



# **TAG Meeting**

## **December 14, 2023**

**Webinar**

**Final**



# **TAG Meeting Agenda**

- 1. Administrative Items – Rich Wodyka**
- 2. 2023 Study Activities – Sid DeSouza and Orvane Piper**
- 3. Transmission Planning Process Attachment N-1 Report – Sammy Roberts**
- 4. 2024 Study Scope Discussion – Bill Quaintance**
- 5. Regional Studies Update – Bob Pierce**
- 6. 2023 TAG Work Plan Update and 2024 TAG Work Plan Preview – Rich Wodyka**
- 7. TAG Open Forum – Rich Wodyka**



# **2023 Study Activities Report**

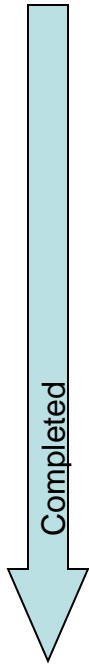
**Sid DeSouza - Duke Energy Progress**

**Orvane Piper - Duke Energy Carolinas**



# Study Process Steps

- 1. Assumptions Selected**
- 2. Study Criteria Established**
- 3. Study Methodologies Selected**
- 4. Models and Cases Developed**
- 5. Technical Analysis Performed**
- 6. Problems Identified and Solutions Developed**
- 7. Collaborative Plan Projects Selected**
- 8. Study Report Prepared**





# Assumptions Selected

- **Study Years for reliability analyses:**
  - **Near-term: 2028 Summer, 2028/2029 Winter**
  - **Longer-term: 2033 Summer, 2033/2034 Winter**



# Study Criteria Established

- **NERC Reliability Standards**
  - Current standards for base study screening
  - Current SERC Requirements
- **Individual company criteria**



# Study Methodologies Selected

- **Thermal Power Flow Analysis**
- **Each system (DEC and DEP) will be tested for impact of other system's contingencies**



# Models and Cases Developed

- **Annual Reliability Study**
  - **Near-term: 2028 Summer, 2028/2029 Winter**
  - **Longer-term: 2033 Summer, 2033/2034 Winter**
- **Local Economic Study**
  - **No studies this year**
- **Public Policy Study**
  - **This study will be performed in Q1 of 2024, and the results will be presented in a supplemental report.**





## Technical Analysis

- **Conduct thermal screenings of the 2028S, 2028/29W, 2033S and 2033/34W base cases**
- **Conduct thermal screenings for public policy scenarios in 2033S and 2033/34W**



## **Problems Identified and Solutions Developed**

- **Identify limitations and develop potential alternative solutions for further testing and evaluation**
- **Estimate project costs and schedule**



## 2023 Transmission Plan Reliability Results

The 2023 Plan, relative to the 2022 Plan, includes 24 new DEC reliability projects:

Project ID	DEC Reliability Project
0086	Parkwood Tie 500/230 kV Bank 5, Replace
0087	Breaker Station on Motley 100 kV Line for New Customer, Construct
0088	Island Creek 44 kV, Conversion
0089	McDowell Tie 230/100 kV Bank 2, Replace
0090	Boyd Switching Station, Construct
0091	Haas Creek Switching Station, Construct
0092	Lyle Creek Switching Station, Construct
0093	Page and Guilford 100 kV Lines (Greensboro-North Greensboro), Upgrade



## 2023 Transmission Plan Reliability Results

The 2023 Plan, relative to the 2022 Plan, includes 24 new DEC reliability projects:

Project ID	DEC Reliability Project
0094	Cabarrus 100 kV Line (Wildcat-Westfork), Upgrade
0095	Sevier 100 kV Line (East Greenville-Verdae Retail Tap), Upgrade
0096	Panther 100 kV Line (EMC Corp-Stallings Rd Retail), Network
0097	Dan River 100 kV Line (Dan River-North Greensboro), Upgrade
0098	Oliver 230 kV Line (Marshall-Boyd), Upgrade
0099	Reidsville and Wolf Creek 100 kV Lines (Dan River-Sadler), Upgrade
0100	Beulah 100 kV Line (Lookout-EnergyUnited Del 18), Upgrade
0101	Hinkle 100 kV Line (Stamey-Statesville), Upgrade



## 2023 Transmission Plan Reliability Results

The 2023 Plan, relative to the 2022 Plan, includes 24 new DEC reliability projects:

Project ID	DEC Reliability Project
0102	Concord 100 kV Line (Concord-Concord City Del 3), Upgrade
0103	Crab Orchard 100 kV Line (Harrisburg-Amity), Upgrade
0104	Hands Mill Switching Station, Construct
0105	Kennedy 100 kV Line (Orchard-Newton Tap), Upgrade
0107	Buckhorn 44 kV Line, Conversion
0108	Messer 230 kV Line (Dixon School Rd-Customer), Construct
0109	Terrell 44 kV Line, Conversion
0110	Troutman 44 kV Line, Conversion



## 2023 Transmission Plan Reliability Results

The 2023 Plan, relative to the 2022 Plan, includes 11 new DEP reliability projects:

Project ID	DEP Reliability Project
0115	Havelock 230/115 kV banks 1 & 2, Replace
0116	Rocky Mount – Battleboro 115 kV line, Reconductor
0117	Asheville Plant – Oteen 115 kV West line, Construct Arden Tap
0118	Weatherspoon -LOF 115 kV line, Reconductor Weatherspoon-LREMC West Lumberton section
0119	Weatherspoon – LOF 115 kV Line, Reconductor Maxton-Pembroke Section
0120	Sumter – SCEG Eastover 115 kV line, Reconductor Kings Hwy – Shaw Field – Eastover sections, raise Gold Kist Tap - Str #427 to 212F



## 2023 Transmission Plan Reliability Results

The 2023 Plan, relative to the 2022 Plan, includes 11 new DEP reliability projects:

Project ID	DEP Reliability Project
0121	Brush Creek, Add STATCOM
0122	Asheboro – Siler City 115 kV line, Reconductor
0123	Franklinton – Franklinton Novo 115 kV Feeder, Construct New Line
0124	Method – Milburnie 115 kV North line, Reconductor
0125	Rockingham - West End 230 kV West line, Reconductor



## **2023 Transmission Plan Reliability Results**

**The 2023 Plan, relative to the 2022 Plan, includes 11 new reliability projects for DEP and 24 new DEC reliability projects**

***DEC New Reliability Projects Total - \$680M***

***DEP New Reliability Projects Total - \$307M***

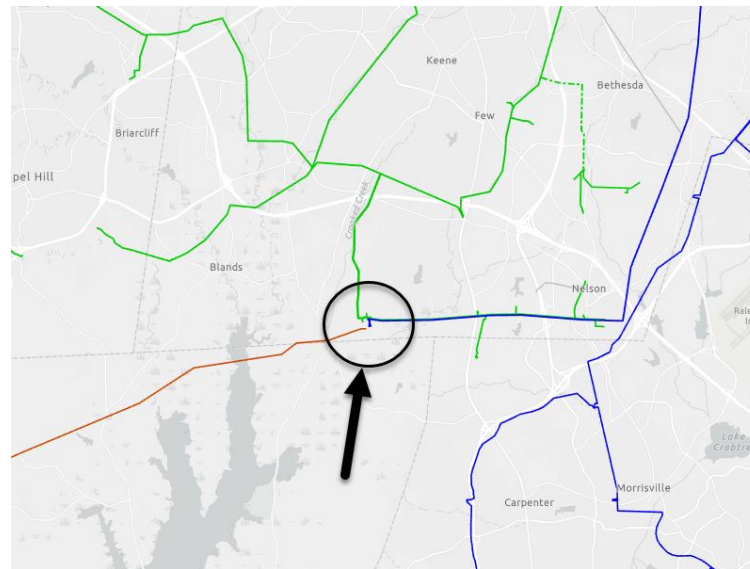




## New Reliability Projects in 2023 Plan

***DEC Parkwood Tie 500/230 kV Bank 5, Replace – scheduled for December 2024***

- **Asset Management**
- **Problem:** One of the phases on the existing bank failed
- **Solution:** Replace 500/230 kV bank

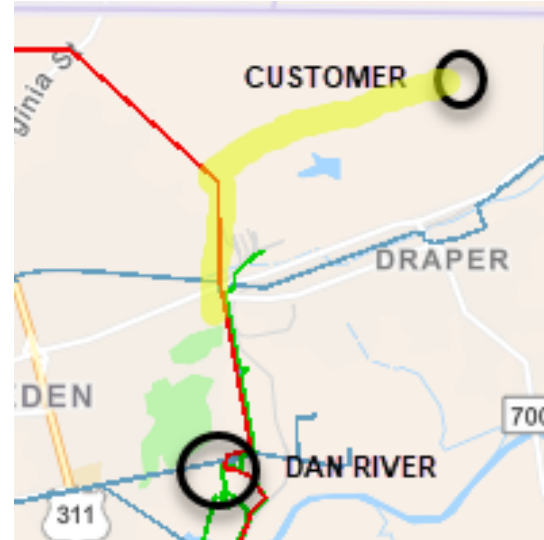




## New Reliability Projects in 2023 Plan

**DEC Breaker Station on Motley 100 kV Line for New Customer, Construct – *scheduled for June 2025***

- **New Load**
- **Solution:** Construct 4 miles of new transmission line to new Customer substation.





## New Reliability Projects in 2023 Plan

### **DEC Island Creek 44 kV, Conversion – *scheduled for June 2025***

- **New Load**
- **Solution:** Convert  $\approx 2.5$  miles of existing transmission line from 44 kV to 100 kV, and replace or install (6) 100 kV breakers at Oakboro Tie.

