2026 Study Scope

Duke Energy Carolinas ("DEC") and Duke Energy Progress ("DEP) have proposed to consolidate into a single entity that includes a single Balancing Authority ("BA"), a single Balancing Authority Area ("BAA"), and a single Transmission Planning area effective 1/1/2027. Post-consolidation, the DEC BA will consist of the legacy DEC BA as well as the legacy DEP BA, and the DUK BAA will consist of the legacy DUK BAA as well as the legacy CPLE and CPLW BAA's. Unless noted otherwise, references in this scope document to DEC, DEP, DUK, CPLE, and/or CPLW reflect the utilities as they exist during the development of this scope document.

For the purpose of the studies in this scope document, DEC and DEP will utilize jointly dispatched transmission models that reflect expected operation after 1/1/2027. Additionally, the models themselves will contain a designation of DUK, which is reflective of the consolidation of the DUK, CPLE, and CPLW BAA's.

Purpose of Study

The purpose of the Base Reliability Study is to assess the DEC and DEP transmission systems' reliability and develop a single collaborative transmission plan for the DEC and DEP transmission systems that ensures reliability of service in accordance with NERC, SERC, DEC, and DEP requirements. In addition, the study will also assess Local Economic Study and/or Public Policy Study requests provided by the Transmission Advisory Group ("TAG") and approved for study by the Oversight Steering Committee ("OSC"). Multi-Value Strategic Transmission ("MVST") Study requests will be addressed in a separate scope document for years in which an MVST Study is undertaken. An MVST Study will be kicked off in 2026. The Planning Working Group ("PWG") will perform the technical analysis outlined in this study scope under the guidance and direction of the OSC in compliance with the currently effective version of Attachment N-1 to the Duke Energy Joint OATT.

Five Local Economic Study requests and three Public Policy Study requests were received from TAG stakeholders by the deadline for the 2026 study year ("2026 Study"). Requests selected for study are described in detail in the Study Assumptions section of this document.

Overview of the Study Process Scope

The scope of the proposed study process will include the following steps:

1. **Study Assumptions**
   - Study assumptions selected.

2. **Study Criteria**
   - Establish the criteria by which the study results will be measured.
3. **Case Development**
   - Develop the models needed to perform the study.
4. **Study Methodology**
   - Determine the methodologies that will be used to carry out the study.
5. **Technical Analysis and Study Results**
   - Perform the study analysis and produce the results. Initially, power flow analyses will be performed based on the assumption that thermal limits will be the controlling limit for the reliability plan. Voltage, stability, and short circuit studies may be performed if circumstances warrant.
6. **Assessment and Problem Identification**
   - Evaluate the results to identify problems/issues.
7. **Solution Development**
   - Identify potential solutions to the problems/issues.
   - Test the effectiveness of the potential solutions through additional studies and modify the solutions as necessary such that all reliability criteria are met.
   - Perform a cost analysis and rough scheduling estimate for each of the proposed solutions.
8. **Selection of a Recommended Collaborative Transmission Plan**
   - Compare alternatives and select the preferred solution alternatives – balancing cost, benefits and risks.
   - Select a preferred set of transmission improvements that provide a reliable transmission system to customers most cost effectively while prudently managing the associated risks.
9. **Report on the Study Results**
   - Prepare a report on the recommended Collaborative Transmission Plan.

Each of these study steps is described in more specific detail below.

Study Assumptions

The specific assumptions selected for the 2026 Study are:

- The years to be studied (study years) will be 2031 Summer and 2031/2032 Winter for a near term reliability analysis and 2036 Summer and 2036/2037 Winter for a longer-term reliability analysis. Each Load Serving Entity ("LSE") will provide a list of resource supply assumptions and include the resource dispatch order for each of its Designated Network Resources in the DEC and DEP Balancing Authority Areas. Generation will be dispatched for each LSE in the

cases to meet that LSE's peak load in accordance with the designated dispatch order. LSEs will also include generation down scenarios for their resources, if applicable (e.g., generation outage with description of how generation will be replaced, such as by that LSE's dispatch order).

