Southeastern Regional
TRANSMISSION PLANNING

2019 SERTP

SERTP – 2nd Quarter Meeting

Preliminary Expansion Plan Meeting

June 27th, 2019

LG&E and KU Energy

Louisville, KY

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**

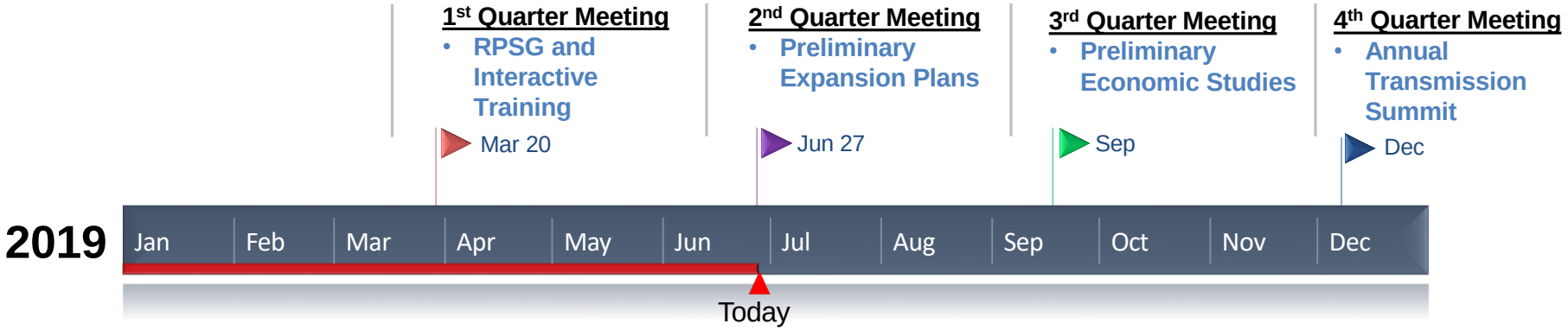
SERTP

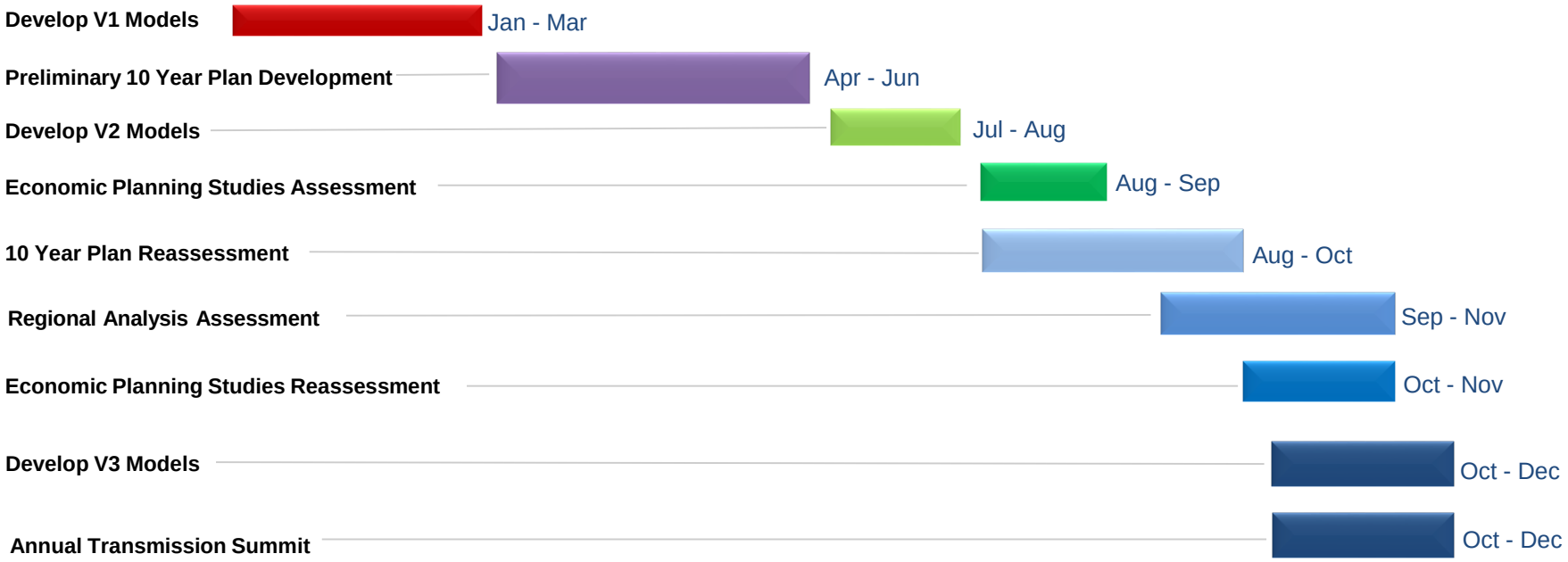
Regional Transmission Expansion Plan Process

Southeastern Regional TRANSMISSION PLANNING

2019 SERTP

10 Year SERTP Regional Transmission Expansion Plan Process



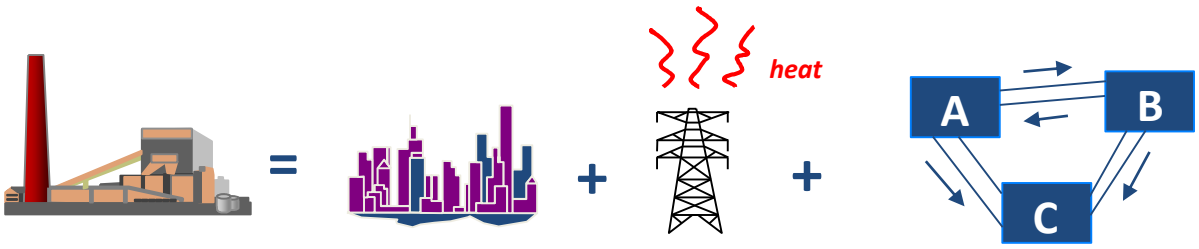


SERTP

Regional Model Assumptions

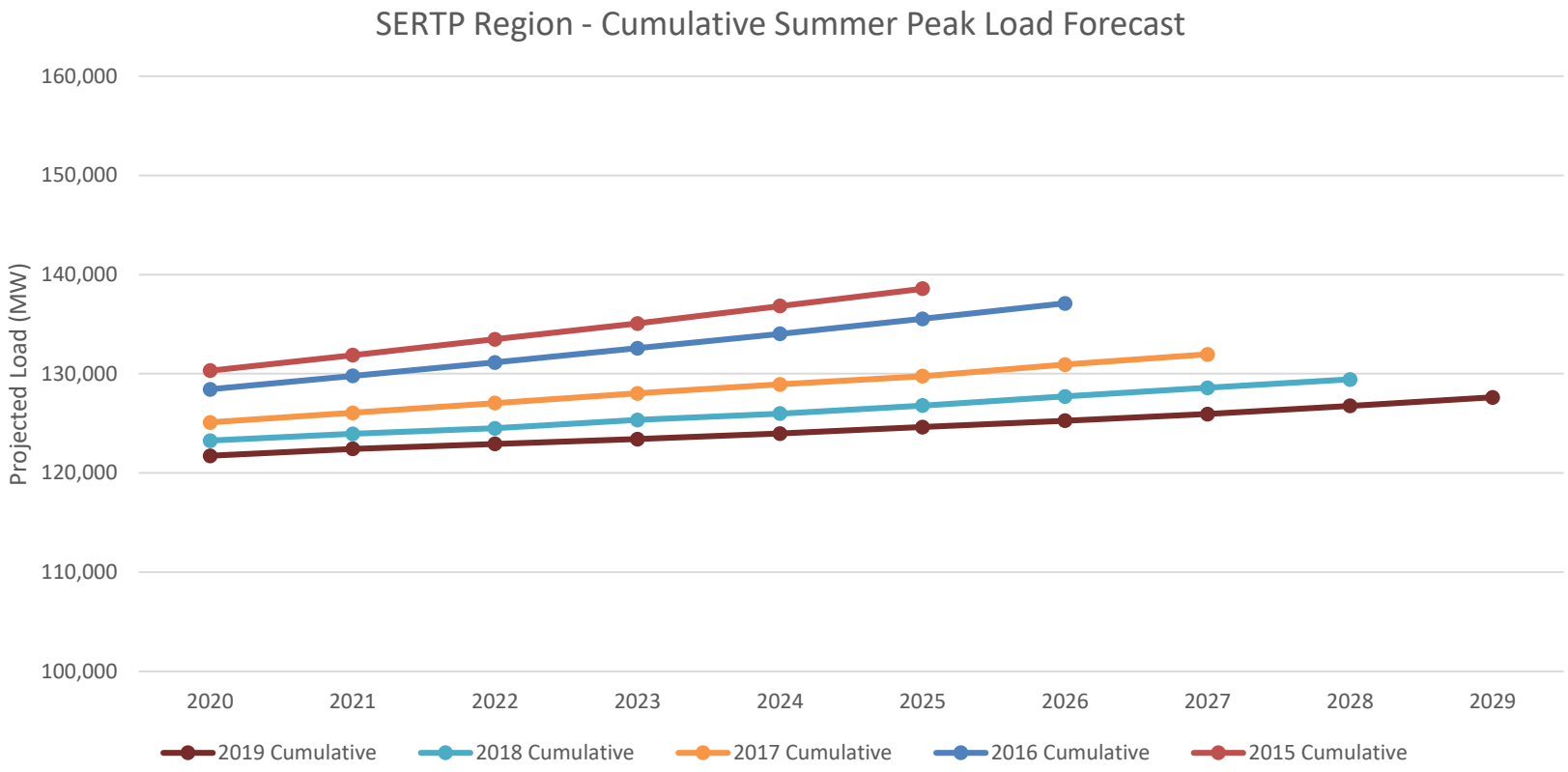
Regional Model Assumptions

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 Carolinas

Duke 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.