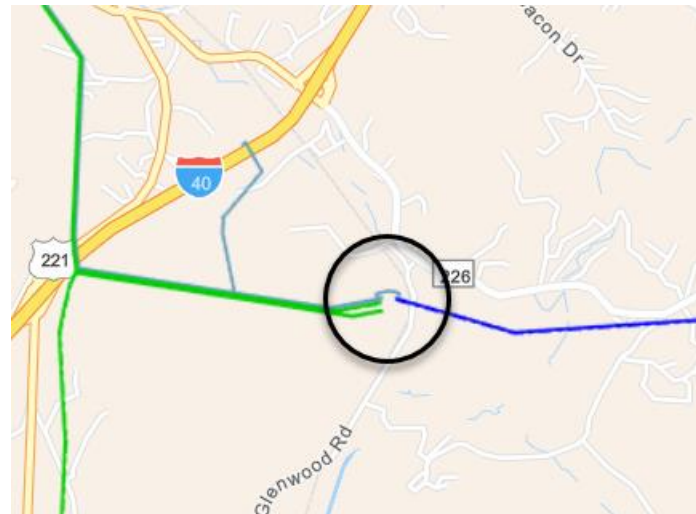




## New Reliability Projects in 2023 Plan

**DEC McDowell Tie 230/100 kV Bank 2, Replace – *scheduled for June 2025***

- **Asset Management**
- **Problem:** Transformer is approaching end of life
- **Solution:** Replace transformer

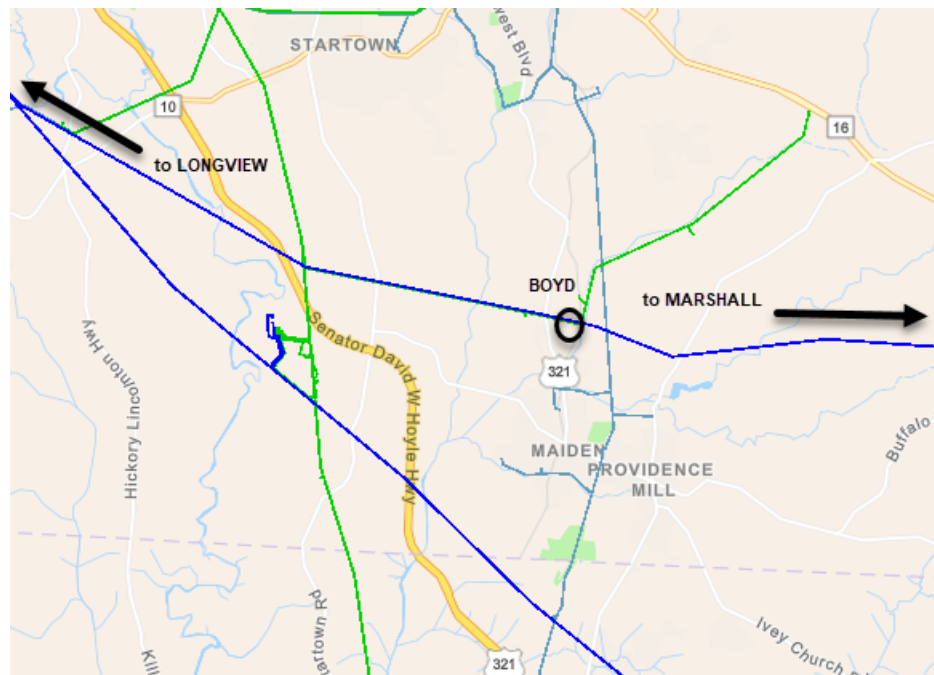




## New Reliability Projects in 2023 Plan

**DEC Boyd Switching Station, Construct – *scheduled for June 2026***

- **New Load**
- **Solution:** Construct new 230 kV switching station on Oliver B/W 230 kV line (Marshall-Longview).

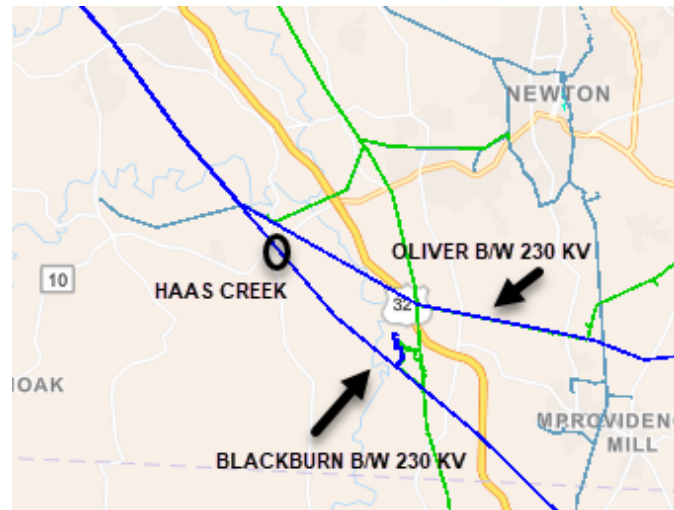




## New Reliability Projects in 2023 Plan

**DEC Haas Creek Switching Station, Construct – *scheduled for June 2026***

- **New Load**
- **Solution:** Construct new 230 kV switching station on Blackburn B/W 230 kV line (Orchard-Longview).

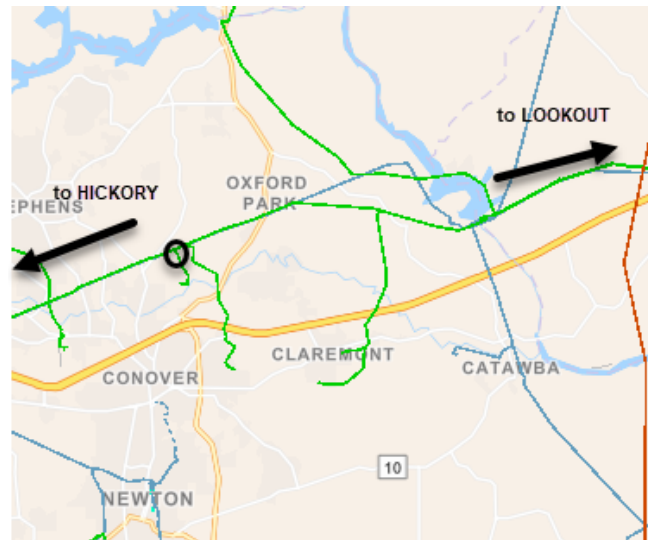




## New Reliability Projects in 2023 Plan

**DEC Lyle Creek Switching Station, Construct – *scheduled for June 2026***

- **New Load**
- **Solution:** Construct new 100 kV switching station on Hickory B/W 100 kV line (Hickory-Lookout).

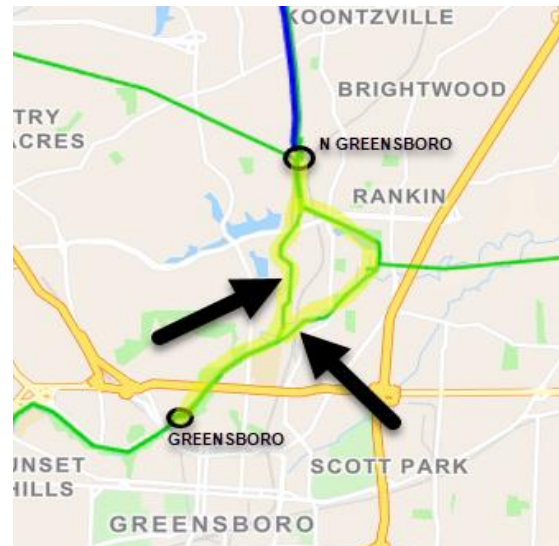




## New Reliability Projects in 2023 Plan

**DEC Page and Guilford 100 kV Lines (Greensboro-North Greensboro), Upgrade – *scheduled for December 2026***

- **NERC Category P2/P4/P6/P7 violation**
- **Problem:** Contingencies at Greensboro or N Greensboro (or involving the transmission lines between those stations) can cause the remaining circuits between the two stations to overload.
- **Solution:** Upgrade both existing transmission lines from 954 ACSR to 1158 ACSS/TW.







## New Reliability Projects in 2023 Plan

### **DEC Cabarrus 100 kV Line (Wildcat-Westfork), Upgrade** – *schedule TBD*

- **NERC Category P2/P4 violation**
- **Problem:** Loss of either circuit can overload the remaining circuit.
- **Solution:** Upgrade 3.1 miles of existing transmission line from 477 ACSR to 1272 ACSR.

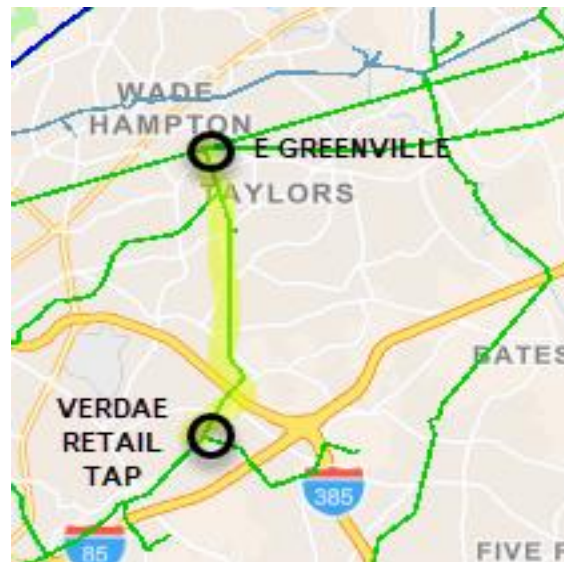




## New Reliability Projects in 2023 Plan

***DEC Sevier 100 kV Line (East Greenville-Verdae Retail Tap), Upgrade – scheduled for December 2026***

- **NERC Category P6 violation**
- **Problem:** Loss of double circuit line between Shady Grove and Oakvale can overload the E Greenville-Verdae Retail Tap section of the Sevier 100 kV line.
- **Solution:** Upgrade 4.9 miles of existing transmission line from 477 ACSR to 795 ACSS/TW.

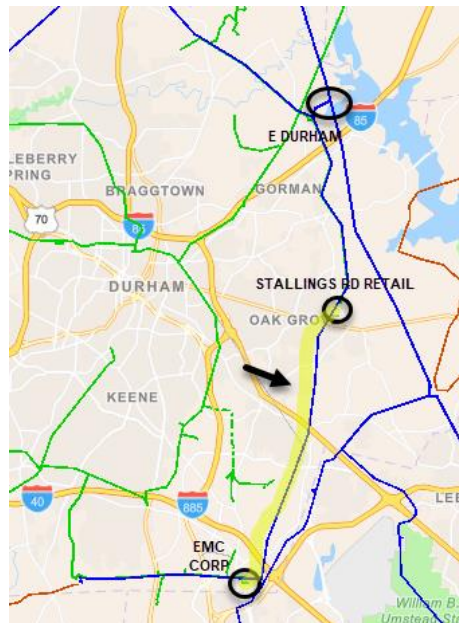




## New Reliability Projects in 2023 Plan

### DEC Panther 100 kV Line (EMC Corp-Stallings Rd Retail), Network

- **DEC Transmission Planning Practices**
- **Problem:** Reliability concerns on radial Panther 100 kV line.
- **Solution:** Network Panther 100 kV line by constructing 8.75 miles of new transmission between Stallings Rd Ret and EMC Corp and re-terminating Stallings Rd Retail to E Durham Tie.

