

TAG Meeting June 21, 2023

Webinar



TAG Meeting Agenda

- Administrative Items Rich Wodyka
- 2023 Study Activities and Study Scope Update Orvane Piper
- 3. NCTPC 2022 Collaborative Transmission Plan Mid-year Update Bill Quaintance
- 4. Duke Energy Red-Zone Transmission Expansion Plan Projects (RZEP 2.0) Sammy Roberts
- 5. Transmission Planning Process Attachment N-1 Report Sammy Roberts
- 6. Regional Studies Update Bob Pierce
- 7. 2023 TAG Work Plan Rich Wodyka
- 8. TAG Open Forum Rich Wodyka



2023 Study Activities and Study Scope

Orvane Piper – Duke Energy Carolinas



Studies for 2023

Reliability Study

 Assess DEC and DEP transmission systems' reliability, and develop a single Collaborative Transmission Plan

- 2 Public Policy requests received
 - Summarized on later slides
- Study will combine aspects of both requests



Reliability Study Scope

Base Reliability

- Peak load
 - Summer (2028, 2033)
 - Winter (2028/29, 2033/34)
- "All Firm Transmission" cases, which consider all confirmed long-term firm transmission reservations with rollover rights applicable to the study years
- Does not include generation without an executed Interconnection Agreement
- Generation economically dispatched
- Generation down cases created from common Base Cases



NC Public Staff Request

- Focused on Carbon Plan and additional 230 kV and/or 500 kV transmission that may be needed long-term
- Retirement of coal generation and integration of new resources
 - Solar (and Solar + Storage)
 - Procurement-based
 - Standalone Storage
 - Onshore and Offshore Wind
 - Combined Cycle, Combustion Turbines
- Perform comparable to Generator Interconnection study



- Clean Energy Stakeholders Request
 - Focused on Carbon Plan and additional transmission needed to meet 2030 targets
 - Start with Carbon Plan Near-Term Execution Plan
 - 2 potential volumes of additional solar
 - 9.3 GW
 - 12.5 GW
 - 3 potential distributions (for location) of additional solar
 - Queue-based
 - Zone-based
 - Procurement-based



- 2023 Public Policy Study
 - 2033 Summer Peak, 2033/34 Winter Peak
 - Modified version of Portfolio P1
 - Retirement of fossil generation
 - DEC: Allen 1-5, Cliffside 5, Lee 3, Marshall 1-4
 - DEP: Roxboro 1-4, Mayo 1, Weatherspoon CTs, Blewett CTs



- 2023 Public Policy Study (continued)
 - Modified version of Portfolio P1 (continued)
 - Incremental 12.5 GW of solar and solar + storage
 - 70% DEP, 30% DEC
 - Locations based on historical Generator Interconnection Requests
 - 9.3 GW scenario will be evaluated <u>after</u> 12.5 GW scenario
 - Onshore wind
 - Offshore wind (DEP)
 - New Bern



- 2023 Public Policy Study (continued)
 - Modified version of Portfolio P1 (continued)
 - SMR (DEC)
 - Marshall
 - CC and CT
 - DEC: Marshall
 - DEP: Roxboro
 - Additional CTs, as needed, at existing generating facilities



- 2023 Public Policy Study (continued)
 - Modified version of Portfolio P1 (continued)
 - Pumped Storage Hydro (DEC)
 - Bad Creek
 - Standalone Batteries
 - Batteries Paired With Solar





Study Process Steps



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



Assumptions Selected

- Study Years for reliability analyses, select from:
 - Near-term: 2028 Summer, 2028/29 Winter
 - Long-term: 2033 Summer, 2033/34 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 2022 series of MMWG cases
- Latest updates to detailed models for DEC and DEP systems will be included
- Planned transmission additions from updated 2022 Plan will be included in relevant models

Technical Analysis Performed

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







NCTPC 2022 Collaborative Transmission Plan Update

Bill Quaintance Duke Energy Progress



2023 Mid-Year Update to the 2022 Collaborative Transmission Plan

Reliability Projects:

- 5 project cost estimates went up, and 12 went down, by at least\$1M
- 3 projects were accelerated, and 7 were delayed
- > Total Reliability Project Cost estimate dropped from \$936M to \$897M



