Southeastern Regional
TRANSMISSION PLANNING

2022 SERTP

SERTP – 2nd Quarter Meeting

Preliminary Expansion Plan Meeting

June 30th, 2022

Microsoft Teams

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**

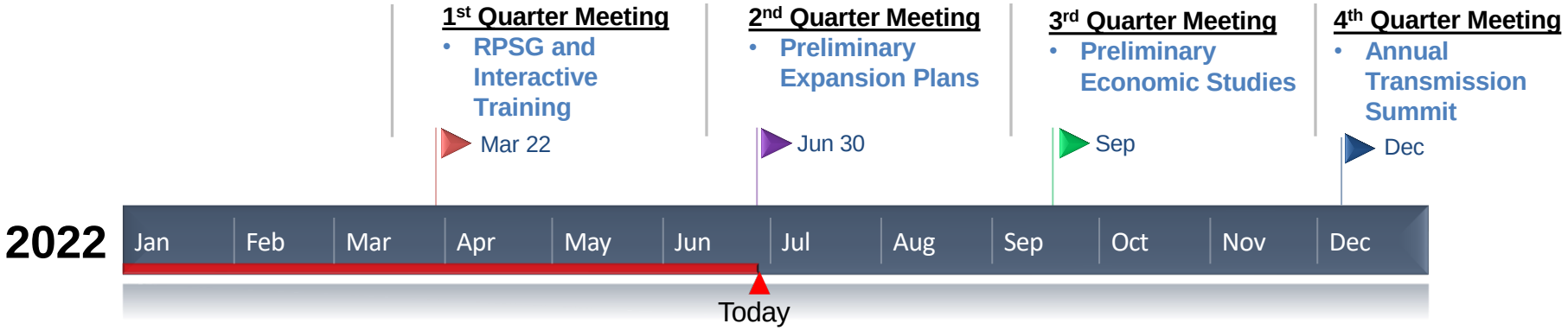
SERTP

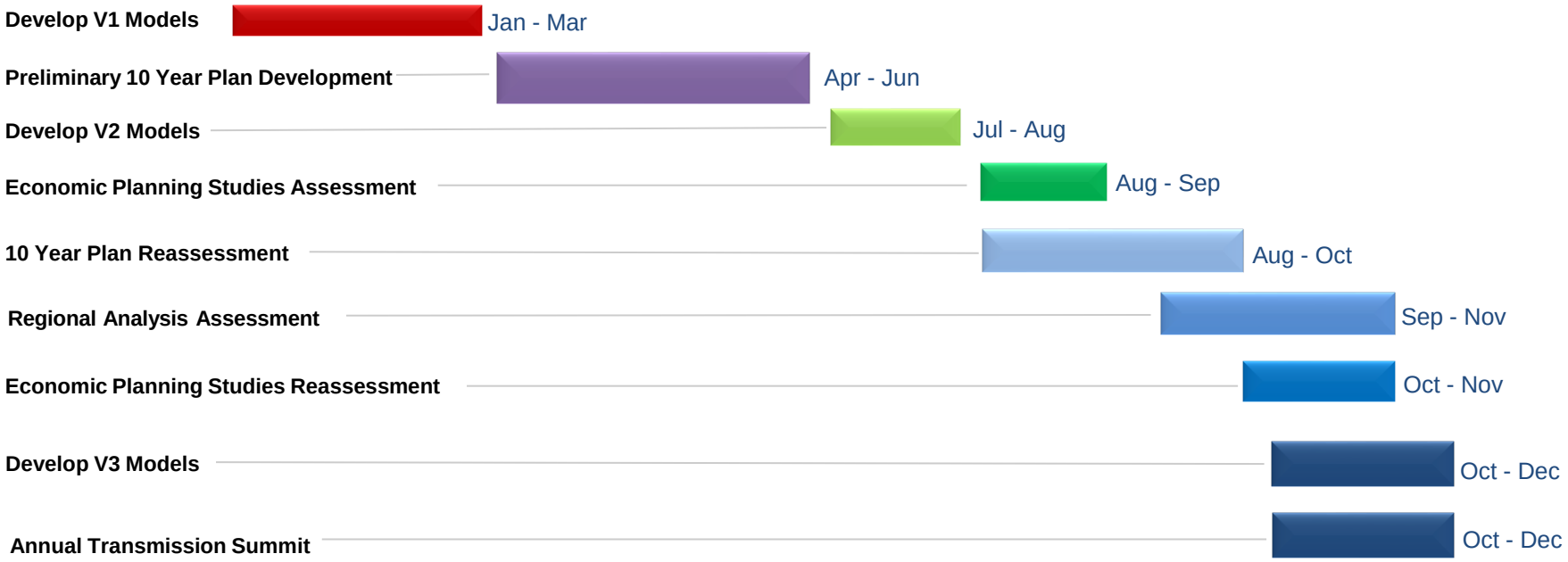
Regional Transmission Expansion Plan Process

Southeastern Regional TRANSMISSION PLANNING

2022 SERTP

10 Year SERTP Regional Transmission Expansion Plan Process



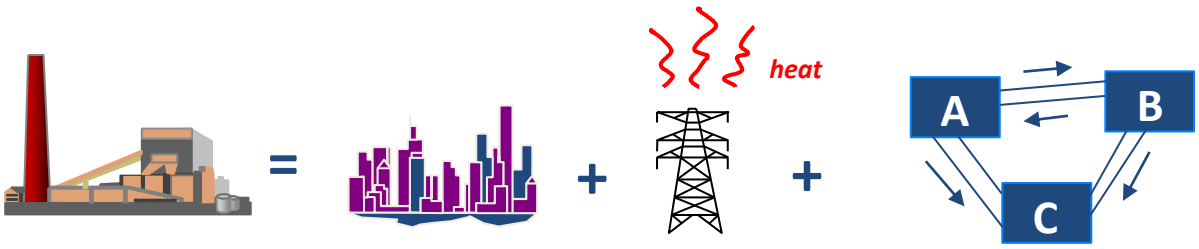


SERTP

Regional Model Assumptions

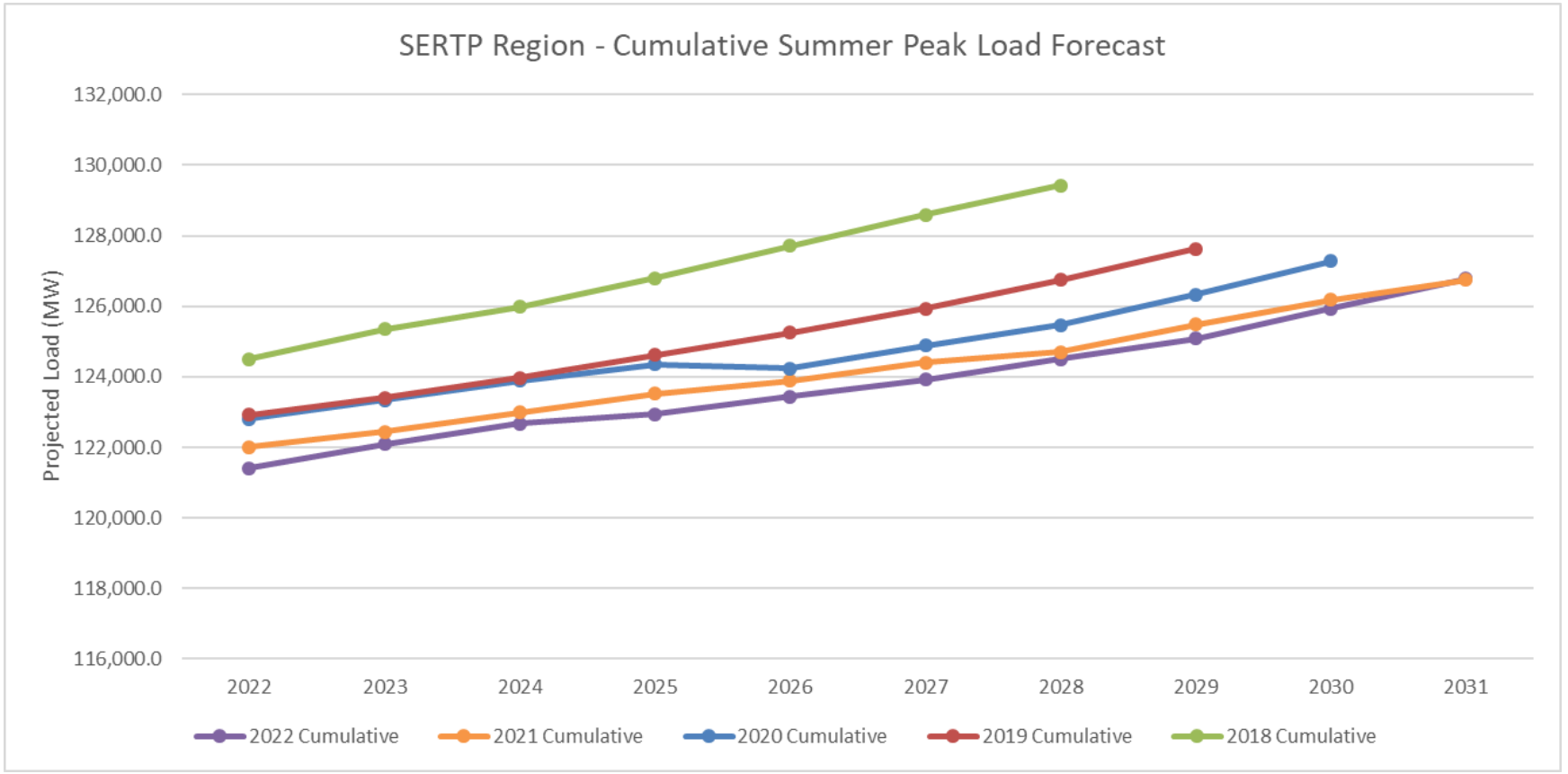
Regional Model Assumptions

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

Southeastern Regional Transmission Planning (SERTP)

PRELIMINARY 10 YEAR TRANSMISSION EXPANSION PLANS:

AECI

Duke Energy Carolinas

Duke Energy Progress

LG&E/KU

PowerSouth

SBAA

Gulf Power

TVA

Preliminary Transmission Expansion Plan

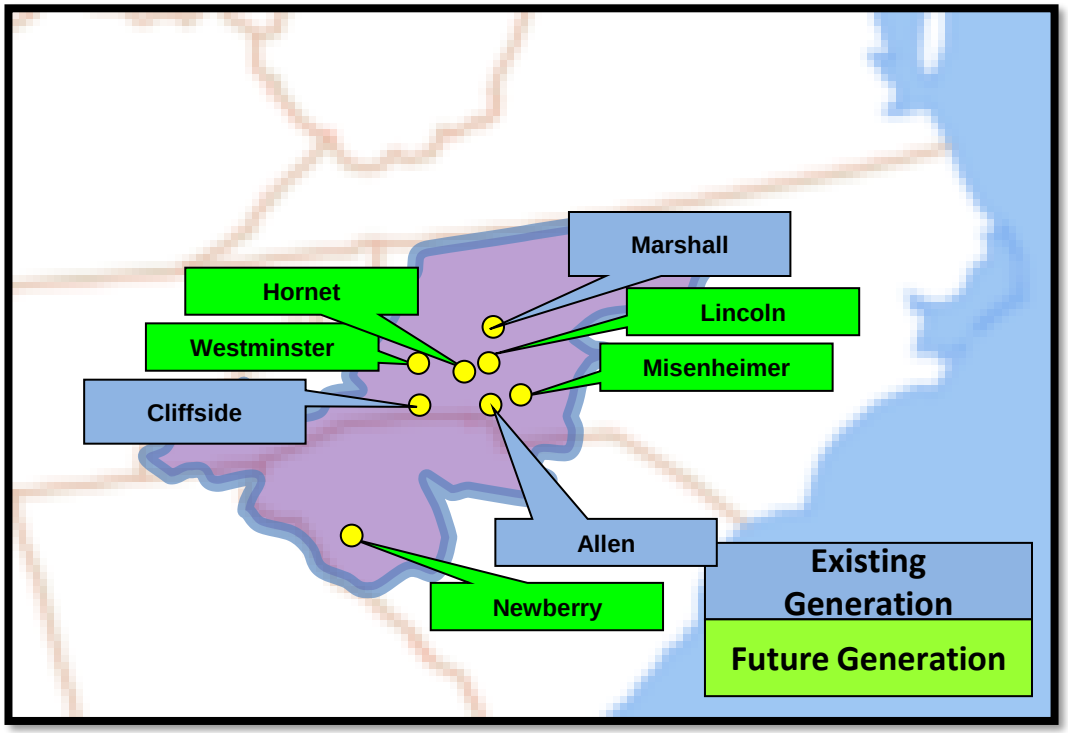
The projects described in this presentation represent the preliminary ten (10) year transmission expansion plan. The transmission expansion plan is periodically reviewed and may be revised due to changes in assumptions. This presentation does not represent a commitment to build for projects listed in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

DUKE ENERGY CAROLINAS Balancing Authority Area

Generation Assumptions

DUKE ENERGY CAROLINAS – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2020 SERTP Process.



Southeastern Regional
TRANSMISSION PLANNING

DUKE CAROLINAS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Allen 1	COAL	158	0	--	--	--	--	--	--	--	--
Allen 5	COAL	253	0	--	--	--	--	--	--	--	--
Cliffside 5	COAL	574	574	574	0	--	--	--	--	--	--
Marshall 1	COAL	388	388	388	388	388	388	0	--	--	--
Marshall 2	COAL	392	392	392	392	392	392	0	--	--	--
Misenheimer	PV	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4
Westminster	PV	75	75	75	75	75	75	75	75	75	75
Hornet	PV	--	74	74	74	74	74	74	74	74	74
Newberry	PV	--	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5
Lincoln 17	GAS	--	402	402	402	402	402	402	402	402	402

Southeastern Regional
TRANSMISSION PLANNING

DUKE ENERGY CAROLINAS – 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	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Cleveland	195	195	195	195	196	196	196	196	196	196
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

DUKE ENERGY CAROLINAS Balancing Authority Area

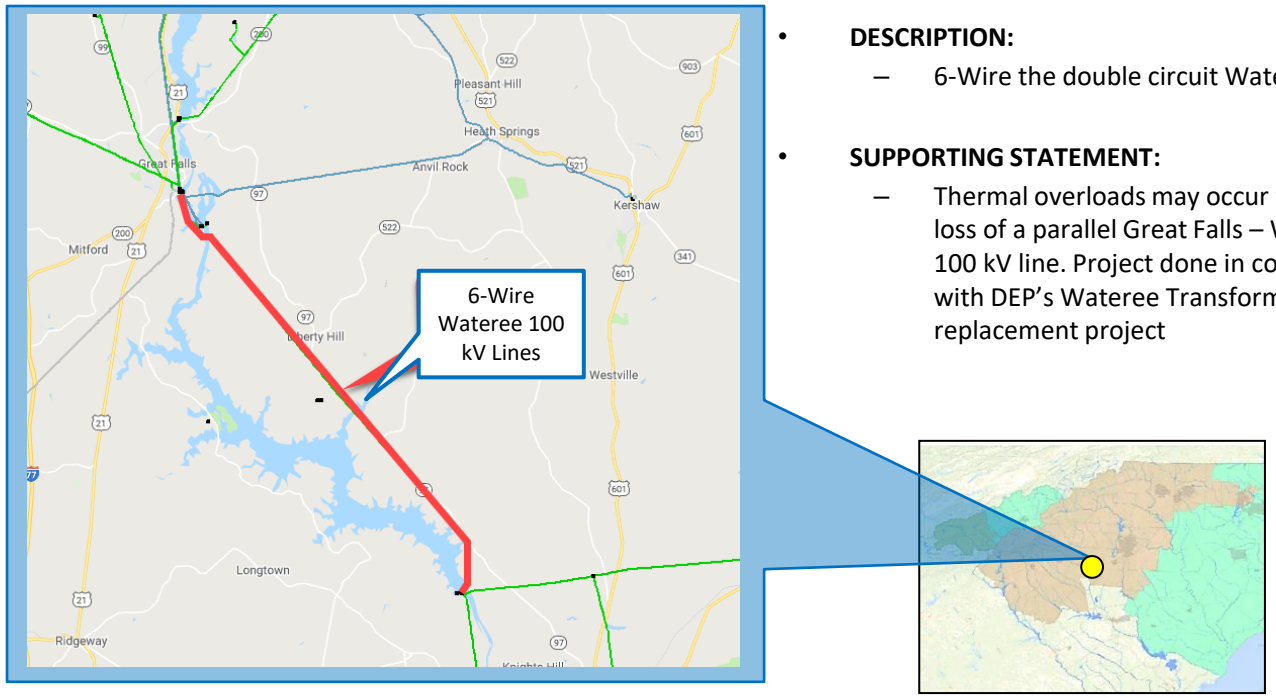
Preliminary Transmission Expansion Plan

Southeastern Regional
TRANSMISSION PLANNING

DUKE ENERGY CAROLINAS - 1

WATEREE LINE 6-WIRE

- **2023**

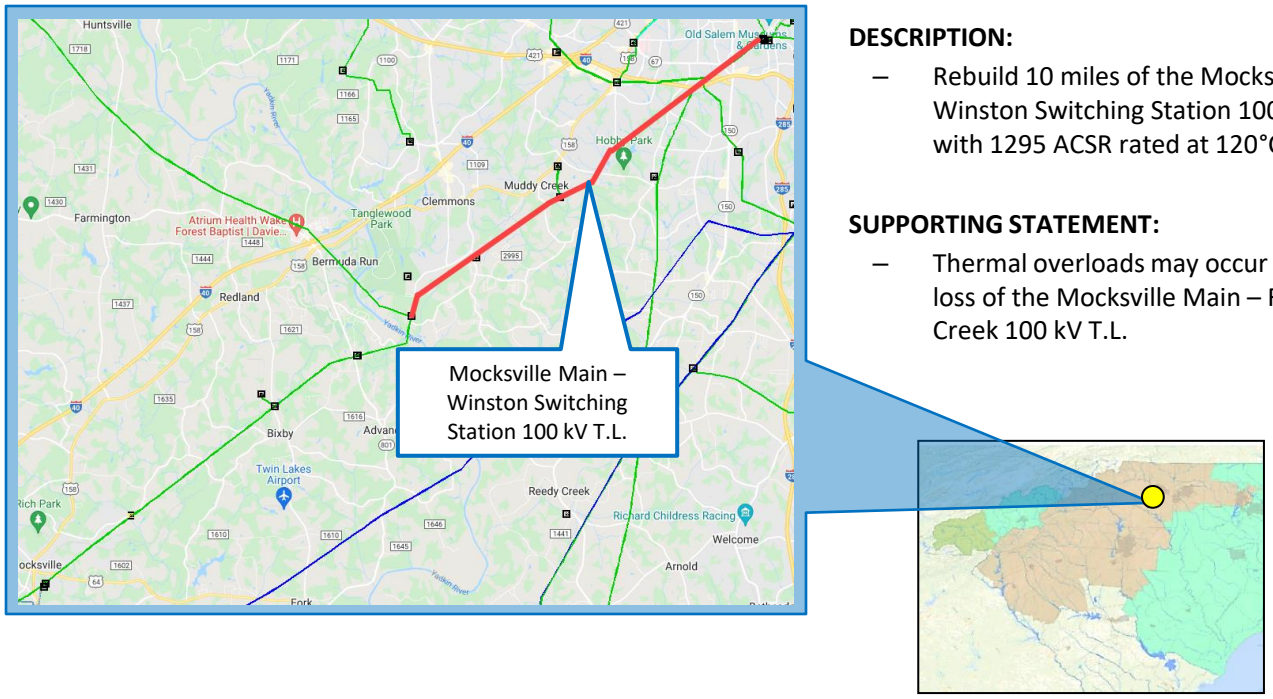


- **DESCRIPTION:**
  - 6-Wire the double circuit Wateree Line
- **SUPPORTING STATEMENT:**
  - Thermal overloads may occur with the loss of a parallel Great Falls – Wateree 100 kV line. Project done in conjunction with DEP's Wateree Transformer replacement project

DUKE ENERGY CAROLINAS - 2

MOCKSVILLE MAIN – WINSTON SWITCHING STATION 100 KV TRANSMISSION LINE

- **2023**



DESCRIPTION:

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

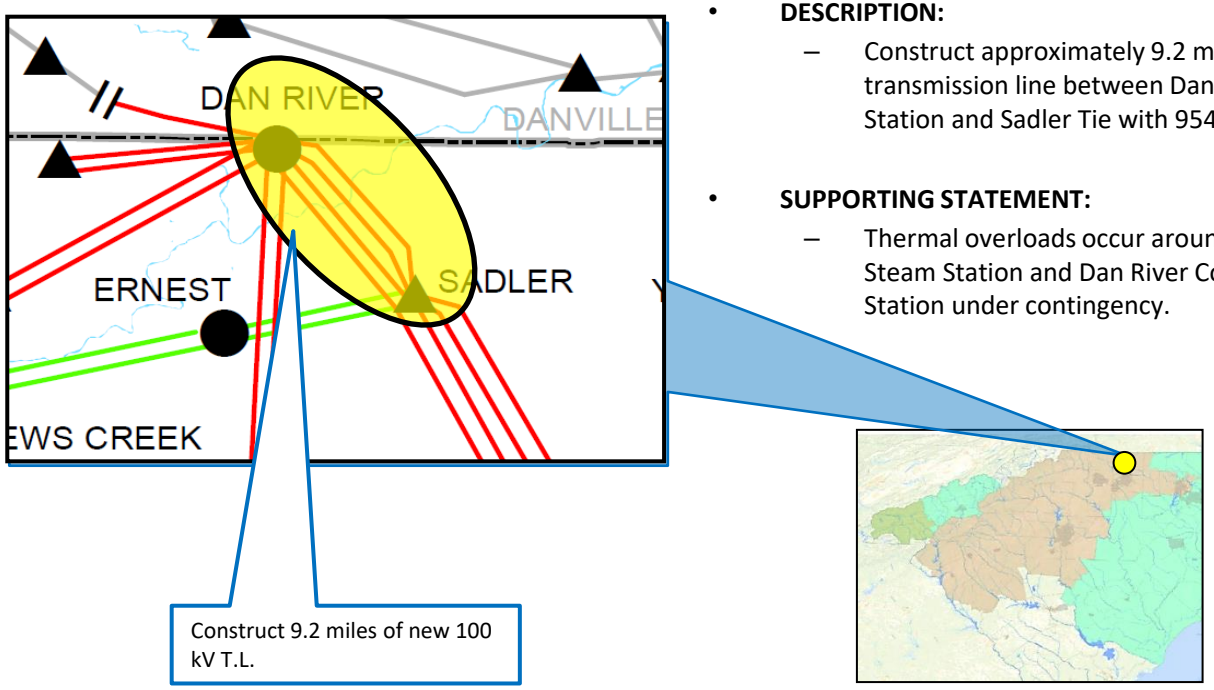
SUPPORTING STATEMENT:

– Thermal overloads may occur with the loss of the Mocksville Main – Fourth Creek 100 kV T.L.

DUKE ENERGY CAROLINAS - 3

SADLER TIE – DAN RIVER 100 KV TRANSMISSION LINE

- **2024**

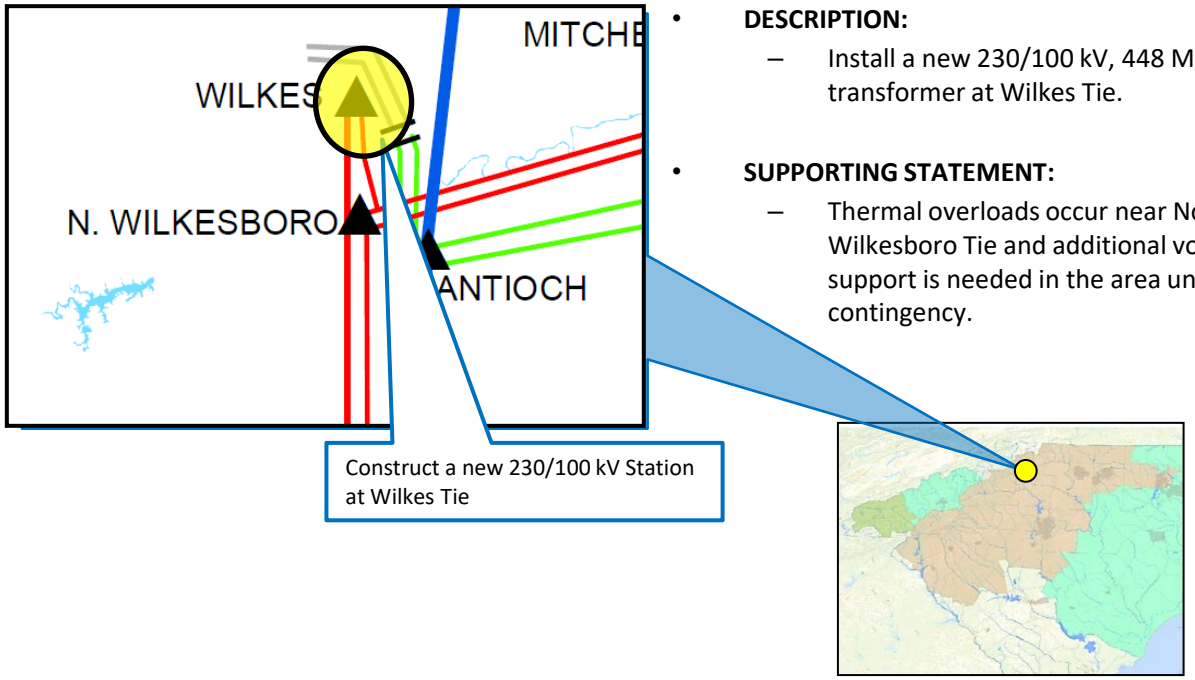


- **DESCRIPTION:**
  - Construct approximately 9.2 miles of new 100 kV transmission line between Dan River Steam Station and Sadler Tie with 954 AAC at 120°C.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur around Dan River Steam Station and Dan River Combined Cycle Station under contingency.

DUKE ENERGY CAROLINAS - 4

WILKES TIE 230 KV SUBSTATION

- **2024**

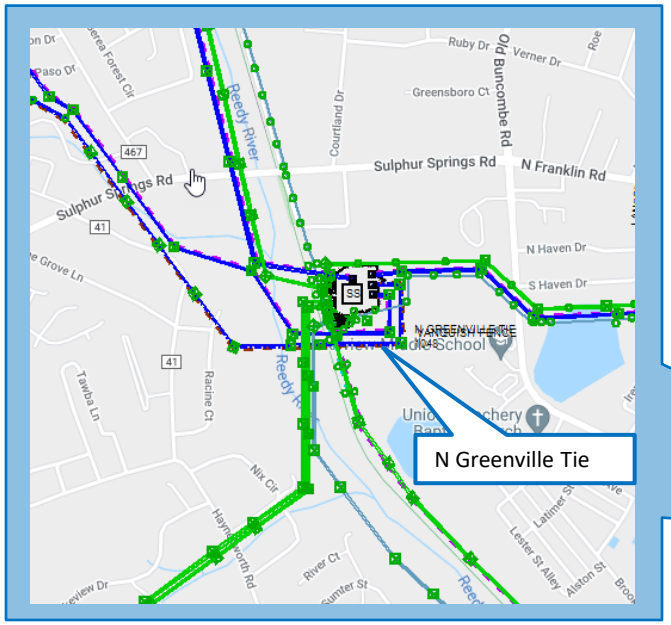


- **DESCRIPTION:**
  - Install a new 230/100 kV, 448 MVA transformer at Wilkes Tie.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur near North Wilkesboro Tie and additional voltage support is needed in the area under contingency.

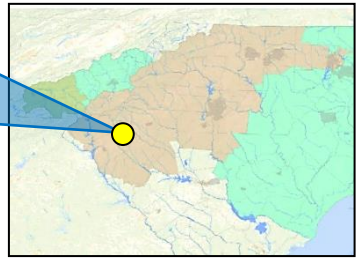
DUKE ENERGY CAROLINAS - 5

NORTH GREENVILLE TIE 230 KV SUBSTATION

- **2025**



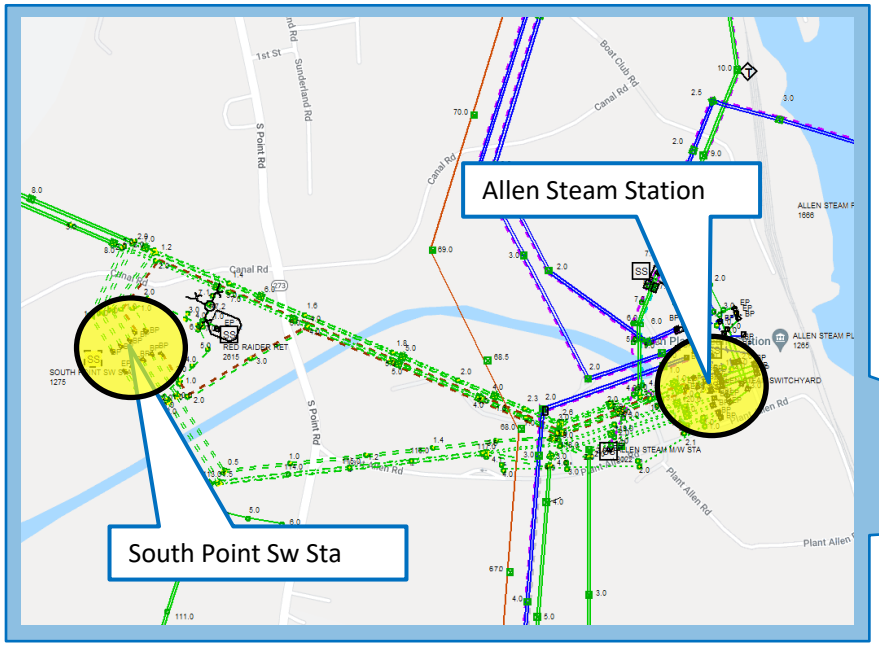
- **DESCRIPTION:**
  - Replace Bank 1 with a new 230/100/44 kV, 448 MVA transformer at N Greenville Tie.
- **SUPPORTING STATEMENT:**
  - Loss of parallel banks can cause the existing bank 1 to overload



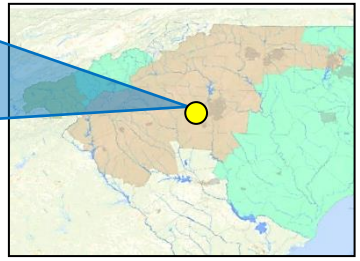
DUKE ENERGY CAROLINAS - 6

ALLEN STEAM STATION AUTOBANK REPLACEMENT / SOUTHPOINT SWITCHING STATION

- **2023 / 2025**



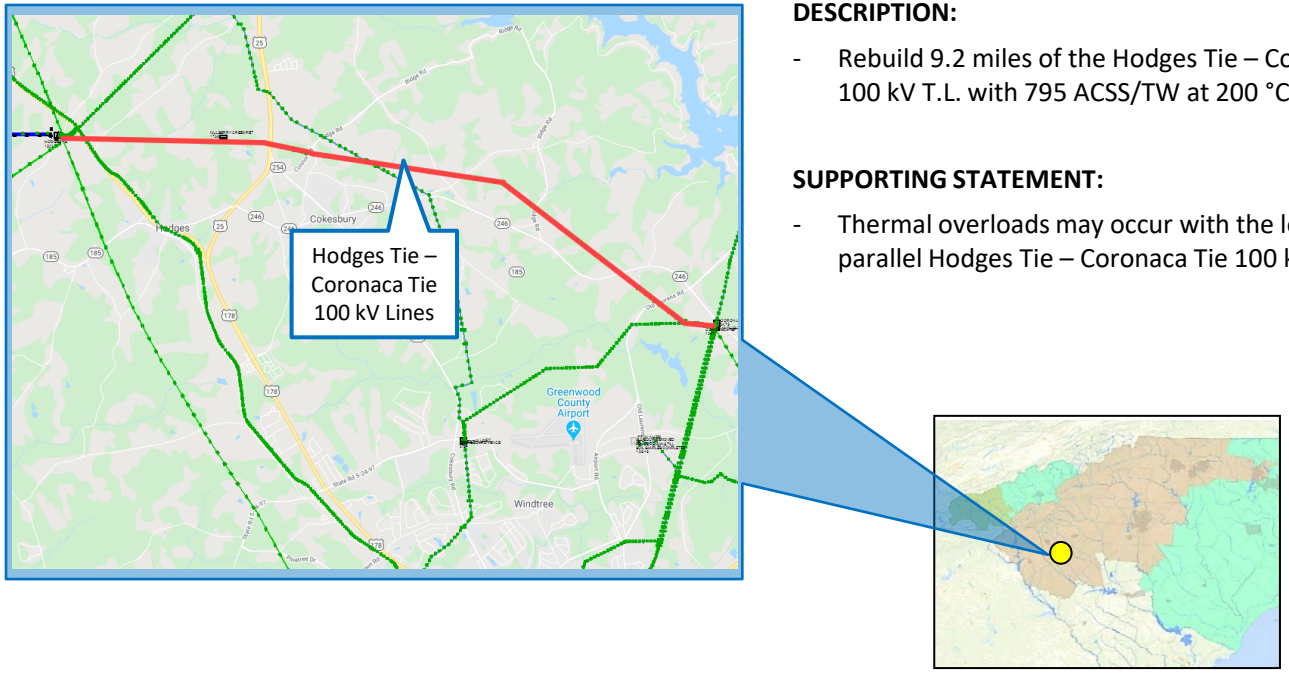
- **DESCRIPTION:**
  - Replace both 230/100/44 kV autobanks at Allen Steam and construct new Southpoint Switching Station
- **SUPPORTING STATEMENT:**
  - Loss of one bank can overload the remaining bank



DUKE ENERGY CAROLINAS - 7

HODGES TIE – CORONACA TIE 100 KV TRANSMISSION LINE

- **2026**



DESCRIPTION:

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

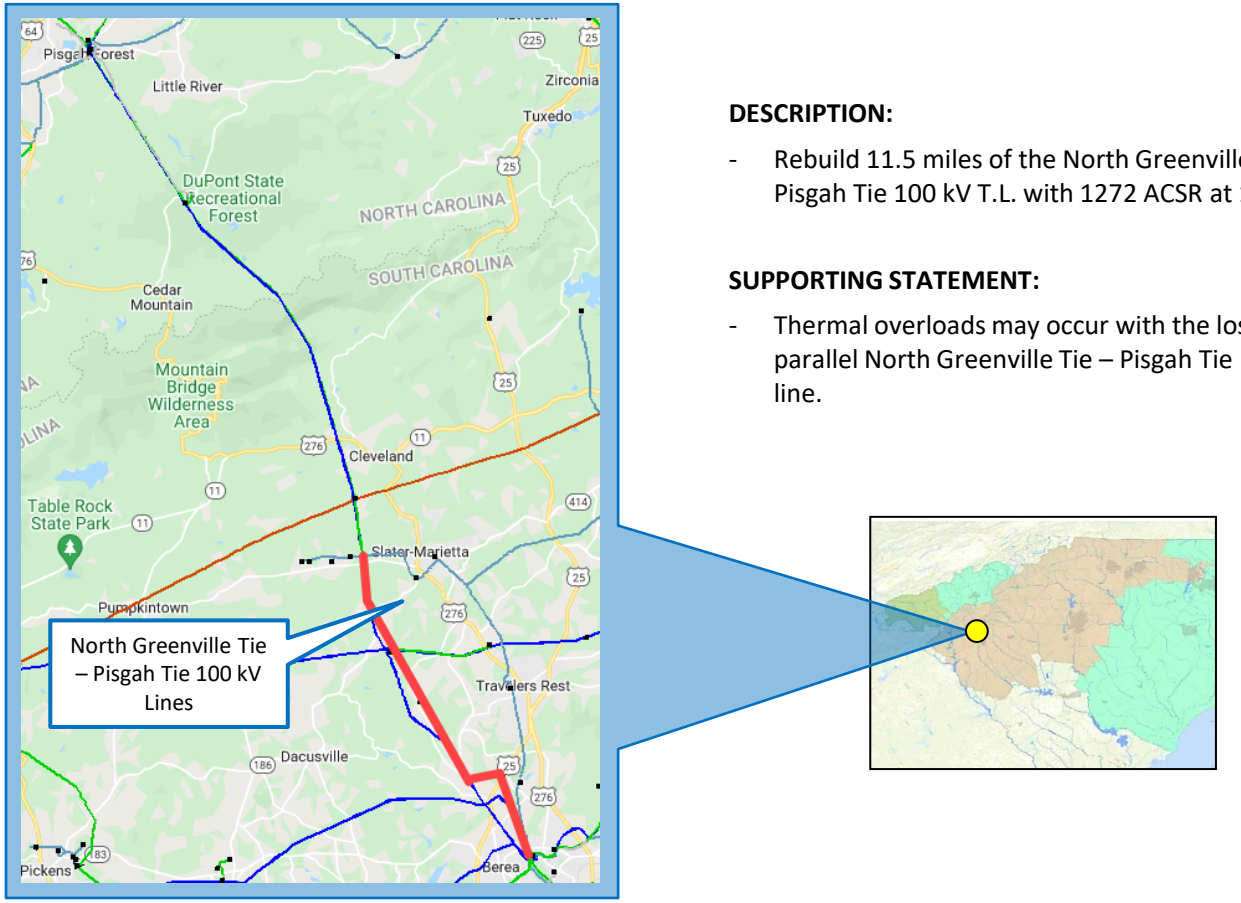
SUPPORTING STATEMENT:

- Thermal overloads may occur with the loss of a parallel Hodges Tie – Coronaca Tie 100 kV line.

