



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

June 25, 2025

Mr. Lee Grzeck, Licensing Manager
New Nuclear Generation Strategy
and Regulatory Engagement
Duke Energy Carolinas, LLC
525 S. Tryon St
Charlotte, NC 28202

SUBJECT: PREAPPLICATION READINESS ASSESSMENT PLAN FOR THE DUKE
ENERGY CAROLINAS, LLC, DRAFT EARLY SITE PERMIT APPLICATION,
BELEWS CREEK, NC SITE

Dear Mr. Grzeck:

Duke Energy Business Services, LLC (Duke Energy) initiated the new nuclear reactor project to be located at the Belews Creek NC (BCNC) site with a letter to the U.S. Nuclear Regulatory Commission (NRC) dated August 16, 2023, Agencywide Documents Access and Management System (ADAMS) Accession No. ML23228A149. As part of preapplication activities related to the BCNC site, Duke Energy plans to make its draft early site permit application (ESPA) available to NRC staff for a preapplication readiness assessment (hereafter "readiness assessment"). Duke Energy requested that NRC staff conduct a readiness assessment of the draft ESPA for the BCNC site prior to its submittal in the fourth quarter of 2025. As this is a draft ESPA undergoing a readiness assessment, the staff understands that it may be submitted in phases and the totality of the draft ESPA may not be intended to meet the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 52.17, "Content of Applications."

The readiness assessment is not part of the NRC's official acceptance review process. The readiness assessment of the BCNC site draft ESPA will allow the NRC staff to review preliminary information, such as the draft site safety analysis report, the draft site environmental report, and draft emergency plans, to understand the level of detail in the draft application and identify any major issues or information gaps between the draft application and the technical content required to be included in the application. The observations from the readiness assessment will inform Duke Energy in finalizing the ESPA and preparing it for submittal to the NRC for review. It is important to note that the comments and observations from the readiness assessment do not predetermine whether the application will be accepted and docketed for detailed review.

The attached readiness assessment plan provides the details and logistics of the readiness assessment activities.

L. Grzeck

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If you have any questions regarding this matter, please contact Billy Gleaves, Senior Project Manager, at (301) 415-5848 or by email at bill.gleaves@nrc.gov.

Sincerely,



Signed by Jardaneh, Mahmoud
on 06/25/25

Mahmoud Jardaneh, Chief
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

Docket No.: 99902121

Enclosure:
Readiness Assessment Plan

cc w/encl.: GovDelivery.com

SUBJECT: PREAPPLICATION READINESS ASSESSMENT PLAN FOR THE DUKE ENERGY CAROLINAS, LLC, DRAFT EARLY SITE PERMIT APPLICATION, BELEWS CREEK, NC SITE
DATED: JUNE 25, 2025

DISTRIBUTION:

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GovDelivery Topic "Duke Energy Belews Creek Early Site Permit"

ADAMS Accession No: ML25176A035 *via e-concurrence NRR-106

OFFICE	DNRL/NLIB: PM	DNRL/NLIB: LA	DNRL/NLIB: A:BC
NAME	WGleaves	SGreen	MJardaneh*
DATE	06/24/25	06/24/2025	6/25/25

OFFICIAL RECORD COPY

**PREAPPLICATION READINESS ASSESSMENT PLAN
FOR THE DUKE ENERGY BELEWS CREEK, NC SITE
DRAFT EARLY SITE PERMIT APPLICATION**

**DOCKET NO. 99902121
JUNE 2025**

LOCATION Belews Creek, NC site
Near the Belews Creek Steam Station
3195 Pine Hall Rd.
Belews Creek, NC 27009

PURPOSE

Duke Energy Business Services, LLC (Duke Energy) has voluntarily agreed to engage with the U.S. Nuclear Regulatory Commission (NRC) staff in a preapplication readiness assessment (hereafter called “readiness assessment” or “RA”) of the early site permit application (ESPA) before the application is submitted for a formal NRC review.

The readiness assessment will allow the NRC staff to:

- Become familiar with the application, particularly in areas where Duke Energy is proposing new concepts or novel regulatory approaches
- Identify information gaps between the draft application and the technical content required in the application submitted to the NRC
- Identify major technical or policy issues that may adversely impact the docketing or technical review of the application

The observations from the RA will inform Duke Energy in finalizing the ESPA and and preparing it for submittal to the NRC for review..

BACKGROUND

Duke Energy initiated the new nuclear reactor project to be located at the Belews Creek NC (BCNC) site with a letter to the NRC dated August 16, 2023 (ADAMS Accession No. ML23228A149).

GUIDANCE

This assessment will be conducted in accordance with NRR Office Instruction LIC-116, “Preapplication Readiness Assessment” (ML20104B698).

The content of an ESPA will be informed by Regulatory Guide 1.70, “Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants,” Revision 3 (ML011340122) and NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition.”

Enclosure

LOCATION OF READINESS ASSESSMENT

The RA will be conducted by NRC staff located primarily at the NRC Headquarters office and remotely through the Duke Energy electronic reading room (eRR).

READINESS ASSESSMENT SCOPE AND SCHEDULE

The NRC plans to conduct the RA from July 2025 through September 2025.

The RA will cover the draft ESPA site safety analysis report (SSAR) Chapters 1, 2, 3, 11, 13, 15, and 17. The RA will also cover the environmental report (ER), Chapters 1 through 10.