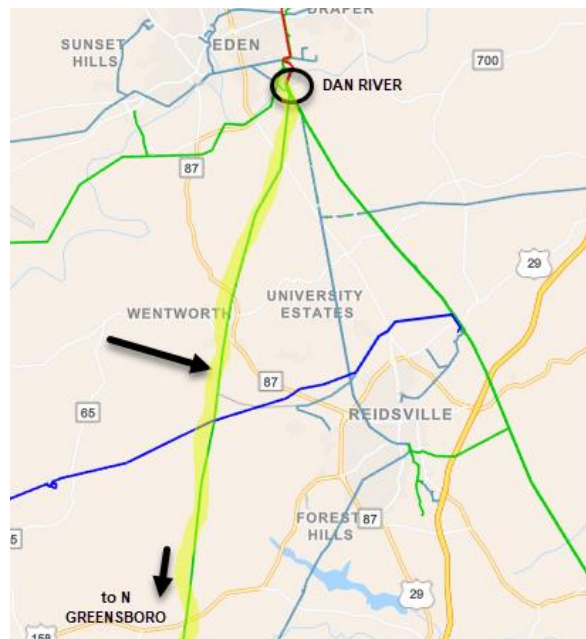




## New Reliability Projects in 2023 Plan

### **DEC Dan River 100 kV Line (Dan River-North Greensboro), Upgrade**

- **NERC Category P2/P4/P6/P7 violation**
- **Problem:** Contingencies around Dan River Steam can cause these circuits to overload.
- **Solution:** Upgrade 25.9 miles of existing transmission line from 336 ACSR to 1272 ACSR.





## New Reliability Projects in 2023 Plan

### **DEC Oliver 230 kV Line (Marshall-Boyd), Upgrade**

- **NERC Category P6/P7 violation**
- **Problem:** Line may overload as load increases at surrounding stations (Boyd, Haas Creek, Lyle Creek).
- **Solution:** Upgrade 15 miles of existing transmission line from 1272 ACSR to B-1272 ACSR.

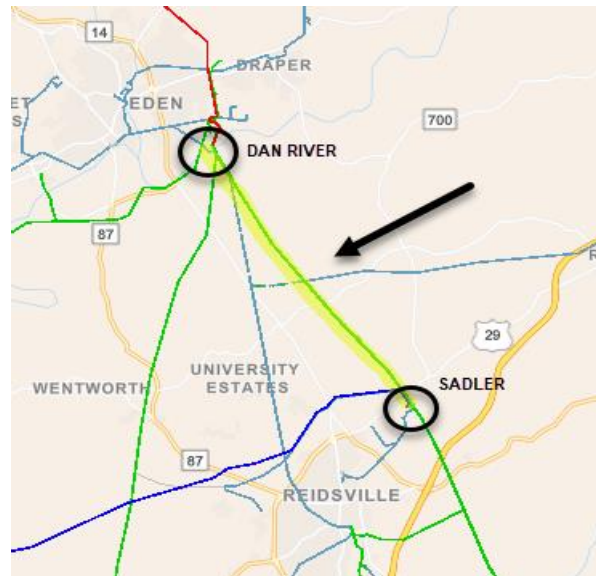




## New Reliability Projects in 2023 Plan

### **DEC Reidsville and Wolf Creek 100 kV Lines (Dan River-Sadler), Upgrade**

- **NERC Category P2/P4 violation**
- **Problem:** Contingencies around Dan River Steam can cause these circuits to overload.
- **Solution:** Upgrade both existing transmission lines from 336 ACSR to 1272 ACSR.



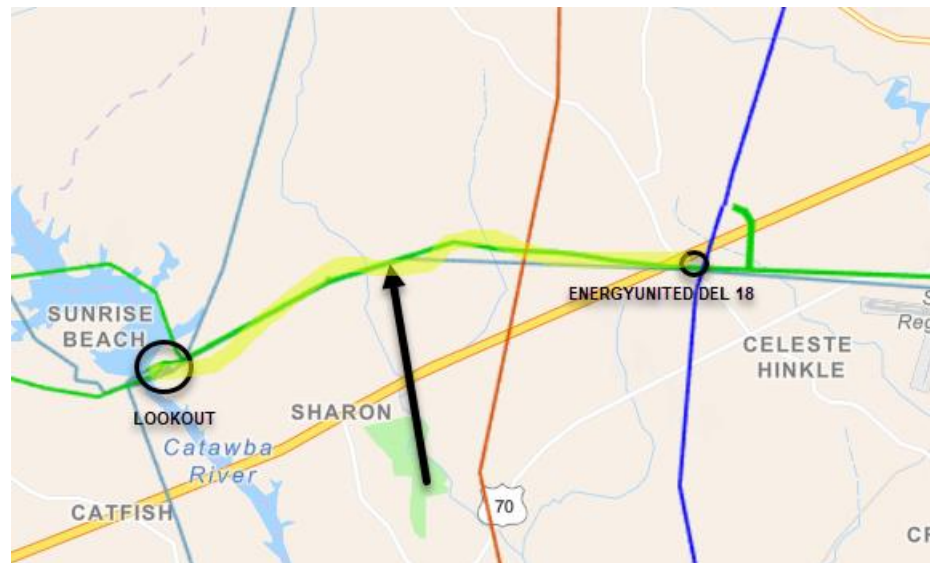




## New Reliability Projects in 2023 Plan

### DEC Beulah 100 kV Line (Lookout-EnergyUnited Del 18), Upgrade

- **NERC Category P1/P2/P3/P4/P5/P6/P7 violation**
- **Problem:** Contingencies involving the loss of either circuit can overload the remaining circuit.
- **Solution:** Upgrade 5.4 miles of existing transmission line from 795 ACSR to 1272 ACSR.





## New Reliability Projects in 2023 Plan

### DEC Hinkle 100 kV Line (Stamey-Statesville), Upgrade

- **NERC Category P3/P6 violation**
- **Problem:** Contingencies involving the loss of either circuit can overload the remaining circuit.
- **Solution:** Upgrade 6 miles of existing transmission line from 795/954 ACSR to 1272 ACSR.



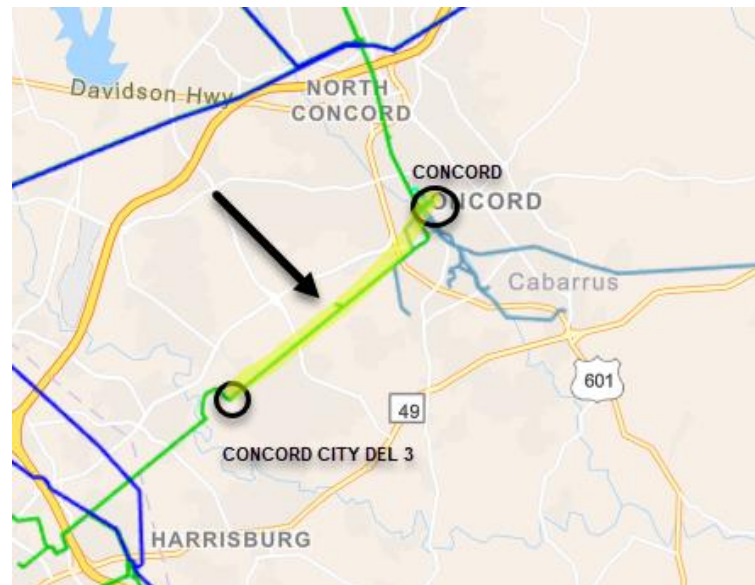




## New Reliability Projects in 2023 Plan

### **DEC Concord 100 kV Line (Concord-Concord City Del 3), Upgrade**

- **NERC Category P2/P4 violation**
- **Problem:** Load growth and contingencies at Harrisburg can cause this line to overload.
- **Solution:** Upgrade 5.5 miles of existing transmission line from 477 ACSR to 1272 ACSR.





## New Reliability Projects in 2023 Plan

***DEC Crab Orchard 100 kV Line (Harrisburg-Amity), Upgrade – scheduled for December 2028***

- **NERC Category P2 violation**
- **Problem:** Contingencies at Harrisburg can cause this line to overload.
- **Solution:** Rebuild 6.45 miles of existing transmission line from 477 ACSR to 1272 ACSR.

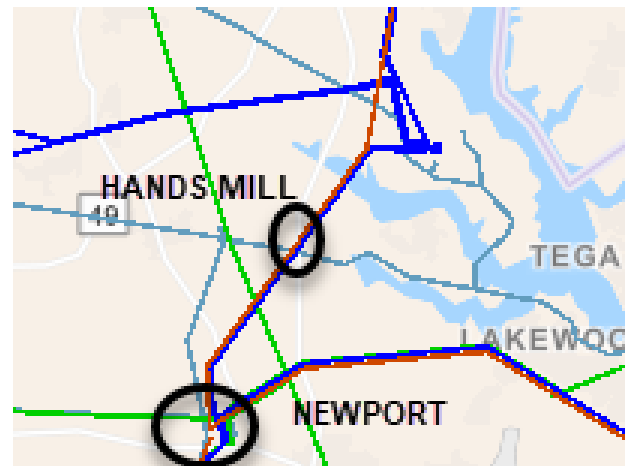




## New Reliability Projects in 2023 Plan

***DEC Hands Mill Switching Station, Construct – scheduled for June 2027***

- **New Load**
- **Solution:** Construct new 230 kV switching station on Newport B/W 230 kV line (Newport-Catawba).