DUKE ENERGY CAROLINAS - 8

NORTH GREENVILLE TIE - PISGAH TIE 100 KV TRANSMISSION LINE

- **2026**



DESCRIPTION:

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

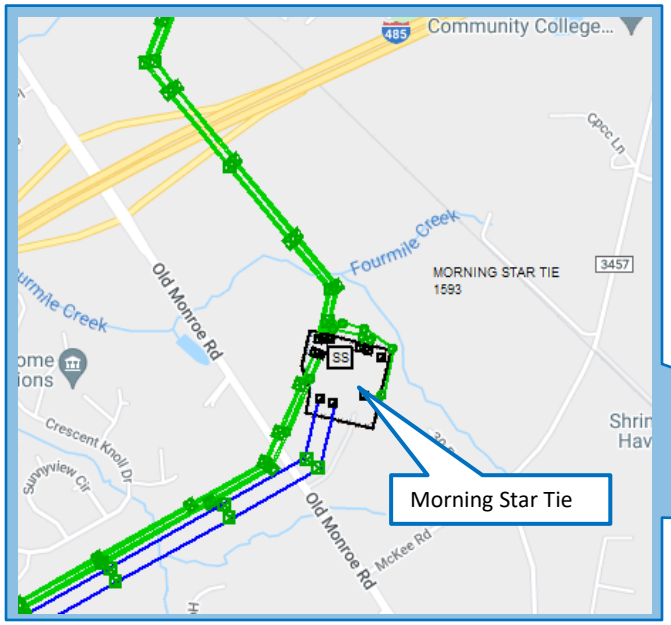
SUPPORTING STATEMENT:

- Thermal overloads may occur with the loss of a parallel North Greenville Tie – Pisgah Tie 100 kV line.

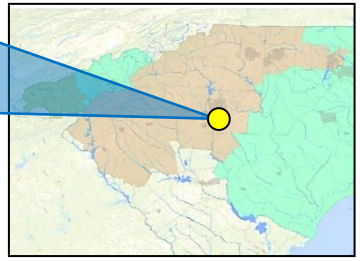
DUKE ENERGY CAROLINAS - 9

MORNING STAR TIE 230 KV SUBSTATION

- **2027**



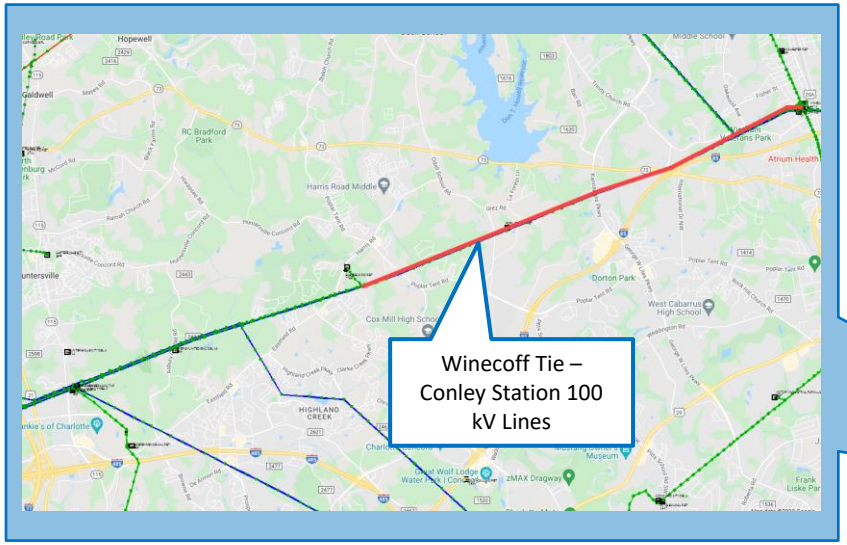
- **DESCRIPTION:**
  - Replace all three autobanks with new 230/100 kV 448 MVA banks and expand the 230 kV into a Breaker and a Half
- **SUPPORTING STATEMENT:**
  - Loss of parallel banks can cause the remaining banks to overload. Future Sandy Ridge Wh will require expansion of the 230 kV



DUKE ENERGY CAROLINAS - 10

WINECOFF TIE TO CONLEY SWITCHING STATION 100 KV TRANSMISSION LINE

- **2027**

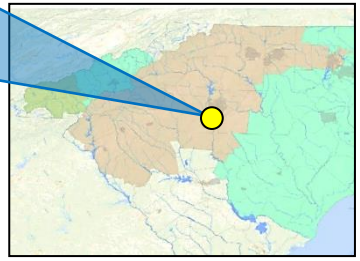


DESCRIPTION:

- Rebuild 7.89 miles of the Winecoff Tie – Conley Switching Station 100 kV T.L. with 1272 ACSR at 120 °C

SUPPORTING STATEMENT:

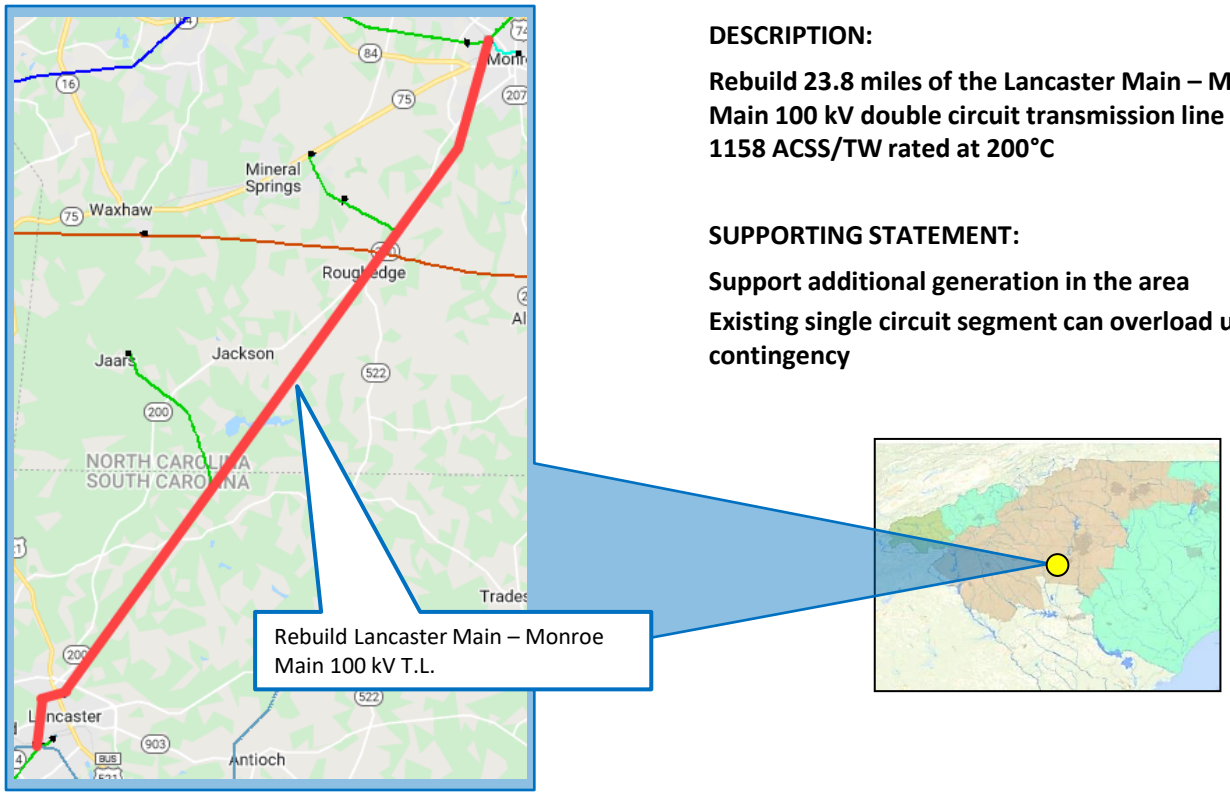
- Thermal overloads may occur with the loss of a Stonewater Tie – Conley Switching Station 100 kV T.L..



DUKE ENERGY CAROLINAS - 11

LANCASTER MAIN – MONROE MAIN 100 kV TRANSMISSION LINE

- **2027**



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:

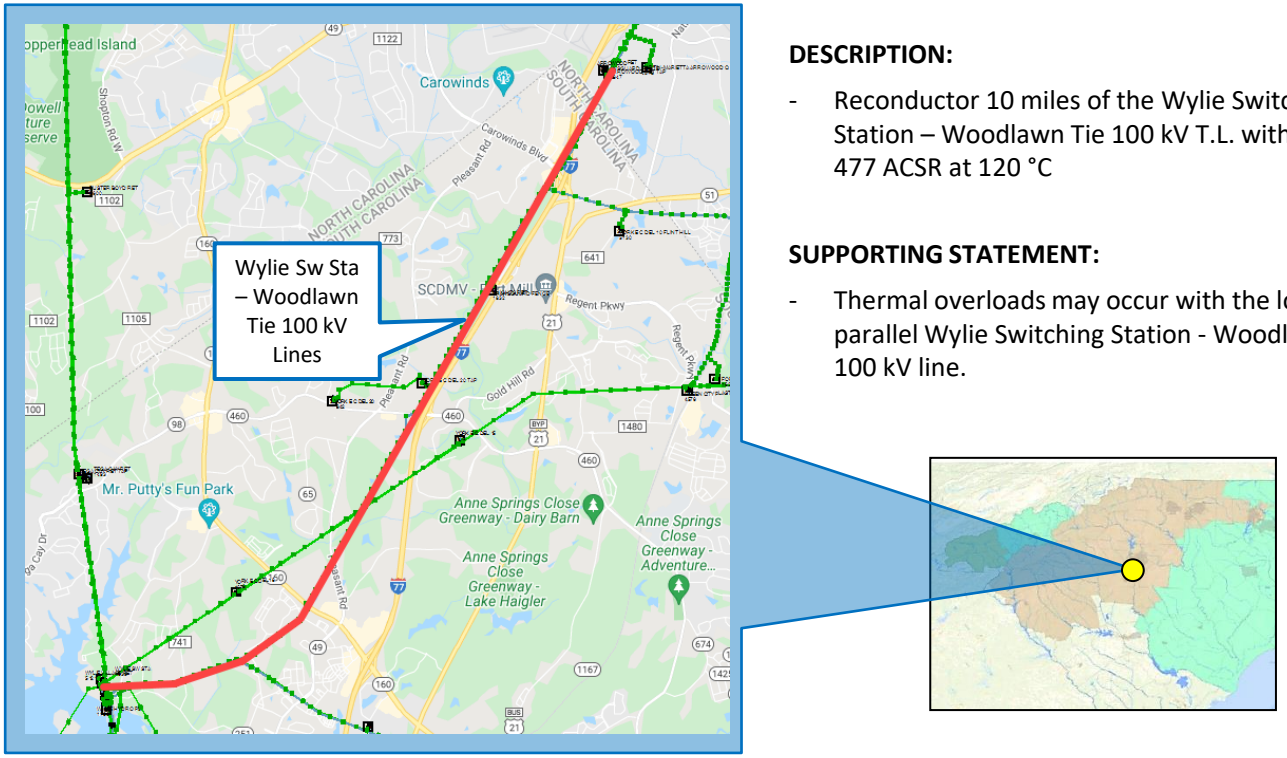
Support additional generation in the area

Existing single circuit segment can overload under contingency

DUKE ENERGY CAROLINAS - 12

WYLIE SWITCHING STATION – WOODLAWN TIE 100 KV TRANSMISSION LINE

- **2028**



DESCRIPTION:

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

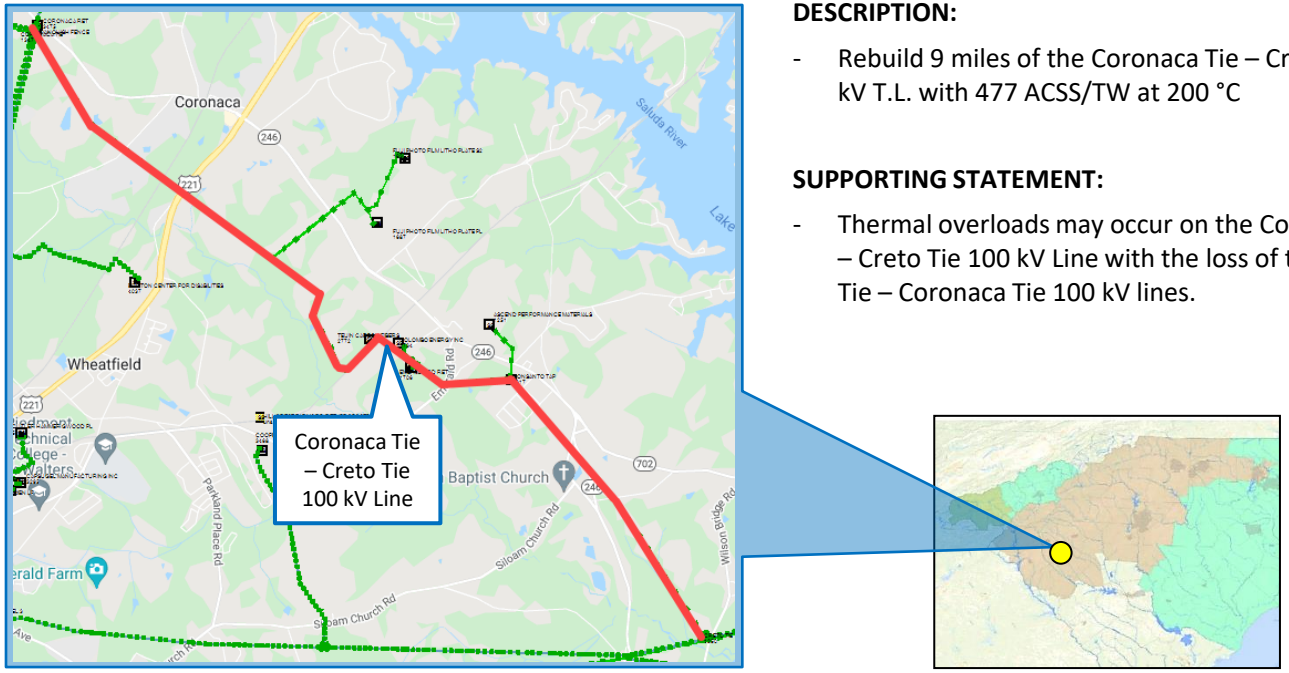
SUPPORTING STATEMENT:

- Thermal overloads may occur with the loss of a parallel Wylie Switching Station - Woodlawn Tie 100 kV line.

DUKE ENERGY CAROLINAS - 13

CORONACA TIE – CRETO TIE 100 KV TRANSMISSION LINE

- **2029**



DESCRIPTION:

- Rebuild 9 miles of the Coronaca Tie – Creto Tie 100 kV T.L. with 477 ACSS/TW at 200 °C

SUPPORTING STATEMENT:

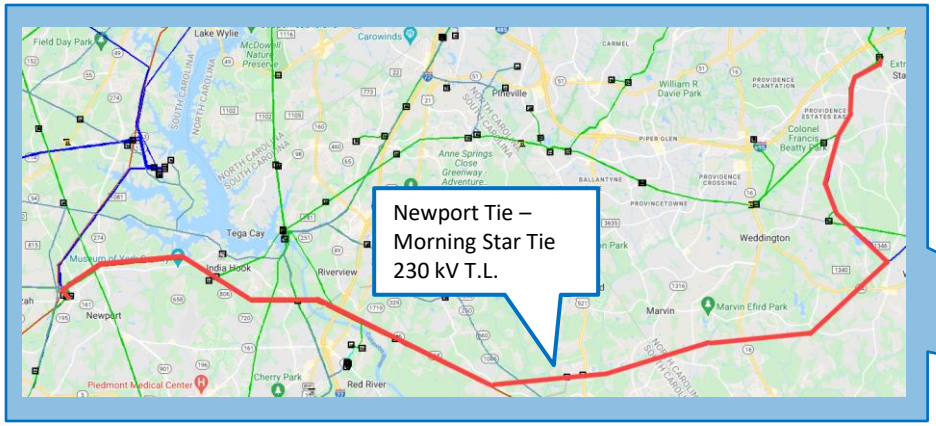
- Thermal overloads may occur on the Coronaca Tie – Creto Tie 100 kV Line with the loss of the Hodges Tie – Coronaca Tie 100 kV lines.

Southeastern Regional TRANSMISSION PLANNING

DUKE ENERGY CAROLINAS - 14

NEWPORT TIE – MORNING STAR TIE 230 KV TRANSMISSION LINE

- **2029**

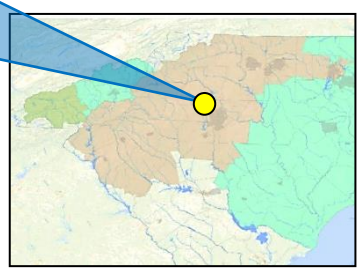


DESCRIPTION:

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.



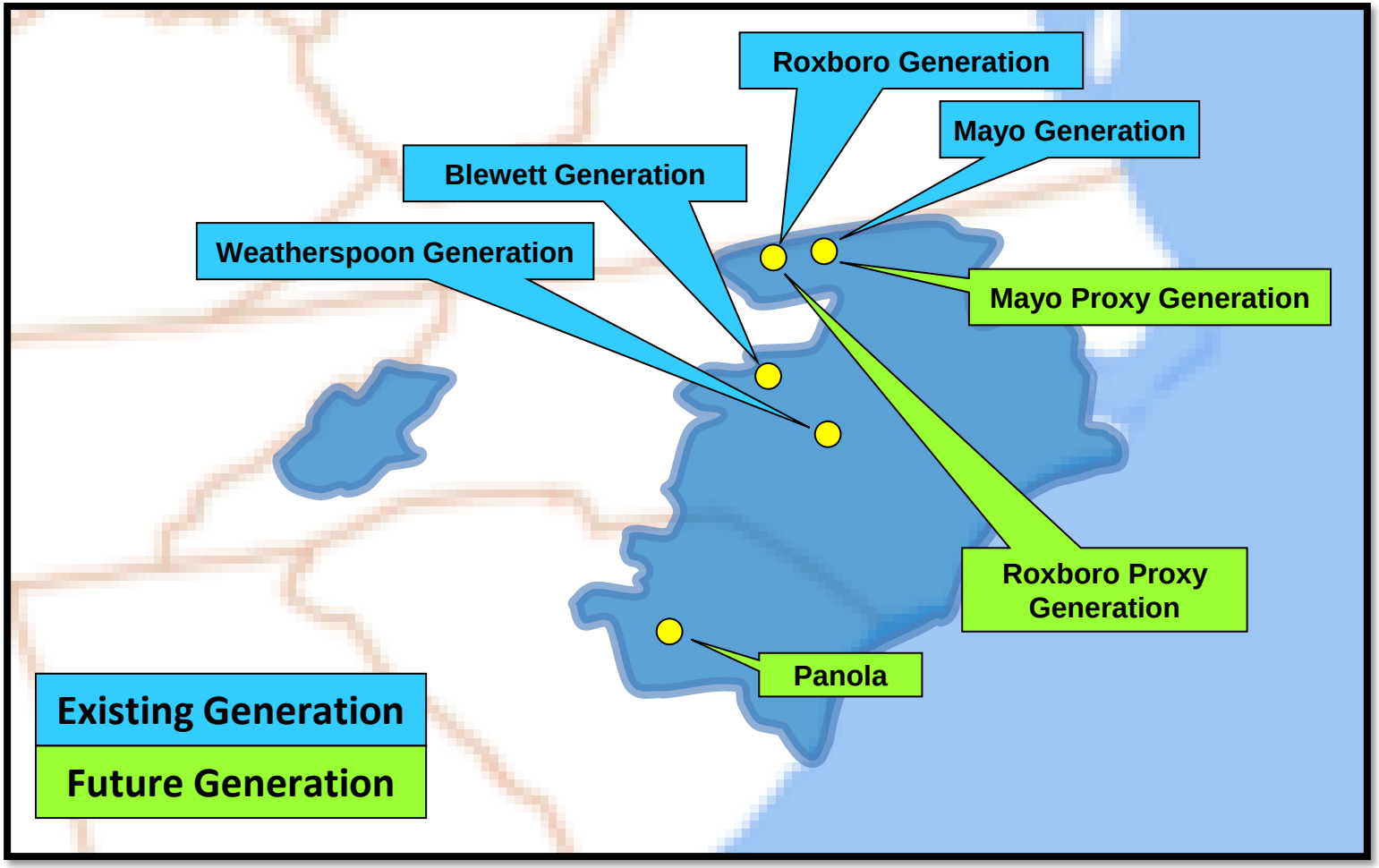
DUKE ENERGY PROGRESS EAST/WEST

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 2022 SERTP Process.



DUKE ENERGY PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BLEWETT IC #1	OIL	13	13	0	--	--	--	--	--	--	--
BLEWETT IC #2	OIL	13	13	0	--	--	--	--	--	--	--
BLEWETT IC #3	OIL	13	13	0	--	--	--	--	--	--	--
BLEWETT IC #4	OIL	13	13	0	--	--	--	--	--	--	--
WEATHERSPOON IC #1	GAS/OIL	32	32	0	--	--	--	--	--	--	--
WEATHERSPOON IC #2	GAS/OIL	32	32	0	--	--	--	--	--	--	--
WEATHERSPOON IC #3	GAS/OIL	33	33	0	--	--	--	--	--	--	--
WEATHERSPOON IC #4	GAS/OIL	31	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 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ROXBORO #1 COAL	COAL	379	379	379	379	379	379	0	--	--	--
ROXBORO #2 COAL	COAL	665	665	665	665	665	665	0	--	--	--
ROXBORO #3 COAL	COAL	691	691	691	691	691	0	--	--	--	--
ROXBORO #4 COAL	COAL	698	698	698	698	698	0	--	--	--	--
MAYO COAL	COAL	727	727	727	727	727	727	0	--	--	--
PANOLA PV	PV	67	67	67	67	67	67	67	67	67	67
ROXBORO PROXY #1	--	--	--	--	--	--	1350	1350	1350	1350	1350
ROXBORO PROXY #2	--	--	--	--	--	--	--	1350	1350	1350	1350
MAYO PROXY	--	--	--	--	--	--	--	602	602	602	602

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	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
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

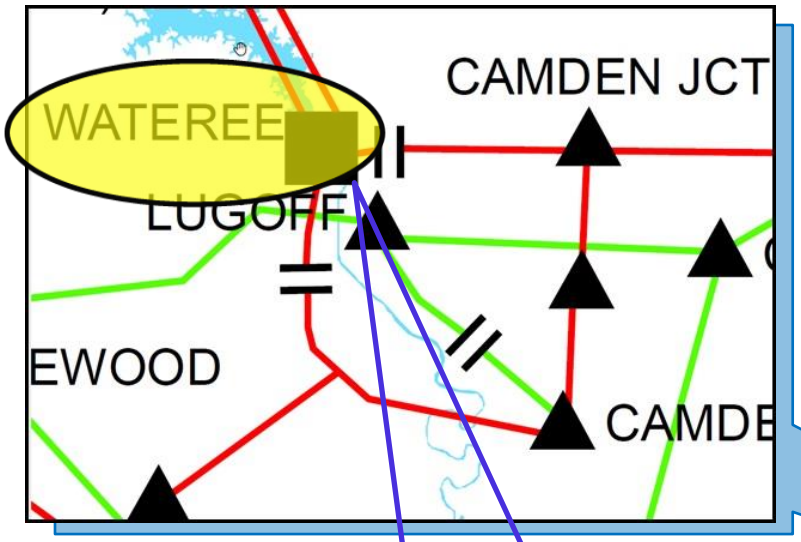
Balancing Authority Area

Preliminary Transmission Expansion Plan

DUKE ENERGY PROGRESS EAST – 1

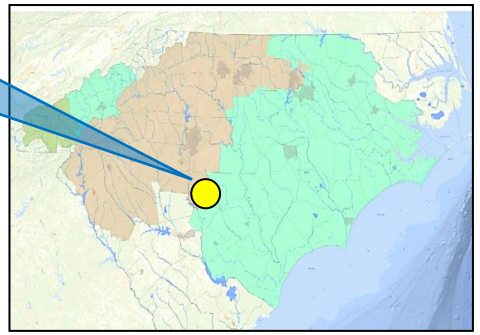
- **2023**

WATEREE HYDRO PLANT – REPLACE 115/100 KV TRANSFORMERS



REPLACE EXISTING 150 MVA, 115/100 KV TRANSFORMER BANK WITH TWO 168 MVA, 115/100 KV TRANSFORMERS

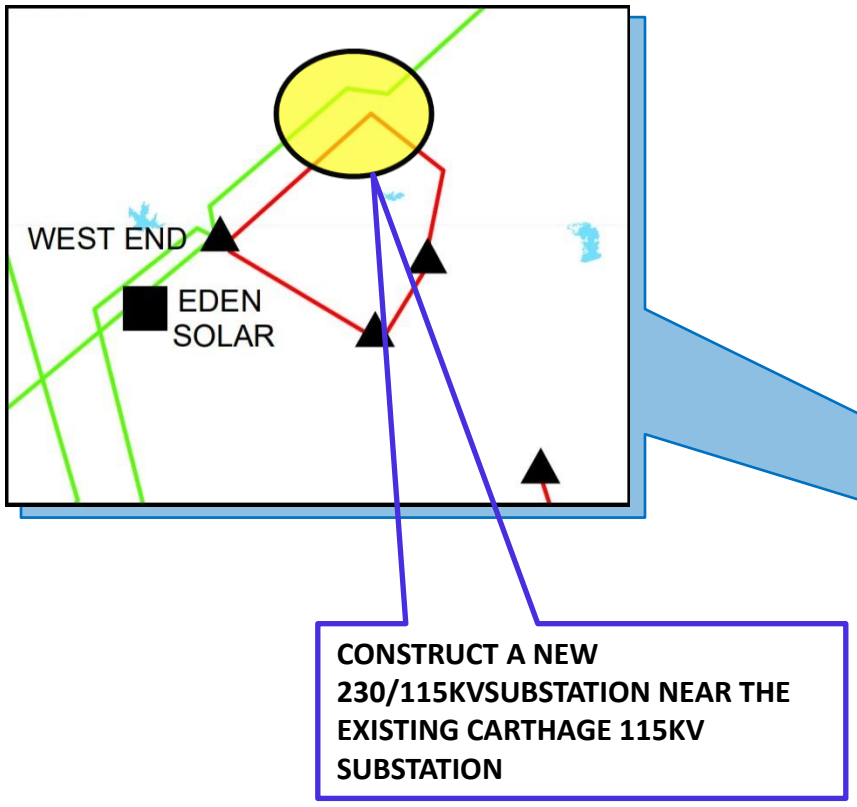
- **DESCRIPTION:**
  - Replace existing 150 MVA, 115/100 kV transformer bank with two 168 MVA, 115/100 kV transformers. Project to be done in conjunction with Duke Energy Carolinas' Wateree Line 6-wire project.
- **SUPPORTING STATEMENT:**
  - The existing Wateree transformer bank overloads under contingency.



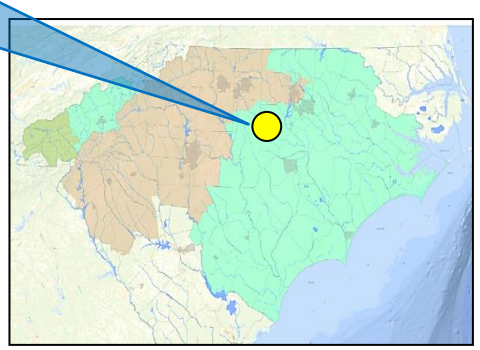
DUKE ENERGY PROGRESS EAST – 2

- **2025**

CARTHAGE 230/115 KV SUBSTATION – CONSTRUCT



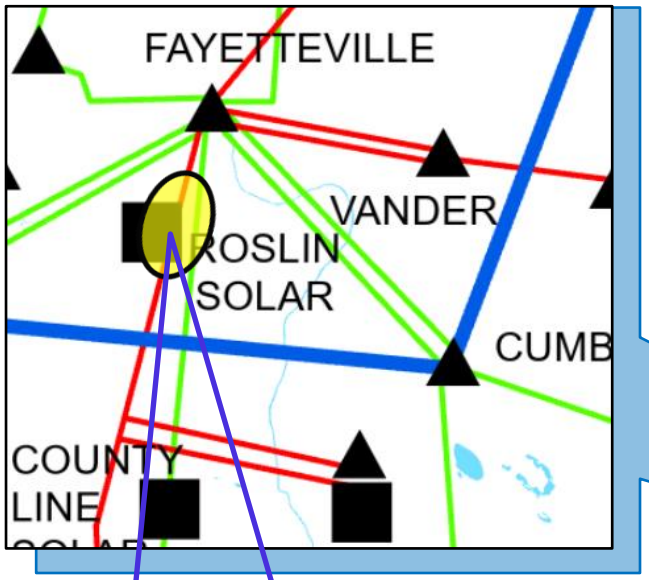
- **DESCRIPTION:**
  - Construct a new 230/115kV substation near the existing Carthage 115kV substation. Loop in the existing Cape Fear – West End 230kV line and West End – Southern Pines 115kV feeder.
- **SUPPORTING STATEMENT:**
  - Outage of one West End transformer overloads the other and voltage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



DUKE ENERGY PROGRESS EAST – 3

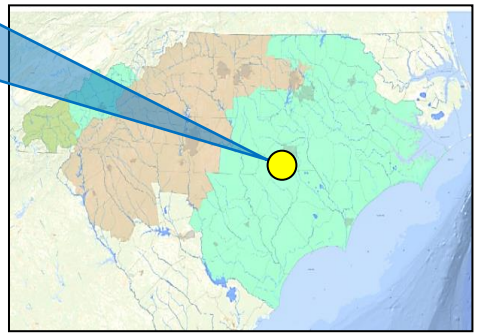
- **2025**

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



RECONDUCTOR HOPE MILLS CHURCH STREET – ROSLIN SOLAR SECTION WITH 3-1590 MCM ACSR OR EQUIVALENT

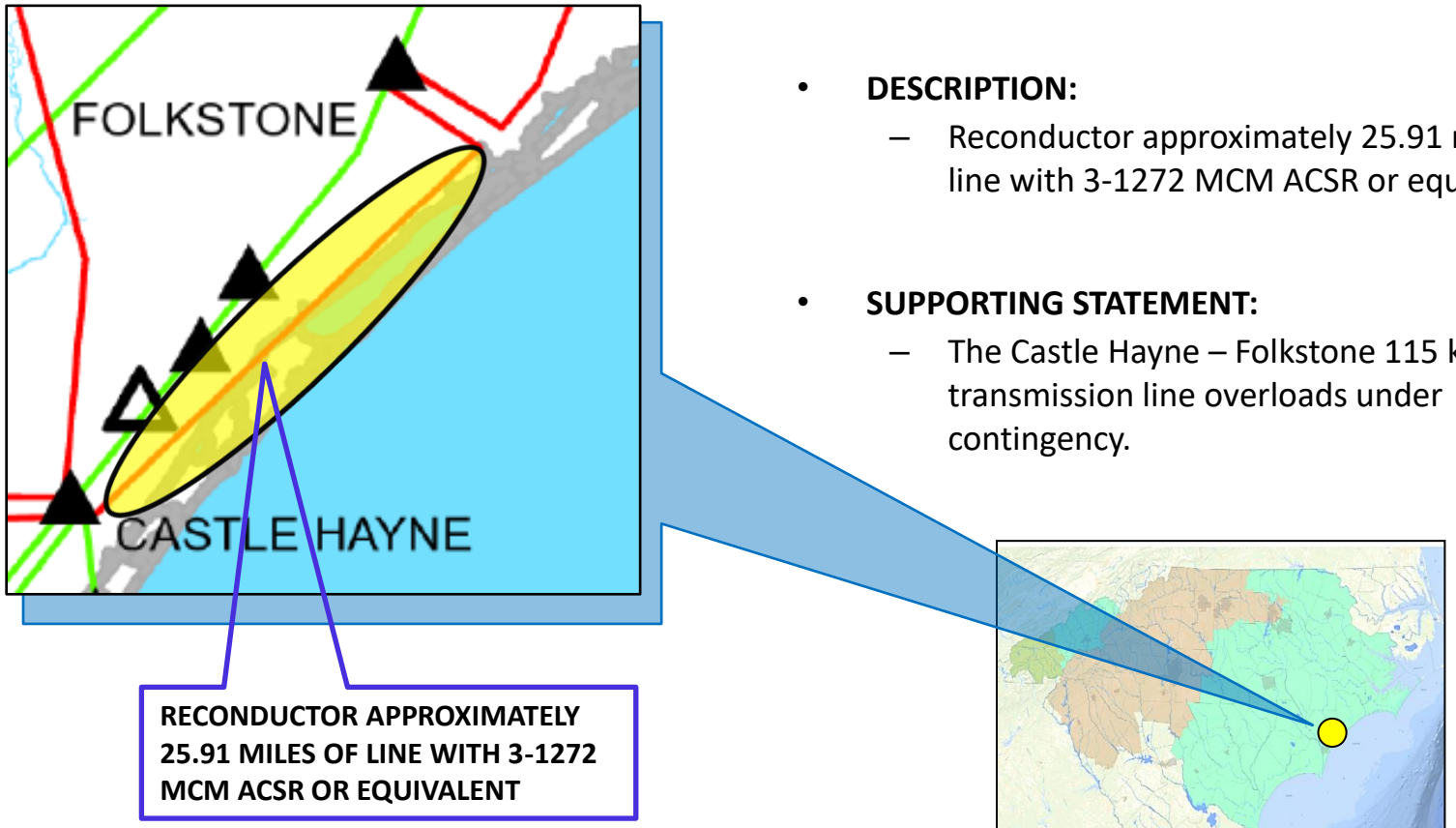
- **DESCRIPTION:**
  - Reconductor approximately 3.0 miles Hope Mills Church Street – Roslin Solar section of the Fayetteville – Fayetteville Dupont SS 115kV Line with 3-1590 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - Outage of the Weatherspoon-Fayetteville 230kV line causes overload of this line section.



DUKE ENERGY PROGRESS EAST – 4

- **2026**

CASTLE HAYNE - FOLKSTONE 115 KV TRANSMISSION LINE – RECONDUCTOR

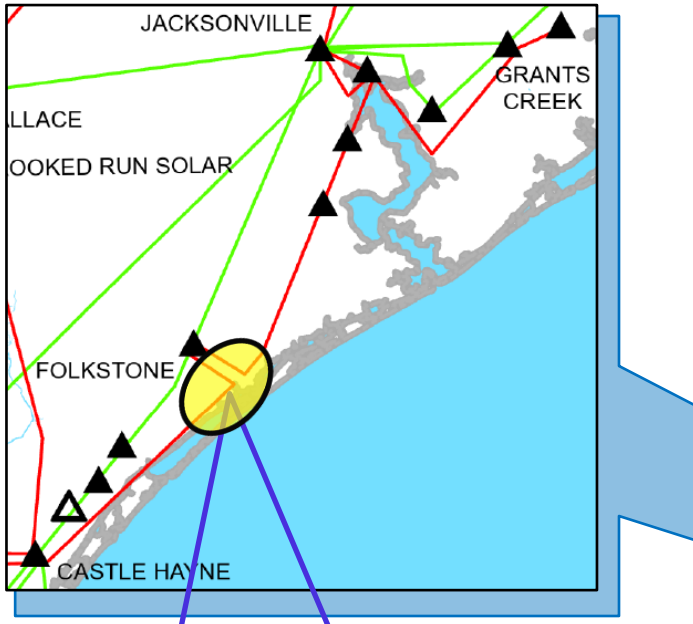


- **DESCRIPTION:**
  - Reconductor approximately 25.91 miles of line with 3-1272 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - The Castle Hayne – Folkstone 115 kV transmission line overloads under contingency.