Reliability Projects in 2022 Plan							
Reliability Project	то	Planned I/S Date					
Windmere 100 kV Line (Dan River-Sadler), Construct	DEC	Accelerated 6/1/2023					
Wilkes 230/100 kV Tie Station, Construct	DEC	Accelerated 6/1/2024					
Wateree 100 kV Line (Great Falls-Wateree), Upgrade	DEC	Delayed 6/1/2024					
Silas 100 kV Line (Mocksville-Idols Tap), Upgrade	DEC	6/1/2025					
Cokesbury 100 kV Line (Coronaca–Hodges), Upgrade	DEC	Delayed 12/1/2025					



Reliability Projects in 2022 Plan							
Reliability Project	то	Planned I/S Date					
South Point 100 kV Switching Station, Construct	DEC	12/1/2025					
North Greenville 230 kV Tie Station, Upgrade	DEC	Accelerated 12/1/2025					
Coronaca 100 kV Line (Coronaca-Creto), Upgrade and Construct	DEC	Delayed 12/1/2026					
Wylie 100 kV Line (Wylie-Arrowood Retail), Upgrade	DEC	12/1/2026					
Monroe 100 kV Line (Lancaster-Monroe), Upgrade	DEC	12/1/2027					



Reliability Projects in 2022 Plan						
Reliability Project	то	Planned I/S Date				
Sandy Ridge 230 kV Line (Newport-Morning Star), Upgrade	DEC	Delayed 12/1/2029				
Davidson River 100 kV Line (North Greenville- Marietta), Upgrade	DEC	12/1/2030 (was TBD)				
Morning Star 230 kV Tie Station, Upgrade	DEC	Delayed 12/1/2032				
Westport 230 kV Line (McGuire-Marshall), Upgrade	DEC	TBD				
Harley 100 kV Line (Tiger-Campobello), Upgrade	DEC	TBD				
Skybrook 100 kV Line (Winecoff-Eastfield Retail), Upgrade	DEC	TBD				



Reliability Projects in 2022 Plan							
Reliability Project	то	Planned I/S Date					
Asheboro–Asheboro East 115 kV North Line, Reconductor	DEP	12/1/2022					
Wateree Hydro Plant, Upgrade	DEP	Delayed 12/1/2023					
Craggy–Enka 230 kV Line, Construct	DEP	12/1/2024					
Castle Hayne–Folkstone115 kV Line, Rebuild	DEP	12/1/2025					
Carthage 230/115 kV Substation, Construct	DEP	Delayed 6/1/2026					



Reliability Projects in 2022 Plan						
Reliability Project	то	Planned I/S Date				
Holly Ridge North 115 kV Switching Station, Construct	DEP	12/1/2026				
Durham–RTP 230 kV Line, Reconductor	DEP	TBD				
Falls 230 kV Sub, Construct SVC	DEP	TBD				



2023 Mid-Year Update to the 2022 Collaborative Transmission Plan

Public Policy Projects:

- > 9 project cost estimates went up, and 5 went down
- 3 projects were accelerated (none were delayed)
- 1 project was added
- > Total Public Policy Project Cost estimates increased from \$554M to \$576M



Public Policy Projects in 2022 Plan						
Reliability Project	то	Planned I/S Date				
Newberry 115 kV Line (Bush River-DESC), Upgrade	DEC	Accelerated 6/1/2025				
Lee 100 kV Line (Lee-Shady Grove), Upgrade	DEC	Accelerated 12/1/2025				
Piedmont 100 kV Line (Lee-Shady Grove), Upgrade	DEC	12/1/2026				
Clinton 100 kV Line (Bush River-Laurens), Upgrade	DEC	12/1/2026				



Public Policy Projects in 2022 Plan							
Reliability Project	то	Planned I/S Date					
Fayetteville-Fayetteville Dupont 115 kV Line, Rebuild 3.2-mile section	DEP	12/1/2024					
Erwin – Fayetteville 115 kV Line, Rebuild	DEP	6/1/2025					
Weatherspoon-Marion 115 kV Line, Rebuild	DEP	12/1/2025					
Cape Fear – West End 230 kV Line, Rebuild	DEP	6/1/2026					
Erwin – Fayetteville East 230 kV Line, Rebuild	DEP	6/1/2026					