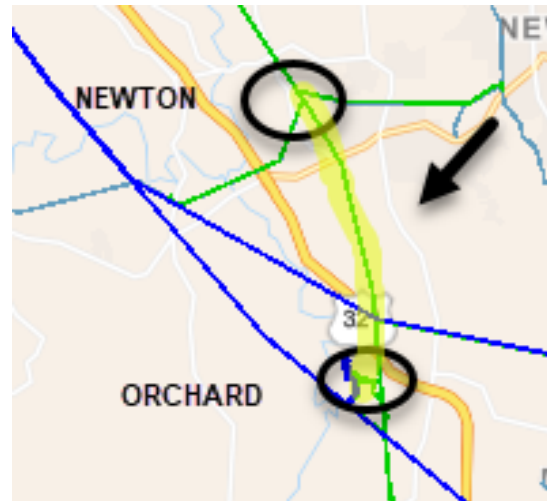




## New Reliability Projects in 2023 Plan

### **DEC Kennedy 100 kV Line (Orchard-Newton Tap), Upgrade**

- **NERC Category P3/P6/P7 violation**
- **Problem:** Loss of the parallel circuit or P6 and P7 events in the local area may overload this line.
- **Solution:** Upgrade 4.2 miles of existing transmission line from 477 ACSR to 1272 ACSR.

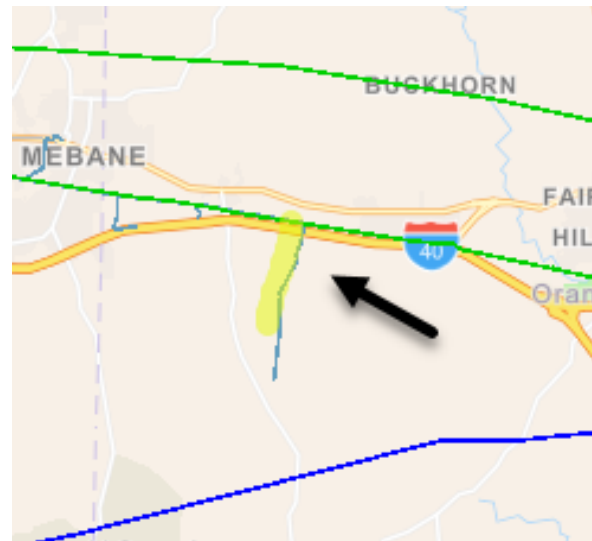




## New Reliability Projects in 2023 Plan

**DEC Buckhorn 44 kV Line, Conversion – *scheduled for December 2024***

- **New Load**
- **Solution:** Convert 2.2 miles of single circuit 44 kV to double circuit (100 kV on one side, 44 kV on the other side), and tap the new 100 kV to the Eno W 100 kV circuit.





## New Reliability Projects in 2023 Plan

***DEC Messer 230 kV Line (Dixon School Rd-Customer), Construct – scheduled for December 2026***

- **New Load**
- **Solution:** Construct 1.3 miles of new transmission line from Dixon School Rd to new Customer.

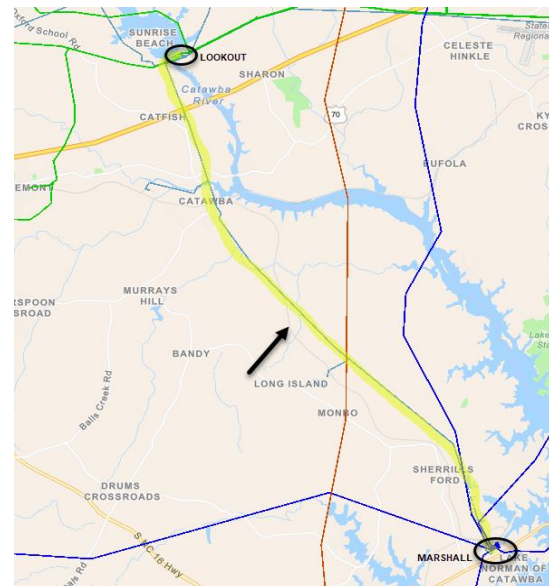




# New Reliability Projects in 2023 Plan

## DEC Terrell 44 kV Line, Conversion

- **DEC Transmission Planning Practices**
- **Problem:** Line can experience thermal and voltage issues during periods of high load.
- **Solution:** Rebuild 14.2 miles of single circuit 44 kV to double circuit 954 ACSR (100 kV on one side, 44 kV on the other side), add 100 kV terminal at Lookout, and convert existing 44 kV deliveries to 100 kV, as needed.





## New Reliability Projects in 2023 Plan

### ***DEC Troutman 44 kV Line, Conversion – scheduled for June 2027***

- **DEC Transmission Planning Practices**
- **Problem:** Line can experience thermal and voltage issues.
- **Solution:** Rebuild 7.7 miles of single circuit 44 kV to double circuit 954 ACSR (100 kV on one side, 44 kV on the other side), and convert Perth Rd Retail from 44 kV to 100 kV.



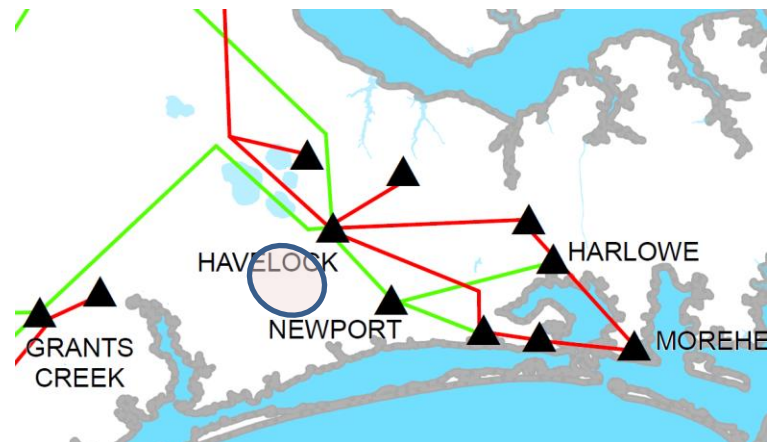




## New Reliability Projects in 2023 Plan

### **DEP Havelock 230/115 kV banks 1 & 2, Replace – *scheduled for June 2024***

- **Problem:** Failure of the Havelock 230 kV CB29 (NERC P2) which results in opening the Havelock 230/115 kV bank #1 and the Havelock –Newport 230 kV line, overloads Havelock bank #2. Also, NERC P6 failure of either Havelock 230/115 kV transformer plus the Havelock-Newport 230 kV line overloads the remaining Havelock transformer.
- **Solution:** This project consists of replacing the two existing 230/115 banks 1 & 2 at the Havelock 230 kV substation rated at 224 MVA with 336 MVA banks.

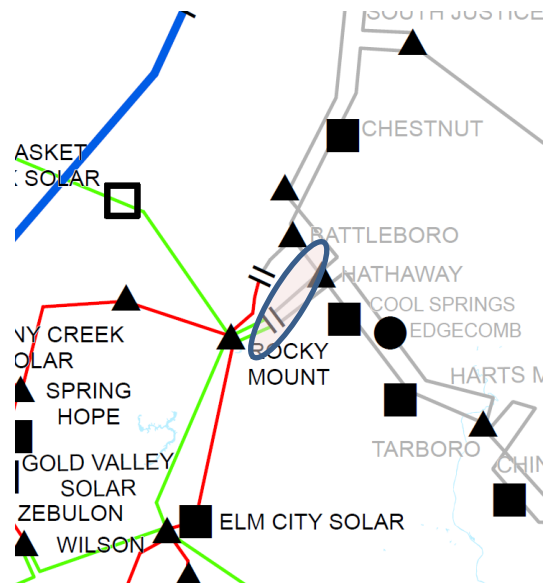




## New Reliability Projects in 2023 Plan

**DEP Rocky Mount – Battleboro 115 kV line, Reconductor – *scheduled for June 2025***

- **Problem:** With generation in the PJM queue, the NERC P7 outage of both Rocky Mount – Hathaway 230 kV lines overloads the Rocky Mount – VEPCO Battleboro 115 kV line.
- **Solution:** Reconductor the Rocky Mount – VEPCO Battleboro 115 kV line with 3-795 MCM ACSS/TW conductor.

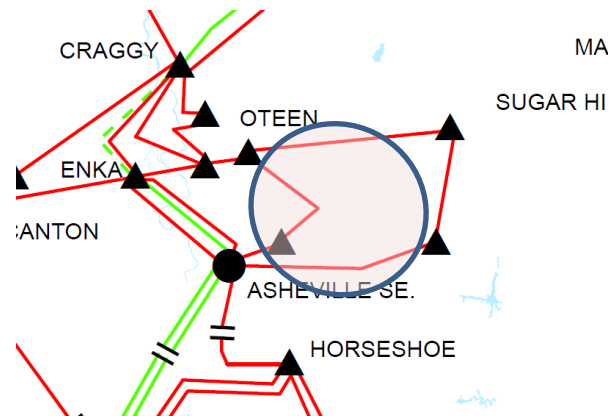




## New Reliability Projects in 2023 Plan

### **DEP Asheville Plant – Oteen 115 kV West line, Construct Arden Tap – *scheduled for June 2026***

- **Problem:** By winter 2024/25, loss of the Asheville Plant terminal of the Asheville Plant-Oteen 115 kV East line will produce voltages on the line below Planning criteria. This project will mitigate this issue.
- **Solution:** This project consists of constructing approximately 2 miles of 1272 MCM ACSR tap line, double circuited with the East line, from structure #2 on the Asheville Plant-Oteen 115 kV West line to Arden 115 kV Substation on the Asheville Plant-Oteen 115 kV East line. Existing right-of-way is to be utilized. The Arden 115 kV Substation will be connected to this new tap line.

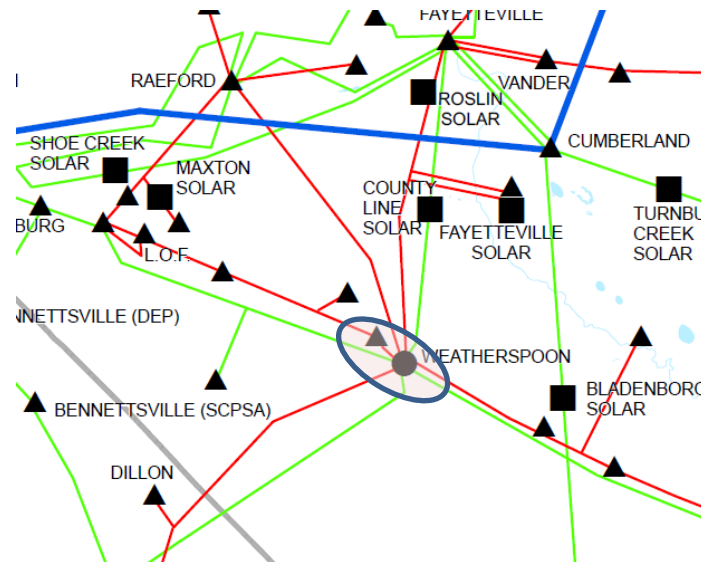




## New Reliability Projects in 2023 Plan

**DEP Weatherspoon - LOF 115 kV line, Reconductor Weatherspoon-LREMC West Lumberton section – *scheduled for December 2026***

- **Problem:** The Weatherspoon-LREMC West Lumberton section of the Weatherspoon-LOF 115 kV line overloads for various P1, P2, P3, & P5 outages.
- **Solution:** Reconductor Weatherspoon-LREMC West Lumberton section (8.26 miles) of Weatherspoon - LOF 115 kV line.