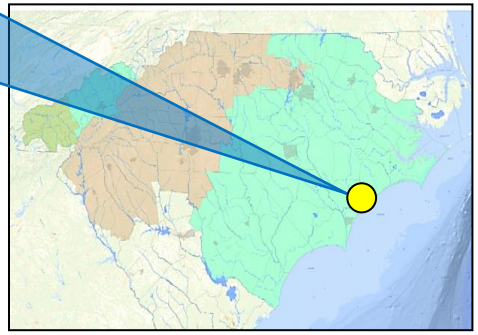
DUKE ENERGY PROGRESS EAST – 5

- **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 WEST

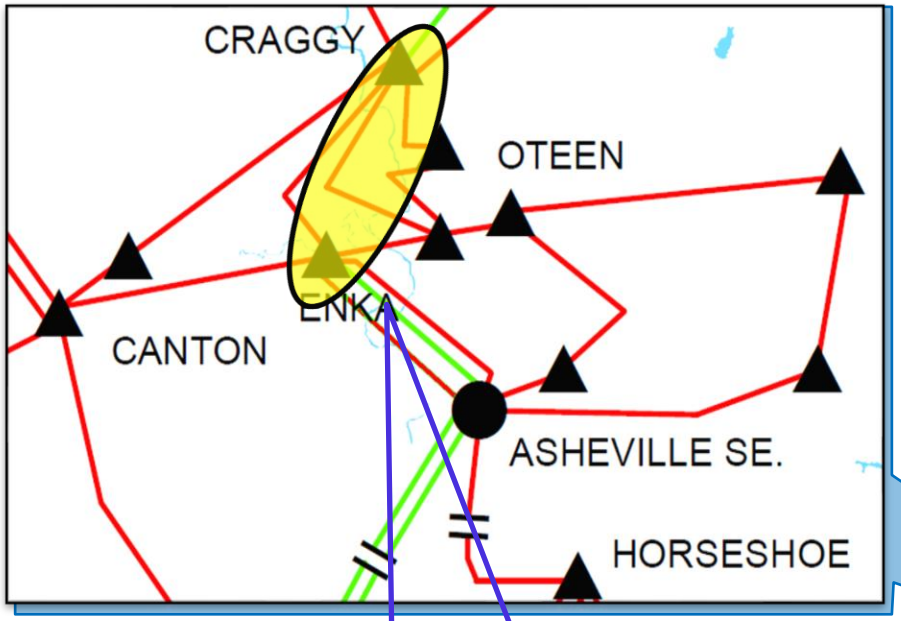
Balancing Authority Area

Preliminary Transmission Expansion Plan

DUKE ENERGY PROGRESS WEST – 1

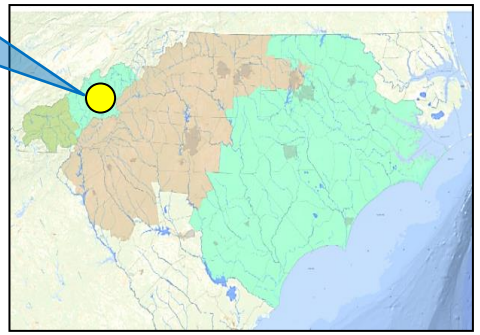
- **2025**

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

Southeastern Regional
TRANSMISSION PLANNING

LG&E/KU – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Zorn	Gas	0	0	0	0	0	0	0	0	0	0
Ashwood	Solar	0	86	86	86	86	86	86	86	86	86
Rhudes Creek	Solar	100	100	100	100	100	100	100	100	100	100

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	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

LG&E/KU Balancing Authority Area

Preliminary Transmission Expansion Plan

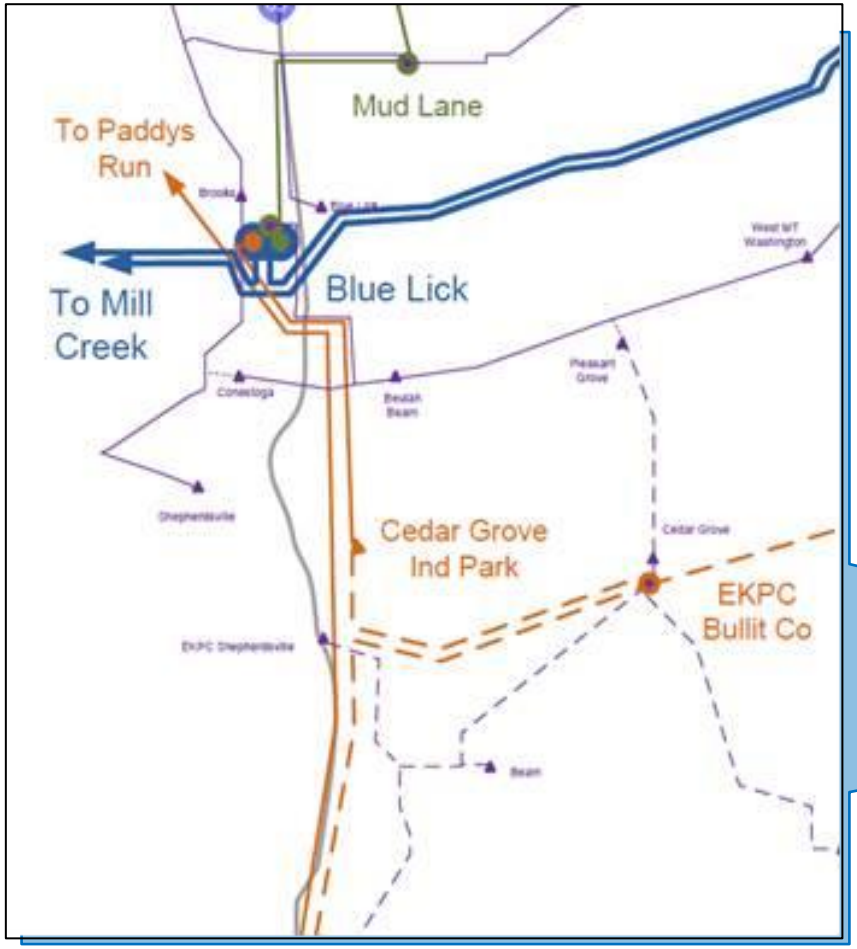
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

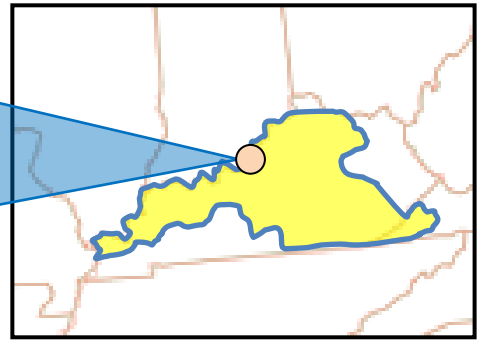
LG&E/KU - 1

- **2024**

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.



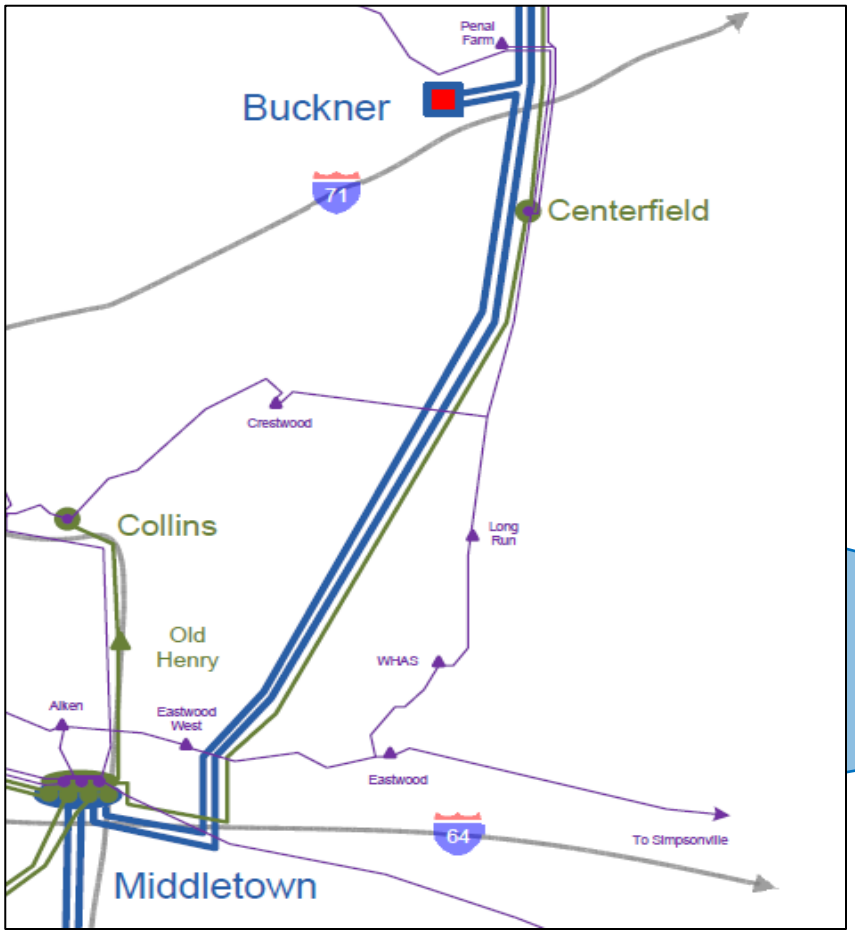
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

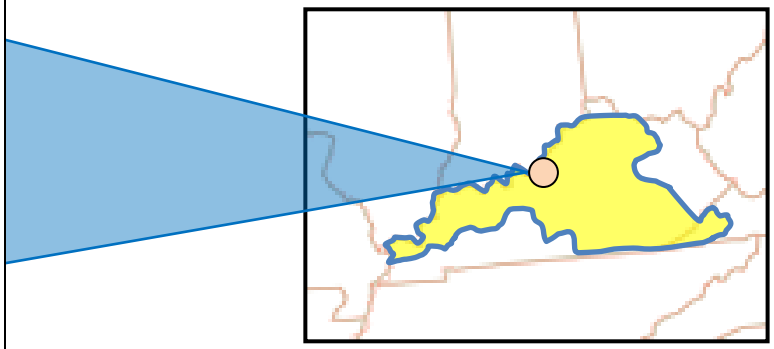
LG&E/KU - 2

- **2024**

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.

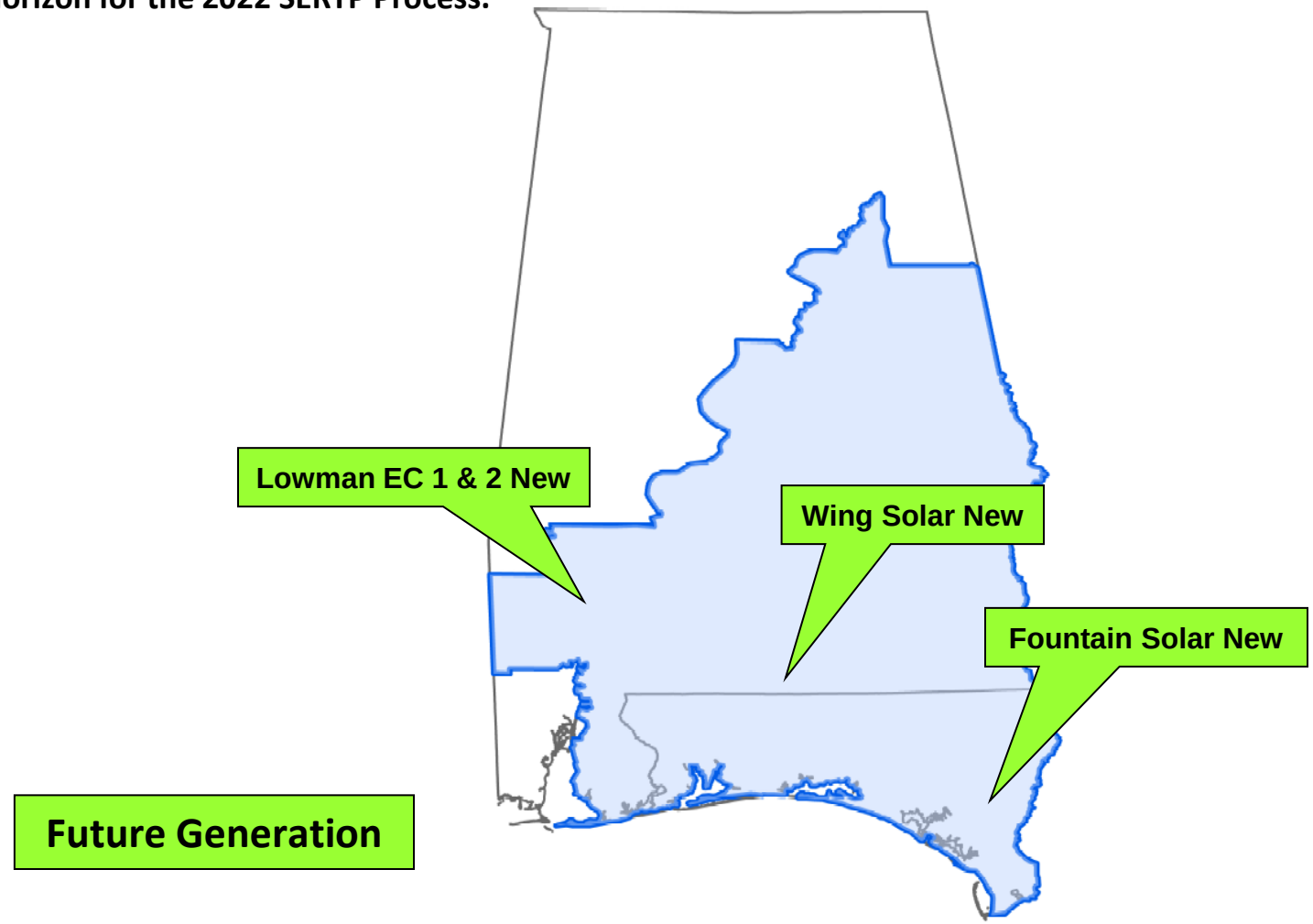


POWERSOUTH Planning Authority Area

Generation Assumptions

POWERSOUTH – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process.



POWERSOUTH – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lowman EC 1 & 2	Gas	--	632	632	632	632	632	632	632	632	632
Wing	Solar	--	80	80	80	80	80	80	80	80	80
Fountain	Solar	--	--	--	80	80	80	80	80	80	80

POWERSOUTH Planning Authority Area

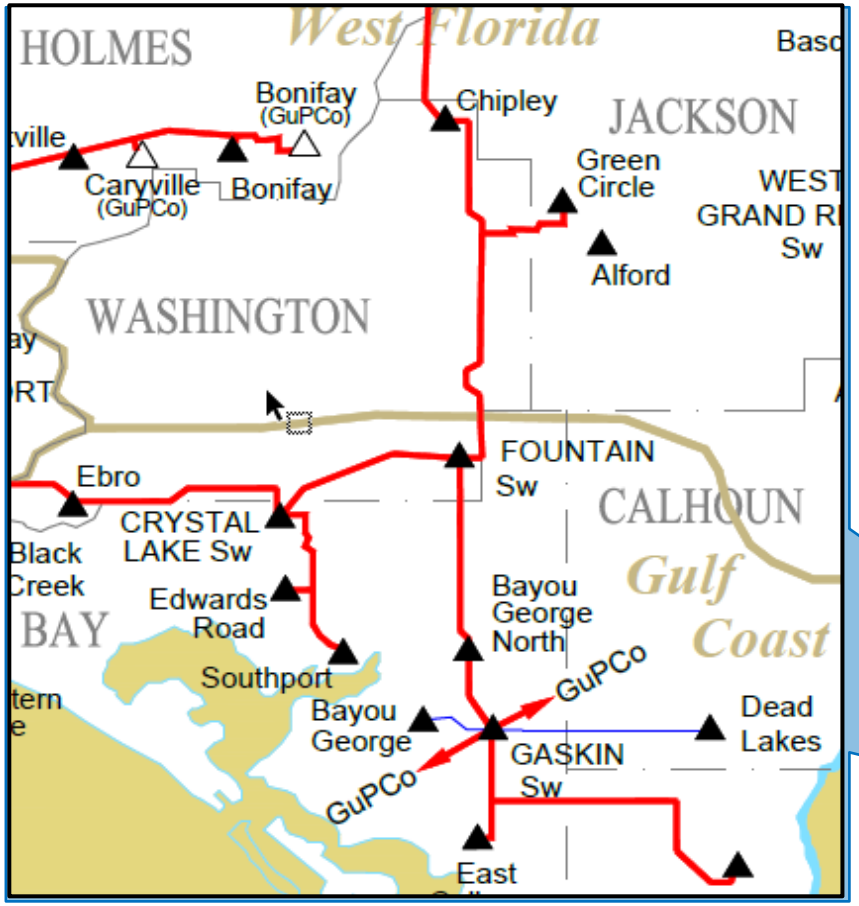
Preliminary Transmission Expansion Plan

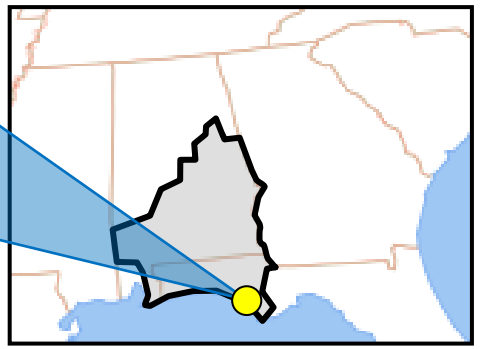
POWERSOUTH Planning Authority Area

POWERSOUTH – 1

• **2022**

Fountain Switching 115kV Capacitor Bank





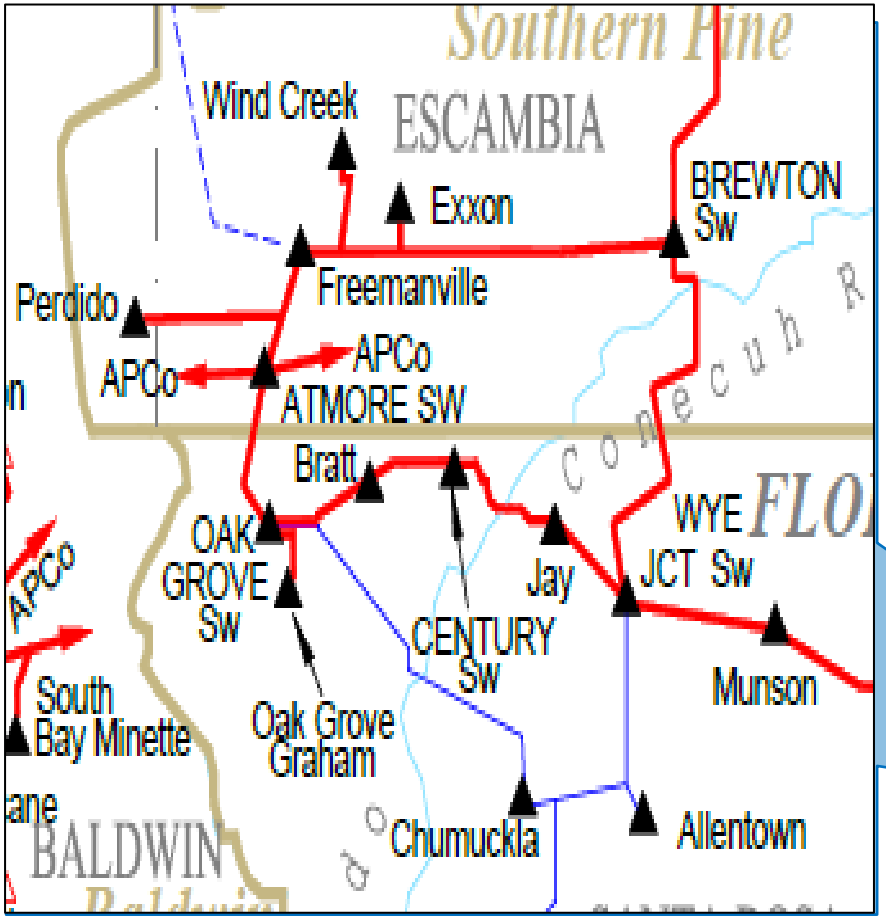
- **DESCRIPTION:**
  - 30 Mvar Capacitor Bank Installation
- **SUPPORTING STATEMENT:**
  - This project provides voltage support to area delivery points.

POWERSOUTH Planning Authority Area

POWERSOUTH - 2

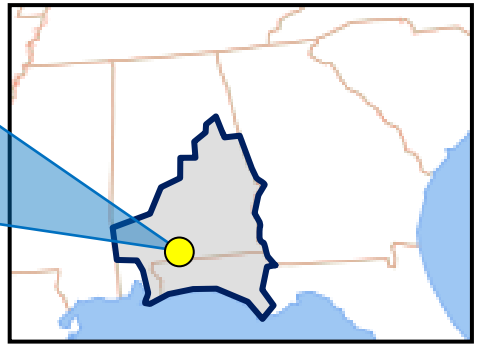
- **2022**

Brewton – Exxon – Freemanville 115 KV Transmission Line



- **DESCRIPTION:**
  - Operating temperature upgrade on approximately 25.0 miles of 115 kV transmission line from Brewton 115kV Station to Freemanville Substation to 100°C.

- **SUPPORTING STATEMENT:**
  - The existing 115kV transmission line overloads under contingency. Project will double line capacity from 68 MVA to 134 MVA.

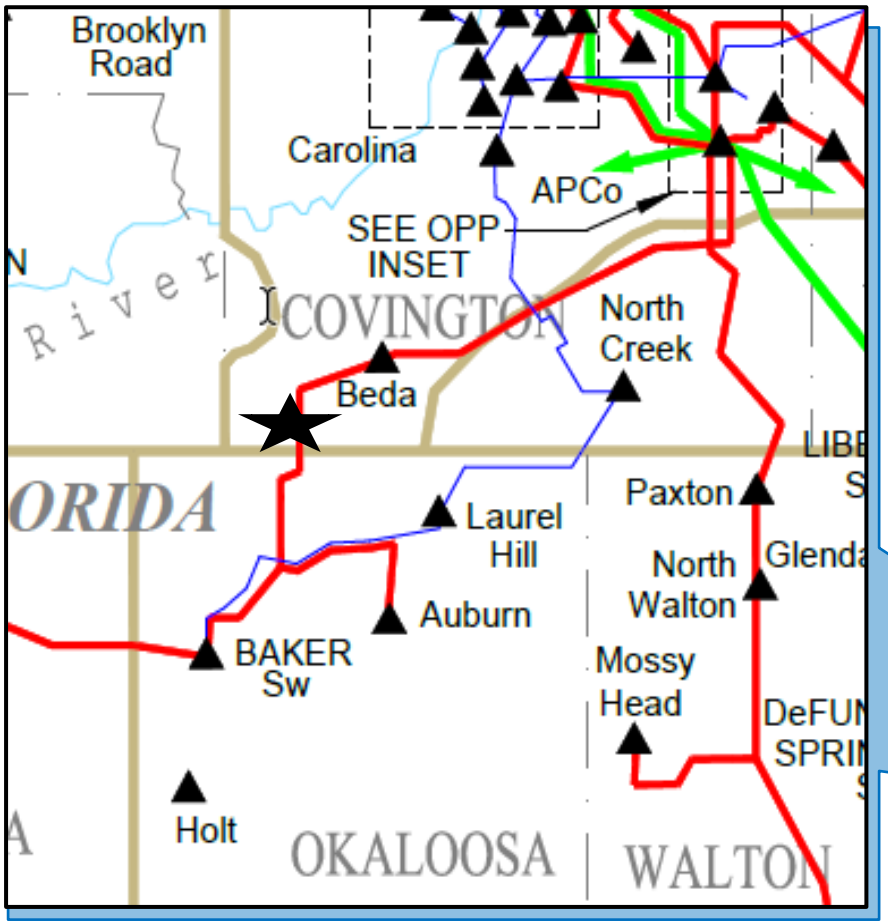


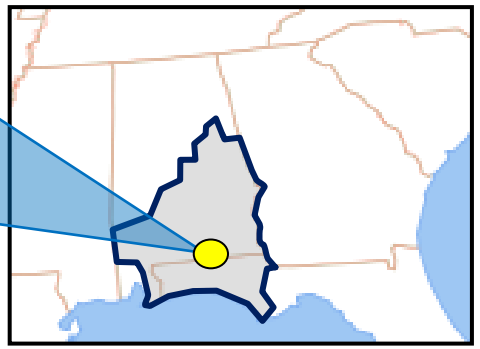
POWERSOUTH Planning Authority Area

POWERSOUTH - 3

- **2022**

Wing 115 KV Switching Station





- **DESCRIPTION:**
  - New 115kV Switching Station on the Beda – Auburn Jct. 115kV line which will serve as the POI for Wing Solar.
- **SUPPORTING STATEMENT:**
  - POI for the 80 MW Wing Solar project.

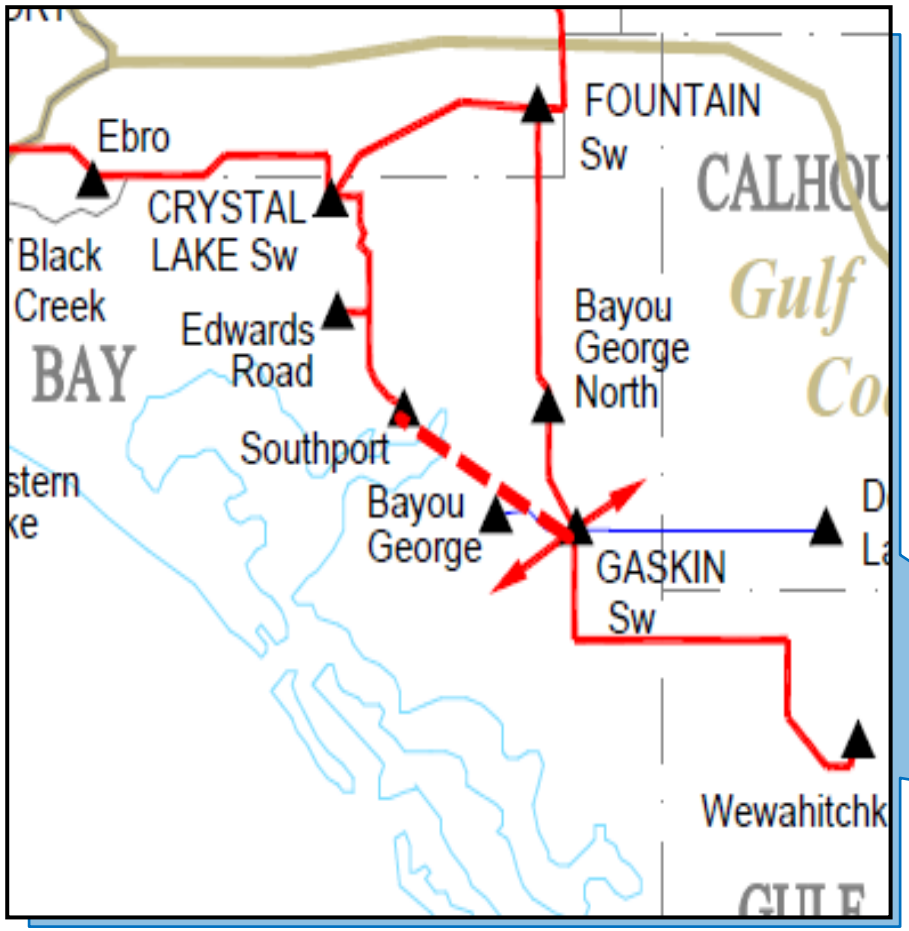
Southeastern Regional TRANSMISSION PLANNING

POWERSOUTH Planning Authority Area

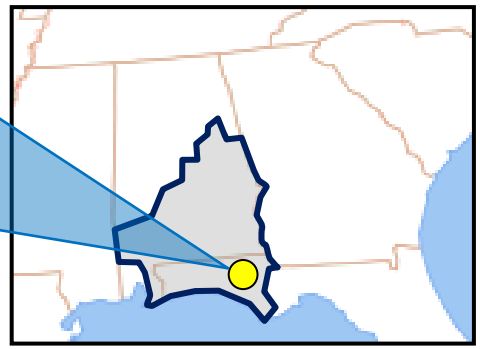
POWERSOUTH - 4

- **2024**

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 at 100°C.
- **SUPPORTING STATEMENT:**
  - Improve the reliability of Gulf Coast Electric's substations by providing a looped service feed.



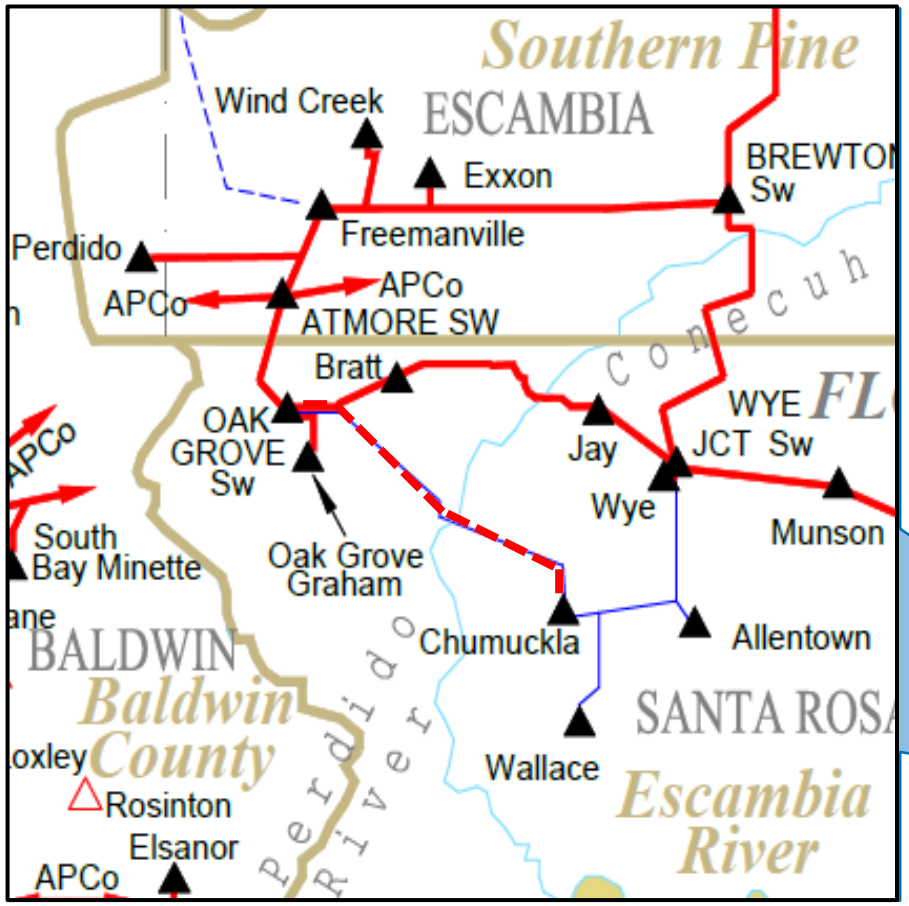
Southeastern Regional TRANSMISSION PLANNING

POWERSOUTH Planning Authority Area

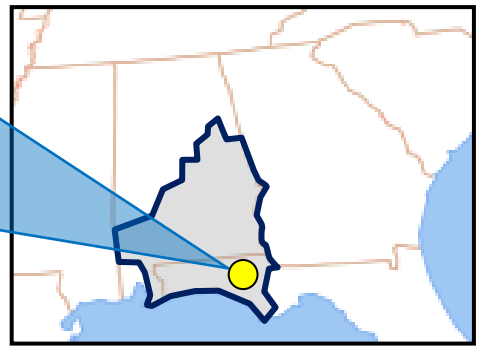
POWERSOUTH - 5

• **2024**

Oak Grove – Chumuckla 115 KV Transmission Line



- **DESCRIPTION:**
  - Construct a new 115 kV transmission line from Oak Grove Switching Station to Chumuckla Substation which will replace the existing 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.

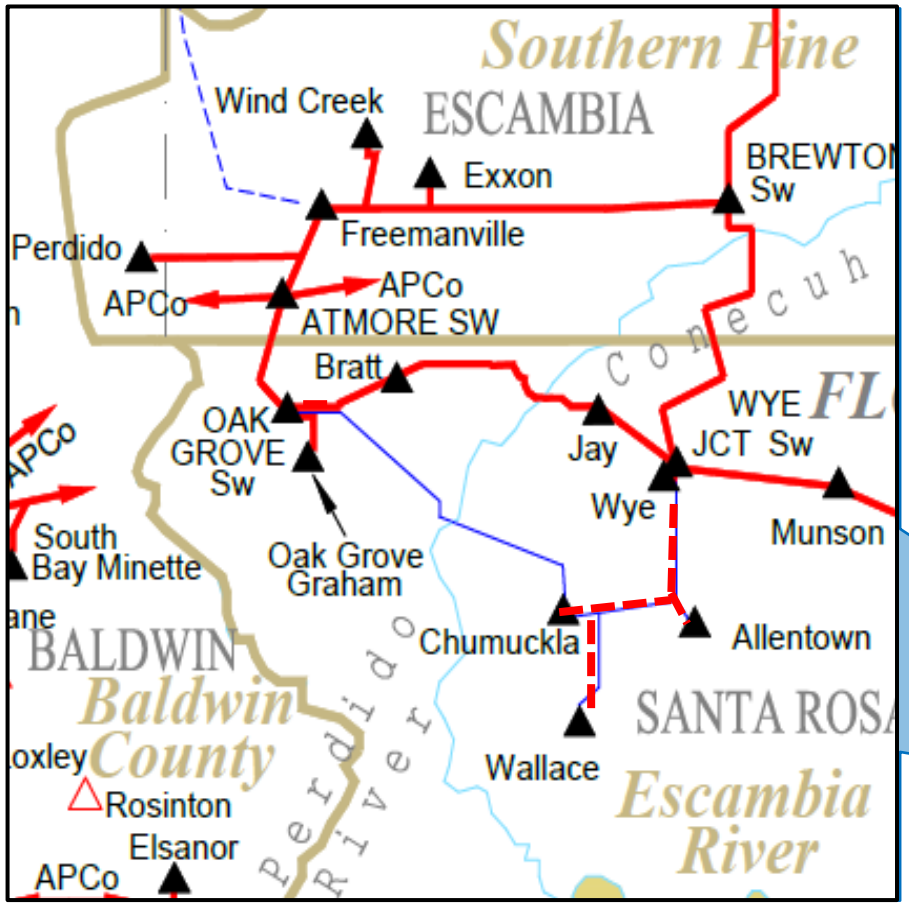


POWERSOUTH Planning Authority Area

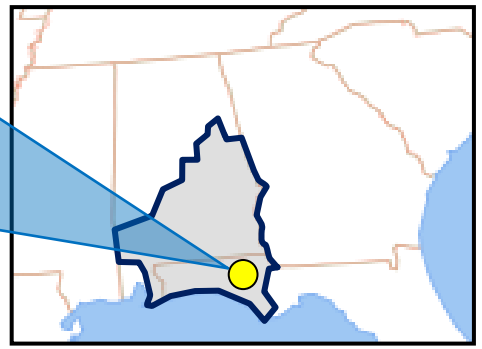
POWERSOUTH - 6

• **2025**

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.
  - Provide networked service to area delivery points that are currently served radially

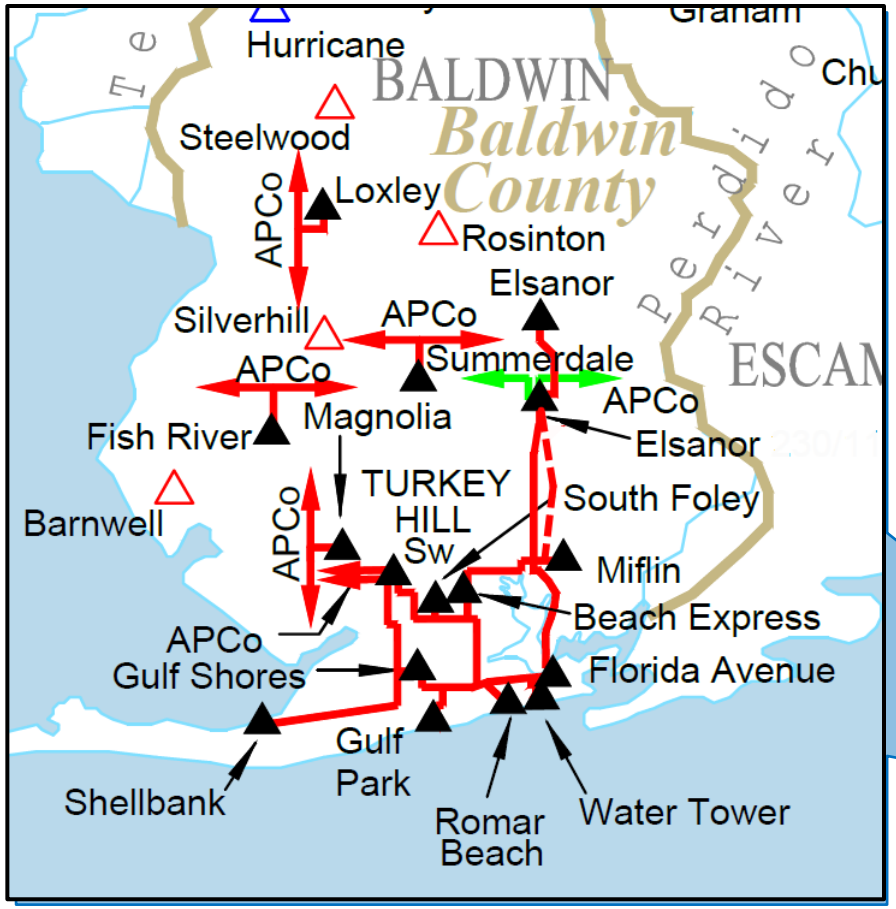


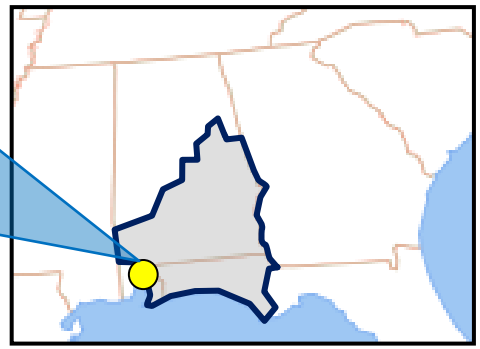
POWERSOUTH Planning Authority Area

POWERSOUTH - 7

• **2025**

Elsanor - Miflin 2ND 115 KV Transmission Line





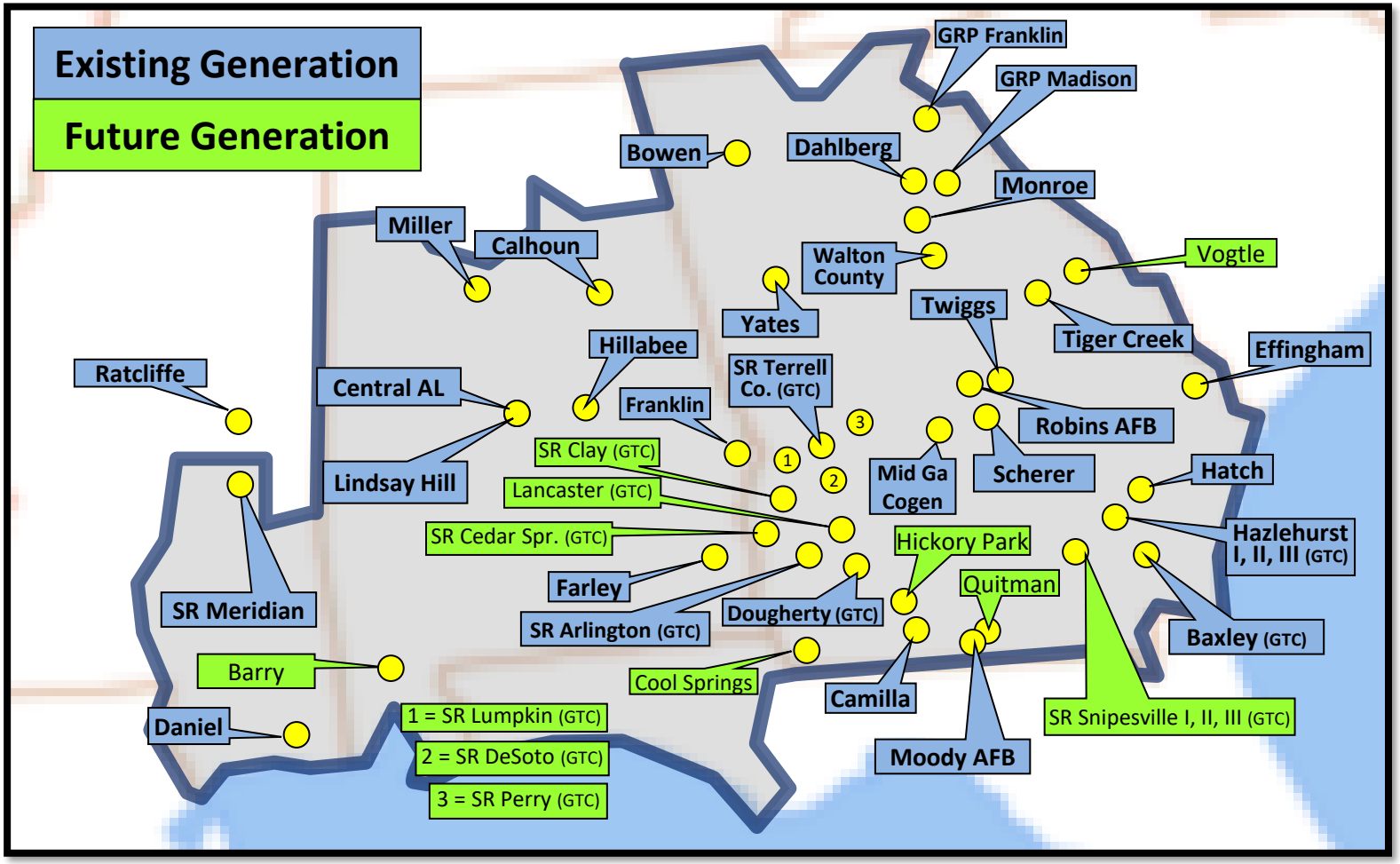
- **DESCRIPTION:**
  - Construct approximately 12.0 miles of new 115 kV transmission line from Elsanor Switching to Miflin Substation with 795 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - The existing Elsanor-Miflin 115kV line overloads under contingency.

