SERTP – 2nd Quarter Meeting

Preliminary Expansion Plan Meeting

June 29th, 2023

Process Information

- The SERTP process is a transmission planning process.
- Please contact the respective transmission provider for questions related to real-time operations or Open Access Transmission Tariff (OATT) transmission service.
- SERTP Website Address:
  - www.southeasternrtp.com

Agenda

- **Regional Expansion Plan Process**
  - Annual Process Overview
- **Preliminary 10 Year Transmission Expansion Plan**
  - Regional Model Assumptions
    - Load Forecast
    - Generation Assumptions
    - Transmission System Topology
- **Miscellaneous Updates**
- **Next Meeting Activities**

SERTP

Regional Transmission Expansion Plan Process

Southeastern Regional TRANSMISSION PLANNING

2023 SERTP

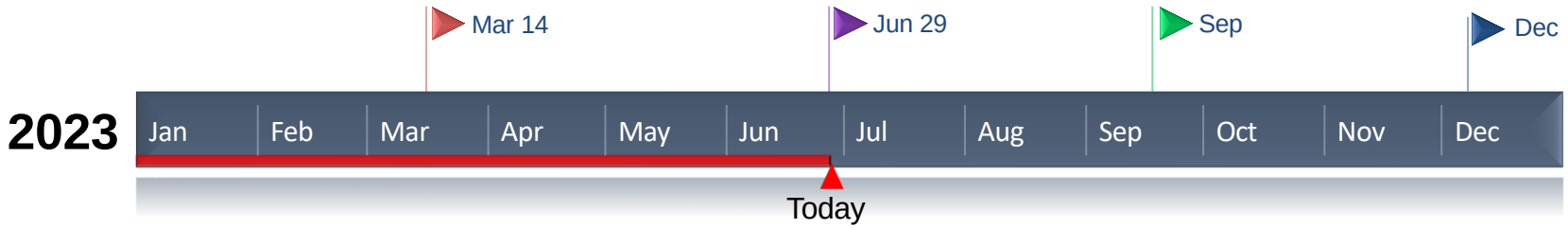
10 Year SERTP Regional Transmission Expansion Plan Process

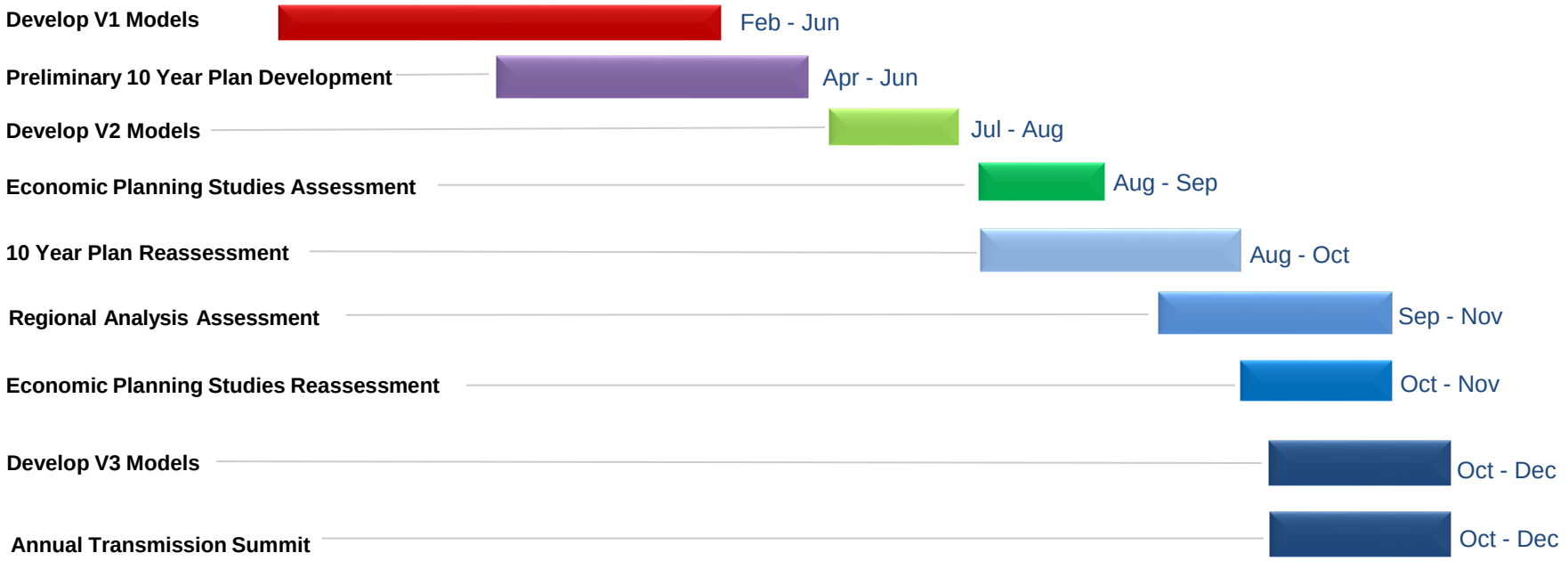
1st Quarter Meeting
- RPSG and Interactive Training

2nd Quarter Meeting
- Preliminary Expansion Plans

3rd Quarter Meeting
- Preliminary Economic Studies

4th Quarter Meeting
- Annual Transmission Summit



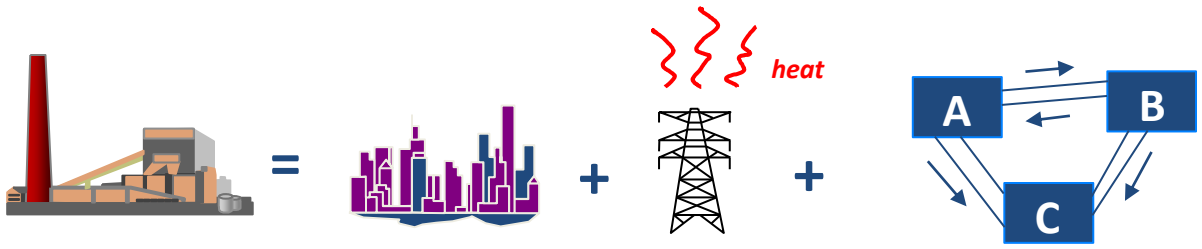


SERTP

Regional Model Assumptions

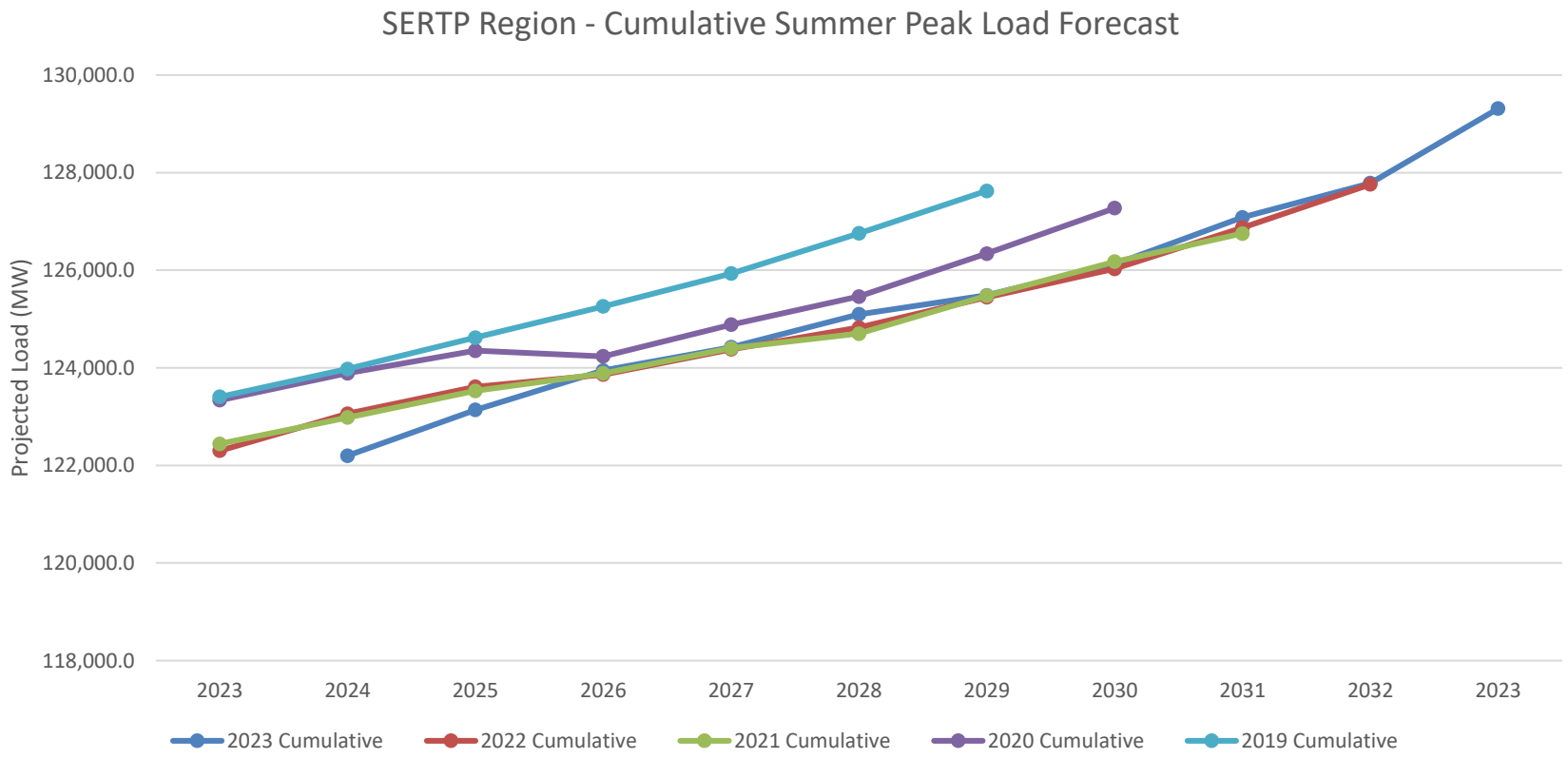
Regional Model Assumptions

Generation = Load + Losses (Topology) + Net Interchange



- Projected load for each year and season
- Losses produced in serving that load
  - Transmission Lines & Transformers
    - 10 Year Transmission Expansion Plan
- Area Interchange of long-term firm commitments across the interface
- Generation needed to balance all of the above

SERTP Cumulative Summer Peak Load Forecast



SERTP

Preliminary Transmission Expansion Plans

Preliminary Transmission Expansion Plan

The projects described in this presentation represent the preliminary ten (10) year transmission expansion plan. The transmission expansion plan is periodically reviewed and may be revised due to changes in assumptions. This presentation does not represent a commitment to build for projects listed in the future.

Southeastern Regional Transmission Planning (SERTP)

PRELIMINARY 10 YEAR TRANSMISSION EXPANSION PLANS:

AECI

Duke Energy Carolinas

Duke Energy Progress

LG&E/KU

PowerSouth

SBAA

TVA

AECI Balancing Authority Area

AECI Balancing Authority Area

Generation Assumptions

* AECI has no generation assumptions expected to change throughout the ten year planning horizon for the 2023 SERTP Process.

AECI Balancing Authority Area

AECI Balancing Authority Area

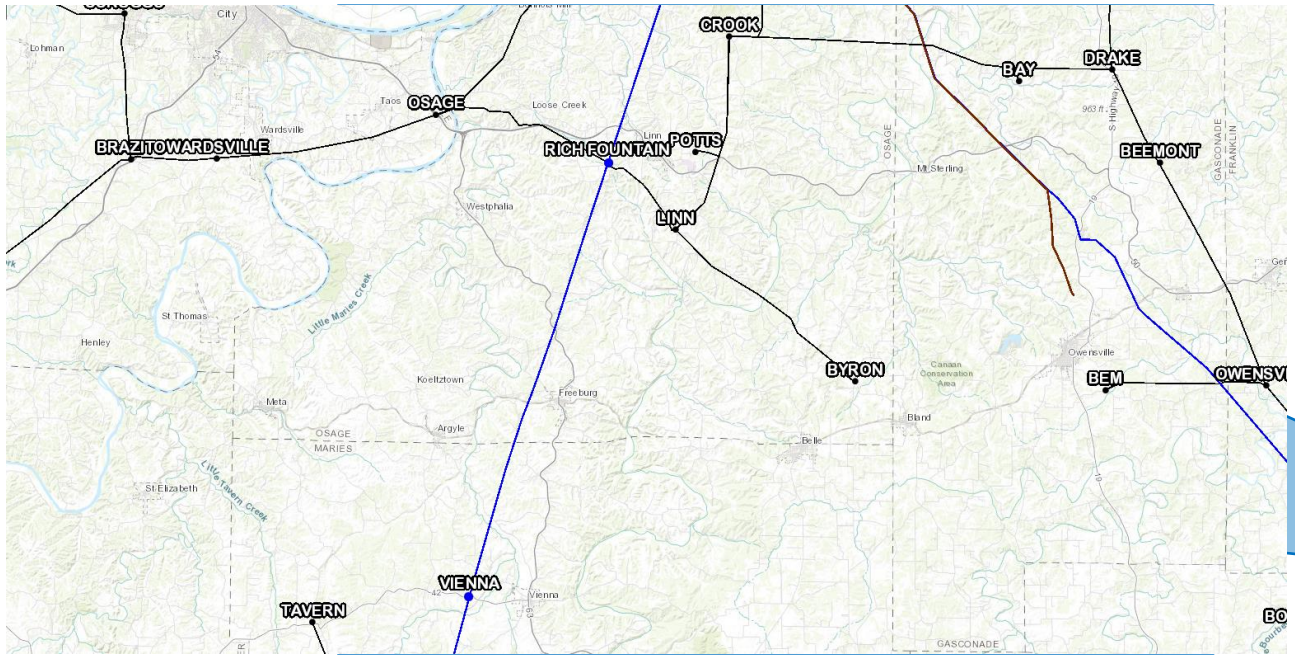
Preliminary Transmission Expansion Plan

AECI Balancing Authority Area

AECI – 1

- **2023**

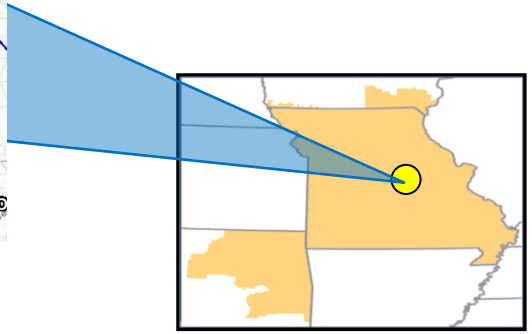
Rich Fountain – Vienna 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Rebuild the 20.66-mile-long Rich Fountain – Vienna 161 kV Transmission Line with 795 ACSR at 100°C .

SUPPORTING STATEMENT:

- The Rich Fountain - Vienna 161 kV transmission line section overloads under contingency.

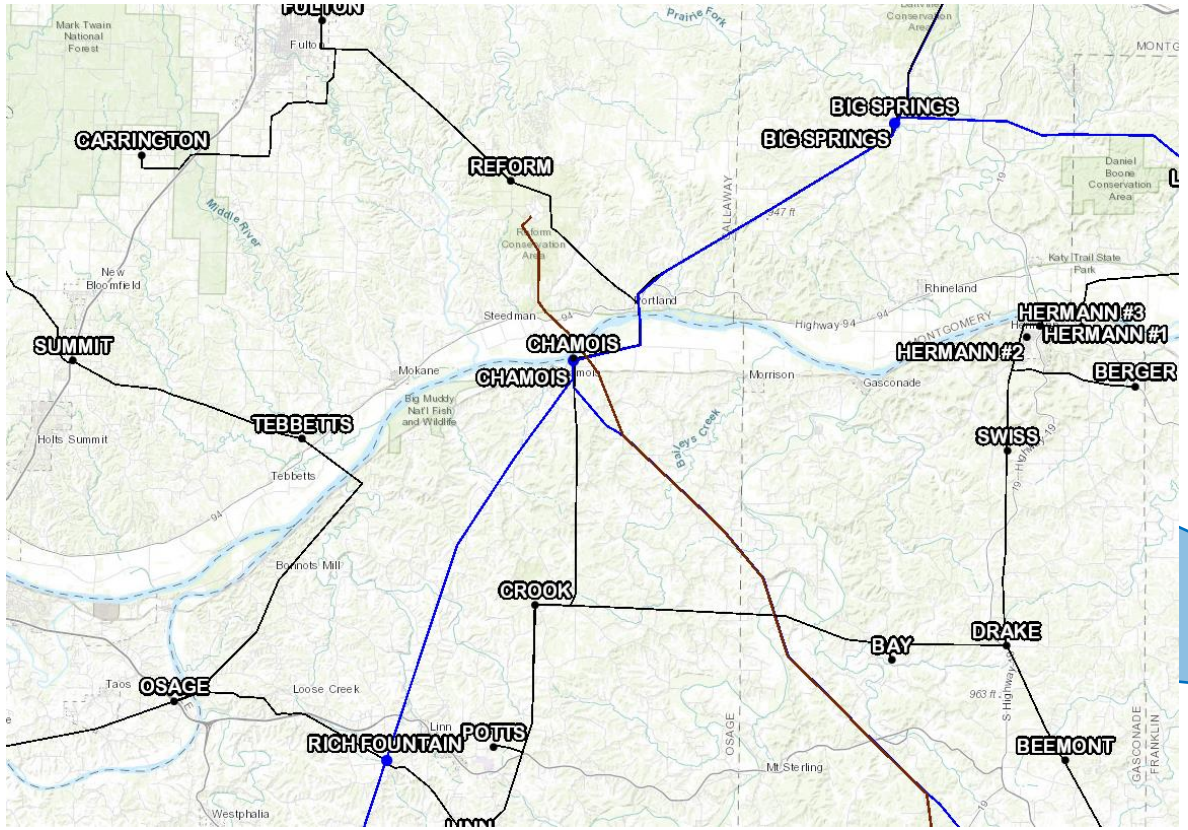


AECI Balancing Authority Area

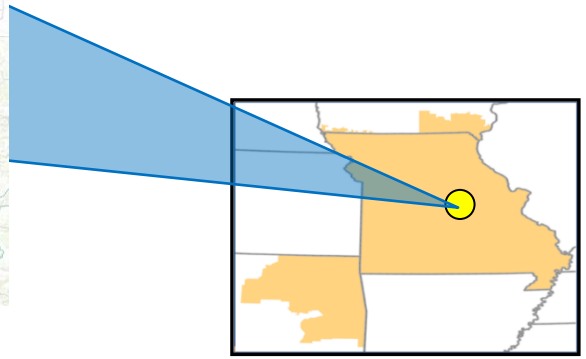
AECI – 2

- **2023**

Rich Fountain – Chamois 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Rebuild the 16.36-mile-long Rich Fountain – Chamois 161 kV Transmission Line with 795 ACSR at 100°C .
- **SUPPORTING STATEMENT:**
  - The Rich Fountain - Chamois 161 kV transmission line section overloads under contingency.

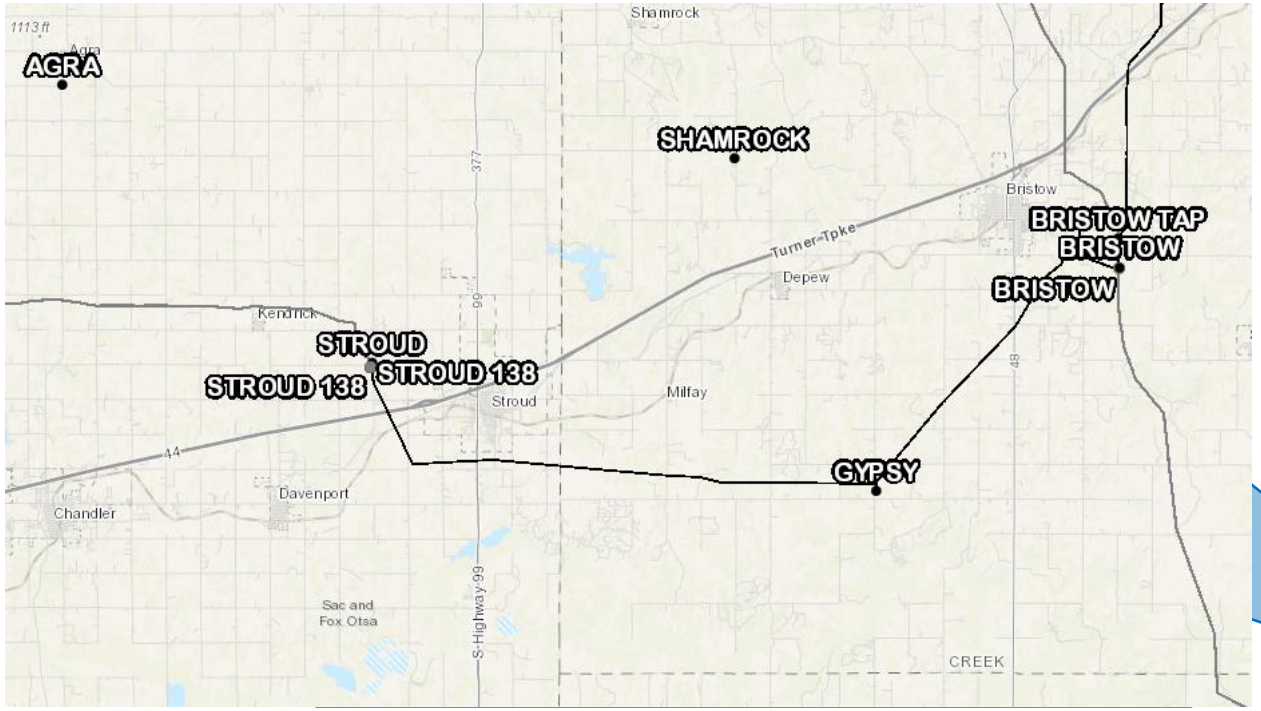


AECI Balancing Authority Area

AECI – 3

- **2025**

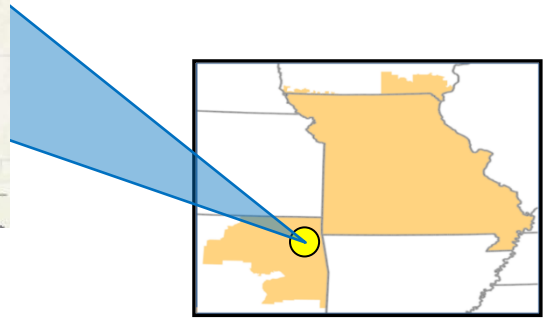
Stroud – Gypsy - Bristow 138 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Convert the 27.85-mile-long Stroud – Gypsy – Bristow Transmission Line to 138 kV with 1192 ACSR at 100C.

SUPPORTING STATEMENT:

- The Stroud – Gypsy - Bristow 138 kV transmission line section overloads and experiences low voltage under contingency.



DUKE ENERGY CAROLINAS Balancing Authority Area

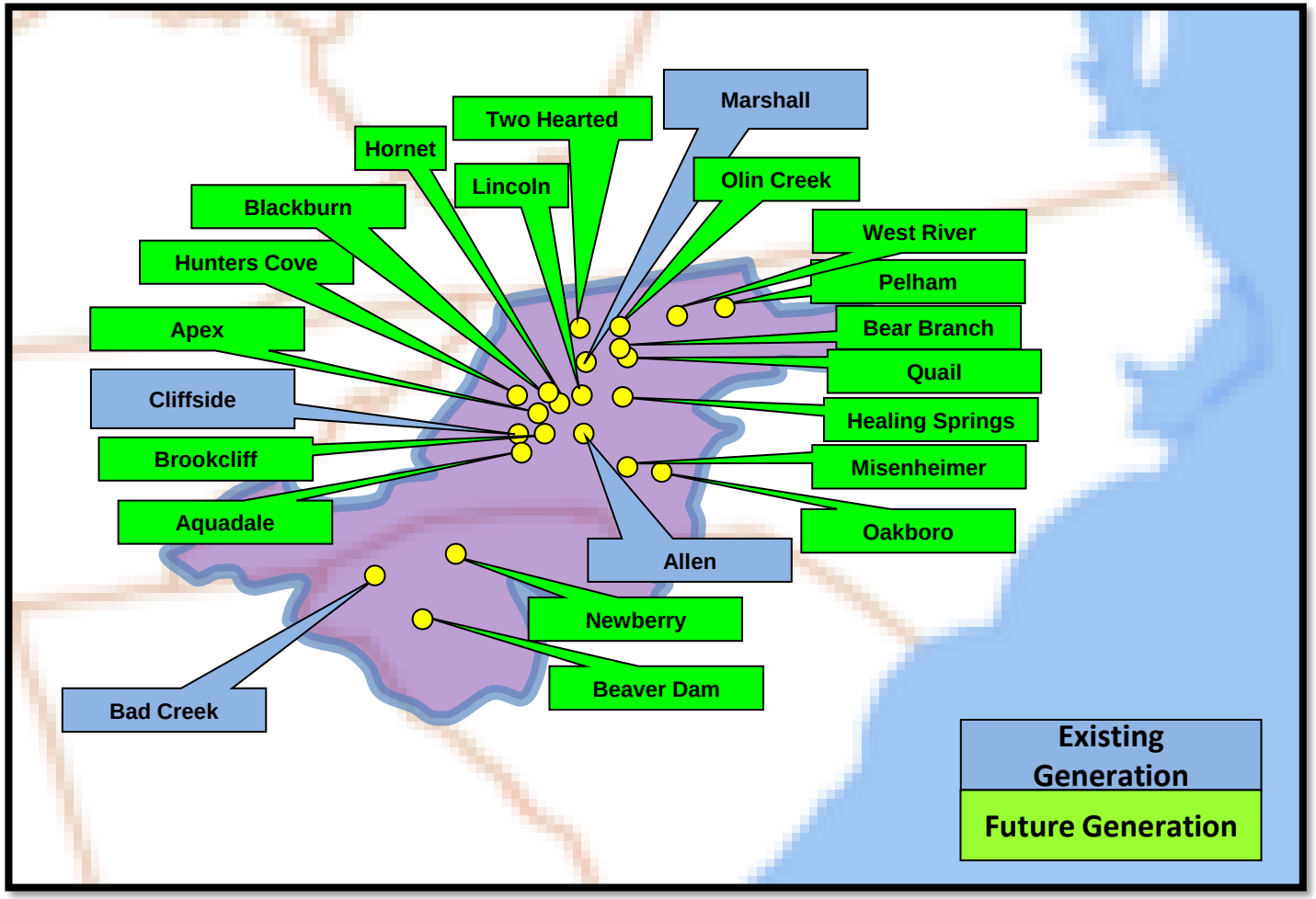
Generation Assumptions

Southeastern Regional TRANSMISSION PLANNING

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process.



DEC Balancing Authority Area

DEC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Allen 1	COAL	0	--	--	--	--	--	--	--	--	--
Allen 5	COAL	0	--	--	--	--	--	--	--	--	--
Cliffside 5	COAL	574	574	0	--	--	--	--	--	--	--
Marshall 1	COAL	388	388	388	388	388	0	--	--	--	--
Marshall 2	COAL	392	392	392	392	392	0	--	--	--	--
Lincoln 17	GAS	402	402	402	402	402	402	402	402	402	402
Bad Creek 4	Pumped Storage	420	420	420	420	420	420	420	420	420	420

DEC Balancing Authority Area

DEC – Generation Assumptions Continued

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Apex	Solar	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
Blackburn	Solar	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1
Misenheimer	Solar	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4
Olin Creek	Solar	35	35	35	35	35	35	35	35	35	35
Pelham	Solar	32	32	32	32	32	32	32	32	32	32
Two Hearted	Solar	22	22	22	22	22	22	22	22	22	22
West River	Solar	40	40	40	40	40	40	40	40	40	40
Brookcliff	Solar	50	50	50	50	50	50	50	50	50	50
Newberry	Solar	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5
Quail	Solar	30	30	30	30	30	30	30	30	30	30
Aquadale	Solar	--	50	50	50	50	50	50	50	50	50
Bear Branch	Solar	--	35	35	35	35	35	35	35	35	35
Healing Springs	Solar	--	55	55	55	55	55	55	55	55	55
Hornet	Solar	--	75	75	75	75	75	75	75	75	75
Hunters Cove	Solar	--	50	50	50	50	50	50	50	50	50
Oakboro	Solar/Storage	--	40	40	40	40	40	40	40	40	40
Beaverdam	Solar	--	--	42	42	42	42	42	42	42	42

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments for the SERTP 2023 Planning Process. The years shown represent Summer Peak conditions.

SITE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Cleveland	195	195	195	195	196	0	--	--	--	--
Broad River	875	875	875	875	875	875	875	875	875	875
Catawba	407	407	407	407	407	407	407	407	407	407
Rowan	460	441	428	373	376	370	180	180	180	180
Kings Mountain	32	92	92	92	92	92	92	92	92	92

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS Balancing Authority Area

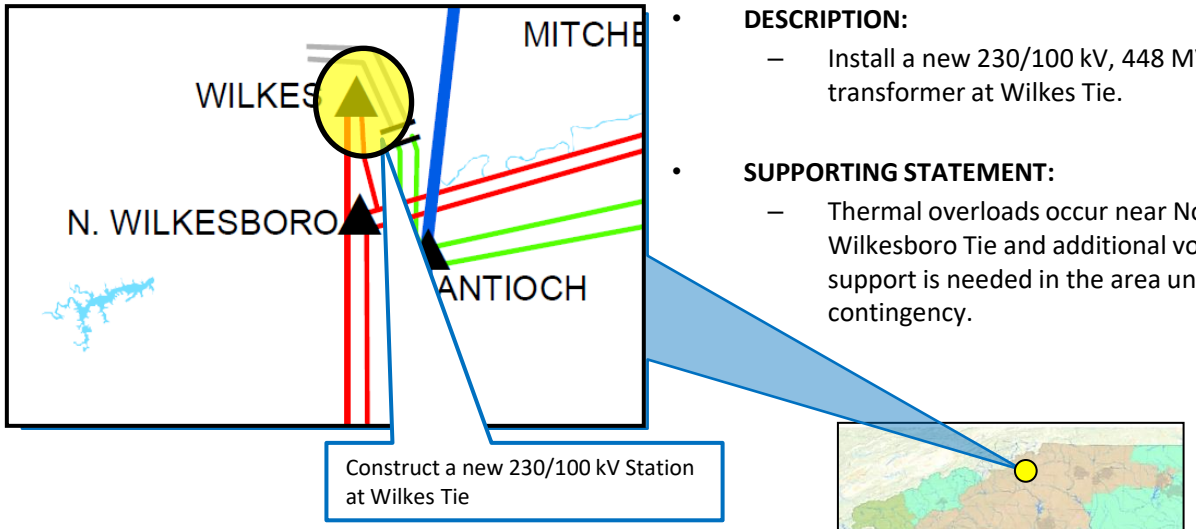
Preliminary Transmission Expansion Plan

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 1

- **2024**

WILKES TIE 230 KV SUBSTATION



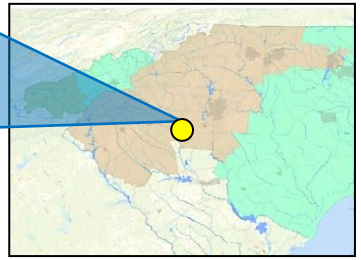
- **DESCRIPTION:**
  - Install a new 230/100 kV, 448 MVA transformer at Wilkes Tie.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur near North Wilkesboro Tie and additional voltage support is needed in the area under contingency.

DUKE ENERGY CAROLINAS - 2

- **2024**

Wateree Switching Station – Great Falls Switching Station 100 kV Line

- **DESCRIPTION:**
  - 6-Wire the double circuit Wateree Line
- **SUPPORTING STATEMENT:**
  - Wateree Switching Station – Great Falls Switching Station 100 kV Line can overload under contingency. Project done in conjunction with DEP's Wateree Transformer replacement project

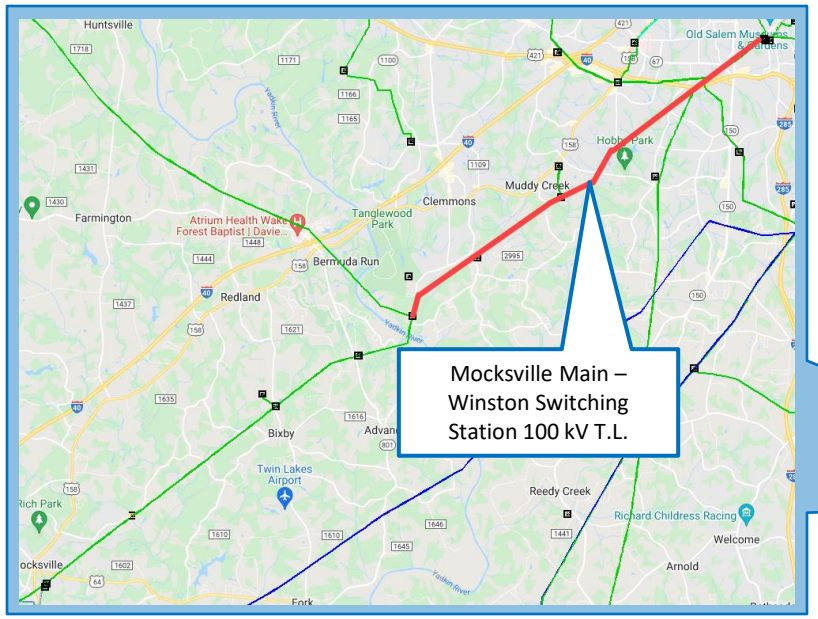


DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 3

- **2025**

MOCKSVILLE MAIN – WINSTON SWITCHING STATION 100 KV TRANSMISSION LINE

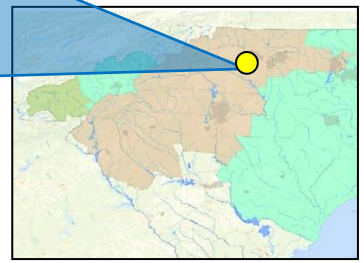


DESCRIPTION:

– Rebuild 10 miles of the Mocksville Main – Winston Switching Station 100 kV line with 1295 ACSR rated at 120°C.