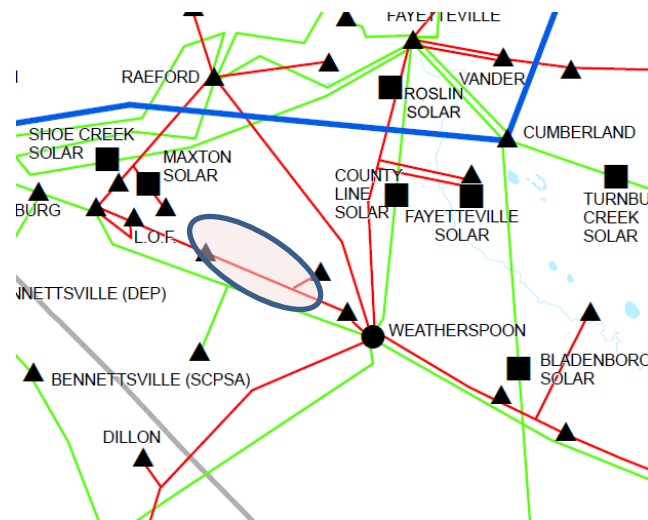




## New Reliability Projects in 2023 Plan

### **DEP Weatherspoon-LOF 115 kV Line, Reconductor Maxton-Pembroke Section – *scheduled for June 2026***

- **Problem:** By winter 2026/27, with a Brunswick Unit down, loss of the Weatherspoon-Laurinburg 230 kV Line will cause the Maxton-Pembroke section of the Weatherspoon-LOF 115 kV Line to overload.
- **Solution:** Reconductor with 795 MCM ACSR or equivalent from Maxton to Pembroke 115 kV substation which is approximately 9 miles. Replace the existing 600A switch (45-2) with a 1200A switch.

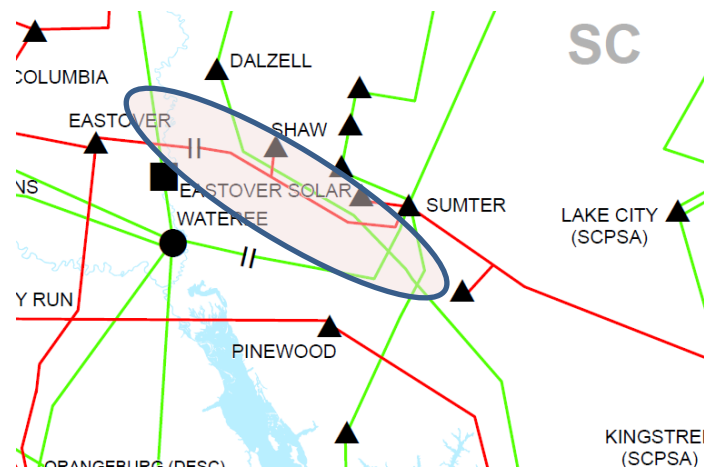




## New Reliability Projects in 2023 Plan

**DEP Sumter – SCEG Eastover 115 kV line, Reconductor Kings Hwy - Shaw Field - Eastover sections, raise Gold Kist Tap - Str #427 to 212F – *scheduled for June 2027***

- **Problem:** Various P3 outages consisting of a double circuit line outage along with a TRM scenario with a large generator down cause the Shaw Field Tap-Eastover section of the Sumter-Eastover 115 kV line to overload.
- **Solution:** Reconductor Sumter Kings Hwy - Shaw Field Tap and Shaw Field Tap - DESC Eastover sections of Sumter-Eastover 115 kV line to 1272 ACSR and raise Sumter Gold Kist Tap - Str #427 to 212 F.

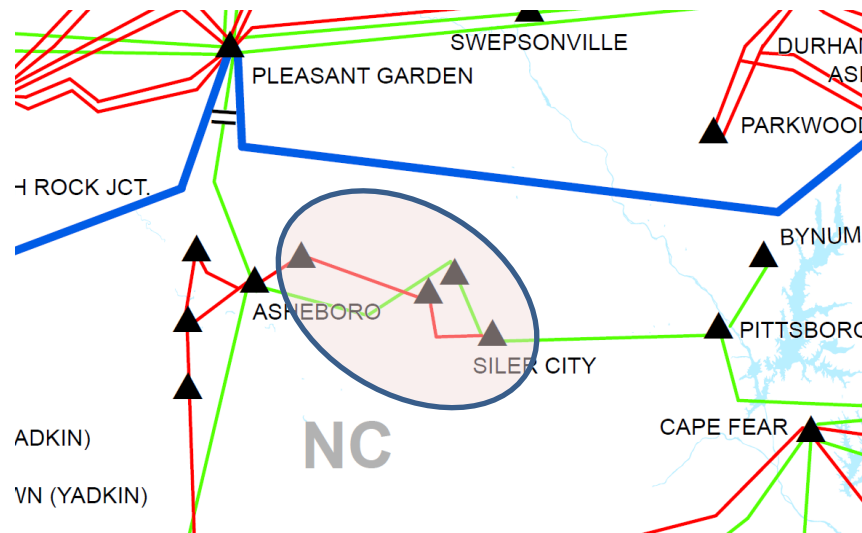




## New Reliability Projects in 2023 Plan

### DEP Brush Creek, Add STATCOM – *scheduled for December 2028*

- **Problem:** This upgrade is needed for the addition of new economic development loads. With the addition of these new loads certain contingencies cause low voltages on the grid. The reactive power from the STATCOM is needed to mitigate this.
- **Solution:** Add STATCOM to Brush Creek 230 kV Switching Station.

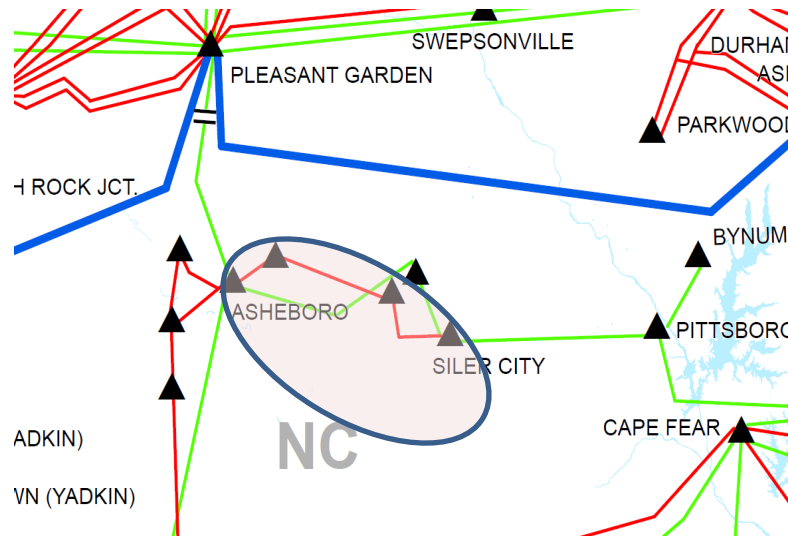




## New Reliability Projects in 2023 Plan

**DEP Asheboro – Siler City 115 kV line, Reconductor – *scheduled for December 2028***

- **Problem:** This upgrade is needed for the addition of new economic development loads.
- **Solution:** Reconductor 22.66 mi of the entire Asheboro – Siler City 115 kV Line.



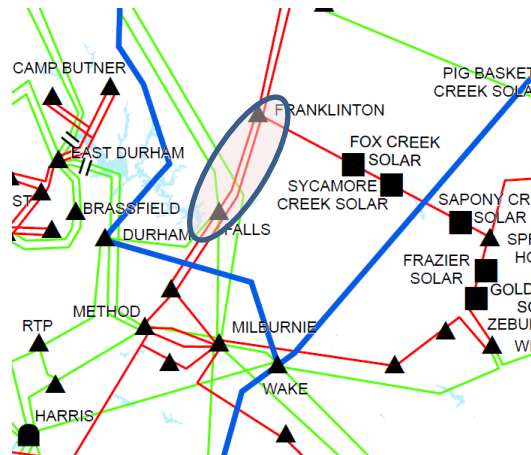




## New Reliability Projects in 2023 Plan

### **DEP Franklinton - Franklinton Novo 115 kV Feeder, Construct New Line – *scheduled for December 2028***

- **Problem:** NERC P1 outage of the Novozymes-Franklinton segment of the Franklinton-Spring Hope SS 115 kV line causes low voltages at buses on the line even after addition of the Louisburg 115 kV capacitor. Also caused by the P2 outage of the Franklinton 115 Bus and multiple P3 scenarios. Additionally, NERC P6 outage of Henderson-Person 230 kV Line and Concord 230/115 kV transformer #1 & bus causes the Falls-Wake EMC POD section of the Falls-Franklinton 115 kV West Line to overload.
- **Solution:** Construct new line from Franklinton – Franklinton Novo 115 kV feeder

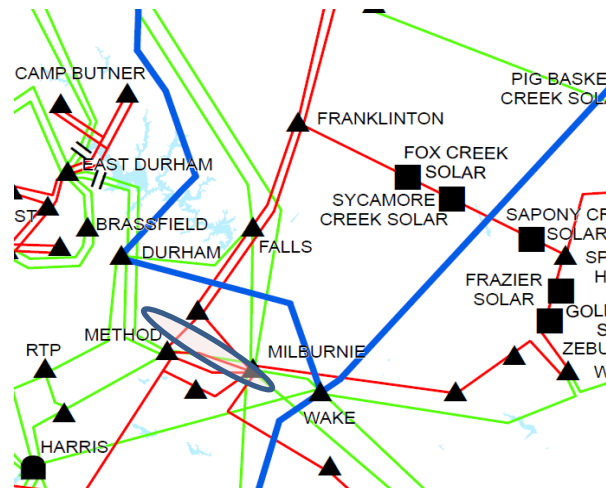




## New Reliability Projects in 2023 Plan

### **DEP Method - Milburnie 115 kV North line, Reconductor – *scheduled for June 2033***

- **Problem:** Various P2 and P3 outages consisting of either a breaker outage or a line section outage along with a TRM scenario with a large generator down cause the Method-Raleigh Northside & the Milburnie-Raleigh Timberlake sections of the Method - Milburnie 115 kV North line to overload. A reconductor is needed for a higher summer rating.
- **Solution:** Reconductor 7.32 mi (2 sections) of the Method – Milburnie 115 kV North line.