SOUTHERN Balancing Authority Area

Generation Assumptions

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2022 SERTP Process.



Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ADDISON 1&3	Gas	305	305	305	305	305	305	305	0	--	--
DAHLBERG	Gas	373	373	75	504	504	760	760	685	685	685
HARRIS 1	Gas	640	640	640	640	640	640	640	0	--	--
HARRIS 2	Gas	--	--	689	689	689	689	689	689	689	689
MID GA COGEN	Gas	300	300	300	300	300	0	--	--	--	--
MONROE POWER	Gas	309	0	360	360	360	360	360	360	360	360
TIGER CREEK 1&4	Gas	313	0	--	--	--	--	--	--	--	--
TENASKA HEARD 1-6	Gas	945	945	945	945	945	945	945	0	--	--
WALTON COUNTY	Gas	465	0	--	--	--	--	--	--	--	--

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BARRY[1]	Gas	685	685	685	685	685	685	685	685	685	685
GASTON 1-4	Gas	465	515	515	515	515	515	515	515	515	515
VOGTLE 3	Nuclear	504	504	504	504	504	504	504	504	504	504
VOGTLE 4	Nuclear	--	504	504	504	504	504	504	504	504	504
YATES 6-7	Gas	649	714	714	714	714	714	714	714	714	714
CENTRAL ALABAMA	Gas	890	890	890	890	890	890	890	890	890	890
CALHOUN 1-4	Gas	690	690	690	690	690	690	690	690	690	690
Wansley 7	Gas	--	--	622	622	622	622	622	622	622	622

(1) This assumption may be modified as resource decisions are made by the corresponding LSEs pursuant to applicable regulatory processes.

Southern Company – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BIRD DOG SOLAR	Solar	40	40	40	40	40	40	40	40	40	40
BULLDOG SOLAR	Solar	80	80	80	80	80	80	80	80	80	80
CRANE CREEK SOLAR	Solar	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5
MOONSHOT SOLAR	Solar	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5
PEAK CLEAN SOLAR	Solar	80	80	80	80	80	80	80	80	80	80
SONNY SOLAR	Solar	40	40	40	40	40	40	40	40	40	40
WADLEY SOLAR	Solar	--	260	260	260	260	260	260	260	260	260

Southern Company – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BLACK WATER SOLAR	Solar	80	80	80	80	80	80	80	80	80	80
WOLFSKIN SOLAR	Solar	38	38	38	38	38	38	38	38	38	38
DOUBLE RUN SOLAR	Solar	--	220	220	220	220	220	220	220	220	220
DECATUR SOLAR	Solar	--	200	200	200	200	200	200	200	200	200
WASHINGTON CO	Solar	--	150	150	150	150	150	150	150	150	150
TIMBERLAND SOLAR	Solar	--	140	140	140	140	140	140	140	140	140
HOBNAIL SOLAR	Solar	70	70	70	70	70	70	70	70	70	70
FORT STEWART SOLAR	Solar	30	43	43	43	43	43	43	43	43	43

SOUTHERN Balancing Authority Area

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	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BOWEN	159	159	159	159	159	159	159	159	159	159
CENTRAL ALABAMA	0	--	--	--	--	--	--	--	--	--
DAHLBERG	494	494	419	419	419	194	194	194	194	194
DANIEL	650	600	600	600	600	600	600	600	600	600
HAMMOND	10	10	10	10	10	10	10	10	10	10
HILLABEE	350	350	350	350	350	350	350	350	350	350
LINDSAY HILL	220	220	220	220	220	220	220	220	220	220
SCHERER	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131
VOGTLE	103	206	206	206	206	206	206	206	206	206

GTC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
SR CEDAR SPRINGS	SOLAR	70	70	70	70	70	70	70	70	70	70
SR CLAY	SOLAR	106	106	106	106	106	106	106	106	106	106
SR AILEY	SOLAR	--	80	80	80	80	80	80	80	80	80
SR SNIPESVILLE III	SOLAR	107	107	107	107	107	107	107	107	107	107
VOGTLE 3	NUCLEAR	330	330	330	330	330	330	330	330	330	330
VOGTLE 4	NUCLEAR	--	330	330	330	330	330	330	330	330	330
EFFINGHAM	GAS	518	545	545	545	545	545	545	545	545	545

MEAG – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
VOGTLE 3	NUCLEAR	250	250	250	250	250	250	250	250	250	250
VOGTLE 4	NUCLEAR	--	250	250	250	250	250	250	250	250	250

DALTON – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
VOGTLE 3	NUCLEAR	19	19	19	19	19	19	19	19	19	19
VOGTLE 4	NUCLEAR	--	19	19	19	19	19	19	19	19	19

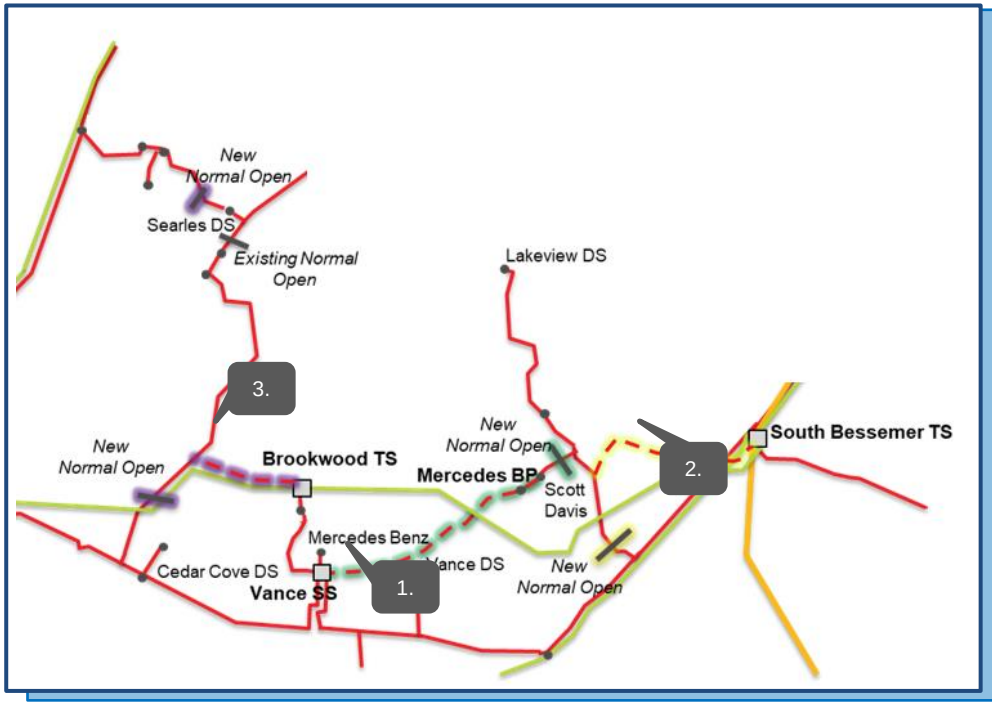
SOUTHERN (WEST) Balancing Authority Area

SERTP Regional Transmission Expansion Plan

SOUTHERN – 1W

- **2023**

HWY 11 BROOKWOOD AREA SOLUTION

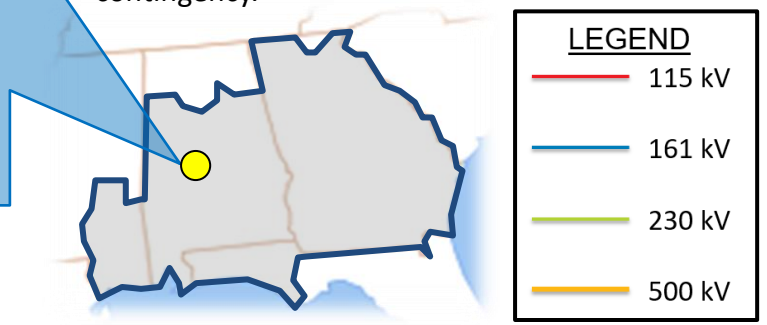


PROJECT DESCRIPTION:

1. Construct approximately 6.0 miles of 795 ACSR from Vance SS to Scott Davis DS 115 kV transmission line.
2. Construct a new approximately 5.2 mile 115 kV TL South Bessemer to Scott Davis Tap with 795 26/7 ACSR at 100°C.
3. Construct a new approximately 4 mile 115 kV TL from Brookwood TS to Warrior Met Area with 795 26/7 ACSR at 100°C.

SUPPORTING STATEMENT:

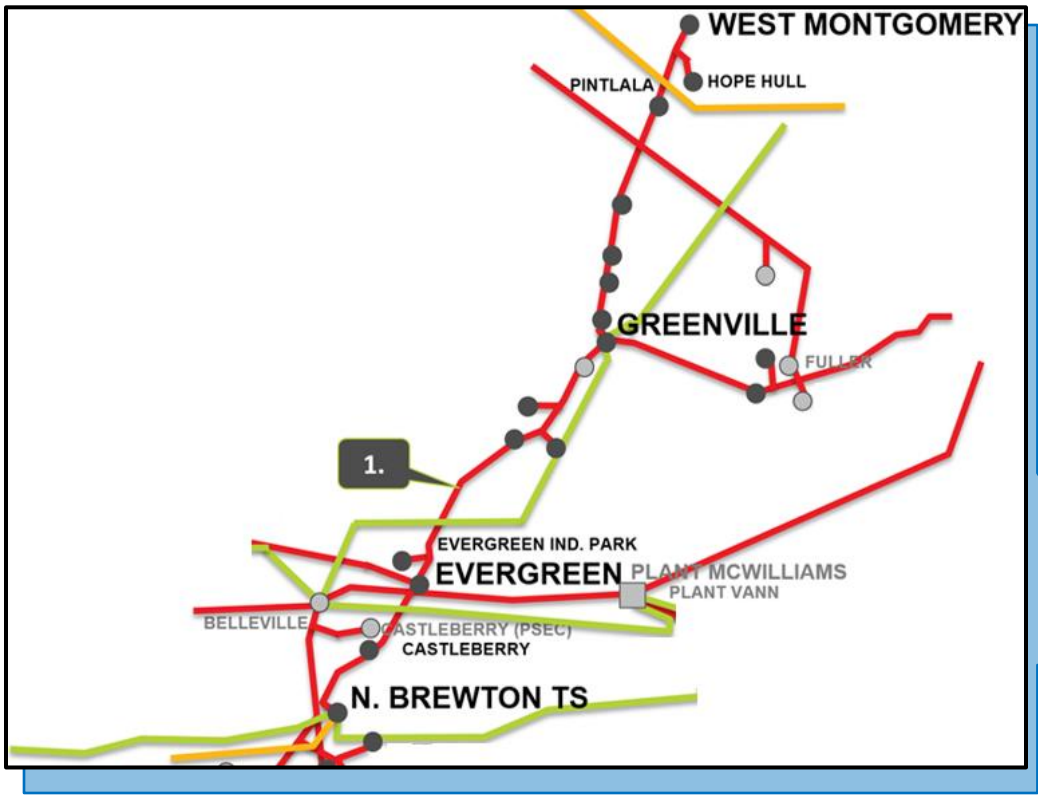
- The Vance SS – South Bessemer TS 115 kV transmission line overloads under contingency. This project also addresses voltage constraints under contingency.



SOUTHERN – 2W

- **2023**

CENTRAL CORRIDOR SOLUTION 115 KV PROJECT

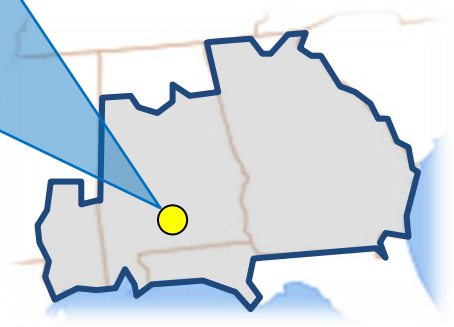


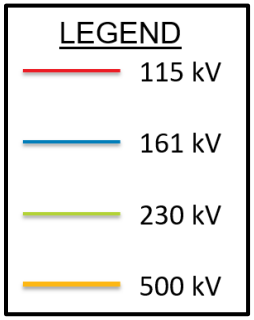
PROJECT DESCRIPTION:

1. Rebuild approximately 97.0 miles of 115 kV transmission line from West Montgomery to North Brewton 115 kV transmission line with 795 ACSS at 200˚C.

SUPPORTING STATEMENT:

- Multiple sections of the central corridor overload under contingency. This project also provides additional operational and maintenance flexibility which then increases reliability.

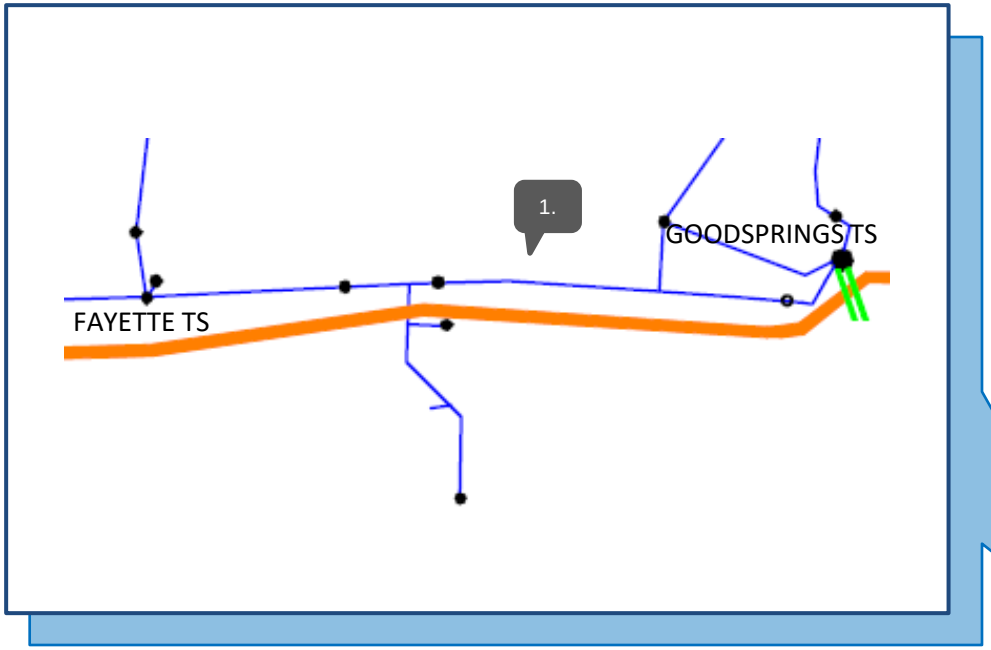




SOUTHERN – 3W

- **2023**

FAYETTE – GOODSPRINGS TS 161 KV TRANSMISSION LINE

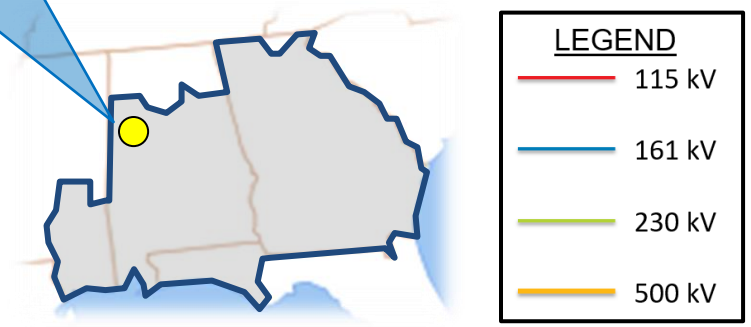


PROJECT DESCRIPTION:

1. Rebuild approximately 37.0 miles of 397 ACSR from Fayette to Goodsprings TS 161 kV transmission line with 795 ACSS at 200°C.

SUPPORTING STATEMENT:

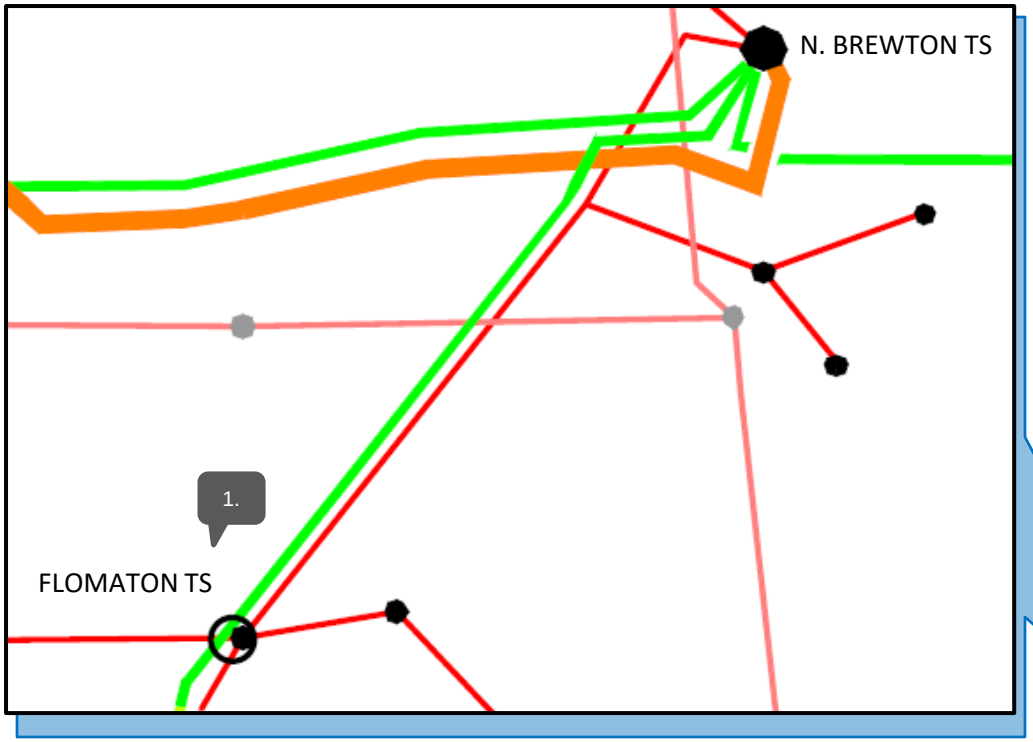
- The Fayette – Goodsprings TS 161 kV transmission line overloads under contingency.



SOUTHERN – 4W

- **2023**

FLOMATON 230/115 KV SUBSTATION

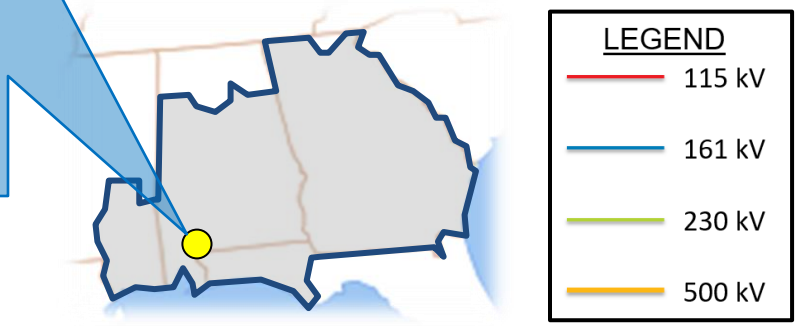


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

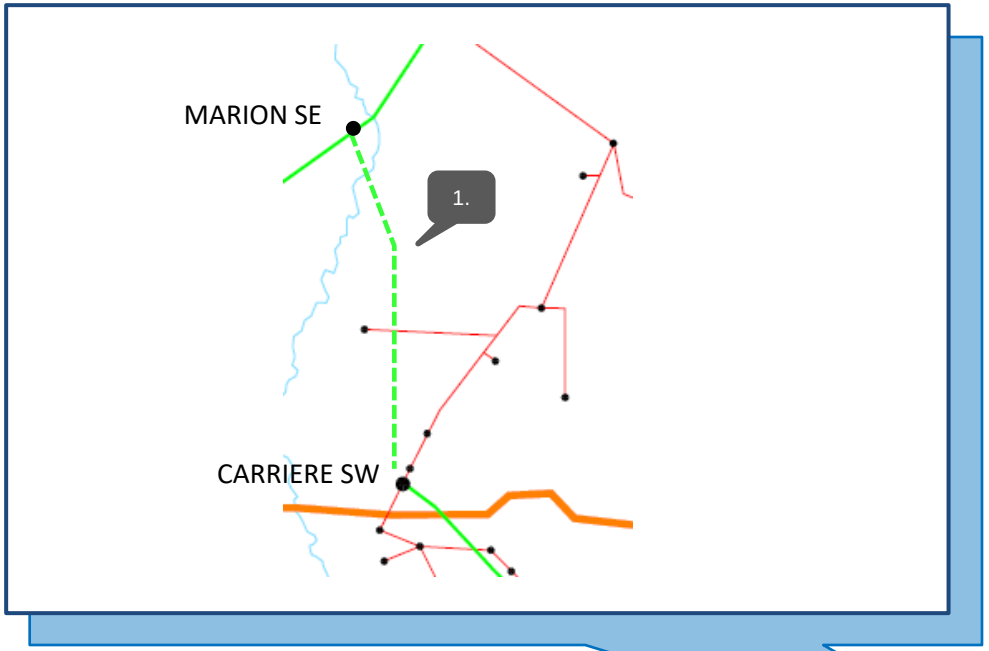
- Provides additional operational and maintenance flexibility which then increases reliability. This project also provides voltage support under contingency scenarios.



SOUTHERN – 5W

• **2023**

CARRIERE SW – MARION SE 230 KV TRANSMISSION LINE

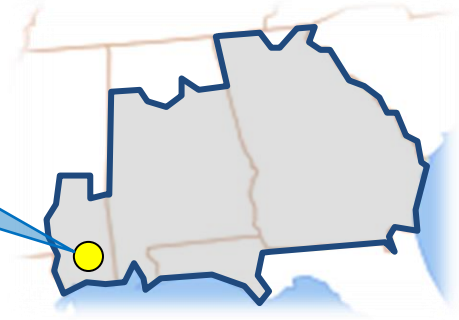


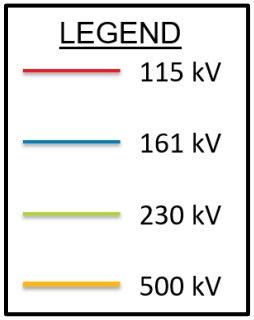
PROJECT DESCRIPTION:

1. Construct a new approximately 33 mile, 230 kV line from Carriere SW 230/115 kV substation to a new Marion SE 230 kV switching station with 1351 ACSS at 200°C.

SUPPORTING STATEMENT:

- The Hattiesburg SW - Wiggins 115 kV line overloads under contingency.

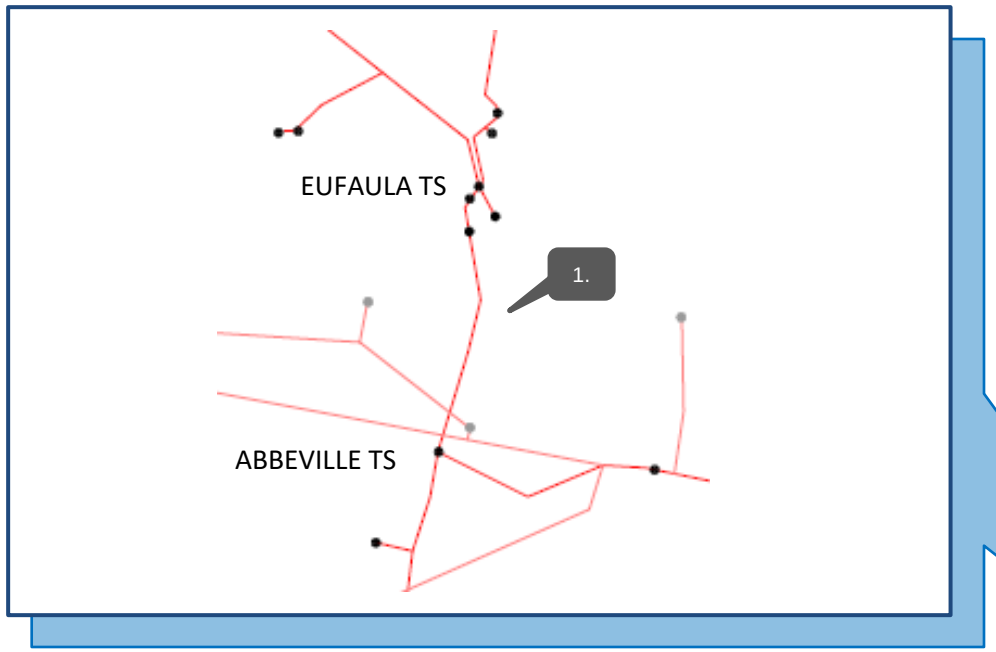




SOUTHERN – 6W

- **2024**

EUFAULA – GEORGE DAM – WEBB 115 KV TRANSMISSION LINE

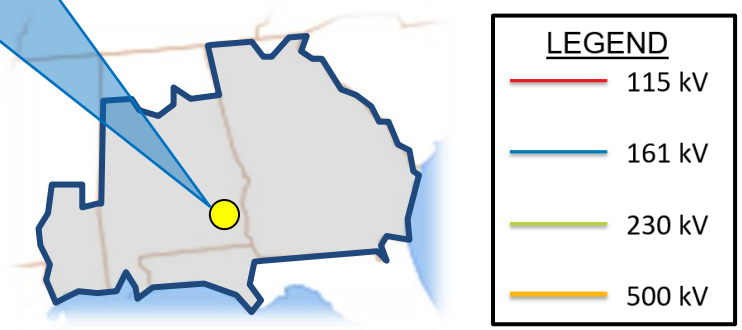


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

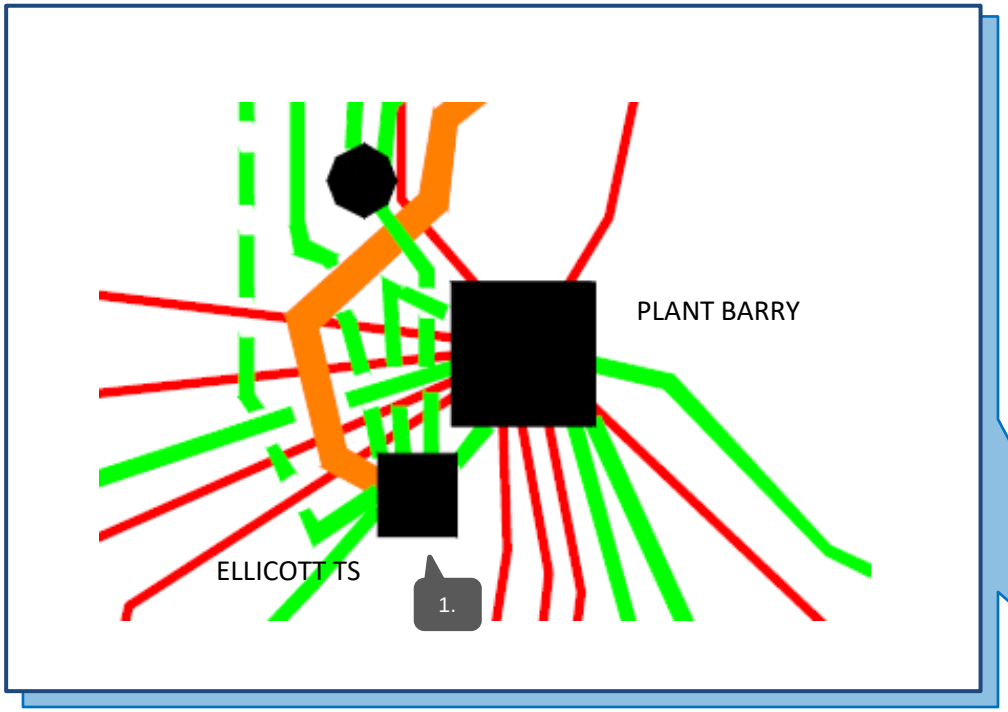
- The Eufaula – Abbeville 115 kV transmission line overloads under contingency.



SOUTHERN – 7W

- **2024**

ELLICOTT SUBSTATION EXPANSION PROJECT

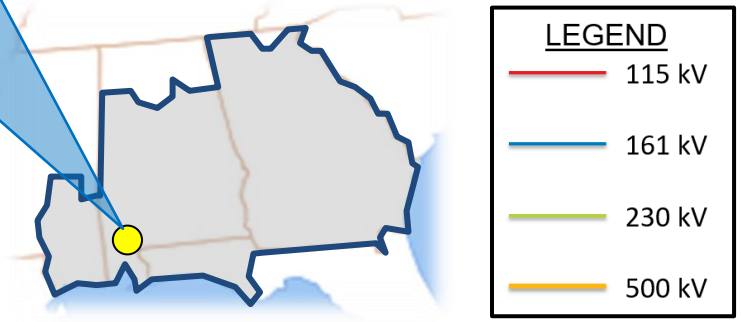


PROJECT DESCRIPTION:

1. Relocate existing 115 kV Lines to a new 115 kV substation

SUPPORTING STATEMENT:

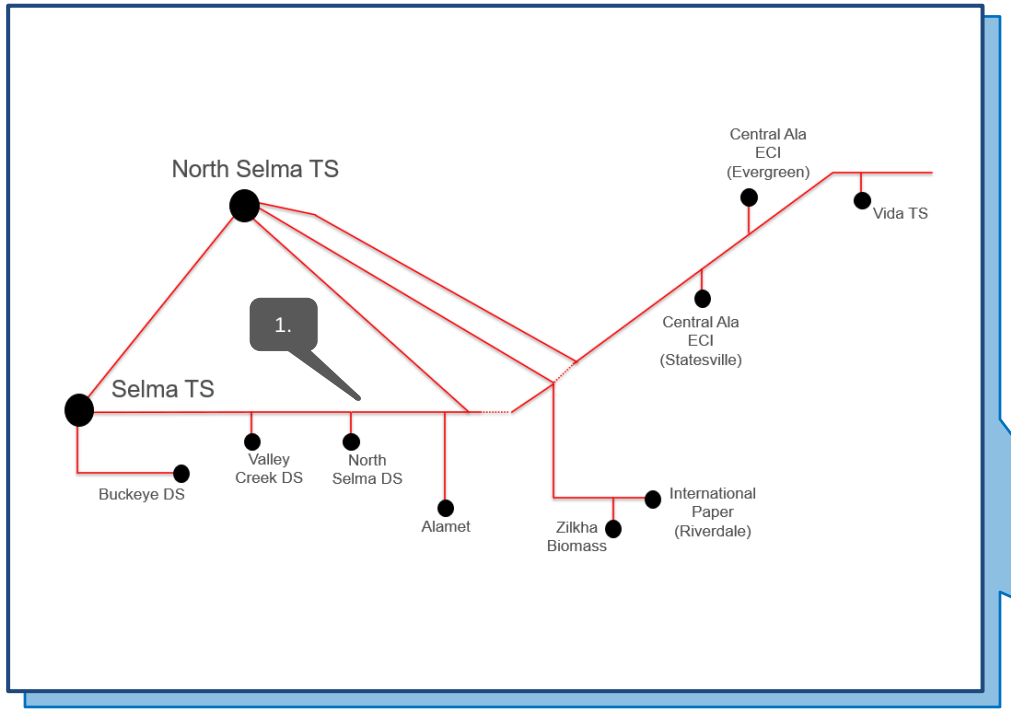
- Upgrade existing and construct new transmission facilities to provide additional operational and maintenance flexibility, which increases reliability.



SOUTHERN – 8W

- **2024**

NORTH SELMA – SELMA #2 115 KV TRANSMISSION LINE

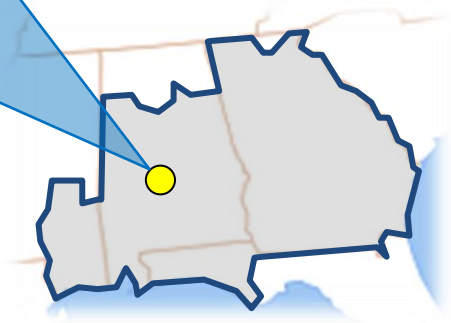


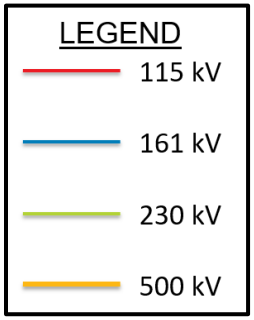
PROJECT DESCRIPTION:

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.