SUPPORTING STATEMENT:

– Mocksville Main – Winston Switching Station 100 kV T.L. can overload under contingency

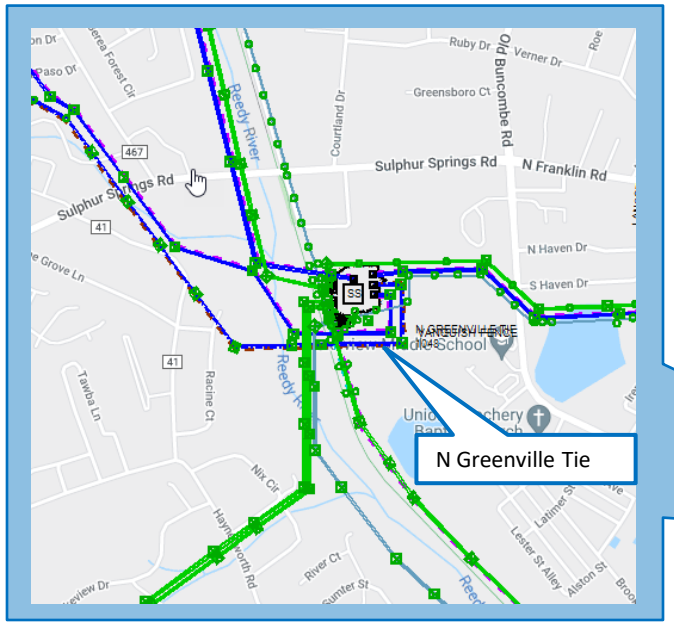


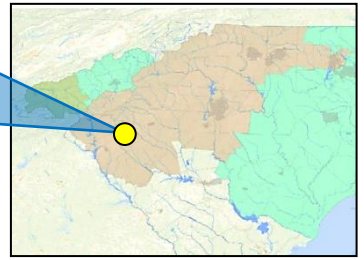
DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 4

- **2025**

NORTH GREENVILLE TIE 230 KV SUBSTATION





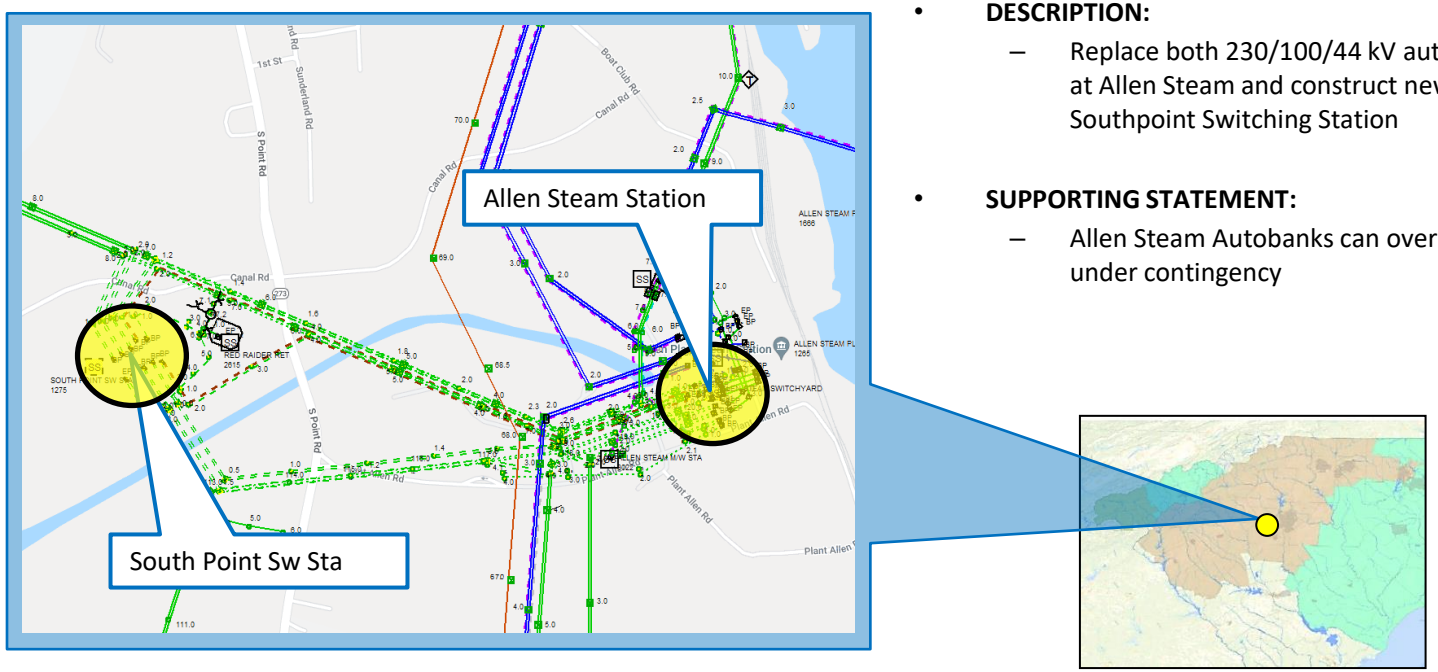
- **DESCRIPTION:**
  - Replace Bank 1 with a new 230/100/44 kV, 448 MVA transformer at N Greenville Tie.
- **SUPPORTING STATEMENT:**
  - North Greenville Bank 1 can overload under contingency

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 5

- **2025**

ALLEN STEAM STATION AUTOBANK REPLACEMENT / SOUTHPOINT SWITCHING STATION

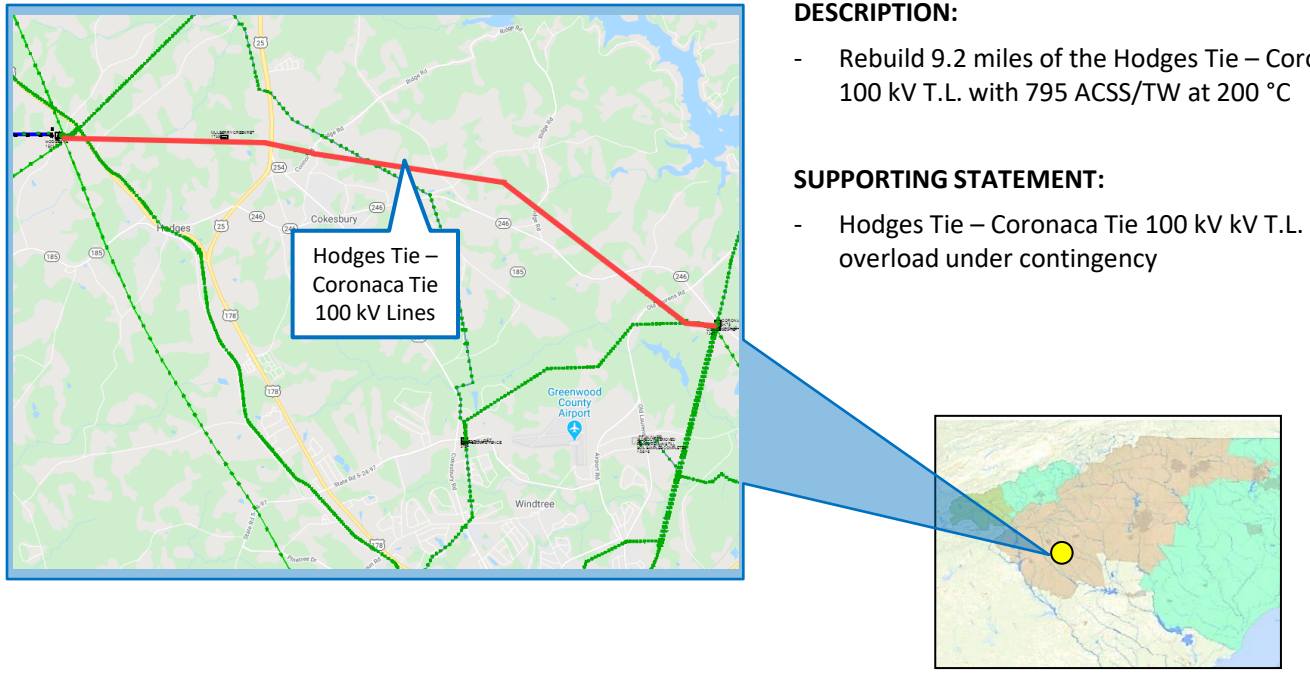


- **DESCRIPTION:**
  - Replace both 230/100/44 kV autobanks at Allen Steam and construct new Southpoint Switching Station
- **SUPPORTING STATEMENT:**
  - Allen Steam Autobanks can overload under contingency

DUKE ENERGY CAROLINAS - 6

- **2025**

HODGES TIE – CORONACA TIE 100 KV TRANSMISSION LINE



DESCRIPTION:

- Rebuild 9.2 miles of the Hodges Tie – Coronaca Tie 100 kV T.L. with 795 ACSS/TW at 200 °C

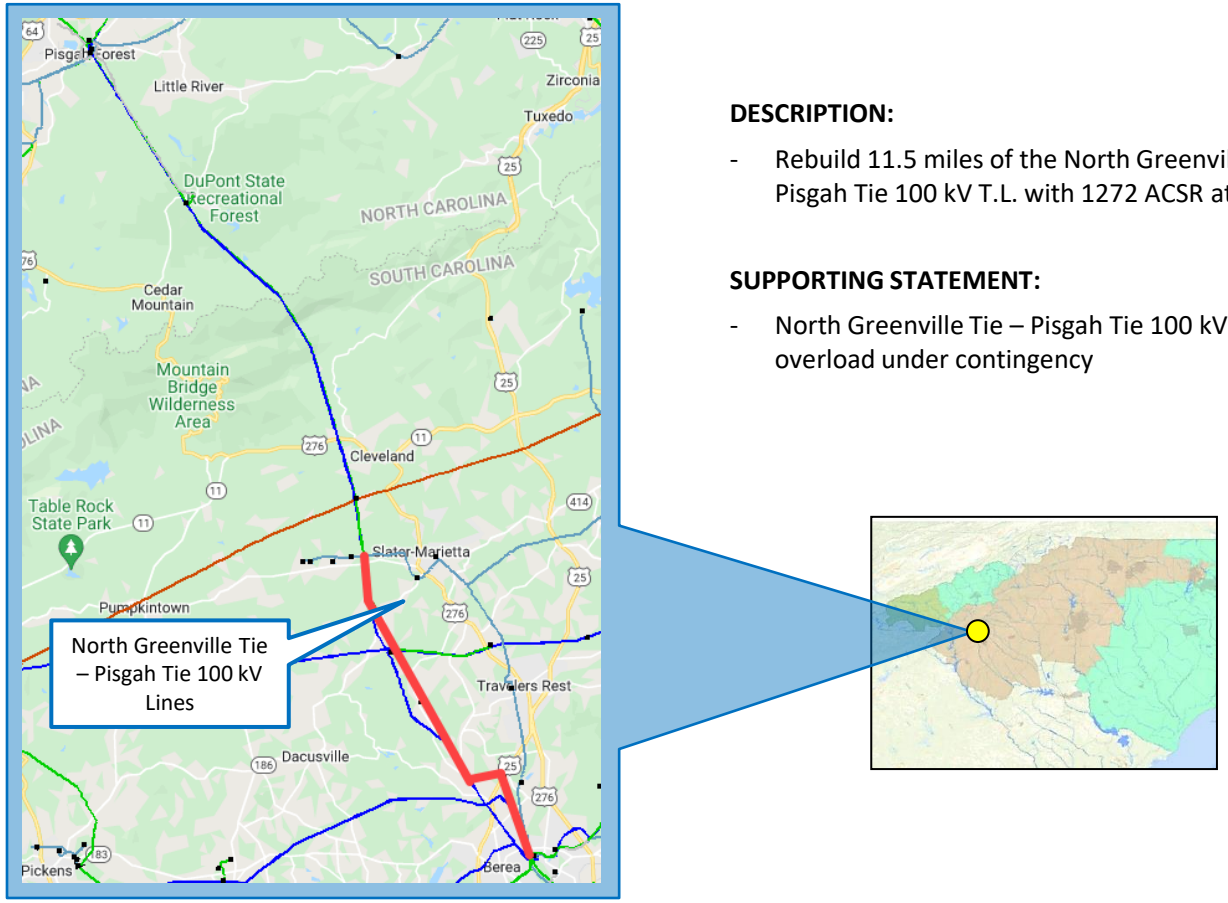
SUPPORTING STATEMENT:

- Hodges Tie – Coronaca Tie 100 kV kV T.L. can overload under contingency

DUKE ENERGY CAROLINAS - 7

- **2025**

NORTH GREENVILLE TIE - PISGAH TIE 100 KV TRANSMISSION LINE



DESCRIPTION:

- Rebuild 11.5 miles of the North Greenville Tie – Pisgah Tie 100 kV T.L. with 1272 ACSR at 120 °C

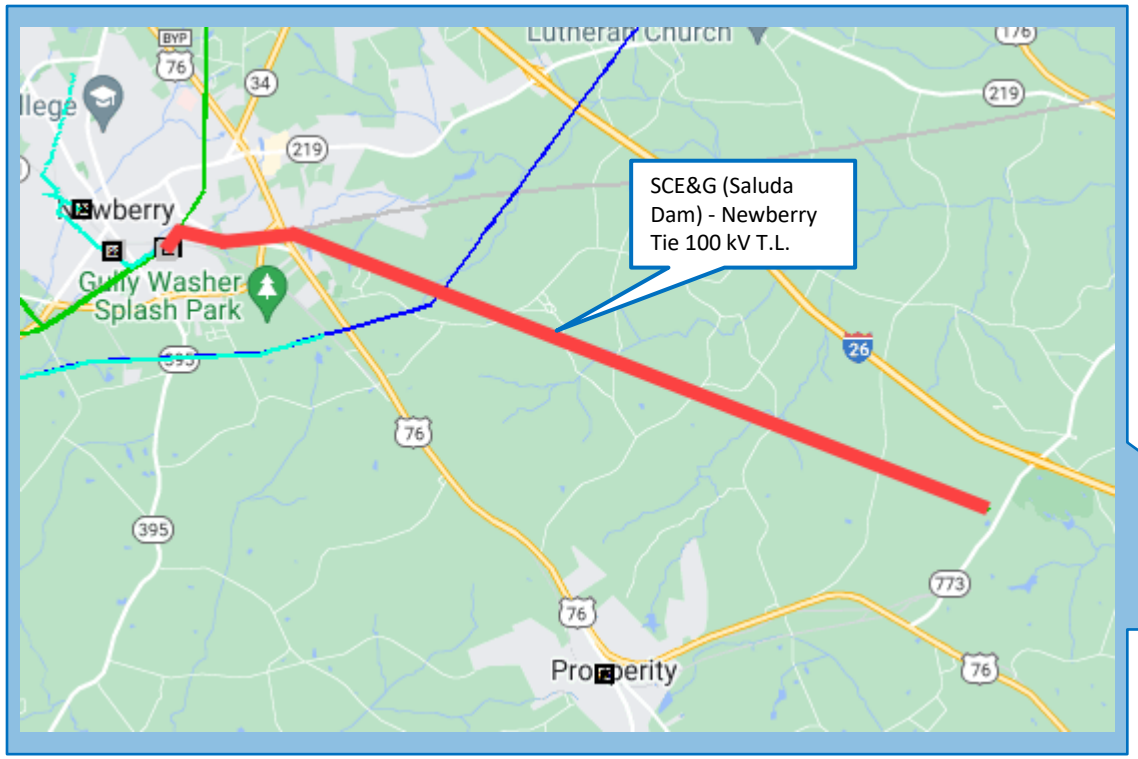
SUPPORTING STATEMENT:

- North Greenville Tie – Pisgah Tie 100 kV T.L. can overload under contingency

DUKE ENERGY CAROLINAS - 8

- **2025**

SCE&G (SALUDA DAM) - NEWBERRY TIE 100 KV TRANSMISSION LINES

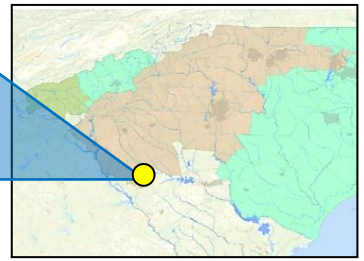


DESCRIPTION:

- Rebuild the SCE&G (Saluda Dam) - Newberry Tie 100 kV Line up to the change of ownership with SCE&G with 1272 ACSR at 120°C

SUPPORTING STATEMENT:

- Support future solar generation in the area and address potential contingency loading conditions on the SCE&G (Saluda Dam) - Newberry Tie 100 kV

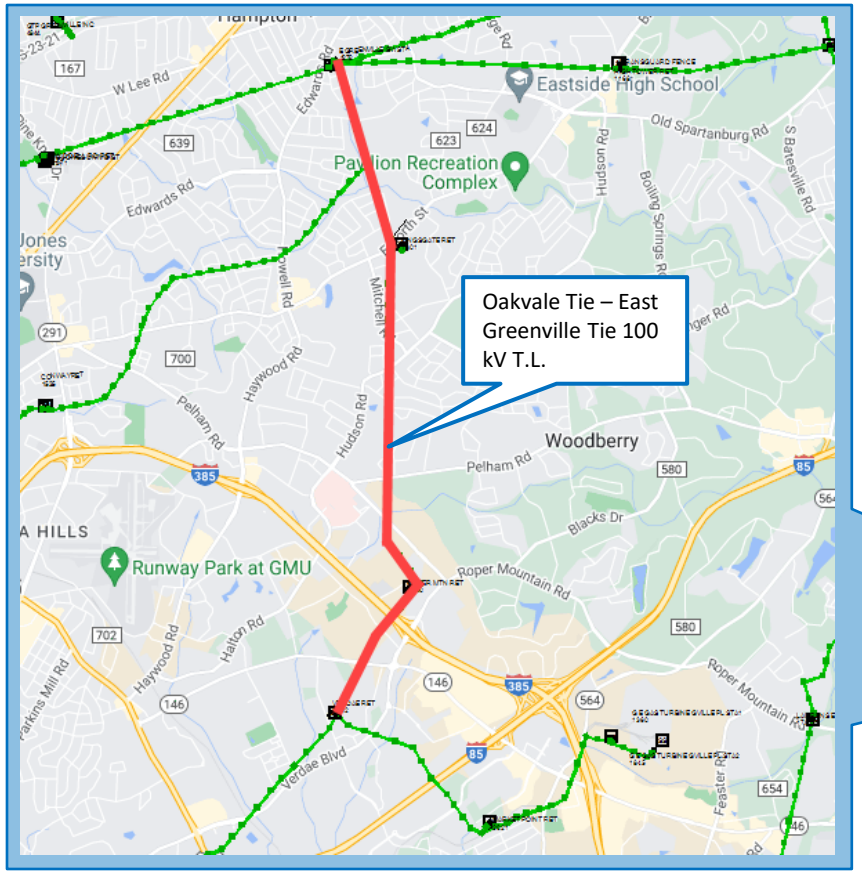


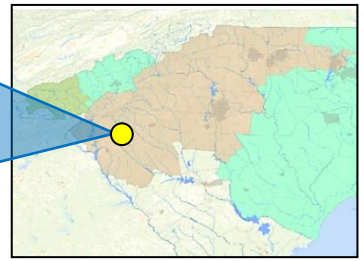
DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 9

- **2026**

OAKVALE TIE – EAST GREENVILLE TIE 100 KV TRANSMISSION LINE





DESCRIPTION:

- Rebuild 4.5 miles (East Greenville to Verdae Retail) of the Oakvale Tie - East Greenville Tie 100 kV Double Circuit line with 1272 ACSR at 120°C

SUPPORTING STATEMENT:

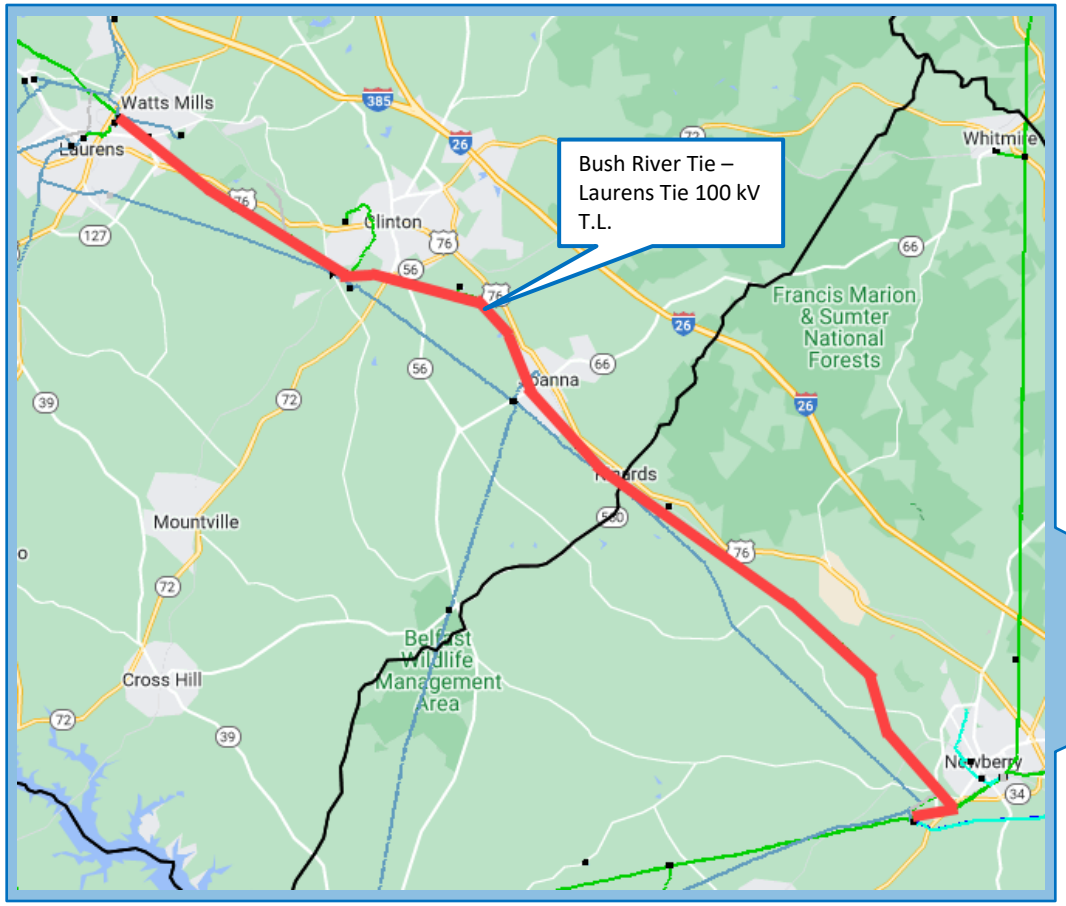
- The Oakvale Tie - East Greenville Tie 100 kV Transmission Line can overload under contingency

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 10

- **2026**

BUSH RIVER TIE – LAURENS TIE 100 KV TRANSMISSION LINE

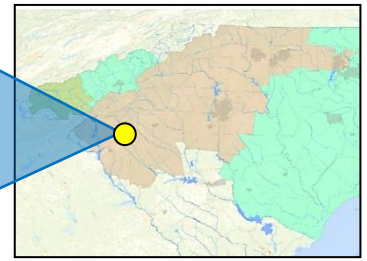


DESCRIPTION:

- Rebuild the full 29 miles of the Bush River Tie - Laurens Tie 100 kV double circuit line with 1272 ACSR at 120°C

SUPPORTING STATEMENT:

- Support future solar generation in the area and address potential contingency loading conditions on the Bush River Tie - Laurens Tie 100 kV Transmission Line



DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 11

- **2026**

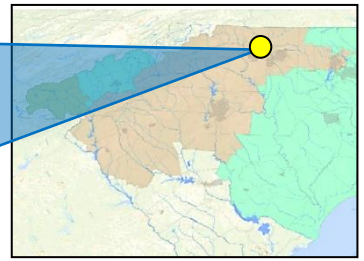
NORTH GREENSBORO TIE - GREENSBORO MAIN 100 KV TRANSMISSION LINES

DESCRIPTION:

- Rebuild both of the North Greensboro Tie - Greensboro Main 100 kV Transmission Lines with 1158 ACSS/TW at 200°C

SUPPORTING STATEMENT:

- The North Greensboro - Greensboro Main 100 kV Transmission Lines can overload under contingency

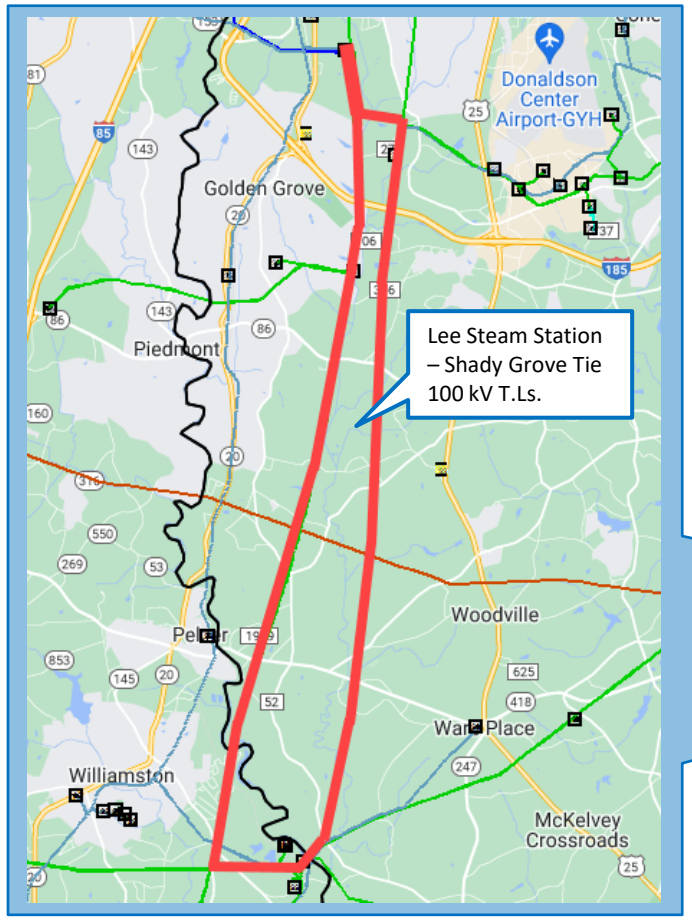


DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 12

• **2026**

LEE STEAM STATION - SHADY GROVE TIE 100 KV TRANSMISSION LINES



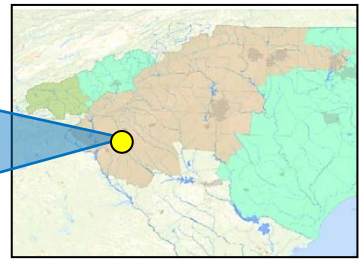
DESCRIPTION:

- Rebuild both of the Lee Steam Station - Shady Grove 100 kV Transmission Line (Lee circuits) with 1158 ACSS/TW at 200°C

SUPPORTING STATEMENT:

- The Lee Steam Station - Shady Grove 100 kV Transmission Lines can overload under contingency

Note: These are two separate projects in the 10 year plan

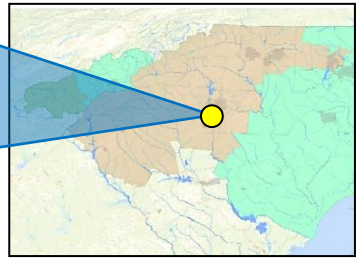


DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 13

- **2026**

WYLIE SWITCHING STATION – WOODLAWN TIE 100 KV TRANSMISSION LINE



DESCRIPTION:

- Reconductor 10 miles of the Wylie Switching Station – Woodlawn Tie 100 kV T.L. with Bundled 477 ACSR at 120 °C

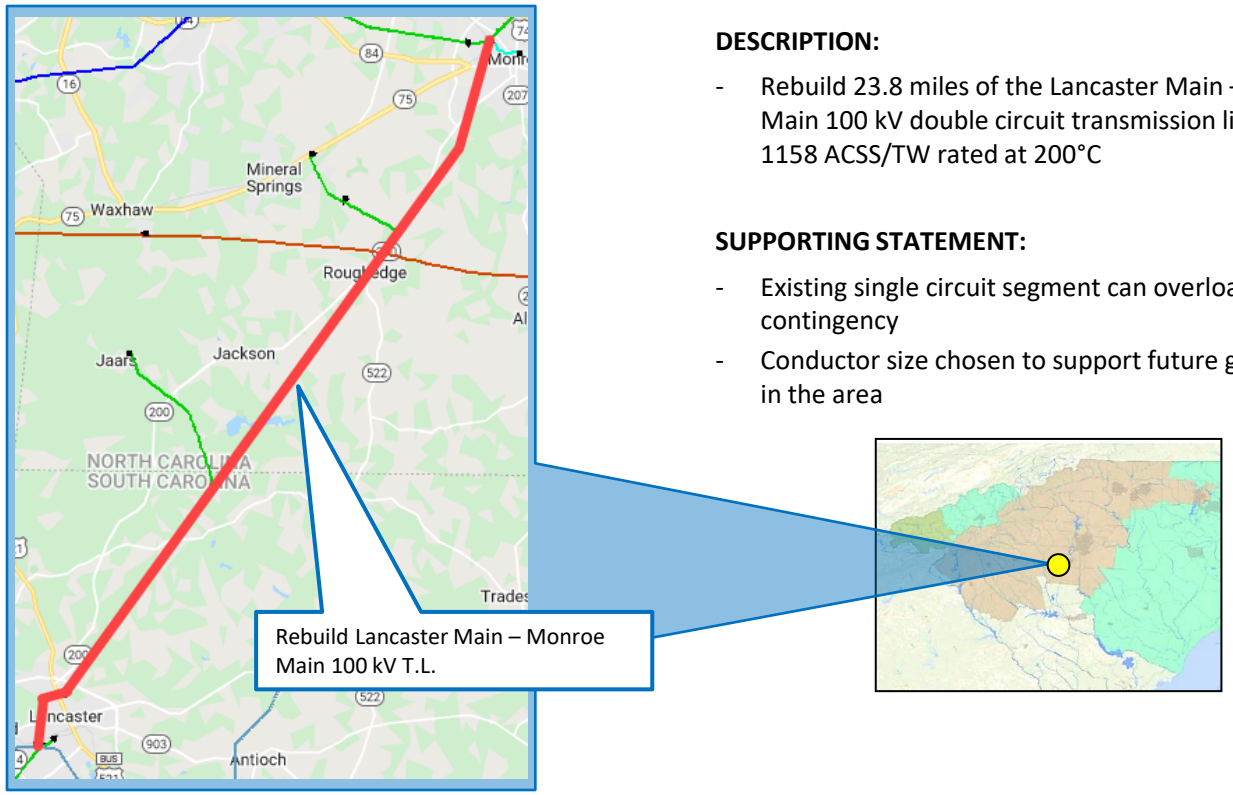
SUPPORTING STATEMENT:

- Wylie Switching Station - Woodlawn Tie 100 kV T. L. can overload under contingency.

DUKE ENERGY CAROLINAS - 14

- **2027**

LANCASTER MAIN – MONROE MAIN 100 kV TRANSMISSION LINE



DESCRIPTION:

- Rebuild 23.8 miles of the Lancaster Main – Monroe Main 100 kV double circuit transmission line with 1158 ACSS/TW rated at 200°C

SUPPORTING STATEMENT:

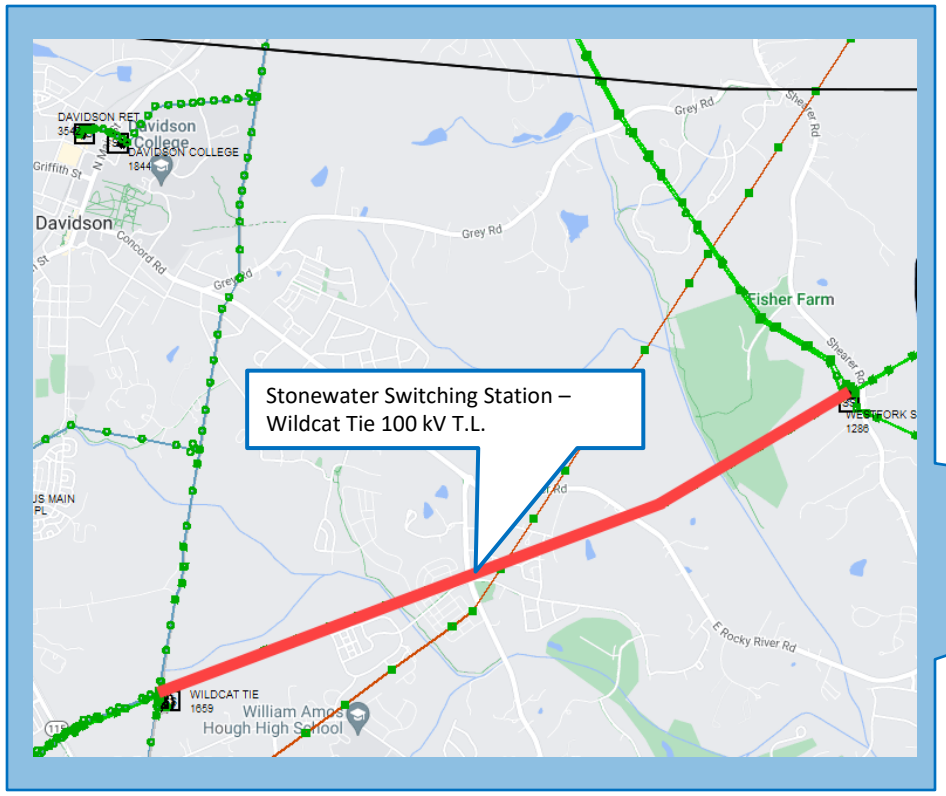
- Existing single circuit segment can overload under contingency
- Conductor size chosen to support future generation in the area

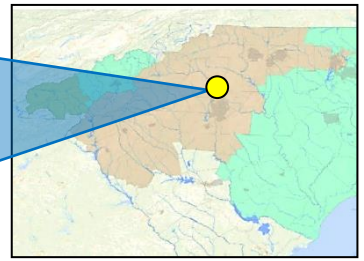
DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 15

- **2028**

STONEWATER TIE - WESTFORK SWITCHING STATION 100 KV TRANSMISSION LINES





DESCRIPTION:

- Rebuild 3 miles (Wildcat Tie to Westfork Switching Station) of the Stonewater Tie - Westfork Switching Station 100 kV Transmission Line with 1272 ACSR at 120°C

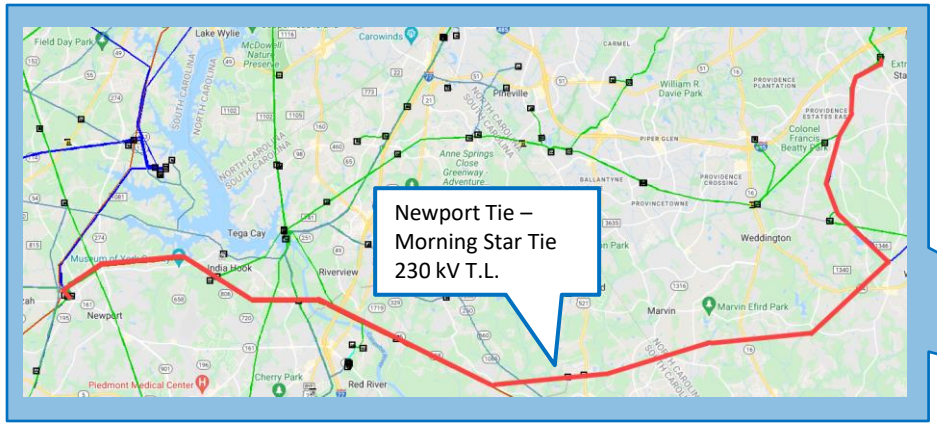
SUPPORTING STATEMENT:

- The Stonewater Tie - Westfork Switching Station 100 kV transmission line can overload under contingency

DUKE ENERGY CAROLINAS - 16

- **2029**

NEWPORT TIE – MORNING STAR TIE 230 KV TRANSMISSION LINE

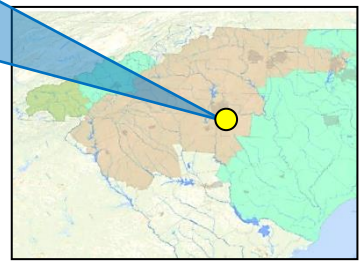


DESCRIPTION:

- Add a second circuit to the existing Newport Tie – Morning Star Tie 230 kV Transmission Line

SUPPORTING STATEMENT:

- A number of contingencies on the Duke Energy Carolinas 230 kV transmission system can cause thermal overloads on the Newport Tie – Morning Star Tie 230 kV T.L.



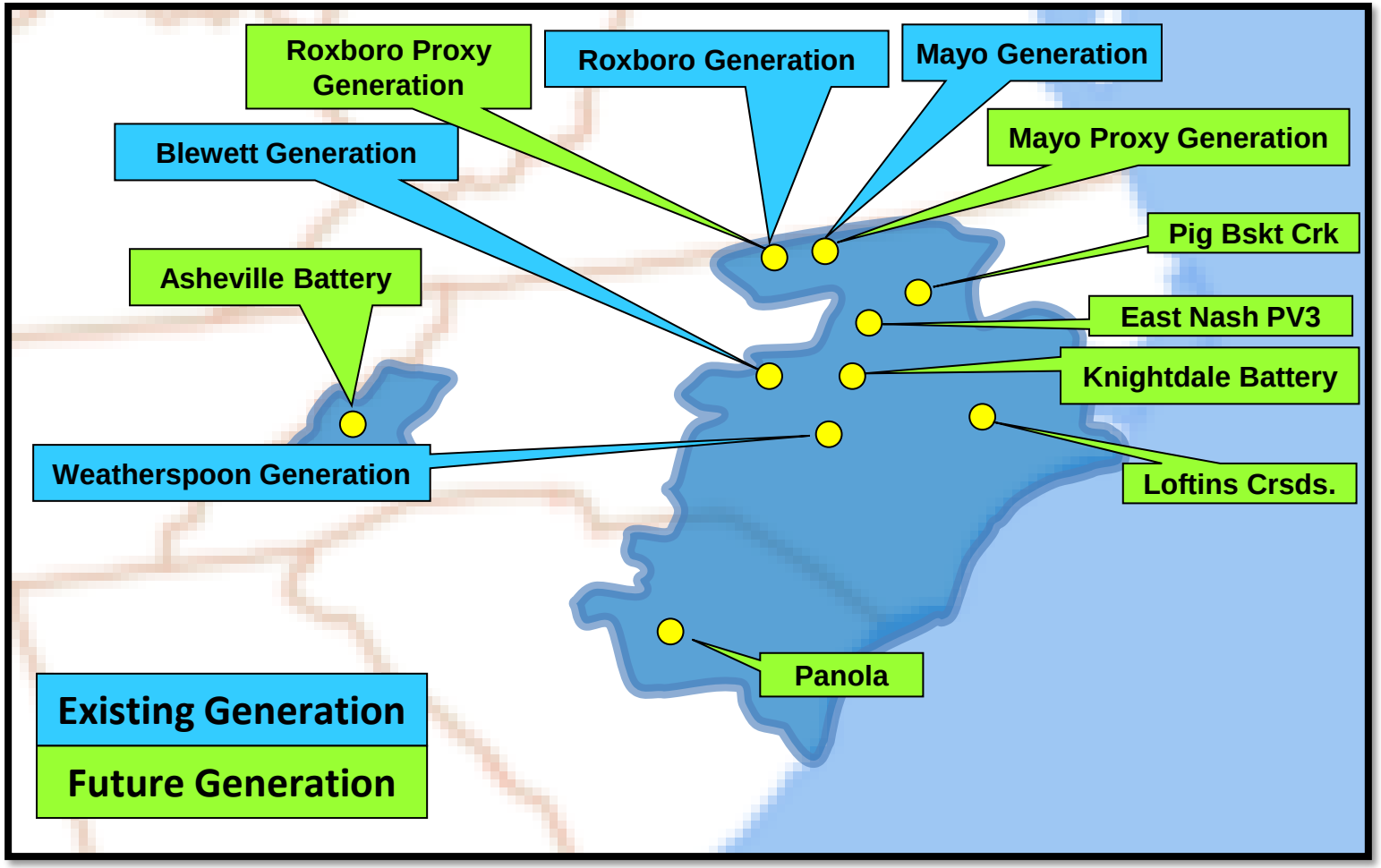
DUKE ENERGY PROGRESS EAST/WEST

Balancing Authority Areas

Generation Assumptions

DUKE ENERGY PROGRESS – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process.