AECI Balancing Authority Area

AECI Balancing Authority Area

Generation Assumptions

Southeastern Regional TRANSMISSION PLANNING

AECI Balancing Authority Area

AECI– Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
White Cloud	WIND	238	238	238	238	238	238	238	238	238	238
Clear Creek	WIND	230	230	230	230	230	230	230	230	230	230

AECI Balancing Authority Area

AECI Balancing Authority Area

Preliminary Transmission Expansion Plan

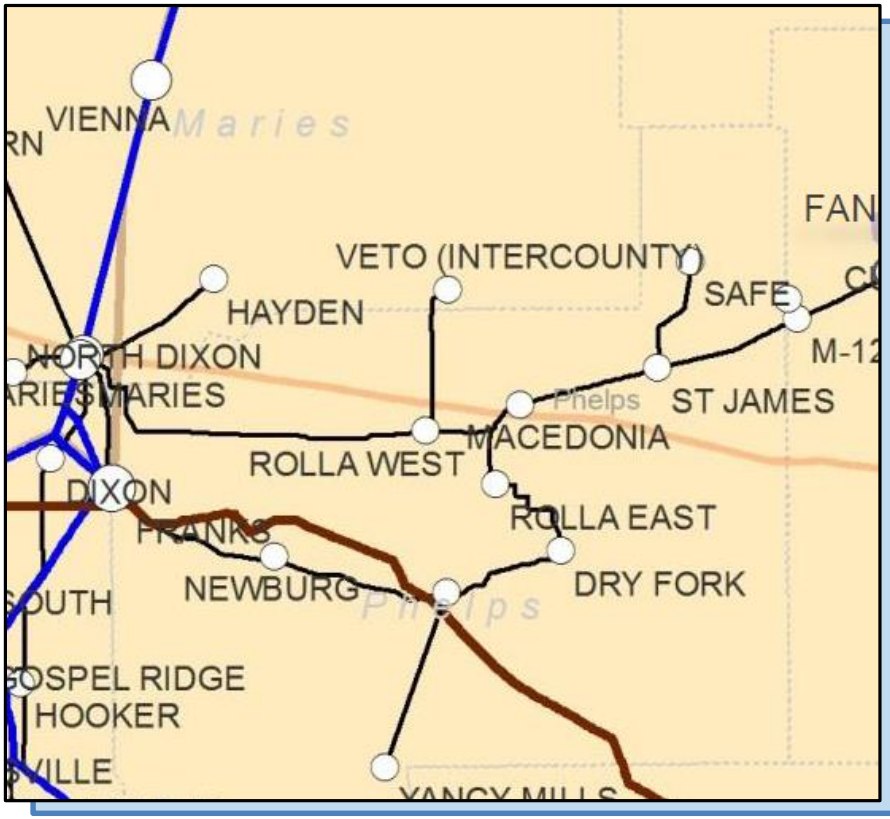
Southeastern Regional TRANSMISSION PLANNING

AECI Balancing Authority Area

AECI – 1

- **2020**

Macedonia – Dillon 138 kV T.L. & Macedonia 138 kV Substation

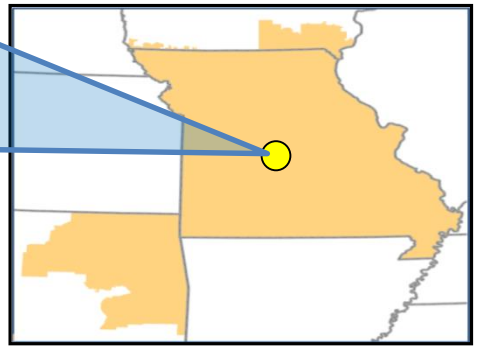


DESCRIPTION:

Construct approximately 1.1 miles of 138 kV transmission line from Macedonia to Dillon (Ameren) with 795 ACSR at 100°C and install a 56 MVA 138/69 kV transformer at Macedonia.

SUPPORTING STATEMENT:

The Maries – Rolla. West transmission line overloads under contingency and additional voltage support is needed in the Maries and Rolla areas under contingency

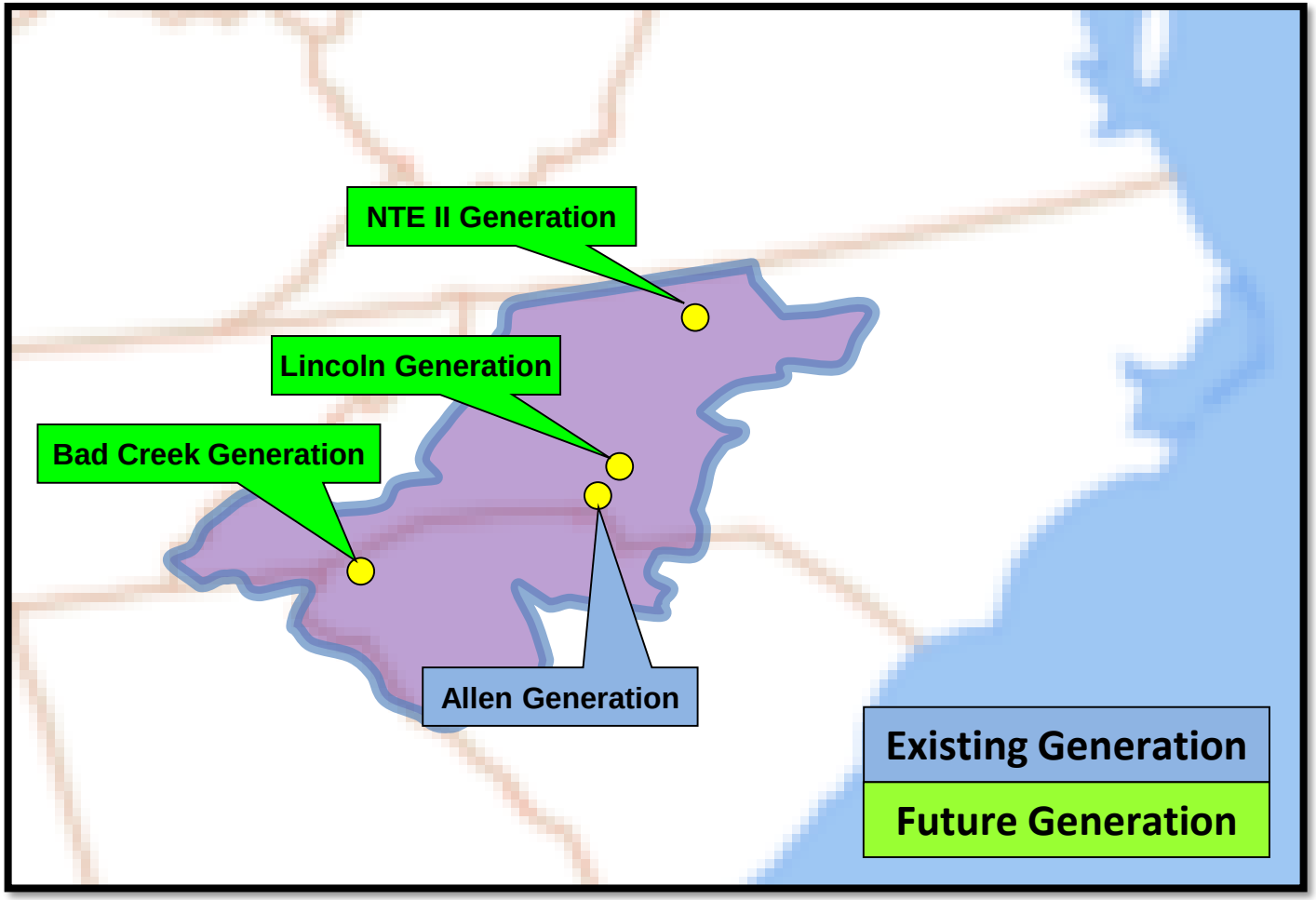


DUKE CAROLINAS Balancing Authority Area

Generation Assumptions

DUKE CAROLINAS – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process.



DUKE CAROLINAS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
ALLEN 1	COAL	174	174	174	174	174	0	--	--	--	--
ALLEN 2	COAL	172	172	172	172	172	0	--	--	--	--
ALLEN 3	COAL	271	271	271	271	271	0	--	--	--	--
ALLEN 4	COAL	274	274	274	274	274	274	274	274	0	--
ALLEN 5	COAL	290	290	290	290	290	290	290	290	0	--
BAD CREEK 1	Pumped Hydro	350	420	420	420	420	420	420	420	420	420
BAD CREEK 2	Pumped Hydro	350	350	420	420	420	420	420	420	420	420
BAD CREEK 3	Pumped Hydro	350	350	350	420	420	420	420	420	420	420
BAD CREEK 4	Pumped Hydro	350	350	350	350	420	420	420	420	420	420
LINCOLN 17	GAS	--	--	--	--	402	402	402	402	402	402
NTE II	GAS	--	--	474	474	474	474	474	474	474	474

Duke Carolinas Balancing Authority Area

DUKE 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	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BROAD RIVER	850	850	850	850	850	850	850	850	850	850
CATAWBA	155	155	155	155	155	155	155	155	155	155
ROWAN	150	150	150	150	150	150	150	150	150	150

DUKE CAROLINAS Balancing Authority Area

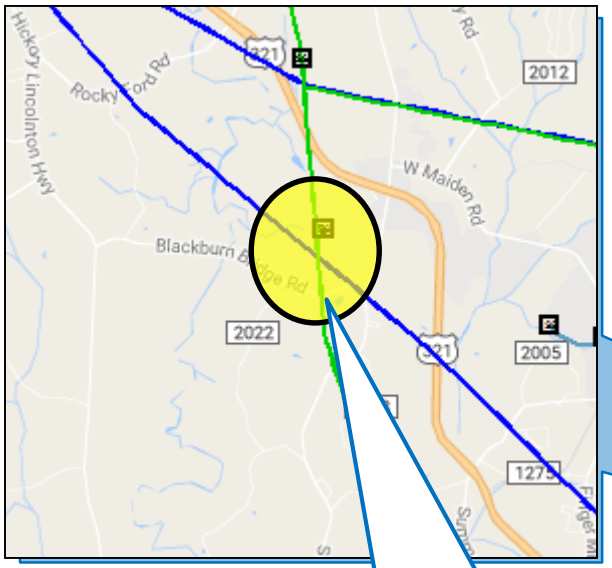
Preliminary Transmission Expansion Plan

Duke Carolinas Balancing Authority Area

DUKE CAROLINAS – 1

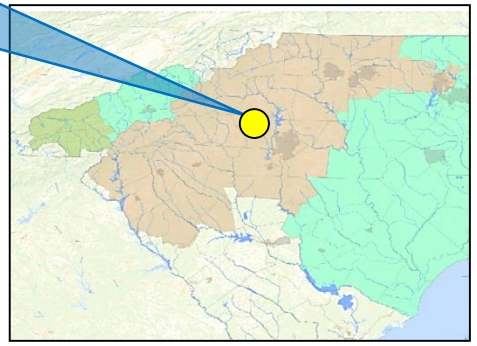
• **2020**

ORCHARD 230/100 KV TIE



Construct a new 230/100 kV Tie East of Maiden, NC

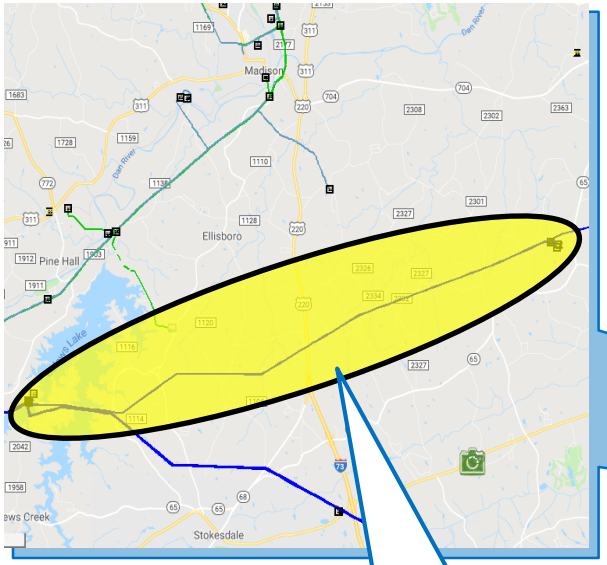
- **DESCRIPTION:**
  - Construct a new 230/100 kV Tie station, southwest of Maiden, NC at the intersection of the Lincoln CT to Longview Tie 230 kV transmission line and the Lincolnton Tie to Hickory Tie 100 kV transmission line.
- **SUPPORTING STATEMENT:**
  - To support additional load growth in the area.