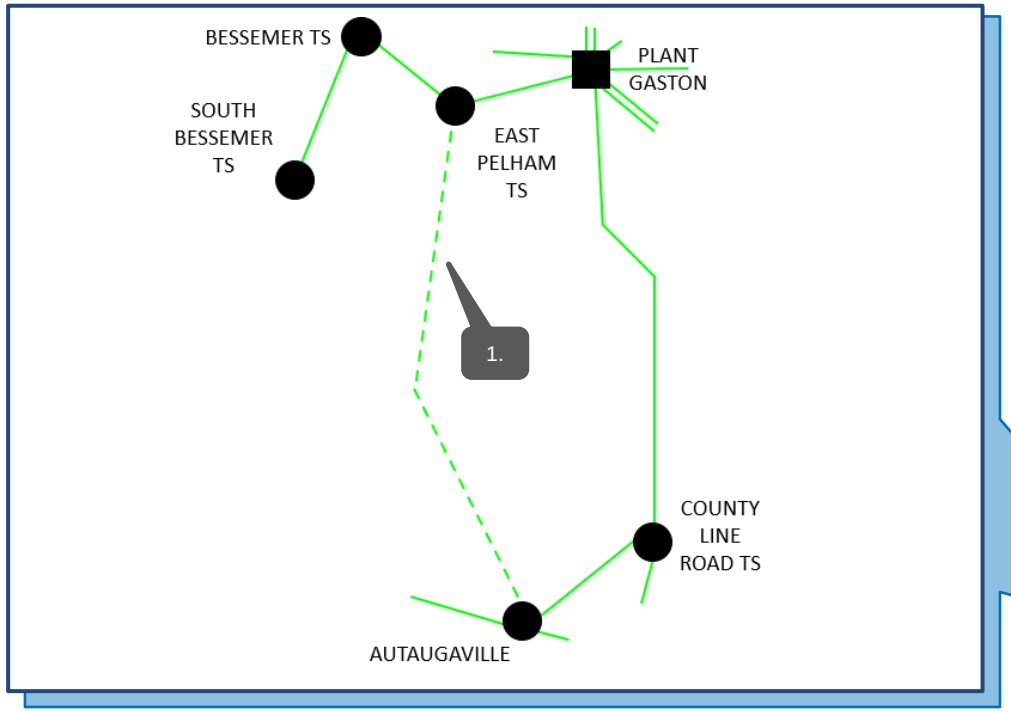




SOUTHERN – 9W

- **2027**

AUTAUGAVILLE – EAST PELHAM NEW 230 KV TRANSMISSION LINE

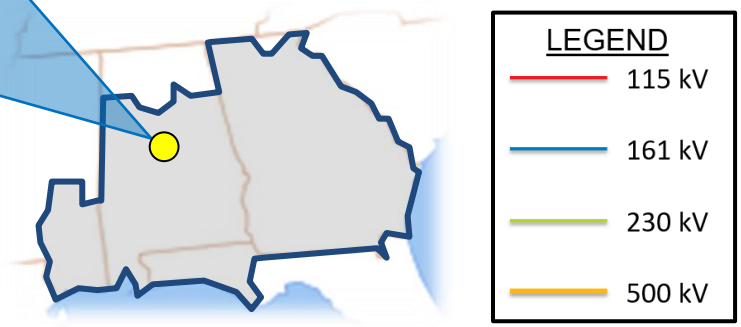


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

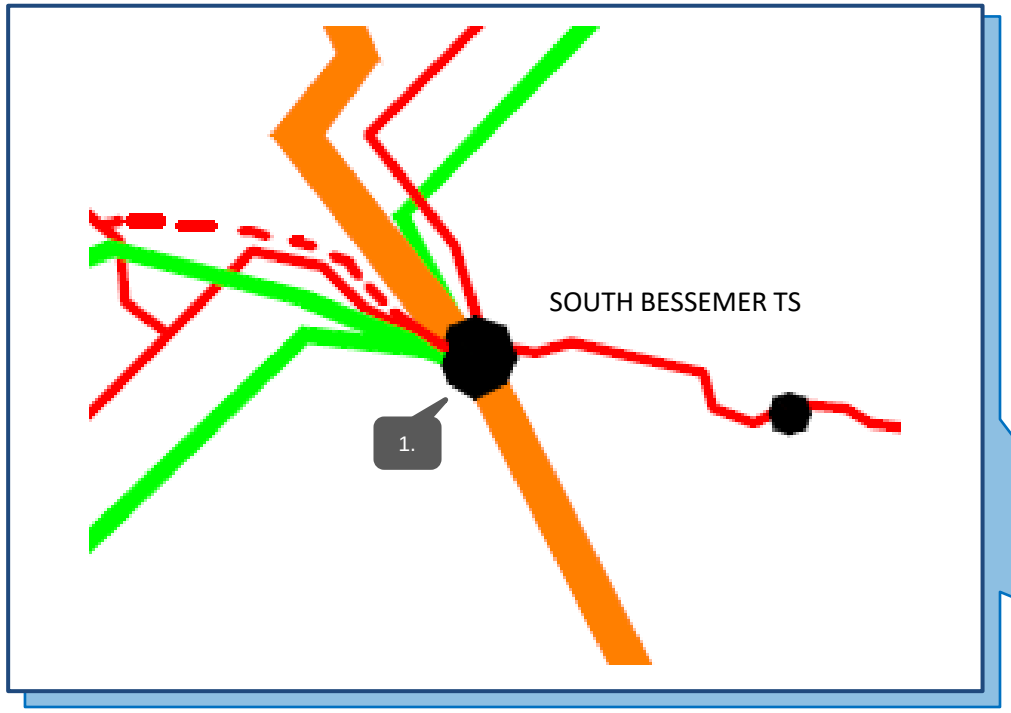
- The Bessemer – South Bessemer 230 kV transmission line overloads under contingency. Provides additional operational and maintenance flexibility, which increases reliability.



SOUTHERN – 10W

- **2028**

2ND SOUTH BESSEMER 500/230 AUTOBANK

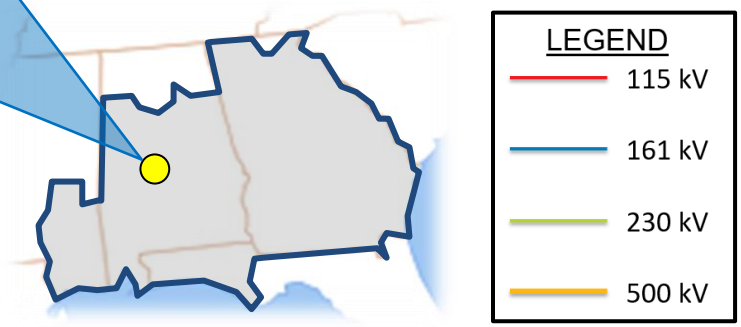


PROJECT DESCRIPTION:

1. Design and Construct to add a second 500/230 kV autobank at South Bessemer TS.

SUPPORTING STATEMENT:

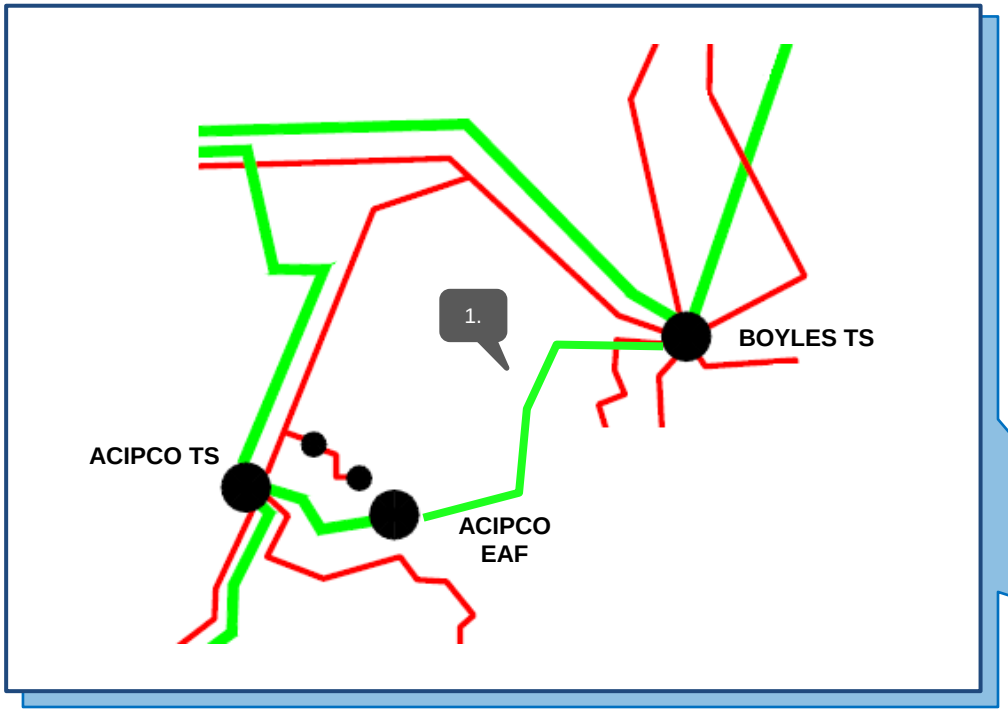
- Low voltage in the area under contingency. This project provides voltage support under contingency scenarios.



SOUTHERN – 11W

- **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

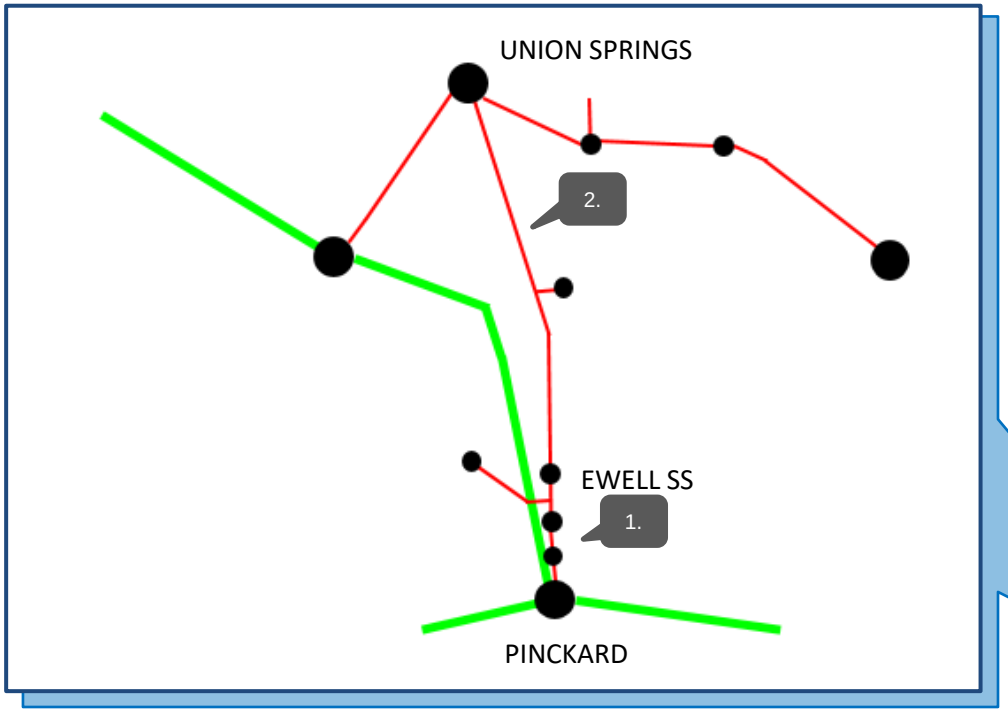
SUPPORTING STATEMENT:

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

SOUTHERN – 12W

- **2030**

UNION SPRINGS - PINCKARD 115 KV TRANSMISSION LINE

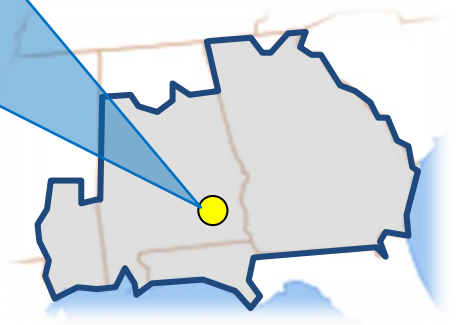


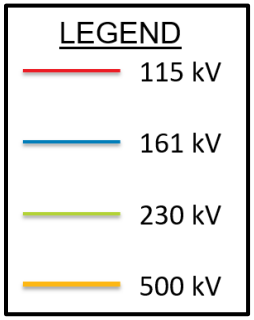
PROJECT DESCRIPTION:

1. Rebuild ~8.1 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.





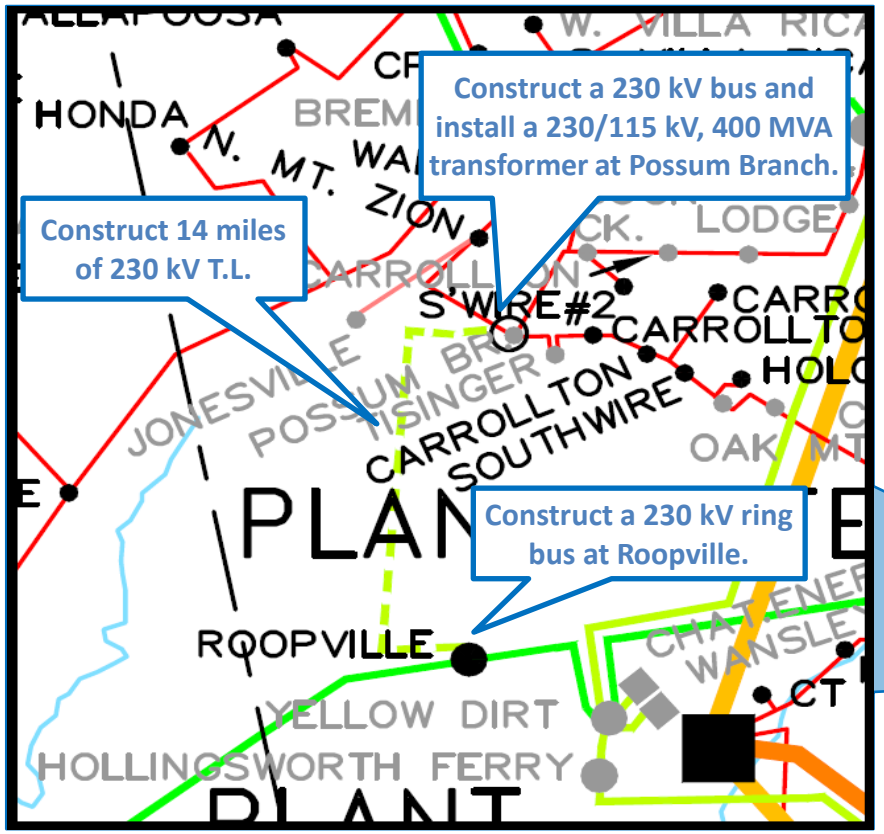
SOUTHERN (EAST) Balancing Authority Area

SERTP Regional Transmission Expansion Plan

SOUTHERN – 1E

• **2023**

POSSUM BRANCH 230/115 KV PROJECT

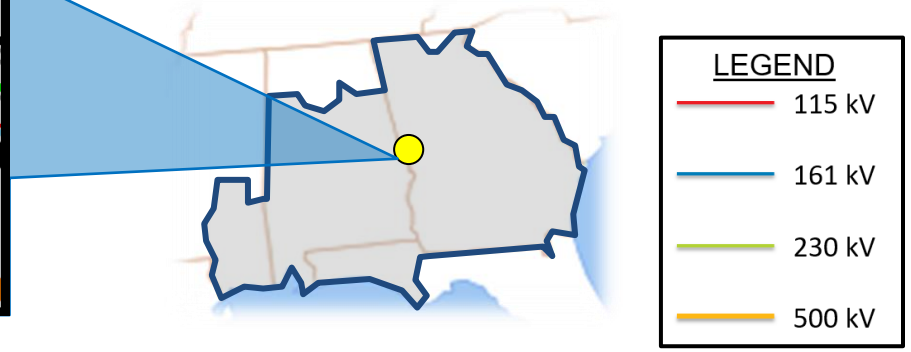


DESCRIPTION:

- GTC: Construct a new, approximately 14 mile, 1351 ACSR 230 kV line at 100°C from Possum Branch to Roopville. Install a 230/115 kV, 400 MVA transformer at Possum Branch.
- GPC: Construct a 230 kV ring bus switching station at Roopville.

SUPPORTING STATEMENT:

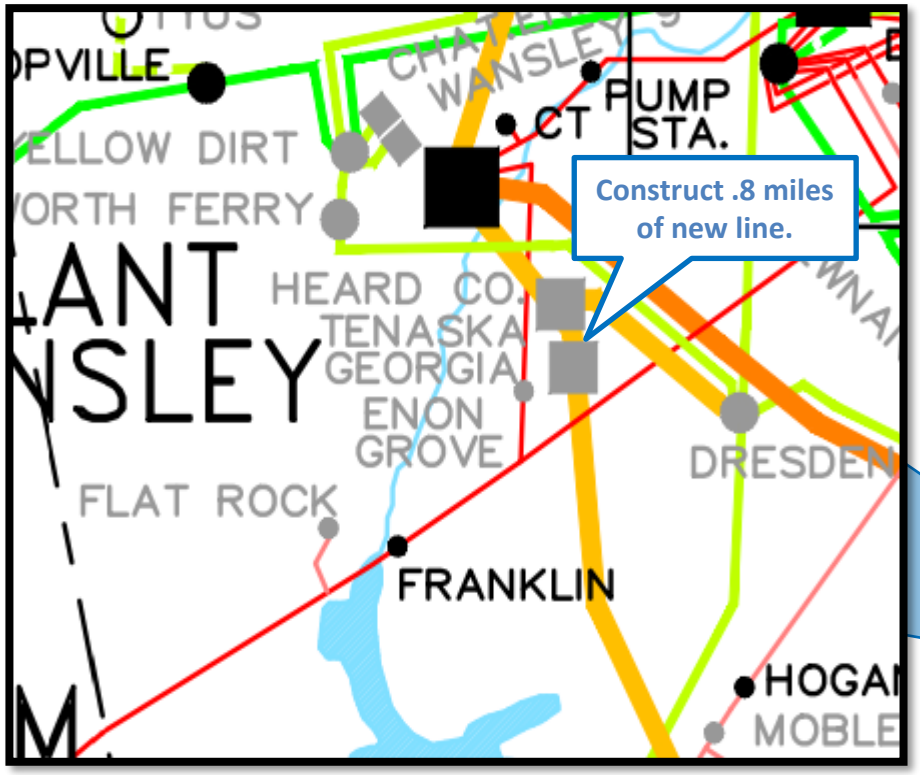
- Project is necessary to facilitate planned maintenance in the Bremen area.



SOUTHERN – 2E

- **2024**

HEARD COUNTY-TENASKA 500KV (SECOND LINE)

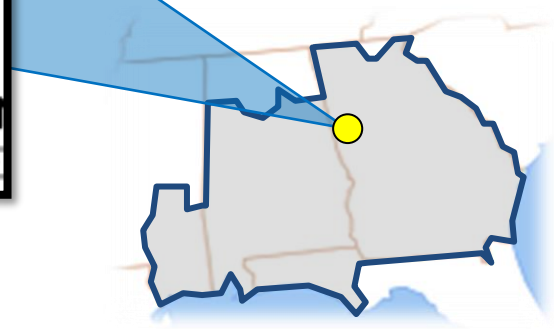


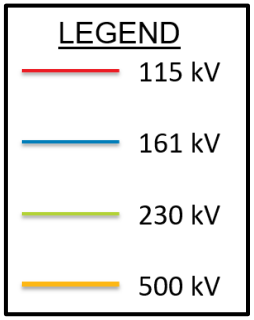
DESCRIPTION:

- GTC: Build a second Heard County –Tenaska 500kV line, 0.8 miles with 100°C (3) 1113 ACSR conductor. Add 500kV ring-bus breaker at Heard County.
- GPC: Add a 500kV breaker at Tenaska.

SUPPORTING STATEMENT:

- To minimize the system impact of ELG system change, the solution of a new Heard County-Tenaska 500kV has been evaluated to be the most effective solution.

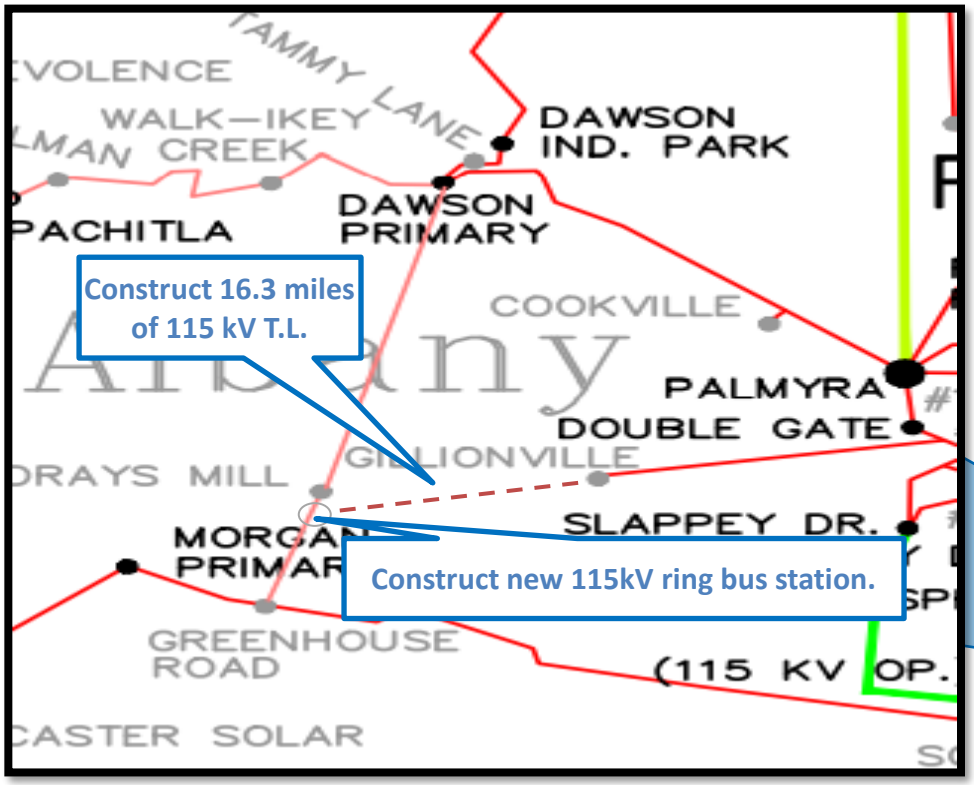




SOUTHERN – 3E

- **2025**

HWY 45/234-WESTOVER 115KV (NEW LINE)

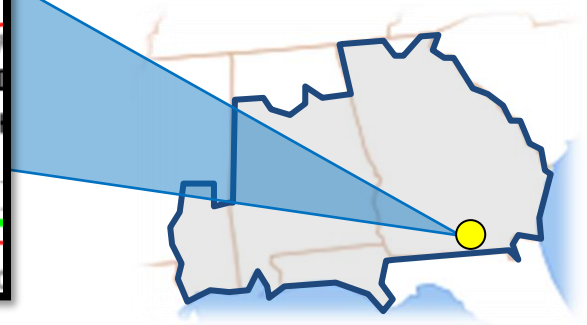


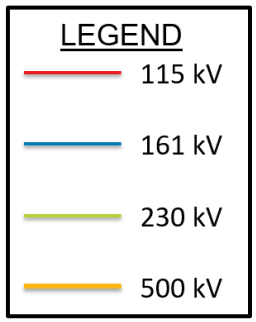
DESCRIPTION:

- GTC: Construct 16.3 miles of new 115kV line from Gillionville to new Hwy 45/234 substation

SUPPORTING STATEMENT:

- This new line will address overloads on the Dawson Primary-Palmyra 115kV transmission line under contingency.

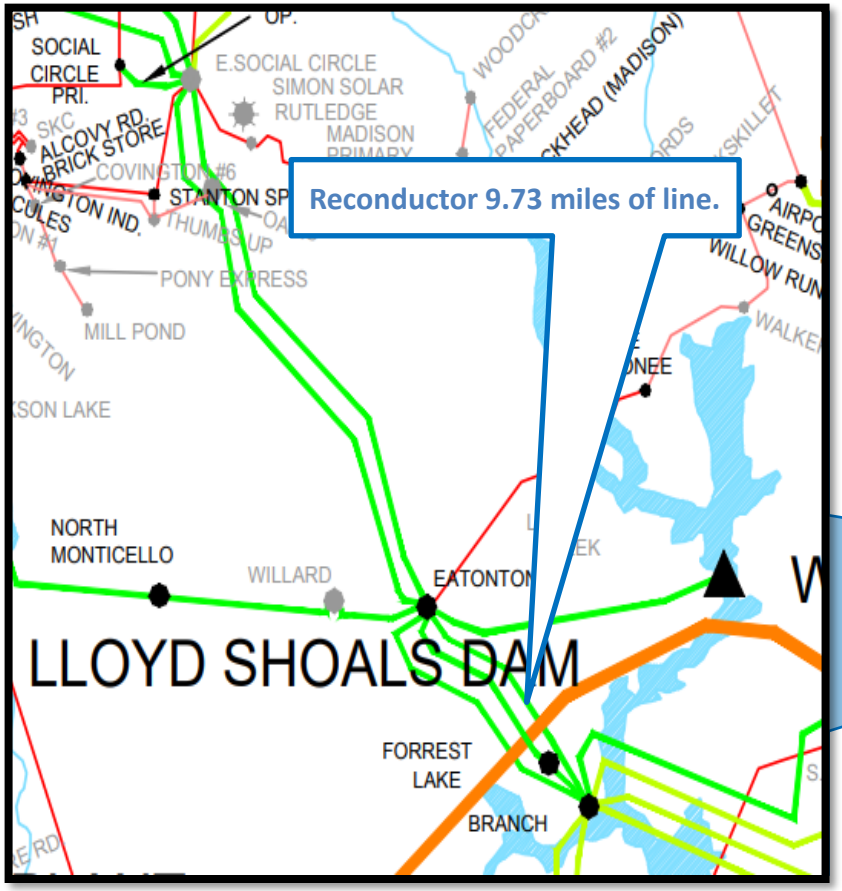




SOUTHERN – 4E

- **2026**

BRANCH - OASIS 230KV LINE RECONDUCTOR

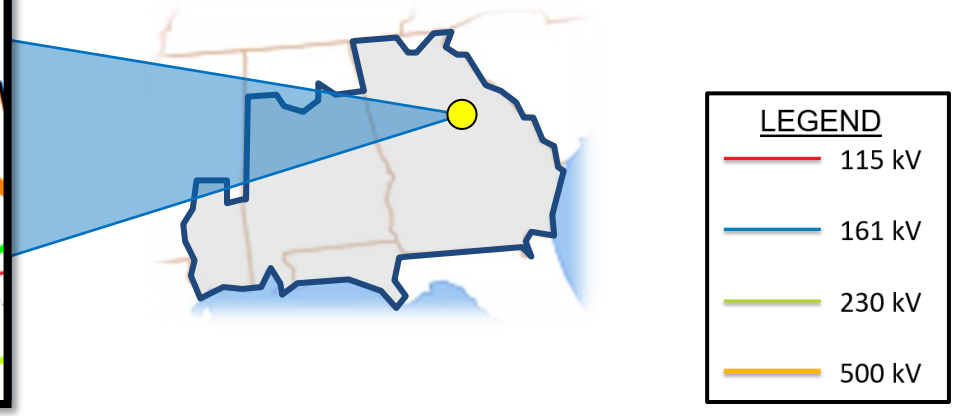


DESCRIPTION:

- Reconductor 9.73 miles of 1351.5 100°C with ACSS 1351 160°C line conductor. Replace jumpers at Branch substation and jumpers and bus at Eatonton Primary.

SUPPORTING STATEMENT:

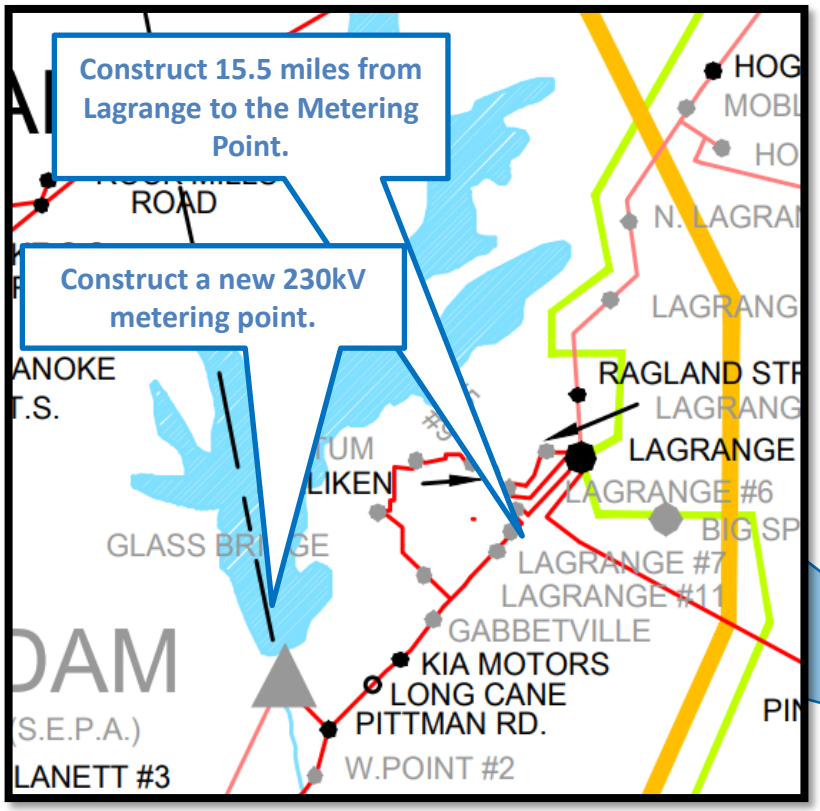
- Segments of the Branch-Oasis 230kV transmission line overload under contingency.



SOUTHERN – 5E

- **2027**

LAGRANGE PRIMARY-NORTH OPELIKA 230KV (NEW LINE)

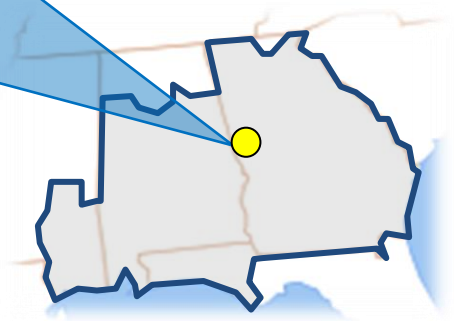


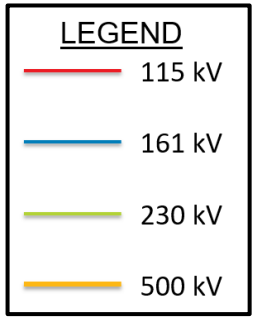
DESCRIPTION:

- GTC: Construct the 230kV line (15.5 miles) from Lagrange to the Metering Point located at the Georgia-Alabama border.
- ITS Assigned: Construct a metering point near state line.
- GPC: Extend 230 kV bus at Lagrange Primary.
- APC: Construct the 230kV line from the Metering Point to North Opelika.

SUPPORTING STATEMENT:

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

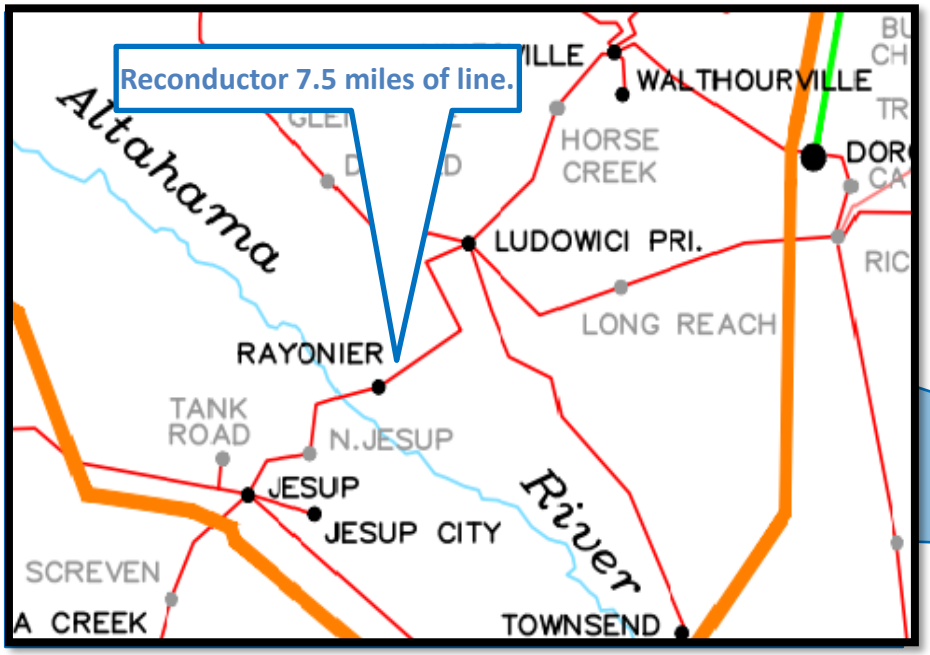




SOUTHERN – 6E

- **2028**

JESUP - LUDOWICI PRIMARY 115-KV RECONDUCTOR

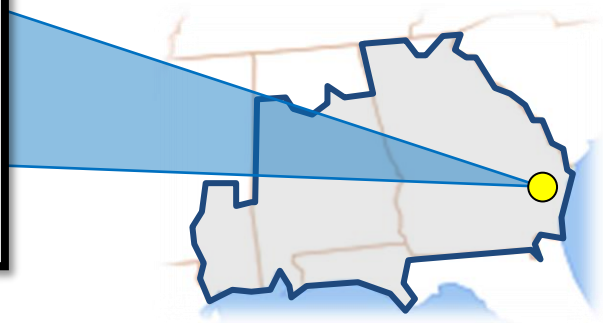


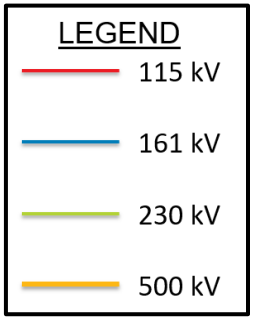
DESCRIPTION:

- Reconductor 7.5 miles of line from 100°C 336 ACSR to 100°C 795 ACSR conductor.

SUPPORTING STATEMENT:

- Segments of the Jesup - Ludowici Primary 115kV transmission line overload under contingency.

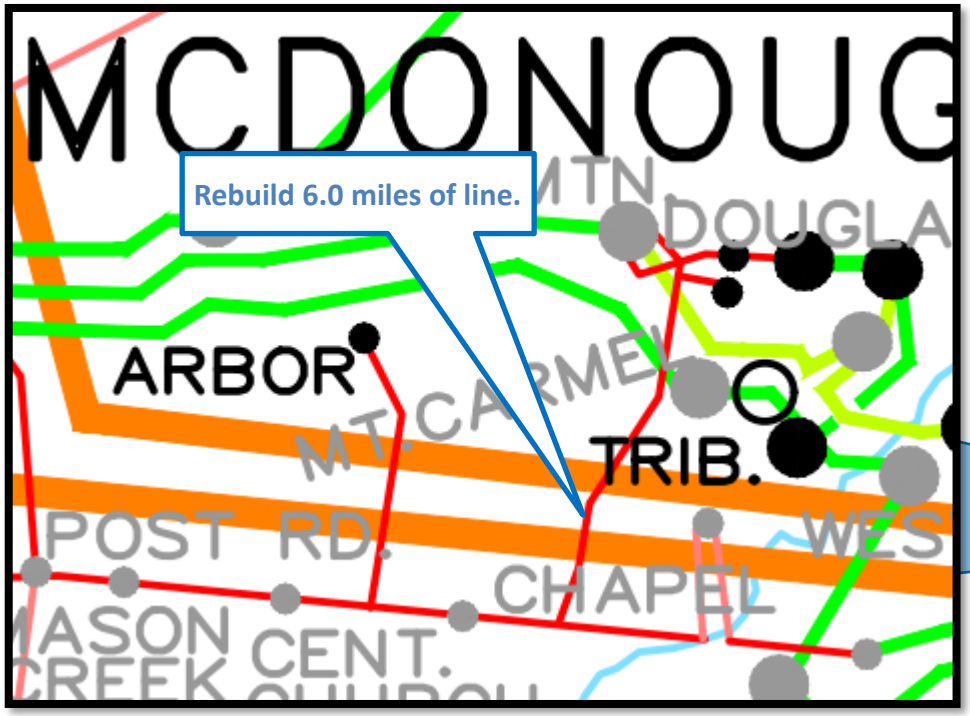




SOUTHERN – 7E

- **2029**

DOUGLASVILLE - POST RD 115 KV REBUILD

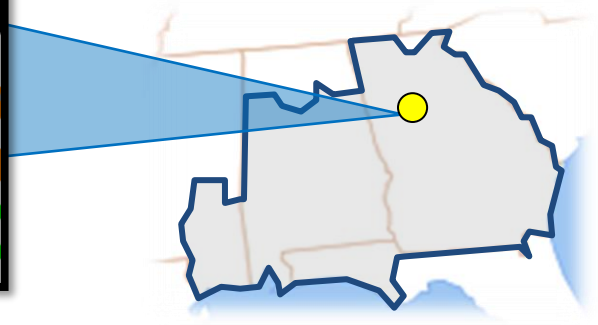


DESCRIPTION:

- Rebuild 6.0 miles of 100°C 336 ACSR to 100°C 795 ACSR conductor.

SUPPORTING STATEMENT:

- Segments of the Douglasville-Post Road 115 kV transmission line overload under contingency.