Public Policy Projects in 2022 Plan							
Reliability Project	то	Planned I/S Date					
Milburnie 230 kV Substation, Upgrade	DEP	6/1/2026					
Robinson Plant-Rockingham 230 kV Line, Rebuild	DEP	6/1/2026					
Fayetteville-Fayetteville Dupont 115 kV Line, Rebuild 4.9-mile section	DEP	6/1/2026					
Camden Junction-Wateree 115 kV Line, Rebuild	DEP	12/1/2026					
Camden - Camden Dupont 115kV Line, Rebuild	DEP	New 12/1/2026					
Robinson Plant-Rockingham 115 kV Line, Rebuild	DEP	Accelerated 6/1/2027					



Proposed Updates to the Collaborative Plan at Mid-Year

- ➤ One (1) new Red Zone Transmission Expansion Plan project is proposed to be added to the Collaborative Plan at mid-year
- > The justification for this project is based on the need to reduce transmission system constraints impacting Duke Energy's ability to connect renewable generation, ensure system reliability, and achieve public policy
- > This project has been identified as constraints in prior generation interconnection studies



Camden – Camden Dupont 115 Upgrade

- From Transmission Panel Rebuttal Testimony, p 11,12: While Duke Energy agrees that Project #14—the Camden—Camden Dupont 115 kV line upgrade—may be able to be postponed at this time, Duke Energy will pay close attention to this upgrade being needed in the near-term if identified in the 2022 DISIS Phase 1 Study.
- ▶ P16: The Companies acknowledge that Project #14, the Camden-Camden Dupont 115 kV line upgrade, may be able to be postponed at this time, but nevertheless continue to believe that this project will be necessary for timely execution of the Carbon Plan.
- ➤ 1727 MW of solar facilities in the 2022 DISIS Phase 1 Study impacted the Camden-Camden Dupont 115 kV line loading
- ➤ CBA for this line determined to be 10.5

2022 DISIS Phase 1 Study Results

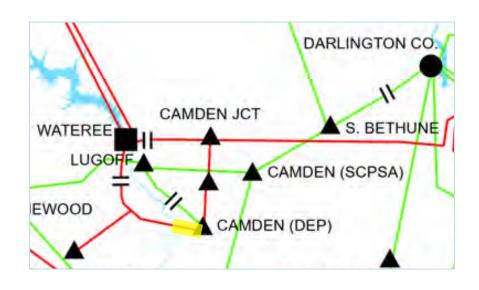
ID (NW) (%) (NW) 225140 70 3.764 2.462 2.635 564942 48 3.755 1.684 1.802 565074 75 1.826 1.280 1.370 565080 75 3.497 2.451 2.623 566096 200 2.054 3.839 4.108 566478 74.9 3.686 2.580 2.761 566488 74.9 1.699 1.189 1.273 566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568988 80 1.503 1.124 1.202 56914 48 12.716	15	MW Output (MW)	DFAX (%)	Loading Impact (%)	MW Impact (MW)
564942 48 3.755 1.684 1.802 565074 75 1.826 1.280 1.370 565080 75 3.497 2.451 2.623 566096 200 2.054 3.839 4.108 566478 74.9 3.686 2.580 2.761 566488 74.9 1.699 1.189 1.273 566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568988 80 1.503 1.124 1.202 56914 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60		` '	2 764		` '
565074 75 1.826 1.280 1.370 565080 75 3.497 2.451 2.623 566096 200 2.054 3.839 4.108 566478 74.9 3.686 2.580 2.761 566488 74.9 1.699 1.189 1.273 566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130					
565080 75 3.497 2.451 2.623 566096 200 2.054 3.839 4.108 566478 74.9 3.686 2.580 2.761 566488 74.9 1.699 1.189 1.273 566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568982 76 3.889 2.762 2.956 569988 80 1.503 1.124 1.202 56914 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275					
566096 200 2.054 3.839 4.108 566478 74.9 3.686 2.580 2.761 566488 74.9 1.699 1.189 1.273 566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568982 76 3.889 2.762 2.956 56914 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130					
566478 74.9 3.686 2.580 2.761 566488 74.9 1.699 1.189 1.273 566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568982 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 56914 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	565080	75	3.497	2.451	2.623
566488 74.9 1.699 1.189 1.273 566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568982 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 56914 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566096	200	2.054	3.839	4.108
566518 74.9 4.094 2.866 3.066 566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568982 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566478	74.9	3.686	2.580	2.761
566542 74.9 3.554 2.488 2.662 566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568892 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566488	74.9	1.699	1.189	1.273
566580 60 3.67 2.058 2.202 566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568892 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566518	74.9	4.094	2.866	3.066
566724 74.9 3.465 2.426 2.595 566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568892 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566542	74.9	3.554	2.488	2.662
566734 60 3.465 1.943 2.079 568444 75 1.63 1.143 1.223 568892 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566580	60	3.67	2.058	2.202
568444 75 1.63 1.143 1.223 568892 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566724	74.9	3.465	2.426	2.595
568892 76 3.889 2.762 2.956 568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	566734	60	3.465	1.943	2.079
568988 80 1.503 1.124 1.202 569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	568444	75	1.63	1.143	1.223
569014 48 12.716 5.704 6.104 569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	568892	76	3.889	2.762	2.956
569188 75 1.575 1.104 1.181 569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	568988	80	1.503	1.124	1.202
569524 60 2.126 1.192 1.276 569986 275 0.411 1.056 1.130	569014	48	12.716	5.704	6.104
569986 275 0.411 1.056 1.130	569188	75	1.575	1.104	1.181
	569524	60	2.126	1.192	1.276
570382 75 3.747 2.626 2.810	569986	275	0.411	1.056	1.130
	570382	75	3.747	2.626	2.810



