



TAG Meeting

March 28, 2022

Webinar



TAG Meeting Agenda

- 1. Administrative Items – Rich Wodyka**
- 2. Current NCTPC Study Process Limitations-
Mark Byrd**
- 3. 2021 Public Policy Study Report – Orvane Piper
and Sid DeSouza**
- 4. 2022 Study Activities and Study Scope Report
– Mark Byrd**
- 5. Regional Studies Update – Bob Pierce**
- 6. 2022 TAG Work Plan – Rich Wodyka**
- 7. TAG Open Forum – Rich Wodyka**



Current NCTPC Study Process Limitations

Mark Byrd - Duke Energy Progress



Current NCTPC Study Process Limitations

- **2021 Public Policy Results will not be inclusive of all the transmission that would be required by official generator interconnection or transfer study requests**
 - These NCTPC Public Policy Results studies have historically been used for high-level screening and informational purposes



Current NCTPC Study Process Limitations

- **Current NCTPC practices do not produce the same results as true Generator Interconnection and Transmission Service Request studies**
 - The 2021 Public Policy Study request was for a case where all proposed study resources were online and other resources were reduced economically
 - Other possible dispatches and combinations of transfers would need to be analyzed
- **The study process could be enhanced for future Public Policy Study requests to mimic the OATT process studies**



2021 Public Policy Study

Orvane Piper – Duke Energy Carolinas
Sid DeSouza - Duke Energy Progress



2021 Public Policy Study

- **This is not...**
 - **HB 951 Study**
 - **Generator Interconnection Study**
 - **Transmission Service Request**

- **This is...**
 - **A data point based on one hypothetical scenario**



2021 Public Policy Study - Assumptions

Accelerated Retirement of Coal Generation

➤ **DEC**

- Allen 1-5
- Belews Creek 1-2 (Dual Fuel Optionality)
- Cliffside 5
- Marshall 1-4 (Dual Fuel Optionality)

➤ **DEP**

- Mayo 1
- Roxboro 1-4



2021 Public Policy Study - Assumptions

Hypothetical Combined Cycle at Roxboro

- Included in study proposal
- Excluded from study



2021 Public Policy Study - Assumptions

Increased Solar Generation

➤ **DEC**

- Additional 3000 MW

➤ **DEP**

- Additional 1500 MW
- Assumes battery storage at Mayo (568 MW)



2021 Public Policy Study - Assumptions

Increased Wind Generation

➤ **DEC**

- Import 1000 MW of offshore wind (from DEP)
- Import 1500 MW of onshore wind (from Midwest)

➤ **DEP**

- Inject 1600 MW of offshore wind at New Bern 230 kV
 - ❖ Export 1000 MW (to DEC)
- Import 1000 MW of onshore wind (from Midwest)

➤ **DVP**

- Inject 2640 MW of offshore wind at Fentress 500 kV
 - ❖ Scale down other DVP generation by 2640 MW



2021 Public Policy Study - Cases

Case 1: On-Peak Load

- 100% summer peak load
- Coal retirements as specified
- Solar
 - DEC: 80% of nameplate, based on historical data
 - DEP: 50% of nameplate, based on historical data
- Wind (Offshore, Onshore)
 - 100% of nameplate
- Mayo battery discharging
- Economically dispatch remaining generation



2021 Public Policy Study - Cases

Case 2: Off-Peak Load

- 75% summer peak load (DEC)
- 83% summer peak load (DEP)
- Coal retirements as specified
- Solar
 - 100% of nameplate
- Wind (Offshore, Onshore)
 - 100% of nameplate
- Mayo battery charging
- Economically dispatch remaining generation



2021 Public Policy Study - Methodology

- **2031 Summer**
- **Power Flow only**
 - Stability, Short Circuit, etc. have not been studied
- **Results are focused on DEC and DEP**
 - Affected System process evaluates impacts to external systems



2021 Public Policy Study - Limitations

- **Study is based on a single year (2031)**
- **Generator Interconnection process is outside of the NCTPC process**
- **Locations of replacement generation are unknown**
- **Locations of future renewables on external systems are unknown**
 - Affected System process evaluates impacts to DEC and DEP



2021 Public Policy Study - Results (DEC)

Reliability Project	Mileage	Estimated Cost (\$M)
Upgrade Bannertown 100 kV Lines (Bannertown-Mitchell River)	18.7	63.6
Upgrade Kennedy 100 kV Lines (Newton-Orchard)	4.2	14.3
Upgrade Lee 100 kV Lines (Lee-Shady Grove)	9.78	33.3
Upgrade Piedmont 100 kV Lines (Lee-Shady Grove)	9.62	32.8
Upgrade Wateree 100 kV Lines (Great Falls-Wateree)	19.8	67.4