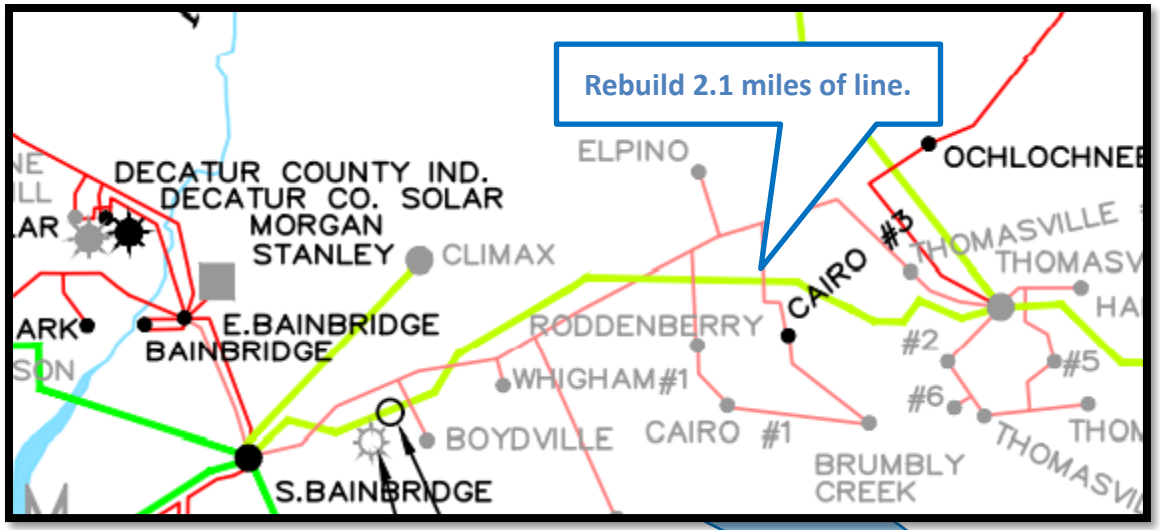


LEGEND
- 115 kV
- 161 kV
- 230 kV
- 500 kV

SOUTHERN – 8E

- **2030**

SOUTH BAINBRIDGE - THOMASVILLE 115KV (RODDENBERY SEGMENT)

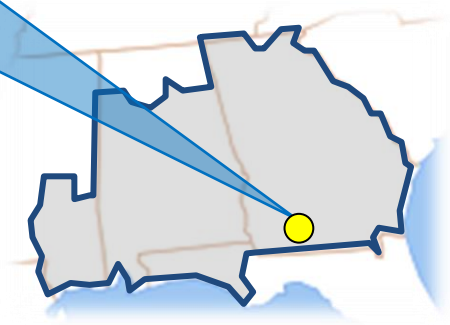


DESCRIPTION:

- MEAG: Rebuild 2.1-mile line segment of 50°C 762 ACSR conductor with 100°C 795 ACSR conductor.

SUPPORTING STATEMENT:

- Segments of South Bainbridge-Thomasville 115kV transmission line overloads under contingency.

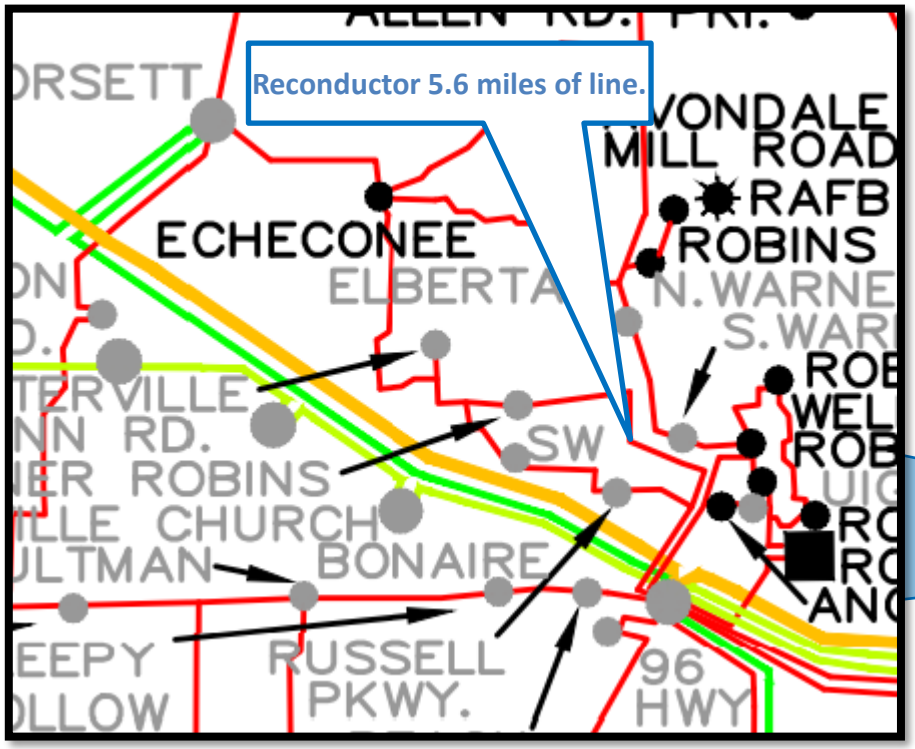


LEGEND
- 115 kV
- 161 kV
- 230 kV
- 500 kV

SOUTHERN – 9E

- **2031**

BONAIRE PRIMARY - ECHECONNEE 115KV RECONDUCTOR

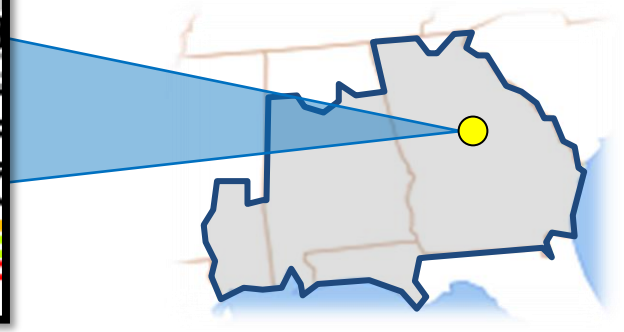


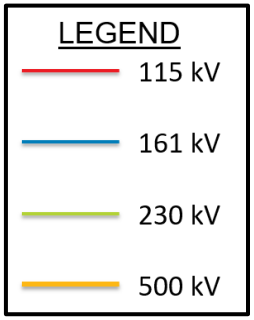
DESCRIPTION:

- Reconductor 5.6 miles line from 100°C 636 ACSR to 100°C 795 ACSR.

SUPPORTING STATEMENT:

- Segments of the Bonaire Primary-Echeconnee 115kV transmission line overload under contingency.

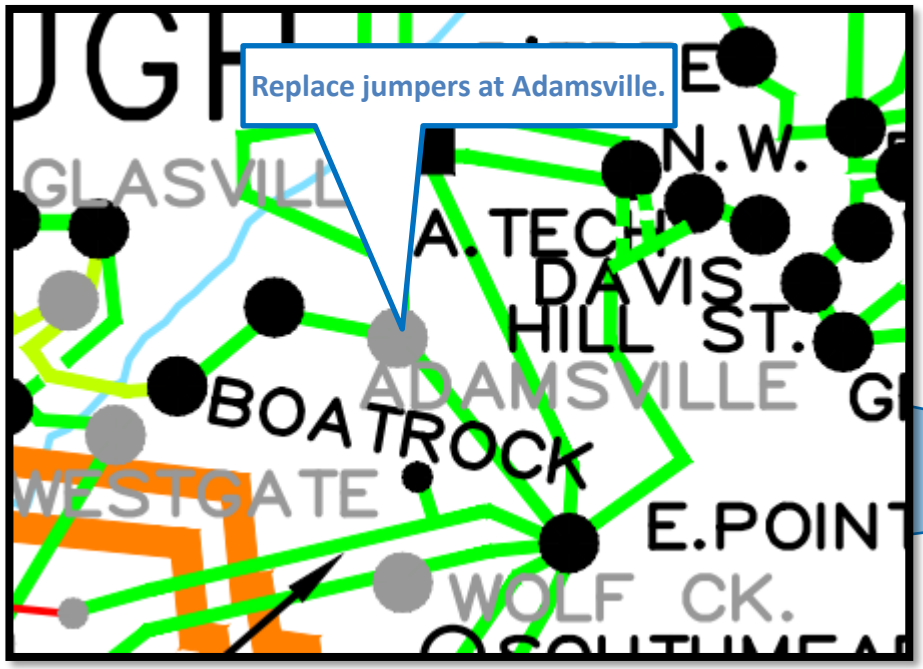




SOUTHERN – 10E

- **2032**

ADAMSVILLE JUMPER REPLACEMENT

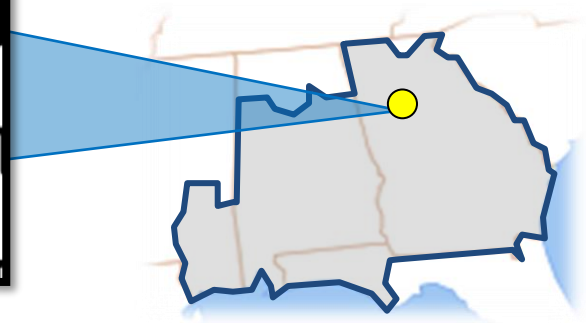


DESCRIPTION:

- GTC: Replace jumpers at Adamsville substation.

SUPPORTING STATEMENT:

- Line jumper overloads for a contingency.



LEGEND
- 115 kV
- 161 kV
- 230 kV
- 500 kV

GULF POWER Balancing Authority Area

Generation Assumptions

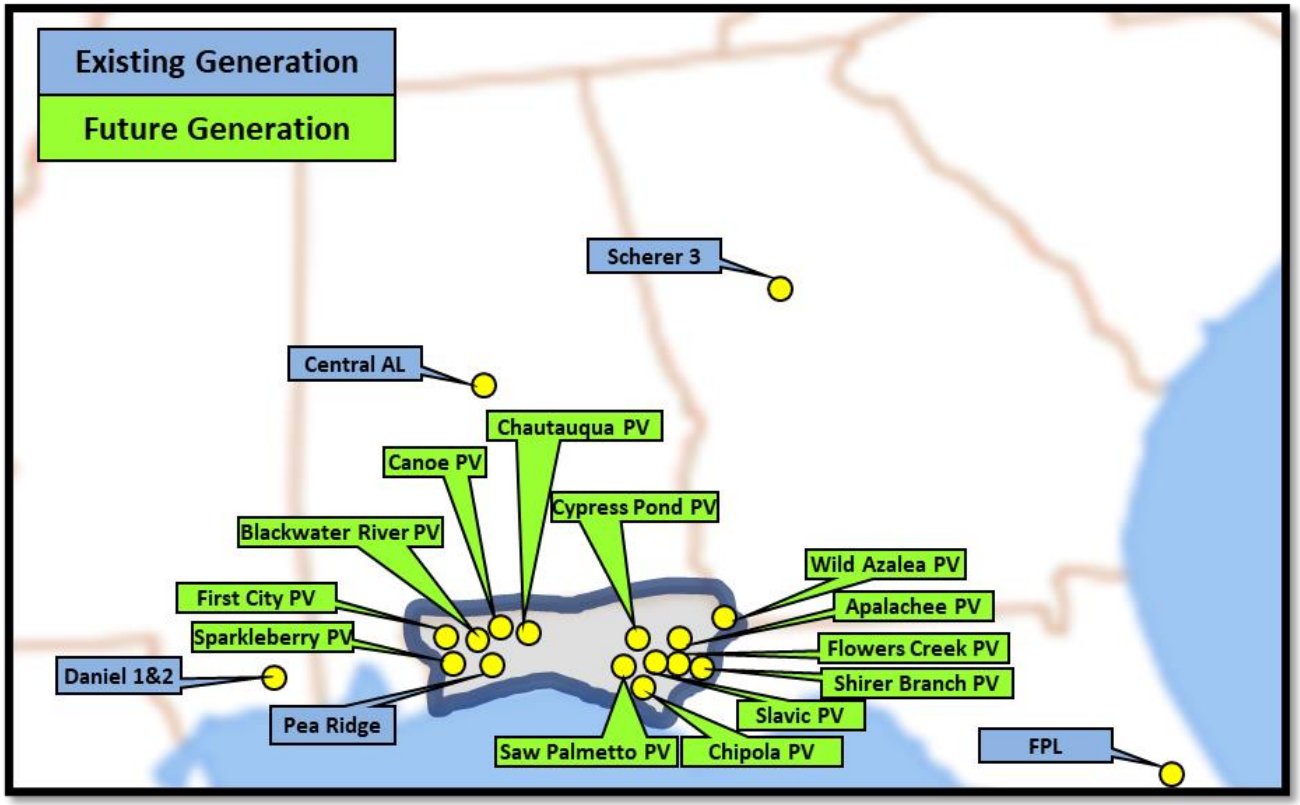
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF POWER – Generation Assumptions

2022

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten-year planning horizon for the 2022 SERTP Process.



Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF POWER – Generation Assumptions

The following table depicts future generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022[1]	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
FLOWERS CREEK PV	Solar	--	75	75	75	75	75	75	75	75	75	75
WILD AZALEA PV	Solar	--	75	75	75	75	75	75	75	75	75	75
APALACHEE PV	Solar	--	75	75	75	75	75	75	75	75	75	75
BLACKWATER RIVER PV	Solar	--	75	75	75	75	75	75	75	75	75	75
CANOE PV	Solar	--	75	75	75	75	75	75	75	75	75	75
CHAUTAUQUA PV	Solar	--	75	75	75	75	75	75	75	75	75	75
CHIPOLA 1 PV	Solar	--	75	75	75	75	75	75	75	75	75	75
CHIPOLA 2 PV	Solar	--	75	75	75	75	75	75	75	75	75	75
CHIPOLA 3 PV	Solar	--	--	75	75	75	75	75	75	75	75	75
CHIPOLA 4 PV	Solar	--	--	75	75	75	75	75	75	75	75	75
CYPRESS POND PV	Solar	--	75	75	75	75	75	75	75	75	75	75
FIRST CITY PV	Solar	--	75	75	75	75	75	75	75	75	75	75
SAW PALMETTO PV	Solar	--	75	75	75	75	75	75	75	75	75	75
SHIRER BRANCH PV	Solar	--	75	75	75	75	75	75	75	75	75	75
SLAVIC PV	Solar	--	--	75	75	75	75	75	75	75	75	75
SPARKLEBERRY	Solar	--	75	75	75	75	75	75	75	75	75	75

Note: Gulf Power is currently in the SBAA but has preliminary plans to leave the SBAA in June 2022

Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF POWER – Generation Assumptions (Delivery Service)

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

SITE	2022[1]	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
DANIEL 1 & 2	500	500	0	0	0	0	0	0	0	0	0
SCHERER 3	220	220	220	220	220	220	220	0	0	0	0
CENTRAL ALABAMA	885	--	--	--	--	--	--	--	--	--	--
PEA RIDGE	12	12	12	0	0	0	0	0	0	0	0
FPL[1]	500	500	850	850	-600	-600	-700	-700	-850	-850	-850

[1] Positive sign indicates Gulf receiving from FPL, negative sign indicates Gulf sending to FPL.

Note: Gulf Power is currently in the SBAA but has preliminary plans to leave the SBAA in June 2022

GULF POWER Balancing Authority Area

Preliminary Transmission Expansion Plan

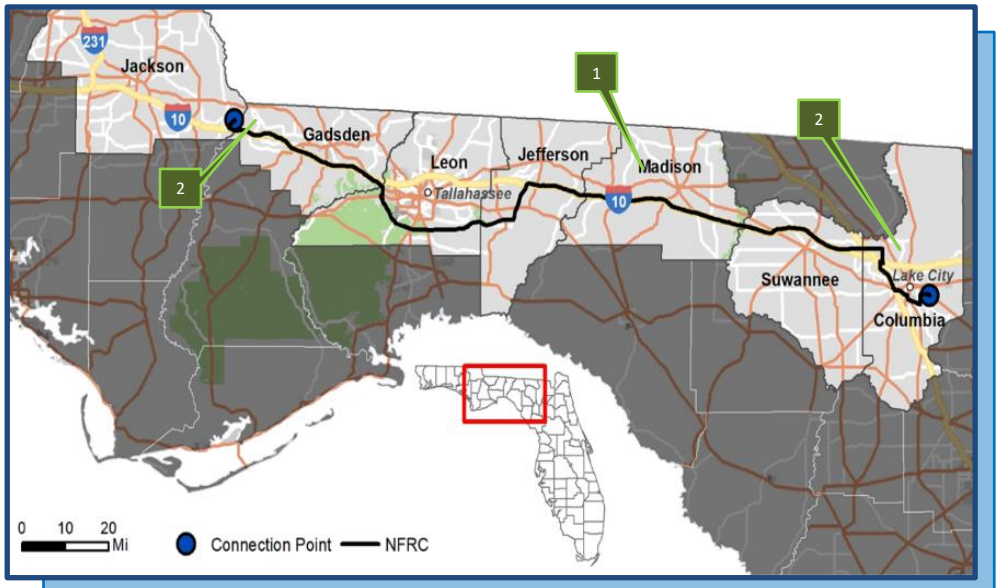
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 1

- **2022**

RAVEN-SINAI CEMETARY 161kV TRANSMISSION LINE PROJECT



PROJECT DESCRIPTION:

1. Build a new 161kV line of approximately 176 miles rated at 3,210 Amps (895 MVA) from Raven (FPL) to Sinai Cemetery (GULF) substations.
2. Add a 230/161kV transformer at Raven and Sinai substations.

SUPPORTING STATEMENT:

- This project will help meet future load growth and continue to improve reliability in a low cost manner for Gulf Power's customers by implementing a direct transmission connection between GULF and FPL.

LEGEND
- 161 kV
- 115 kV
- 230 kV
- 500 kV

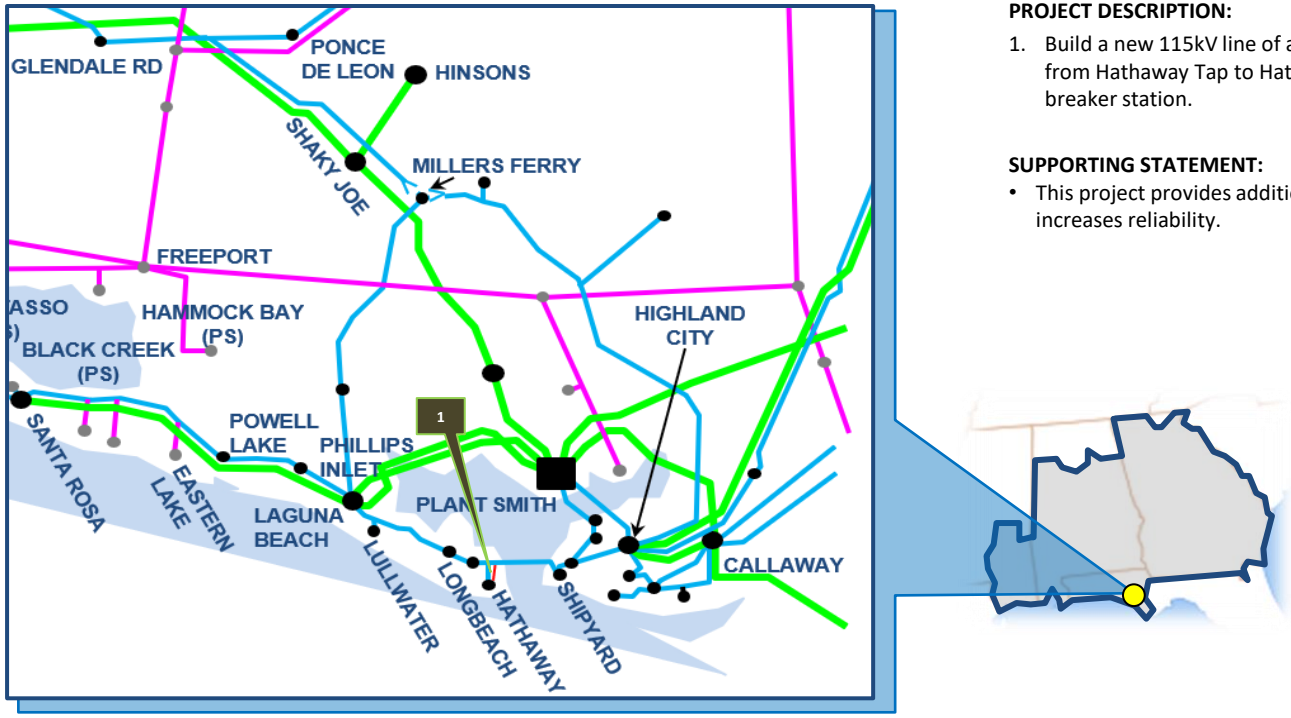
Southeastern Regional
TRANSMISSION PLANNING

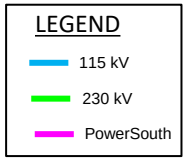
GULF POWER Balancing Authority Area

GULF - 2

- **2022**

HATAWAY 115KV LOOP PROJECT





PROJECT DESCRIPTION:

1. Build a new 115kV line of approximately 2.39 miles rated at 1512 Amps (301 MVA) from Hathaway Tap to Hathaway to provide loop service. Make Hathaway a breaker station.

SUPPORTING STATEMENT:

- This project provides additional operational and maintenance flexibility which then increases reliability.

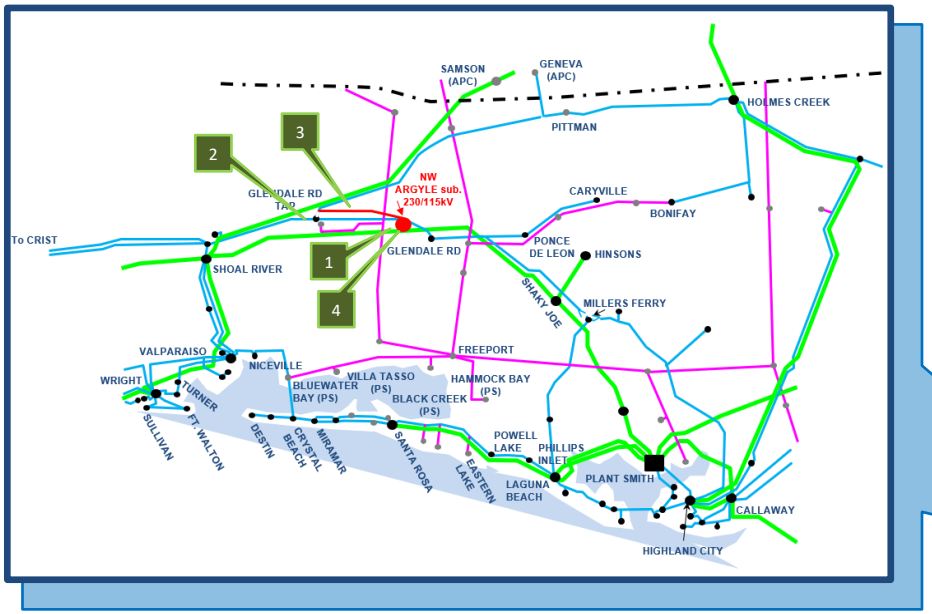
Southeastern Regional
TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 3

- **2022**

ARGYLE INJECTION

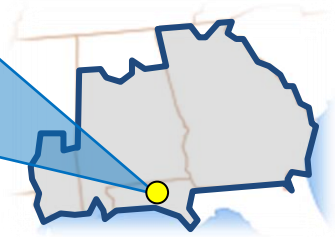


PROJECT DESCRIPTION:

1. Build a new 230/115kV substation (Argyle). Loop-in Shoal River-Smith 230kV line and Glendale Road Tap-Glendale Road 115kV line section.
2. Reconductor Glendale Road Tap-Argyle line section to a minimum of 1044 Amps (208 MVA).
3. Build a new 115kV line of approximately 5 miles rated at 1495 Amps (298 MVA) to Glendale Road Tap to create new Argyle-Holmes Creek 115kV line.
4. Install a 230/115kV, 500 MVA autotransformer at Argyle substation.

SUPPORTING STATEMENT:

- This project eliminates several overloads under several contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.



LEGEND
115 kV
230 kV
PowerSouth

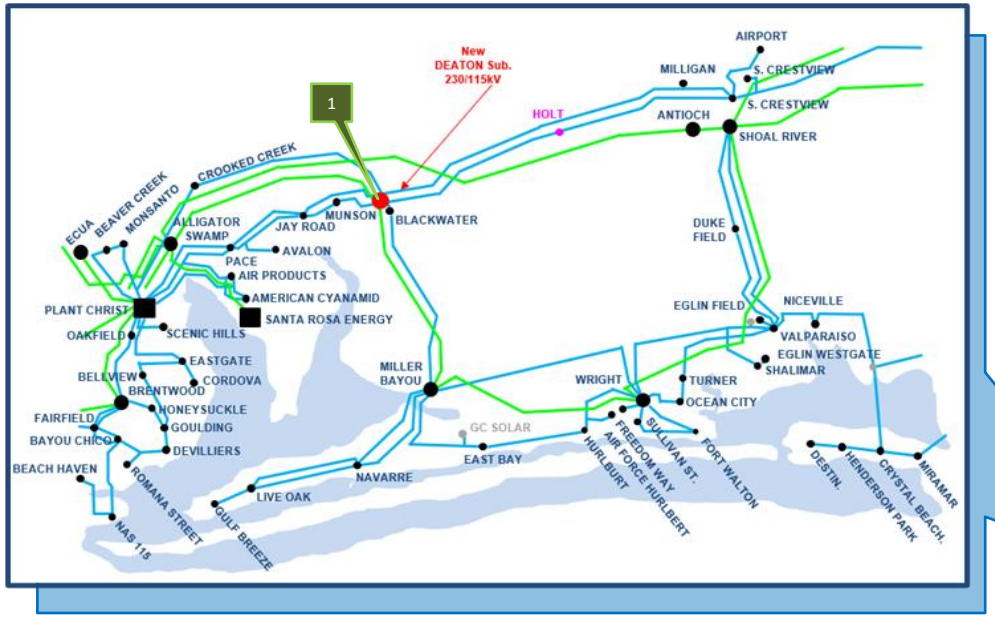
Southeastern Regional TRANSMISSION PLANNING

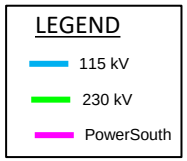
GULF POWER Balancing Authority Area

GULF - 4

- **2022**

DEATON INJECTION





PROJECT DESCRIPTION:

1. Build a new 230/115kV substation (Deaton) looping-in the existing Crist-South Crestview #1 & #2-115kV lines, Blackwater-Crooked Creek 115kV and the Alligator Swamp-Miller Bayou 230kV line. Add a 230/115kV, 500MVA autotransformer.

SUPPORTING STATEMENT:

- This project eliminates several overloads under several contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.

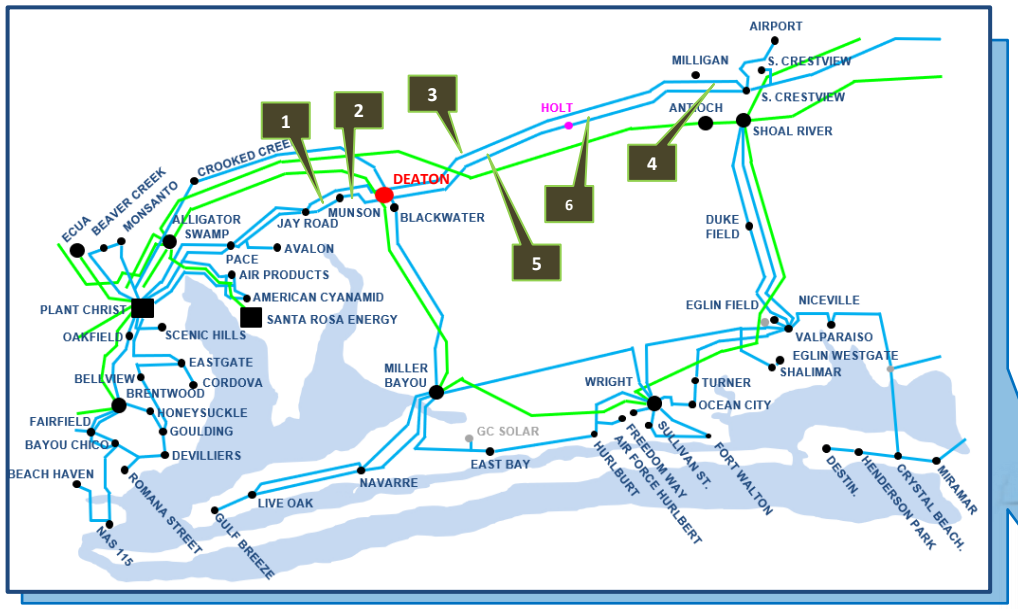
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 5

- **2022-2023**

CRIST – DEATON-SOUTH CRESTVIEW 115 KV RECONDUCTORINGS

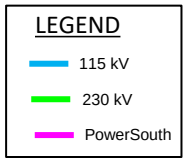


PROJECT DESCRIPTION:

1. Reconductor approx. 2.1 miles of JAY ROAD-MUNSON 115kV line to a minimum of 1495 Amps (298 MVA).
2. Reconductor approx. 2.4 miles of MUNSON-DEATON 115kV line to a minimum of 1495 Amps (298 MVA).
3. Reconductor approx. 21.64 miles of DEATON-MILLIGAN TAP 115kV line to a minimum of 1495 Amps (298 MVA).
4. Reconductor approx. 4.7 miles of MILLIGAN TAP-SOUTH CRESTVIEW 115kV line to a minimum of 1495 Amps (298 MVA).
5. Reconductor approx. 15 miles of DEATON-HOLT TP 115kV line to a minimum of 1495 Amps (298 MVA).
6. Reconductor approx. 11.3 miles of HOLT TP-SOUTH CRESTVIEW 115kV line to a minimum of 1495 Amps (298 MVA).

SUPPORTING STATEMENT:

- This project eliminates several overloads under several contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.



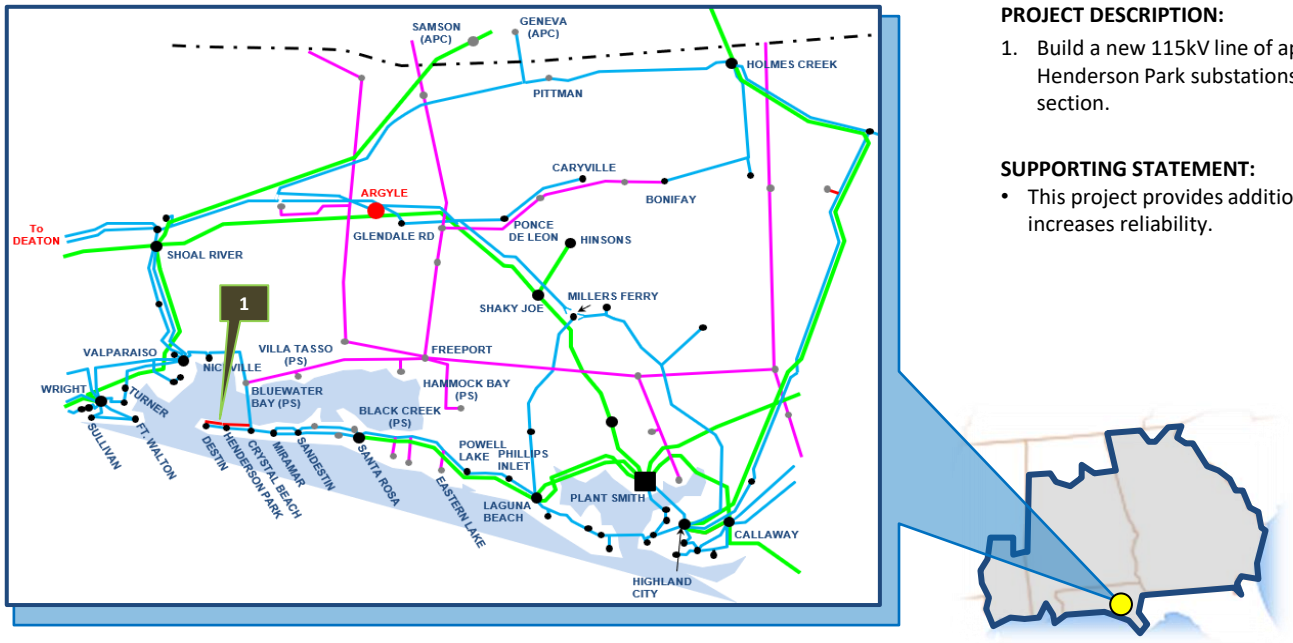
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 6

- **2023**

DESTIN 115KV LOOP PROJECT



PROJECT DESCRIPTION:

1. Build a new 115kV line of approximately 4.18 miles to loop-in Destin and Henderson Park substations on the Bluewater Bay (PS)-Crystal Beach 115kV line section.

SUPPORTING STATEMENT:

- This project provides additional operational and maintenance flexibility which then increases reliability.

LEGEND

- 115 kV
- 230 kV
- PowerSouth

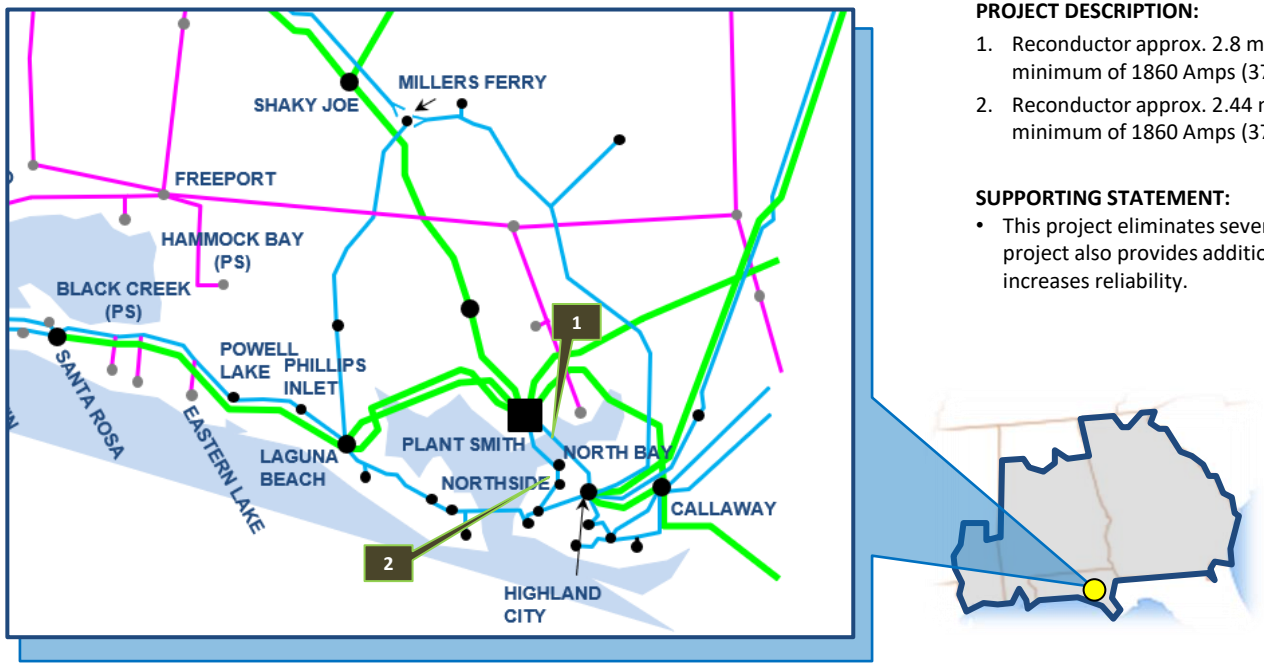
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 7

- **2023**

GREENWOOD-LANSING SMITH #1-115 KV RECONDUCTORINGS



PROJECT DESCRIPTION:

1. Reconductor approx. 2.8 miles of LANSING SMITH-NORTH BAY 115kV line to a minimum of 1860 Amps (371 MVA).
2. Reconductor approx. 2.44 miles of NORTHSIDE-NORTH BAY 115kV line to a minimum of 1860 Amps (371 MVA).

SUPPORTING STATEMENT:

- This project eliminates several overloads under several contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.

LEGEND

- 115 kV
- 230 kV
- PowerSouth

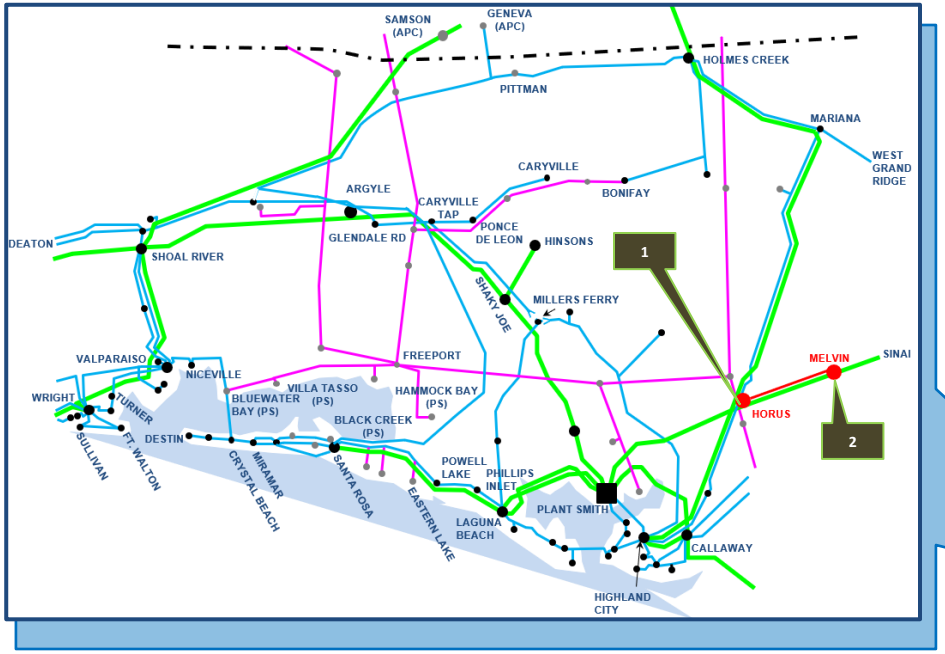
Southeastern Regional TRANSMISSION PLANNING

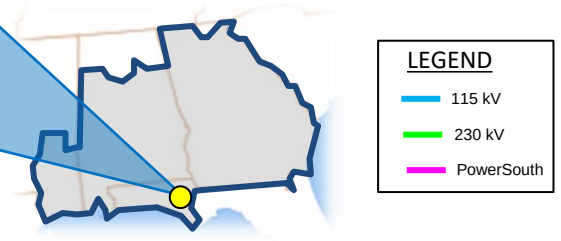
GULF POWER Balancing Authority Area

GULF - 8

- **2023**

HORUS INJECTION PROJECT





PROJECT DESCRIPTION:

1. Build a new 230kV substation (HORUS). Loop-in Sinai-Smith 230kV and Highland City-Holmes Creek 230kV lines.
2. Build a new 230kV line approximately 14 miles rated at 1905 Amps (759 MVA) from Horus substation to a new 230kV substation (MELVIN).