DUKE ENERGY PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
BLEWETT IC #1	OIL	13	0	--	--	--	--	--	--	--	--
BLEWETT IC #2	OIL	13	0	--	--	--	--	--	--	--	--
BLEWETT IC #3	OIL	13	0	--	--	--	--	--	--	--	--
BLEWETT IC #4	OIL	13	0	--	--	--	--	--	--	--	--
WEATHERSPOON IC #1	GAS/OIL	32	0	--	--	--	--	--	--	--	--
WEATHERSPOON IC #2	GAS/OIL	32	0	--	--	--	--	--	--	--	--
WEATHERSPOON IC #3	GAS/OIL	33	0	--	--	--	--	--	--	--	--
WEATHERSPOON IC #4	GAS/OIL	31	0	--	--	--	--	--	--	--	--

DUKE ENERGY PROGRESS – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
ROXBORO #1 COAL	COAL	379	379	379	379	379	0	--	--	--	--
ROXBORO #2 COAL	COAL	665	665	665	665	665	0	--	--	--	--
ROXBORO #3 COAL	COAL	691	691	691	691	0	--	--	--	--	--
ROXBORO #4 COAL	COAL	698	698	698	698	0	--	--	--	--	--
MAYO COAL	COAL	727	727	727	727	727	0	--	--	--	--
ROXBORO PROXY #1	--	--	--	--	--	1350	1350	1350	1350	1350	1350
ROXBORO PROXY #2	--	--	--	--	--	--	1350	1350	1350	1350	1350
MAYO PROXY	--	--	--	--	--	--	602	602	602	602	602

DUKE ENERGY PROGRESS – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
ASHEVILLE BATTERY	BATTERY	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25
PANOLA	PV	67	67	67	67	67	67	67	67	67	67
EAST NASH PV3	PV	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4
LOFTINS XROADS PV	PV	75	75	75	75	75	75	75	75	75	75
PIG BSKT CRK PV	PV	80	80	80	80	80	80	80	80	80	80
KNIGHTDALE BATTERY	BATTERY	--	100	100	100	100	100	100	100	100	100

DUKE ENERGY PROGRESS – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

SITE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
HAMLET #1	55	55	55	55	55	55	55	55	55	55
HAMLET #2	55	55	55	55	55	55	55	55	55	55
HAMLET #3	55	55	55	55	55	55	55	55	55	55

DUKE ENERGY PROGRESS EAST

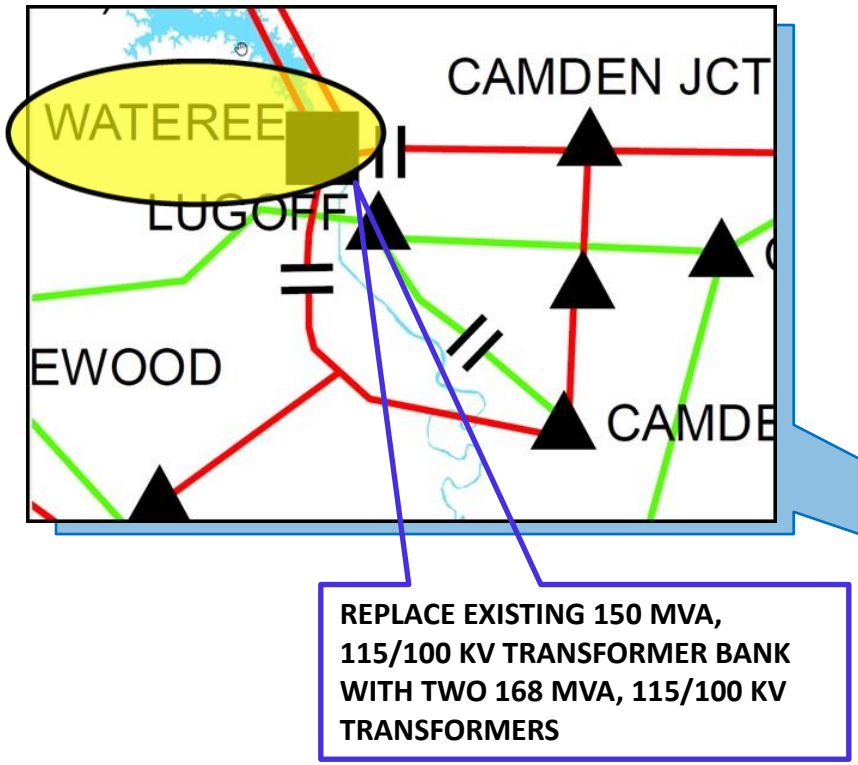
Balancing Authority Area

Preliminary Transmission Expansion Plan

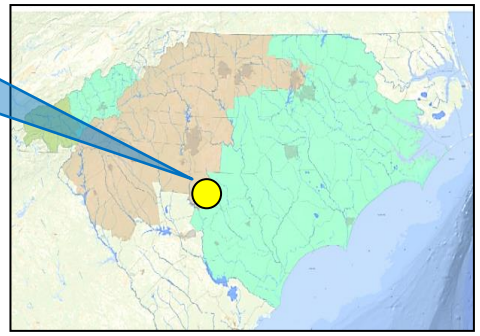
DUKE ENERGY PROGRESS EAST – 1

- **2023**

WATEREE HYDRO PLANT – REPLACE 115/100 KV TRANSFORMERS



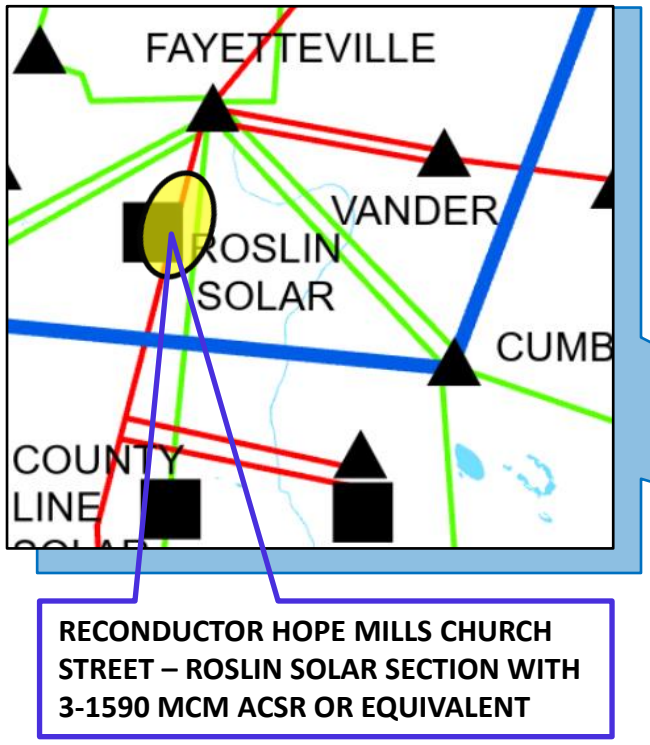
- **DESCRIPTION:**
  - Replace existing 150 MVA, 115/100 kV transformer bank with two 168 MVA, 115/100 kV transformers. Project to be done in conjunction with Duke Energy Carolinas' Wateree Line 6-wire project.
- **SUPPORTING STATEMENT:**
  - The existing Wateree transformer bank overloads under contingency.



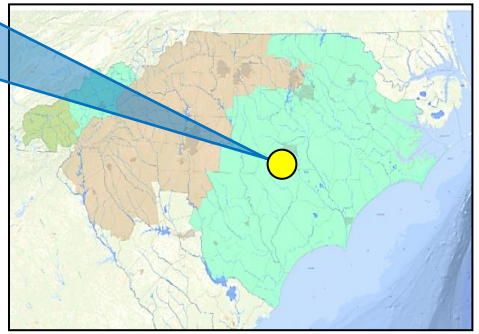
DUKE ENERGY PROGRESS EAST – 2

- **2024**

FAYETTEVILLE - FAYETTEVILLE DUPONT SS 115 KV T.L. – RECONDUCTOR



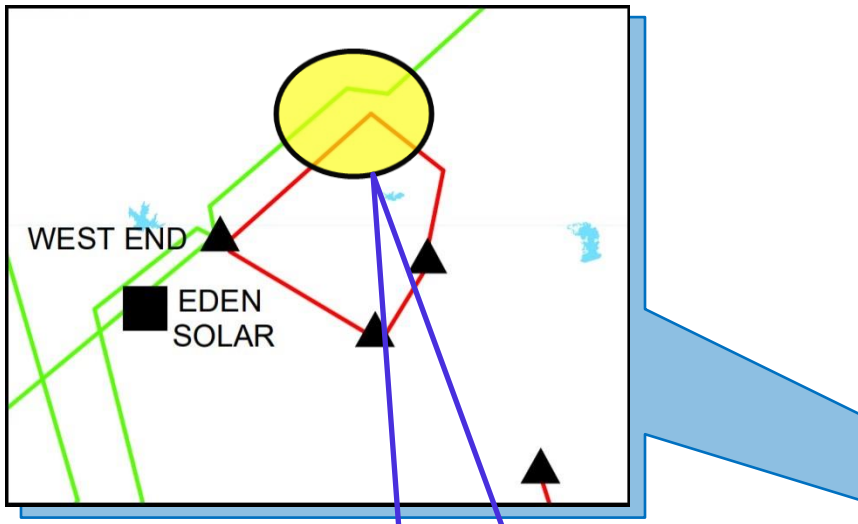
- **DESCRIPTION:**
  - Reconductor approximately 3.2 miles Hope Mills Church Street – Roslin Solar section of the Fayetteville – Fayetteville Dupont SS 115kV Line with 3-1590 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - Outage of the Weatherspoon-Fayetteville 230kV line causes overload of this line section.



DUKE ENERGY PROGRESS EAST – 3

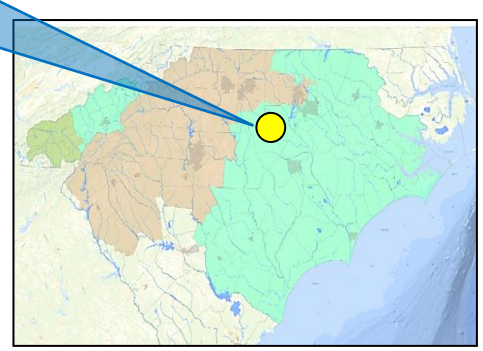
- **2025**

CARTHAGE 230/115 KV SUBSTATION – CONSTRUCT



CONSTRUCT A NEW 230/115KVSUBSTATION NEAR THE EXISTING CARTHAGE 115KV SUBSTATION

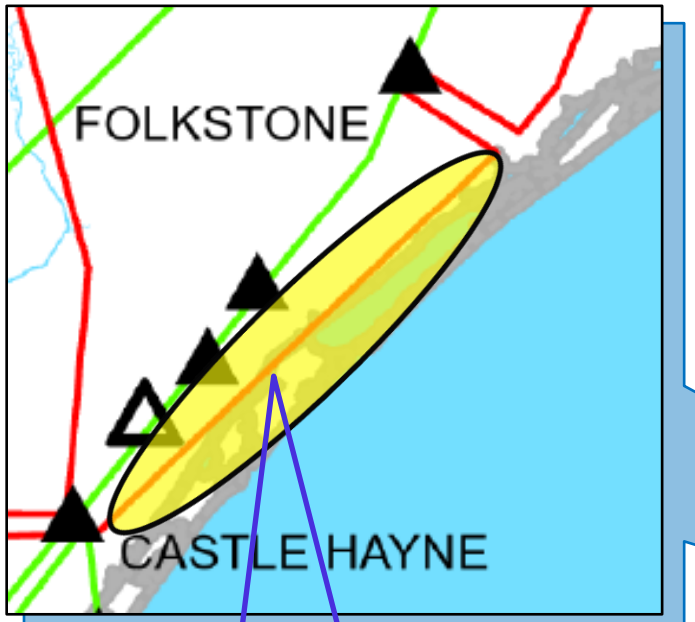
- **DESCRIPTION:**
  - Construct a new 230/115kV substation near the existing Carthage 115kV substation. Loop in the existing Cape Fear – West End 230kV line and West End – Southern Pines 115kV feeder.
- **SUPPORTING STATEMENT:**
  - Outage of one West End transformer overloads the other and voltage at Southern Pines 115kV drops below criteria.



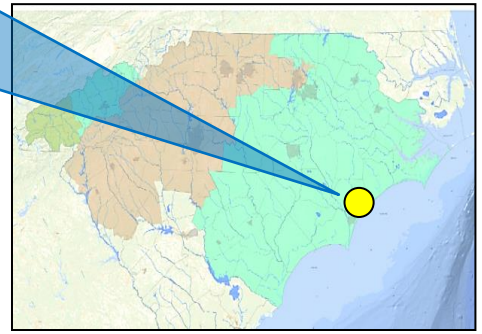
DUKE ENERGY PROGRESS EAST – 4

- **2025**

CASTLE HAYNE - FOLKSTONE 115 KV TRANSMISSION LINE – RECONDUCTOR



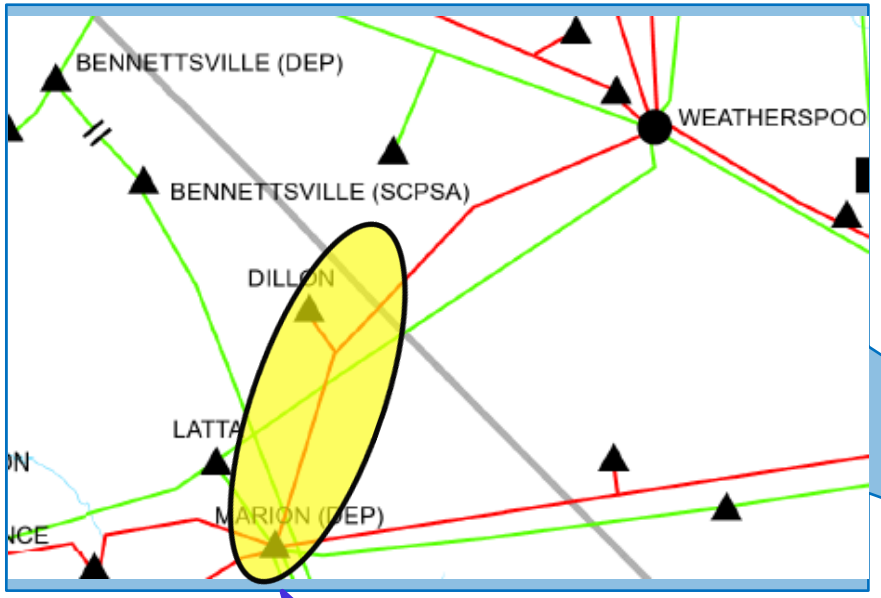
- **DESCRIPTION:**
  - Reconductor approximately 25.91 miles of line with 3-1272 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - The Castle Hayne – Folkstone 115 kV transmission line overloads under contingency.



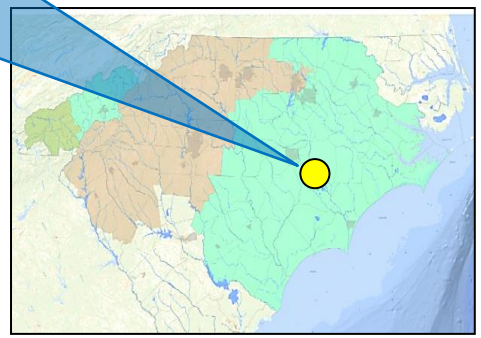
DUKE ENERGY PROGRESS EAST – 5

- **2025**

WEATHERSPOON - MARION 115 KV LINE (RED ZONE)



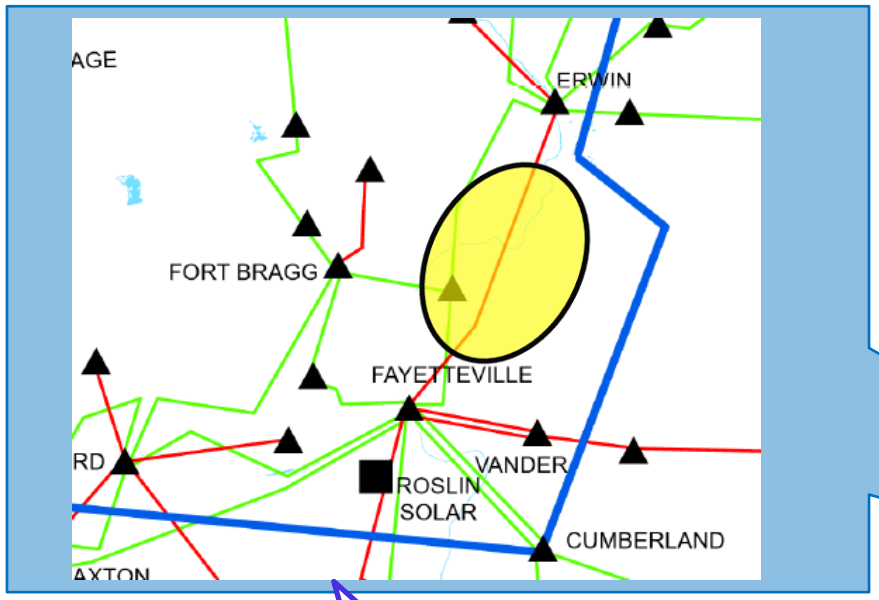
- **DESCRIPTION:**
  - Weatherspoon-Marion 115 kV - raise 6.45 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



DUKE ENERGY PROGRESS EAST – 6

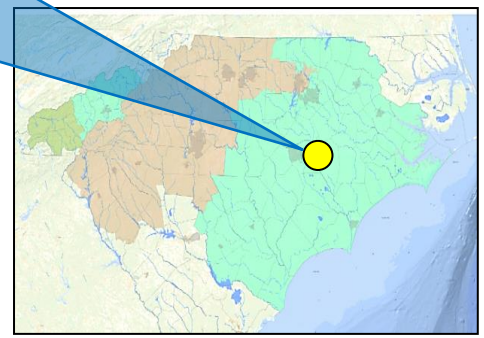
- **2025**

FAYETTEVILLE – FAYETTEVILLE DUPONT SS 115 KV LINE, RECONDUCTOR ONE SECTION (RED ZONE)



RECONDUCTOR 4.9 MILES OF 115 KV T.L. WITH 1590 ACSR

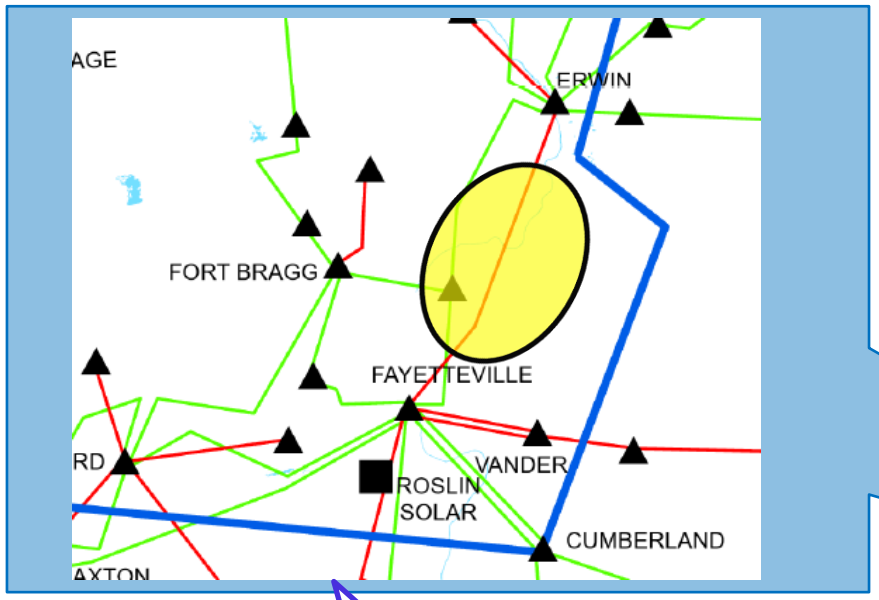
- **DESCRIPTION:**
  - Reconductor one sections, 4.9 miles, of the Erwin - Fayetteville 115 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



DUKE ENERGY PROGRESS EAST – 7

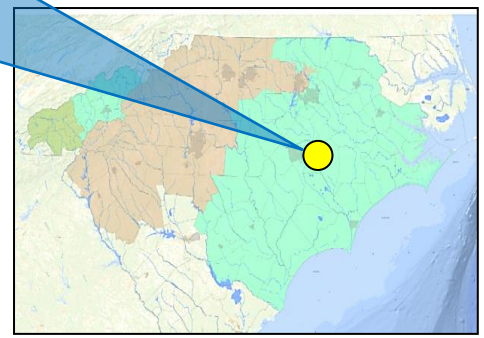
- **2025**

ERWIN – FAYETTEVILLE 115 KV LINE, RECONDUCTOR TWO SECTIONS (RED ZONE)



RECONDUCTOR 8.72 MILES OF 115 KV T.L. WITH 1590 ACSR

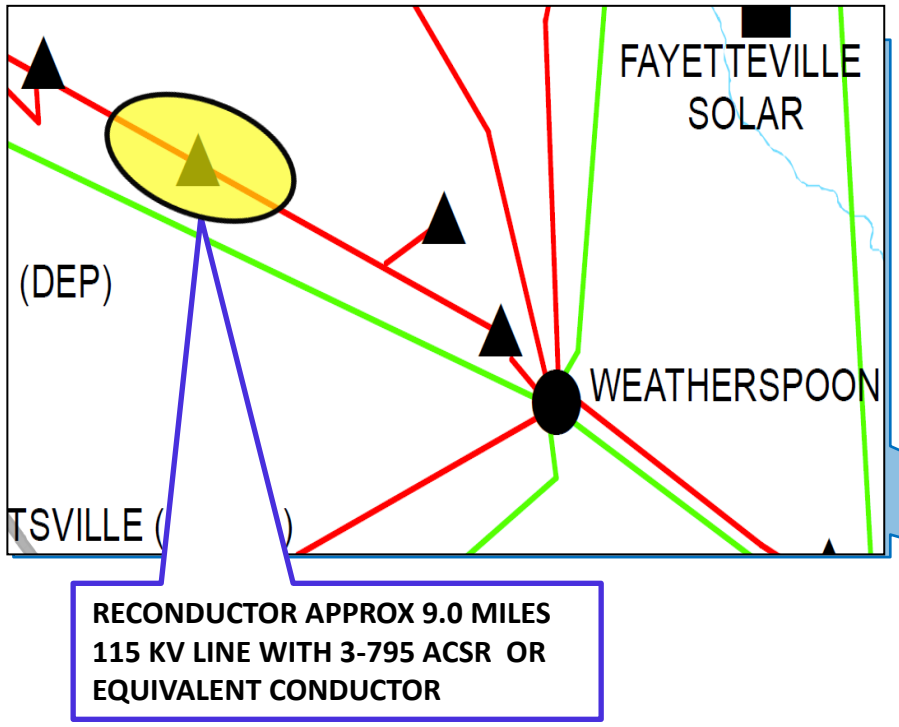
- **DESCRIPTION:**
  - Reconductor two sections, 8.72 miles, of the Erwin - Fayetteville 115 kV Line
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



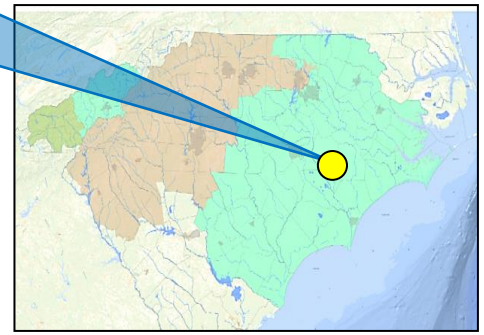
DUKE ENERGY PROGRESS EAST – 8

- **2026**

WEATHERSPOON – LOF 115 KV T.L.



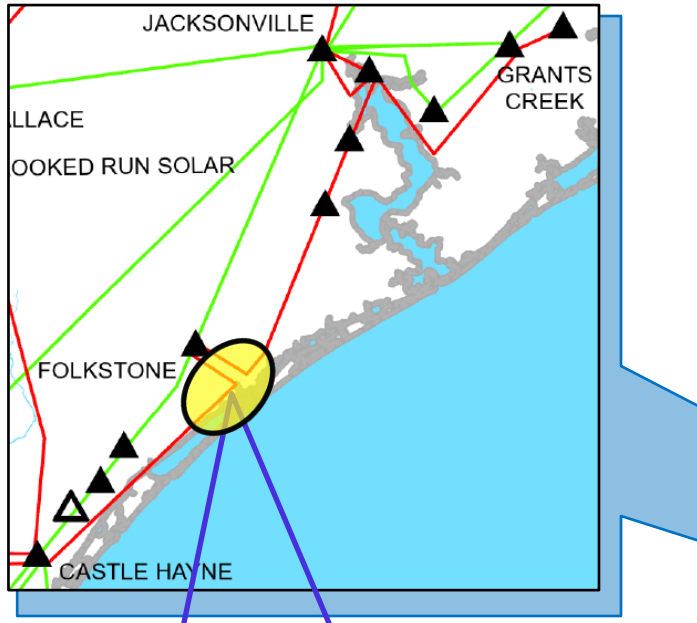
- **DESCRIPTION:**
  - Reconductor approximately 9.0 miles from Maxton to Pembroke 115 kV substation with 3-795 MCM ACSR or equivalent. Replace existing 600A switch with 1200A switch.
- **SUPPORTING STATEMENT:**
  - The Maxton-Pembroke section of the Weatherspoon-LOF 115 kV transmission line overloads under contingency.



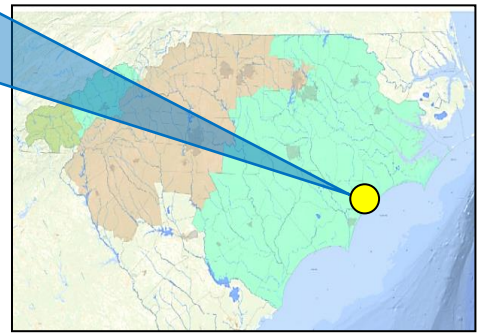
DUKE ENERGY PROGRESS EAST – 9

- **2026**

HOLLY RIDGE NORTH 115 KV SWITCHING STATION – CONSTRUCT SUBSTATION



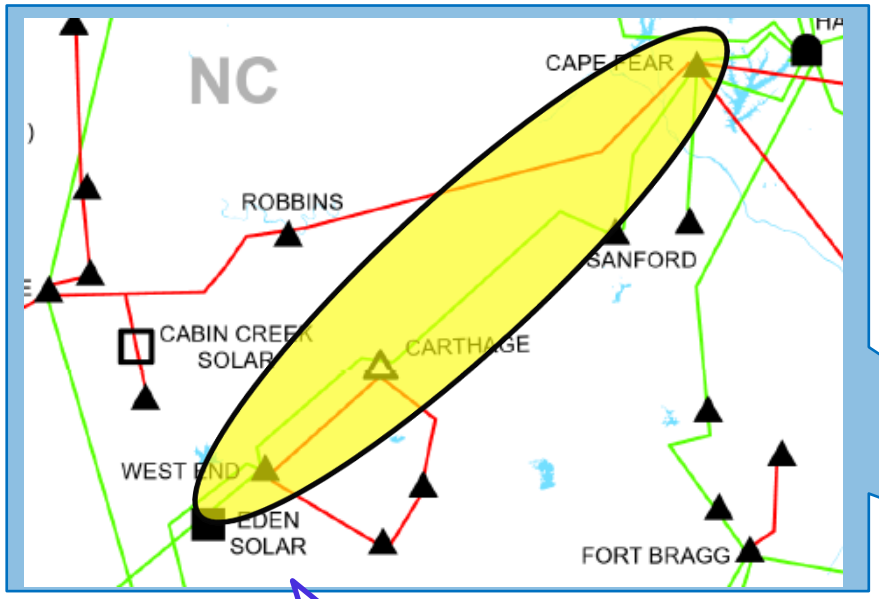
- **DESCRIPTION:**
  - Construct a new 115kV Switching Station northeast of Holly Ridge, NC where the Castle Hayne-Folkstone 115kV and Folkstone-Jacksonville City 115kV lines come together.
  - Construct a new 115kV feeder from the new switching station to JOEMC Folkstone POD.
- **SUPPORTING STATEMENT:**
  - The Castle Hayne – Folkstone 115 kV transmission line has low voltages at stations along on this line under contingency.



DUKE ENERGY PROGRESS EAST – 10

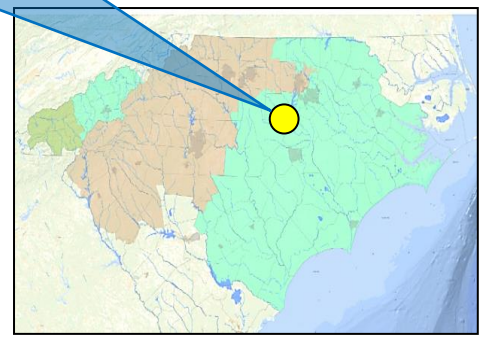
- **2026**

Cape Fear Plant - West End 230 kV Line, Rebuild (Red Zone)



RECONDUCTOR 26 MILES OF 230 KV T.L. WITH 6-1590 ACSR, RAISE 4.5 MILES

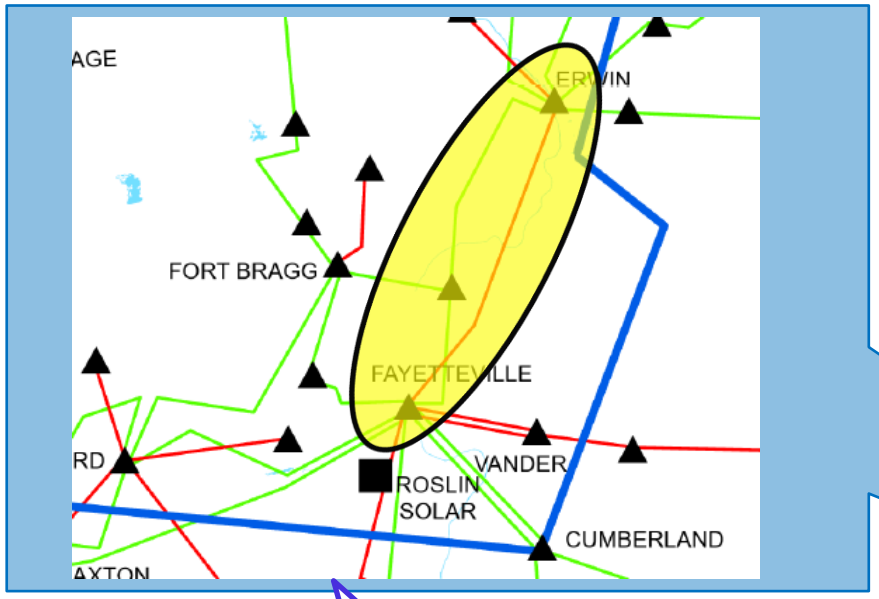
- **DESCRIPTION:**
  - Reconductor 26 miles and raise 4.5 miles of the Cape Fear Plant - West End 230 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



DUKE ENERGY PROGRESS EAST – 11

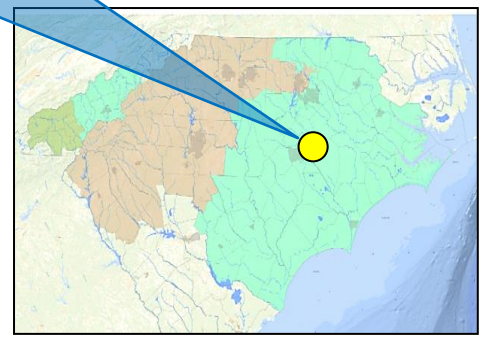
- **2026**

ERWIN - FAYETTEVILLE EAST 230 KV LINE, REBUILD (RED ZONE)



RECONDUCTOR 23 MILES OF 230 KV T.L. WITH 6-1590 ACSR

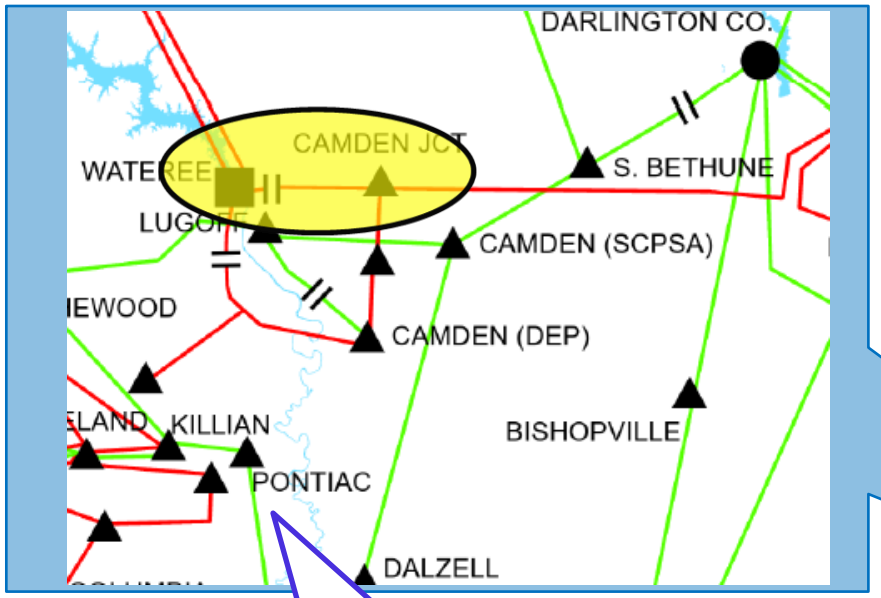
- **DESCRIPTION:**
  - Reconductor 23 miles of the Erwin - Fayetteville East 230 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



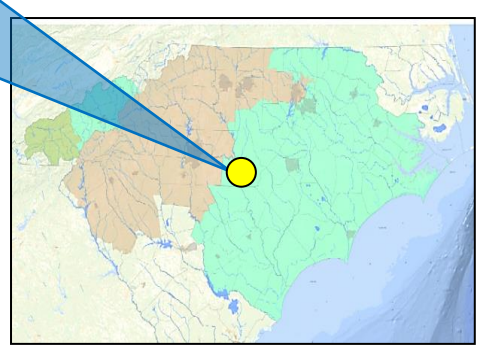
DUKE ENERGY PROGRESS EAST – 12

- **2026**

CAMDEN JUNCTION - DPC WATEREE 115 KV LINE (RED ZONE)



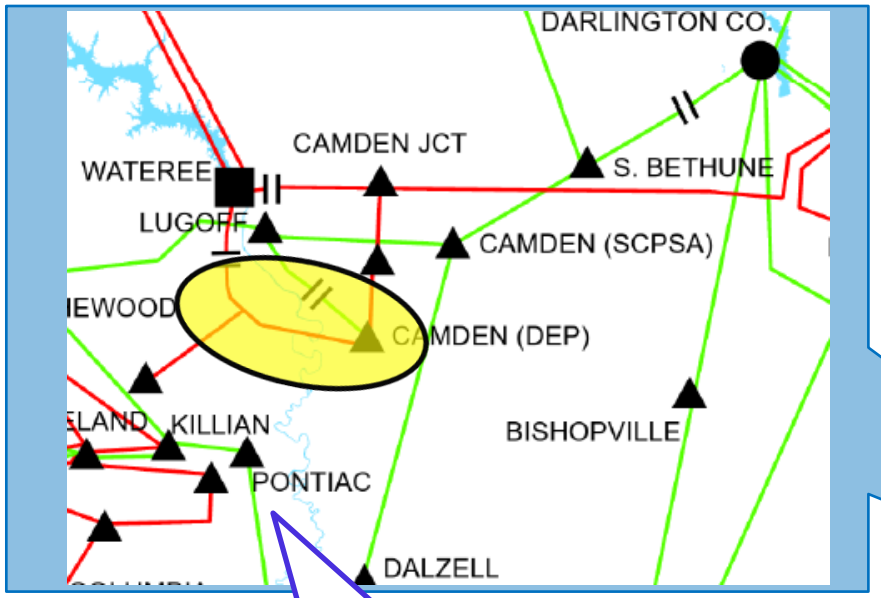
- **DESCRIPTION:**
  - Camden Junction-DPC Wateree 115 kV line - reconductor 4.24 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



DUKE ENERGY PROGRESS EAST – 13

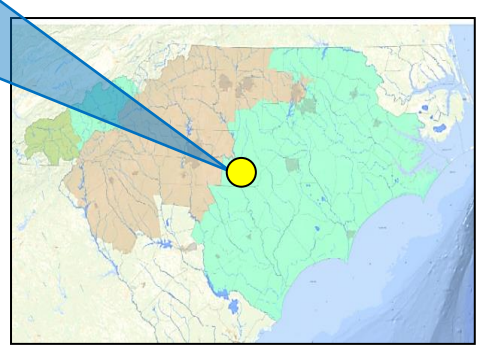
- **2026**

CAMDEN - CAMDEN DUPONT 115 KV LINE, REBUILD 0.7 MILES (RED ZONE)



RECONDUCTOR 0.7 MILES OF 115 KV T.L. WITH 1590 ACSR

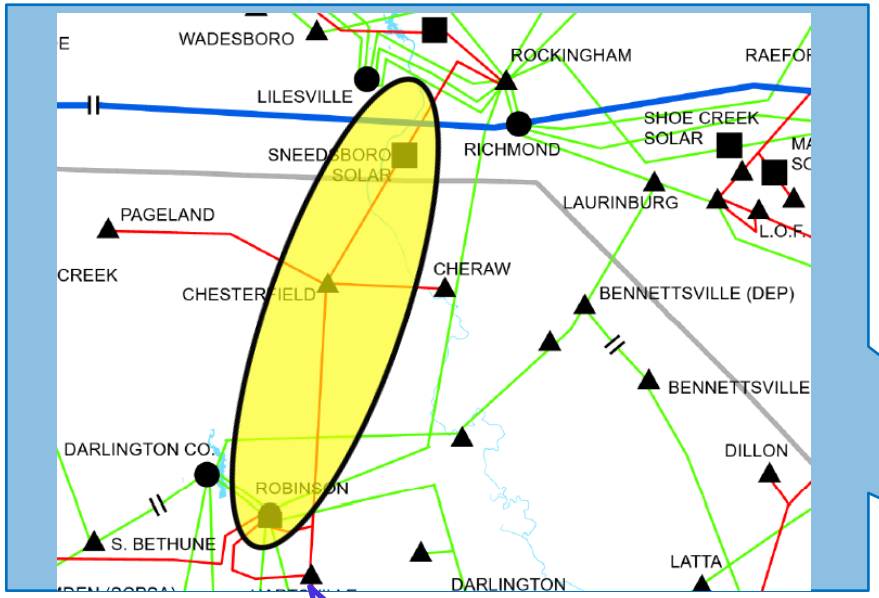
- **DESCRIPTION:**
  - Rebuild 0.7 miles of the Camden - Camden DuPont 115 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



DUKE ENERGY PROGRESS EAST – 14

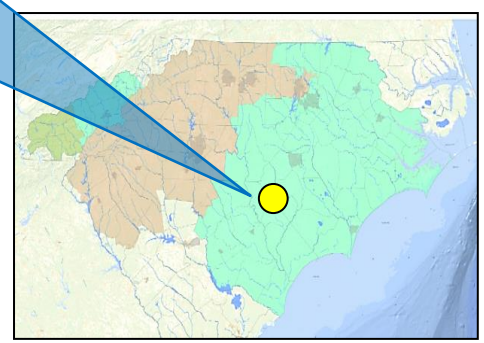
- **2026**

ROBINSON PLANT - ROCKINGHAM 115 KV LINE (RED ZONE)



RECONDUCTOR 17.08 MILES OF 115 KV T.L. WITH 1590 ACSR

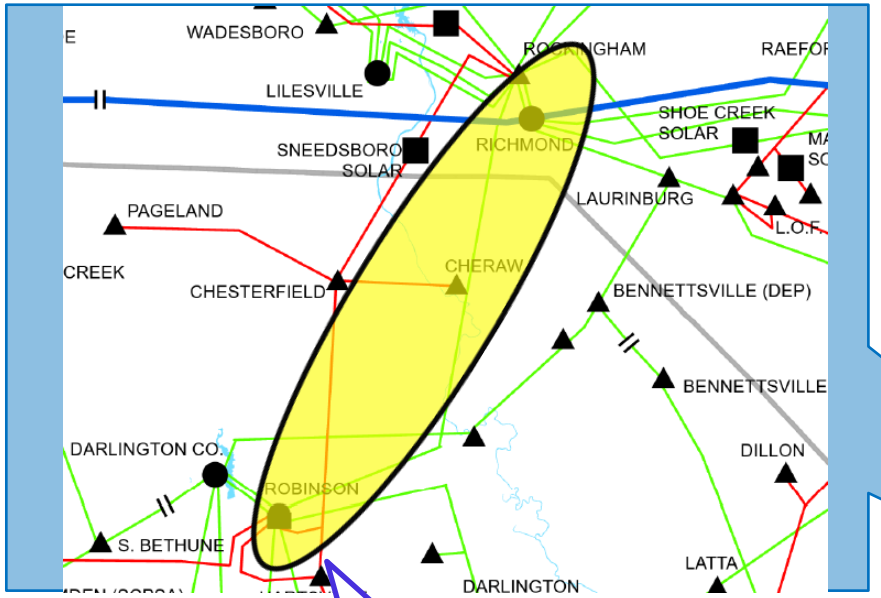
- **DESCRIPTION:**
  - Robinson Plant-Rockingham 115 kV line - reconductor 17.08 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



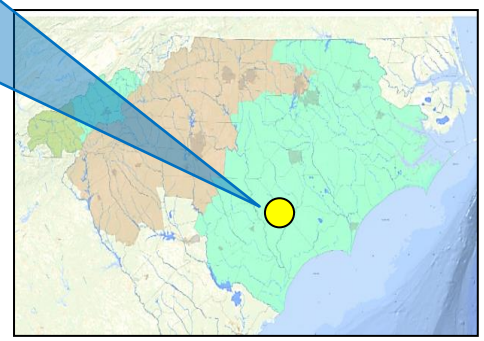
DUKE ENERGY PROGRESS EAST – 15

- **2027**

ROBINSON - ROCKINGHAM 230 KV LINE (RED ZONE)



RECONDUCTOR 41 MILES OF 230 KV T.L. WITH 6-1590 ACSR

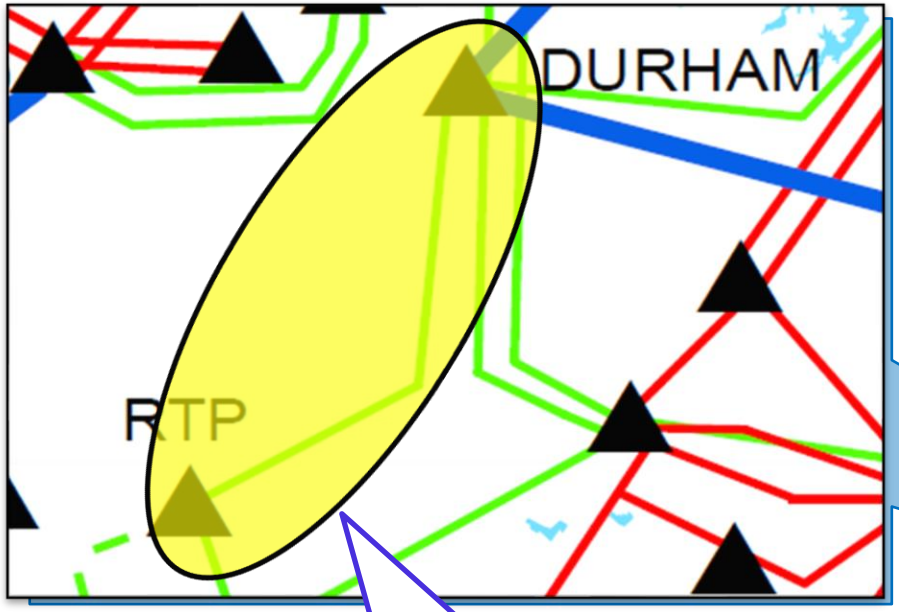


- **DESCRIPTION:**
  - Robinson Plant-Rockingham 230 line - reconductor 41 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.