Additional Red Zone Upgrade

Reconductor Camden – Camden Dupont 115 kV line

- 0.73 miles
- Includes end station equipment upgrades
- Enables addition of renewable resources





Duke Energy Red-Zone Transmission Expansion Plan Projects (RZEP 2.0)

Sammy Roberts Duke Energy Progress



DEC RZEP 2.0 Proposed Projects

Transmission Line/Transformer	Segment (Upgrade Identified in 2022 DISIS Phase 1 Study	Rating	Loading (%)	Length (mi)	Upgrade Details	Estimated Cost (\$M)	Estimated Lead Time (months)	Future Rating (MVA)
Broadway B/W 100 kV	Belton Tie-WS Lee Combined Cycle	132	107.12	6 4 1	Reconductor to 1272 ACSR	24.662	42	282
Bush River 115/100 kV	N/A	50	107.55	N/A	Replace Banks 7 & 8	5.321	30	168
Champion B/W 100 kV	Bush River- ID569756	135	146.53	1 08	Reconductor to 1272 ACSR	4.193		282
Champion B/W 100 kV	ID569756-ID569164	135	138.95	151	Reconductor to 1272 ACSR	5.863	42	282
Champion B/W 100 kV	ID569164-Customer Delivery	135	113.68	3 71	Reconductor to 1272 ACSR	14.405		282
I Champion B/VV IUU KV	Customer Delivery- Newberry PV	165	96.17	183	Reconductor to 1272 ACSR	7.106		282