SUPPORTING STATEMENT:

- This project provides additional operational and maintenance flexibility which then increases reliability.

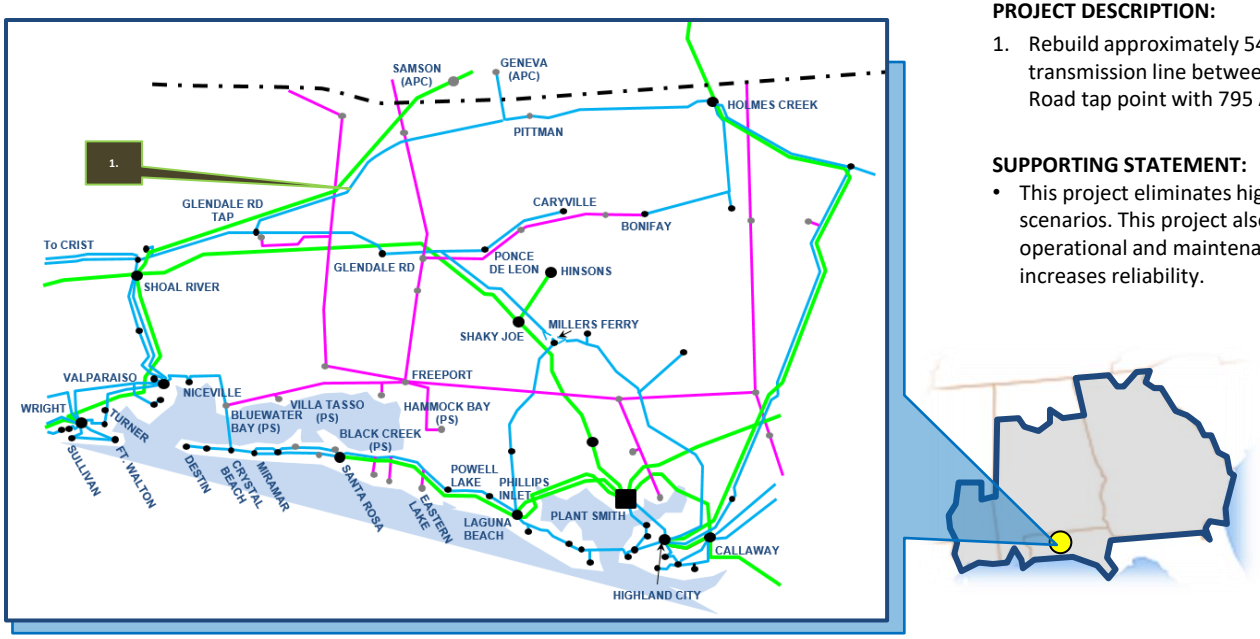
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 9

- **2024**

HOLMES CREEK – SOUTH CRESTVIEW 115 KV TRANSMISSION LINE



PROJECT DESCRIPTION:

1. Rebuild approximately 54.4 miles of 115 kV transmission line between Holmes Creek and Glendale Road tap point with 795 ACSR at 100˚C.

SUPPORTING STATEMENT:

- This project eliminates high loadings under contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.

LEGEND

- 115 kV
- 230 kV
- PowerSouth

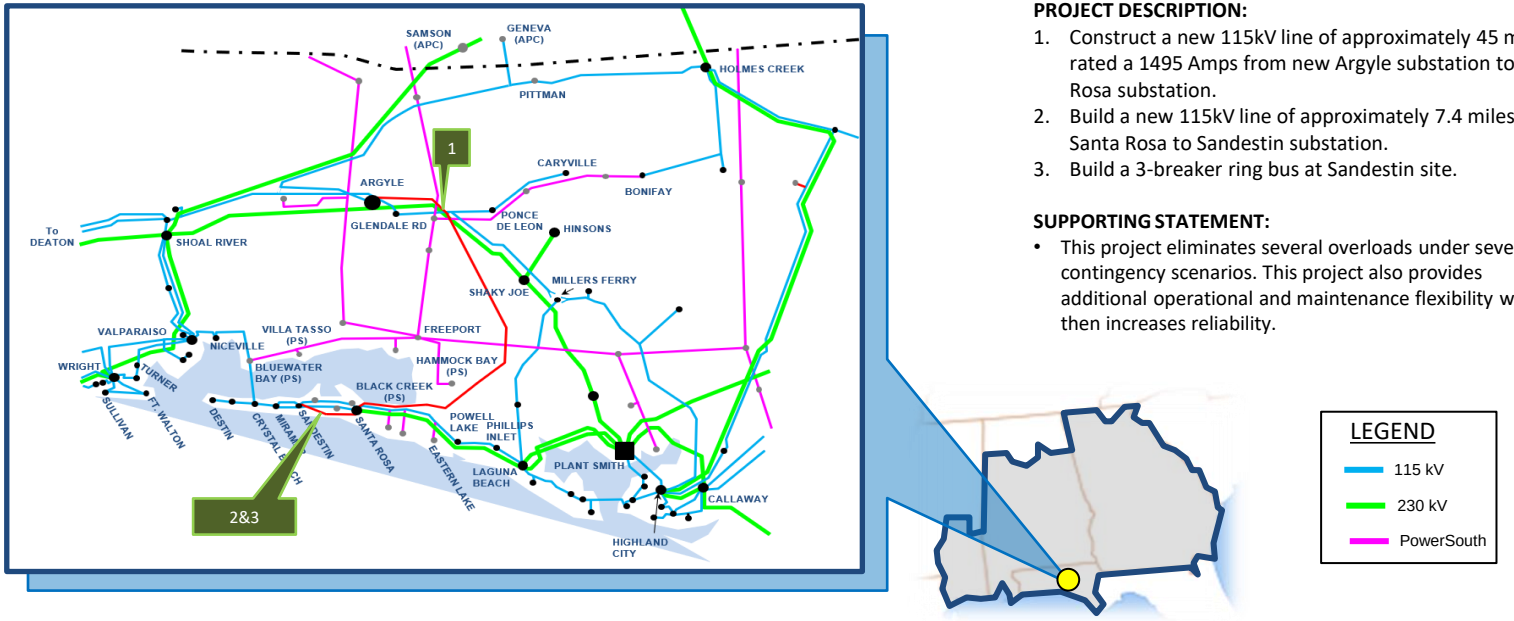
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 10

- **2025**

ARGYLE – SANTA ROSA 115 KV TRANSMISSION LINE



PROJECT DESCRIPTION:

1. Construct a new 115kV line of approximately 45 miles rated a 1495 Amps from new Argyle substation to Santa Rosa substation.
2. Build a new 115kV line of approximately 7.4 miles from Santa Rosa to Sandestin substation.
3. Build a 3-breaker ring bus at Sandestin site.

SUPPORTING STATEMENT:

- This project eliminates several overloads under several contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.

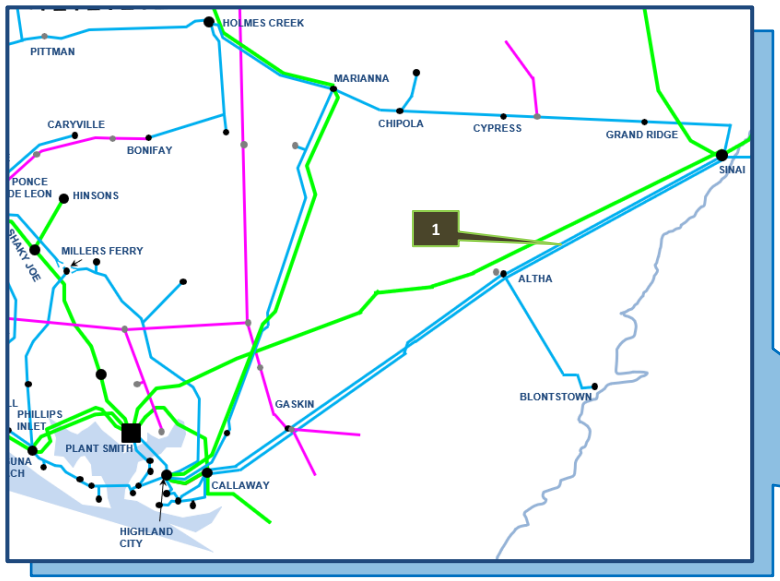
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 11

- **2027**

SINAI-GASKIN 115 KV TRANSMISSION LINE

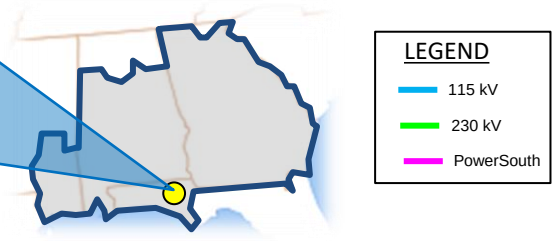


PROJECT DESCRIPTION:

1. Rebuild/upgrade approximately 17.3 miles of 115 kV transmission line between Sinai-Altha for a minimum of 567Amps (113MVA).

SUPPORTING STATEMENT:

- This project eliminates high loadings under contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.



TVA Balancing Authority Area

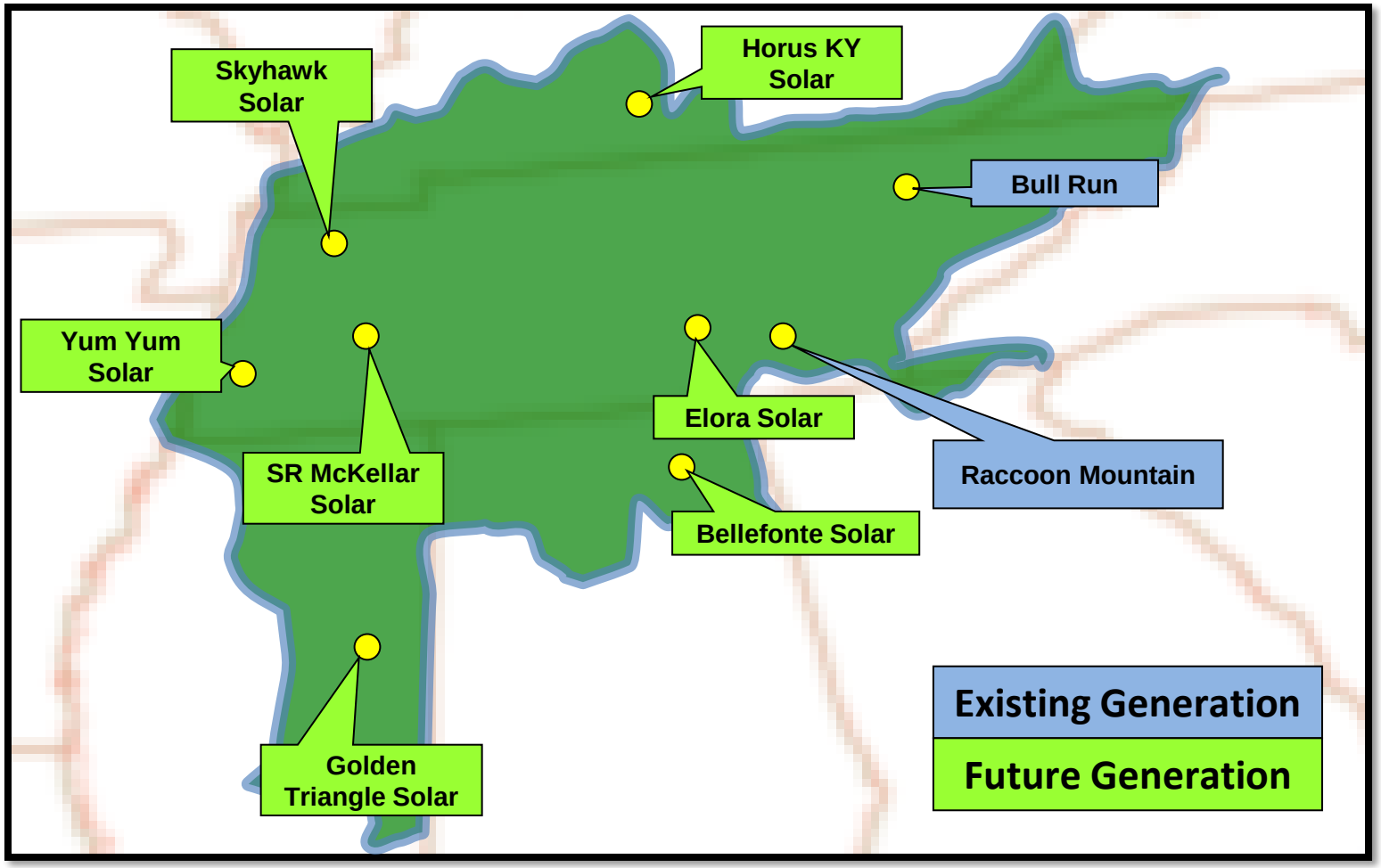
Generation Assumptions

Southeastern Regional TRANSMISSION PLANNING

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 2022 SERTP Process.



TVA Balancing Authority Area

TVA – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2022 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
RACOON MTN GEN 3	440	440	440	440	440	440	440	440	440	440
BULL RUN FP UNIT 1	925	925	0	--	--	--	--	--	--	--
BELLEFONTE SOLAR	150	150	150	150	150	150	150	150	150	150
ELORA SOLAR	150	150	150	150	150	150	150	150	150	150
YUM YUM SOLAR	147	147	147	147	147	147	147	147	147	147
GOLDEN TRIANGLE SOLAR	--	200	200	200	200	200	200	200	200	200
HORUS KY SOLAR	--	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
SKYHAWK SOLAR	--	100	100	100	100	100	100	100	100	100
SR MCKELLAR SOLAR	--	80	80	80	80	80	80	80	80	80

TVA Balancing Authority Area

Preliminary Transmission Expansion Plan

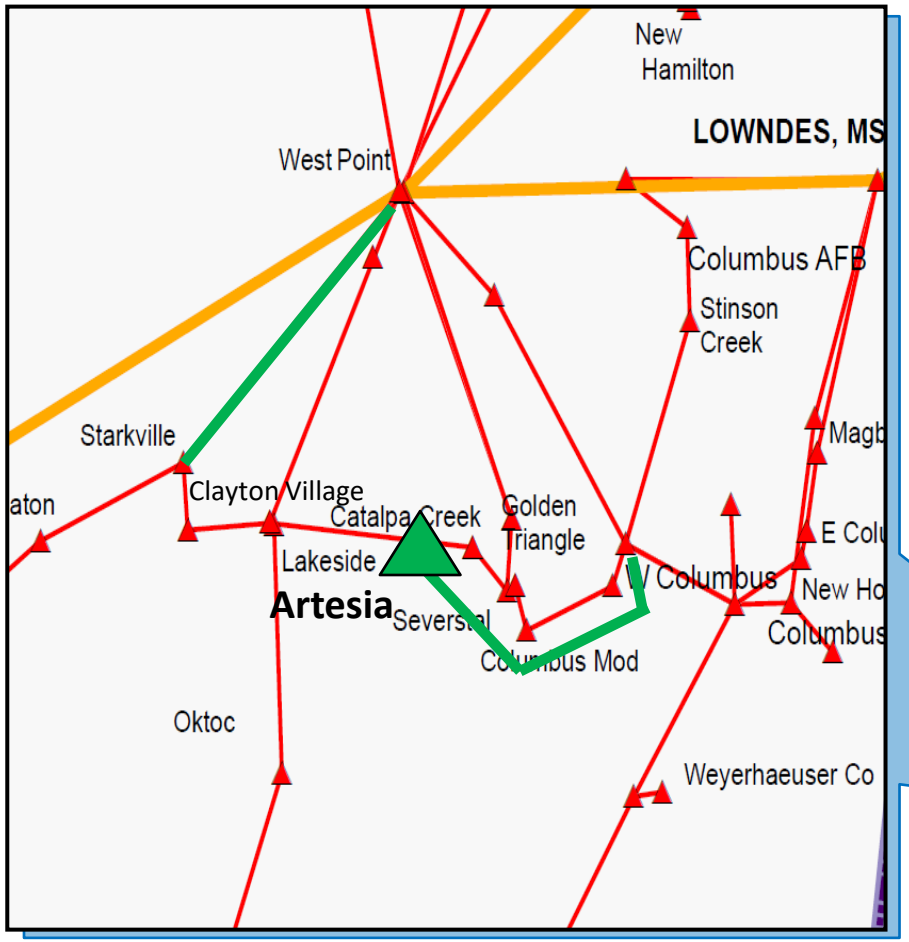
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 1

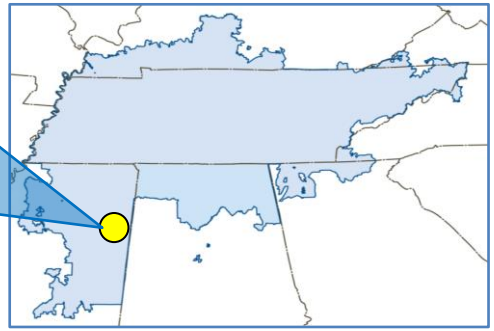
- **2022**

ARTESIA – W. COLUMBUS 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct the Artesia 161 kV Substation. Construct approximately 12.0 miles for Artesia to West Columbus with 954 ACSS at 150°C. Reconductor approximately 15.0 miles of West Point to Starkville 161 kV with 954 ACSS at 150°C.

- **SUPPORTING STATEMENT:**
  - Thermal overloads occur and voltage support is needed in the West Point and Columbus area under contingency.



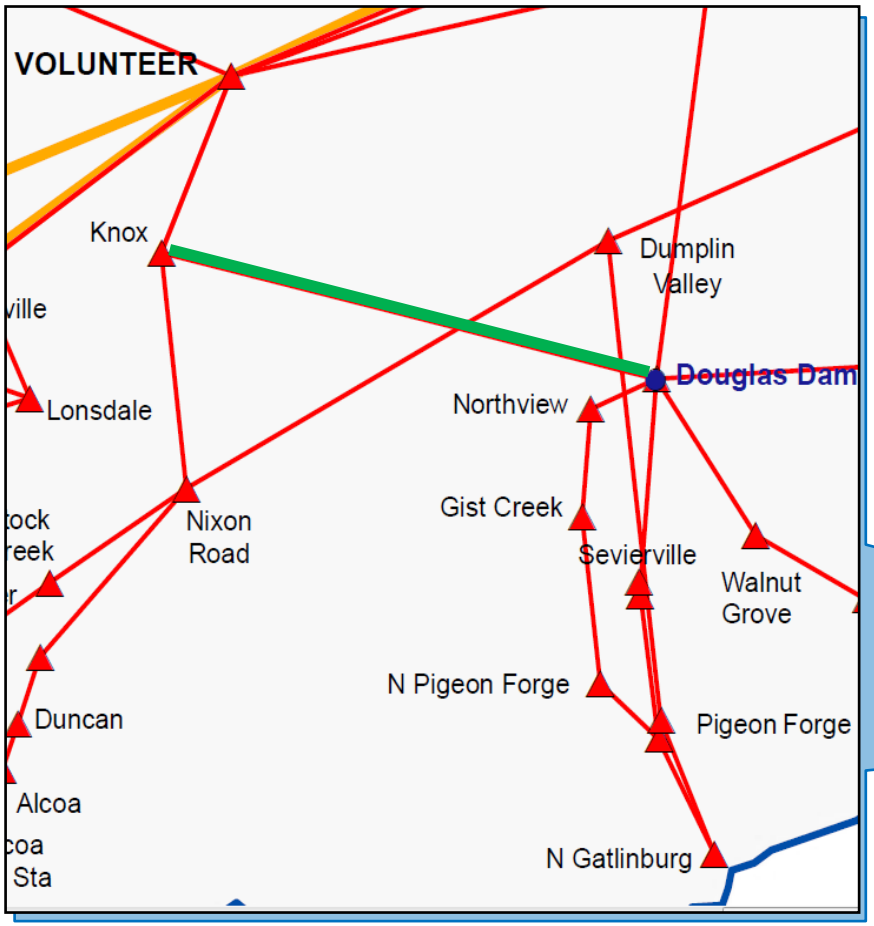
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

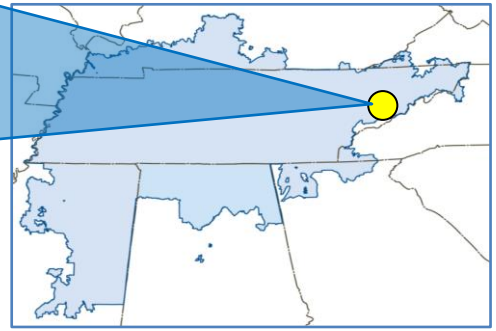
TVA – 2

• **2022**

KNOX – DOUGLAS 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Rebuild approximately 15.0 miles of the Knox to Douglas 161 kV transmission line with 954 ACSS at 125°C.
- **SUPPORTING STATEMENT:**
  - The Knox to Douglas 161 kV transmission line overloads under contingency.



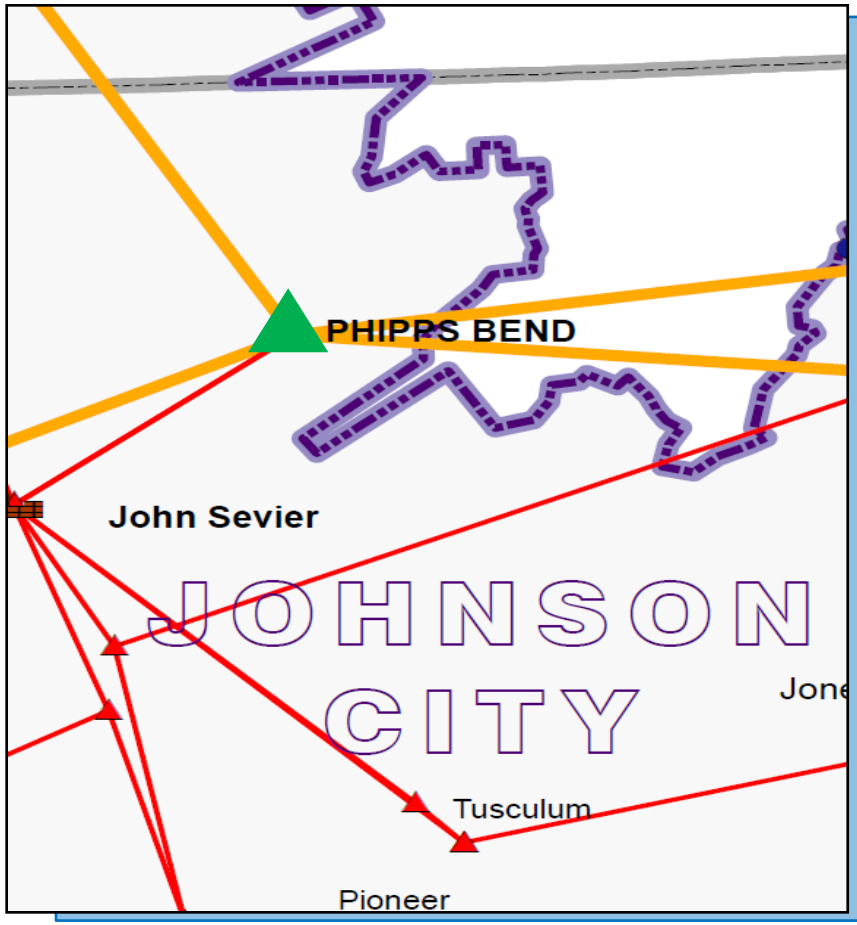
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

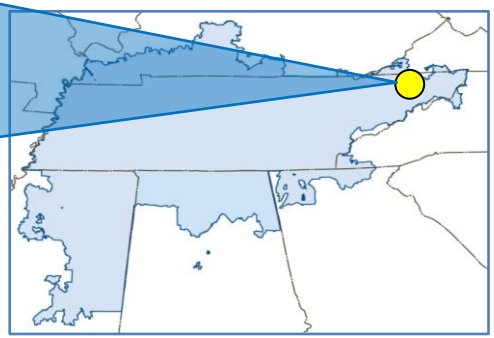
TVA – 3

- **2022**

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.

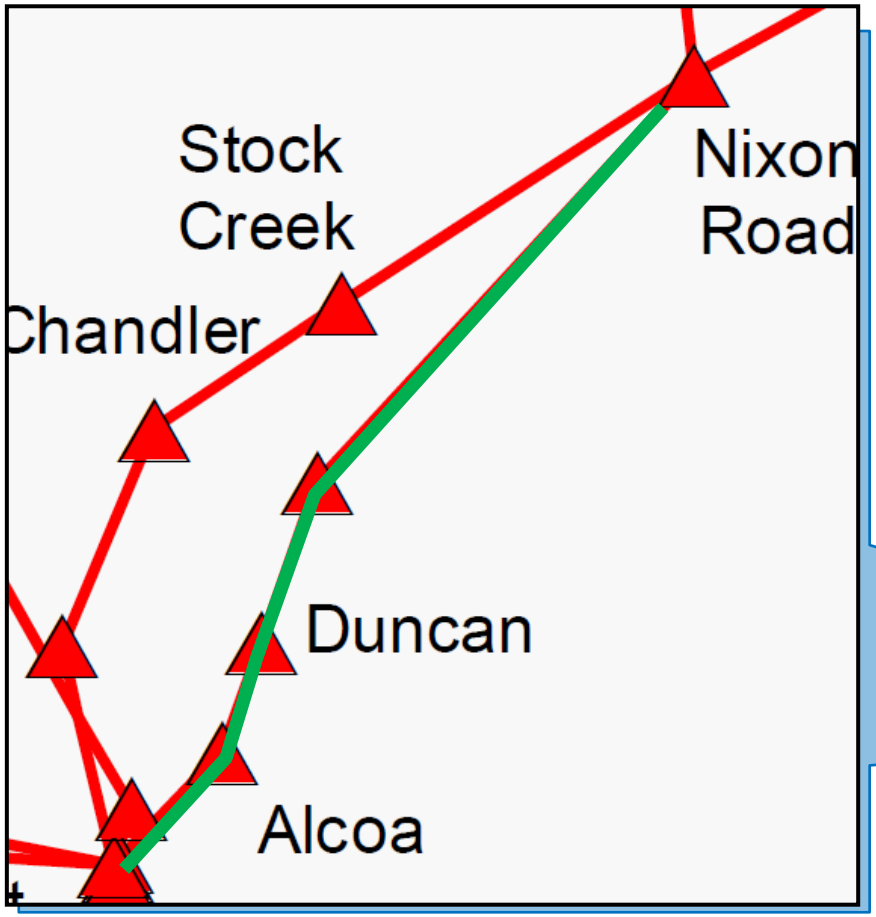


TVA Balancing Authority Area

TVA – 4

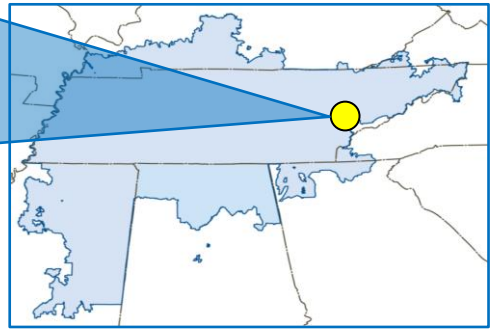
- **2023**

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 2.0 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.



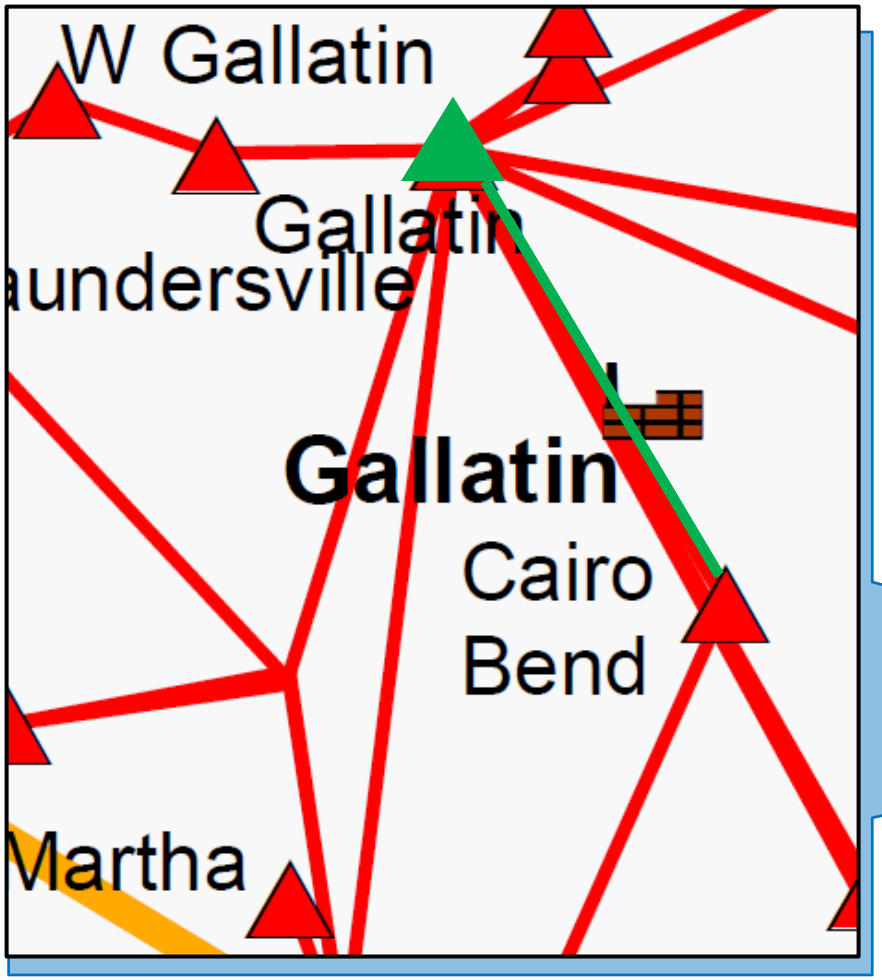
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

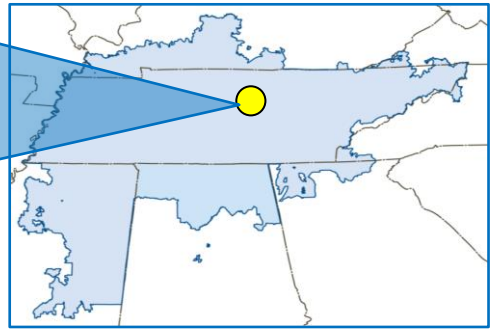
TVA – 5

- **2023**

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.



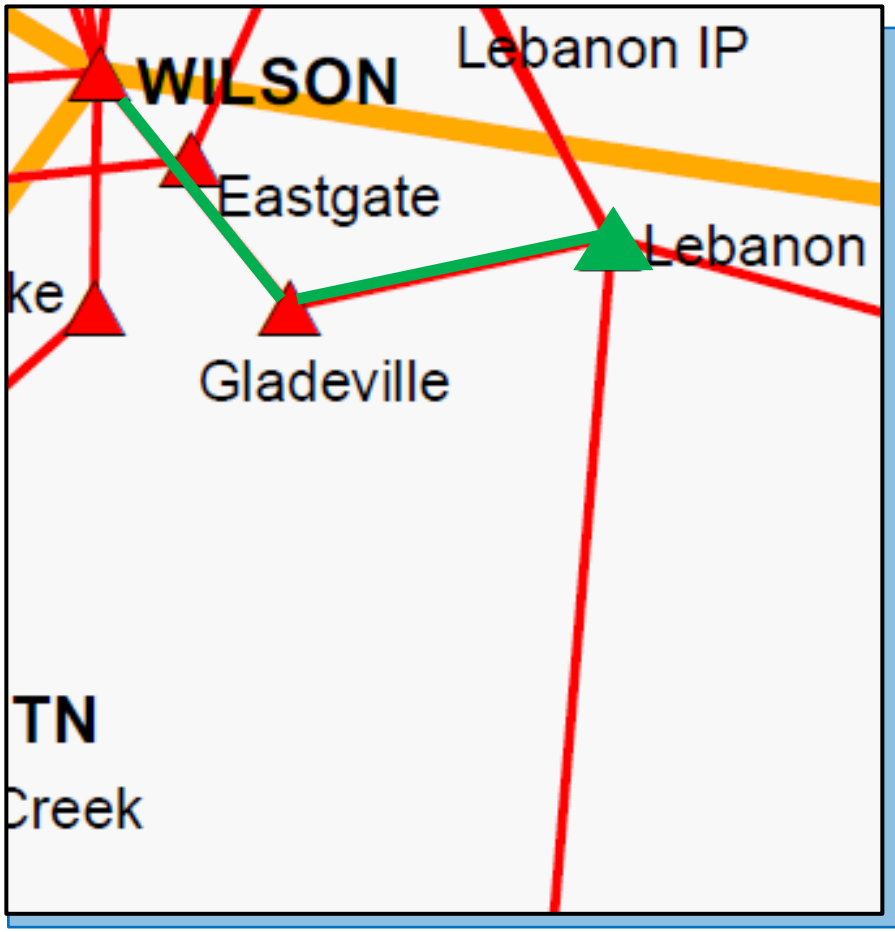
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

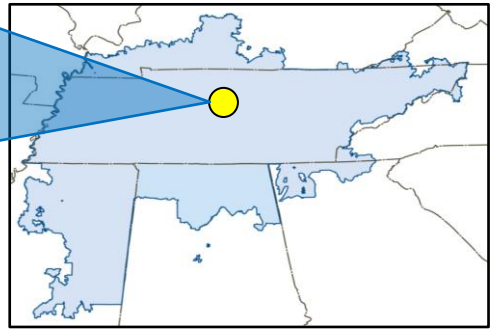
TVA – 6

- **2023**

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.



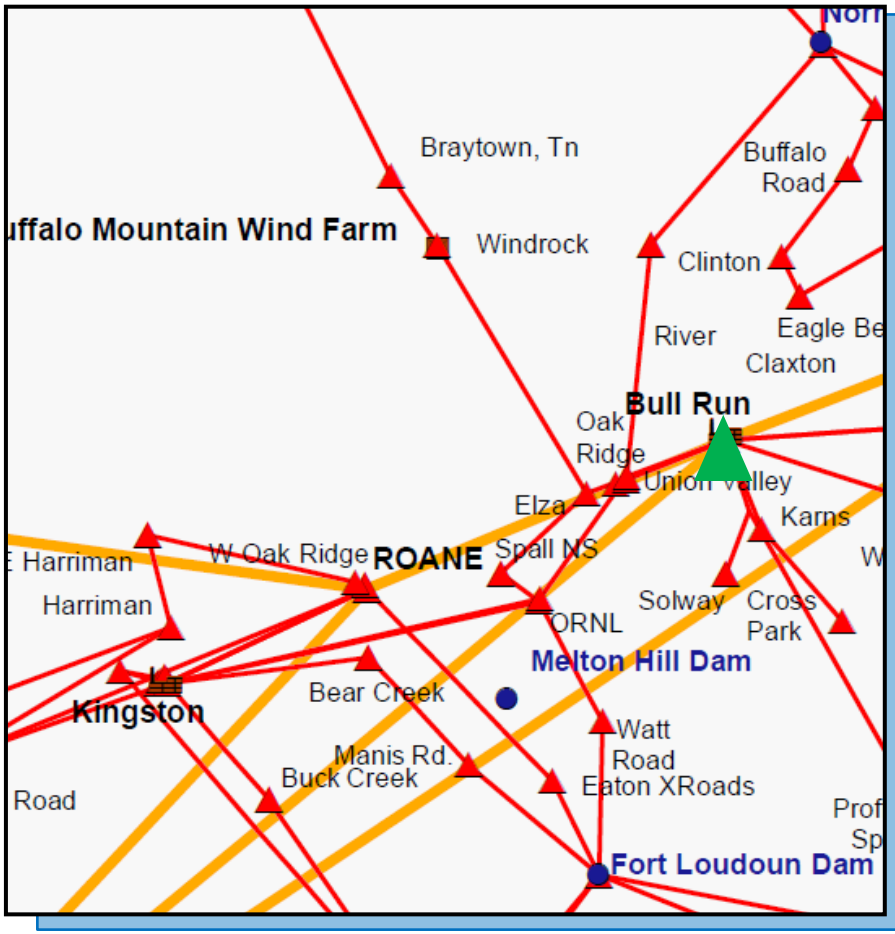
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

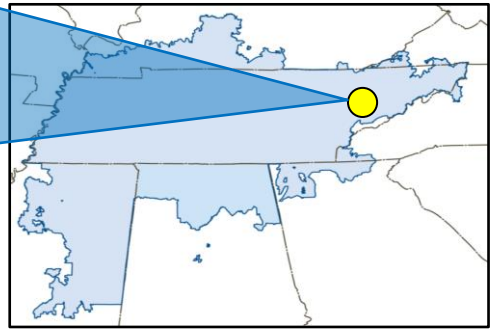
TVA – 7

- **2023**

ANDERSON 500 KV SUBSTATION



- **DESCRIPTION:**
  - Build new Anderson 500kV Substation and build Anderson 500/161 kV transformer bank.
- **SUPPORTING STATEMENT:**
  - Area 500/161 kV transformer overloads under contingency.