2021 Public Policy Study - Results (DEP)

Reliability Project	Mileage	Estimated Cost (\$M)
Reconductor Fayetteville-Hope Mills Church St. section of the Fay-Fay Dupont 115 kV line	4.9	12.04
Reconductor Hope Mills Church St.-Roslin Solar section of the Fay-Fay Dupont 115 kV line	3.0	7.0
Raise Dillon Tap-Marion section of the Weatherspoon – Marion 115 kV Line to 212 F Rating	14.6	6.87
Shaw AFB-Eastover section of Sumter – SCE&G Eastover 115kV Tie Line. Working with Dominion SCEG to get higher line rating.	7.3	n/a



2021 Public Policy Study - Results (DEP)

Reliability Project	Mileage	Estimated Cost (\$M)
Replace New Bern Transformers to 336 MVA Banks	n/a	8.0
Upgrade Bus tie breaker to 3000A at New Bern 230 kV Substation	n/a	2.0
Upgrade entire Kinston Dupont-New Bern 115 kV Line to 212 F Rating	29.6	14.8
Upgrade entire Havelock-New Bern 230 kV Line to 212 F Rating. Change CT ratio at Havelock.	23.5	23.5



2021 Public Policy Study - Results (DEP)

Reliability Project	Mileage	Estimated Cost (\$M)
Uprate two sections of Aurora-New Bern 230 kV Line to 212 F Rating	8.5	8.5
Reconductor both sections of New Bern-Wommack 230 kV North Line	32	96.0

