NCTPC 2021 Collaborative Transmission Plan Update

June 2022

Attached is the mid-year update to the NCTPC 2021 Collaborative Transmission Plan dated January 24, 2022. **Also attached is a listing of proposed Red Zone Expansion Projects to be added to the Collaborative Plan at midyear.** The status and timing of all projects presented in the Plan have been reviewed and the attached update reflects all changes (shown in red) that have been identified. In addition, all cost projections have been reviewed and updated to reflect current assumptions.

The total cost estimate of 2021 Plan Reliability Projects changed from $694 million to $748 million. The key differences between the original plan and this updated plan are summarized below:

Updates to the 2021 Collaborative Plan		
Project	**Change**	**Reason for Change**
Asheboro- Asheboro East 115 kV North Line Reconductor	Updated to final project cost estimate (+16M)	Added scope for required work at Asheboro East 115 kV Sub
Windmere 100 kV Line (Dan River-Sadler), Construct	Revised projected in-service date	Recent projections
Craggy-Enka 230 kV Line	Cost estimate increase (+25M)	New Class 5 cost estimates. Earlier cost estimates were based on cost/mile values
Cokesbury 100 kV Line (Coronaca-Hodges), Upgrade	Revised projected in-service date	Recent schedule projections
South Point Switching Station, Construct	Project delayed 1 year	Recent schedule projections
Wateree 115 kV Plant, Upgrade 115/100 kV Transformers	Cost estimate increase (+3M) and earlier ISD	Project was accelerated by 5 months
Carthage 230/115 kV Substation, Construct Sub	Updated project cost estimate (+6M)	New Class 5 cost estimates. Siting is complete and land/ROW being purchased
Castle Hayne–Folkstone 115 kV Line, Rebuild	Updated project cost estimate (+11M) by Engineering	New Class 5 cost estimates.
Holly Ridge North 115 kV Switching Station, Construct	Updated project cost estimate (-7M) by Engineering	New Class 5 cost estimates.

Updates to the 2021 Collaborative Plan		
Project	**Change**	**Reason for Change**
Coronaca 100 kV Line (Coronaca-Creto), Upgrade and Add Second Circuit	Revised projected in-service date	Recent schedule projections
Monroe 100 kV Line (Lancaster-Monroe), Upgrade	Changed status to Underway	Work has begun
Total Change	**+54 Million**	**Plan up from $694 M to $748 M**

In addition to the 2021 Plan updates, eighteen (18) new projects are proposed to be added to the 2022 Plan at mid-year. The justification for these projects 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 based on state law or regulatory decisions informing such needs for new transmission projects in the Companies' balancing authority areas. These projects have been identified as constraints in prior generation interconnection studies. Initiating these projects will also support our ability to meet the requirements of the Carbon Plan.

Proposed Updates to the Collaborative Plan at Mid-Year		
Project	**Change**	**Reason for Change**
18 (4 DEC and 14 DEP) proactive Red Zone transmission upgrade projects	Add 18 New projects	To integrate additional generation and to meet the public policy requirements of the Carbon Plan.

2021 Collaborative Transmission Plan – Reliability Projects (Estimated Cost > $10M) Items identified in red are changes from the previous report							
Project ID	**Reliability Project**	**Issue Resolved**	**Status[1]**	**Transmission Owner**	**Projected In-Service Date**	**Estimated Cost ($M)[2]**	**Project Lead Time (Years)[3]**
0024	Durham - RTP 230 kV Line, Reconductor	Address loading on the Durham - RTP 230 kV Line	Conceptual	DEP	TBD	20	4
0034	Sutton-Castle Hayne 115 kV North Line Rebuild	Mitigate contingency loading	In-service	DEP	6/1/2021	30	-
0039	Asheboro-Asheboro East 115 kV North Line Reconductor	Mitigate contingency loading	In-service	DEP	6/1/2022	28	-
0046	Windmere 100 kV Line (Dan River-Sadler), Construct	Mitigate contingency loading	Underway	DEC	6/1/2024	28	2
0048	Wilkes 230/100 kV Tie Station, Construct	Mitigate contingency loading and voltage issues	Underway	DEC	6/1/2024	69	2
0050	Craggy-Enka 230 kV Line, Construct	Mitigate contingency loading	Underway	DEP	12/17/2024	99	2.5
0051	Cokesbury 100 kV Line (Coronaca-Hodges), Upgrade	Mitigate contingency loading	Planned	DEC	6/1/2026	20	3
0052	South Point Switching Station, Construct	Transformer contingency loading	Underway	DEC	12/1/2025	111	3.5
0053	Wateree 115 kV Plant, Upgrade 115/100 kV Transformers	Mitigate contingency loading	Underway	DEP	7/13/2023	13	1
0054	Carthage 230/115 kV Substation, Construct Sub	Mitigate contingency loading and voltage issues	Underway	DEP	12/1/2025	33	3.5