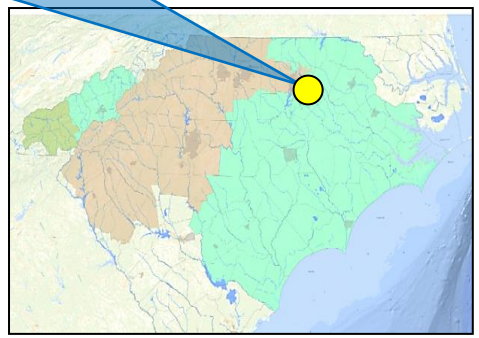
DUKE ENERGY PROGRESS EAST – 16

- **TBD**

DURHAM – RTP 230 KV T.L.



- **DESCRIPTION:**
  - Reconductor approximately 10.0 miles of the Durham – RTP 230 kV transmission line with bundled 6-1590 ACSR rated for 1195 MVA.
- **SUPPORTING STATEMENT:**
  - The Durham – RTP 230 kV transmission line overloads under contingency.



DUKE ENERGY PROGRESS WEST

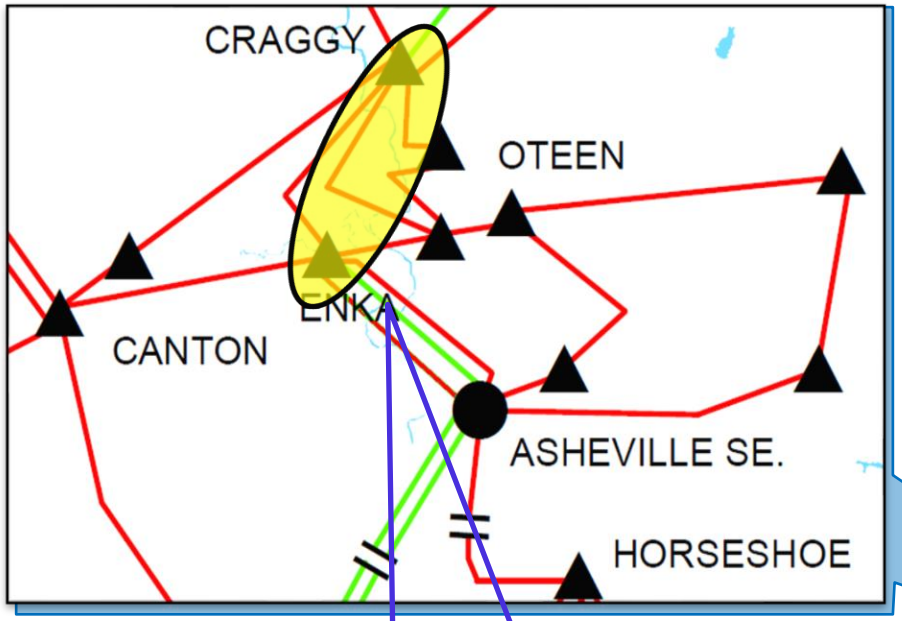
Balancing Authority Area

Preliminary Transmission Expansion Plan

DUKE ENERGY PROGRESS WEST – 1

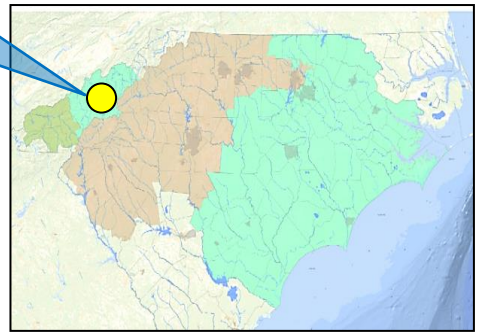
- **2024**

CRAGGY - ENKA 230 KV TRANSMISSION LINE – CONSTRUCT



CONSTRUCT APPROXIMATELY 10.0 MILES OF 230 KV TRANSMISSION LINE FROM THE CRAGGY 230 KV SUB TO THE ENKA 230 KV SUB WITH 3-1590 MCM ACSR OR EQUIVALENT

- **DESCRIPTION:**
  - Construct approximately 10.0 miles of new 230 kV transmission line from the Craggy 230 kV substation to the Enka 230 kV substation with 3-1590 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - The Enka-West Asheville, Craggy-Enka, Asheville-Oteen West, Oteen-West Asheville, and Craggy-Vanderbilt 115 kV lines and Enka 230/115kV transformer overload under various contingencies.



LG&E/KU Balancing Authority Area

Generation Assumptions

LG&E/KU – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
GI-2017-002	Solar	86	86	86	86	86	86	86	86	86	86
GI-2019-029	Solar	100	100	100	100	100	100	100	100	100	100
GI-2021-007	Solar	128	128	128	128	128	128	128	128	128	128

LG&E/KU Balancing Authority Area

LG&E/KU – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

SITE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

LG&E/KU Balancing Authority Area

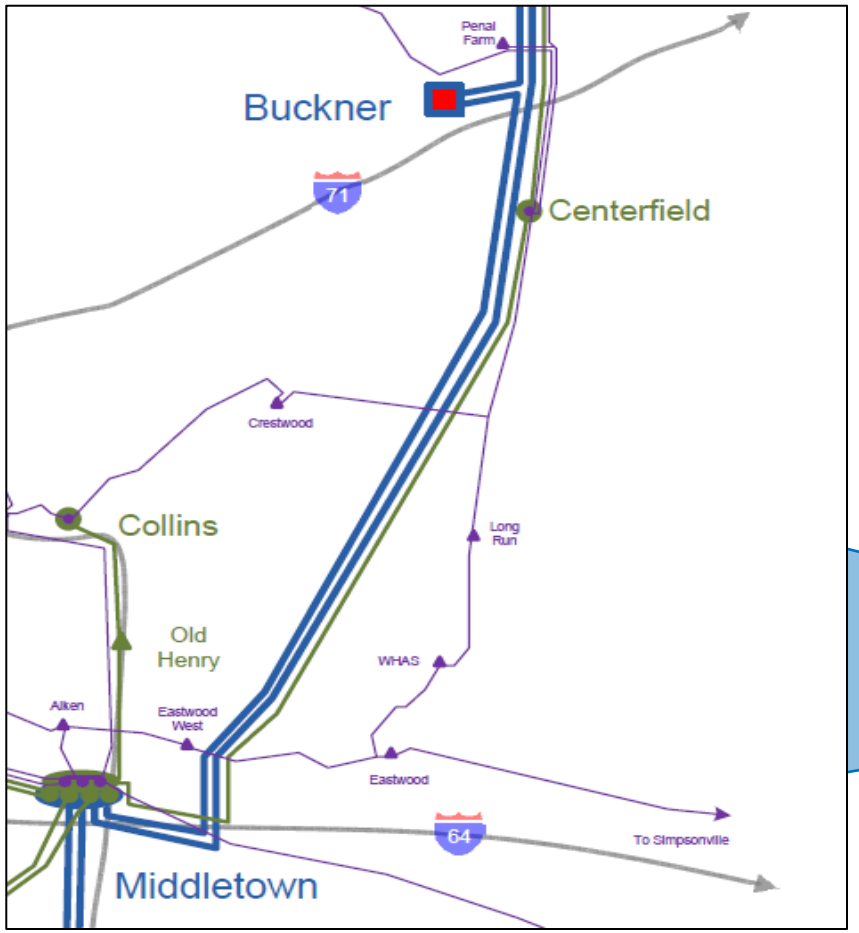
Preliminary Transmission Expansion Plan

LG&E/KU Balancing Authority Area

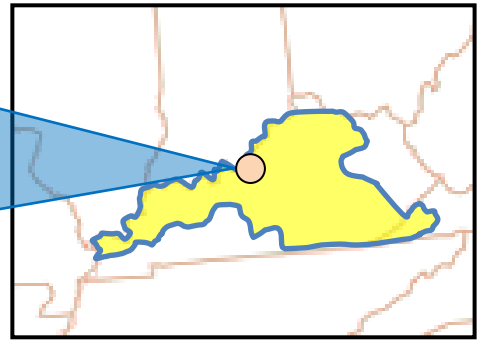
LG&E/KU - 1

- **2025**

MIDDLETOWN – BUCKNER 345 KV



- **DESCRIPTION:**
  - Replace the 345kV 2000A breakers associated with the Middletown – Buckner 345kV line with 3000A breakers.
- **SUPPORTING STATEMENT:**
  - The Middletown – Buckner 345 kV transmission line overloads under contingency.

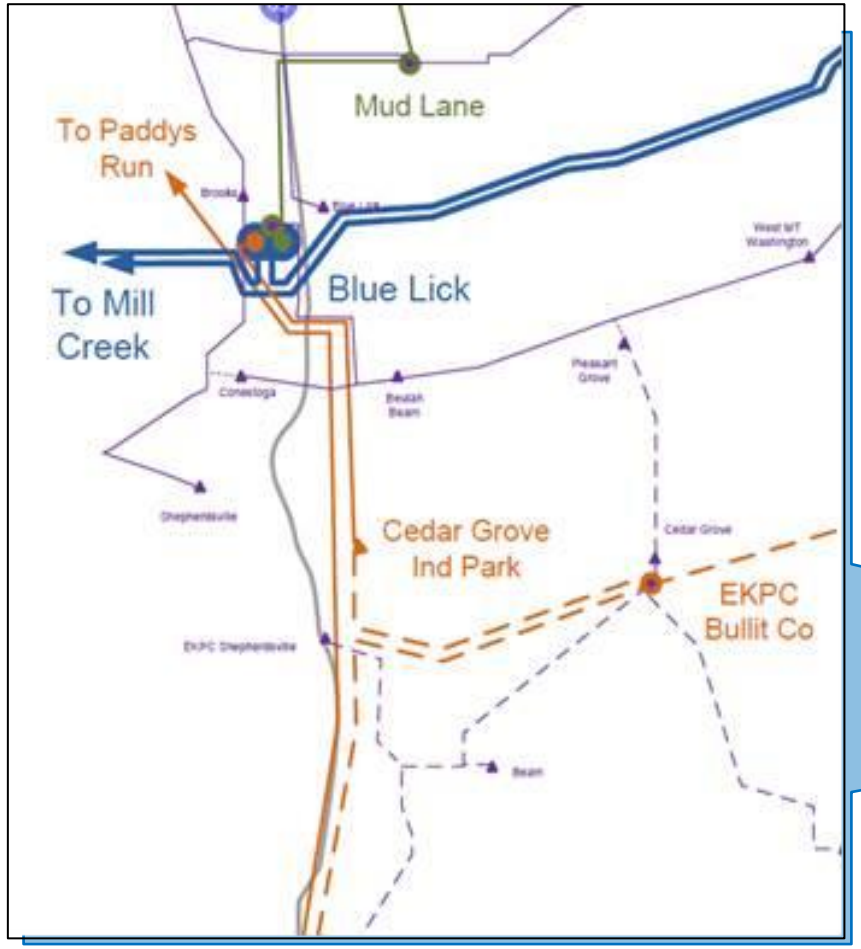


LG&E/KU Balancing Authority Area

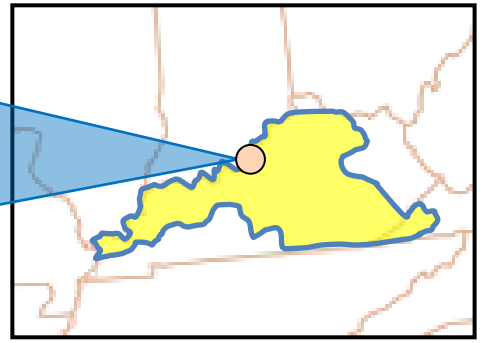
LG&E/KU - 2

- **2025**

BLUE LICK – CEDAR GROVE 161 KV



- **DESCRIPTION:**
  - Reconductor approximately 4.7 miles of the Blue Lick - Cedar Grove 161 kV transmission line with 795 ACSR or better.
- **SUPPORTING STATEMENT:**
  - The Blue Lick – Cedar Grove 161 KV transmission line overloads under contingency.

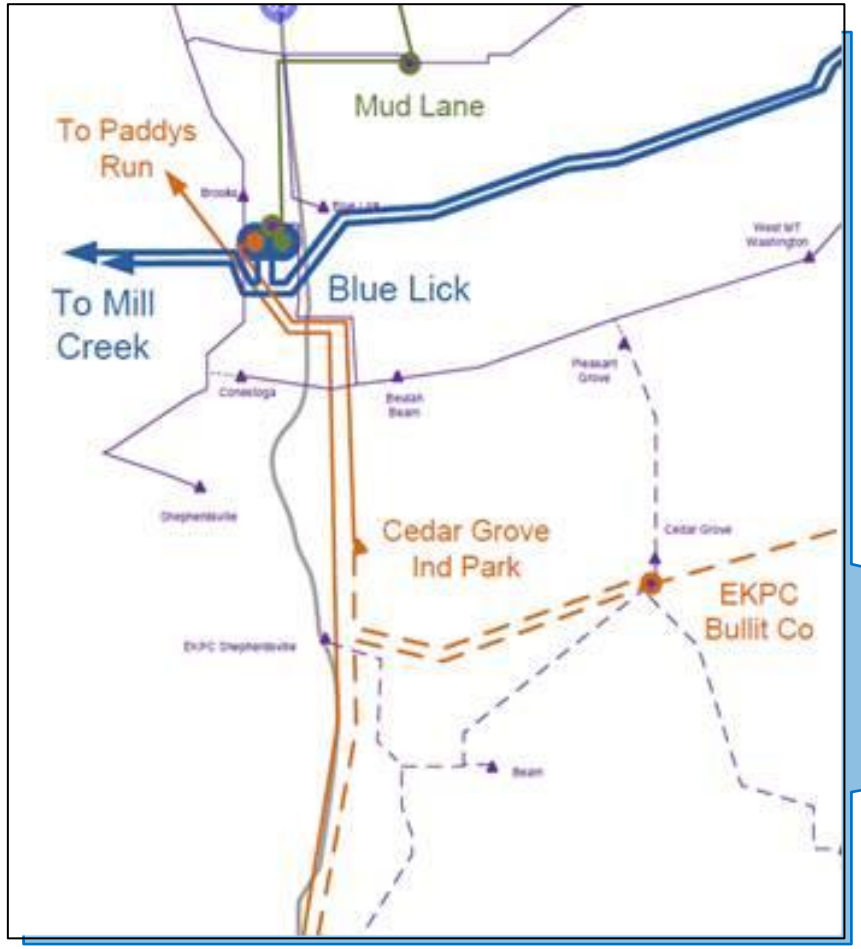


LG&E/KU Balancing Authority Area

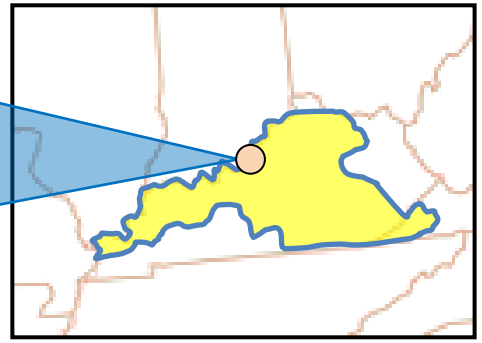
LG&E/KU - 3

- **2028**

BULLITT CO – CEDAR GROVE 161 KV



- **DESCRIPTION:**
  - Reconductor approximately 1.6 miles of the Bullitt Co - Cedar Grove 161 kV transmission line with 795 ACSR or better.
- **SUPPORTING STATEMENT:**
  - The Bullitt Co – Cedar Grove 161 KV transmission line overloads under contingency.



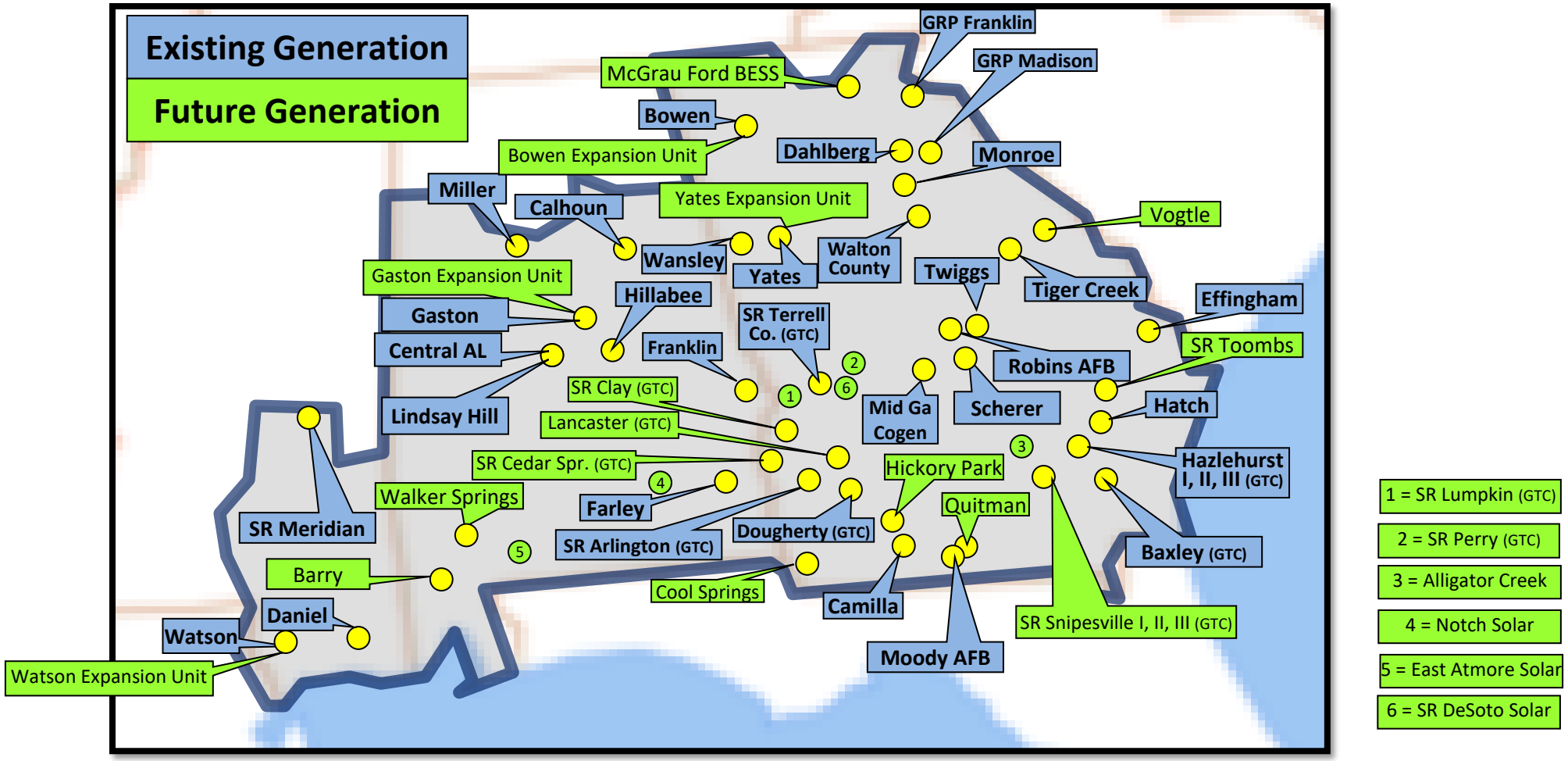
SOUTHERN Balancing Authority Area

Generation Assumptions

SOUTHERN Balancing Authority Area

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process.



1 = SR Lumpkin (GTC)

2 = SR Perry (GTC)

3 = Alligator Creek

4 = Notch Solar

5 = East Atmore Solar

6 = SR DeSoto Solar

Southern Company – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
BOWEN 1*	COAL	728	728	728	728	728	0	--	--	--	--
BOWEN 2 *	COAL	728	728	728	728	728	0	--	--	--	--
BOWEN 3*	COAL	889	889	889	889	889	889	889	0	--	--
BOWEN 4 *	COAL	891	891	891	891	891	891	891	0	--	--
SCHERER 1[1]	COAL	74	74	74	74	74	0	--	--	--	--
SCHERER 2[1]	COAL	74	74	74	74	74	0	--	--	--	--
SCHERER 3	COAL	661	661	661	661	661	0	--	--	--	--
YATES EXPANSION UNIT[2]	--	--	--	--	--	--	--	800	800	800	800
BOWEN EXPANSION UNIT[2]	--	--	--	--	--	--	--	--	800	1600	1600

*This assumption may be modified as resource decisions are made by the corresponding LSEs pursuant to applicable regulatory processes

[1]Only includes GPC's portion of Scherer 1 & 2

[2]The expansion unit locations shown do not represent long term generation resource plans and may be moved based on study needs

Southern Company – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
BARRY 5*	COAL	0	--	--	--	--	--	--	--	--	--
BARRY 1	GAS	80	80	80	80	0	--	--	--	--	--
BARRY 2	GAS	80	80	80	80	0	--	--	--	--	--
GASTON 1	COAL/GAS	254	254	254	254	254	0	--	--	--	--
GASTON 2	COAL/GAS	256	256	256	256	256	0	--	--	--	--
GASTON 3	COAL/GAS	254	254	254	254	254	0	--	--	--	--
GASTON 4	COAL/GAS	256	256	256	256	256	0	--	--	--	--
GASTON 5	COAL/GAS	872	895	895	895	895	895	895	895	895	895
GASTON EXPANSION UNIT[1]	--	--	--	--	--	--	--	--	800	800	800

*This assumption may be modified as resource decisions are made by the corresponding LSEs pursuant to applicable regulatory processes

[1]The expansion unit locations shown do not represent long term generation resource plans and may be moved based on study needs

Southern Company – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
WATSON 4	GAS	0	--	--	--	--	--	--	--	--	--
DANIEL 2	COAL	510	510	510	510	0	--	--	--	--	--
GREENE COUNTY 1	GAS	258	258	0	--	--	--	--	--	--	--
GREENE COUNTY 2	GAS	258	258	258	0	--	--	--	--	--	--
GADSDEN 1	GAS	--	--	--	--	--	--	--	--	--	--
GADSDEN 2	GAS	--	--	--	--	--	--	--	--	--	--
WATSON EXPANSION UNIT[1]	--	--	--	--	--	--	--	400	400	400	400

[1]The expansion unit locations shown do not represent long term generation resource plans and may be moved based on study needs

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
BARRY 8	Gas	653	653	653	653	685	685	685	685	685	685
VOGTLE 4	Nuclear	509	509	509	509	509	509	509	509	509	509
YATES 6-7	Gas	714	714	714	714	714	714	714	714	714	714
WANSLEY 7	Gas	--	622	622	622	622	622	622	622	622	622
DAHLBERG	Gas	371	502	502	502	758	685	685	685	685	685

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
WADLEY SOLAR	Solar	260	260	260	260	260	260	260	260	260	260
WALKER SPRINGS I, II SOLAR	Solar	--	160	160	160	160	160	160	160	160	160
NOTCH SOLAR	Solar	--	--	160	160	160	160	160	160	160	160
EAST ATMORE SOLAR	Solar	--	80	80	80	80	80	80	80	80	80

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
DOUBLE RUN SOLAR	Solar	220	220	220	220	220	220	220	220	220	220
DECATUR SOLAR	Solar	200	200	200	200	200	200	200	200	200	200
WASHINGTON CO	Solar	150	150	150	150	150	150	150	150	150	150
TIMBERLAND SOLAR	Solar	140	140	140	140	140	140	140	140	140	140
FORT STEWART SOLAR	Solar	43	43	43	43	43	43	43	43	43	43
MCGRAU FORD BESS	BESS	--	--	265	265	265	265	265	265	265	265

Southern Company – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

SITE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
DAHLBERG	44	44	44	44	44	44	44	44	44	44
DANIEL	100	100	100	100	100	100	100	100	100	100
HARRIS	106	106	106	106	106	106	106	106	106	106
HILLABEE	210	210	210	210	210	210	210	210	210	210
LINDSAY HILL	220	220	220	220	220	220	220	220	220	220
SCHERER	215	215	215	215	215	0	0	0	0	0
VOGTLE	206	206	206	206	206	206	206	206	206	206

GTC – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
SR AILEY	SOLAR	80	80	80	80	80	80	80	80	80	80
SR DESOTO	SOLAR	250	250	250	250	250	250	250	250	250	250
VOGTLE 4	NUCLEAR	334	334	334	334	334	334	334	334	334	334
EFFINGHAM	GAS	545	545	545	545	545	545	545	545	545	545
TIGER CREEK	GAS	320	320	320	320	320	320	320	320	320	320
SR TOOMBS	SOLAR	--	250	250	250	250	250	250	250	250	250

MEAG – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
VOGTLE 4	NUCLEAR	253	253	253	253	253	253	253	253	253	253

DALTON – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
VOGTLE 4	NUCLEAR	18	18	18	18	18	18	18	18	18	18

SOUTHERN (WEST) Balancing Authority Area

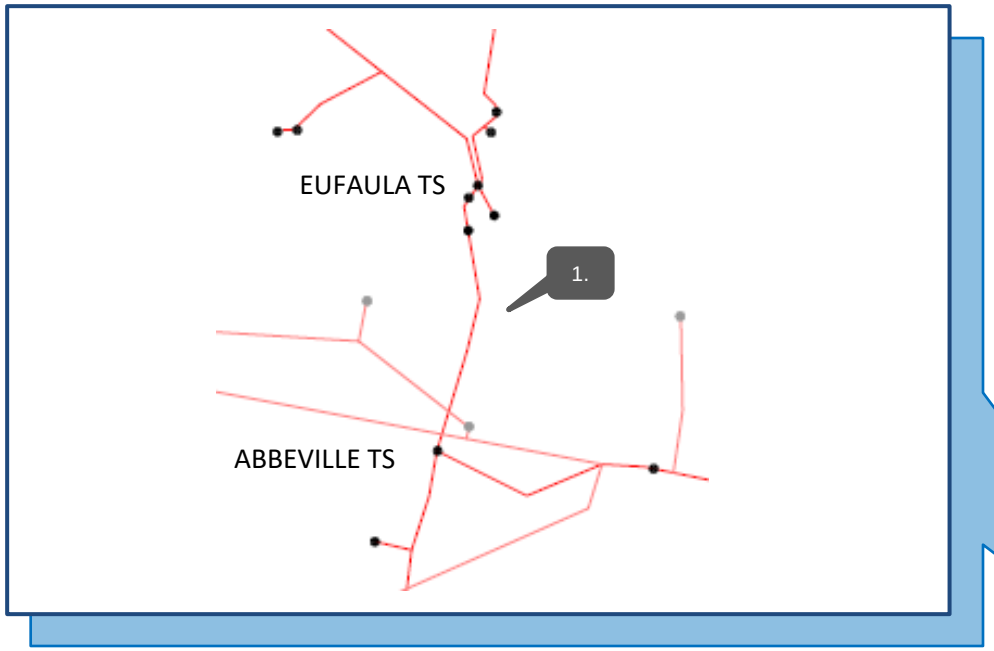
SERTP Regional Transmission Expansion Plan

SOUTHERN Balancing Authority Area

SOUTHERN – 1W

• **2024**

EUFAULA – GEORGE DAM – WEBB 115 KV TRANSMISSION LINE

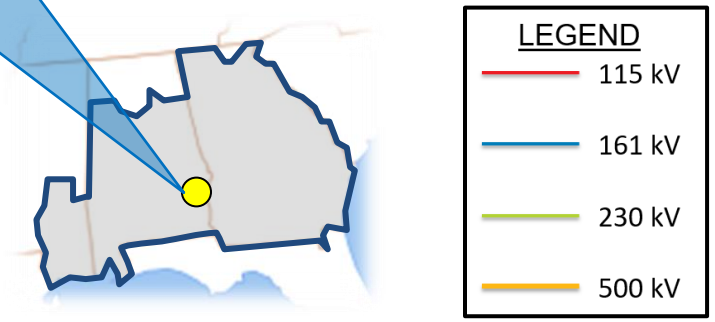


PROJECT DESCRIPTION:

1. Reconductor approximately 45.3 miles of 266 ACSR at 100°C from Eufaula to Webb with 795 ACSR at 100°C

SUPPORTING STATEMENT:

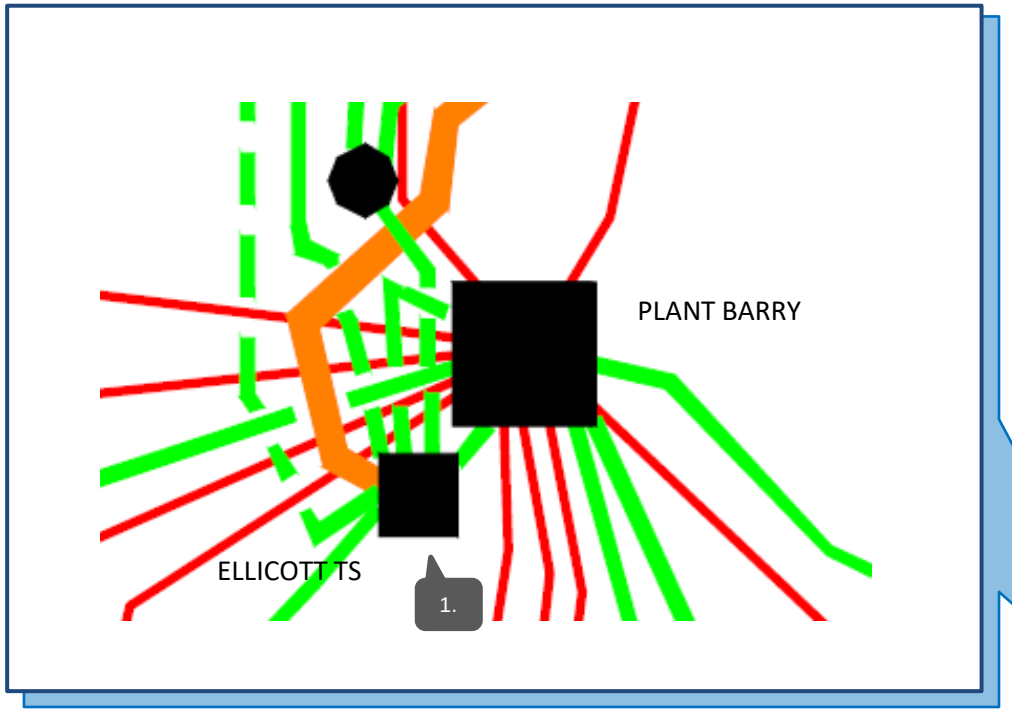
- The Eufaula – Abbeville 115 kV transmission line overloads under contingency.



SOUTHERN – 2W

• **2026**

ELLICOTT SUBSTATION EXPANSION PROJECT

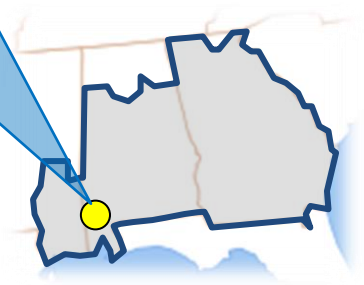


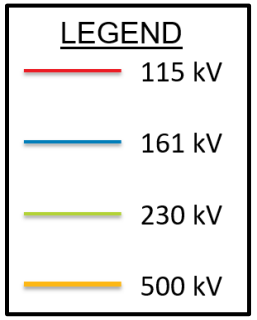
PROJECT DESCRIPTION:

1. Relocate existing 115 kV transmission lines to a new 115 kV substation

SUPPORTING STATEMENT:

- Upgrade existing and construct new transmission facilities to provide additional operational and maintenance flexibility, which increases reliability.



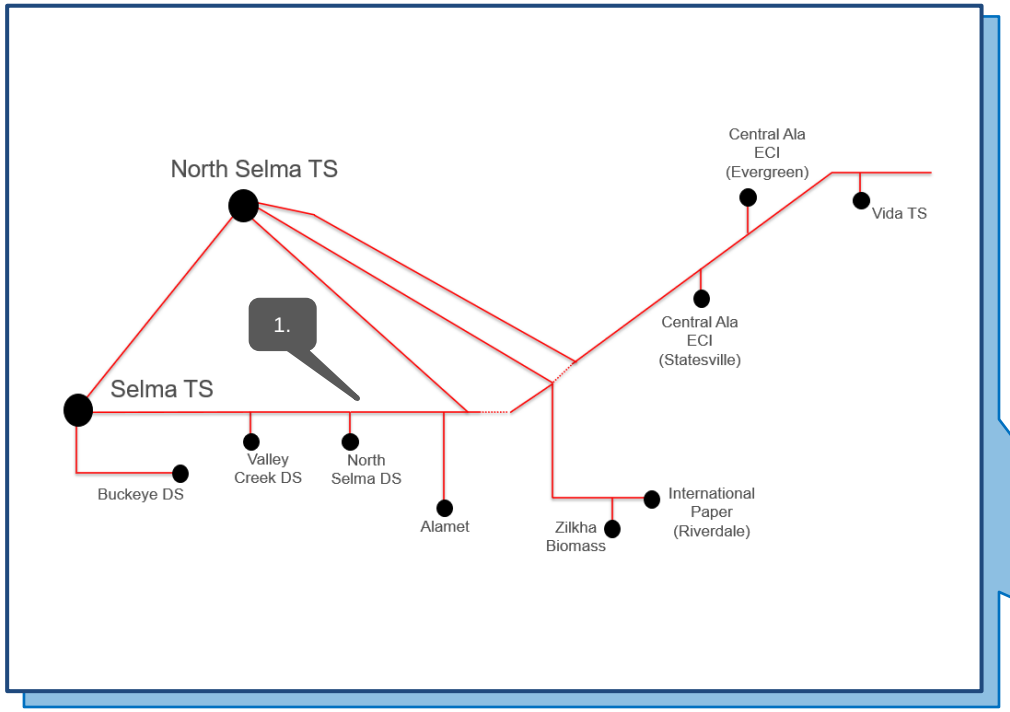


SOUTHERN Balancing Authority Area

SOUTHERN – 3W

• **2026**

NORTH SELMA – SELMA #2 115 KV TRANSMISSION LINE

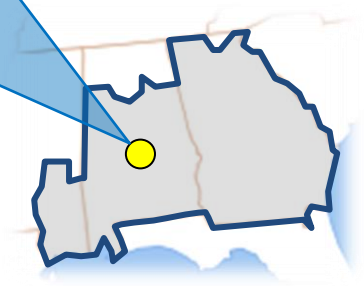


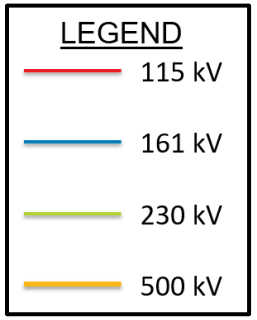
PROJECT DESCRIPTION:

1. Rebuild ~27 miles of 397 ACSR at 100°C of Selma TS – Vida TS 115 kV TL to 795 ACSS at 200°C

SUPPORTING STATEMENT:

- Provides additional operational and maintenance flexibility which then increases reliability.