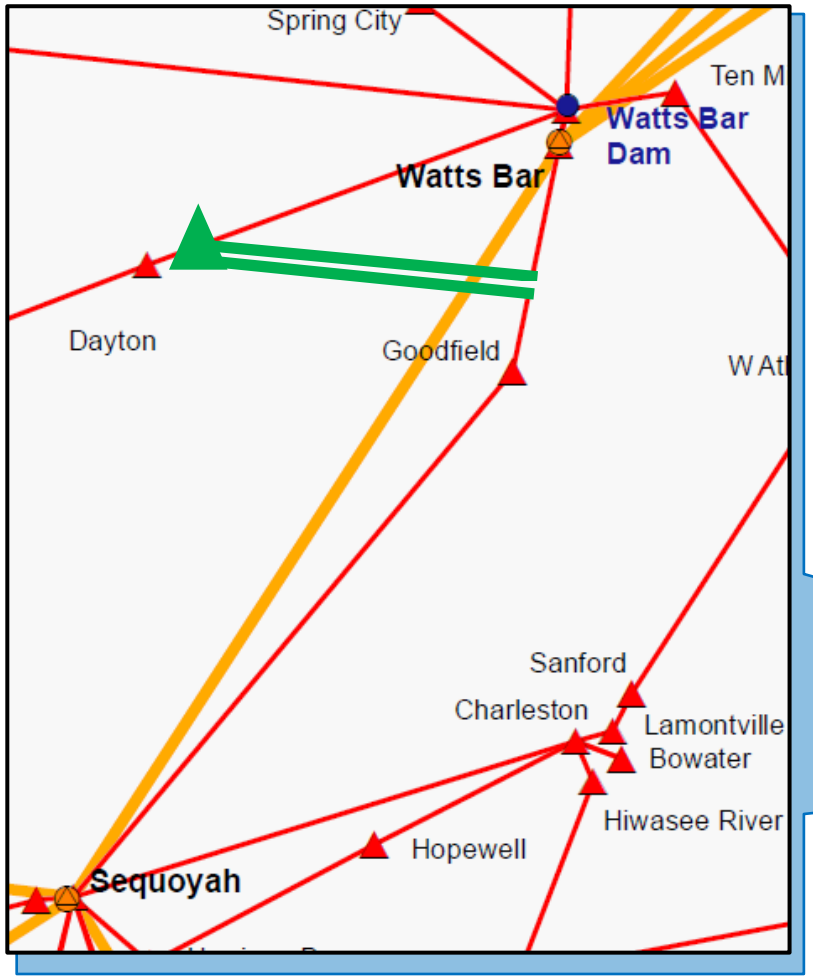
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

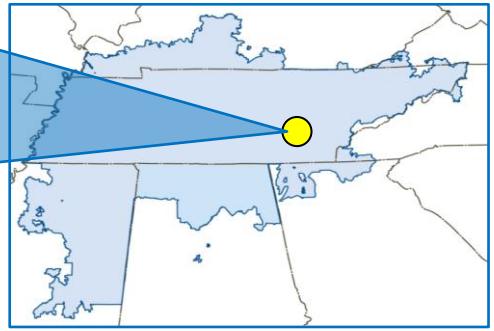
TVA – 8

• **2023**

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.



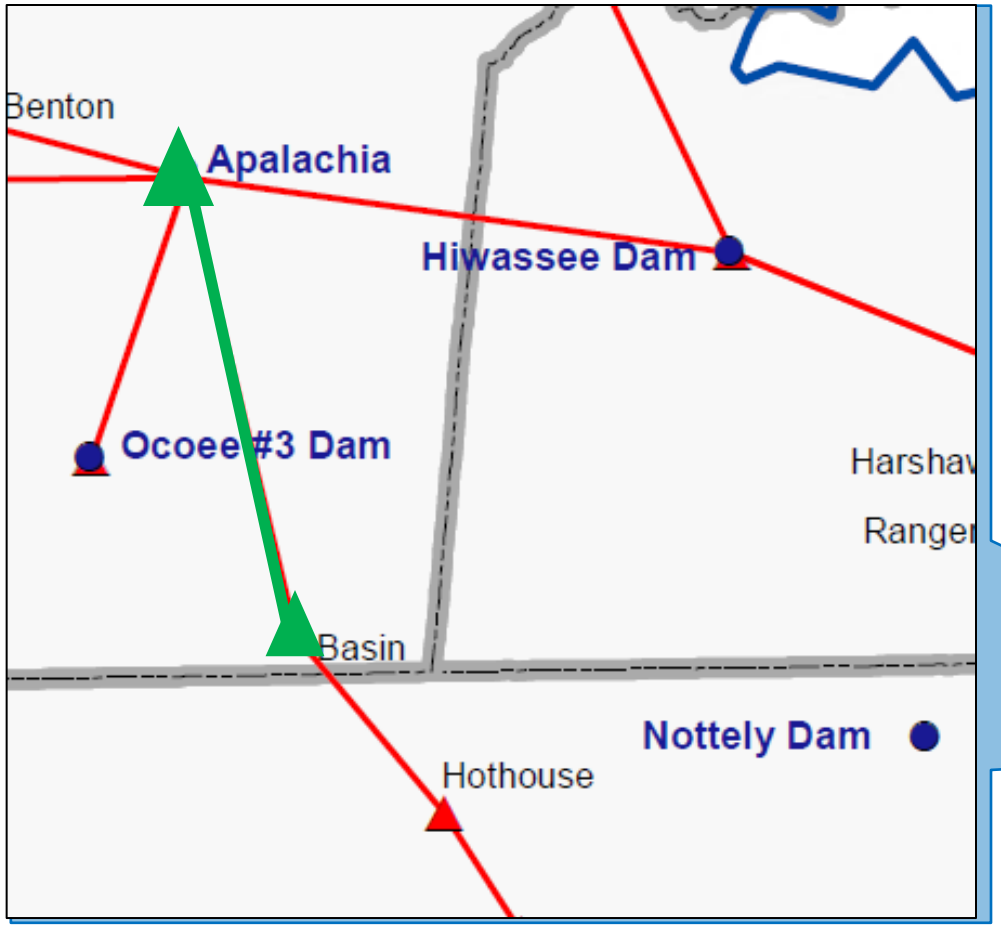
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 9

• **2025**

APALACHIA - BASIN RECONDUCTOR/UPRATE

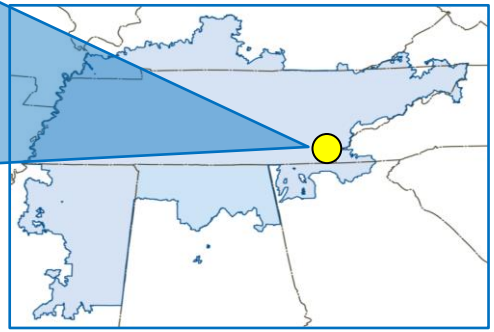


DESCRIPTION:

– Reconductor the 8.4 miles of ACSR 477, replace a wave trap at Basin, and reset a CT at Apalachia.

SUPPORTING STATEMENT:

– The Apalachia - Basin 161 kV transmission line overloads under contingency.



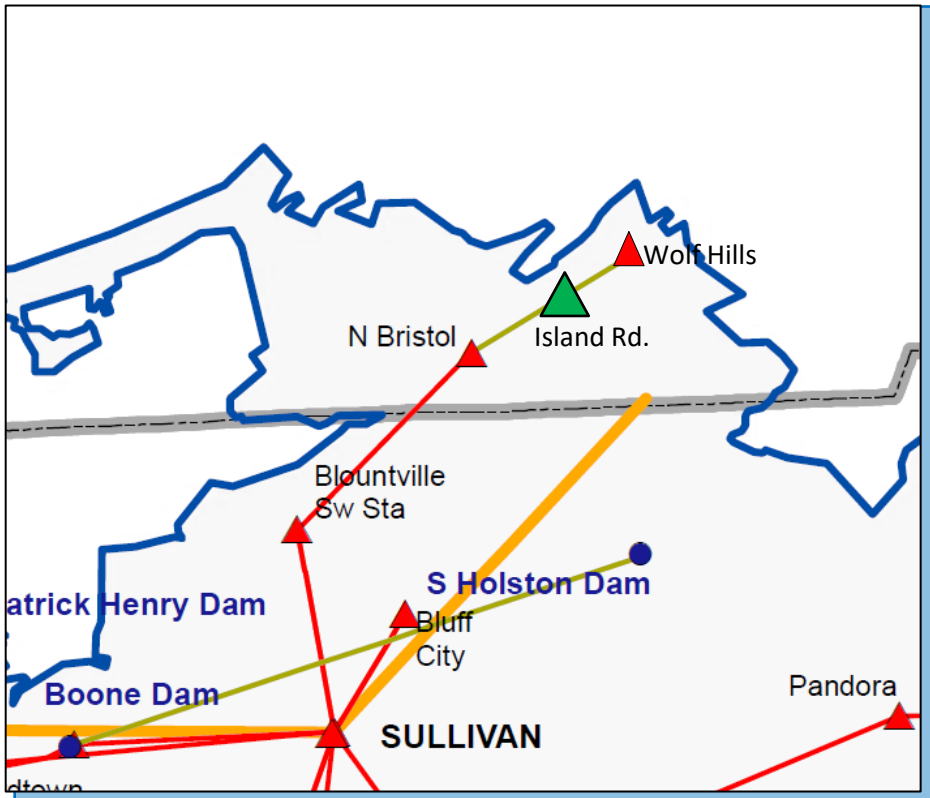
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

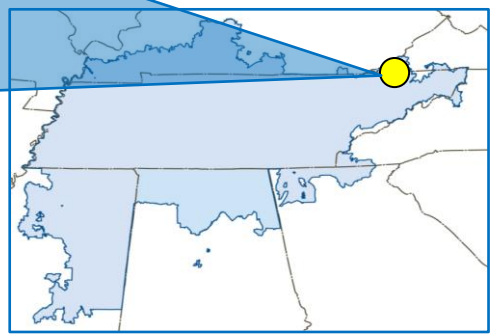
TVA – 10

• **2025**

ISLAND RD 138KV CAPACITOR BANK



- **DESCRIPTION:**
  - Construct the Island Road 138kV Substation with a minimum of a 72MVAR capacitor bank.
- **SUPPORTING STATEMENT:**
  - Voltage support is needed in the North Bristol, TN area under contingency.



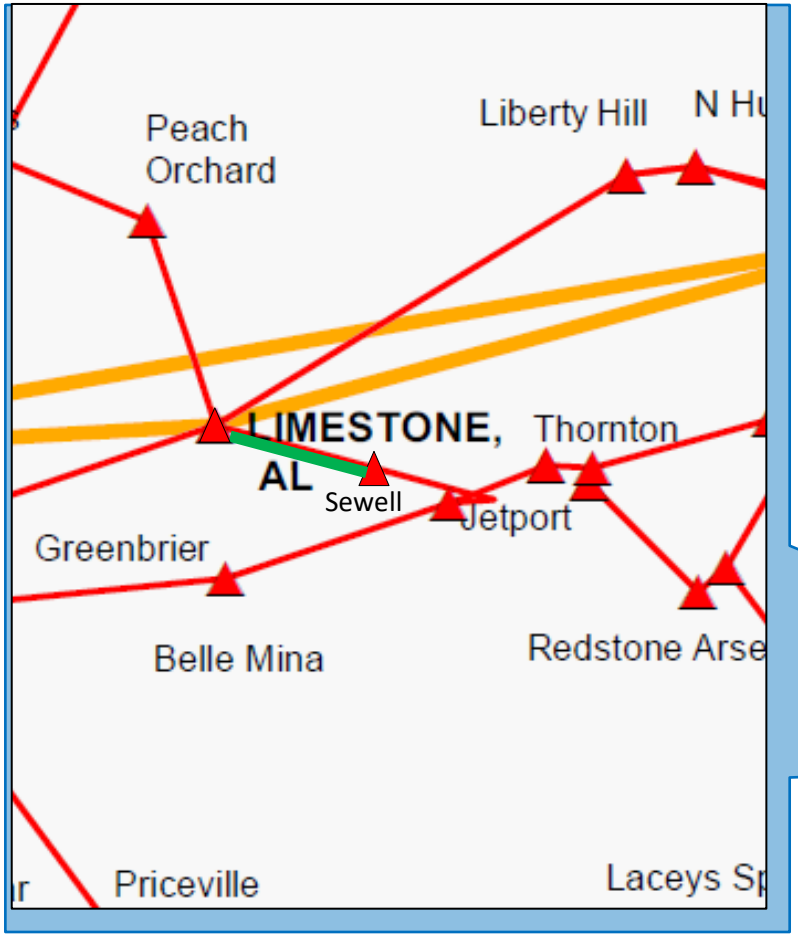
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

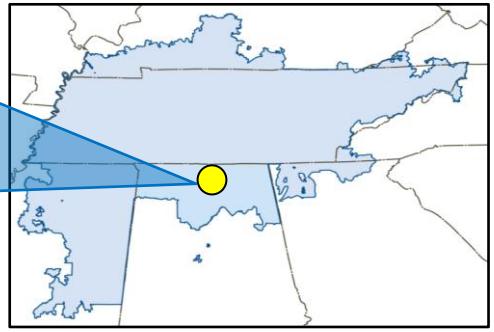
TVA – 11

• **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.



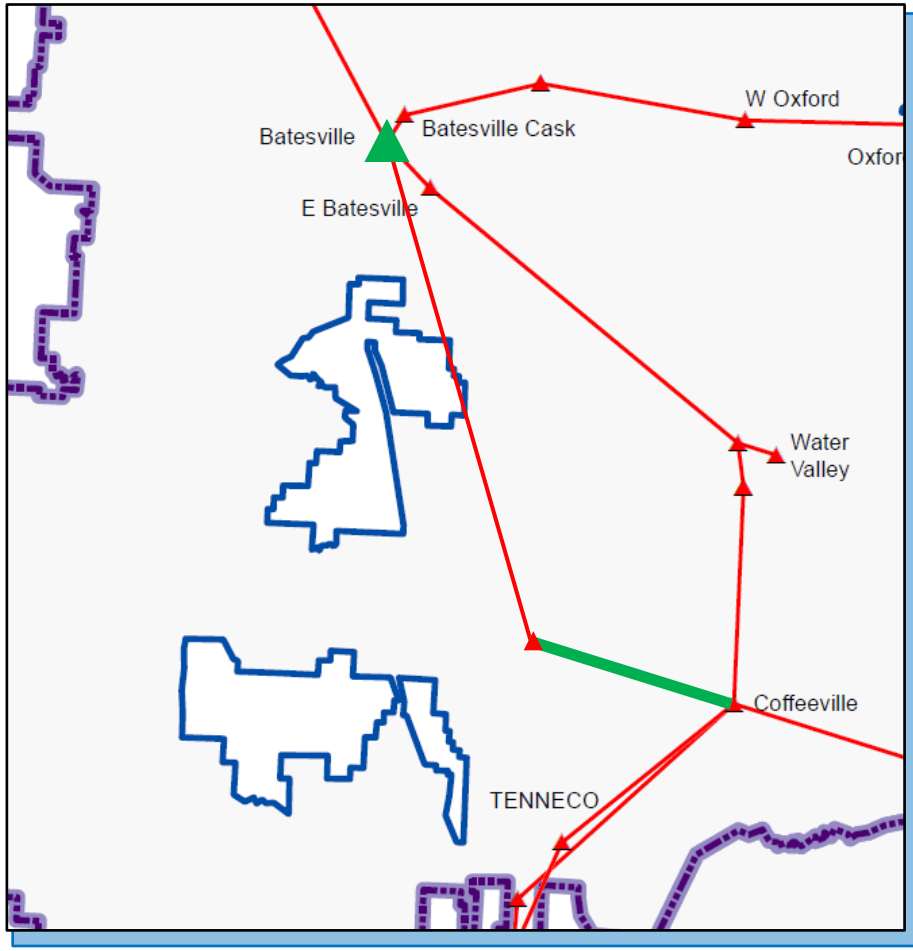
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

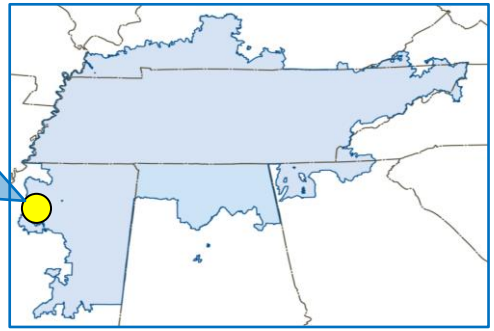
TVA – 12

• **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.



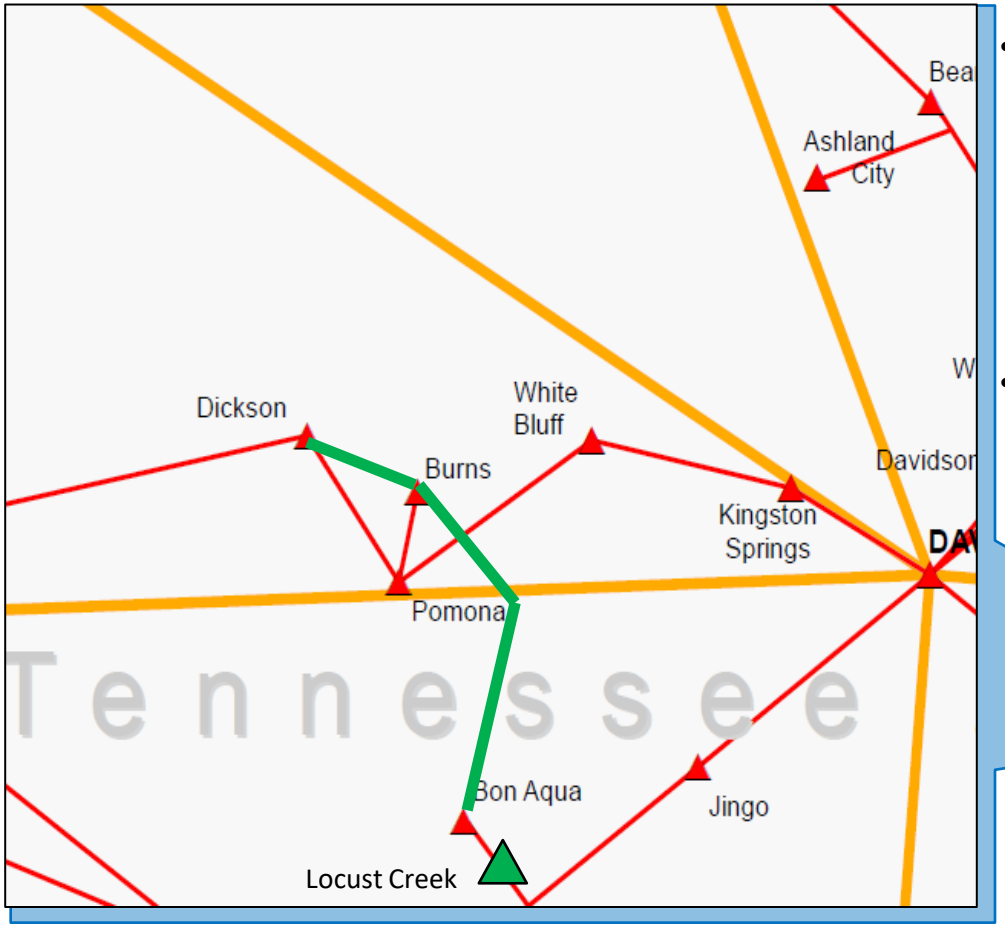
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

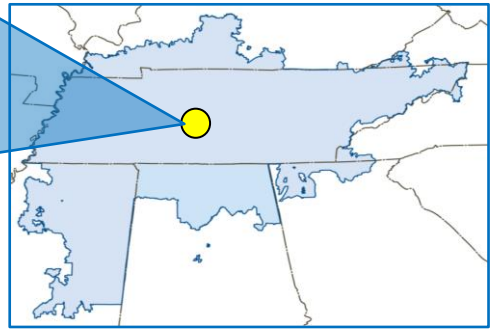
TVA – 13

• **2026**

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.



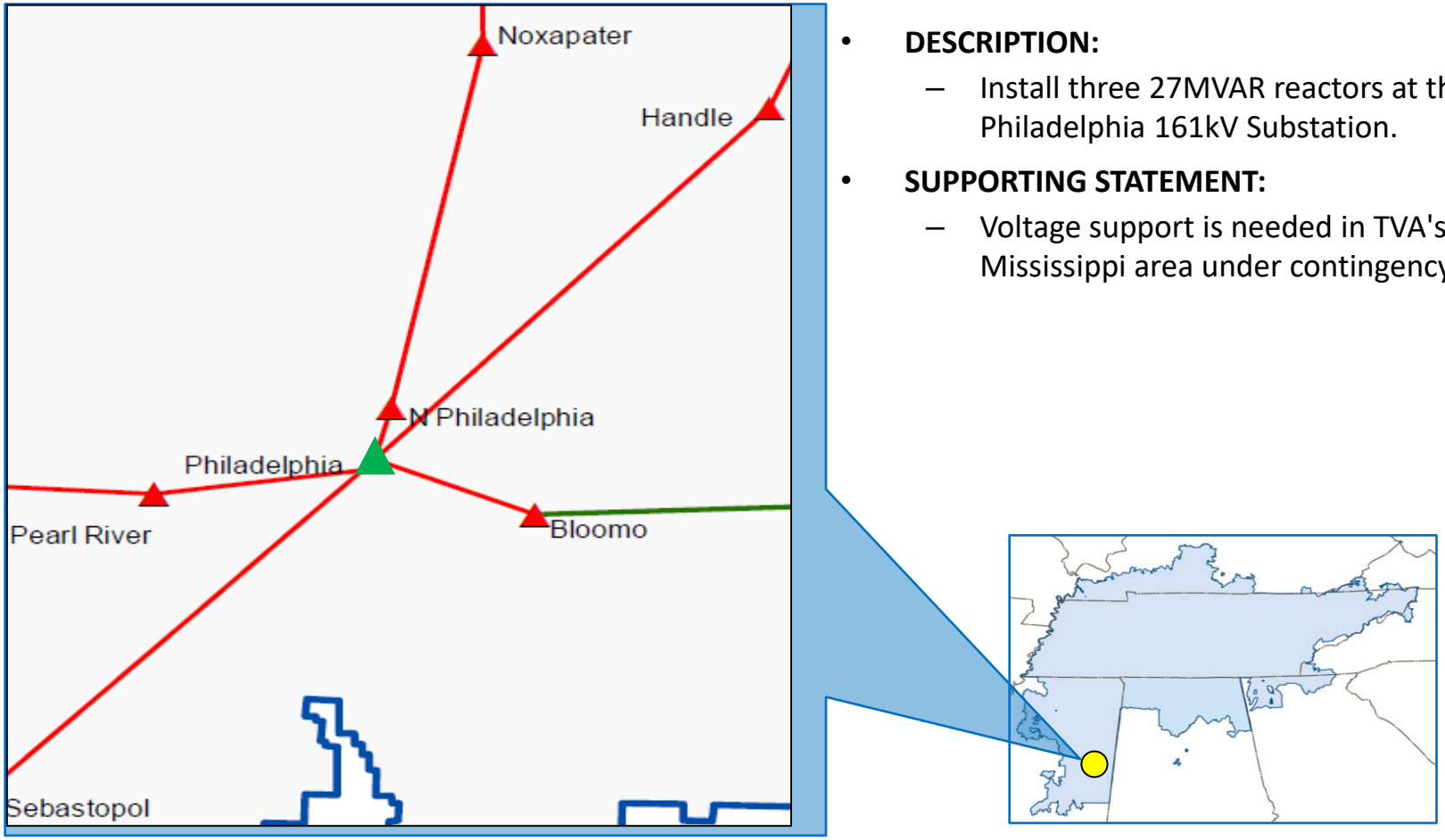
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 14

• **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.

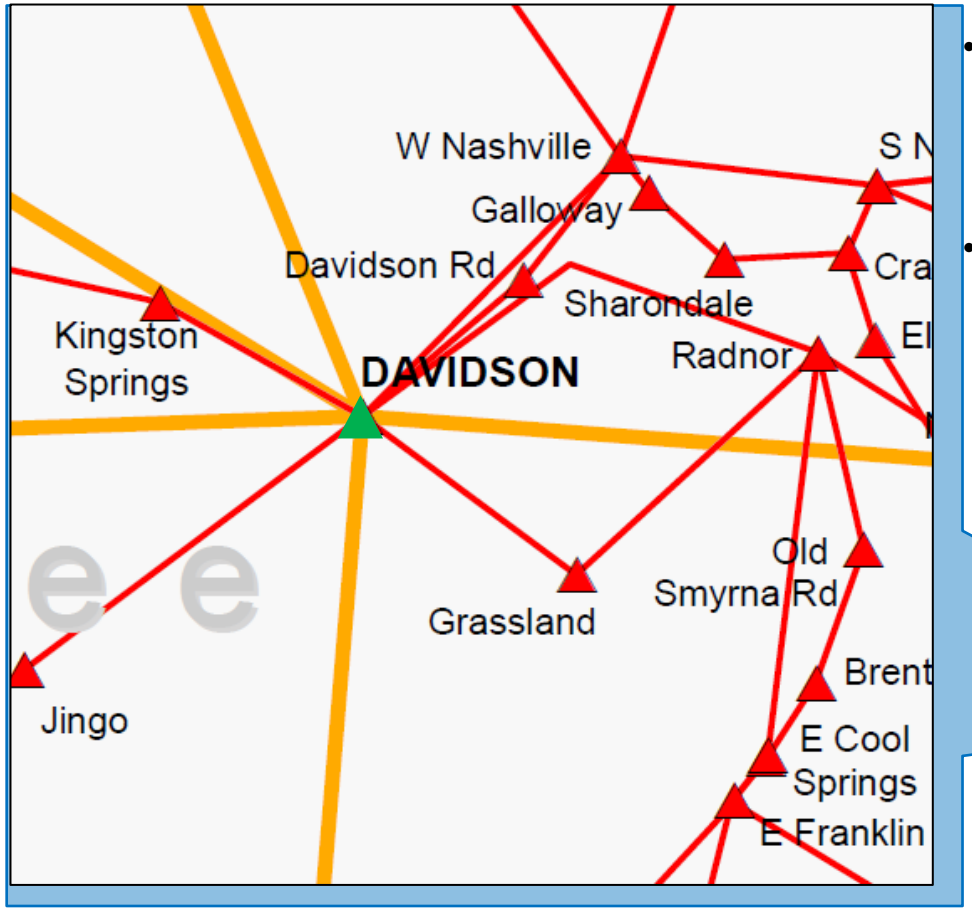
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

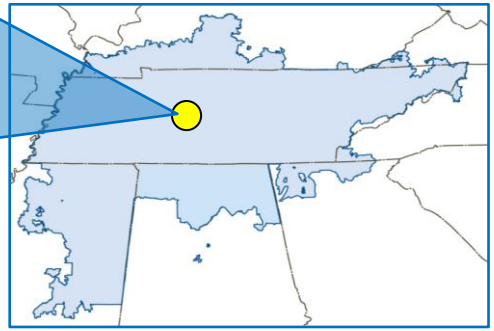
TVA – 15

• **2027**

DAVIDSON 500KV 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.



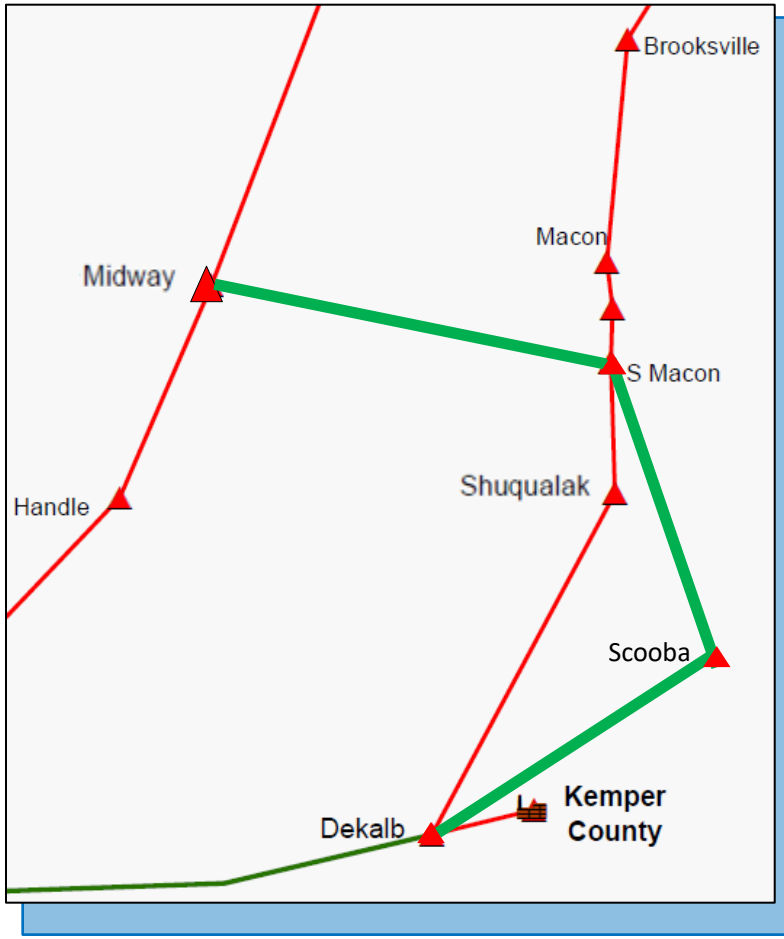
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

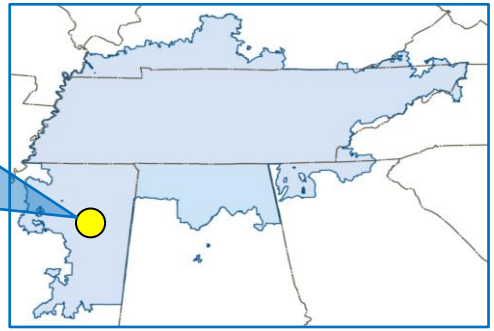
TVA – 16

• **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.



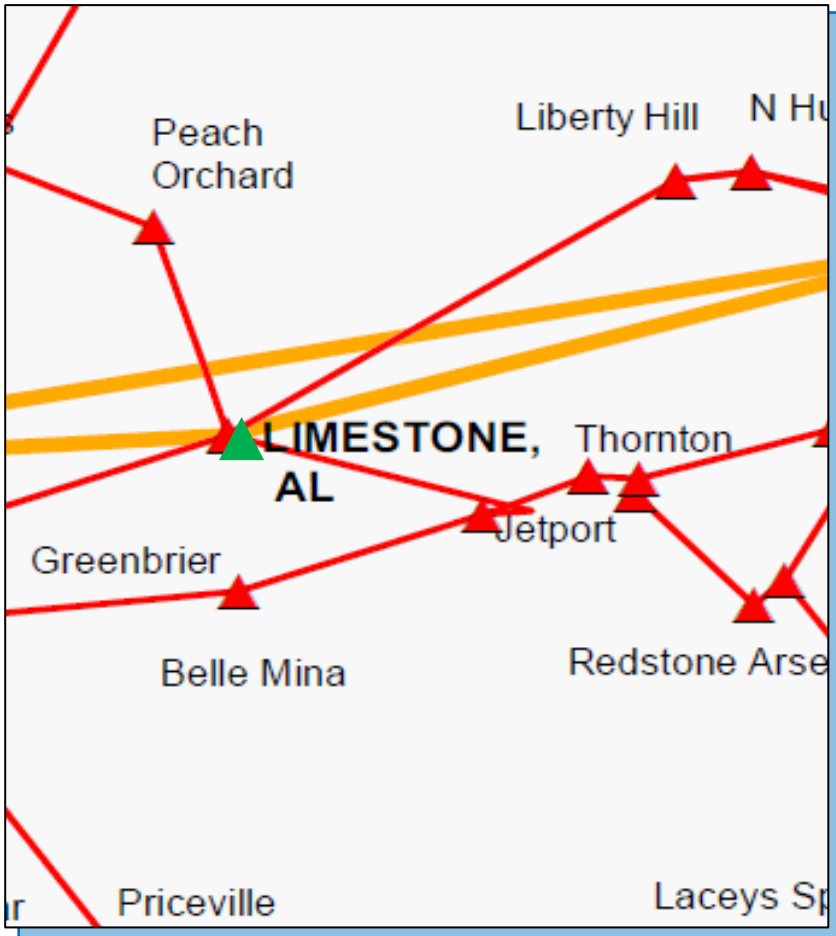
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

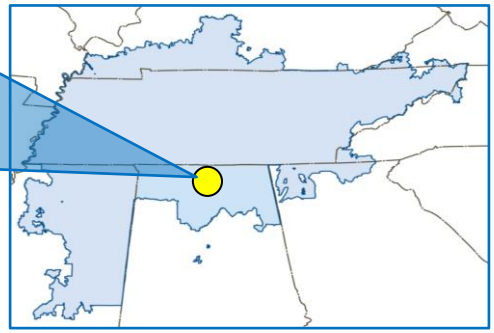
TVA – 17

- **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.



SERTP

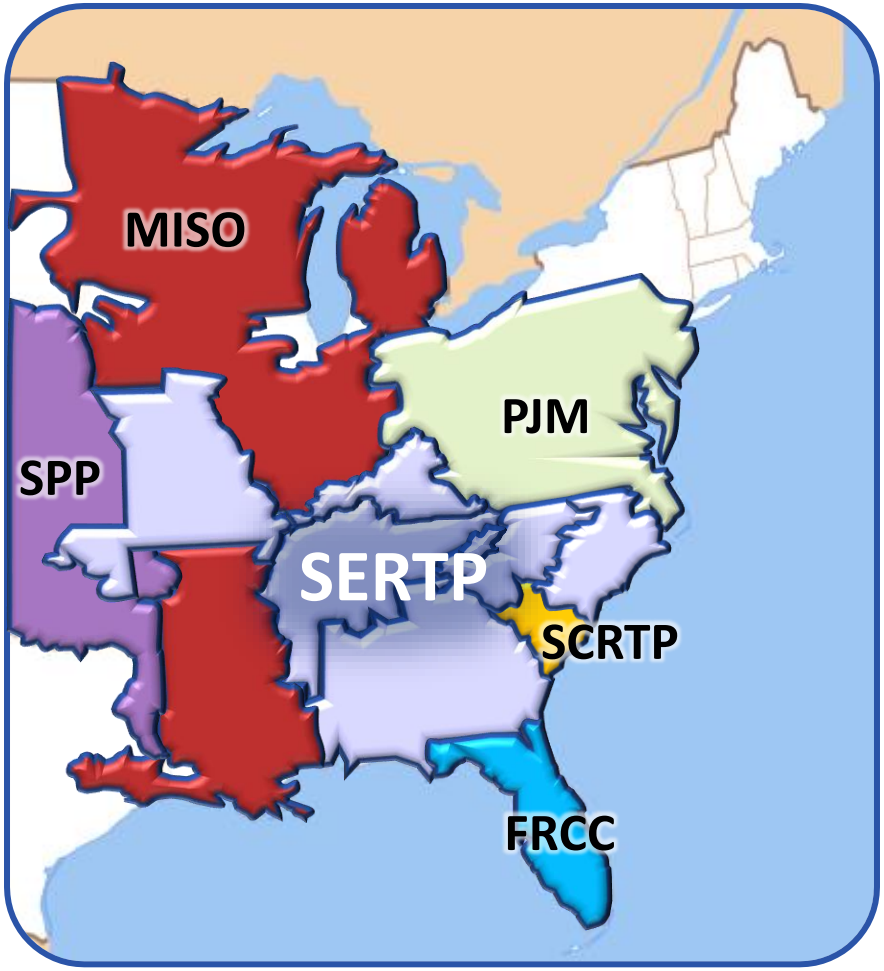
Miscellaneous Updates

Regional Analyses Update

- SERTP Sponsors are currently developing a list of potential alternative transmission projects to evaluate during the 2022 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



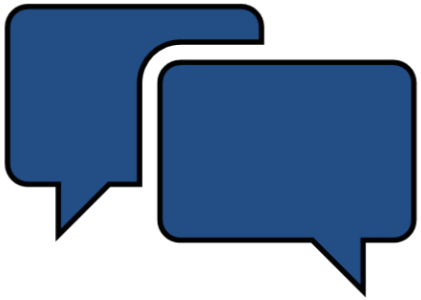
Interregional Update

- 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.

Next Meeting Activities

- **2022 SERTP 3rd Quarter Meeting** – *Second RPSG Meeting*
  - **Location: Web Conference**
  - **Date: September 2022**
  - **Purpose:**
    - Discuss Preliminary Economic Planning Study Results
    - Discuss Previous Stakeholder Input on Transmission Expansion Plans

2022 SERTP



Questions?

www.southeasternrtp.com