- The models consider 5,138 MW of Electric Service Agreements and Network Integration Transmission Service Agreements associated with large load[1] in the DEC and DEP BA's.
- PSS/E and/or TARA will be used for the study.
- Generation, load, interchange and other assumptions will be coordinated between Participants as needed.
- The tables below list the major generation facility additions and retirements assumed to occur by 2031 Summer, 2031/2032 Winter, 2036 Summer and 2036/2037 Winter.
- "Surplus" indicates surplus interconnection service, which is defined in the Duke Energy Joint OATT and shall mean any unneeded portion of Interconnection Service established in a Large Generator Interconnection Agreement, such that if Surplus Interconnection Service is utilized the total amount of Interconnection Service at the Point of Interconnection would remain the same.
- Any assumptions or details unique to the Local Economic Study and/or Public Policy Study within this scope document are listed below.
  - If unaddressed, assumptions from the Base Reliability Study are used.

Major Generation[2] Facility Additions in 2026 Study

*Includes facilities with a signed Interconnection Agreement (IA) as of **5/31/2026**. Additional queued generation (e.g. **Person County CC 2**, etc.) that does not have a signed IA as of **5/31/2026** is not included in the 2026 Reliability Study.*

Company	Generation Facility	2031S	2031/32W	2036S	2036/37W
DEC	Allen Battery (50 MW)	Included	Included	Included	Included
DEC	Apex Solar (28.9 MW)	Included	Included	Included	Included
DEC	Baxter Creek Solar (30 MW)[3]	Included	Included	Included	Included
DEC	Bear Branch Solar (34.5 MW)	Included	Included	Included	Included
DEC	Bear Claw Solar (28.25 MW)	Included	Included	Included	Included

[1] Large Load is 50 MW or greater

[2] Major Generation is 10 MW or greater and connected to the transmission system.

[3] This project was formerly known as Quail Solar.

Company	Generation Facility	2031S	2031/32W	2036S	2036/37W
DEC	Beaverdam Solar (40.8 MW)	Included	Included	Included	Included
DEC	Brookcliff Solar (50 MW)	Included	Included	Included	Included
DEC	Bush River Solar (45 MW)[4]	Included	Included	Included	Included
DEC	Catawba 1 Uprate (12 MW Summer/40 MW Winter)	Included	Included	Included	Included
DEC	Clark Creek Solar (40 MW) with 14 MW of Storage^	Included	Included	Included	Included
DEC	Cliffside 2 Battery (199.9 MW)	Included	Included	Included	Included
DEC	Five Circles Solar (74.9 MW)	Included	Included	Included	Included
DEC	Foster Mill Solar (54 MW)	Included	Included	Included	Included
DEC	Harrisburg Battery (197 MW)[5]	Included	Included	Included	Included
DEC	Healing Springs Solar (55 MW)	Included	Included	Included	Included
DEC	Hornet Solar (73 MW)	Included	Included	Included	Included
DEC	Hudson Place Solar (70.7 MW)	Included	Included	Included	Included
DEC	Maiden Creek Battery (Surplus 50 MW) *	Included	Included	Included	Included
DEC	Marshall CT 1, 2 (780 MW)	Included	Included	Included	Included
DEC	Marshall CT 1, 2 Uprate (134.2 MW Summer/136 MW Winter)	Included	Included	Included	Included
DEC	McGuire 1 Uprate (18 MW Summer/33 MW Winter)	Included	Included	Included	Included
DEC	McGuire 2 Uprate (25 MW Summer/40 MW Winter)	Included	Included	Included	Included
DEC	Monroe Battery (Surplus 25 MW) *	Included	Included	Included	Included
DEC	Newberry Solar (74.5 MW)	Included	Included	Included	Included
DEC	Quaker Creek Farm Solar (35 MW)	Included	Included	Included	Included

[4] This project was formerly known as Yorkshire Solar.

[5] This project was formerly known as Granite Battery.