DUKE CAROLINAS – 2

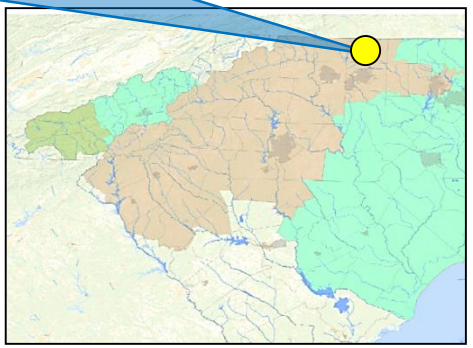
• **2021**

Belews – Ernest 230 kV Line Reconductor



- **DESCRIPTION:**
  - Reconductor Belews Creek – Ernest 230 kV Transmission line with 1158 ACSS/TW at 200°C.
- **SUPPORTING STATEMENT:**
  - To support the addition of NTE II's generation at Ernest Tie.

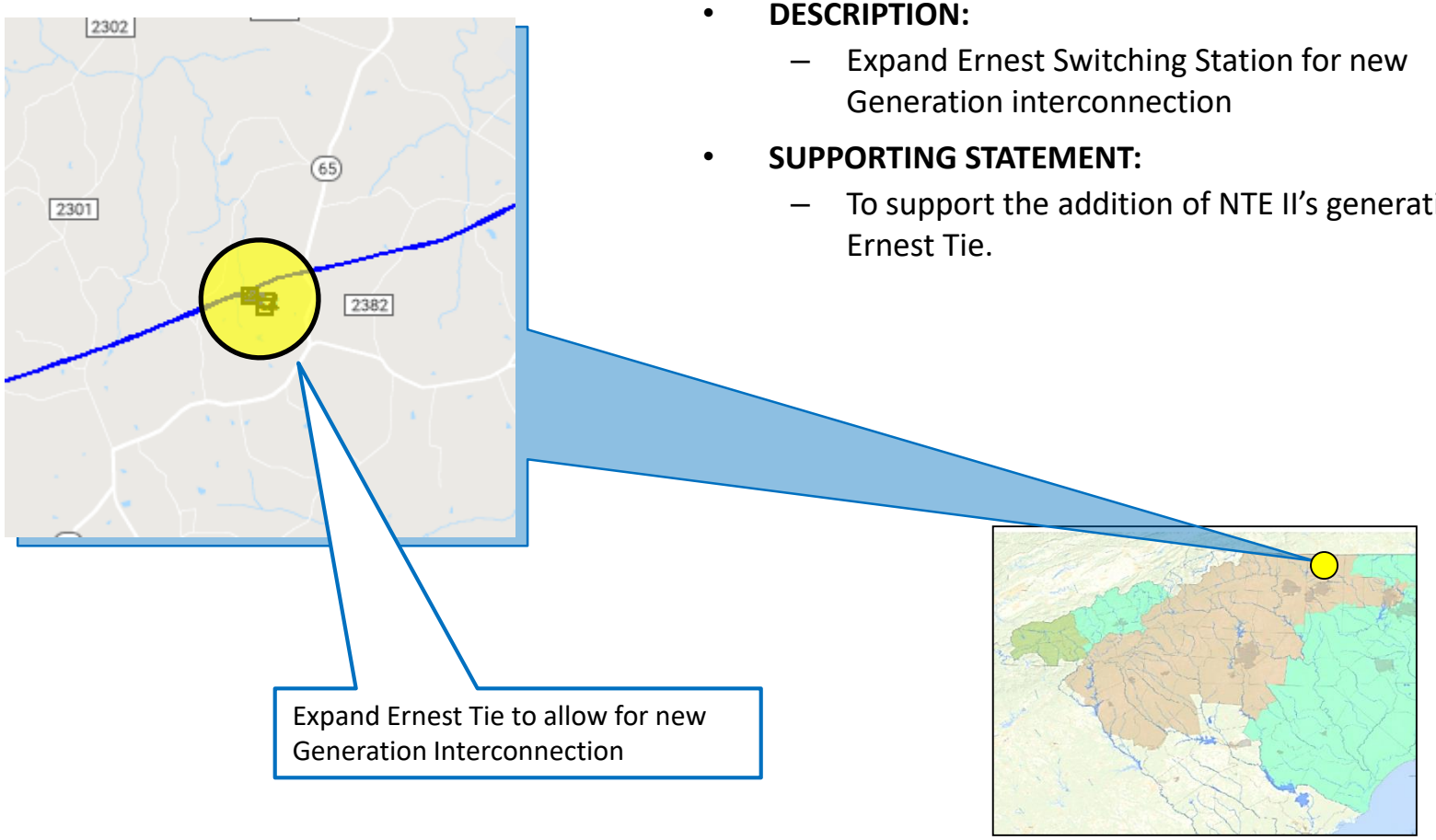
Reconductor Belews – Ernest 230 kV T.L.



DUKE CAROLINAS – 3

• **2021**

Ernest Tie Expansion

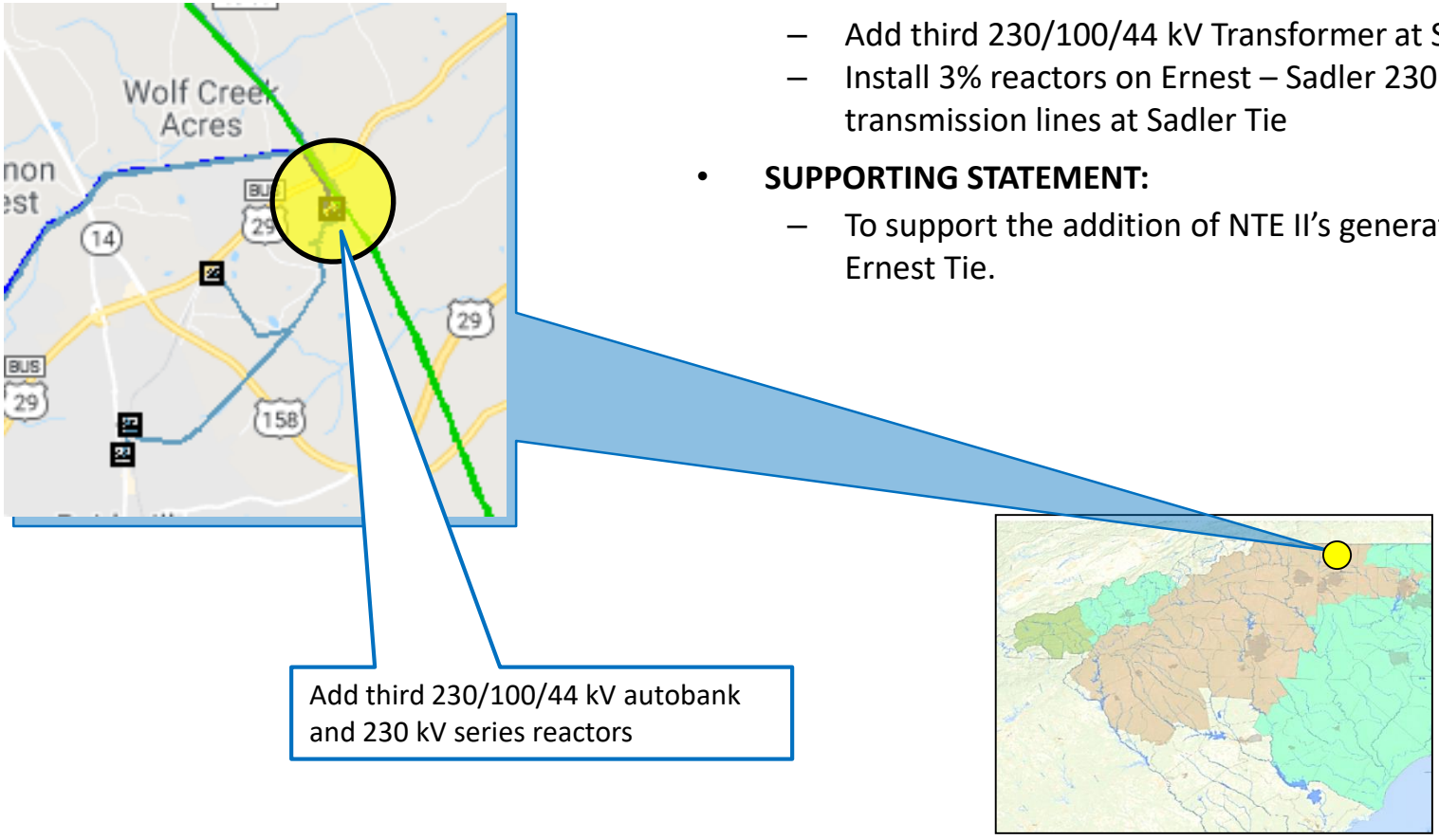


- **DESCRIPTION:**
  - Expand Ernest Switching Station for new Generation interconnection
- **SUPPORTING STATEMENT:**
  - To support the addition of NTE II's generation at Ernest Tie.

DUKE CAROLINAS – 4

• **2021**

Sadler Tie Upgrades

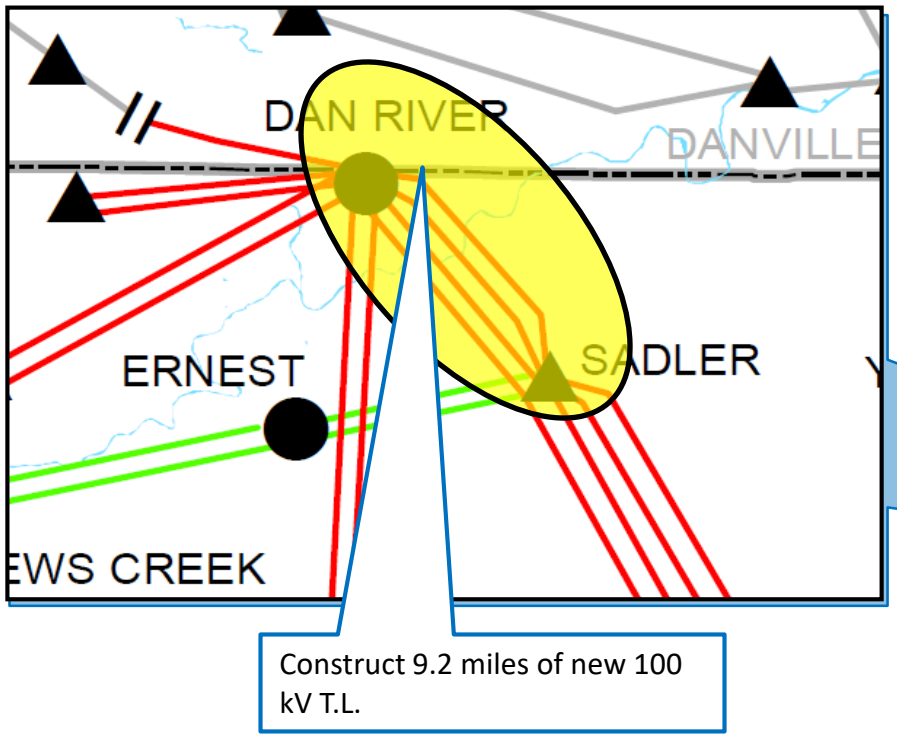


- **DESCRIPTION:**
  - Add third 230/100/44 kV Transformer at Sadler Tie
  - Install 3% reactors on Ernest – Sadler 230 kV transmission lines at Sadler Tie
- **SUPPORTING STATEMENT:**
  - To support the addition of NTE II's generation at Ernest Tie.