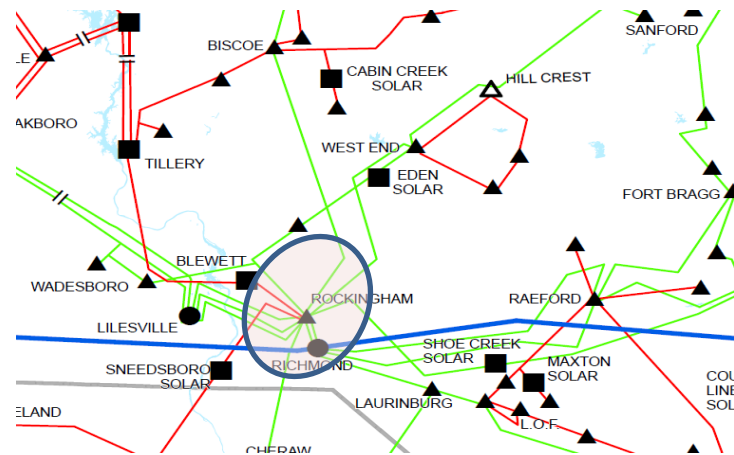




## New Reliability Projects in 2023 Plan

### **DEP Rockingham – West End 230 kV West line, Reconductor – schedule TBD**

- **Problem:** Various P3 outages consisting of a double circuit line outage or single line section outage along with a TRM scenario with a large generator down cause the Rockingham-Wadesboro Tap section of the Rockingham – West End 230 kV West line to overload.
- **Solution:** Reconductor the Rockingham-Wadesboro Tap section (7.96 miles) of the Rockingham – West End 230 kV West line.





## 2022 Transmission Plan Public Policy Results

The 2023 Plan includes 1 new DEP projects resulting from the Local Public Policy Planning Process:

**Project ID**

**DEP Projects**

85

Camden – Camden Dupont 115 kV Line, reconductor

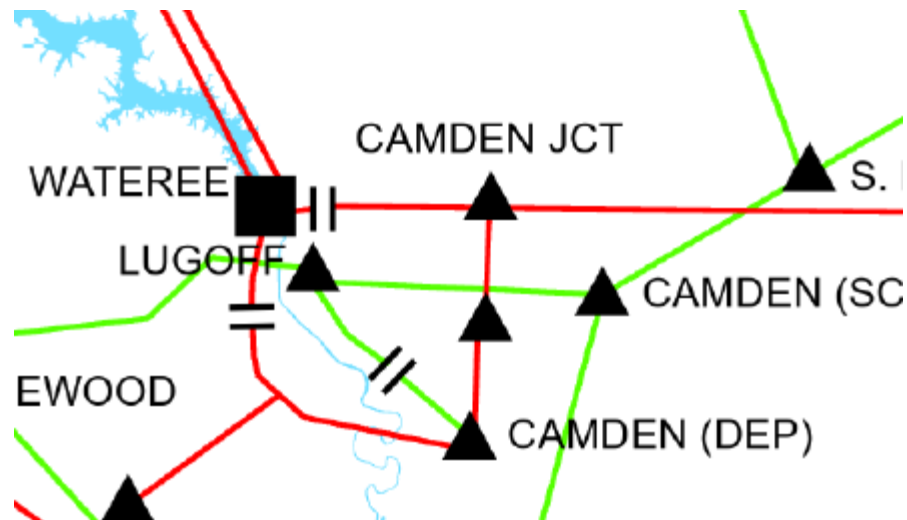
***DEP New Public Policy Projects Total - \$11M***



## New Public Policy Projects in 2023 Plan

**DEP Camden – Camden Dupont 115 kV Line, reconductor – *scheduled for 12/1/2024***

- **Proactive Solar Upgrade**
- **Problem:** This upgrade is needed for future solar generation proposed for compliance with the Carbon Plan goals.
- **Solution:** Rebuild 115 kV line.





## ***Comparison to Previous Collaborative Transmission Plan***

	<b>2022 Original Plan</b>	<b>2022 Plan Mid-year Update</b>	<b>2023 Plan</b>
<b>Number of projects</b>	<b>38</b>	<b>38</b>	<b>72</b>
<b>Total estimated cost of Plan</b>	<b>\$1.49 B</b>	<b>\$1.464 B</b>	<b>\$2.397 B</b>



## Study Report Prepared

- **OSC expects to distribute and post the Final Draft of the 2023 Collaborative Transmission Plan Study Report mid January**
- **TAG will be requested to provide any input to the OSC on the 2023 Collaborative Transmission Plan Study Report. Provide input by February 15, 2023 to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))**



# 2023 Public Policy Study

- **2033 Summer Peak, 2033/34 Winter Peak**
- **Modified version of Portfolio P1**
  - Retirement of fossil generation
  - Incremental solar and solar + storage
    - 12.5 GW vs 9.3 GW
  - Onshore wind
  - Offshore wind (DEP)
  - Small Modular Reactor (SMR) (DEC)
  - CC and CT
  - Additional CTs, as needed, at existing generating facilities
  - Pumped Storage Hydro (DEC)
  - Standalone Batteries





# 2023 Public Policy Study

- **Analysis performed during Q1 2024**
- **Supplemental report to follow**



# Questions ?





# **Transmission Planning Process Attachment N-1 Report**

**Sammy Roberts - Duke Energy**



# CTPC Planning Study Process Changes

## Local Transmission Planning Process Changes

October 4

October 25

November 1

November

December 7

2024

Pre-filing Meeting with FERC Staff on Proposed Attachment N-1 Changes

Responses Provided to TAG Input on Proposed Attachment N-1 Changes

Filed Changes to Attachment N-1 of the OATT with FERC to Align with Local Transmission Plan Process Changes

Protests Filed With FERC on Proposed Attachment N-1 Changes

Responses to Protests Filed

Implement Local Transmission Planning Process Changes Accepted by FERC





## CTPC Planning Study Process Changes

***Purpose: Adopt Practices from FERC NOPR and Other Regions' Transmission Planning Processes to enable least cost planning for resources and load***

- Transparency and Coordination
  - More clarity on sharing models and associated data
  - Process clarity around content shared in TAG meetings
  
- Strategic Transmission Planning
  - Long-term scenario planning that evaluates transmission needs based on changing resources and loads
  - Evaluate multi-value benefit streams for proposed projects to arrive at least cost recommendations that meet identified needs



## CTPC Planning Study Process Changes

### ***TAG Stakeholder Feedback***

#### **Section 2.4.3.1 et seq. of Proposed Revisions**

Many TPC procedures and requirements are set forth in external documents (e.g. the Participation Agreement and Scope documents) that are not part of the tariff. While we understand that having those documents outside the tariff provides additional flexibility, in the interest of transparency the OATT should provide that any changes to these documents are subject to review and comment by stakeholders.

#### **Support Documents Provided for Review:**

- *CTPC Model and Data Requests draft 12-8-2023*
- *CTPC NDA template\_DEC draft 11-9-2023*
- *CTPC NDA template\_DEP draft 11-9-2023*
- *CTPC Transmission Cost Allocation draft 11-9-2023*
- *Multi-Value Strategic Transmission Planning Process draft 11-13-2023*
- *Scope - Oversight Steering Committee draft 11-9-2023*
- *Scope - Planning Working Group draft 11-9-2023*
- *Scope - Transmission Advisory Group draft 11-9-2023*
- *Seventh Revised Participation Agreement draft 11-25-2023*



## CTPC Planning Study Process Changes

### **Support Documents - CTPC Model and Data Requests draft 12-8-2023**

Individuals desiring to obtain Base Case Data or Change Case Data must submit a completed request form, found at the end of this procedure, to the appropriate Duke Energy OASIS Contact ([DEC Transmission Provider](#), [DEP Transmission Provider](#)) as well as execute a Non-Disclosure Agreement for Critical Energy Infrastructure Information (“NDA”). These forms for DEC and DEP NDAs are posted on the CTPC website.

Once the completed CEII Request Form and NDA has been submitted to the Transmission Provider, the Transmission Provider will in most cases exercise the option to conduct a [background check](#).

Transmission customers and individuals that have been approved for access to Base Case Data or Change Case Data use their browser to access <https://sftp2.duke-energy.com>. Use the UserId/Password provided.



## CTPC Planning Study Process Changes

**Support Documents - CTPC NDA template\_DEC draft 11-9-2023;**

**CTPC NDA template\_DEP draft 11-9-2023**

**NDA** - I hereby certify that access to Data is being provided to me pursuant to the terms and conditions of the Critical Energy Infrastructure Information Recipient Non-Disclosure Agreement Between Duke Energy Carolinas, LLC and Recipient dated \_\_\_\_\_, 20\_\_\_\_ (the "Non-Disclosure Agreement"), that I have been given a copy of and have read the Non-Disclosure Agreement, and that I agree to be bound by it. I understand that the contents of the Data, any notes or other memoranda, or any other form of information that copies or discloses CEII must not be disclosed to anyone other than in accordance with the terms of the Non-Disclosure Agreement.





## CTPC Planning Study Process Changes

### **Support Documents - CTPC Transmission Cost Allocation draft 11-9-2023**

The CTPC Participants have developed an “avoided cost” cost allocation methodology that applies to Joint Local Reliability Projects where there is a demonstration that a local transmission solution and local approach to cost allocation results in cost savings. Such “Joint Local Regional Reliability Projects” are projects that are proposed in lieu of “Reliability Projects,” which are projects required to preserve system reliability. The CTPC Participants also have developed a “requestor pays” cost allocation methodology that applies to “Joint Local Economic Projects” which improve economic power transfers between control areas.