Total RZEP 2.0 Cost 61.550



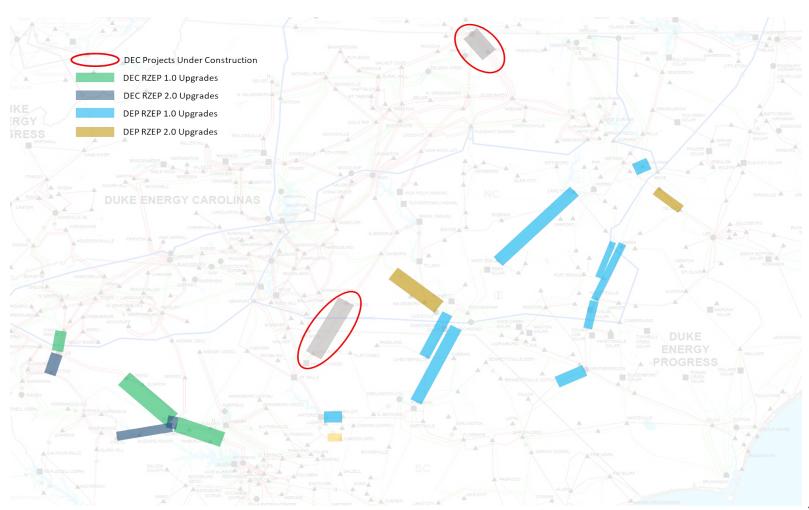
DEP RZEP 2.0 Proposed Projects

Transmission Line/Transformer	Present Rating (MVA)	Loading (%)	Length (mi)	Upgrade Summary	Estimated Cost (\$M)	Estimated Lead Time (months)	Future Rating (MVA)
Clayton Industrial - Selma 115 kV (Clayton Industrial -Smithfield)	201	104.6	6.02	Reconductor with 1590 ACSR or equivalent	17.804	48	310
Clayton Industrial - Selma 115 kV (Smithfield - Selma)	201	107.5	3.36	Reconductor with 1590 ACSR or equivalent	9.937	48	310
Lilesville - Oakboro 230 kV Black (Lilesville - Wadesboro Tap)	397	134.5	8.97	Reconductor with 6-1590 ACSR	16.381	72	1195
Lilesville - Oakboro 230 kV Black (Wadesboro Tap - Ansonville	397	134.5	7.38	Reconductor with 6-1590 ACSR	13.478	72	1195
Lilesville - Oakboro 230 kV Black (Ansonville - Oakboro)	398	132.7	13.48	Reconductor with 6-1590 ACSR, 5.13 miles in DEC	24.618	72	1195
Lilesville - Oakboro 230 kV White (Lilesville - PDEMC Burnsville)	397	125.6	18.93	Reconductor with 6-1590 ACSR	34.571	72	1195
Lilesville - Oakboro 230 kV White (PDEMC Burnsville - Oakboro)	398	122.6	10.9	Reconductor with 6-1590 ACSR	19.906	72	1195

Total RZEP 2.0 Cost 136.695



RZEP Projects





Questions?



Transmission Planning Process Attachment N-1 Report

Sammy Roberts Duke Energy Progress



NCTPC Planning Study Process Changes

Track with FERC NOPR and Other Regions' Local Transmission Planning Processes to enable least cost planning for resources and load

Proposed NCTPC Transmission Planning Process Changes

- Adopt attributes from FERC NOPR on Regional Transmission Planning Processes
 - Transparency and Coordination
 - Strategic Transmission Planning
- Suggest that a TAG Participant can submit NCTPC form with supplemental information as required to SERTP if PWG determines a regional study is needed
- Change name to Carolinas Planning Collaborative (CPC) and continue invitation for other wholesale LSEs within the DEC and DEP transmission system footprints with local transmission plan approval authority



NCTPC Planning Study Process Changes

Proposed NCTPC Transmission Planning Process Changes

Transparency and Coordination with the Local Transmission Planning Process

TAG Stakeholder Meetings

- ➤ **Assumptions Meeting** NCTPC to review the criteria, assumptions, and methodology the PWG intends to use to identify needs and transmission solutions to include in the Local Transmission Plan
- ➤ **Needs Meeting** NCTPC will review the identified system needs and the drivers of those needs, based on the application of its criteria, assumptions, and methodology in the Study Scope Document.
 - Models and sufficient information will be made available, subject to CEII and confidentiality restrictions, to enable TAG participants to replicate the results of planning studies reviewed at the Needs Meeting
- > Solutions Meeting NCTPC will review potential solutions and any alternatives considered as studied and identified by the PWG.



NCTPC Planning Study Process Changes

Proposed NCTPC Transmission Planning Process Changes

Four pathways with the Local Transmission Planning process...

- 1) Local Projects that are necessary to preserve reliability and comply with applicable reliability standards ("Local Reliability Projects"),
- Local Projects that will increase transmission access to potential supply resources inside and outside the Control Areas of the Companies based on TAG participant requested economic studies ("Local Economic Projects")
- Local Projects to satisfy Public Policy Requirements ("Public Policy Projects");
 and/or
- Local Projects that will integrate new generation resources and/or loads and provide other benefits in a least cost manner ("Multi-value Strategic Transmission Projects").