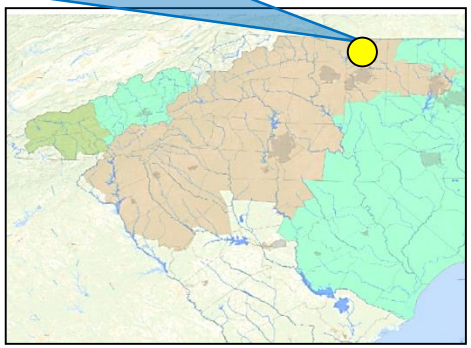
DUKE CAROLINAS – 5

• **2023**

SADLER TIE – DAN RIVER 100 KV TRANSMISSION LINE



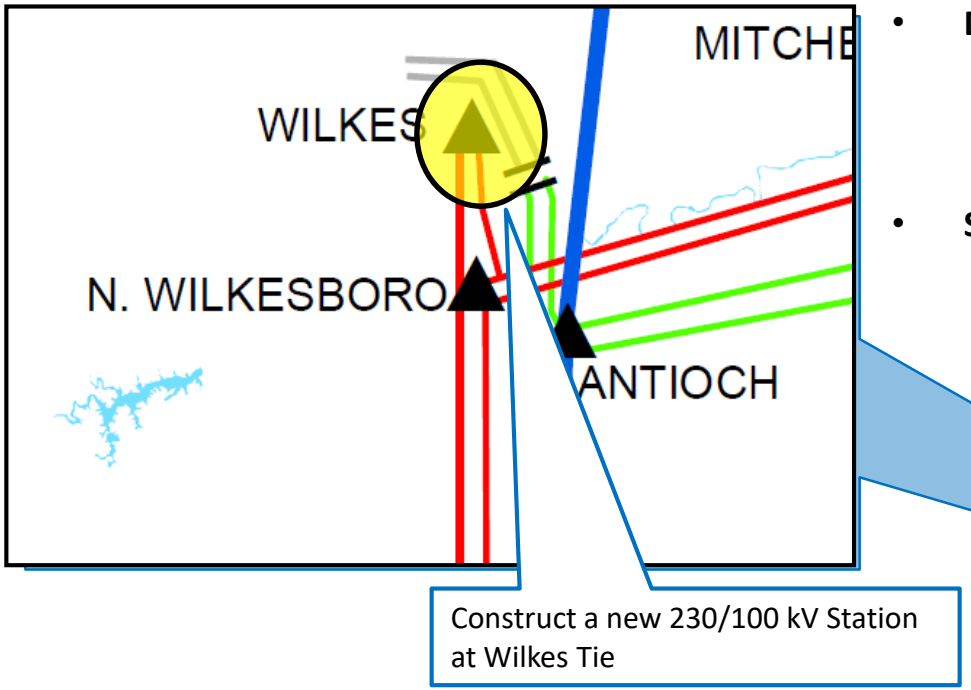
- **DESCRIPTION:**
  - Construct approximately 9.2 miles of new 100 kV transmission line between Dan River Steam Station and Sadler Tie with 954 AAC at 120°C.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur around Dan River Steam Station and Dan River Combined Cycle Station under contingency.



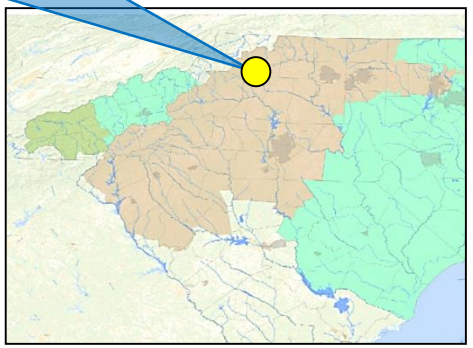
DUKE CAROLINAS – 6

• **2023**

WILKES TIE 230 KV SUBSTATION



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

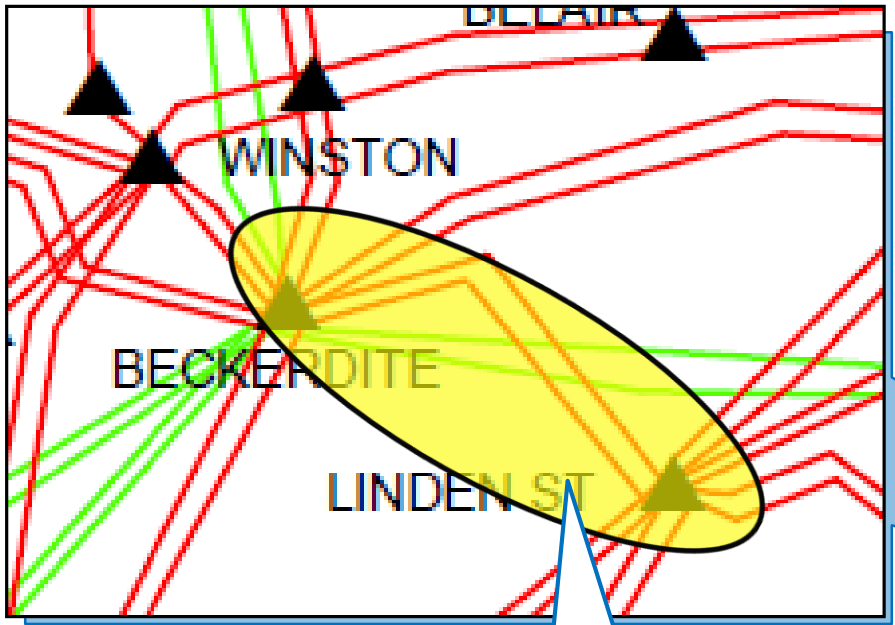


Duke Carolinas Balancing Authority Area

DUKE CAROLINAS – 7

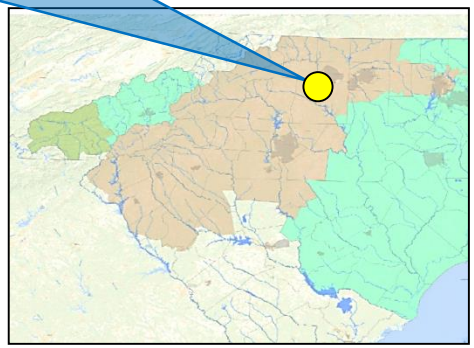
• **2025**

BECKERDITE – LINDEN STREET 100 KV TRANSMISSION LINE



Reconductor 16 miles of the Beckerdite – Linden Street 100

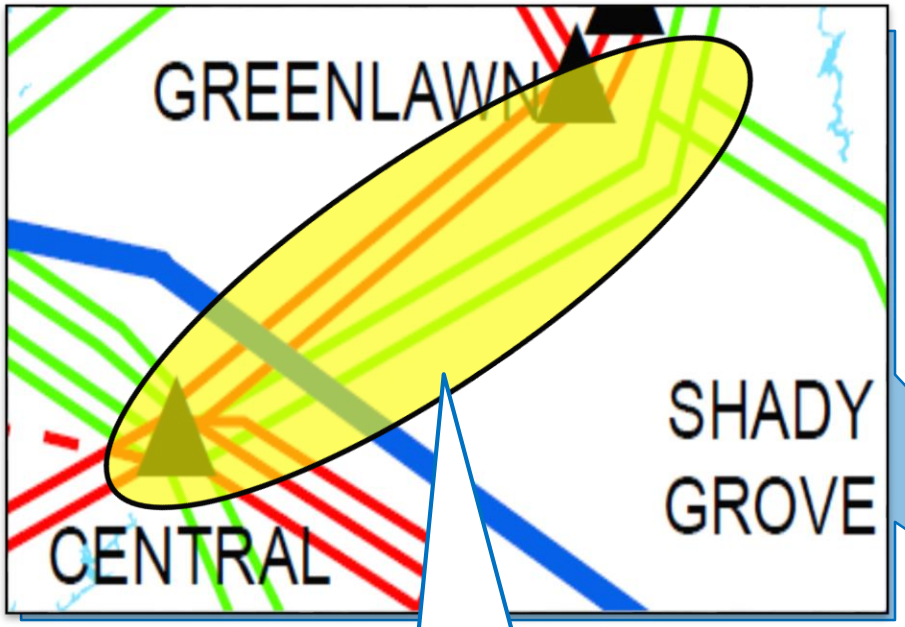
- **DESCRIPTION:**
  - Reconductor approximately 16.0 miles of the double circuit Beckerdite to Linden St 100 kV transmission line with bundled 477 ACSR.
- **SUPPORTING STATEMENT:**
  - The Beckerdite to Linden Street 100 kV transmission line overloads under contingency.



DUKE CAROLINAS – 8

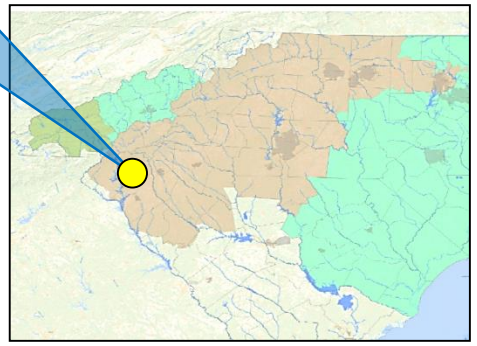
• **2025**

CENTRAL – SHADY GROVE 230 KV TRANSMISSION LINE



Reconductor 18 miles of the Central – Shady Grove 230 kV T.L. with Bundled 954 ACSR

- **DESCRIPTION:**
  - Reconductor approximately 18.0 miles of the Central to Shady Grove 230 kV transmission line with bundled 954 ACSR at 120°C.
- **SUPPORTING STATEMENT:**
  - The Central to Shady Grove 230 kV transmission line overloads under contingency.