Company	Generation Facility	2031S	2031/32W	2036S	2036/37W
DEC	Riverbend Battery (115 MW)	Included	Included	Included	Included
DEC	Rutabaga Solar (69.75 MW)	Included	Included	Included	Included
DEC	South Davidson Solar (80 MW)	Included	Included	Included	Included
DEC	Sweetwater Solar (34 MW)	Included	Included	Included	Included
DEC	Two Hearted Solar (22 MW)	Included	Included	Included	Included
DEC	Tyger Solar (74.99 MW) with 28 MW of Storage^	Included	Included	Included	Included
DEC	West River Solar (40 MW)	Included	Included	Included	Included
DEC	Wilkes Battery (120 MW)	Included	Included	Included	Included
DEC	Wilson Bridge Solar (72 MW)	Included	Included	Included	Included
DEP	Asheville Battery (17.25 MW)	Included	Included	Included	Included
DEP	Asheville Solar (9.5 MW)	Included	Included	Included	Included
DEP	Asheville 115 CC IC5 & ST6 Uprate (19.9 MW)	Included	Included	Included	Included
DEP	Asheville 230 CC IC7 & ST8 Uprate (19.9 MW)	Included	Included	Included	Included
DEP	Barn Perch Solar (80 MW)	Included	Included	Included	Included
DEP	B&K Solar (74.9 MW)	Included	Included	Included	Included
DEP	Cedar Creek Solar (70 MW) with 28 MW of Storage^	Included	Included	Included	Included
DEP	Copperhead Run Solar (Bear Marsh) (80 MW)	Included	Included	Included	Included
DEP	Craggy Battery (30.5 MW)	Included	Included	Included	Included
DEP	Creed Solar (48 MW)	Included	Included	Included	Included
DEP	Culpepper Solar (74.9 MW)	Included	Included	Included	Included
DEP	Duke WSP #1 (199.9 MW)	Included	Included	Included	Included
DEP	Elm City Battery (Surplus 21.9 MW)*	Included	Included	Included	Included

Company	Generation Facility	2031S	2031/32W	2036S	2036/37W
DEP	Fox Hollow Solar (63.9 MW) with 24.05 MW of Storage^	Included	Included	Included	Included
DEP	Gum Swamp Solar (80 MW)	Included	Included	Included	Included
DEP	HF Lee - 1A & 1B CC Uprate (52 MW Summer/20 MW Winter)	Included	Included	Included	Included
DEP	HF Lee - 1C & ST CC Uprate (74 MW Summer/26 MW Winter)	Included	Included	Included	Included
DEP	Hyco Solar (80 MW)	Included	Included	Included	Included
DEP	IP Solar (75 MW)	Included	Included	Included	Included
DEP	Juniper Solar (74.9 MW)	Included	Included	Included	Included
DEP	Juno Solar (Old Hundred) (275 MW)	Included	Included	Included	Included
DEP	Knightdale Battery (100 MW)	Included	Included	Included	Included
DEP	Loftins Crossroads (75 MW)	Included	Included	Included	Included
DEP	Longleaf Solar (100 MW) with 35 MW of Storage^	Included	Included	Included	Included
DEP	Lotus Solar (75 MW)	Included	Included	Included	Included
DEP	Maple Leaf Solar (73 MW)	Included	Included	Included	Included
DEP	Martins Crossroads Solar (74.9 MW)	Included	Included	Included	Included
DEP	Melsam Solar (65 MW) with 25 MW of Storage^	Included	Included	Included	Included
DEP	New Hill Battery (56 MW)	Included	Included	Included	Included
DEP	Old Liberty Solar (Cedar Falls) (44 MW) with 17 MW of Storage^	Included	Included	Included	Included
DEP	Panola Solar (67 MW)	Included	Included	Included	Included
DEP	Person County CC1 (1,091 MW)	Included	Included	Included	Included
DEP	Person County CC1 Uprate (307 MW Summer/313 MW Winter)	Included	Included	Included	Included