NCTPC Planning Study Process Changes

Results of Local Transmission Planning Process Changes

- ➤ A Carolinas Transmission Expansion Plan (CTEP) report reflecting the NCTPC study results will be published annually
- ➤ The CTEP is a local transmission plan that will be developed throughout the year considering input from OSC, PWG, and TAG stakeholder participants
- ➤ This report will reflect needed and coordinated transmission system expansion for:
 - local reliability requirements
 - economic transfers
 - public policy impacts
 - resource supply additions and retirements
 - load additions and changes (demand-side)
 - aging infrastructure replacement
- Strategic transmission planning, conducted at least once every three years for identified scenarios, will also be an input into the CTEP

43



NCTPC Planning Study Process Changes

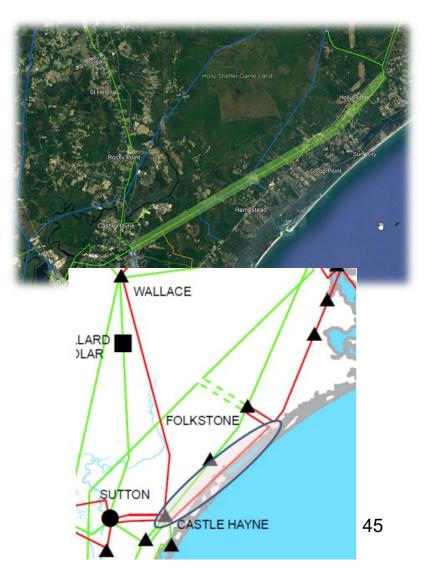
Solutions Template

- Reason(s) for Need:
- Proposed Solution:
- Estimated Transmission Project Cost:
- Alternatives Considered:
- Projected In-Service:
- Project Status:



Illustrative Example

- Reason(s) for Need: Aging Infrastructure; Adding 20 MVA Delivery Point for Transmission Customer; Contingency overload identified in Winter 26/27 study
- Other Considerations:
- ➤ Proposed Solution: Rebuild Castle Hayne Folkstone 115kV line and replace 21 miles of 556 ACSR and 5 miles of bundled 2/0 copper conductor on wooden H-frame structures with 1272 ACSR.
- Estimated Transmission Project Cost: \$95.5M
- ➤ Alternatives Considered: 1) New 230 line incurs significant cost and time transitioning 115kV delivery points to 230kV; 2)request interconnection of a 25 MW battery at Vista 115kV substation will not resolve resiliency issue with 5 miles of bundled 2/0 copper conductor nor provide capability for load growth and renewable resources.
- Projected In-Service: 12/1/2026
- Project Status: Scoping/Design





NCTPC Planning Study Process Changes

March 15 2023 June 21 2023 August 2023 October 2023 2024

Reviewed and
Collected Input on
Local Transmission
Planning Process
Change High-level
Road Map with
PWG, OSC and TAG
and incorporated
feedback

Present and Collect
Input on Proposed
Local Transmission
Planning Process
Changes from
PWG, OSC and
TAG

Incorporate

Descriptions of
Revised Local
Transmission
Planning Process
Changes into the
Carbon Plan Filing

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

Implement Local
Transmission
Planning Process
Changes
Accepted by
FERC



ouestions?



Regional Studies Reports

Bob Pierce Duke Energy Carolinas



SERC Long-Term Working Group Update



SERC Long-Term Working Group

- ➤ Completed 2023 series of LTWG cases
- Beginning submittal of MMWG case data
- ➤ Working on determination of 2023 study scope



SERTP



SERTP

- 2nd Quarter Meeting June 29th Chattanooga
 - Preliminary Expansion Plan presentation
- Economic Planning Studies being performed
 - MISO to TVA 2900 MW, 2028W
 - South GA to North GA 1600 MW, 2028S
 - TVA to North GA 1600 MW, 2028S
 - MISO to LGE/KU 1242 MW, 2028S
 - SOCO to DEC 500 MW, 2033



http://www.southeasternrtp.com/





Announcement

Two-thirds of North America Faces Reliability Challenges in the Event of Widespread Heatwaves