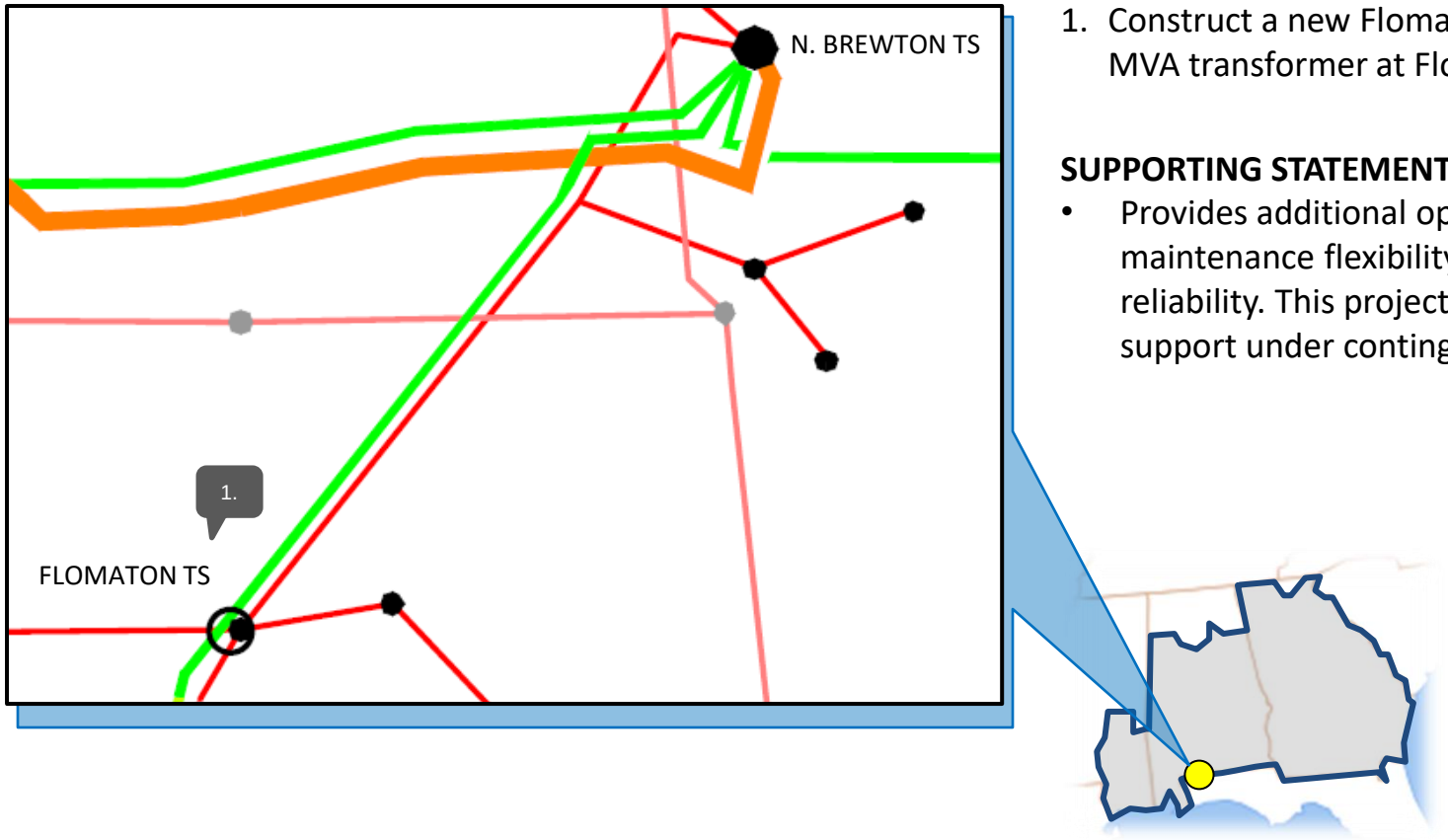


SOUTHERN Balancing Authority Area

SOUTHERN – 4W

• **2026**

FLOMATON 230/115 KV SUBSTATION



PROJECT DESCRIPTION:

1. Construct a new Flomaton 230/115 kV, 480 MVA transformer at Flomaton TS.

SUPPORTING STATEMENT:

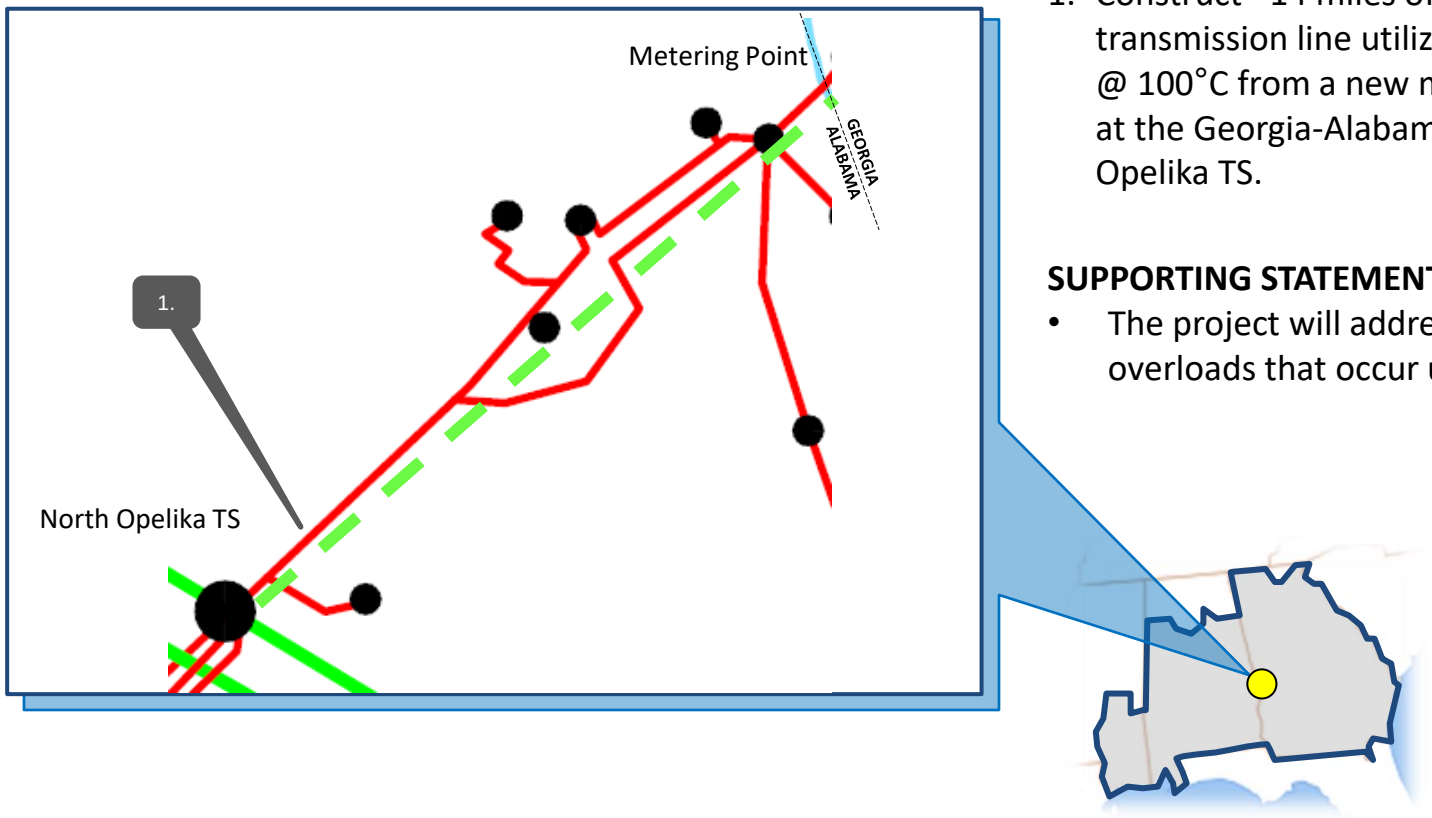
- Provides additional operational and maintenance flexibility which then increases reliability. This project also provides voltage support under contingency scenarios.

SOUTHERN Balancing Authority Area

SOUTHERN – 5W

• **2026**

LAGRANGE PRIMARY-NORTH OPELIKA NEW 230 KV TRANSMISSION LINE



PROJECT DESCRIPTION:

1. Construct ~14 miles of new 230 kV transmission line utilizing 1351 54/19 ACSR @ 100°C from a new metering point, located at the Georgia-Alabama border, to North Opelika TS.

SUPPORTING STATEMENT:

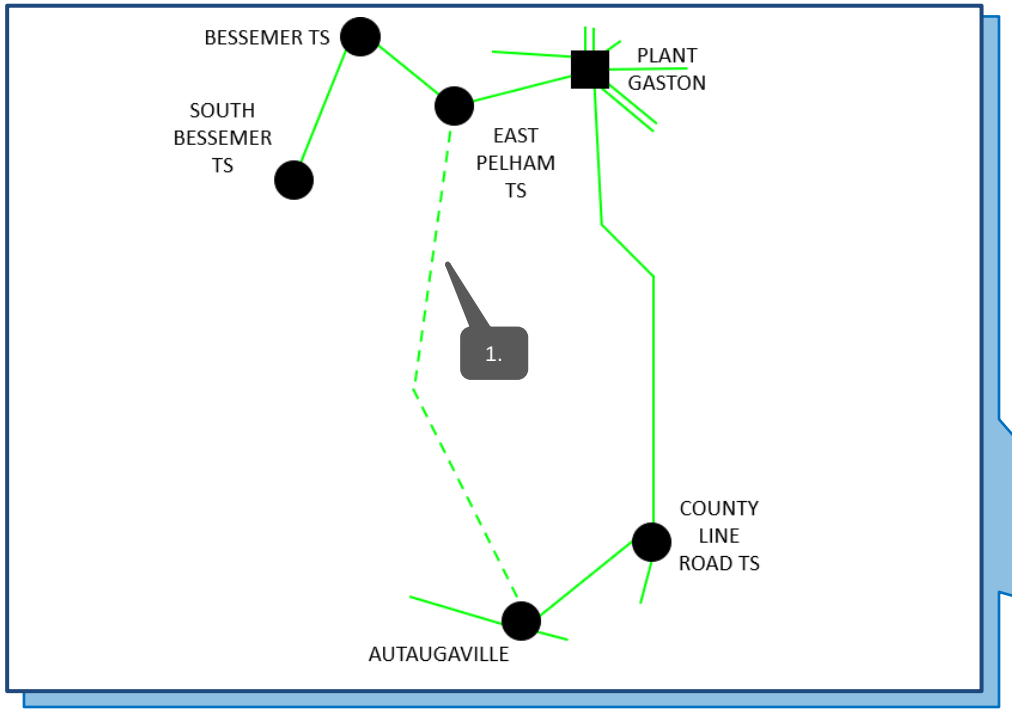
- The project will address multiple thermal overloads that occur under contingency.

SOUTHERN Balancing Authority Area

SOUTHERN – 6W

• **2027**

AUTAUGAVILLE – EAST PELHAM NEW 230 KV TRANSMISSION LINE

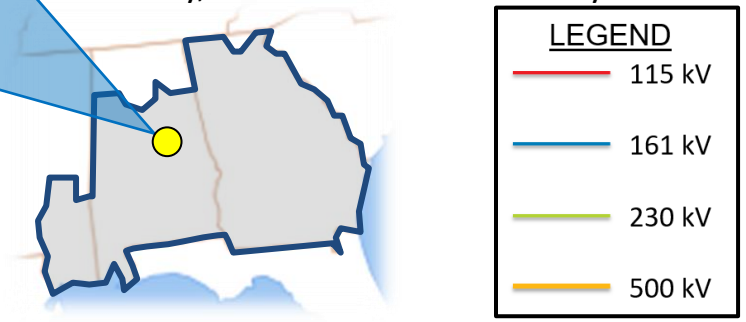


PROJECT DESCRIPTION:

1. Construct ~75 miles of new 230 kV transmission line bundled 795 26/7 ACSS 200°C from Autaugaville TS to East Pelham TS.

SUPPORTING STATEMENT:

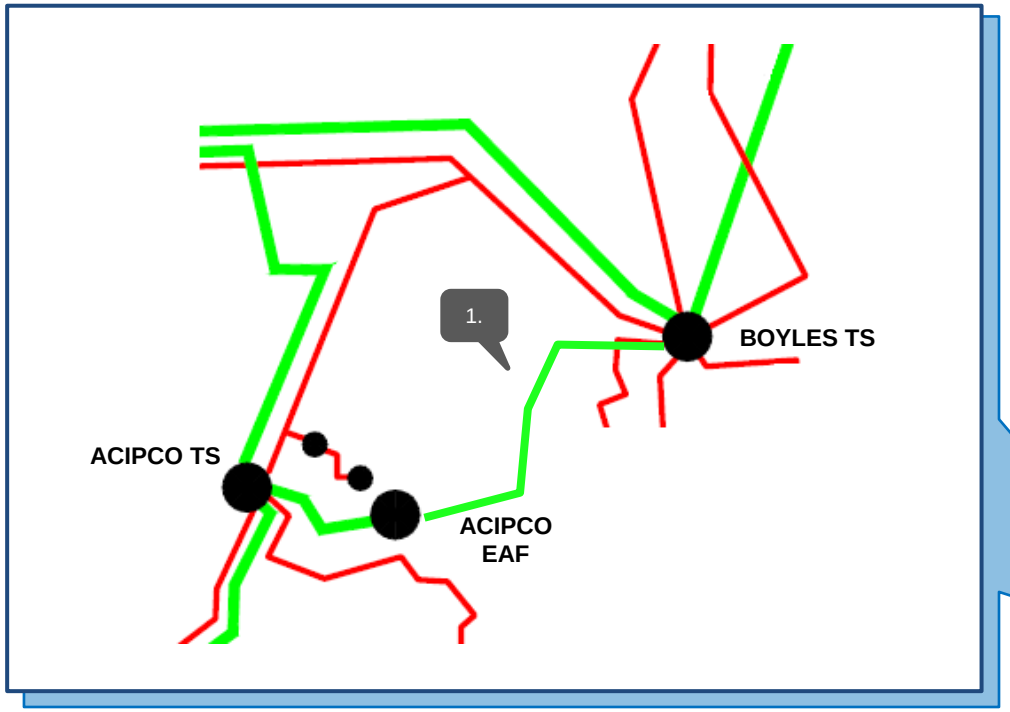
- The Bessemer – South Bessemer 230 kV transmission line overloads under contingency. Reduces loadings on multiple 230 kV transmission lines and provides additional operational and maintenance flexibility, which increases reliability.



SOUTHERN – 7W

• **2028**

ACIPCO EAF – BOYLES 230 KV NEW TRANSMISSION LINE

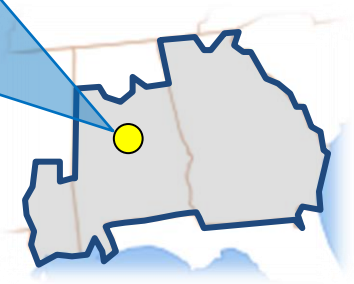


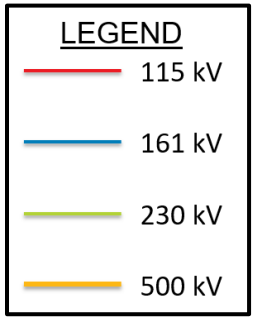
PROJECT DESCRIPTION:

1. Construct ~3 miles of 1351 54/19 ACSR at 100°C from ACIPCO EAF to Boyles TS. Reconductor ~1.8 miles from ACIPCO TS to ACIPCO EAF from 795 ACSR to 1351 ACSR.

SUPPORTING STATEMENT:

- The Boyles - Miller 230 kV transmission line overloads under contingency. Also provides additional operational and maintenance flexibility, which increases reliability.



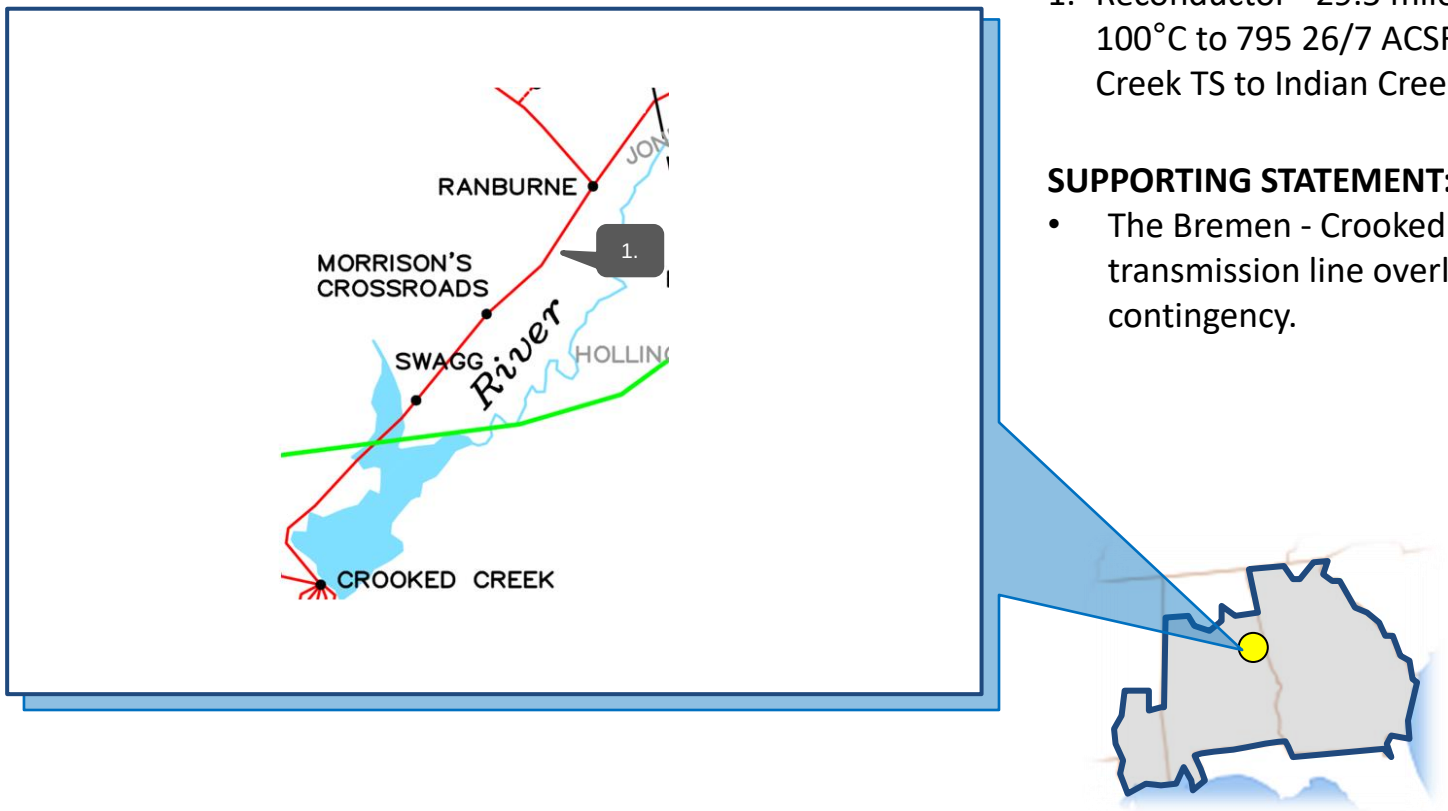


SOUTHERN Balancing Authority Area

SOUTHERN – 8W

• **2029**

BREMEN – CROOKED CREEK 115 KV TRANSMISSION LINE



PROJECT DESCRIPTION:

1. Reconductor ~29.5 miles of 397 30/7 ACSR 100°C to 795 26/7 ACSR 100°C from Crooked Creek TS to Indian Creek Metering Station.

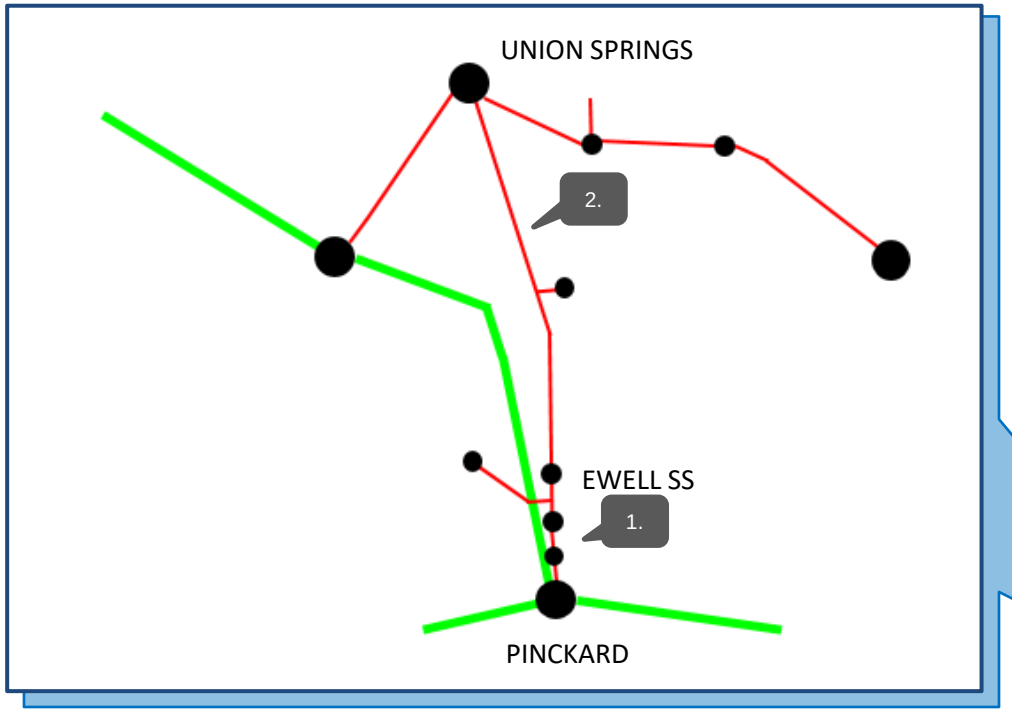
SUPPORTING STATEMENT:

- The Bremen - Crooked Creek 115 kV transmission line overloads under contingency.

SOUTHERN – 9W

• **2030**

UNION SPRINGS - PINCKARD 115 KV TRANSMISSION LINE

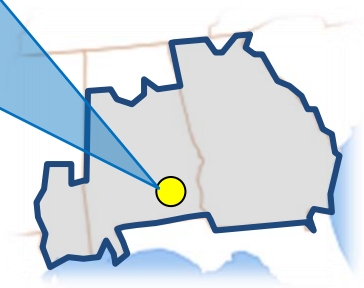


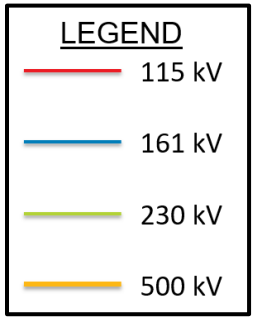
PROJECT DESCRIPTION:

1. Rebuild ~10.6 miles of 397 ACSR of the Pinckard – Ewell SS 115 kV TL from 397 ACSR at 49°C to 795 ACSR at 100° C.
2. Reconductor ~50 miles of 397 ACSR at 50°C Union Springs – Ewell 115 kV TL to 795 ACSR at 100°C

SUPPORTING STATEMENT:

- The Union Springs - Pinckard 115 kV TL overloads under contingency. Provides additional operational and maintenance flexibility, which increases reliability.





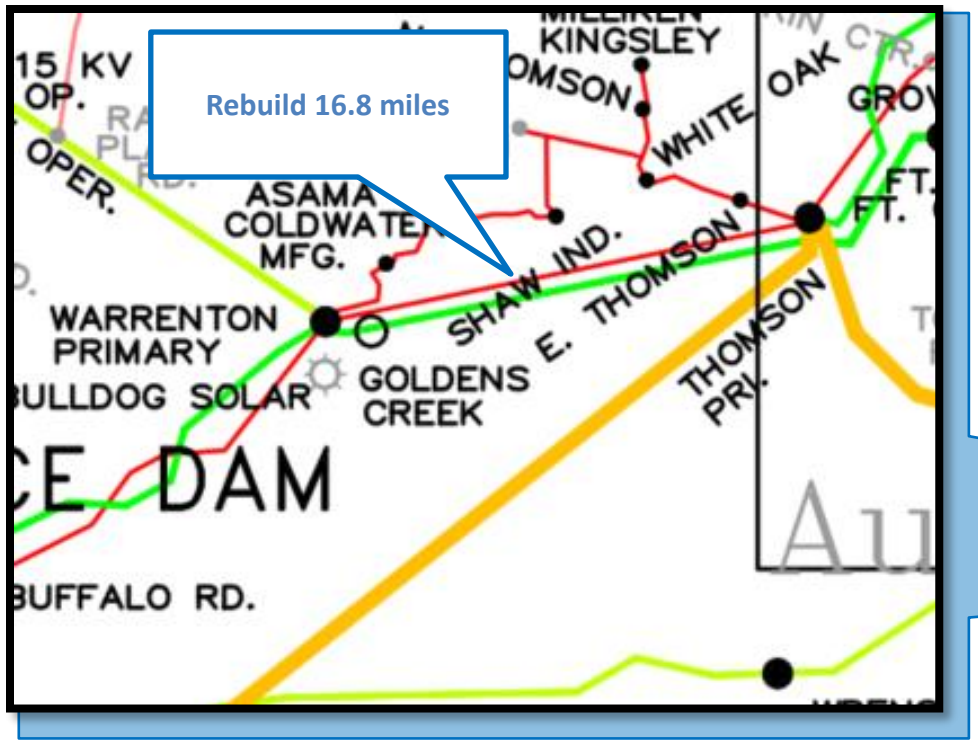
SOUTHERN (EAST) Balancing Authority Area

SERTP Regional Transmission Expansion Plan

SOUTHERN – 1E

• **2024**

THOMSON PRIMARY – WARRENTON PRIMARY (WHITE) 115KV LINE REBUILD

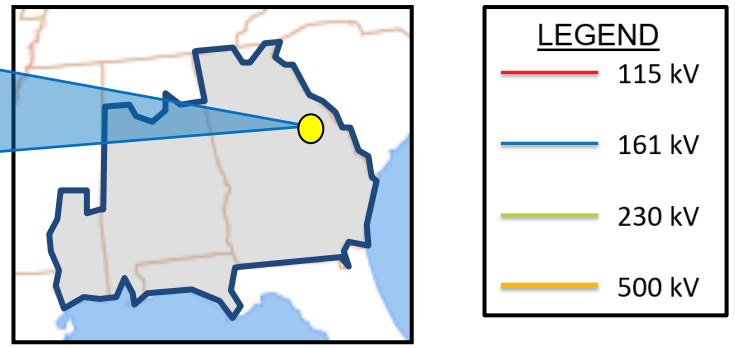


DESCRIPTION:

- Rebuild the Thomson Primary - Warrenton Primary (White) 115kV line.

SUPPORTING STATEMENT:

- The Thomson Primary - Warrenton Primary (White) 115kV line overloads under contingency.

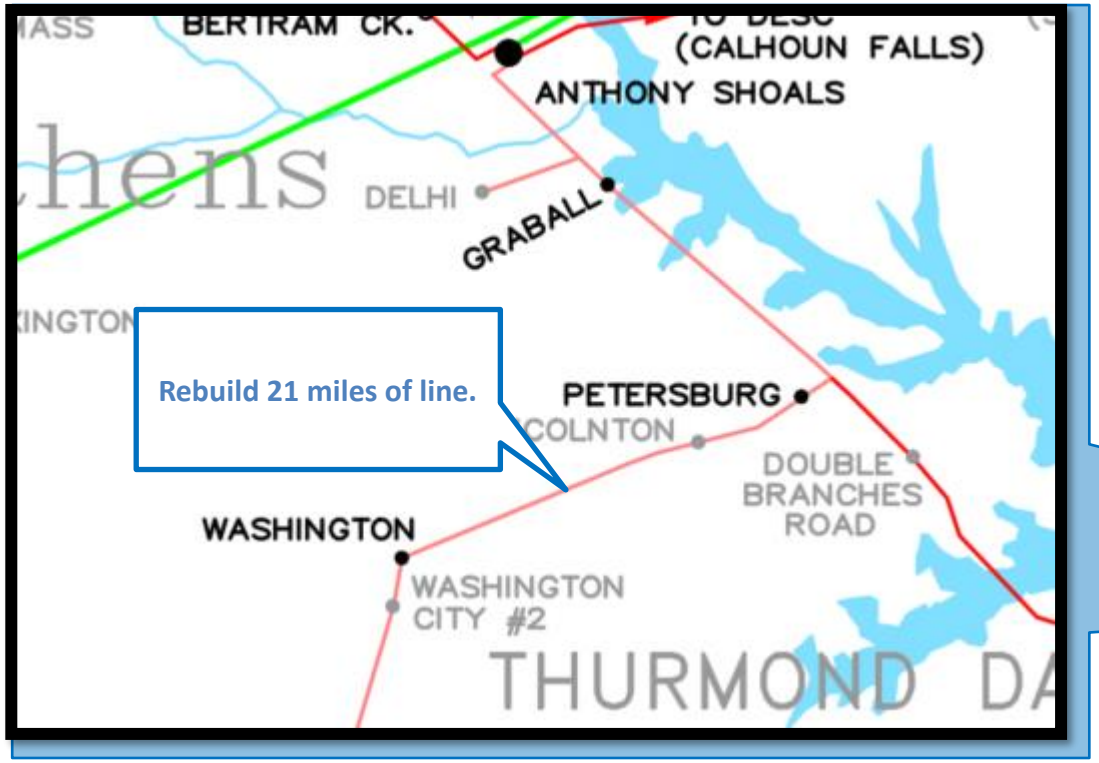


SOUTHERN Balancing Authority Area

SOUTHERN – 2E

• **2025**

GTC: ANTHONY SHOALS – WASHINGTON 115KV LINE REBUILD

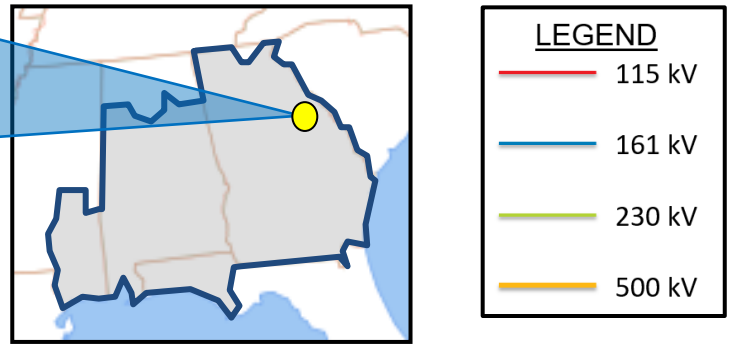


DESCRIPTION:

- Rebuild the Double Branches Junction – Washington 115 kV line section with 100C 795 ACSR conductor.

SUPPORTING STATEMENT:

- The Anthony Shoals – Washington 115kV line overloads under contingency.

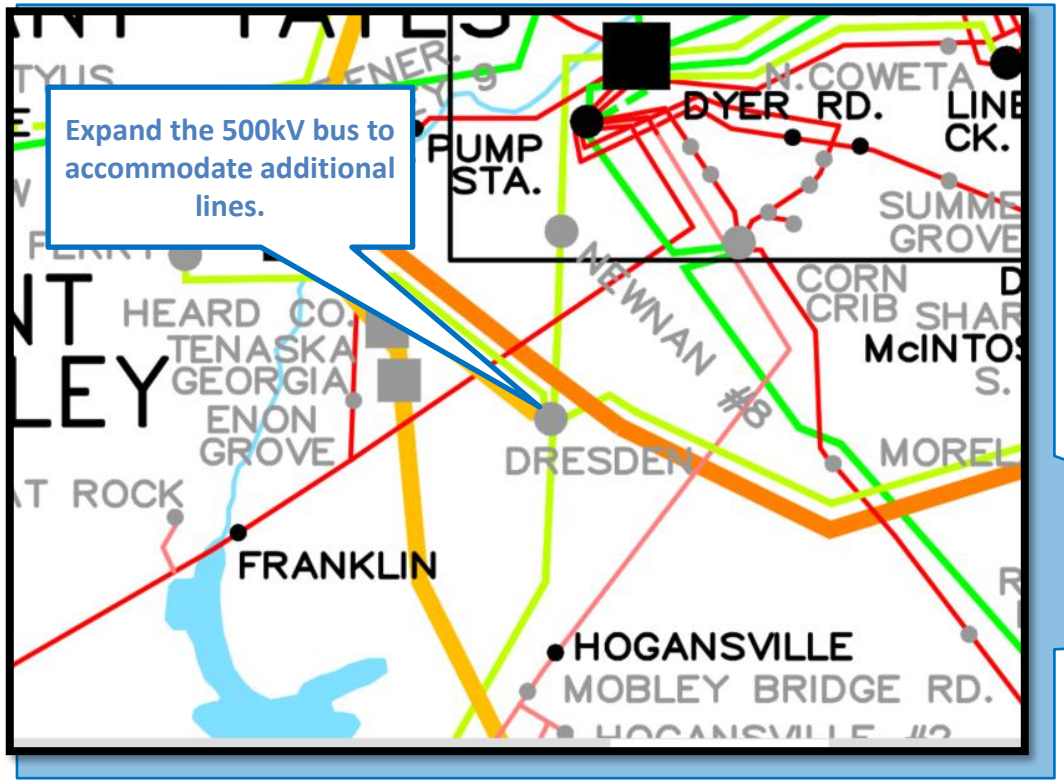


SOUTHERN Balancing Authority Area

SOUTHERN – 3E

• **2026**

GTC: DRESDEN 500KV BUS EXPANSION

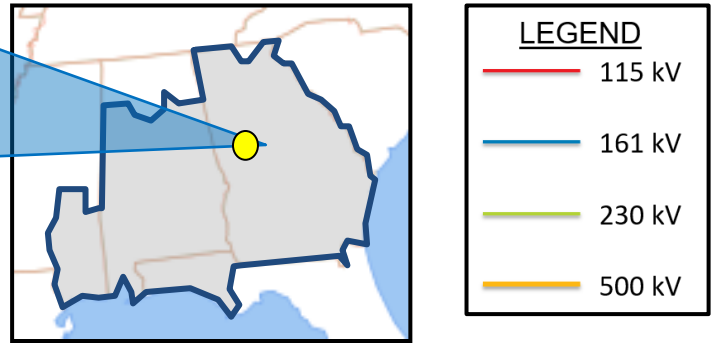


DESCRIPTION:

- Expand the Dresden 500kV bus to bring additional 500kV lines into the station.

SUPPORTING STATEMENT:

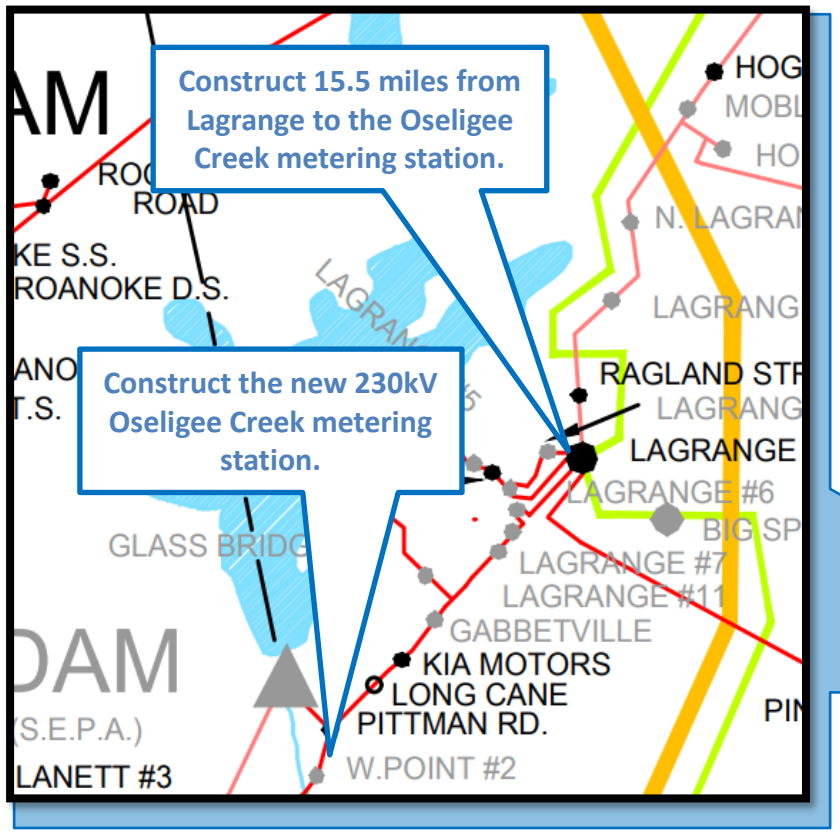
- This project will resolve multiple thermal constraints by eliminating a contingency.



SOUTHERN – 4E

• **2026**

GTC: LAGRANGE PRIMARY-NORTH OPELIKA 230KV (NEW LINE)

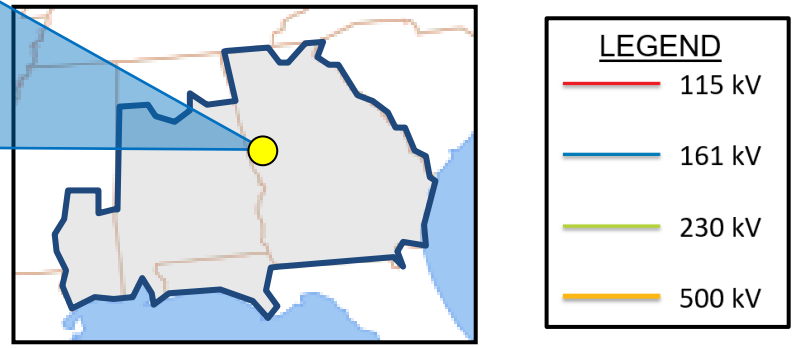


Description:

- GTC: Construct the Oseligee Creek 230kV metering station near the Georgia-Alabama state line. Construct the 230kV line section (15.5 miles) from Lagrange Primary to Oseligee Creek.
- GPC: Construct the 230kV line section from Oseligee Creek to the Georgia-Alabama state line (~1 mile). Extend the 230kV bus at Lagrange Primary to terminate the new line.

Supporting Statement:

- Project proposed to minimize system impact caused by unit retirements and improve system reliability.