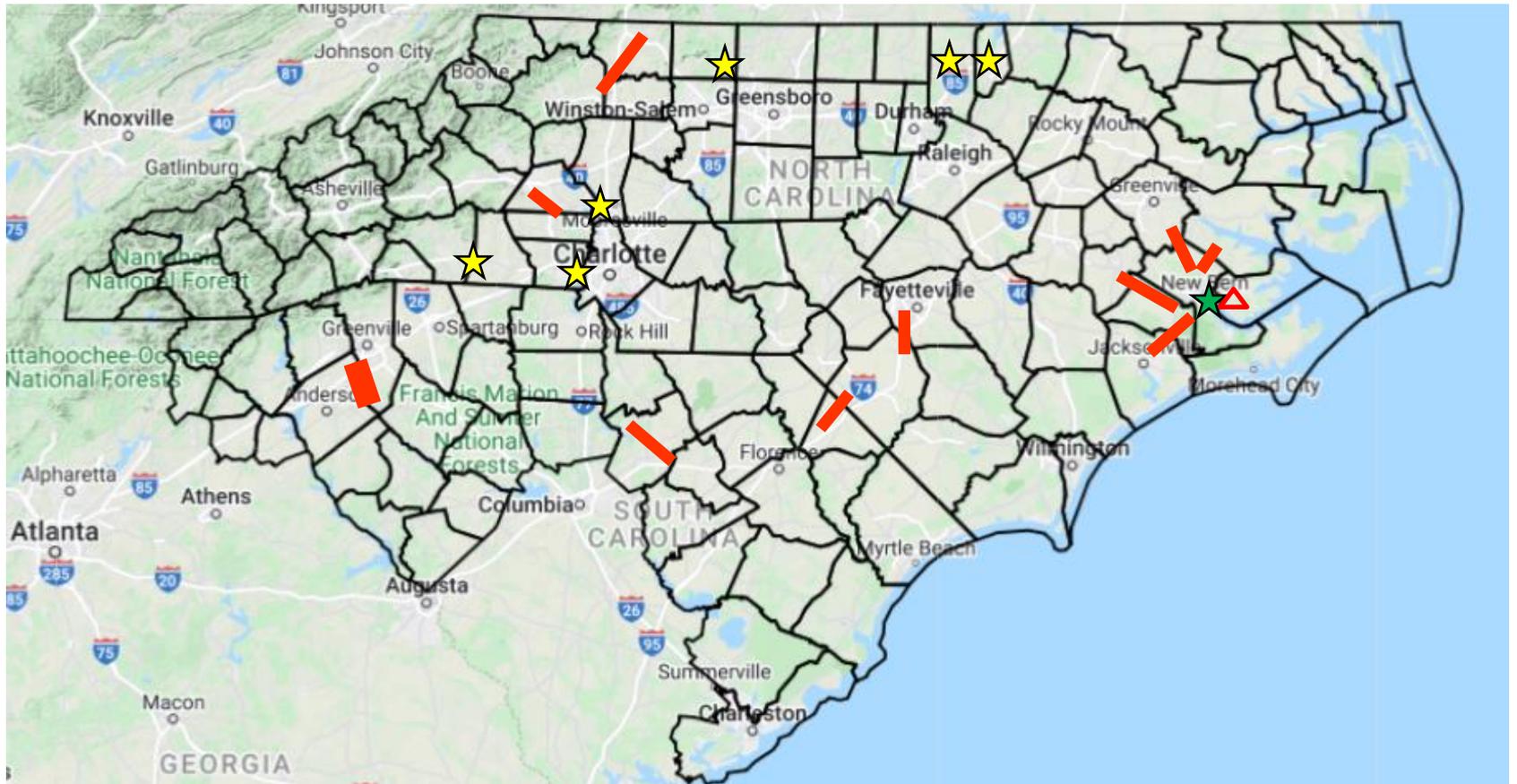


2021 Public Policy Study - Results (DEP & DEC Total)

<u>Area</u>	<u>Estimated Cost</u>
DEC	\$ 211.40 M
DEP	\$ <u>178.71 M</u>
Total	\$ 390.11 M



2021 Public Policy Study - Map





2021 Public Policy Study - Takeaways

- **Study outputs are dependent on study inputs**
- **Additional studies are required to understand impacts of House Bill 951**
- **Need to understand best locations for solar**
- **Need to understand best locations for offshore wind**
- **May have to look at solar and wind separately to see how each affects the upgrades determined**
- **Some areas of the transmission system can accommodate renewable integration at a low cost. These may or may not be good locations based on other considerations beyond the transmission system.**



Questions ?





2022 Study Activities and Study Scope Report

Mark Byrd
Duke Energy Progress



Studies Proposed for 2022

- **Annual Reliability Study**
 - Assess DEC and DEP transmission systems' reliability and develop a single Collaborative Transmission Plan
- **Resource Supply Option - Biennially - Assess DEC and DEP interfaces with neighboring systems by modeling hypothetical transfers (last performed in 2019)**
- **Local Economic Studies / Public Policy Studies**
 - 4 Local Economic Study Requests Received
 - 2 Public Policy Requests Received



2022 Reliability Study Scope

- **Base reliability case analysis – 2027 summer and 2027/2028 winter and 2032/33 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
- **Assess DEC and DEP interfaces with neighboring systems – 2032/33 winter**



Resource Supply Scenario

- **Hypothetical Imports/Exports to be Evaluated**
 - The PWG will analyze cases to determine the impacts of fifteen different hypothetical transfers into and out of the DEC and DEP systems. These fifteen hypothetical transfer scenarios are identified in the following tables
 - 3 of the transfers (shown in Red) will be responsive to 2022 Economic Study Requests received



2032/33W Hypothetical Import/Export

Resource From	Sink	Test Level (MW)
PJM	DUK ¹	1,000
SOCO	DUK	1,000
CPL ²	DUK	1,000
TVA ³	DUK	1,000
PJM	CPL	1,000

1 – DUK is the Balancing Authority Area for DEC

2 – CPL is the eastern Balancing Authority Area for DEP

3 - This hypothetical transfer is intended to evaluate the impact of a 1,000 MW TVA transaction through the SOCO transmission system into DUK



2032/33W Hypothetical Import/Export

Resource From	Sink	Test Level (MW)
DUK	CPLE	1,000
DUK	SOCO	1,000
PJM	DUK/CPLE	1,000/1,000
DUK/CPLE	PJM	1,000/1,000
CPLE	PJM	1,000



2032/33W Hypothetical Import/Export

Resource From	Sink	Test Level (MW)
DUK	PJM	1,000
DUK	SCPSA	750
DUK ⁵	TVA	1,000
PJM ⁶	SCPSA	500
DEP	SCPSA	500

4 – This hypothetical transfer is intended to evaluate the impact of a 1,000 MW Southern Co transaction through the DEC transmission system into CPLE

5 – This hypothetical transfer is intended to evaluate the impact of a 1,000 MW DUK transaction through the SOCO transmission system into TVA

6 – This hypothetical transfer is intended to evaluate the impact of a 500 MW PJM transaction through the CPLE transmission system into SCPSA



4 Local Economic Study Requests

- **Requested by Central Electric Power Cooperative all starting 1/1/29**
 - **DEP-SCPSA 500MW**
 - **PJM-SCPSA 500MW**
 - **Cherokee Co. Gen (DEC)-SCPSA 750MW**
 - **Anderson Co. Gen (DEC)-SCPSA 750MW**
- **Will be analyzed as 3 Hypothetical Import/Exports for 2032/33 Winter**



2 Public Policy Study Requests

- **NC Utilities Commission Request**
 - Requested NCTPC Joint Study with PJM to analyze potential transmission impacts of proposed PJM offshore wind generation on the Duke Energy system
 - Call was held on March 1 with Requestor to discuss the details
 - NCTPC explained that official OATT Affected System process is underway
 - NCUC has agreed to put this request on hold