May 17, 2023

ATLANTA – NERC's <u>2023 Summer Reliability Assessment</u> warns that two-thirds of North America is at risk of energy shortfalls this summer during periods of extreme demand. While there are no high-risk areas in this year's assessment, the number of areas identified as being at elevated risk has increased. The assessment finds that, while resources are adequate for normal summer peak demand, if summer temperatures spike, seven areas — the U.S. West, SPP and MISO, ERCOT, SERC Central, New England and Ontario — may face supply shortages during higher demand levels.

"Increased, rapid deployment of wind, solar and batteries have made a positive impact," said Mark Olson, NERC's manager of Reliability Assessments. "However, generator retirements continue to increase the risks associated with extreme summer temperatures, which factors into potential supply shortages in the western two-thirds of North America if summer temperatures spike."



This year's assessment, which is summarized in a 2023 Summer Reliability Assessment Video, finds that:

- Areas in the U.S. West are at elevated risk due to wide-area heat events that can drive above-normal demand and strain resources and the transmission network.
- In SPP and MISO, wind energy output will be key to meeting normal summer peak and extreme demand levels due to little excess firm capacity.
- The risk of drought and high temperatures in ERCOT may challenge system resources and may result in emergency procedures, including the need for operatorcontrolled load shedding during periods of low wind and high generator outages.
- The SERC Central region is forecasting higher peak demand and less supply capacity, creating challenges for operators to maintain reserves in extreme scenarios.
- New England has lower available capacity than last year, resulting in a higher likelihood of system operators using emergency procedures to manage extreme demand conditions.
- In Ontario, extended nuclear refurbishment has reduced available capacity, limiting system reserves needed to manage peak demand.



SEC. 322. INTERREGIONAL TRANSFER CAPABILITY DETERMINATION STUDY.

- (a) IN GENERAL.—The Electric Reliability Organization, in consultation with each regional entity and each transmitting utility that has facilities interconnected with a transmitting utility in a neighboring transmission planning region, shall conduct a study of total transfer capability between transmission planning regions that contains the following:
 - (1) Current total transfer capability, between each pair of neighboring transmission planning regions.



- (2) A recommendation of **prudent additions to total transfer capability** between each pair of neighboring transmission planning regions that would demonstrably strengthen reliability within and among such neighboring transmission planning regions.
- (3) Recommendations to meet and maintain total transfer capability together with such recommended prudent additions to total transfer capability between each pair of neighboring transmission planning regions.
- (b) PUBLICATION.—Not later than **18 months** after the date of enactment of this Act, the North American Electric Reliability Corporation shall deliver a study to Federal Energy Regulatory Commission.







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





January - February - March

Fourth Quarter TAG Meeting – January 18, 2023

- > 2022 Study Update
 - ✓ Receive 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 (<u>rich.wodyka@gmail.com</u>)



January - February - March

- > 2023 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 3rd)
 - 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 (<u>rich.wodyka@gmail.com</u>)
 - ✓ Receive request from OSC to provide input in identifying any public policies that are driving the need for local transmission (Request sent on January 3rd)
 - 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 (<u>rich.wodyka@gmail.com</u>)
 - Receive 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
 - ✓ Receive a progress report on the 2023 Study Activities
 - ✓ Receive 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
 - ✓ Receive a progress report on Study Activities
 - ✓ Receive final 2023 Study Scope of Work for review and comment
 - ✓ Receive mid-year update status of the upgrades in the 2022 Collaborative Plan
 - ✓ Receive a report on the Duke Energy Red-Zone Transmission Expansion Plan Projects (RZEP 2.0)
 - ✓ Receive a progress report on the Transmission Planning Process Attachment N-1 activities



July - August - September

Third Quarter TAG Meeting – TBD

- > 2023 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

- > 2023 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 2023 Collaborative Transmission Plan Report
- > 2024 Study Scope
 - Discuss potential Study Scope scenarios for 2024 studies







TAG Open Forum Discussion

Comments or Questions?