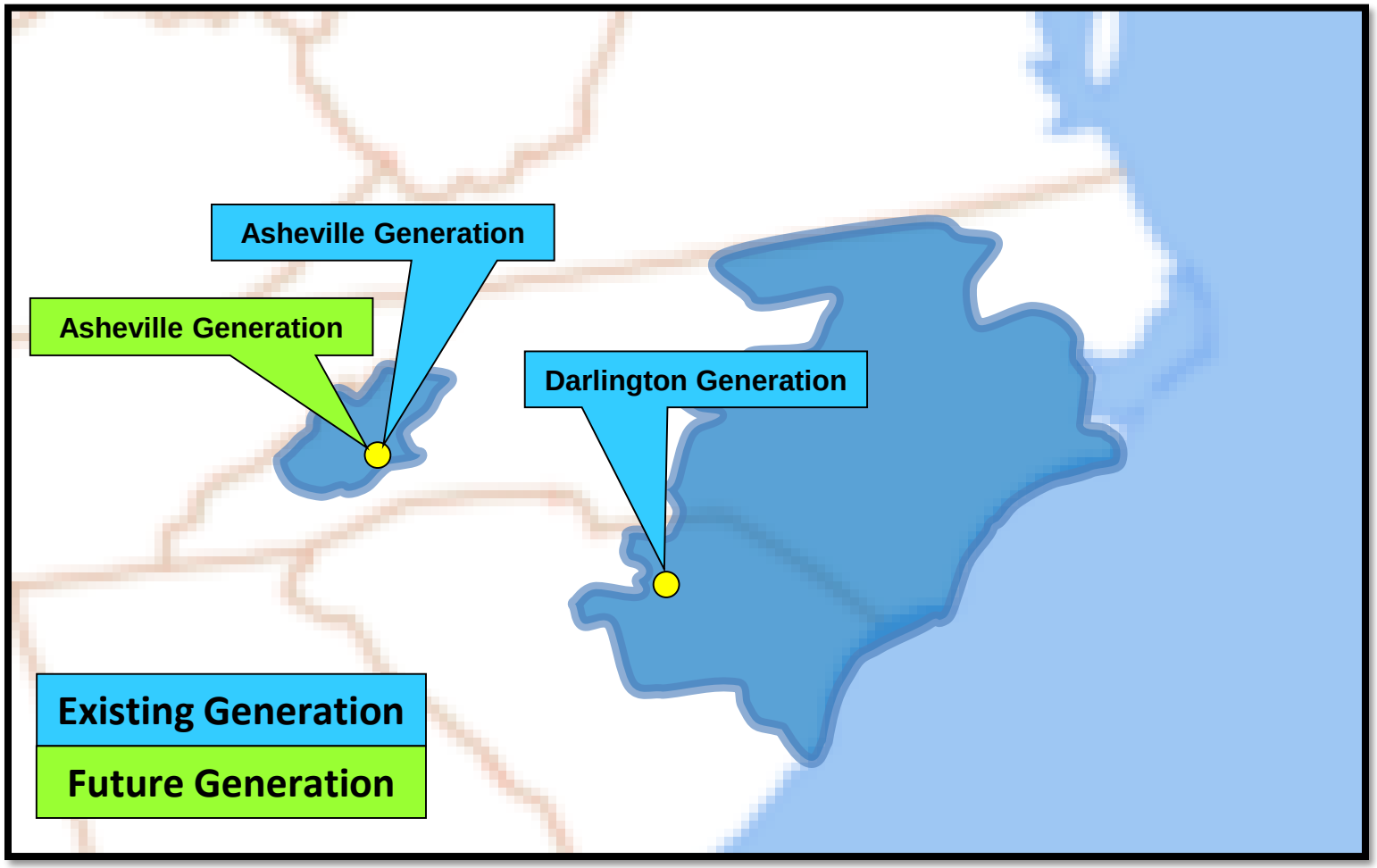
DUKE PROGRESS EAST/WEST

Balancing Authority Areas

Generation Assumptions

DUKE PROGRESS – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process.



DUKE PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2018 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
ASHEVILLE #1 COAL	0	--	--	--	--	--	--	--	--	--
ASHEVILLE #2 COAL	0	--	--	--	--	--	--	--	--	--
ASHEVILLE CC #1	260	260	260	260	260	260	260	260	260	260
ASHEVILLE CC #2	260	260	260	260	260	260	260	260	260	260
DARLINGTON CT #1	0	--	--	--	--	--	--	--	--	--
DARLINGTON CT #2	0	--	--	--	--	--	--	--	--	--
DARLINGTON CT #3	0	--	--	--	--	--	--	--	--	--
DARLINGTON CT #4	0	--	--	--	--	--	--	--	--	--
DARLINGTON CT #6	0	--	--	--	--	--	--	--	--	--

DUKE PROGRESS – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
DARLINGTON CT #7	0	--	--	--	--	--	--	--	--	--
DARLINGTON CT #8	0	--	--	--	--	--	--	--	--	--
DARLINGTON CT #10	0	--	--	--	--	--	--	--	--	--

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

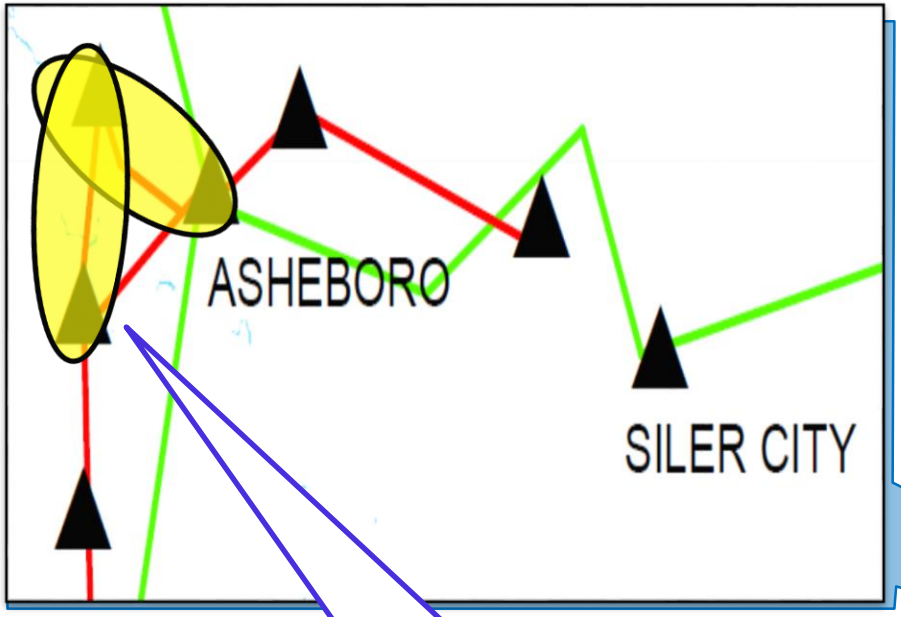
The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

SITE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
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 PROGRESS EAST – 1

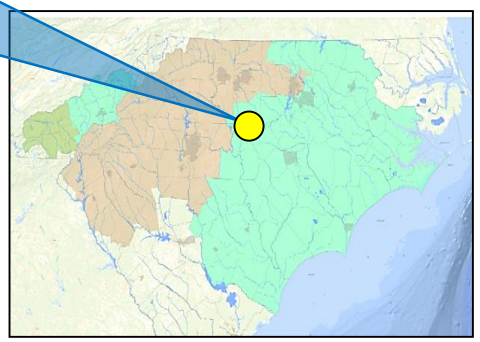
- **2020**

ASHEBORO – ASHEBORO EAST (NORTH) 115 KV T.L.



REBUILD 6.5 MILES 0F 115 KV TL WITH 3-1590. REPLACE SWITCHES WITH AT LEAST 2000 A CAPABILITY

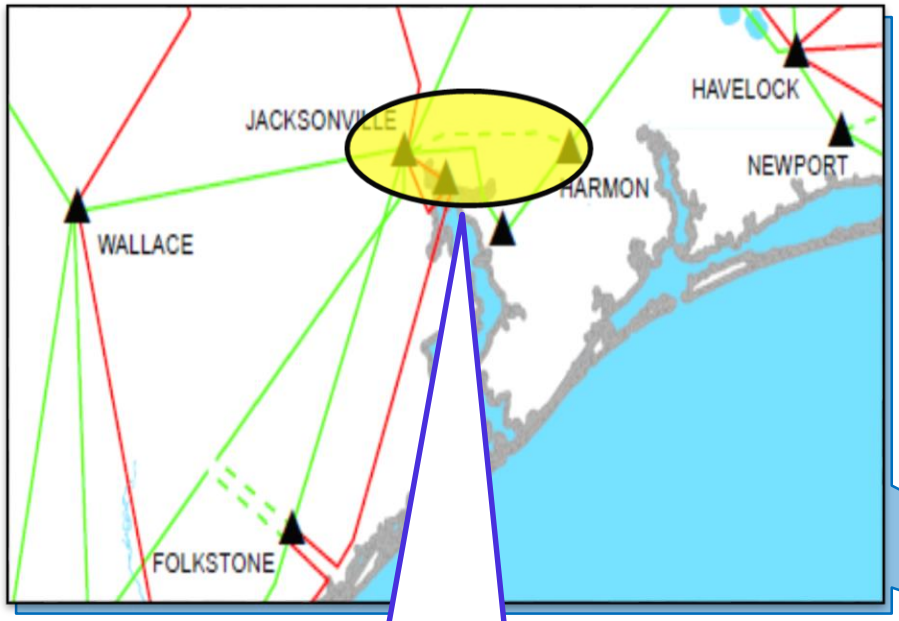
- **DESCRIPTION:**
  - Rebuild approximately 6.5 miles of the Asheboro – Asheboro East (North) 115 kV transmission line using 3-1590 ACSR rated for 307 MVA. Replace disconnect switches at Asheboro 230 kV and both the breaker and the disconnect switches at Asheboro East 115 kV with equipment of at least 2000A capability.
- **SUPPORTING STATEMENT:**
  - The Asheboro – Asheboro East (North) 115 kV transmission line overloads under contingency.



DUKE PROGRESS EAST – 2

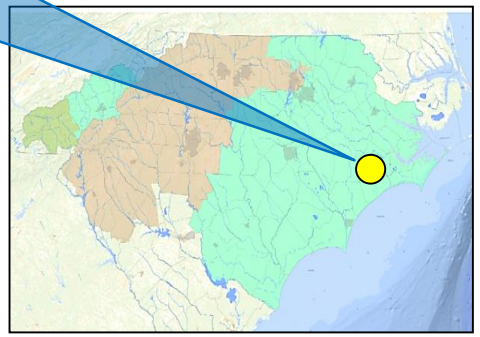
- **2020**

GRANT'S CREEK - JACKSONVILLE 230 KV T.L.