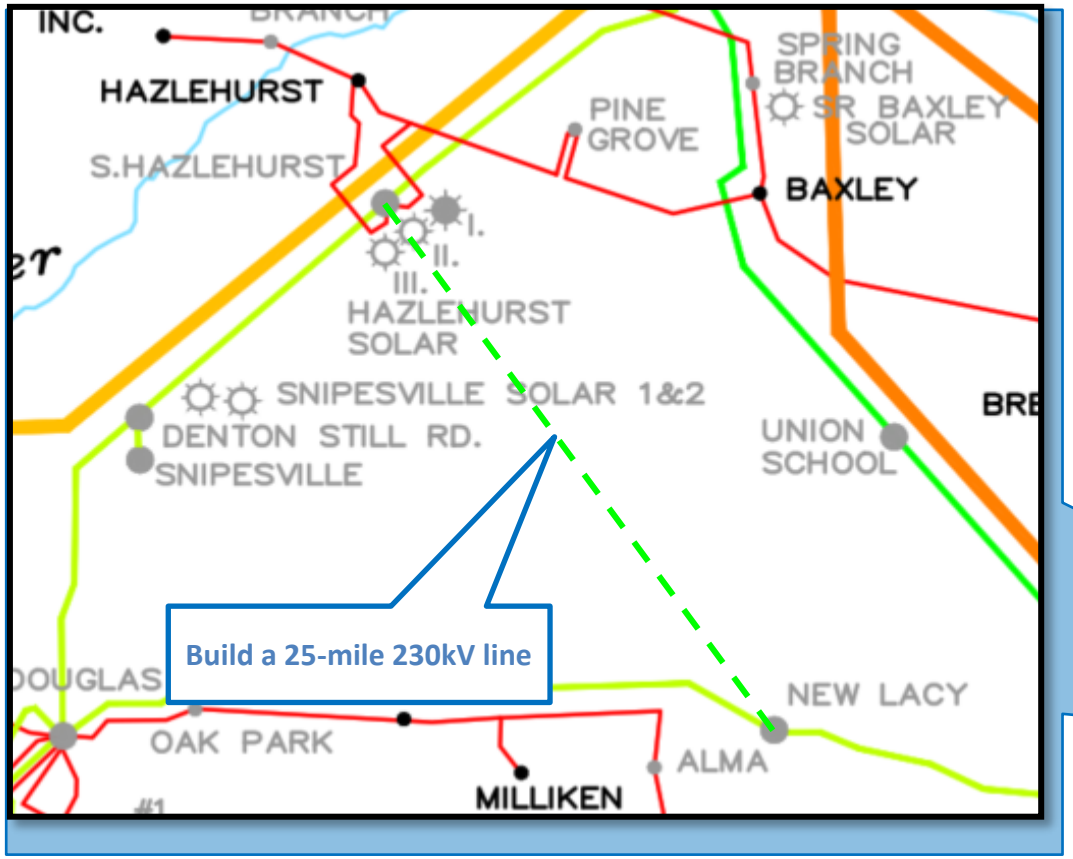


SOUTHERN Balancing Authority Area

SOUTHERN – 5E

• **2027**

GTC: SOUTH HAZLEHURST – NEW LACY 230KV LINE (NEW)

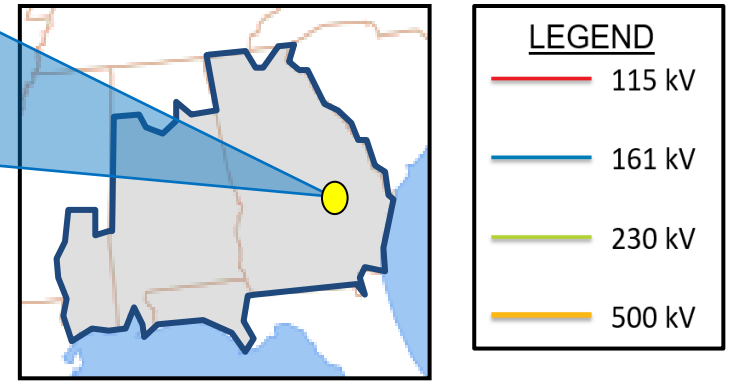


DESCRIPTION:

- Build a new 25-mile 230kV transmission line between South Hazlehurst and New Lacy with 100C ACSR 1351 conductor. Do all the necessary upgrade work to accommodate the additional line in both facilities.

SUPPORTING STATEMENT:

- The project will address multiple thermal overloads that occur under contingency.

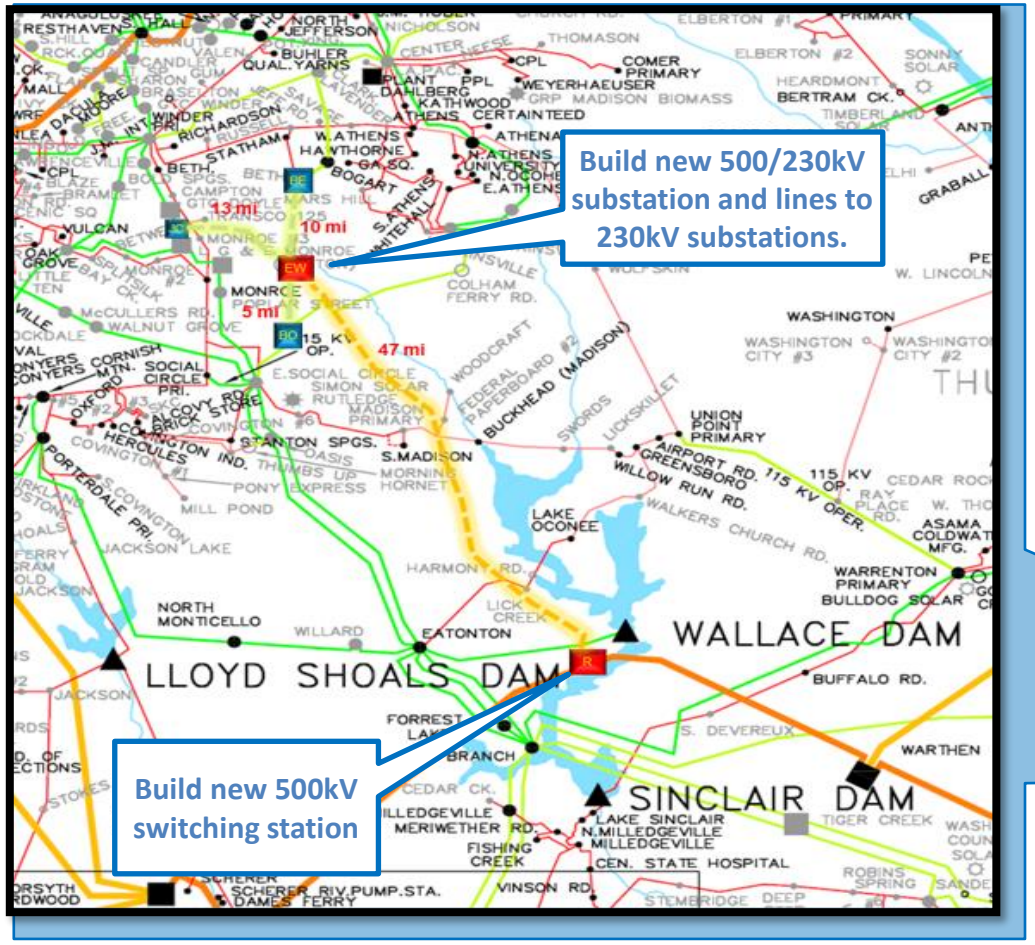


SOUTHERN Balancing Authority Area

SOUTHERN – 6E

• **2027**

EAST WALTON 500/230KV

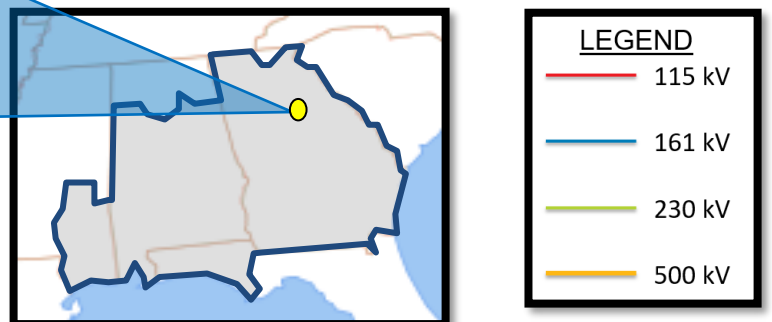


DESCRIPTION:

- GPC/GTC: Construct the Rockville 500kV switching station looping the Scherer - Warthen 500kV. Construct the East Walton 500/230kV substation and build the East Walton - Rockville 500kV line.
- GTC: Construct the Bostwick 230kV switching station and loop the East Social Circle - East Watkinsville 230kV line.
- MEAG/GPC/GTC: Construct the Jack's Creek 230kV switching station and loop the Doyle - LG&E Monroe 230kV line.
- GTC/MEAG: Construct 230kV lines from East Walton to Bethabara, Bostwick and Jack's Creek substations

SUPPORTING STATEMENT:

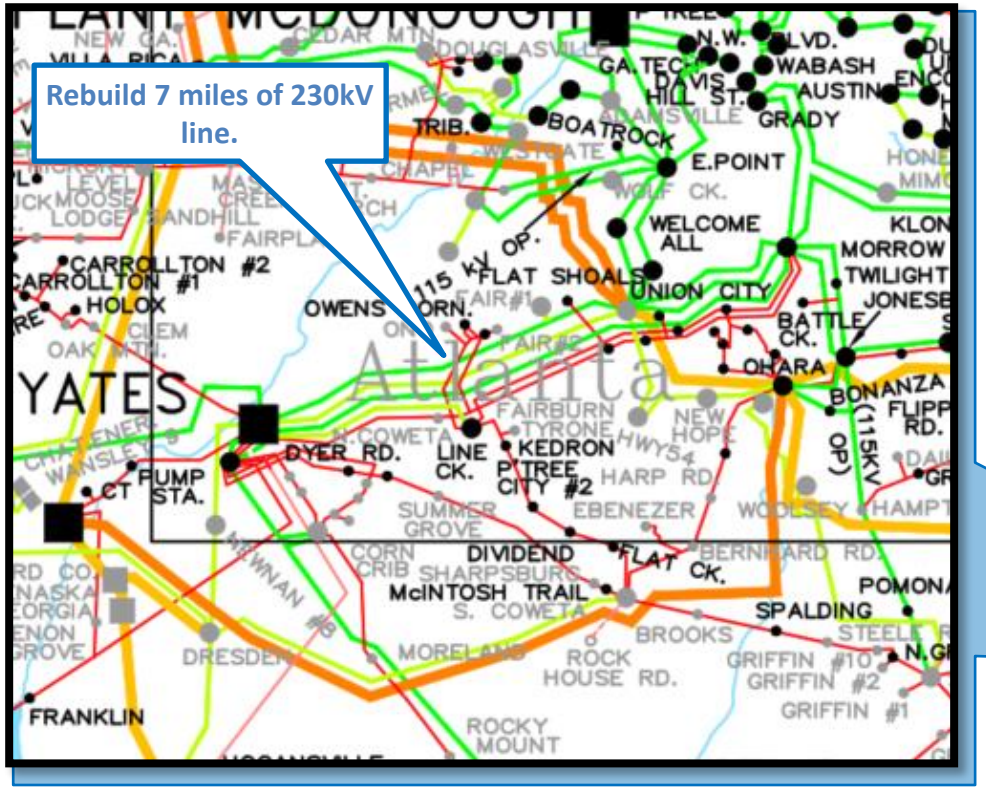
- The project will address multiple thermal overloads that occur under contingency.

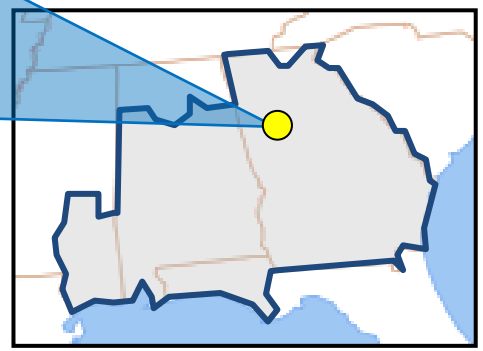


SOUTHERN – 7E

• **2028**

UNION CITY – YATES (BLACK) 230KV LINE REBUILD





DESCRIPTION:

- Rebuild part of the Union City - Yates 230kV Black line. Replace limiting elements at substations along the line.

SUPPORTING STATEMENT:

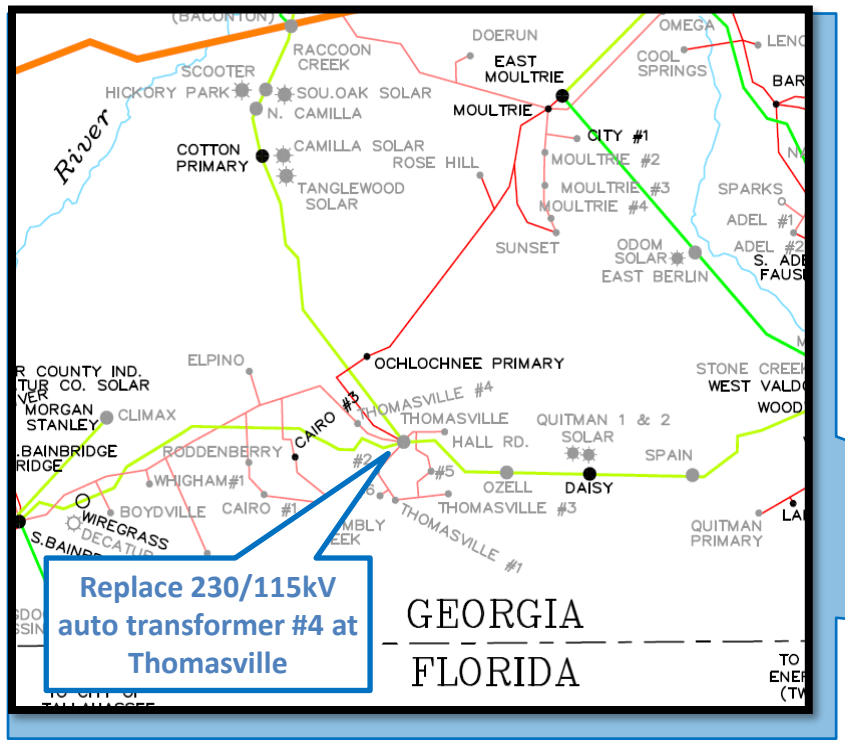
- The Union City - Yates 230kV Black line overloads under contingency.

SOUTHERN Balancing Authority Area

SOUTHERN – 8E

• **2029**

THOMASVILLE 230/115KV AUTO TRANSFORMER REPLACEMENT

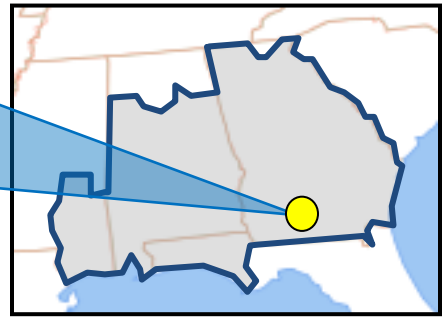


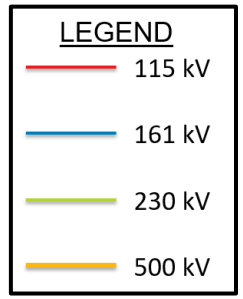
DESCRIPTION:

- Replace 230/115kV auto transformer #4 at Thomasville substation with higher rating

SUPPORTING STATEMENT:

- The 230/115kV auto transformer #4 at Thomasville substation becomes overloaded under contingency.



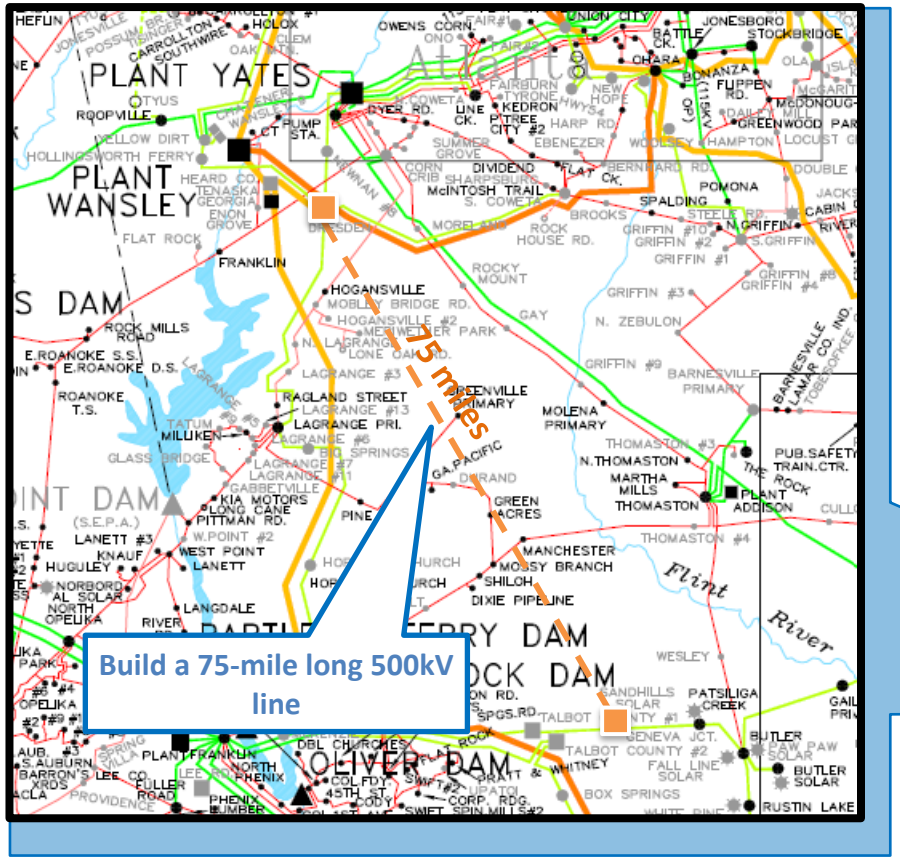


SOUTHERN Balancing Authority Area

SOUTHERN – 9E

• **2029**

GTC: DRESDEN – TALBOT 500KV LINE

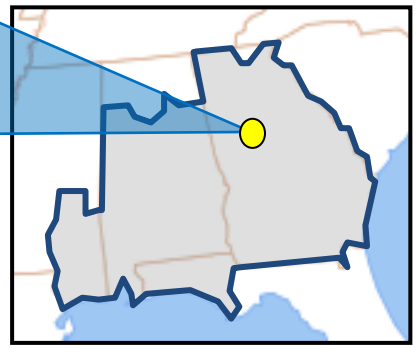


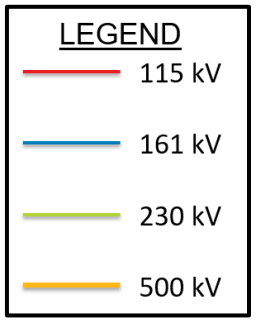
DESCRIPTION:

- Build the new Talbot 500/230kV substation.
- Build a 500kV line from the Talbot substation to Dresden.

SUPPORTING STATEMENT:

- The project will address multiple thermal overloads that occur under contingency.



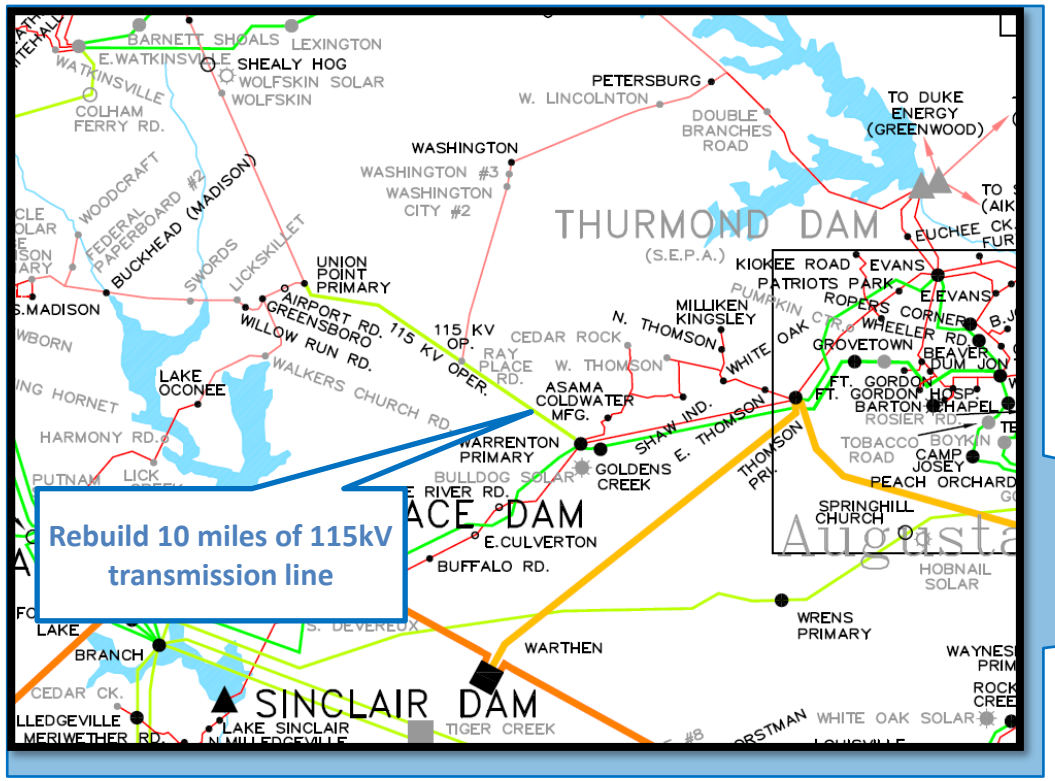


SOUTHERN Balancing Authority Area

SOUTHERN – 10E

• **2030**

MEAG: RAY PLACE ROAD – WARRENTON PRIMARY 115KV LINE REBUILD

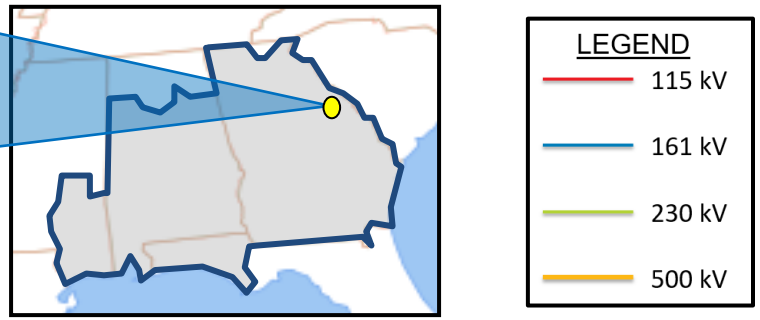


DESCRIPTION:

- Rebuild a section (10 miles) of the Ray Place Road - Warrenton Primary 115kV line. Upgrade limiting elements at substations along the line.

SUPPORTING STATEMENT:

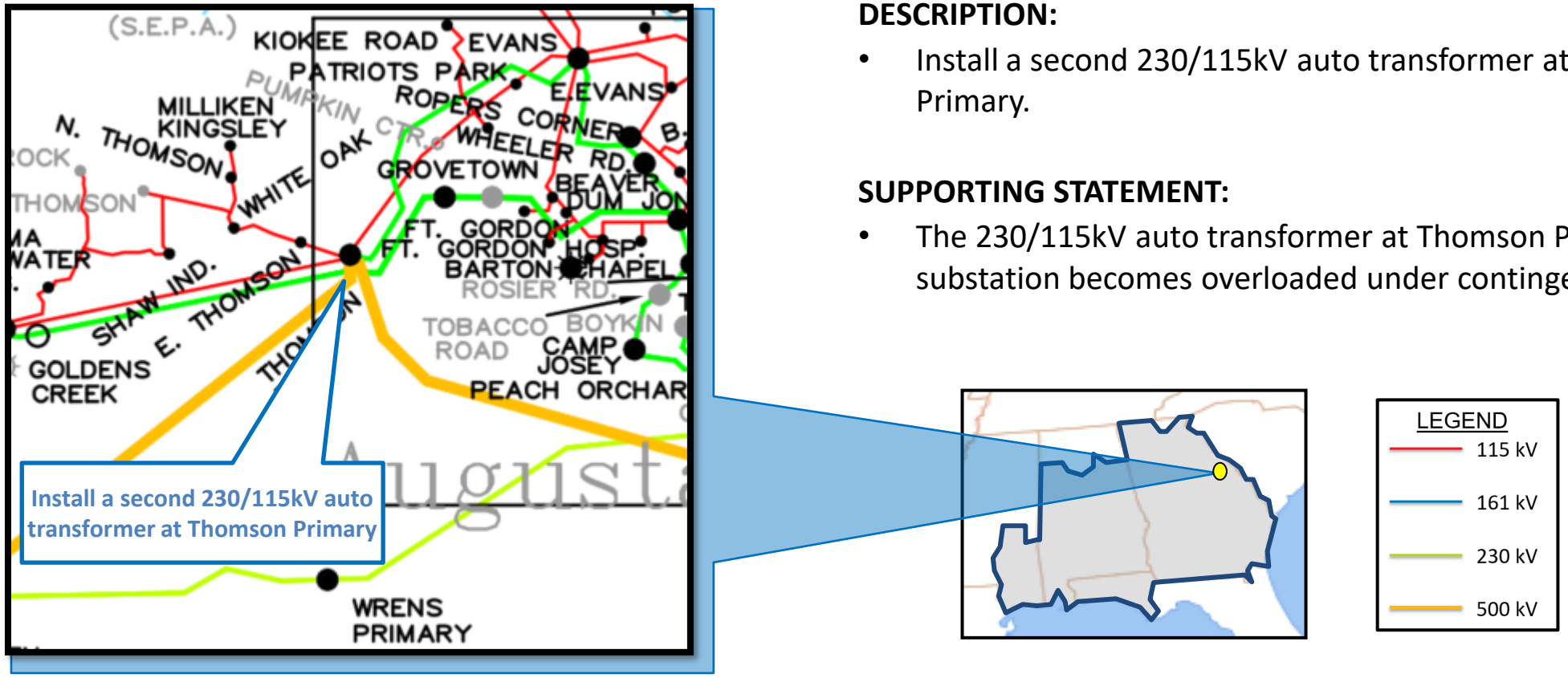
- Ray Place Road - Warrenton Primary 115kV transmission line becomes overloaded under contingency.



SOUTHERN – 11E

• 2031

THOMSON PRIMARY 230/115KV AUTO TRANSFORMER



DESCRIPTION:

- Install a second 230/115kV auto transformer at Thomson Primary.

SUPPORTING STATEMENT:

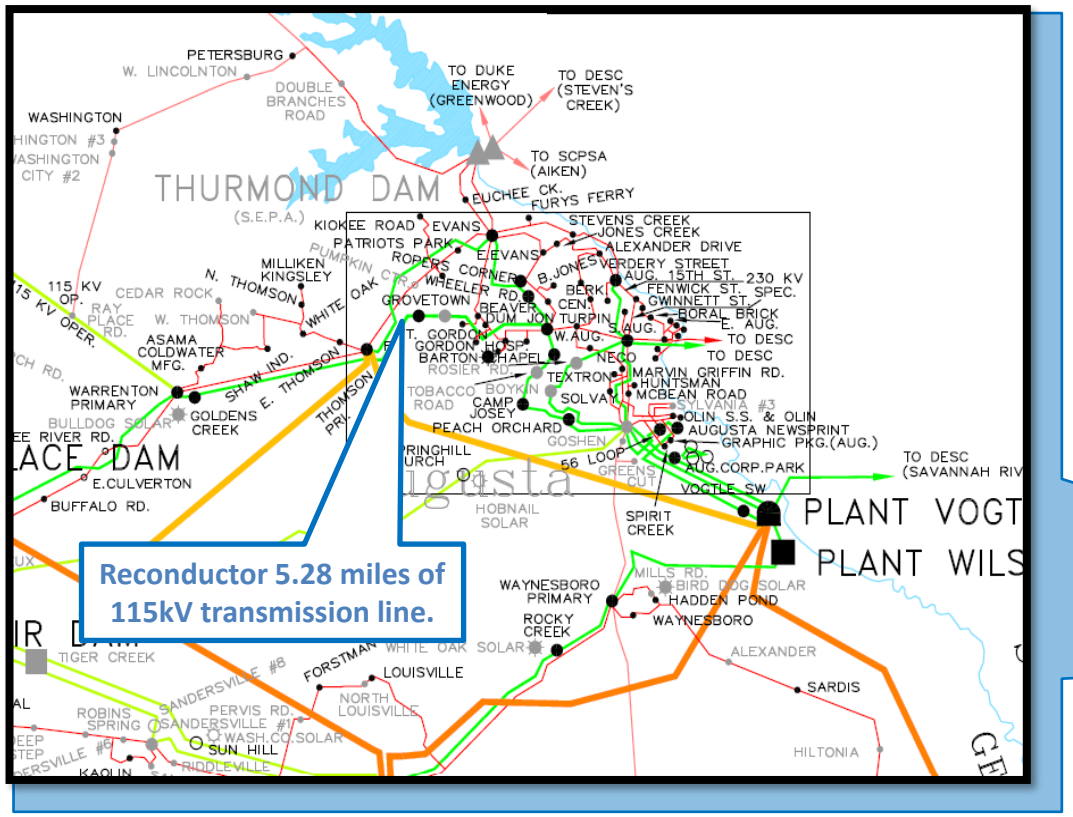
- The 230/115kV auto transformer at Thomson Primary substation becomes overloaded under contingency.

SOUTHERN Balancing Authority Area

SOUTHERN – 12E

• **2032**

EVANS PRIMARY – THOMSON PRIMARY 115KV RECONDUCTOR PHASE II

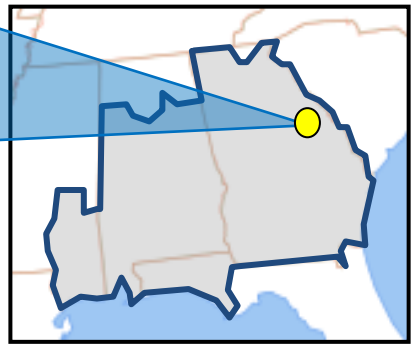


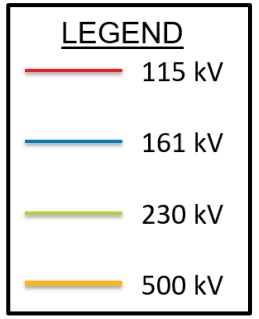
DESCRIPTION:

- Reconductor a section (5.28 miles) of the Evans Primary - Thomson Primary 115kV line with 100C 1351 ACSR Martin conductor. Upgrade limiting elements at substations along the line.

SUPPORTING STATEMENT:

- Evans Primary - Thomson Primary 115kV transmission line becomes overloaded under contingency.



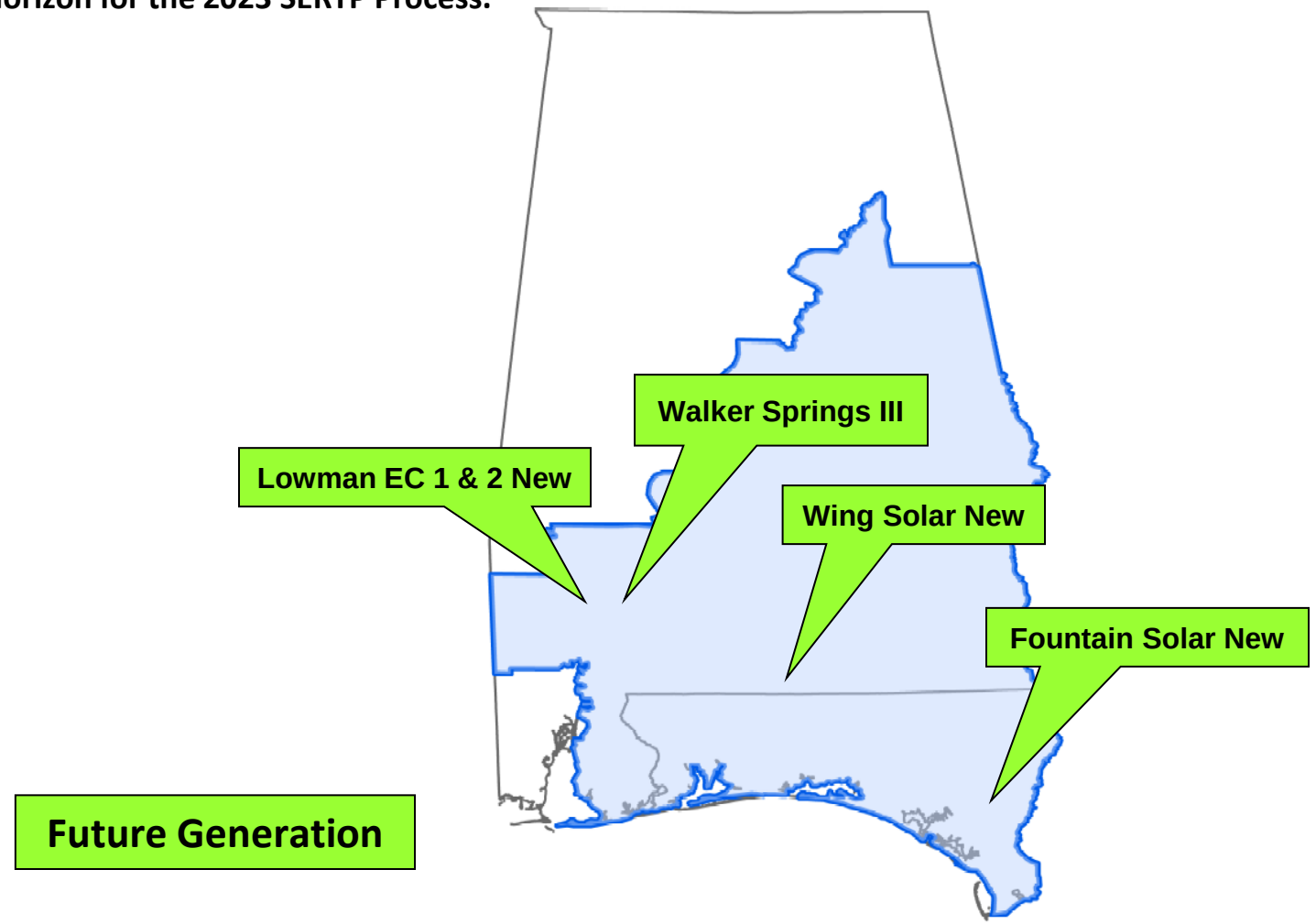


POWERSOUTH Planning Authority Area

Generation Assumptions

POWERSOUTH – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process.



POWERSOUTH – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Lowman EC 1 & 2	Gas	--	641	641	641	641	641	641	641	641	641
Wing	Solar	80	80	80	80	80	80	80	80	80	80
Fountain	Solar	--	--	75	75	75	75	75	75	75	75
Walker Springs III	Solar	--	--	--	80	80	80	80	80	80	80

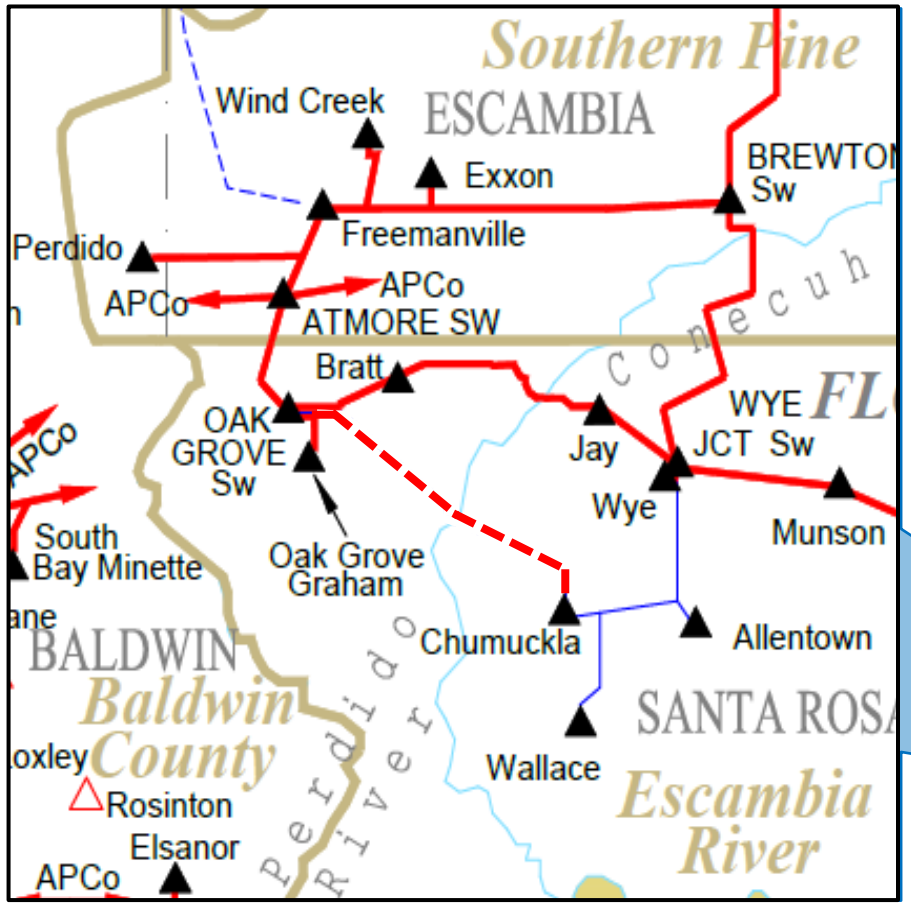
POWERSOUTH Planning Authority Area

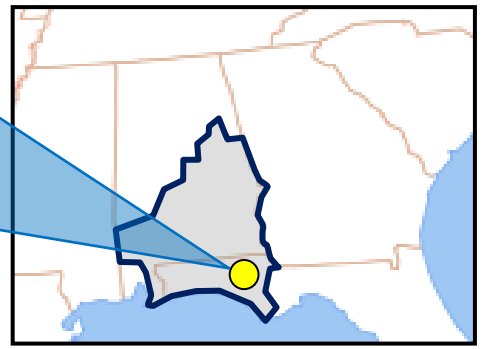
Preliminary Transmission Expansion Plan

POWERSOUTH - 1

• **2024**

Oak Grove – Chumuckla 115 KV Transmission Line



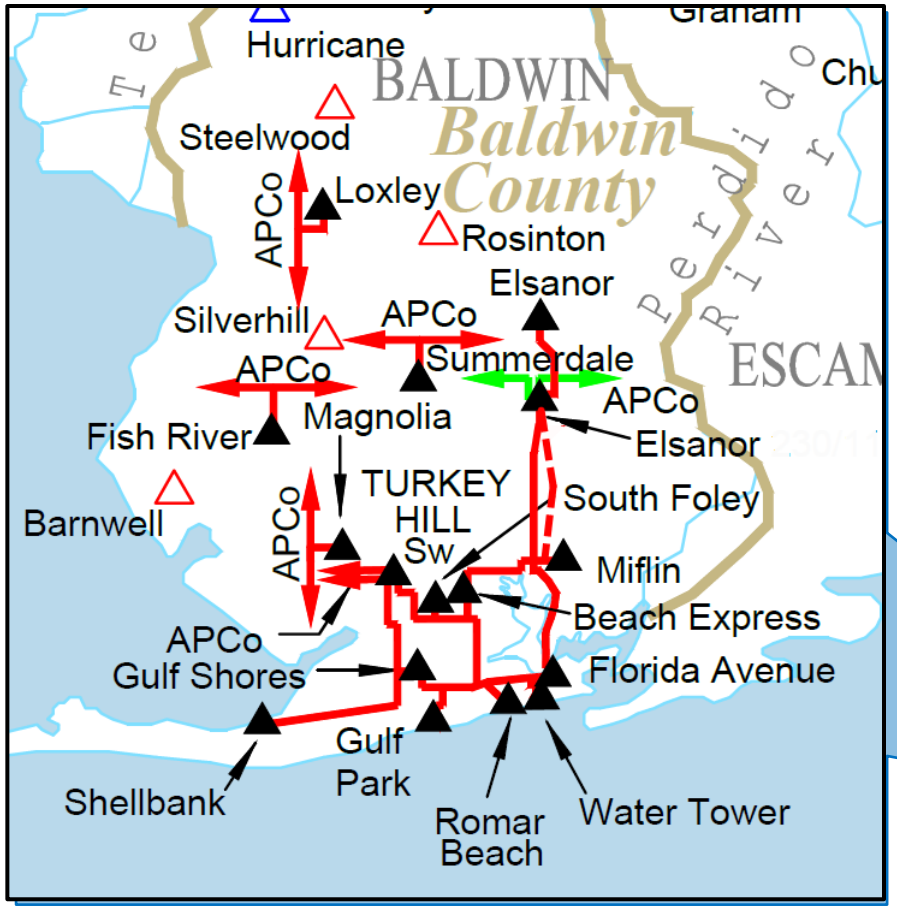


- **DESCRIPTION:**
  - Construct a Oak Grove Graham Jct.
  - Construct a new 115 kV transmission line from Oak Grove Graham Jct. to Chumuckla Substation which will replace the existing Oak Grove Sw. – Chumuckla 46kV transmission line.
- **SUPPORTING STATEMENT:**
  - Load growth in the area has exceeded the capacity of that which can be supported by the existing 46kV facilities.

