and 3*, 87 Fed. Reg. 77,643 (Dec. 19, 2022).

For the following reasons, the Organizations seek a 30-day extension of the comment period or until February 17, 2023:

1. The Organizations have a legally recognized interest in the subsequent license renewal proceeding for the Oconee reactors. The Organizations, who have members residing near the Oconee reactors, raised environmental contentions in the 2021 subsequent license renewal proceeding and the Atomic Safety and Licensing Board ("ASLB") found they had standing. *Duke Energy Carolinas, LLC* (Oconee Nuclear Station, Units 1, 2, and 3), LBP-22-01, __ N.R.C. __ (Feb. 11, 2022) ("LBP-22-01").
2. While the ASLB denied admission of the Organizations' contentions, the Commission partially granted their appeal in *Duke Energy Carolinas, LLC* (Oconee Nuclear Station, Units 1, 2, and 3), et al., CLI-22-03, __ N.R.C. __ (Feb. 24, 2022) ("CLI-22-03"). Duke's revision of its Environmental Report and this proceeding for preparation of an environmental impact statement ("EIS") resulted directly from CLI-22-03. Thus, the Organizations have a demonstrated strong interest in fulfilling the legal rights they won, by having an adequate opportunity to participate in the scoping process for the EIS.
3. Permitting and encouraging public participation in environmental decision-making is a key purpose of the National Environmental Policy Act. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). The Organizations have a strong interest in both participating in the commenting process themselves, and in educating other organizations, government officials,

and the general public about the EIS and the environmental issues raised by re-licensing the Oconee reactors a second time. Therefore, they should be permitted a reasonable opportunity to make scoping comments and to encourage scoping comments by others.

4. The thirty days' comment period provided by the NRC falls over the winter holidays. As is customary throughout the United States, the Organizations' members, staffs, expert, and counsel will be taking time off during the holidays. While the individuals responsible for preparation of the scoping comments must be able to work together simultaneously to have a meaningful opportunity to prepare the comments, their vacation times are different, ranging over a three-week period from December 21 to January 6. As a practical matter, they will need to begin their work after January 6.

5. If the Organizations had timely learned that Duke Energy Carolinas ("Duke") had prepared a revised Environmental Report on November 7, 2022 - the date when Duke submitted it to the NRC -- they would have begun to review the revised Environmental Report in preparation for the scoping process. They also would have notified other organizations, individuals, and state and local government officials that Duke had submitted the revised Environmental Report; and that this submittal would trigger a site-specific NEPA review process by the NRC.

Inexplicably, however, the NRC waited until December 19, 2022 -- the date of publication of the Federal Register notice regarding the opportunity to submit scoping comments -- before posting the revised Environmental Report on ADAMS. And the posting of the revised Environmental Report was the first notice given by Duke of its intention to undergo a site-specific environmental review rather than to await publication of a generic EIS. As a result, *the Organizations lost six weeks* when they could have been reviewing the Environmental Report and communicating with other organizations, individuals, and government officials about that document and the environmental review process that would follow. Now, with the holidays approaching, that work must wait until the new year.

For these reasons, Beyond Nuclear and the Sierra Club respectfully submit that an extension of 30 days is reasonable and fair. (1-1 [Curran, Diane])

Comment: In addition, as required by NEPA and the Freedom of Information Act, the NRC should ensure that any analysis on which it relies is publicly available and referenced in the EIS with information on how to access it.⁹

⁹ See *Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 N.R.C. 1, 15 (2008) (noting the link between NEPA and the FOIA). (2-2 [Curran, Diane])

Comment: The U.S. Environmental Protection Agency (EPA) has reviewed the Nuclear Regulatory Commission's (NRC) Notice of Intent (NOI) to prepare an Environmental Impact Statement for the Duke Energy's Oconee Facility subsequent license renewal, in accordance with Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA). The CAA Section 309 role is unique to EPA. It requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement. As stated in the NOI, the purpose of the proposed Environmental Impact Statement (EIS) is to address the environmental effects associated with obtaining relicensing renewals for the Oconee Nuclear Station (Oconee) Units 1, 2, and 3. The EIS should focus on, indirect and cumulative environmental impacts associated with operations of Oconee following NEPA regulations and guidance, environmental surface and groundwater

discharges following Clean Water Act (CWA) regulations and guidance, nuclear waste storage and disposal following all federal and state regulations, environmental impacts associated with Climate Change, and conduct an meaningful Environmental Justice (EJ) analysis for potential and real impacts for surrounding communities with EJ concerns. (3-1 [Long, Larry])

Comment: Several potential, cumulative, and indirect project impacts are of particular concern at nuclear facilities. (3-2 [Long, Larry])

Response: The NRC granted a 15-day extension to the scoping period. The extension was published in a *Federal Register* notice on January 17, 2023. The scoping period was extended to February 2, 2023 (88 FR 2645). The NEPA Process is discussed in the draft site-specific EIS chapter 3 - Affected Environment. The analyses the NRC uses in its environmental review are publicly available and referenced in the EIS. Per NEPA, the EIS focuses on indirect and cumulative environmental impacts associated with operations of Oconee Station following applicable regulations and guidance.