Company	Generation Facility	2031S	2031/32W	2036S	2036/37W
DEP	Pig Basket Creek (80 MW)	Included	Included	Included	Included
DEP	Piney Grove Solar (Deerwood) (67 MW) with 25 MW of Storage^	Included	Included	Included	Included
DEP	Robinson Solar (76 MW)	Included	Included	Included	Included
DEP	Rollins Solar (74.9 MW)	Included	Included	Included	Included
DEP	Plumfield Solar (74.9 MW)	Included	Included	Included	Included
DEP	Scotch Grove Solar (Juniper Creek) (80 MW)	Included	Included	Included	Included
DEP	Smith PB4 Uprate - CC (46.75 MW)	Included	Included	Included	Included
DEP	Shorthorn Solar (60 MW)	Included	Included	Included	Included
DEP	Sleepy Creek Solar (80 MW)	Included	Included	Included	Included
DEP	Ten Governors Solar (65 MW) with 25 MW of Storage^	Included	Included	Included	Included
DEP	Scotch Grove Solar (Juniper Creek) (80 MW) with 32 MW of Storage^	Included	Included	Included	Included

*Utilizing the FERC Surplus Interconnection Process

^For solar paired with storage resources, the value in parenthesis is the interconnection limit

Major Generation[6] Facility Retirements in 2026 Study

Company	Generation Facility	2031S	2031/32W	2036S	2036/37W
DEC	Allen 1 (167 MW) – Generator Replacement Request (GRR) approved	Retired	Retired	Retired	Retired
DEC	Marshall 1&2 (780 MW) – GRR approved	Retired	Retired	Retired	Retired
DEP	Blewett CTs 1- 4 and Weatherspoon CTs 1- 4 (232 MW)	Retired	Retired	Retired	Retired

[6] Major Generation Threshold is considered to be 10 MW or greater and connected to the transmission system.

DEP	Roxboro 1&4 (1091 MW) – GRR approved	Retired	Retired	Retired	Retired

Local Economic Studies

- Local Economic Studies may be requested to evaluate the impact on the transmission system caused by a variety of factors such as hypothetical load growth, generation additions or retirements, or power purchase agreements starting or expiring. New resource supply options to be evaluated can be either in the form of transactions or some "hypothetical" generators which are added to meet the resource adequacy requirements for this study.
- Based on this analysis, the PWG will provide feedback to the Participants on the viability of these options for meeting future load requirements. The results of this analysis will be included in the 2026 Collaborative Transmission Plan Report.

Hypothetical Transfers

- The PWG will analyze cases that examine the impacts of eight different hypothetical transfers into, out of, or through the DEC and DEP systems.
  - Hypothetical transfers involving PJM will be split equally between AEP and DVP.
- The study will use the 2036/37W model.
- Each of the eight hypothetical transfers will be studied independently (i.e. they are assumed to not occur simultaneously).
- The list of hypothetical transfers is identified in the table below[7]:

ID	Resource From	Sink	Test Level (MW)
1[8]	SOCO	DUK	3,000
2	DUK	SOCO	3,000
3	TVA	DUK	1,500
4	DUK	TVA	1,500
5	PJM	DUK	2,000
6	DUK	PJM	2,000
7	DUK	SCEG	2,000
8	DUK	SC	2,000

- The PWG will analyze these hypothetical resource options to determine if any reliability criteria violations are created. Based on this analysis, the PWG will provide feedback to the Participants on the viability of these options for meeting future load requirements. The results of this analysis will be included in the 2026 Collaborative Transmission Plan Report.

[7] DUK is used in the context of DUK, CPLE, and CPLW being consolidated into a single BAA called DUK.

[8] This hypothetical transfer is intended to satisfy a Local Economic Study request submitted by the TAG.

Hypothetical Industrial and Manufacturing Loads

- Six hypothetical industrial and/or manufacturing loads will be evaluated.
- The study will use the 2031S and 2031/32W models.
- The study will identify hypothetical solutions to address identified overloads or other criteria violations and develop high-level cost estimates for these solutions.
- The list of hypothetical loads is identified in the table below:

Site Name	Load	Latitude	Longitude
Proposed Lexington Industrial Park	50	35.769556	-80.294444
Albemarle Industrial Park	50	35.33375	-80.174361
Lumberton Industrial Park	50	34.593889	-79.101861
Kinston Falling Creek Industrial Site	50	35.2721	-77.6716
La Grange Industrial Site served by City of Kinston	50	35.2903	-77.7554
Nash County Mega Site served by City of Rocky Mount	100	36.109280	-77.782175

High Transfer Levels Between Legacy DEP and Legacy DEC[9]