The tables below break down the planned RA chapters and schedule¹ showing the associated technical and environmental review areas.

SSAR Readiness Assessment Matrix

Chapter	Office/Division/ Branch	Approximate Start of Review	Approximate Date of Feedback
Chapter 1 - Introduction	NRR/DNRL	June 23, 2025	July 10, 2025
Chapter 3 – Design of Structures Systems and Components	NRR/DEX/ESEB	June 23, 2025	July 8, 2025
Chapter 13 – Emergency Plan & Physical Security	NSIR/DPR/RLB & NSIR/DPC/RPPB	July 7, 2025	July 23, 2025
Chapter 17 – Quality Assurance	NRR/DRO/IQVB	July 7, 2025	July 23, 2025
Chapter 11 – Liquid/Gas Radwaste	NRR/DRA/ARCB	August 11, 2025	August 27, 2025
Chapter 15 – Accident Analysis	NRR/DRA/ARCB	August 11, 2025	August 27, 2025
Chapter 2 – Site Characteristics	NRR/DEX/ESEB & NRR/DEX/EXHB	August 25, 2025	September 8, 2025

¹ Planned schedules may vary based on NRC staff availability and other resource factors and may change.

ER Readiness Assessment Matrix

Chapter	Office/Division/Branch	Approximate Start of Review	Approximate Date of Feedback
Chapter 1 – Introduction	NMSS/REFS/EPMB3	June 23	July 9
Chapter 3 – Site Layout/Project Description	NMSS/REFS/EPMB3	August 11	August 25
Chapter 8 – Need for Power	NMSS/REFS/EPMB3	June 23	July 10
Chapter 9 – Alternatives	NMSS/REFS/EPMB3	August 11	September 10
Chapter 2 – Environmental Description – Affected Environment	NMSS/REFS/EPMB3	August 11	August 25
Chapter 4 – Environmental Impacts of Construction	NMSS/REFS/EPMB3	August 11	August 26
Chapter 5 – Environmental Impacts of Operation	NMSS/REFS/EPMB3	August 11	August 26
Chapter 6 - Fuel Cycle, Transportation, Decommissioning	NMSS/REFS/EPMB3	August 11	August 28
Chapter 7 – Cumulative Impacts	NMSS/REFS/EPMB3	August 11	August 28
Chapter 10 – Conclusions	NMSS/REFS/EPMB3	August 25	September 9

LOGISTICS

The applicable chapters and sections of Duke Energy’s draft ESPA SSAR will be located in Duke Energy’s eRR, which has read only access for selected NRC staff. Each RA meeting will begin with a virtual entrance/orientation meeting and there will be a virtual exit meeting to formally end the RA.

If the NRC staff requests to see other supporting materials related to the RA, the NRC staff will coordinate such needs with Duke Energy.

NRC Review Approach

The NRC staff will focus on identifying and documenting technical and regulatory gaps in the draft ESPA SSAR and ER chapter/sections. These will be identified as observations relevant to the draft application and will be shared with Duke Energy at the end of each chapter audit meeting and will be compiled into a final public RA letter to Duke Energy after all the phases have been completed.

The NRC RA includes the following:

- The assessment of each chapter is expected to be conducted in approximately two weeks.
- For each chapter, the NRC will limit participation to targeted technical reviewers.
- At the start of each chapter review, Duke Energy will provide a presentation to technical staff tailored to the specific chapter and section.
- During each chapter review, if the NRC is seeking additional clarity on the SSAR or ER content or would like to see additional material or provide immediate feedback, additional RA meetings with Duke Energy may be requested.
- At the end of each chapter review, the NRC will share RA observations with Duke Energy.
- The NRC PM will provide regular status updates to NRC management and Duke Energy.
- The NRC will target a summary letter of the RA meetings and observations by late September 2025.

SPECIAL REQUESTS

As discussed in the Clinch River site ESP application lessons learned report, any comments requiring special attention, such as those regarding information that may inhibit the ESPA acceptance review or any issues resulting from new and novel approaches will be called out here.

The staff will observe appropriate handling and protection of proprietary or safeguards information, or both, throughout the RA. Any key readiness assessment observations will include expectations, process, and schedules for addressing key gaps in the application.

READINESS ASSESSMENT OBSERVATIONS

The NRC will send the RA observations, including any identified technical concerns or major information gaps, to Duke Energy in a publicly available report that will also summarize the scope of the readiness assessment. The NRC Office Instruction LIC-116 delineates the timeline for the final report which is to be completed within 45 calendar days of completion of the readiness assessment. To protect the applicant's proprietary information, if needed, the staff will issue a proprietary version of the RA report for Duke Energy's review. The staff's expectation is that Duke Energy will consider the staff observations when preparing the ESPA for NRC review and provide feedback on improving the RA process.

The NRC estimates that this RA may require approximately 250 hours by the staff to complete.

REFERENCES

1. NRC, NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition"
2. NRC, Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)"
3. Title 10 *Code of Federal Regulations* Part 52, "Licenses, certifications, and approvals for nuclear power plants"
4. NRC Office Instruction, LIC-116, "Preapplication Readiness Assessment," August 2020 (ML20104B698)
5. NRC, Report, "Best Practices and Lessons Learned from the Review of the Clinch River Nuclear Site Early Site Permit Application," April 2021 (ML19190A078)