2 Public Policy Study Requests

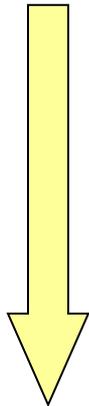
- **Clean Power Suppliers Association/Pine Gate Renewables Request**
 - **Public Policy referenced is NC H.B. 951 Plan for achieving a 70% reduction in carbon dioxide emissions from Duke Energy's North Carolina generation fleet relative to 2005 levels by 2030**
 - **Evaluate the infrastructure upgrades needed to support the addition of at least 9 GW of solar generating resources to the grid**
 - **Call was held on February 28 with Requestor to discuss the details**
 - **On-going discussions continue and more detailed scoping will need to be developed after results of Transitional Cluster and the May 16th Carbon Plan filing are reviewed**



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**





Study Assumptions Selected

- **Study Year's for reliability analyses:**
 - Near-term: 2027 Summer, 2027/2028 Winter
 - Longer-term: 2032/33 Winter
- **LSEs provided:**
 - Input for load forecasts and resource supply assumptions
 - Dispatch order for their resources
- **Adjustments may be made based on additional coordination with neighboring transmission systems**



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

- **Start with 2021 series MMWG cases**
- **Latest updates to detailed models for DEC and DEP systems will be included**
- **Planned transmission additions from updated 2021 Plan will be included in models**

Technical Analysis

- **Conduct thermal screenings of the cases**



Problems Identified and Solutions Developed

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



Collaborative Plan Projects Selected

- **Compare all alternatives and select preferred solutions**

Study Report Prepared

- **Prepare draft report and distribute to TAG for review and comment**



Questions ?





Regional Studies Reports

Bob Pierce
Duke Energy Carolinas



SERC Long Term Working Group Update



SERC Long Term Working Group

- **Have begun work on 2022 series of LTWG cases**
- **2026 LTWG Summer Study to be made public with FERC 715 filings. Nothing unexpected for DEC and DEP in the results.**



SERTP



SERTP

- **1st Quarter Meeting was held virtually on March 22nd.**
- **Determined Economic Planning Studies to be performed for 2022**
- **Training session topic – SERTP Economic Planning Studies Process**



SERTP

No.	Requestor	Source	Sink	Amount	Year
1	NCEMC (J. Manning)	Southern	DEC	1000	2032 (s)
2	NCEMC (J. Manning)	SCE & G	DEC	1000	2032 (s)
3	Santee Cooper (M. Morgan)	SOCO	SC	600	2027 (w)
4	Santee Cooper (M. Morgan)	SOCO	SC	500	2024 (s)
5	Santee Cooper (M. Morgan)	DEC	SC	600	2027 (w)



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



NERC



NERC

2022 SERC Audits – Transmission Planning

- **CIP - 014**
- **TPL - 001**
- **FAC - 008**



Questions ?





2022 TAG Work Plan

Rich Wodyka
Administrator



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
 - OSC publishes FINAL Plan

TAG Meetings





January - February – March

➤ 2021 Study Update

- ✓ Receive Final 2021 Collaborative Transmission Plan Report
- Receive Draft 2021 Public Policy Study Report
 - *TAG provide input to the OSC on Public Policy Study results*

➤ 2022 Study – Finalize Study Scope of Work

- ✓ Receive request from OSC to provide input on proposed Local Economic Study scenarios and interfaces for study
 - *TAG provide input to the OSC on proposed Local Economic Study scenarios and interfaces for study*
- ✓ Receive request from OSC to provide input in identifying any public policies that are driving the need for local transmission
 - *TAG provide input to the OSC in identifying any public policies that are driving the need for local transmission for study*
- Receive final 2022 Reliability Study Scope for comment
 - *TAG review and provide comments to the OSC on the final 2021 Study Scope*



January - February – March

First Quarter TAG Meeting – March 28th

➤ **2021 Public Policy Study Analysis**

- **Receive report on and discuss the final draft of the 2021 Public Policy Study Report**

➤ **2022 Study Update**

- **Receive a report on the Local Economic Study scope and any public policy scenarios that are driving the need for local transmission for study**
- **Receive a progress report on the Reliability Planning study activities and the final 2022 Study Scope**



April - May – June

Second Quarter TAG Meeting – TBD

- **2022 Study Update**
 - **Receive a progress report on study activities**
 - **Receive update status of the upgrades in the 2021 Collaborative Plan**



July - August – September

Third Quarter TAG Meeting – TBD

➤ 2022 Study Update

- Receive a progress report on the study activities and preliminary 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

➤ 2022 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 2022 Collaborative Transmission Plan Report**

➤ 2023 Study Scope

- **Discuss potential study scope scenarios for 2023 studies**



Questions ?





TAG
Open Forum Discussion

Comments or Questions?