- The study will evaluate higher east-west transfers across the legacy DEC and DEP systems due to additional resources being dispatched in legacy DEP to serve load in the combined DEC and DEP footprint (3500 MW in summer, 3000 MW in winter).
- This study will use the 2036S and 2036/37W models and will also consider resources in the 2025 IRP recommended portfolio through 2036.
- The transfer levels will be effectuated by dispatching down generation in legacy DEC and dispatching up generation in legacy DEP using the following priority:
  - Existing resources in the models
  - Re-siting BESS in the 2025 IRP from legacy DEC to legacy DEP
  - Re-siting solar in the 2025 IRP from legacy DEC to legacy DEP

Public Policy Studies

No Public Policy studies will be performed as part of the 2026 Study. The requested Public Policy scenarios focused on the ability to transfer power across a single BA in the Carolinas, additional storage integration, and potential acceleration and/or higher volume of new nuclear resources will be sufficiently addressed or considered in one or more of the other CTPC study types Base Reliability Study, Local Economic Study, and MVST.

[9] This study is intended to satisfy one or more Local Economic Study requests submitted by the TAG.

Study Criteria

The study criteria used will promote consistency in the planning criteria used across the systems of the Participants, while recognizing differences between individual systems. The study criteria will consider the following reliability elements:

- NERC Reliability Standard requirements
- SERC requirements
- Individual company criteria (voltage, thermal, stability, and short circuit)

Case Development

- The most current MMWG system models (2025 series) will be used for the systems external to DEC and DEP as a starting point for the Base Case.
- The Base Case will include the detailed internal models for DEC and DEP and will include current transmission additions planned to be in-service for the given year (e.g., in-service by summer 2036 for 2036S cases and in-service by the winter 2036/37 for 2036/37W cases).
- An "All Firm Transmission" Case(s) will be developed which will consider all confirmed DEC and DEP long term firm transmission reservations with roll-over rights applicable to the study year(s).
- DEC and DEP will each create their respective generation down cases from the common Base Case and share the relevant cases with each other.

Study Methodology

DEC and DEP will exchange contingency and monitored element files so that each can test the impact of the other company's contingencies on its transmission system. Initially, power flow analyses will be performed based on the assumption that thermal limits will be the controlling limit for the reliability plan. Voltage, stability, and short circuit studies may be performed if circumstances warrant.

Technical Analysis and Study Results

The technical analysis will be performed in accordance with the study methodology. Results from the technical analysis will be reported throughout the study area to identify transmission elements approaching their limits such that all Participants are aware of potential issues and appropriate steps can be identified to correct these issues, including the potential of identifying previously undetected problems.

DEC and DEP will report results throughout the study area based on:

- Thermal loadings greater than 95%.

Assessment and Problem Identification

- Each utility will utilize its own reliability criteria for its own transmission facilities. No fewer than 14 days prior to the Needs Meeting, each utility will document the reliability problems resulting from its assessments. These results will be reviewed and discussed with the TAG for feedback.

Solution Development

- No fewer than 14 days prior to the Solutions Meeting, the PWG will develop potential solutions and alternatives to the identified reliability problems.
- The TAG will have the opportunity to propose solution alternatives to the identified reliability problems.
- DEC and DEP will evaluate the effectiveness of the potential solution alternatives using the same cases, methodologies, assumptions and criteria described above.
- DEC and DEP will develop rough, planning-level cost estimates and construction schedules for the solution alternatives.

Selection of a Recommended Collaborative Transmission Plan

- The PWG will compare alternatives and select the preferred solution alternatives, balancing costs, benefits, and risks.
- The PWG will select a preferred set of transmission improvements that provides a reliable and cost-effective transmission solution to meet customers' needs while prudently managing the associated risks.
- The preferred set of transmission improvements developed by the PWG will be reviewed and discussed with the TAG for feedback.

Report on the Study Results

The PWG will compile all the study results and prepare a recommended collaborative plan for OSC review and approval. Prior to the OSC's final review and approval, the final draft of the study report will be reviewed and discussed with the TAG members to solicit their input on the recommended collaborative plan. The final report will include a comprehensive summary of all the study activities as well as the recommended transmission improvements including estimates of costs and construction schedules.