NEW 230 KV TL WITH 6-1590 ACSR OR EQUIVALENT CONDUCTOR. NEW 230 KV SUBSTATION WITH A 230/115 KV, 300 MVA TRANSFORMER

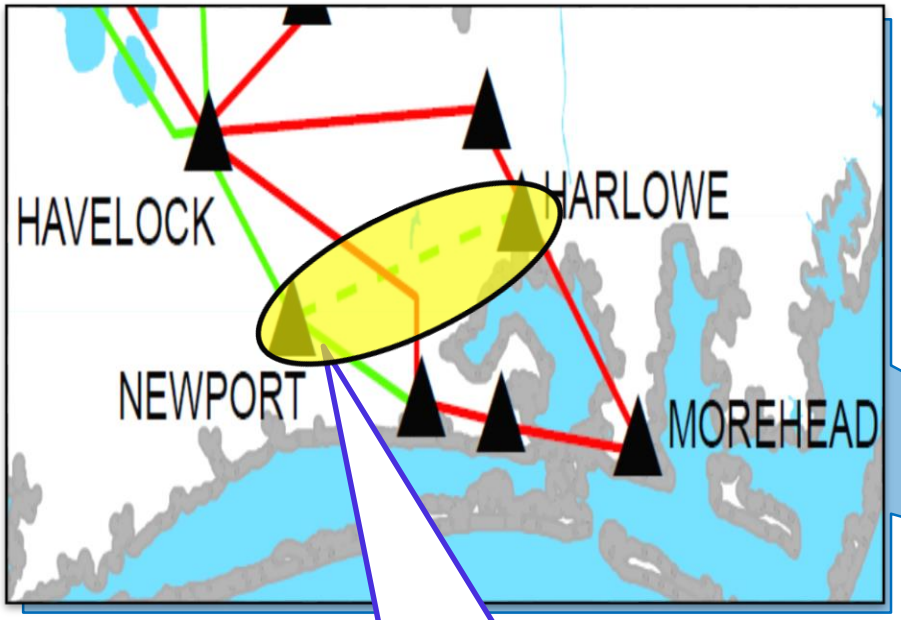
- **DESCRIPTION:**
  - Construct approximately 12.0 miles of new 230 kV transmission line from Jacksonville 230 kV substation to a new 230 kV substation at Grant's Creek with bundled 6-1590 ACSR or equivalent conductor rated for 1195 MVA. Build the new 230 kV Grant's Creek substation with four 230 kV breakers and a new 230/115 kV, 300 MVA transformer.
- **SUPPORTING STATEMENT:**
  - The Havelock – Jacksonville 230 kV transmission line overloads under contingency and additional voltage support is needed in the Jacksonville area.



DUKE PROGRESS EAST – 3

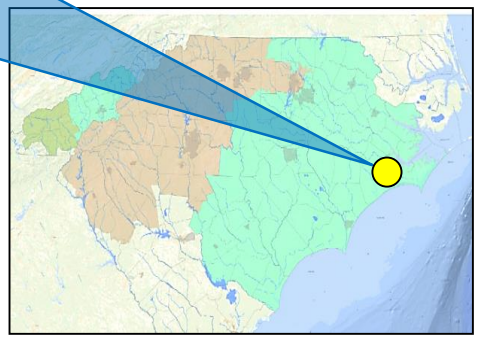
- **2020**

HARLOWE – NEWPORT 230 KV T.L.



NEW 230 KV SWITCHING STATION. NEW 230 KV SUBSTATION. NEW 230 KV T.L. WITH 3-1590 ACSR OR EQUIVALENT CONDUCTOR

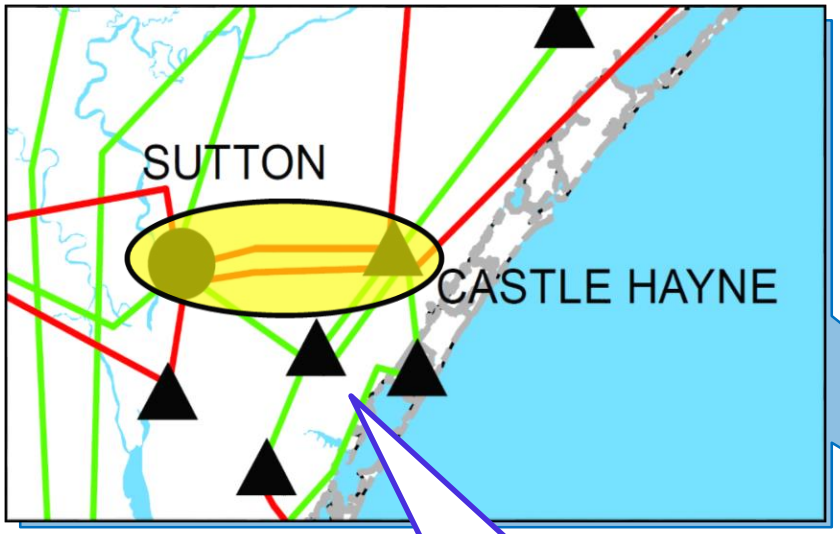
- **DESCRIPTION:**
  - Construct a new 230 kV switching station at Newport, construct a new 230 kV substation in the Harlowe Area, and construct approximately 10.0 miles of new 230 kV transmission line from the Harlowe – Newport with 3-1590 ACSR or equivalent conductor rated for 680 MVA.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in Havelock – Morehead area under contingency.



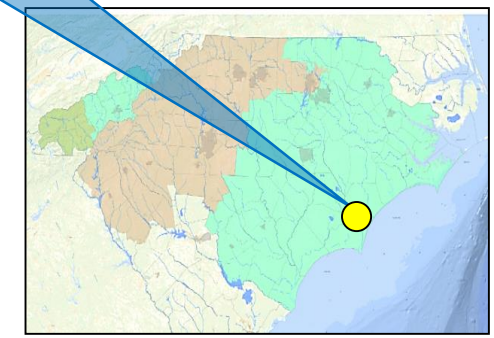
DUKE PROGRESS EAST – 4

- **2020**

SUTTON PLANT – CASTLE HAYNE 115 KV NORTH T.L.



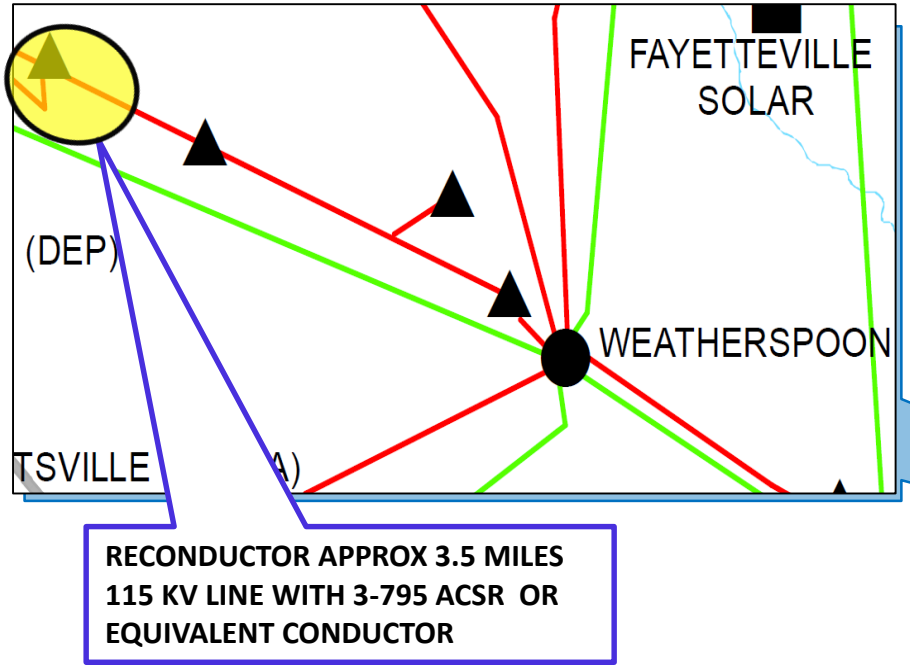
- **DESCRIPTION:**
  - Rebuild approximately 8.0 miles of the Sutton Plant – Castle Hayne 115 kV North transmission line using 1272 ACSR rated for 239 MVA.
- **SUPPORTING STATEMENT:**
  - The Sutton Plant – Castle Hayne 115 kV North transmission line overloads under contingency.



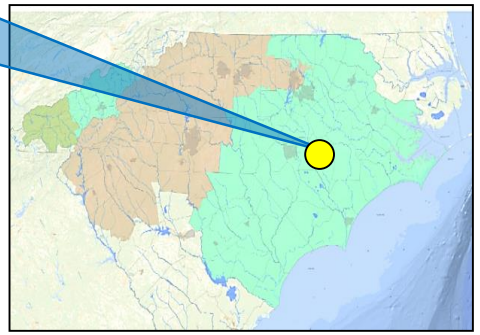
DUKE PROGRESS EAST – 5

- **2022**

IND 304440 – MAXTON 115 KV RECONDUCTOR



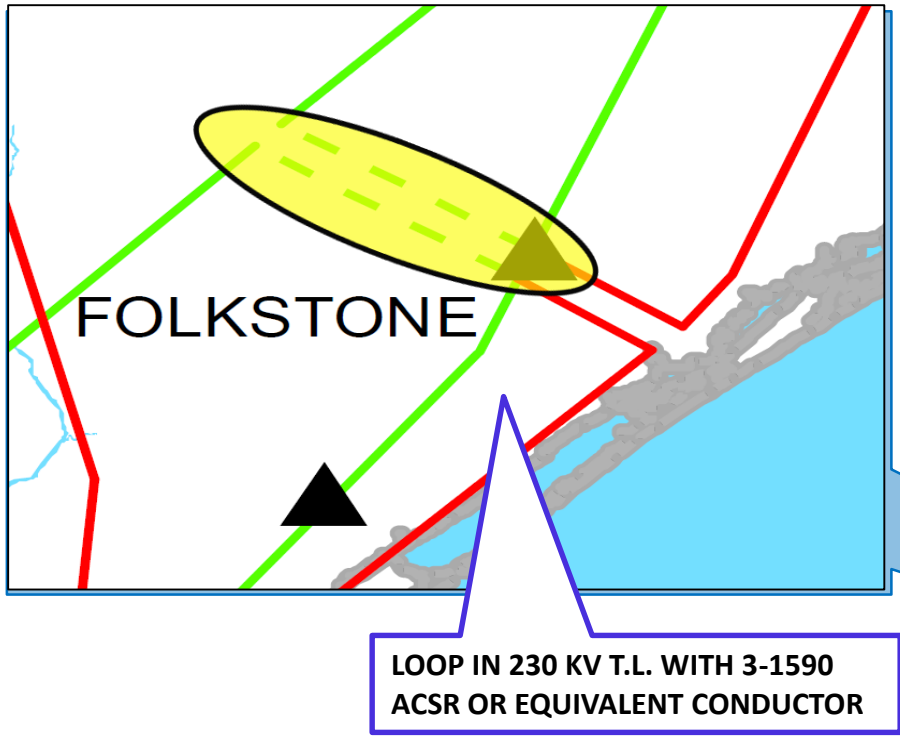
- **DESCRIPTION:**
  - Reconductor with 3-795 MCM ACSR or equivalent from IND 304440 to Maxton 115 kV substation approximately 3.5 miles. Replace existing 600A switches with 1200A switches.
- **SUPPORTING STATEMENT:**
  - The IND 304440-Maxton section of the Weatherspoon-IND 304440 115 kV transmission line overloads under contingency.