POWERSOUTH - 2

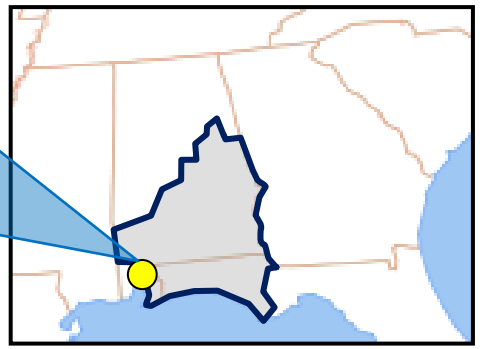
• **2025**

Elsanor – Miflin Distribution 115 KV Transmission Line



- **DESCRIPTION:**
  - Construct approximately 12.0 miles of new 115 kV transmission line from Elsanor Switching to Miflin Distribution Substation with 795 ACSR at 100°C.

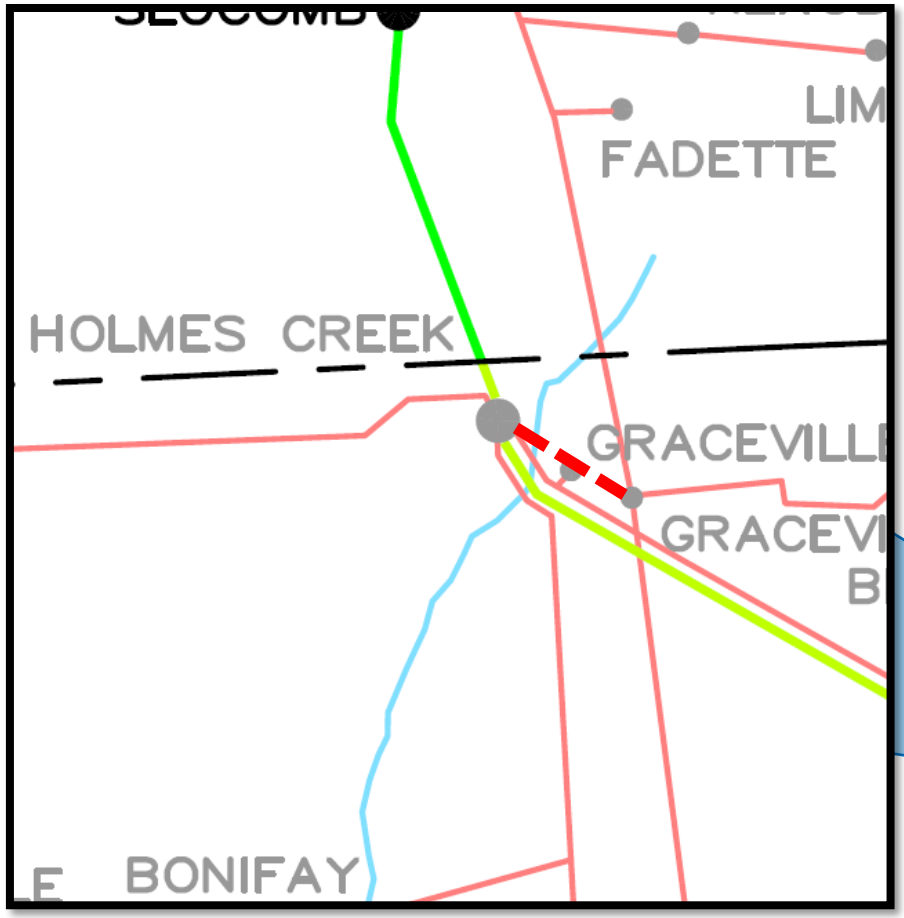
- **SUPPORTING STATEMENT:**
  - The existing Elsanor-Miflin 115kV line overloads under contingency.



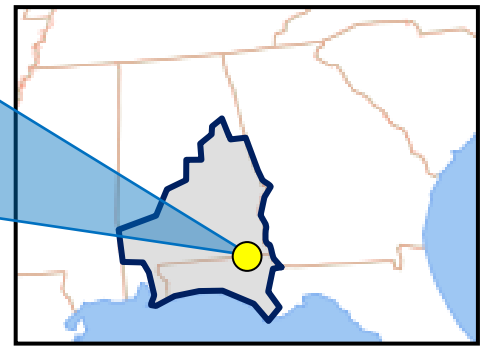
POWERSOUTH - 3

- **2025**

Graceville – Holmes Creek 115 KV Transmission Tie Line



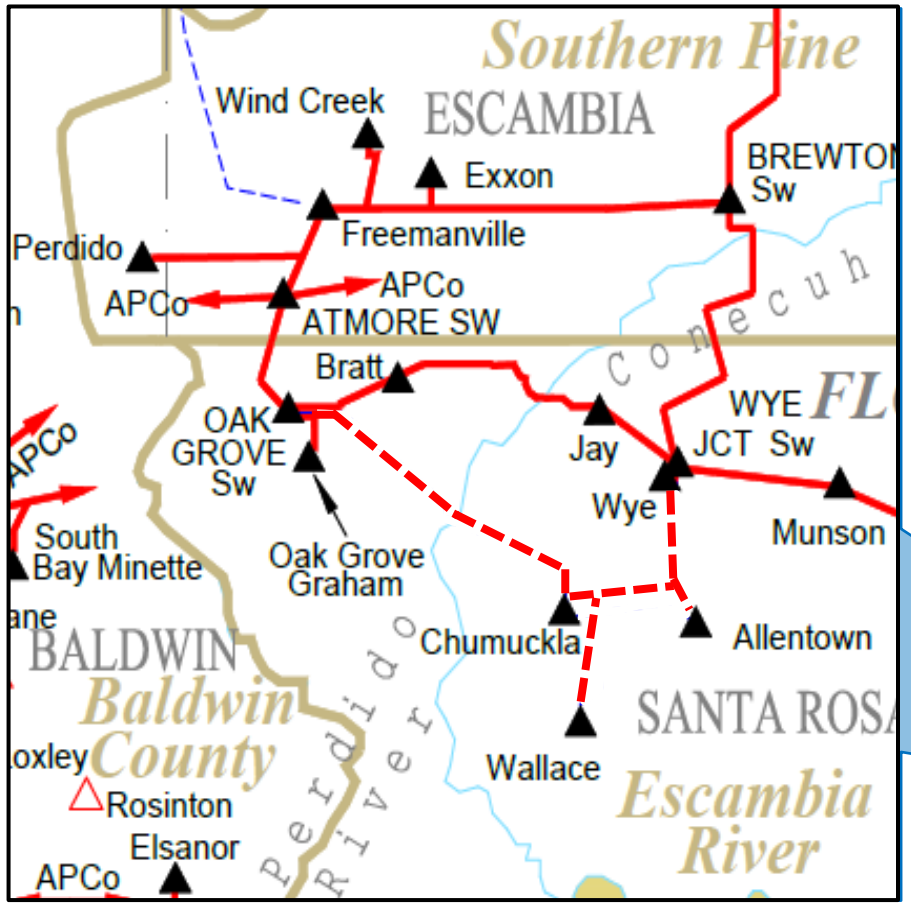
- **DESCRIPTION:**
  - Construct approximately 1.08 miles of new 115 kV transmission line from Graceville Switching Station to FPL's Homes Creek Station with 795 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - Improves voltage support on PowerSouth system in the area



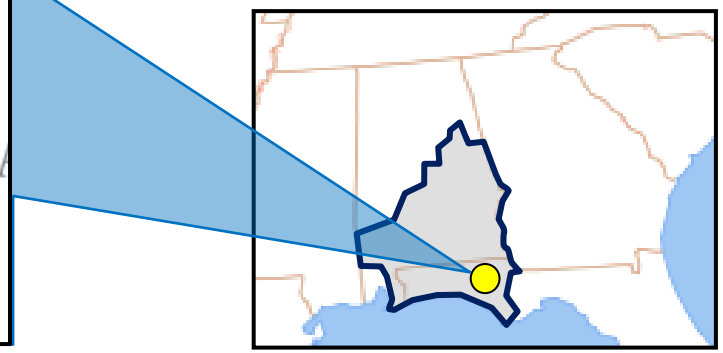
POWERSOUTH - 4

• **2026**

EREC 115 KV Conversion



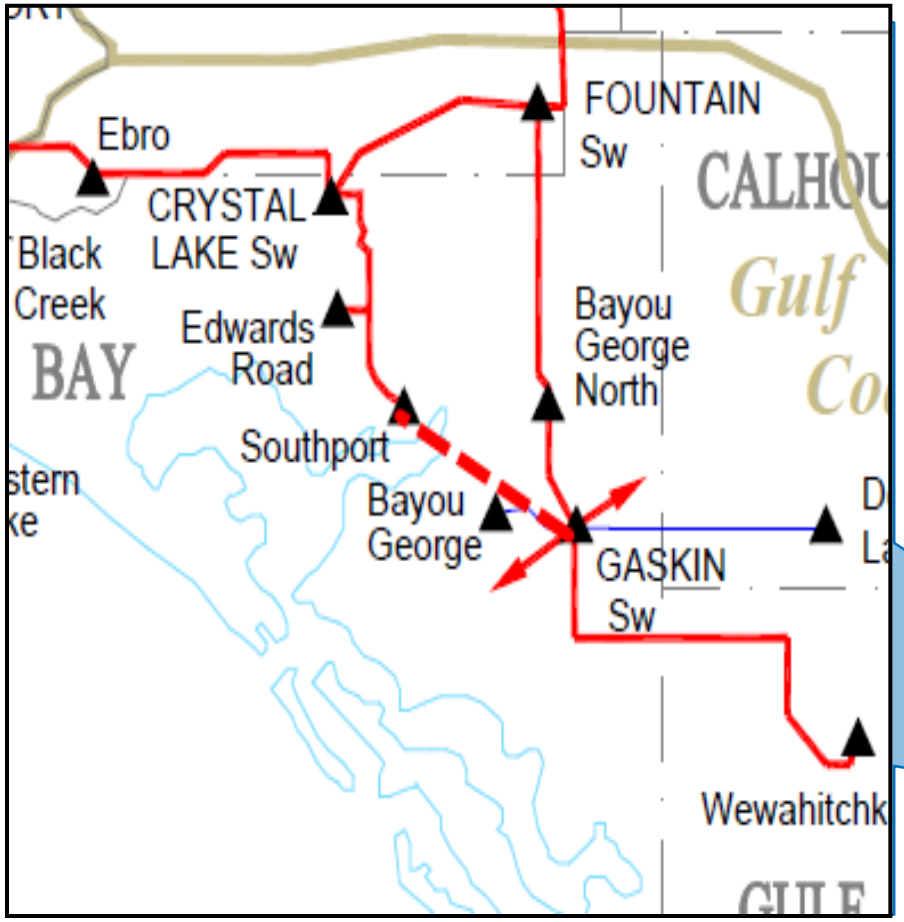
- **DESCRIPTION:**
  - Convert 21.36 miles of 46 kV transmission line and 3 distribution stations to 115kV service.
- **SUPPORTING STATEMENT:**
  - Load growth in the area has exceeded the capacity of that which can be supported by the existing 46kV facilities.



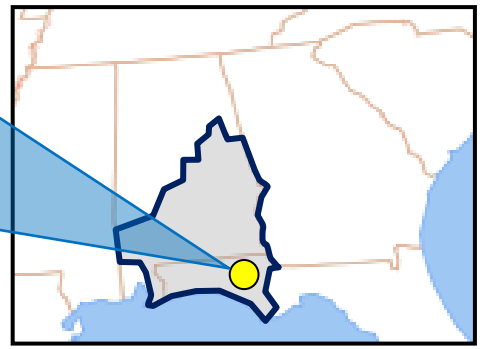
POWERSOUTH - 5

- **2026**

Gaskin – Southport 115 KV Transmission Line



- **DESCRIPTION:**
  - Construct approximately 9.0 miles of new 115 kV transmission line from Gaskin Switching Station to Southport Substation with 795 ACSR/AW at 100°C.
- **SUPPORTING STATEMENT:**
  - Improve the reliability of Gulf Coast Electric's substations by providing a looped service feed.



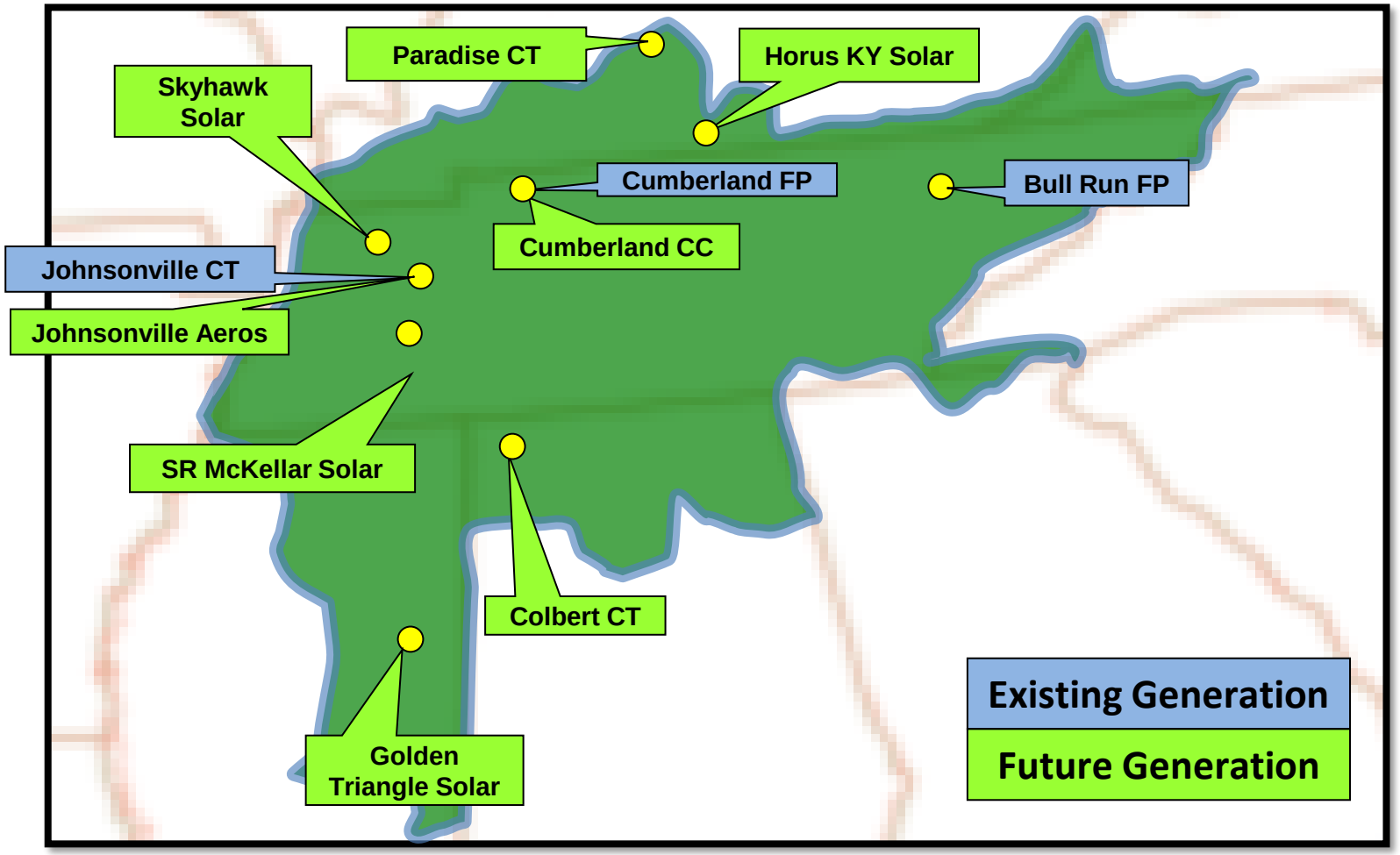
TVA Balancing Authority Area

Generation Assumptions

TVA Balancing Authority Area

TVA – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2023 SERTP Process.



TVA – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2023 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BULL RUN FP UNIT 1	COAL	760	0	--	--	--	--	--	--	--	--
JOHNSONVILLE CT	GAS	800	800	0	--	--	--	--	--	--	--
CUMBERLAND FP UNIT 2	COAL	1130	1130	1130	1130	0	--	--	--	--	--
CUMBERLAND FP UNIT 1	COAL	1130	1130	1130	1130	1130	1130	0	--	--	--
SKYHAWK	SOLAR	100	100	100	100	100	100	100	100	100	100
SR MCKELLAR	SOLAR	70	70	70	70	70	70	70	70	70	70
GOLDEN TRIANGLE	SOLAR	--	200	200	200	200	200	200	200	200	200
COLBERT CT	GAS	--	221	221	221	221	221	221	221	221	221
PARADISE CT	GAS	--	221	221	221	221	221	221	221	221	221
HORUS KY	SOLAR	--	--	69	69	69	69	69	69	69	69
JOHNSONVILLE AEROS	GAS	--	--	530	530	530	530	530	530	530	530
CUMBERLAND CC	GAS	--	--	--	--	1346	1346	1346	1346	1346	1346

TVA Balancing Authority Area

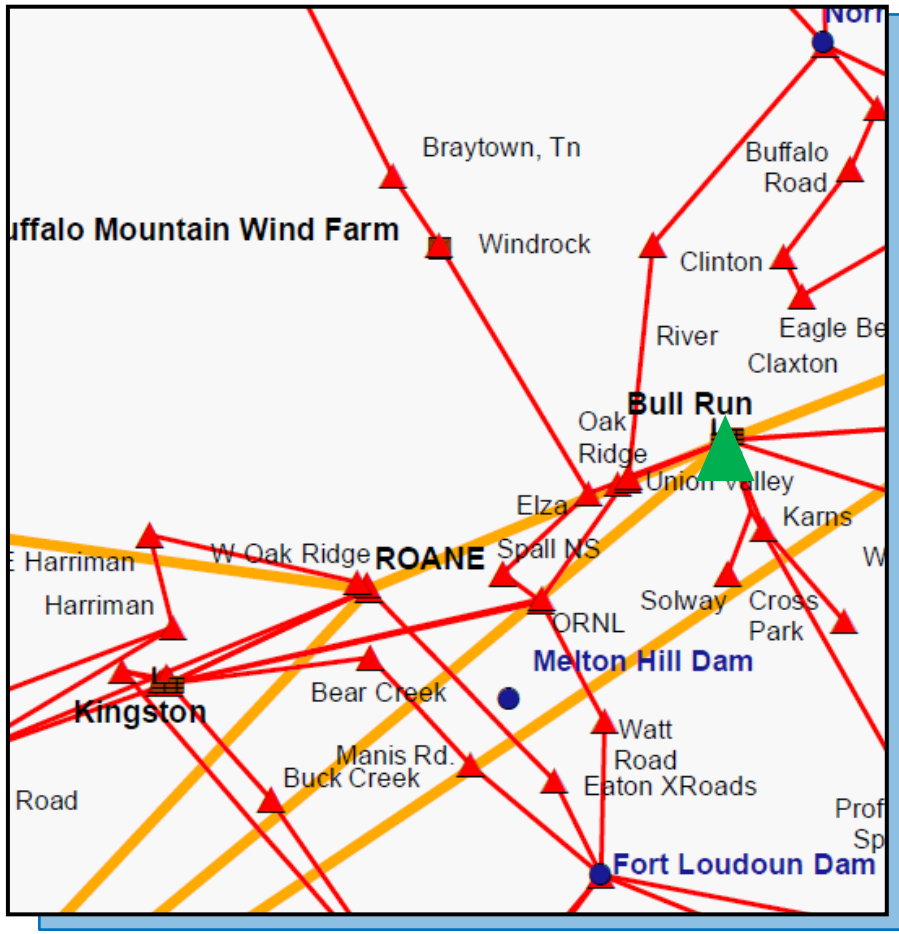
Preliminary Transmission Expansion Plan

TVA Balancing Authority Area

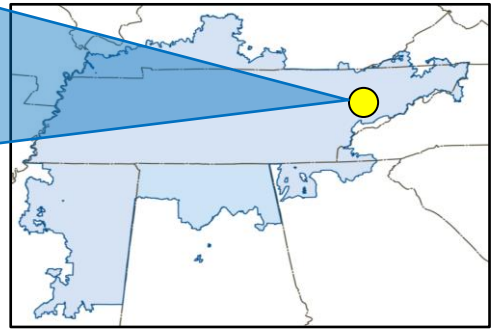
TVA – 1

• **2024**

ANDERSON 500 KV SUBSTATION



- **DESCRIPTION:**
  - Construct a new 500kV substation across from the Bull Run FP. Looping in the Roane - BRF 500kV TL , terminating 4-161kV lines, and installing 4-1phase 500/161 transformers. A direct 161kV tie will be created between BRF and the Anderson 500kV Substation.
- **SUPPORTING STATEMENT:**
  - Area 500/161 kV transformer overloads under contingency.

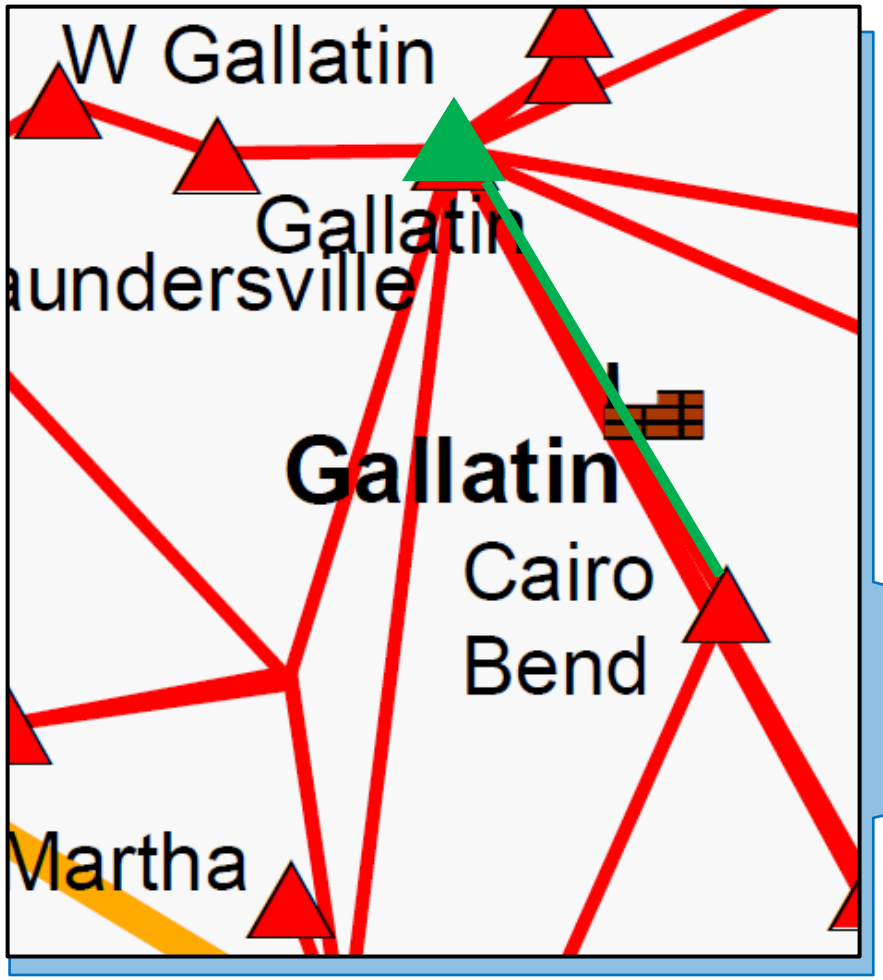


TVA Balancing Authority Area

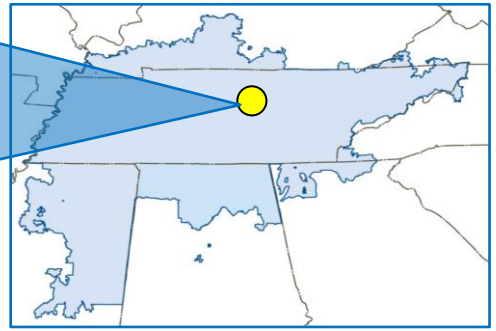
TVA – 2

• **2024**

GALLATIN - CAIRO BEND 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Reconductor approximately 2.2 miles of the Gallatin - Cairo Bend 161 kV transmission line section with 954 ACSS at 150°C and upgrade terminal equipment to 440 MVA at Gallatin 161 kV.
- **SUPPORTING STATEMENT:**
  - The Gallatin FP - Cairo Bend 161 kV transmission line section overloads under contingency.

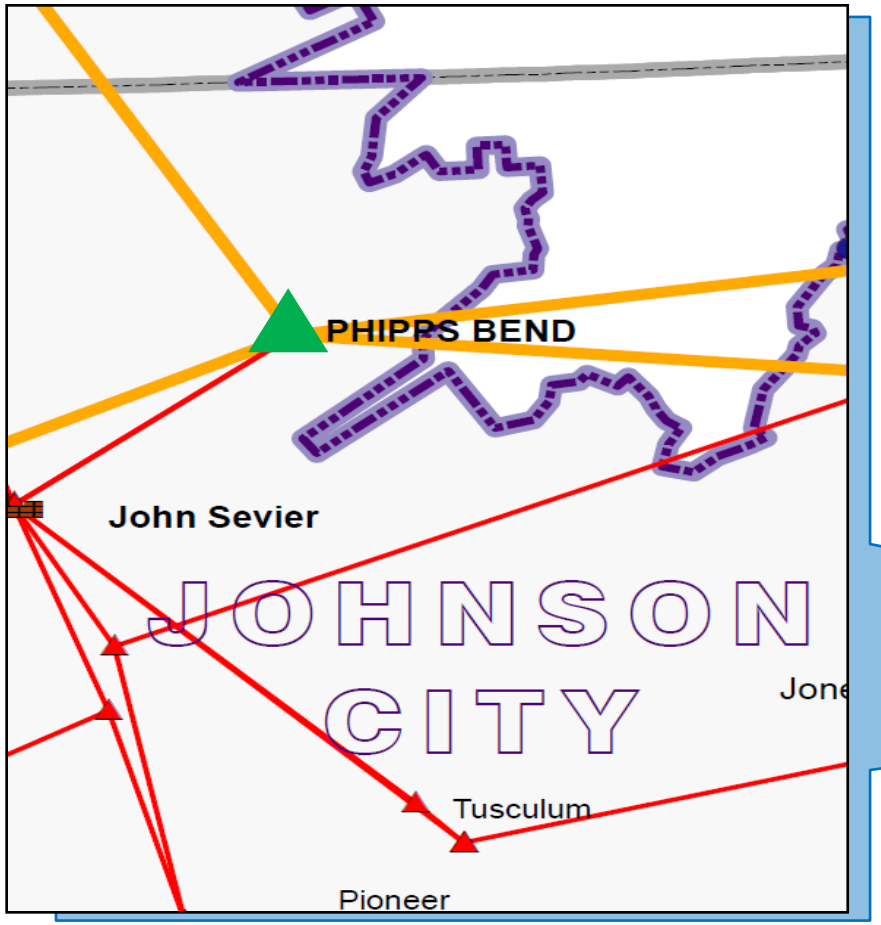


TVA Balancing Authority Area

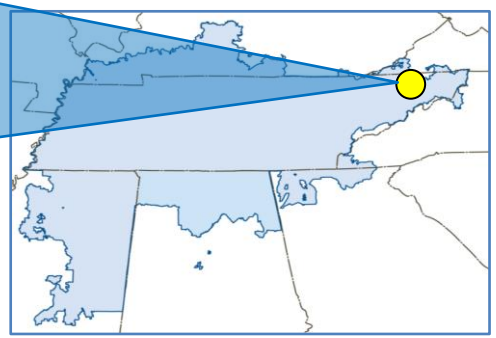
TVA – 3

• **2024**

PHIPPS BEND 500 KV SUBSTATION



- **DESCRIPTION:**
  - Rebuild structures with weathered steel in the Phipps Bend 500 and 161 kV yard.
- **SUPPORTING STATEMENT:**
  - Steel structures in the Phipps Bend 500 kV and 161 kV yards are beginning to show signs of corrosion and will be replaced.

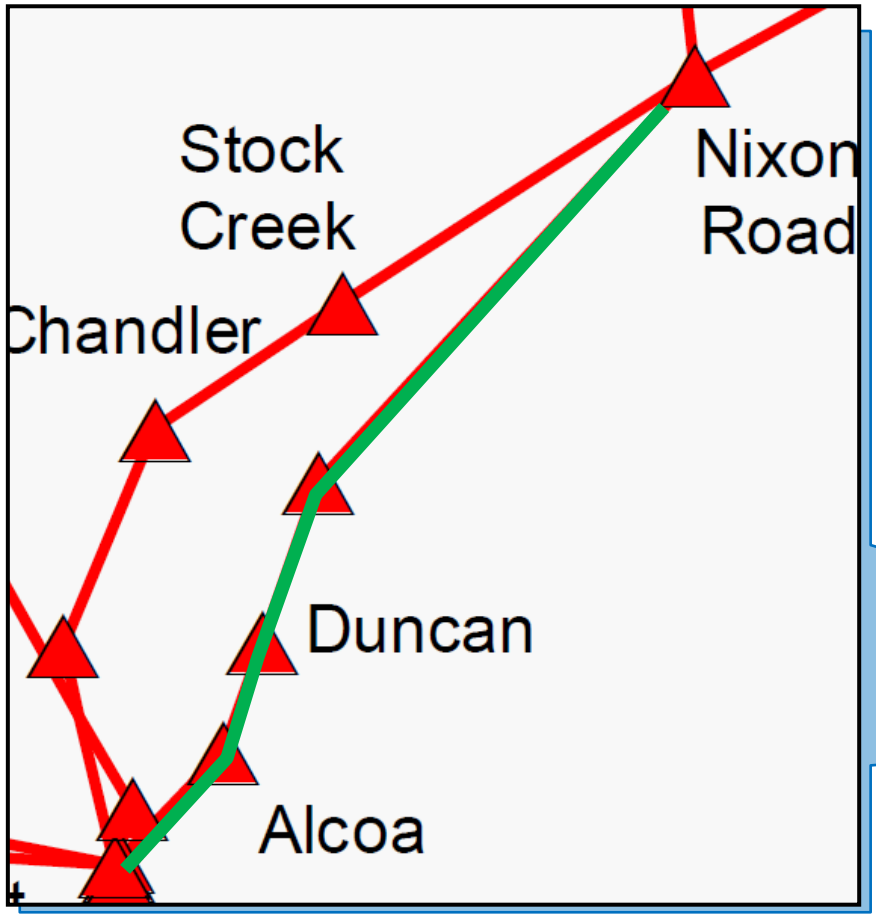


TVA Balancing Authority Area

TVA – 4

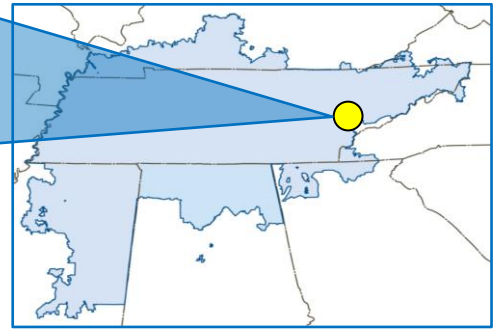
• **2025**

ALCOA SS – NIXON ROAD 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Rebuild approximately 12.0 miles of the Alcoa North to Nixon Road 161 kV transmission line with 1590 ACSR at 100°C and construct approximately 4.0 miles of new transmission line to create the Alcoa SS to Nixon Rd 161 kV #2 transmission line.

- **SUPPORTING STATEMENT:**
  - The existing Alcoa Switching Station to Nixon Road 161 kV transmission line overloads under contingency.

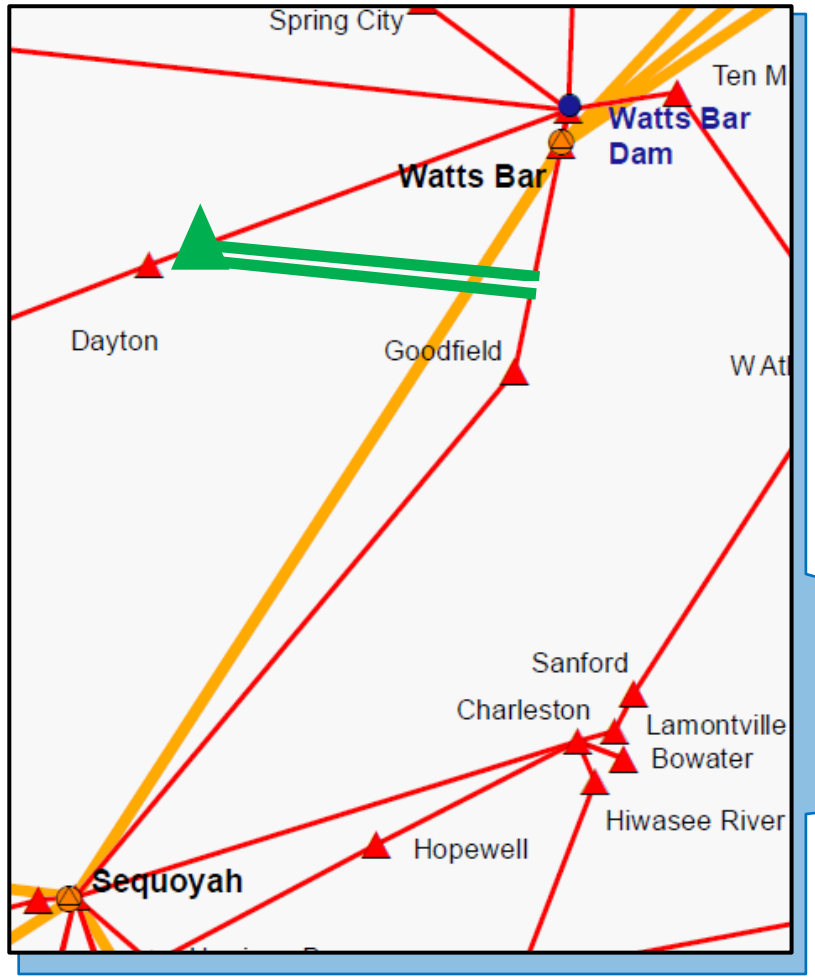


TVA Balancing Authority Area

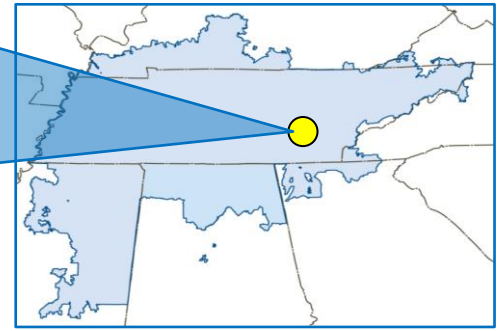
TVA – 5

• **2025**

N. DAYTON SUBSTATION



- **DESCRIPTION:**
  - Construct North Dayton 161 kV substation. Loop in Sequoyah - WBHP 161 kV transmission line into new substation by constructing approximately 27.0 miles of transmission line using 1351 ACSR.
- **SUPPORTING STATEMENT:**
  - Thermal overloads and voltage support is needed in the North Dayton, TN area under contingency.

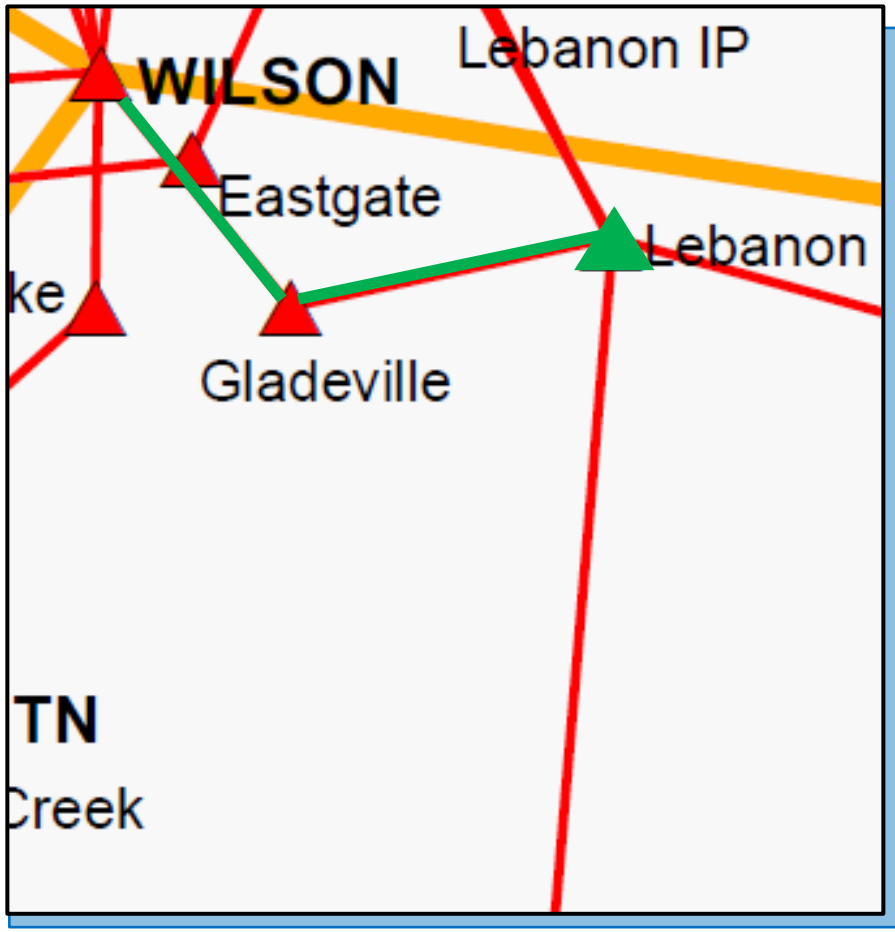


TVA Balancing Authority Area

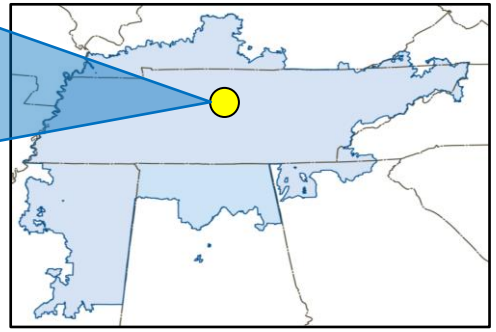
TVA – 6

- **2025**

WILSON - LEBANON 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Rebuild approximately 6.0 miles on the Wilson - Lebanon 161 kV transmission line with 636 ACSR at 100°C and upgrade terminal equipment to 230 MVA at Lebanon 161 kV substation.
- **SUPPORTING STATEMENT:**
  - The Wilson - Lebanon 161 kV transmission line overloads under contingency.