## CTPC Planning Study Process Changes

### **Support Documents - Multi-Value Strategic Transmission Planning Process draft 11-13-2023**

- Study Process for MVST Projects

On at least a triennial basis, the study process for MVST Projects allows the OSC and TAG participants to propose different scenarios for evaluation of new resource supply options, changing load dynamics, transmission solutions requiring longer lead times, generator retirements, and/or economic development opportunities (“Strategic Planning Scenarios”).

- Scenario Development
- Study Criteria, Assumptions, and Methodology
- MVST Study Identified Transmission Needs
- MVST Study Proposed Solutions to Identified Transmission Needs
- MVST Projects and the Local Transmission Plan Report



## **CTPC Planning Study Process Changes**

**Support Documents - Multi-Value Strategic Transmission Planning Process draft 11-13-2023**

### **STRATEGIC PLANNING SCENARIO PROPOSAL FORM**

- GENERAL DESCRIPTION OF PROPOSED STRATEGIC PLANNING SCENARIO
- PROPOSED MODELS TO BE USED AND REASON FOR INCLUSION
- PROPOSED ASSUMPTIONS TO BE USED AND WHY
- PROPOSED DATA SOURCES TO BE USED
- PROPOSED PLANNING HORIZON TO BE USED FOR SCENARIO AND WHY
- (Optional) SUGGESTED BENEFIT METRICS AND ASSOCIATED METHODOLOGY FOR CONSIDERATION IN EVALUATING POTENTIAL SOLUTIONS



## CTPC Planning Study Process Changes

### **Support Documents - Oversight Steering Committee draft 11-9-2023**

#### **OSC Committee Structure**

The OSC shall select a Chair, Vice Chair, and Treasurer from among its members. The term of office for these positions is two years. The officer positions will be rotated among the participating investor- owned utilities, electric membership cooperatives (EMC) and municipalities (Muni) (e.g., officer rotation would occur every two years among the groups) according to the following schedule: EMC and Muni participant, DEC, EMC and Muni participant, DEP. At any one time, each officer position shall be represented by a different Participant organization. Furthermore, this rotation of Chair should ensure that one Company is not selected as the Chair of the PWG and Chair of the OSC during the same term.



## **CTPC Planning Study Process Changes**

**Support Documents - Scope - Planning Working Group draft 11-9-2023**

### **PWG Committee Structure**

The PWG shall select its Chair, Vice Chair, and Secretary from among its members. The term of office for these positions is two years. The officer positions will be rotated among the participating investor- owned utilities, electric membership cooperatives (EMC) and municipalities (Muni) (e.g., officer rotation would occur every two years among the groups) according to the following schedule: EMC and Muni participant, Duke Energy Carolinas, EMC and Muni participant, Duke Energy Progress. At any one time, each officer position shall be represented by a different Participant organization. This rotation should ensure that one Company is not selected as the Chair of the PWG and Chair of the OSC during the same term.



## CTPC Planning Study Process Changes

### **Support Documents - Scope - Transmission Advisory Group draft 11-9-2023**

#### **Purpose**

The **Transmission Advisory Group (TAG)** is formed to provide advice and recommendations to the CTPC Participants to aid in the development of an annual Local Transmission Plan, thereby providing a structure such that interested parties can provide meaningful input into the CTPC Process. Attachment N-1 of Duke Energy Carolinas, LLC's (DEC) and Duke Energy Progress, LLC's (DEP) Joint Open Access Transmission Tariff defines opportunities for input from TAG participants.

The specific responsibilities of the TAG participants include:

Proposing and selecting the studies for Local Economic Projects and Strategic Planning Scenarios for Multi-Value Strategic Transmission Projects, as permitted by Attachment N-1 in the DEC/DEP Joint OATT.

#### **TAG Sector Voting**

However, in the event consensus cannot be reached, the TAG Sector Voting Process will be conducted pursuant to the process described in Section 2.4.4, Attachment N-1 of the Joint OATT.

#### **Data and Information Release Protocol**

TAG participants can request data and information that would allow them to replicate the CTPC planning studies while ensuring that CEII and other confidential data is protected. Base case power flow models developed by DEC and/or DEP for CTPC study purposes will be made available to TAG participants after the Needs meeting.



## CTPC Planning Study Process Changes

### **Support Documents - Seventh Revised Participation Agreement draft 11-25-2023**

**Additional Participants.** Annually during the fourth quarter of the calendar year Load-Serving Entities taking transmission service from DEC or DEP can petition through request sent to the CTPC Administrator to become a Participant in the CTPC. Before the end of each calendar year, the OSC will vote on approving each LSE's petition to become a participant. The LSE(s) will become Participants at the start of the following calendar year planning cycle. Upon additional Participant(s) being approved by the OSC, this document shall be revised to reflect inclusions of such additional Participant(s) in accordance with Section 22. Amendment for New Participants.



# *Questions?*







# 2024 Study Scope Discussion

**Bill Quaintance - Duke Energy Progress**



# 2024 Study Scope Discussion

**Bill Quaintance - Duke Energy Progress**



## Current 2023 Study

- **Base reliability case analysis – 2028 Summer, 2028-29 Winter, 2033 Summer, and 2033-34 Winter**
  - **An “All Firm Transmission” Case(s) were developed which considered all confirmed long term firm transmission reservations with roll-over rights applicable to the study year(s)**
  - **DEC and DEP generation down cases were created from the common Base Case**
- **Public Policy – 2033 Summer and 2033-34 Winter**



## **2024 Proposed Study Scope**

- **Base reliability case analysis – 2029 Summer, 2029-30 Winter, 2034 Summer, and 2034-35 Winter**
  - **An “All Firm Transmission” Case(s) will be developed which will consider all confirmed long term firm transmission reservations with roll-over rights applicable to the study year(s)**
  - **DEC and DEP generation down cases will be created from the common Base Case**
- **Alternate scenarios will use 2034 Summer and/or 2034-35 Winter cases**
- **Study scope to be determined**



## **Past Studies' Alternate Scenarios**

- **Hypothetical Imports/Exports re-evaluated every other year (last performed in 2022)**
  - 1000 MW transfers typical
- **Hypothetical Carolinas Generation**
- **High Renewables (Solar, On Shore Wind, Off Shore Wind, Storage)**
- **Faster Retirement of Coal Units**



# Local Economic Study Requests

- **Propose economic hypothetical scenarios to be studied as part of the transmission planning process**
- **Requests can include in, out, and through transmission service**
- **Official TAG request will be distributed on **January 5, 2024****



# Public Policy Study Requests

- Provide input on public policies that may drive the need for local transmission studies
- Official TAG request will be distributed on **January 5, 2024**



## **TAG Input Request**

- **TAG is requested to provide any additional input to the OSC on the 2024 Study Scope, any additional suggested study scenarios, as well as input on Local Economic Study Requests and Public Policy Study Requests.**
- **Stakeholder feedback is needed!**
- **Provide input by **February 9, 2024** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))**





# Questions ?





# Regional Studies Reports

**Bob Pierce**

**Duke Energy Carolinas**



# **SERC Long Term Working Group Update**



# SERC Long Term Working Group

- Begin coordinating 2024 model development in late January
  
- Building 2023 series MMWG cases
  - Steady state cases complete and are available
  - Working on Stability cases



# SERTP



## SERTP

- 4<sup>th</sup> Quarter Meeting on December 7<sup>th</sup>
- Presentation posted on SERTP website



<http://www.southeasternrtp.com/>



**EIPC**





## EIPC

- Continue working with NREL/PNNL to refine their models for performance of powerflow and production cost analysis for their National Transmission Plan Study



## EIPC

- DOE have completed the National Transmission Needs Study (formerly the triennial congestion study)
  - NIETC RFP & Corridor Designation – 4th Quarter
  - Designate corridors next year
- Increased Interaction with FERC/NERC/NAESB



## DOE

- National Transmission Needs Study
- National Transmission Plan Study
- Grid Deployment Office
  - Resilience and Grid Innovation
  - Smart Grid
  - Clean Nuclear
  - Transmission Facilitation
  - Financing



**NERC**



## **NERC**

### **Winter Storm Elliott Joint Report**

<https://www.ferc.gov/news-events/news/ferc-nerc-release-final-report-lessons-winter-storm-elliott>



## DOE

**USGS** science for a changing world **BERKELEY LAB**

Home Viewer Get Data API Partners Help Guide

### The U.S. Large-Scale Solar Photovoltaic Database

The United States Large-Scale Solar Photovoltaic Database (USPVDB) provides the locations and array boundaries of U.S. ground-mounted photovoltaic (PV) facilities with capacity of 1 megawatt or more. It includes corresponding PV facility information, including panel type, site type, and initial year of operation. The creation of this database was jointly funded by the U.S. Department of Energy (DOE) [Solar Energy Technologies Office \(SETO\)](#) via the Lawrence Berkeley National Laboratory (LBNL) [Energy Markets and Policy Department](#), and the U.S. Geological Survey (USGS) [Energy Resources Program](#). The PV facility records are collected from the U.S. [Energy Information Administration \(EIA\)](#), position-verified and digitized from aerial imagery, and checked for quality. EIA facility data are supplemented with additional attributes obtained from public sources.

[Launch the USPVDB Viewer](#)

### About the Database

In 2020, LBNL and USGS began collaborating on development of the USPVDB to create an accurate, comprehensive, and publicly accessible national large-scale PV database of large-scale PV facilities that includes estimates of the total footprint (i.e., facility size based on array boundaries) of each facility. This work builds on expertise developed through the creation and maintenance of the [U.S. Wind Turbine Database \(USWTDB\)](#) since 2016.