B.1.8 Comments Concerning Process-Licensing Action

Comment Summary: A comment requested that NRC is required to identify all Category 1 and Category 2 environmental impacts using up-to-date information for Oconee Station. One comment requested that NRC adhere to NUREG-1855, "Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making," Revision 1, dated March 2017, (ML17062A466) in its environmental analysis at Oconee Station. One comment requested publication of risk improvements at Oconee Station with uncertainties quantified.

Comments: (2-1) (2-7) (2-8)

Comment: As a general matter, the NRC must conduct a site-specific environmental analysis for all environmental impacts previously classified as "Category 1" (i.e., subject to generic findings) using up-to-date and complete information. In addition, the NRC must re-evaluate environmental impacts previously characterized as Category 2 (i.e., subject to site-specific findings), using up-to-date and complete information. (2-1 [Curran, Diane])

Comment: Since the publication of the original 1996 GEIS the NRC has published "Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decisionmaking," Revision 1 March 2017 (ML17062A466). The NRC should adhere to their own guidance to evaluate uncertainties throughout their environmental analysis. (2-7 [Curran, Diane])

Comment: Under the topic of "Other Considerations," Duke lists "a number of plant improvements" that have been made since the first license renewal for Oconee "to lower overall plant risk."¹⁹ The NRC should quantify and publish for public use the risk improvements that these changes made with the methods and inputs used and the results with uncertainties quantified.

¹⁹ *Id.*, § 4.15.1.1.2 at page 106 of 109. (2-8 [Curran, Diane])

Response: The site-specific EIS assesses all Category 1 and Category 2 environmental impacts using up-to-date information for Oconee Station. Risk-related information is taken into account as part of NRC's analyses and is included in the site-specific EIS when appropriate.

B.1.9 Comments Concerning Waste Management-Radioactive Waste

Comment Summary: The EPA requested that a statement on changes in generation of waste and where spent nuclear fuel and spent nuclear fuel debris will be stored be included.

Comment: (3-8)

Comment: The EIS should indicate if there will be any changes in the generation of waste including low-level radioactive waste, mixed low-level radioactive waste, transuranic waste, and hazardous and Toxic Substance Control Act wastes over the life of the program. The EIS should indicate where Duke Energy will send the spent nuclear fuel and spent fuel debris for storage pending long-term disposal options outside of the facility. (3-8 [Long, Larry])

Response: Waste Management-Radioactive Waste is discussed in Section 3.13 of the draft site-specific EIS.

B.2 Non-Technical and Comments Outside the Scope of the Environmental Review

B.2.1 Comments Concerning Outside Scope - Aging Management

Comment Summary: One comment requested analysis of cumulative effects of aging equipment.

Comment: (2-13)

Comment: The EIS should include a discussion of the cumulative effects of extended operation using aging safety equipment. The problems experienced by sixty-to-eighty-year-old equipment and identified technical knowledge gaps in understanding the initiation and progression of numerous age-related degradation mechanisms for that period of operation are distinct from, more severe, and less understood than those experienced by forty-to-sixty-year-old equipment. As recently stated in an NRC presentation to the International Atomic Energy Agency:

Considering guidance to address plant operation for 80 years is significantly different from making routine revisions to the license renewal guidance documents for plant operation to 60 years. Of particular concern is the identification of potential aging issues that may arise with the extended operating time and greater exposure levels, such as neutron fluence levels. This could include potential new aging degradation phenomena either in new locations from that where it would be expected to occur, different forms of degradation, or greater severity than expected from past OE. The degradation could be from known mechanisms that could become more active, due to either exceeding incubation times or activation energies, or the development of "late blooming phases," or potentially new phenomena not previously seen.²³

²³ Allen L. Hiser, Jr., How Did the United States Get to the Point of Renewing Nuclear Power Plant Operating Licenses to 80 Years? (Nov. 28, 2022) (ML22286A027).

Aging problems include reactor pressure vessel embrittlement, irradiation-assisted stress corrosion cracking of reactor internals, concrete structures and containment degradation, and electrical cable qualification and condition assessment, as identified in SECY-14-0016, Memorandum from Mark A. Satorius, NRC Executive Director of Operations, to NRC Commissioners, re: Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor Subsequent License Renewal at 1 (Jan. 31, 2014) (ML14050A306) and the NRC's five-

volume Expanded Materials Degradation Assessment (EMDA), NUREG/CR-7153 (Oct. 2014) ("EMDA Report").²⁴

²⁴ The five volumes of the EMDA Report are as follows: Volume 1, Core Internals and Piping (ML14279A321); Volume 2, Core Internals and Piping (ML14279A331); Volume 3, Reactor Vessel Aging (ML14279A349); Volume 4, Concrete Aging (ML14279A430); and Volume 5, Cable Aging (ML14279A461).