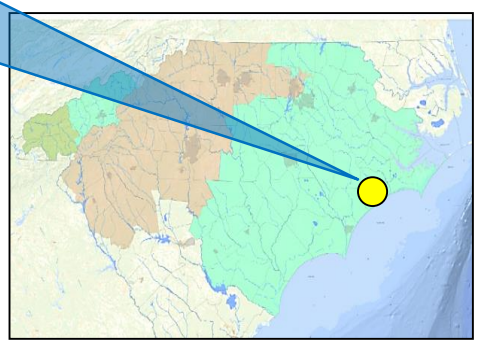
DUKE PROGRESS EAST – 6

- **2024**

BRUNSWICK #1 – JACKSONVILLE 230 KV T.L.



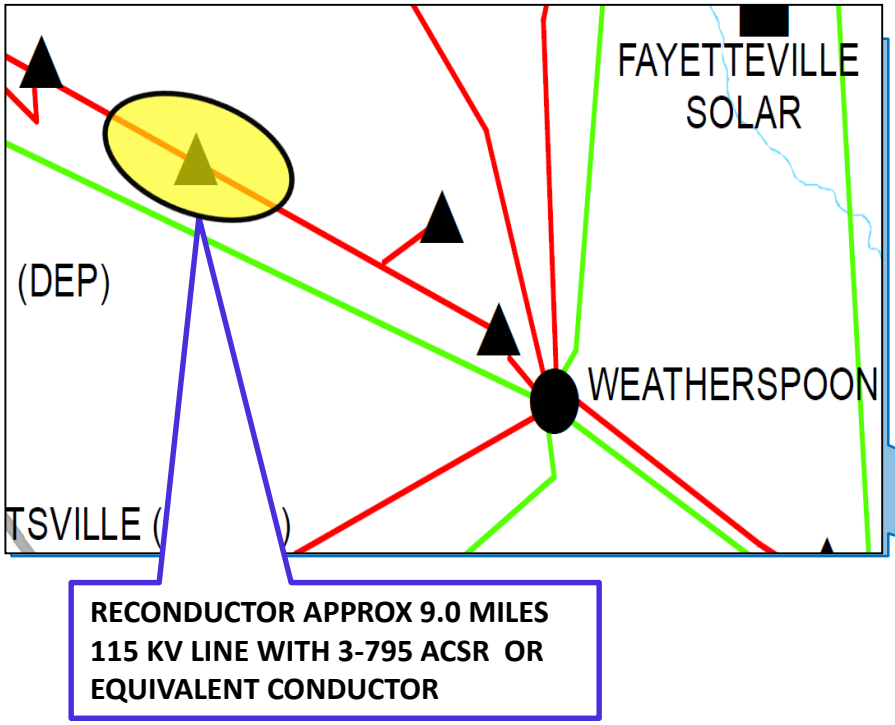
- **DESCRIPTION:**
  - Loop existing Brunswick Plant Unit 1 – Jacksonville 230 kV transmission line into the Folkstone 230 kV Substation. Also, convert the Folkstone 230 kV bus configuration to breaker-and-one-half by installing three (3) new 230 kV breakers.
- **SUPPORTING STATEMENT:**
  - The Castle Hayne – Folkstone 115 kV transmission line overloads under contingency.



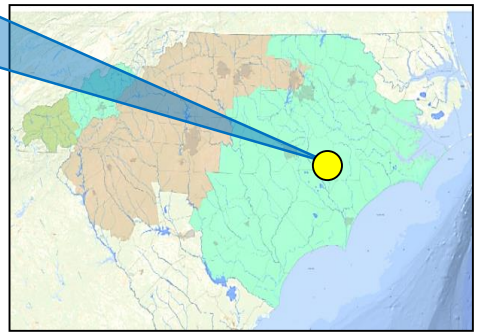
DUKE PROGRESS EAST – 7

- **2026**

WSPN – IND 304440 115 KV T.L.



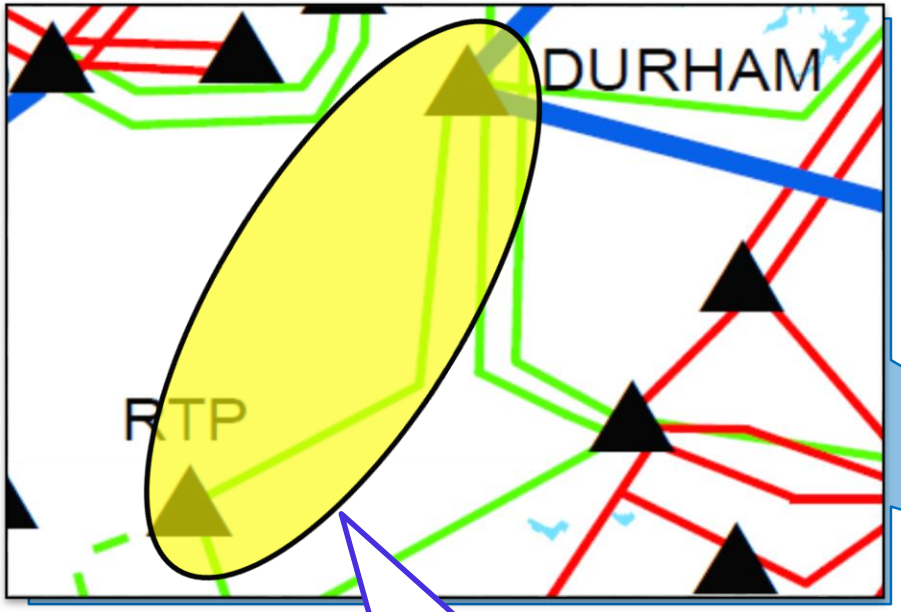
- **DESCRIPTION:**
  - Reconductor approximately 9.0 miles from Maxton to Pembroke 115 kV substation with 3-795 MCM ACSR or equivalent. Replace existing 600A switch with 1200A switch.
- **SUPPORTING STATEMENT:**
  - The Maxton-Pembroke section of the Weatherspoon-IND 304440 115 kV transmission line overloads under contingency.



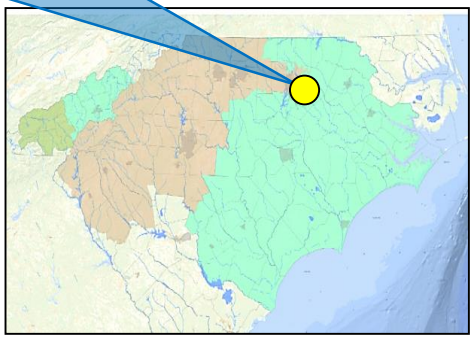
DUKE PROGRESS EAST – 8

- **2027**

DURHAM – RTP 230 KV T.L.



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



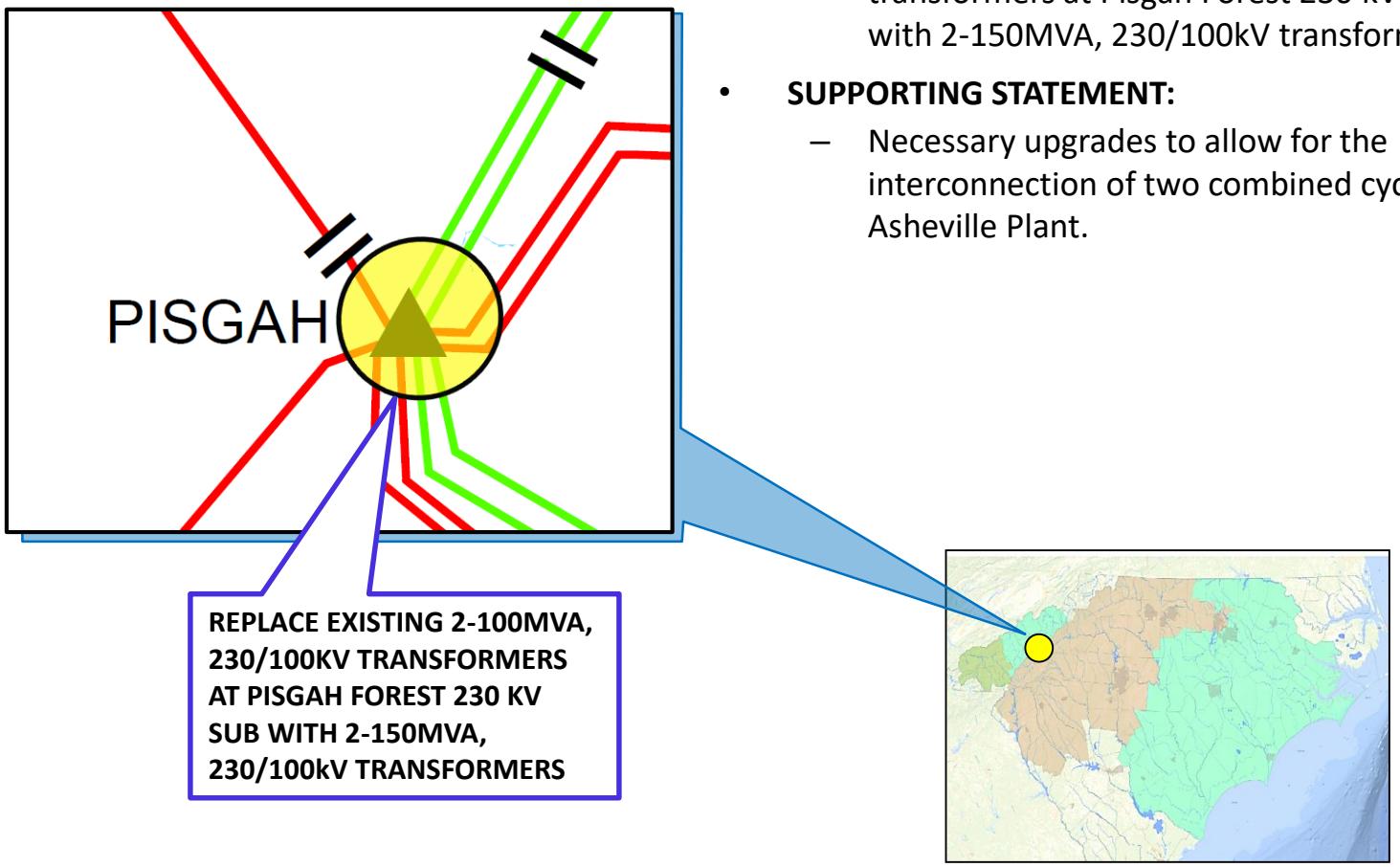
DUKE PROGRESS WEST Balancing Authority Area

Preliminary Transmission Expansion Plan

DUKE PROGRESS WEST – 1

- **2021**

PISGAH FOREST 230KV SUBSTATION

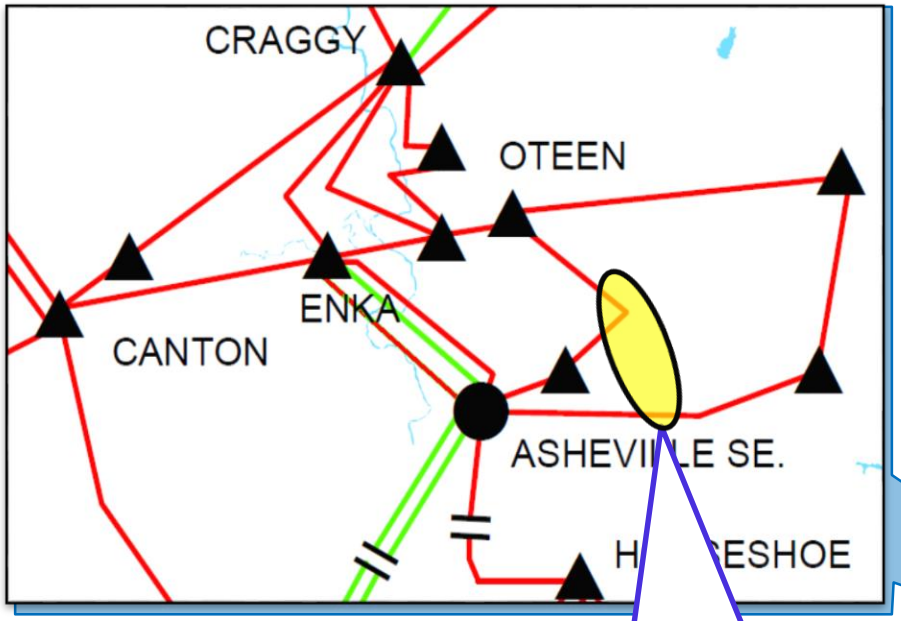


- **DESCRIPTION:**
  - Replace existing 2-100MVA, 230/100kV transformers at Pisgah Forest 230 kV Substation with 2-150MVA, 230/100kV transformers.
- **SUPPORTING STATEMENT:**
  - Necessary upgrades to allow for the interconnection of two combined cycle units at Asheville Plant.