2021 Collaborative Transmission Plan – Reliability Projects (Estimated Cost > $10M) Items identified in red are changes from the previous report							
Project ID	**Reliability Project**	**Issue Resolved**	**Status[1]**	**Transmission Owner**	**Projected In-Service Date**	**Estimated Cost ($M)[2]**	**Project Lead Time (Years)[3]**
0055	Falls 230 kV Sub, Add 300 MVAR SVC	Mitigate future voltage issues with retirement of Person Co. generation	Conceptual	DEP	12/1/2028	45	4
0056	Castle Hayne–Folkstone 115 kV Line, Rebuild	Address loading on the Castle Hayne - Folkstone 115 kV Line	Underway	DEP	12/1/2026	96	4.5
0057	Holly Ridge North 115 kV Switching Station, Construct	Mitigate contingency low voltage	Underway	DEP	12/1/2026	13	4.5
0058	Coronaca 100 kV Line (Coronaca-Creto), Upgrade and Add Second Circuit	Mitigate contingency loading	Planned	DEC	12/1/2029	15	3.5
0059	Monroe 100 kV Line (Lancaster-Monroe), Upgrade	Mitigate contingency loading	Underway	DEC	6/1/2027	88	5
0060	Westport 230 kV Line (McGuire-Marshall), Upgrade	Mitigate contingency loading, also eliminates must-run requirements	Conceptual	DEC	TBD	40	5
TOTAL						**748**	

[1] Status: *Underway:* Projects with this status range from the Transmission Owner having some money in its current year budget for the project to the Transmission Owner having completed some construction activities for the project. *Planned:* Projects with this status do not have money in the Transmission Owner's current year budget, and the project is subject to change. *Conceptual*: Projects with this status are not *Planned* at this time but will continue to be evaluated as a potential project in the future.
[2] The estimated cost is in nominal dollars which reflects the sum of the estimated annual cash flows over the expected development period for the specific project (typically 2 – 5 years), including direct costs, loadings and overheads; but not including AFUDC. Each year's cash flow is escalated to the year of the expenditures. The sum of the expected cash flows is the estimated cost.
[3] For projects with a status of Underway, the project lead time is the time remaining to complete construction and place in-service.

Projects Proposed to be Added to the Collaborative Transmission Plan at Mid-Year – Red Zone Projects Items identified in red are changes from the previous report							
Project ID	**Reliability Project**	**Issue Resolved**	**Status[1]**	**Transmission Owner**	**Projected In-Service Date**	**Estimated Cost ($M)[2]**	**Project Lead Time (Years)[3]**
0061	Lee 100 kV (Lee-Shady Grove), Upgrade	Enable interconnection of renewable generation	Proposed	DEC	12/1/2026	45	4.5
0062	Piedmont 100 kV (Lee-Shady Grove), Upgrade	Enable interconnection of renewable generation	Proposed	DEC	12/1/2026	45	4.5
0063	Newberry 115 kV (Bush River-DESC), Upgrade	Enable interconnection of renewable generation	Proposed	DEC	12/1/2026	42	4.5
0064	Clinton 100 kV (Bush River-Laurens), Upgrade	Enable interconnection of renewable generation	Proposed	DEC	12/1/2026	109	4.5
0065	Cape Fear Plant – West End 230 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	9/1/2026	70.4	4.5
0066	Erwin – Fayetteville East 230 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	9/1/2026	83.9	4.5
0067	Erwin – Fayetteville 115 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	9/1/2026	21.3	4.5
0068	Rockingham – West End 230 kV West Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	9/1/2026	1.5	4.5
0069	Fayetteville-Fayetteville Dupont 115 kV Line – 3.2 mile section, Upgrade[4]	Enable interconnection of renewable generation	Proposed	DEP	9/1/2026	14.1	4.5

Projects Proposed to be Added to the Collaborative Transmission Plan at Mid-Year – Red Zone Projects Items identified in red are changes from the previous report							
Project ID	**Reliability Project**	**Issue Resolved**	**Status[1]**	**Transmission Owner**	**Projected In-Service Date**	**Estimated Cost ($M)[2]**	**Project Lead Time (Years)[3]**
0070	Milburnie 230 kV Substation, Add redundant bus protection	Enable interconnection of renewable generation	Proposed	DEP	9/1/2026	4.3	4.5
0071	Erwin-Milburnie 230 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	5.3	4.5
0072	Sutton Plant-Wallace 230 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	0.5	4.5
0073	Weatherspoon-Marion 115 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	13	4.5
0074	Camden-Camden Dupont 115 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	2.6	4.5
0075	Camden Junction-DPC Wateree 115 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	10	4.5
0076	Robinson Plant-Rockingham 115 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	38	4.5
0077	Robinson Plant-Rockingham 230 kV Line, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	43.1	4.5
0078	Fayetteville-Fayetteville Dupont 115 kV Line – 4.9 mile section, Upgrade	Enable interconnection of renewable generation	Proposed	DEP	12/1/2026	11.6	4.5

Projects Proposed to be Added to the Collaborative Transmission Plan at Mid-Year – Red Zone Projects Items identified in red are changes from the previous report							
Project ID	**Reliability Project**	**Issue Resolved**	**Status[1]**	**Transmission Owner**	**Projected In-Service Date**	**Estimated Cost ($M)[2]**	**Project Lead Time (Years)[3]**
Total						560.6	

[4] This project is also required in the most recent NERC TPL reliability studies