The cumulative impacts analysis should also include at the cumulative or compounding effects of operating an aging reactor for an extended period with safety equipment that is not only deteriorating in unknown ways but that is subject to flooding risks. (2-13 [Curran, Diane])

Response: While aging management is outside the scope of the EIS process, it is addressed in the NRC's Safety Evaluation Report Related to the Subsequent License Renewal of Oconee Nuclear Station, Units 1, 2, and 3, section 2 Structures and components subject to aging management and section 3 Aging management review results Docket Nos. 50-269, 50-270, and 50-287 as part of its review of the licensing action.

B.2.2 Comments Concerning Outside Scope - Safety

Comment Summary: A comment requested that new measures be evaluated for protection of Oconee Station against flooding of essential safety equipment. One comment stated that the EIS for Oconee Station should address the cost-effectiveness of mitigation measures for reduction of accident risk. One comment requested evaluation of meteorological events related to climate change and efforts taken at Oconee Station to address and adapt to potential climate change impacts. One comment requested the structural integrity of discharge structures be evaluated.

Comments: (2-10) (2-12) (2-14) (3-6) (3-9)

Comment: Given Oconee's location downstream of the Jocassee Dam, the environmental impacts of flooding is a significant environmental issue. Climate change clearly will increase probable maximum precipitation (PMP) and probable maximum flood (PMF). This can increase the flooding heights at Oconee and its Standby Shutdown Facility (SSF) the only permanently installed equipment capable of mitigating a flooding event above grade. Not only will climate change increase the consequences of flooding, but it will increase the frequency of such events.

Local, state, federal, and international authorities have published significant information on projected climate changes such as rising temperatures, storm intensity and duration, and drought since the previous NRC analysis.

The NRC should propagate these new insights through the external events analysis including impacts on PMP and PMF, local intense precipitation (LIP) increases in wind speed intensity from tornadoes and hurricanes, etc. The NRC must use this updated climate research, information, and projections to define the baseline environment for the subsequent license renewal period. (2-10 [Curran, Diane])

Comment: The EIS should address the environmental significance of the Staff's 2011 Safety Evaluation that the potential for a random (*i.e.*, "sunny day") Jocassee Dam failure constitutes an "adequate protection" issue and therefore must be addressed by new measures to protect against flooding of essential safety equipment that would inevitably cause a reactor

meltdown.²² Because Duke has failed to protect Oconee from the floods evaluated in the 2011 Safety Evaluation, the outstanding and unresolved safety issue now constitutes a significant environmental issue that must be addressed in the Environmental Report.

²² "Safety Evaluation on Confirmatory Action Letter to Address External Flooding Concerns" (Jan. 28, 2011) (ML110280153) ("2011 NRC Safety Evaluation"). See also Hearing Request and Mitman Report. (2-12 [Curran, Diane])

Comment: We respectfully submit that if the NRC revises its accident risk analysis to take into account all current and relevant information, the estimated risk of an accident will substantially increase, thereby changing the cost-benefit analysis for mitigation measures to make mitigation more cost-effective. In light of this new information, the EIS should address the cost-effectiveness of mitigation measures for reduction of accident risk. For instance, the EIS should address the costs and benefits of safety upgrades to ensure that the design of Oconee Units 1, 2 and 3 is adequate to protect against a catastrophic accident caused by the failure of the Jocassee Dam. (2-14 [Curran, Diane])

Comment: [T]he EPA recommends the NRC address the structural integrity of any discharge structures. While the current NPDES permit requires monitoring to ensure that there are no point source discharges from the cooling structures to any adjacent surface waters, it is important for the facility to use relevant techniques to verify that all discharge structures are intact and able to retain nutrient-rich wastewater. The EPA recommends NRC consider this issue as part of the Aging Management Program or other relevant mechanism and include the potential discharges of increased peak storm events such as tropic storms and hurricanes. (3-6 [Long, Larry])

Comment: Climate change may impact the proposed project, posing threats to aging infrastructure, worker health and safety and the environment. We recommend that the EIS include an evaluation of climate-related impacts including discussions of frequency and severity of major storm events, wildfires, or drought that could lead to power disruptions or increased cooling demands in summer months. Efforts that Duke Energy is taking at Oconee to address and adapt to potential climate impacts should also be discussed in the EIS. (3-9 [Long, Larry])

Response: Although these comments are out of scope, they will be shared with the NRC's safety staff for their consideration.