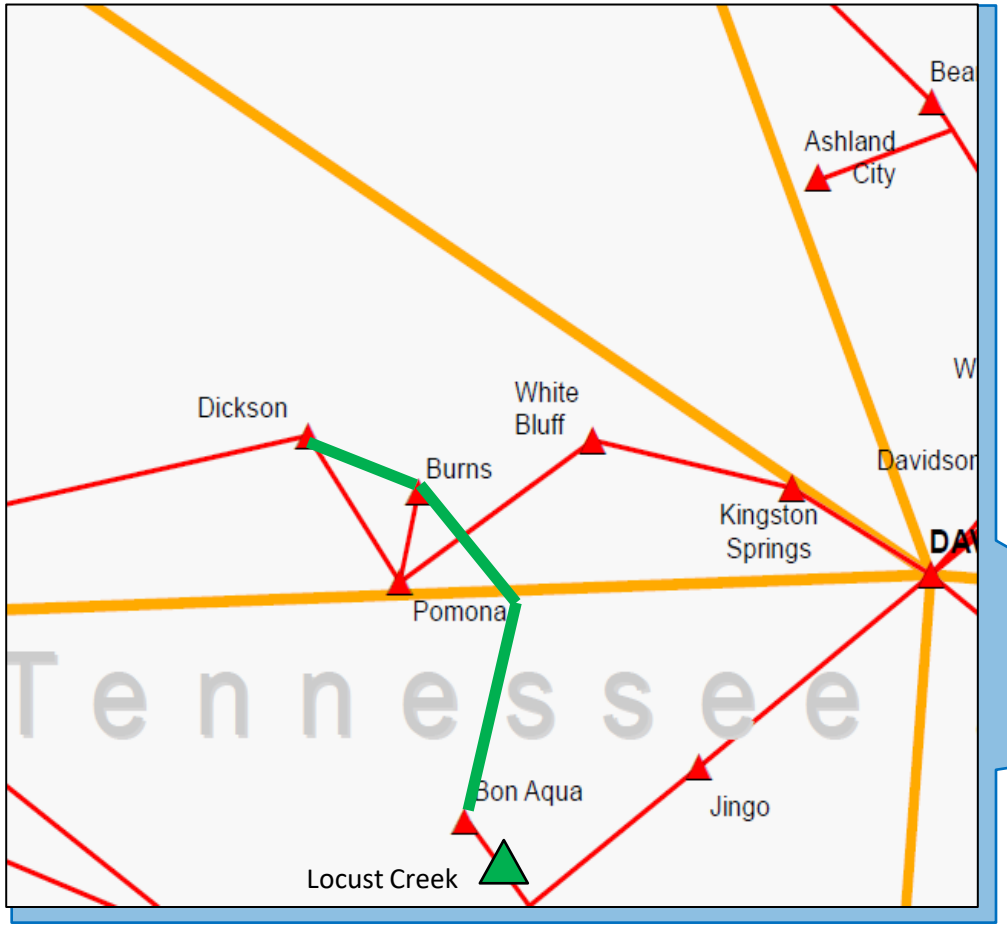


TVA Balancing Authority Area

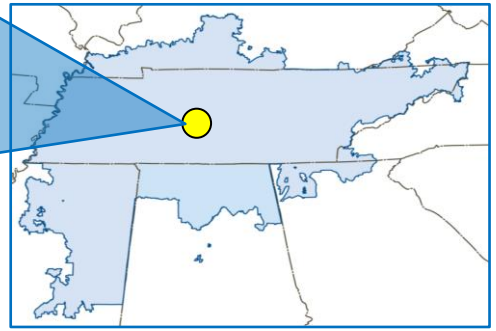
TVA – 7

• **2025**

DICKSON 161 KV AREA IMPROVEMENT



- **DESCRIPTION:**
  - Construct approximately 19.5 miles of new 161 kV transmission line from Bon Aqua to Burns, construct approximately 4.3 miles new 161 kV double circuit into Dickson, and construct a new Locust Creek 161 kV Substation.
- **SUPPORTING STATEMENT:**
  - Voltage support is needed in the Dickson, TN area under contingency.

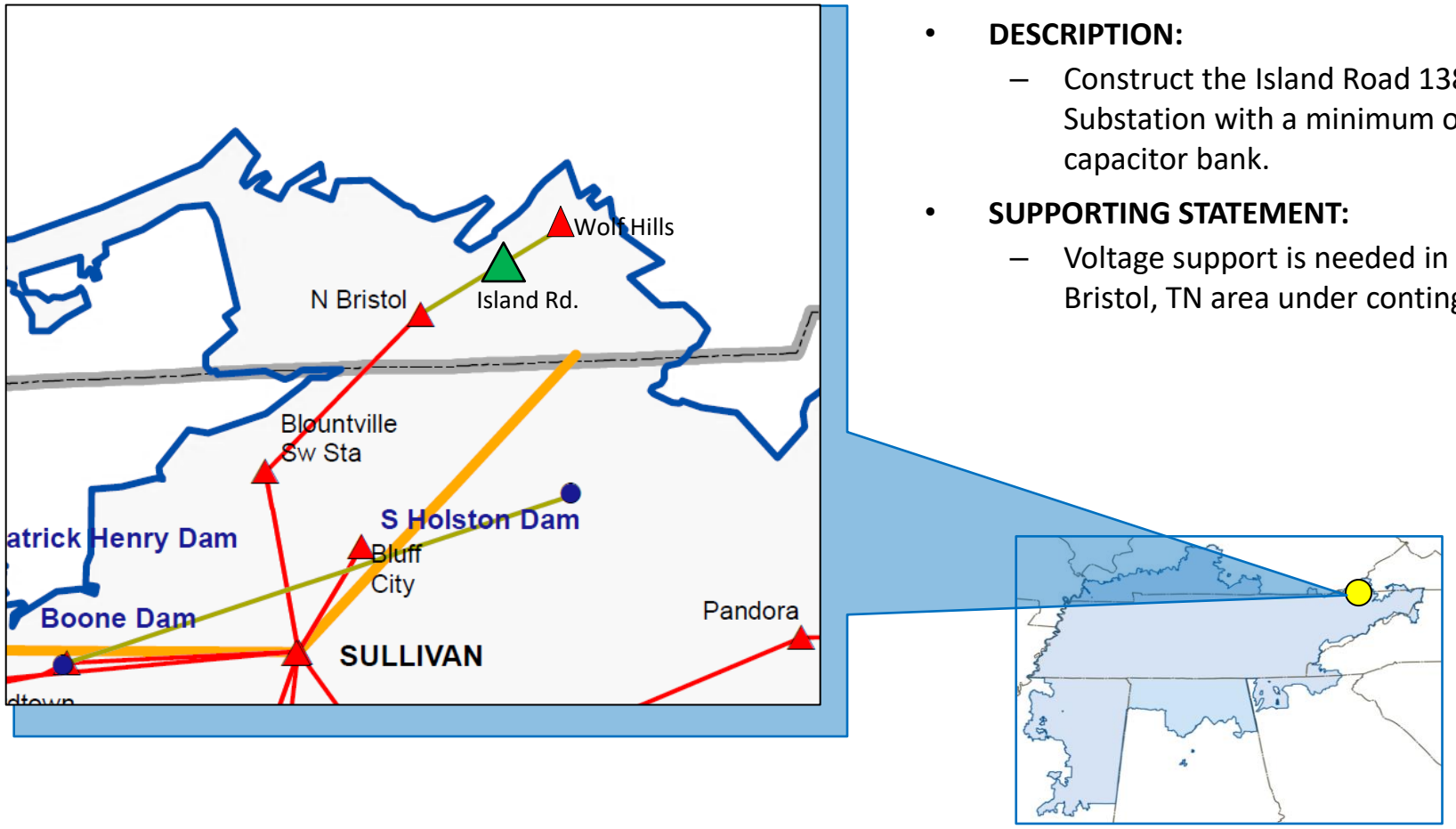


TVA Balancing Authority Area

TVA – 8

- **2025**

ISLAND RD 138KV CAPACITOR BANK



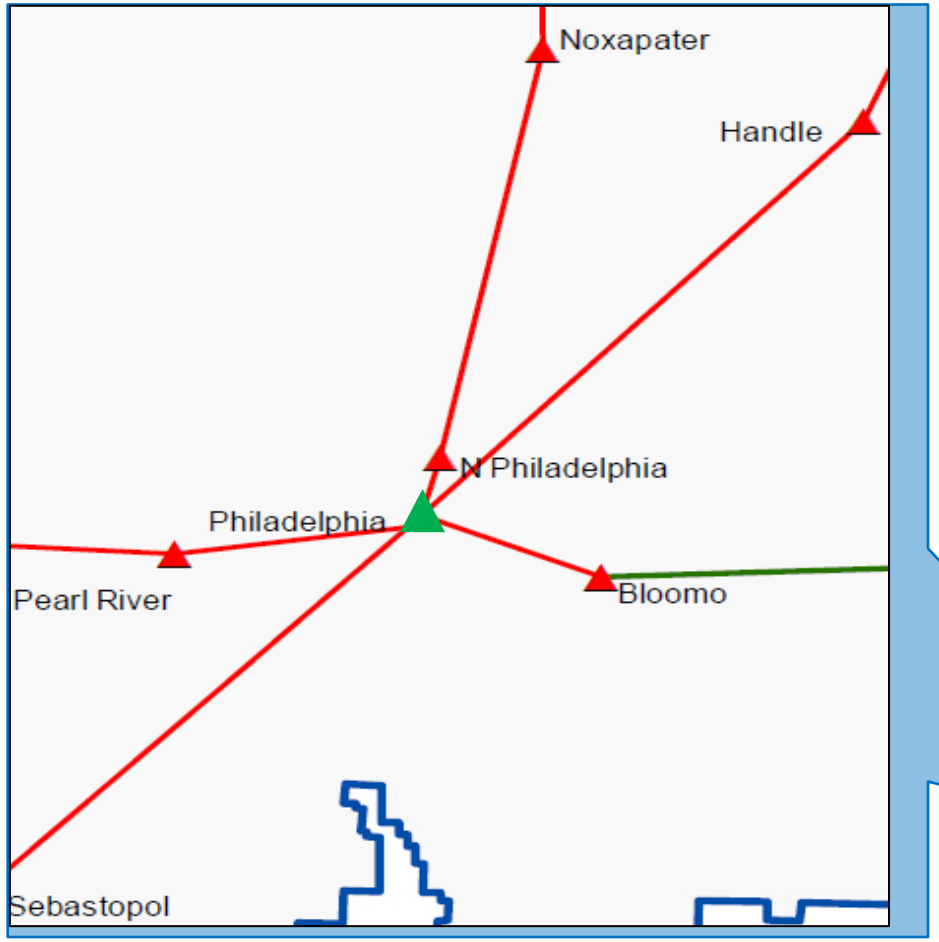
- **DESCRIPTION:**
  - Construct the Island Road 138kV Substation with a minimum of a 81MVAR capacitor bank.
- **SUPPORTING STATEMENT:**
  - Voltage support is needed in the North Bristol, TN area under contingency.

TVA Balancing Authority Area

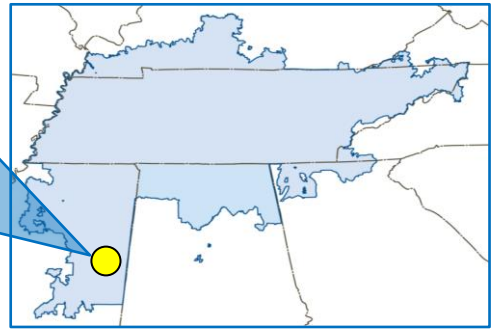
TVA – 9

- **2026**

PHILADELPHIA REACTOR



- **DESCRIPTION:**
  - Install three 27MVAR reactors at the Philadelphia 161kV Substation.
- **SUPPORTING STATEMENT:**
  - Voltage support is needed in TVA's Mississippi area under contingency.

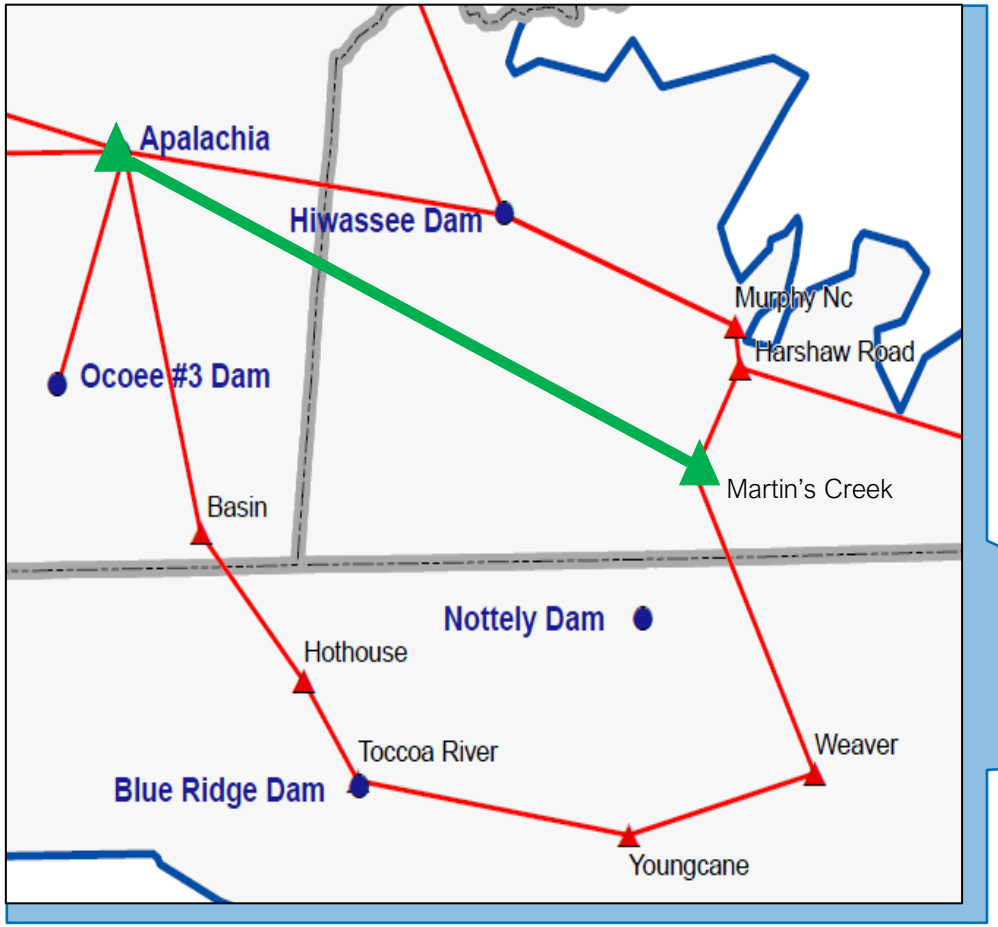


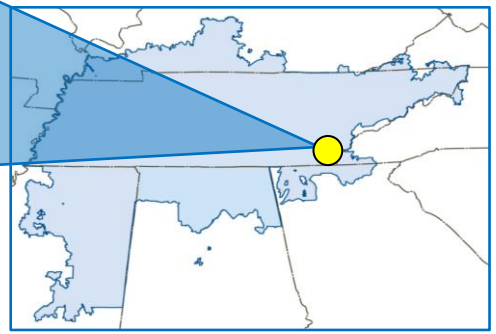
TVA Balancing Authority Area

TVA – 10

• **2026**

APALACHIA AREA IMPROVEMENT PLAN





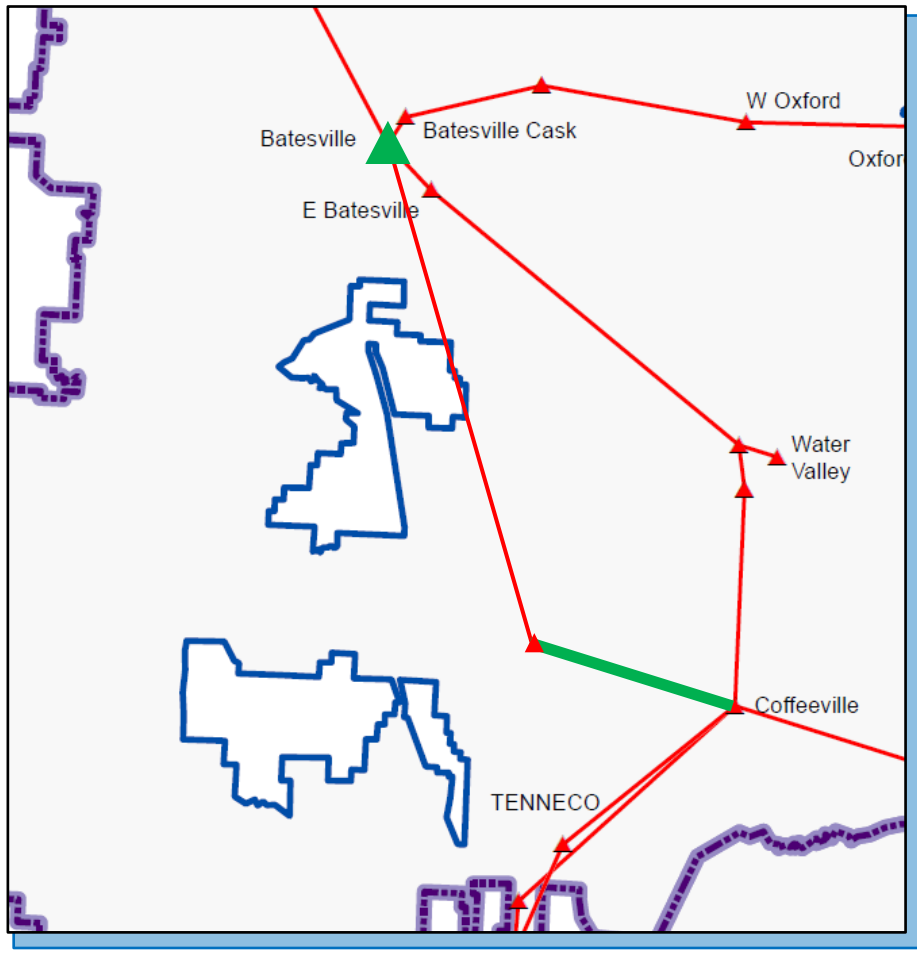
- **DESCRIPTION:**
  - Construct Martin's Creek 161 kV substation. Construct approximately 25 miles of new TL from Apalachia 161 kV substation to Ranger 161 kV switching station.
- **SUPPORTING STATEMENT:**
  - The Apalachia - Basin 161 kV transmission line overloads under contingency.

TVA Balancing Authority Area

TVA – 11

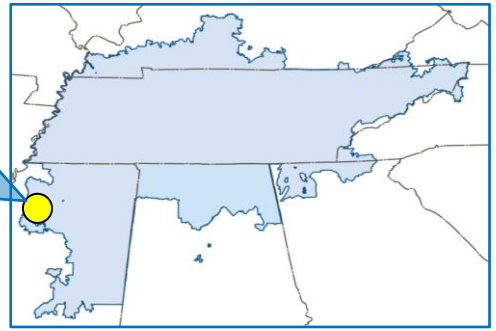
• **2026**

N. OAKLAND – COFFEEVILLE 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct approximately 18.0 miles of new 161kV transmission line from North Oakland - Coffeeville using 954 at 100°C and upgrade terminal equipment to 472 MVA at Batesville 161 kV.

- **SUPPORTING STATEMENT:**
  - Multiple 161 kV transmission lines overload under contingency.

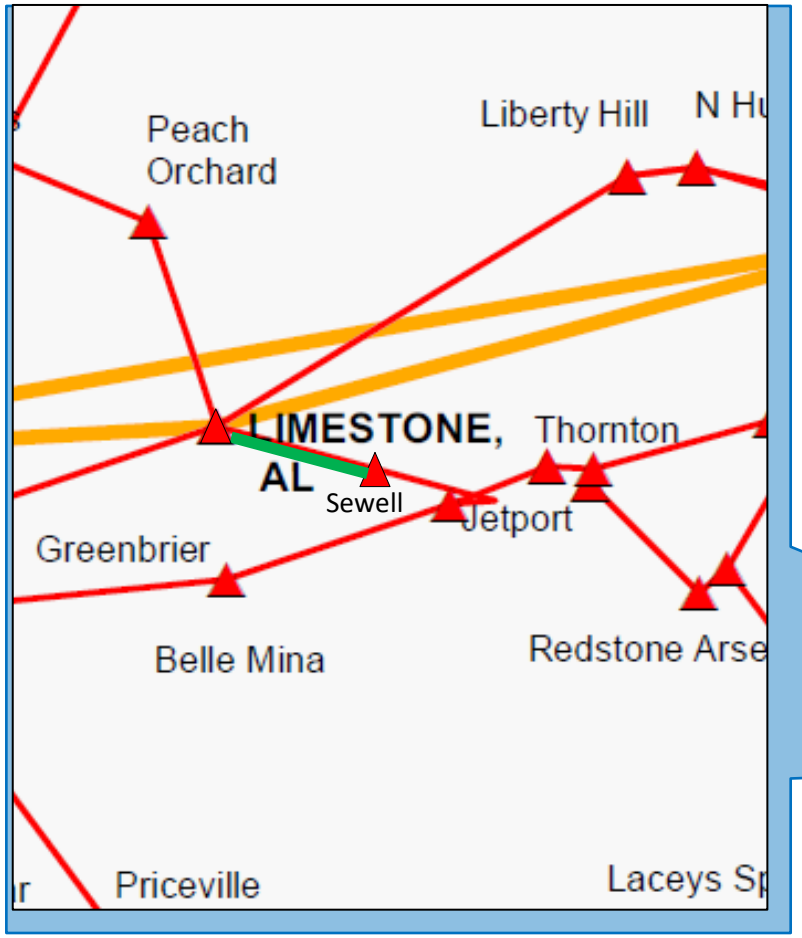


TVA Balancing Authority Area

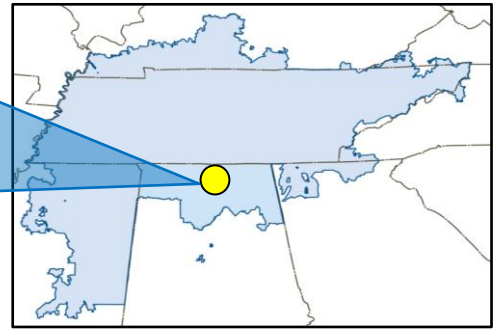
TVA – 12

• **2026**

LIMESTONE – SEWELL 161 KV #2 TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct approximately 2.1 miles of 161 kV transmission line with 2034 ACSR at 100°C on the existing Limestone - Sewell 161 kV double circuit towers.
- **SUPPORTING STATEMENT:**
  - Additional thermal capacity and voltage support is needed in the Huntsville, AL area under contingency.

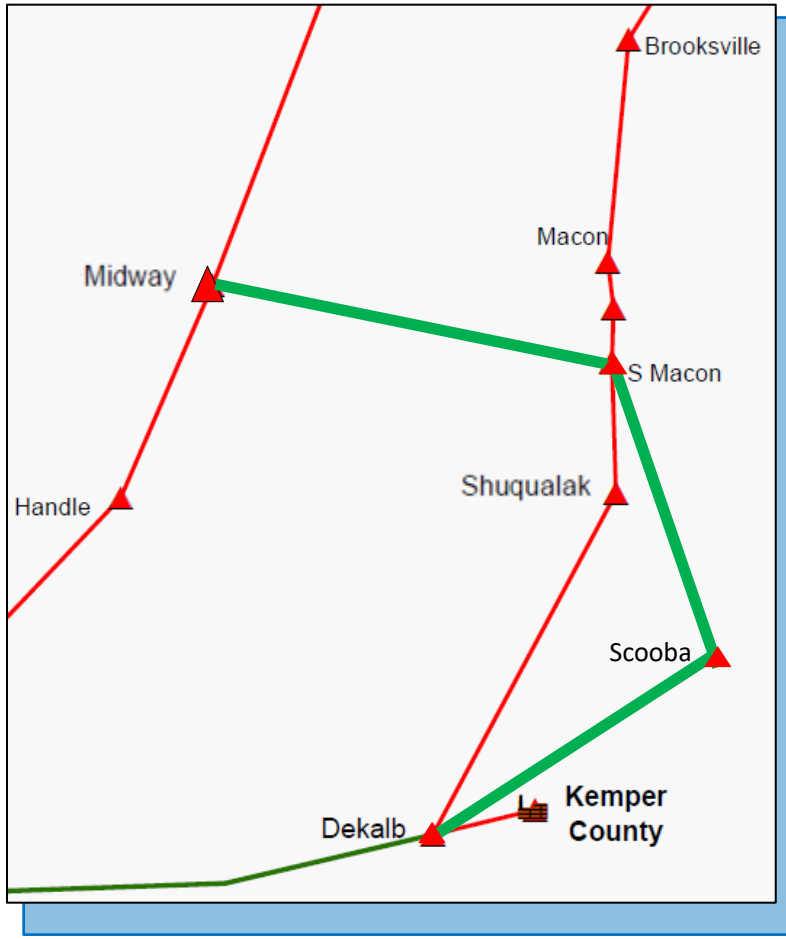


TVA Balancing Authority Area

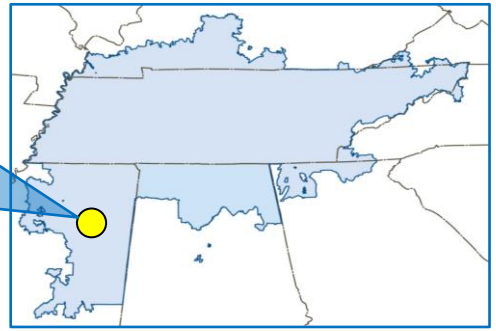
TVA – 13

• **2027**

MIDWAY - S MACON - DEKALB 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct approximately 20 miles new 161 kV transmission line from Midway to S Macon and approximately 31.3 miles new 161 kV transmission line from S Macon to Dekalb via Scooba.
- **SUPPORTING STATEMENT:**
  - Voltage support is needed in TVA's Mississippi area under contingency.

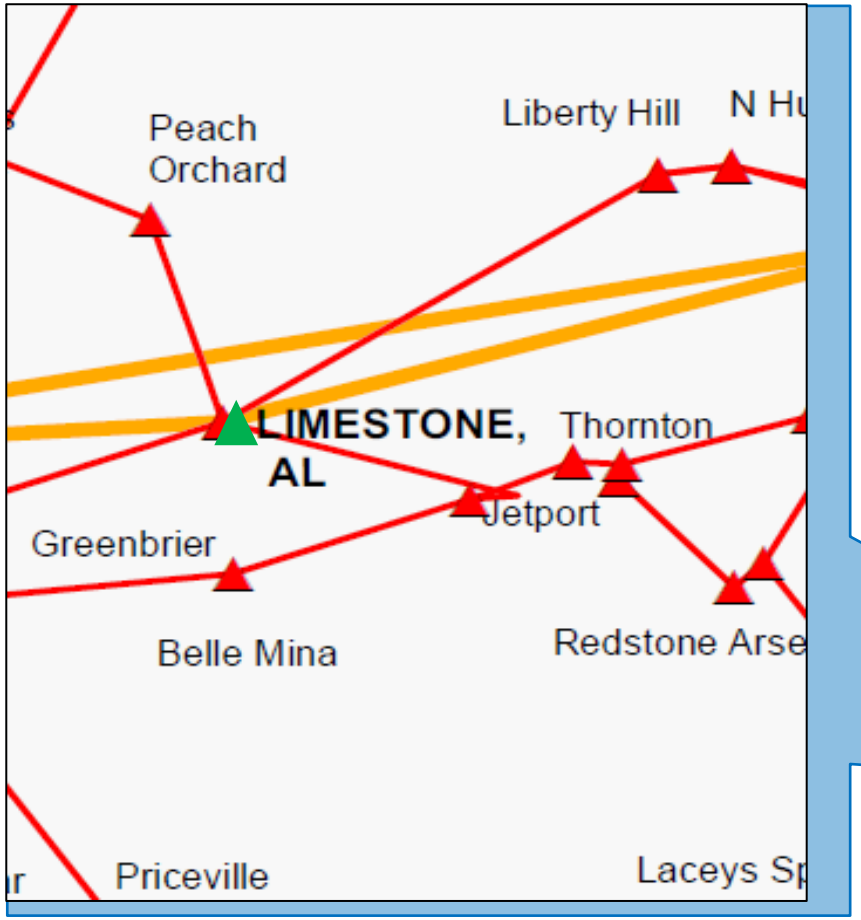


TVA Balancing Authority Area

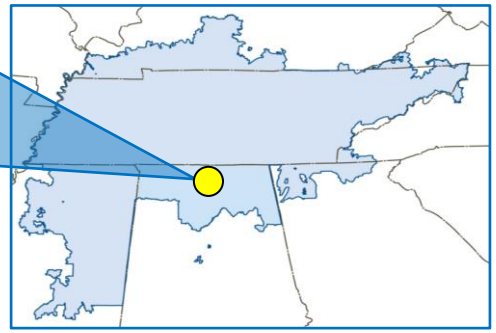
TVA – 14

- **2028**

LIMESTONE 500KV DOUBLE BREAKER AND LOOP



- **DESCRIPTION:**
  - Reconfigure the 500kV yard at Limestone by adding breakers and loop in the Browns Ferry - Maury 500kV TL.
- **SUPPORTING STATEMENT:**
  - Area overloads are observed under contingency.

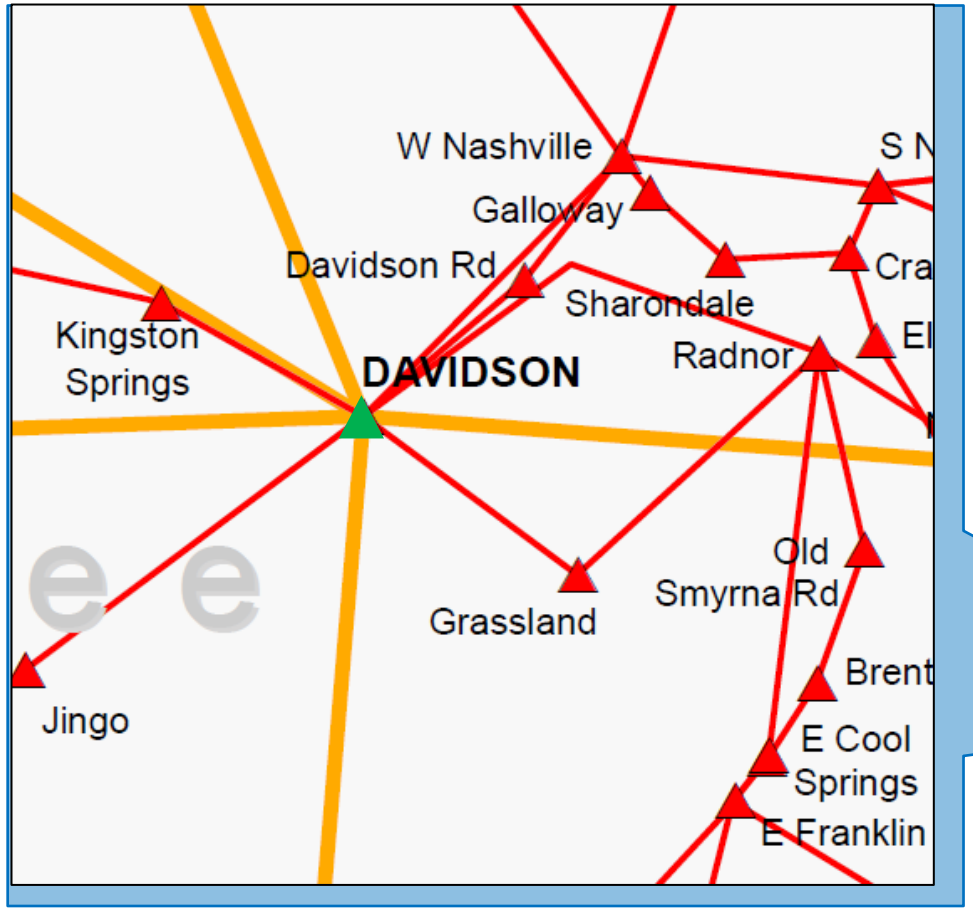


TVA Balancing Authority Area

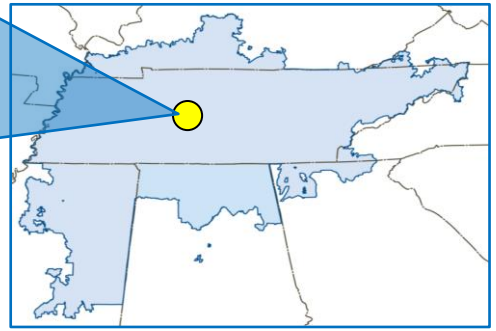
TVA – 15

• **2028**

DAVIDSON 500 KV SWITCH HOUSE



- **DESCRIPTION:**
  - Construct a new 500 kV switch house with all new assets and replace aging assets in the Davidson Yard.
- **SUPPORTING STATEMENT:**
  - Additional thermal capacity and voltage support is needed in the Davidson County, TN area under contingency.



SERTP

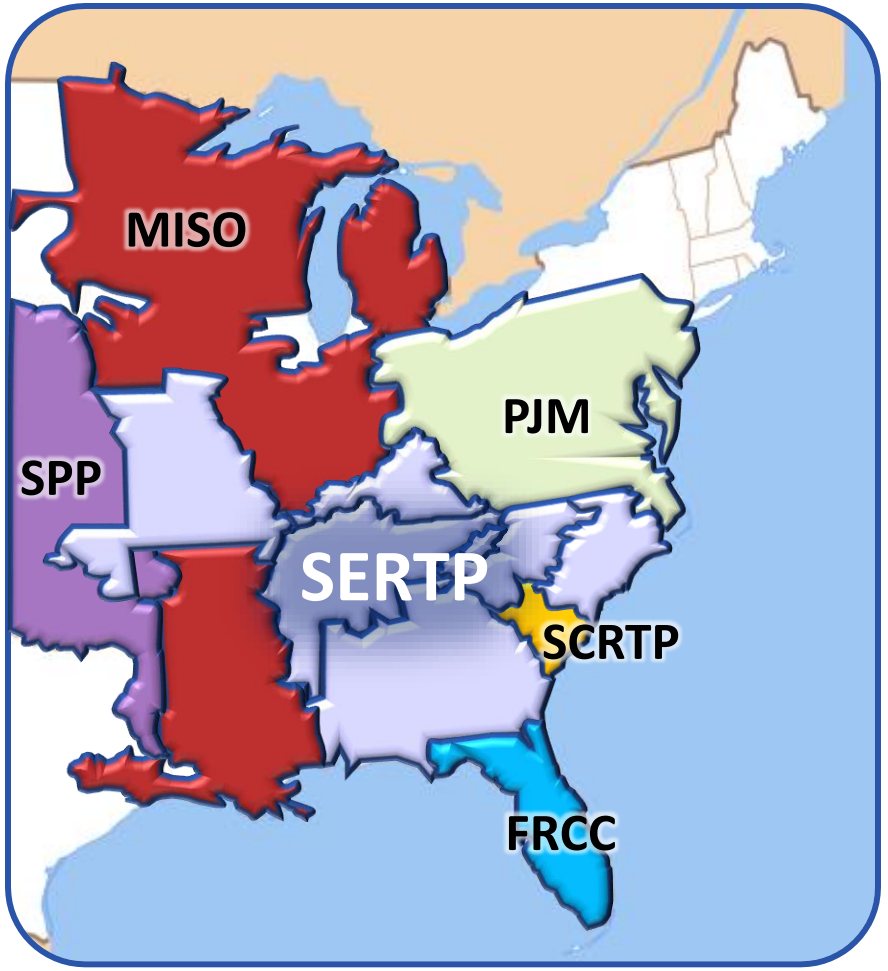
Miscellaneous Updates

Regional Analyses Update

- SERTP Sponsors are currently developing a list of potential alternative transmission projects to evaluate during the 2023 planning process

- These projects are generally developed by identifying areas with multiple forecasted transmission projects which could be potentially displaced by a regional transmission project

Interregional Update



Interregional Update

- Latest interregional coordination procedures are posted on the SERTP website
- Meetings will occur in the third quarter to facilitate the exchange of power-flow models and transmission expansion plans.

Coordination Activities with Transmission Providers

- **The SOCO is currently evaluating the possibility of adding new transmission tie lines with South Carolina**
  - There are multiple possible lines that are being evaluated to determine benefits on both sides of the interface
  - If a candidate line is determined to be beneficial and approved for construction by the companies involved, the expansion plans will be modified to reflect the addition
- **SBAA and FRCC continue to coordinate and discuss the need for potential improvements to the interface**

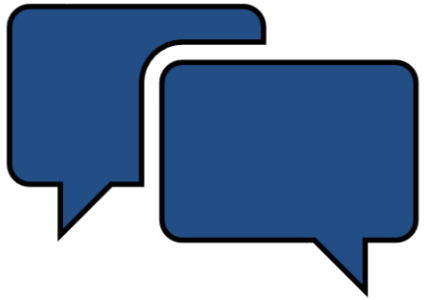
Public Policy Requirements Stakeholder Proposal

Transmission Needs Driven by Public Policy Requirements (PPRs)

- The SERTP process received three submissions for needs driven by Public Policy Requirements. These submissions are all related to the North Carolina Carbon Plan.
- In accordance with the NCUC Order, the North Carolina Carbon Plan Order is currently being considered by Duke Energy and in activities of the North Carolina Transmission Planning Collaborative (NCTPC).
- Any resulting transmission plans will subsequently be made part of the SERTP process, SERTP itself has no role in the North Carolina local transmission planning process.
- Accordingly, submitters of the Public Policy Requests to the SERTP related to the North Carolina Carbon Plan Order should refer to, and if desired, participate in the NCTPC Transmission Advisory Group (TAG) to provide advice and recommendations on the resource decisions and any resultant transmission needs and solutions.

Next Meeting Activities

- **2023 SERTP 3rd Quarter Meeting** – *Second RPSG Meeting*
  - **Location: Web Conference**
  - **Date: September 2023**
  - **Purpose:**
    - Discuss Preliminary Economic Planning Study Results
    - Discuss Previous Stakeholder Input on Transmission Expansion Plans



Questions?

www.southeasternrtp.com