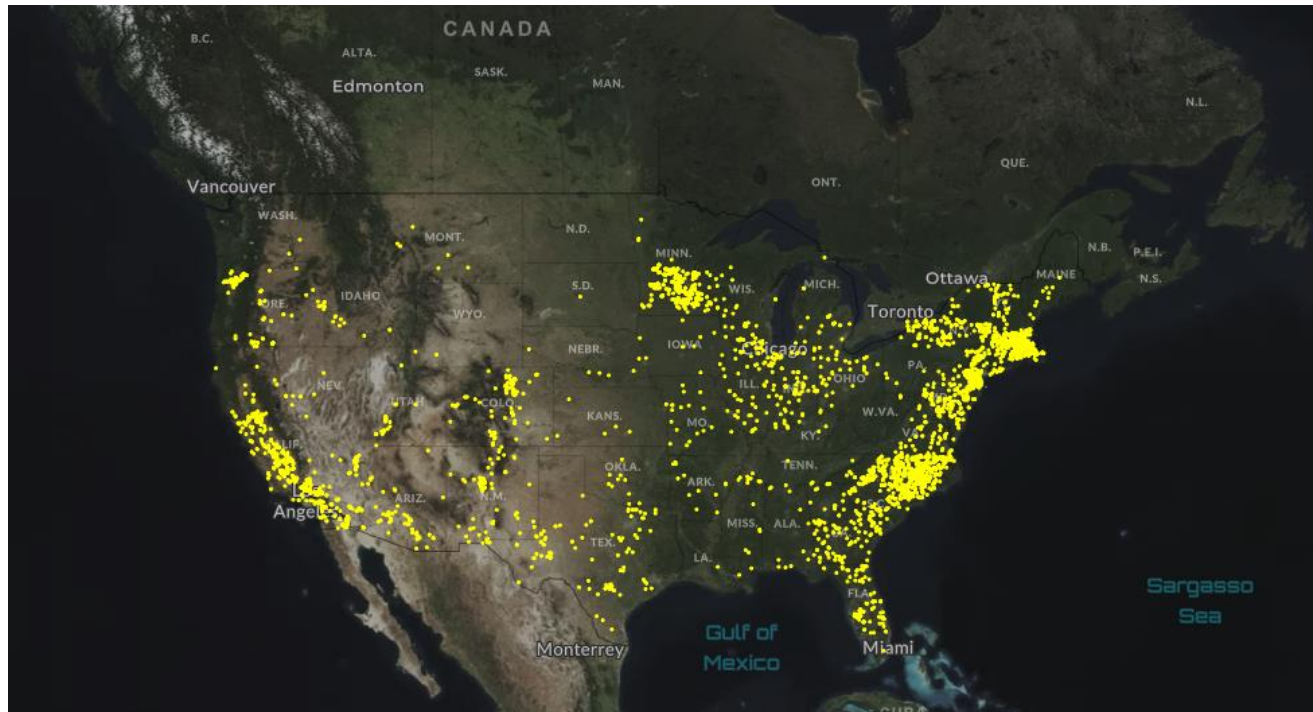
The data may be used by government agencies, scientists, private companies, and other stakeholders for a variety of analyses. Examples include operational impact analyses related to the role of solar energy in the U.S. electric grid, interactions between PV facilities and the natural environment, and investments in PV infrastructure.

With the release of this public version, we hope researchers and other interested parties around the world will use the data to further their efforts. If you have feedback or want to let us know how you are using the data, [send us a note @ gs-uspvdb@usgs.gov](mailto:gs-uspvdb@usgs.gov); [uspvdb@lbl.gov](mailto:uspvdb@lbl.gov).

The database combines datasets from the U.S. EIA, the Environmental Protection Agency (EPA) and the National Renewable Energy Laboratory (NREL). The locations and array boundaries of all facilities were visually verified and digitized to within 10 meters using high-resolution aerial imagery.



# DOE



[https://eerscmap.usgs.gov/uspvdb/?utm\\_medium=email&utm\\_source=govdelivery](https://eerscmap.usgs.gov/uspvdb/?utm_medium=email&utm_source=govdelivery)



# *Questions ?*







# 2023 TAG Work Plan

**Rich Wodyka**  
**Administrator**



## 2023 NCTPC Overview Schedule

### Reliability Planning Process

- Evaluate current reliability problems and transmission upgrade plans
  - Perform analysis, identify problems, and develop solutions
  - Review Reliability Study Results

### Local Economic Planning Process

- Propose and select Local Economic Studies and Public Policy Study scenarios
  - Perform analysis, identify problems, and develop solutions
  - Review Local Economic Study and Public Policy Results

### Coordinated Plan Development

- Combine Reliability and Local Economic Study and Public Policy Results
  - OSC publishes DRAFT Plan
  - TAG review and comment

TAG Meetings





# January - February – March

## Fourth Quarter TAG Meeting – January 18, 2023

### ➤ 2022 Study Update

- ✓ Received Final DRAFT of 2022 Collaborative Transmission Plan Report

### ➤ TAG is invited to provide any additional comments or questions to the OSC on the 2022 Collaborative Transmission Plan.

- ✓ Provide input by **February 8, 2023** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))



## January - February – March

### ➤ 2023 Study – Finalize Study Scope of Work

- ✓ Received request from OSC to provide input on proposed Local Economic Study scenarios and interfaces for study (Request sent on January 3<sup>rd</sup>)
  - *TAG requested to provide input to the OSC on proposed Local Economic Study scenarios and interfaces for study*
  - Provide input by **February 8, 2023** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))
- ✓ Received request from OSC to provide input in identifying any public policies that are driving the need for local transmission (Request sent on January 3<sup>rd</sup>)
  - *TAG requested to provide input to the OSC in identifying any public policies that are driving the need for local transmission for study*
  - Provide input by **February 8, 2023** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))
- ✓ Received final 2023 Study Scope of Work for review and comment
  - *TAG review and provide comments to the OSC on the final 2023 Study Scope of Work*



## January - February – March

- **First Quarter TAG Meeting – March 15, 2023**
  
- **2023 Study Update**
  - ✓ Received a progress report on the 2023 Study Activities
  - ✓ Received an update on the 2023 Study Scope of Work and any study scenarios that are driving the need for local transmission



## **April - May – June**

### **Second Quarter TAG Meeting – June 21, 2023**

- ✓ **2023 Study Update**
  - Received a progress report on 2023 Study Activities
  - Received final 2023 Study Scope of Work for review and comment
- ✓ **Received Mid Year update status of the upgrades in the 2022 Collaborative Plan**
- ✓ **Received a report on the Duke Energy Red-Zone Transmission Expansion Plan Projects (RZEP 2.0)**
- ✓ **Received a progress report on the Transmission Planning Process Attachment N-1 activities**
- ✓ **Received a report on various Regional Studies Activities**
- ✓ **Received an update on the TAG Work Plan**



# July - August – September

## Third Quarter TAG Meeting – September 14, 2023

### ✓ 2023 Reliability Study Update

- Received a progress report on the 2023 Study Activities and Preliminary Reliability Study Results
- *TAG is requested to provide feedback to the OSC on the technical analysis performed, the problems identified as well as proposing alternative solutions to the reliability problems identified*
  - ❖ Provide feedback on Preliminary Reliability Study Results by **October 16, 2023** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))



## **July - August – September**

### **Third Quarter TAG Meeting – September 14, 2023**

- ✓ **Received a report on the Duke Energy Red-Zone Transmission Expansion Plan Projects (RZEP 2.0)**
- ✓ **Received a progress report on the Transmission Planning Process Attachment N-1 activities**
- ✓ **Received a report on various Regional Studies Activities**
- ✓ **Received an update on the TAG Work Plan**





## October - November - December

### Fourth Quarter TAG Meeting – **December 14<sup>th</sup>**

#### ➤ 2023 Study Update

- ✓ TAG will receive feedback from the OSC on any reliability project alternative solutions that were proposed by TAG members
- Receive Final DRAFT of the 2023 Collaborative Transmission Plan Report – **mid January**
- Receive a report on the 2023 Public Policy Study Results – **TBD**

#### ➤ 2024 Study Scope

- ✓ Discuss potential Study Scope scenarios for 2024 studies



# Questions ?





# 2024 TAG Work Plan

**Rich Wodyka**  
**Administrator**



## 2024 NCTPC Overview Schedule

### Reliability Planning Process

- Evaluate current reliability problems and transmission upgrade plans
  - Perform analysis, identify problems, and develop solutions
  - Review Reliability Study Results

### Local Economic Planning Process

- Propose and select Local Economic Studies and Public Policy Study scenarios
  - Perform analysis, identify problems, and develop solutions
  - Review Local Economic Study and Public Policy Results

### Coordinated Plan Development

- Combine Reliability and Local Economic Study and Public Policy Results
  - OSC publishes DRAFT Plan
  - TAG review and comment

TAG Meetings





# January - February – March

## First Quarter TAG Meeting – **TBD**

### ➤ 2023 Study Update

- Receive Final DRAFT of 2023 Collaborative Transmission Plan Report – **mid January 2024**

### ➤ TAG is invited to provide any additional comments or questions to the OSC on the 2023 Collaborative Transmission Plan.

- Provide input by **February 9, 2024** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))



## January - February – March

### ➤ 2024 Study – Finalize Study Scope of Work

- Receive request from OSC to provide input on proposed Local Economic Study scenarios and interfaces for study (Request sent on January 3<sup>rd</sup>)
  - *TAG requested to provide input to the OSC on proposed Local Economic Study scenarios and interfaces for study*
  - Provide input by **February 9, 2024** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))
- Receive request from OSC to provide input in identifying any public policies that are driving the need for local transmission (Request sent on January 3<sup>rd</sup>)
  - *TAG requested to provide input to the OSC in identifying any public policies that are driving the need for local transmission for study*
  - Provide input by **February 9, 2024** to Rich Wodyka ([rich.wodyka@gmail.com](mailto:rich.wodyka@gmail.com))
- Receive final 2024 Study Scope of Work for review and comment
  - *TAG review and provide comments to the OSC on the final 2024 Study Scope of Work*



## **January - February – March**

### **➤ 2024 Study Update**

- **Receive a report on the Final 2024 Study Scope of Work and any study scenarios that are driving the need for local transmission**
- **Receive a progress report on the 2024 Study Activities**



## **April - May – June**

### **Second Quarter TAG Meeting – TBD**

- **2024 Study Update**
  - **Receive a progress report on Study Activities**
  - **Receive update status of the upgrades in the 2023 Collaborative Plan**





# July - August – September

## Third Quarter TAG Meeting – TBD

### ➤ 2024 Study Update

- Receive a progress report on the Study Activities and Preliminary Study Results
- TAG is requested to provide feedback to the OSC on the technical analysis performed, the problems identified as well as proposing alternative solutions to the problems identified



# October - November - December

## Fourth Quarter TAG Meeting – TBD

### ➤ 2024 Study Update

- TAG will receive feedback from the OSC on any alternative solutions that were proposed by TAG members
- Receive and discuss Final DRAFT of the 2024 Collaborative Transmission Plan Report

### ➤ 2025 Study Scope

- Discuss potential Study Scope scenarios for 2025 studies



# Questions ?





**TAG**  
**Open Forum Discussion**

*Comments or Questions?*