DUKE PROGRESS WEST – 2

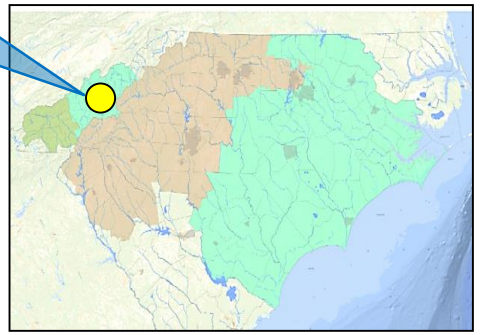
- **2022**

ASHEVILLE PLANT – OTEEN WEST 115 KV T.L., BALDWIN TAP



CONSTRUCT 2.2 MILES OF 115 KV TRANSMISSION LINE WITH 795 ACSR. RECONNECT THE BALDWIN 115 KV SUBSTATION.

- **DESCRIPTION:**
  - Construct approximately 2.2 miles of new 115 kV transmission line from the Asheville Plant – Oteen West 115 kV transmission line to the Asheville Plant – Oteen East 115 kV transmission line with 795 ACSR. The Baldwin 115 kV substation will be reconnected to this new tap line.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in the Baldwin area.



LG&E/KU Balancing Authority Area

Generation Assumptions

* LG&E/KU has no generation assumptions expected to change throughout the ten year planning horizon for the 2019 SERTP Process.

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	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

LG&E/KU Balancing Authority Area

Preliminary Transmission Expansion Plan

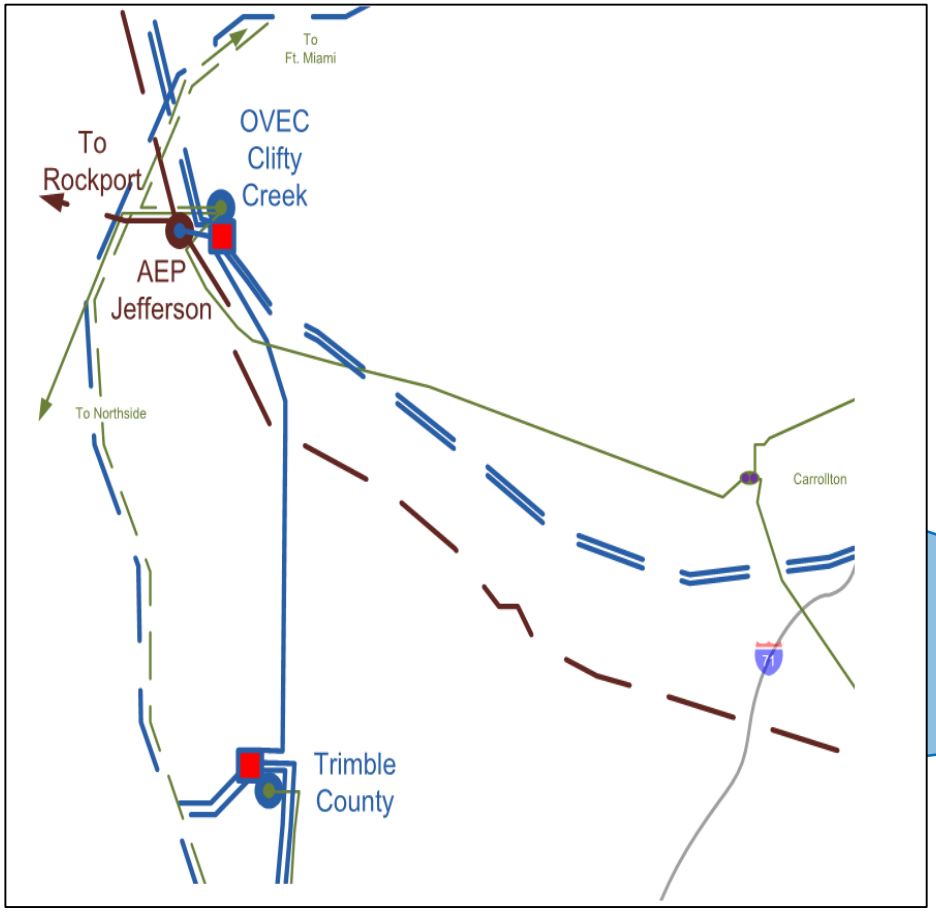
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 1

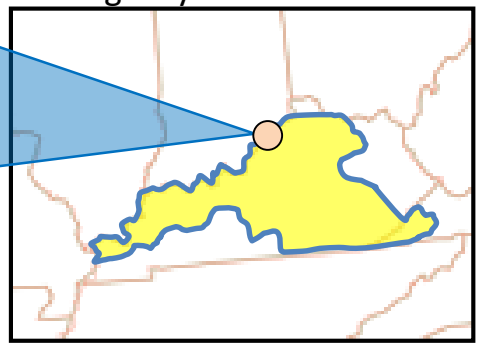
- **2020**

CARROLLTON – CLIFTY CREEK 138KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Upgrade the terminal equipment associated with breaker 067-744 at Carrollton to a minimum of 1182A winter emergency. Change the relay settings so protection will not trip under load for less than 1800A.

- **SUPPORTING STATEMENT:**
  - The Carrollton to Clifty Creek 138 kV transmission line overloads under contingency.



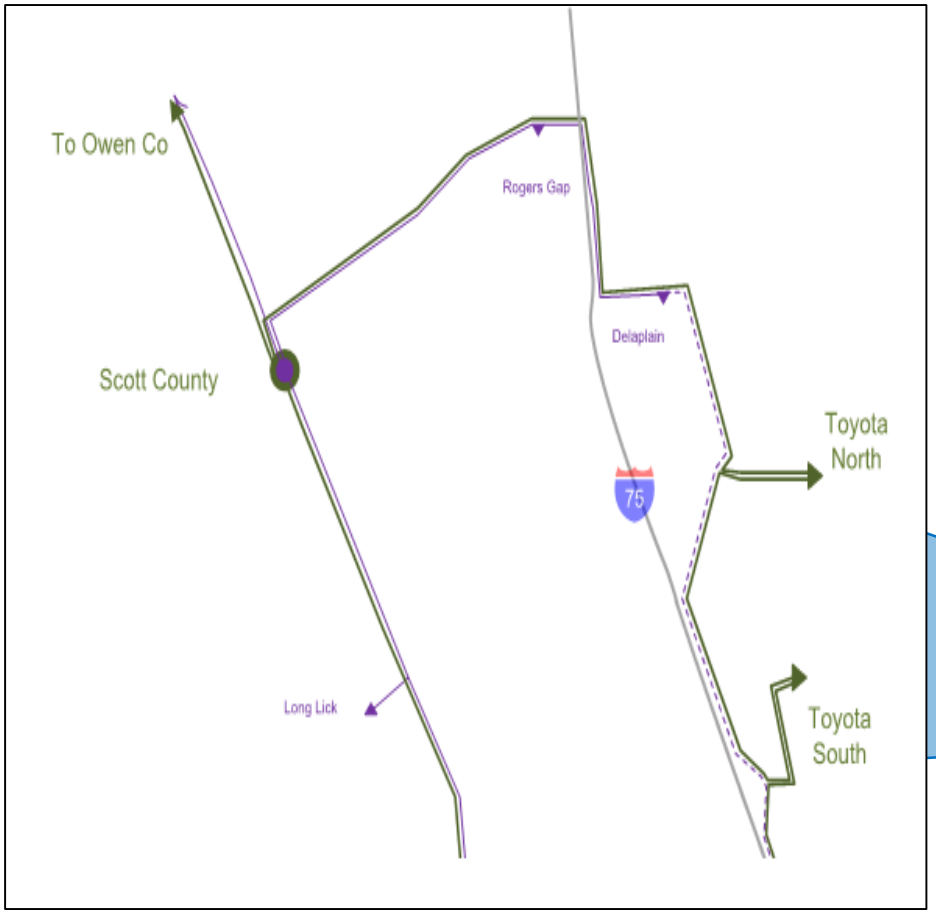
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 2

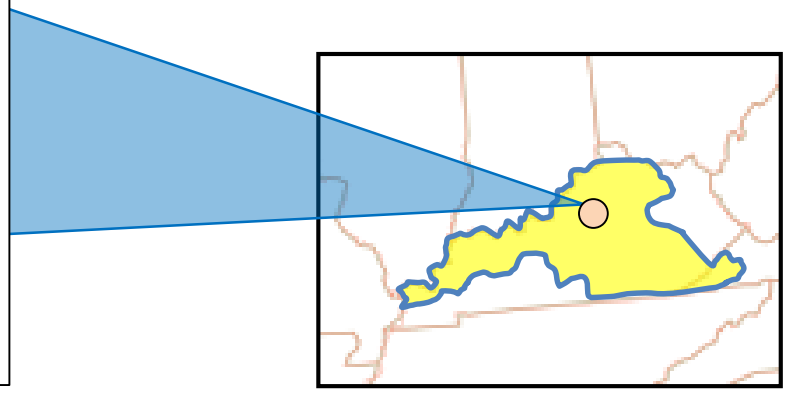
- **2020**

MOVE ROGERS GAP LOAD TO 138KV



- **DESCRIPTION:**
  - Convert the Rogers Gap 69kV distribution station to a 138kV station by tapping the existing Scott Co – Toyota North 138kV line.

- **SUPPORTING STATEMENT:**
  - The Adams to Delaplain Tap 69kV transmission line overloads under contingency.



Southeastern Regional TRANSMISSION PLANNING

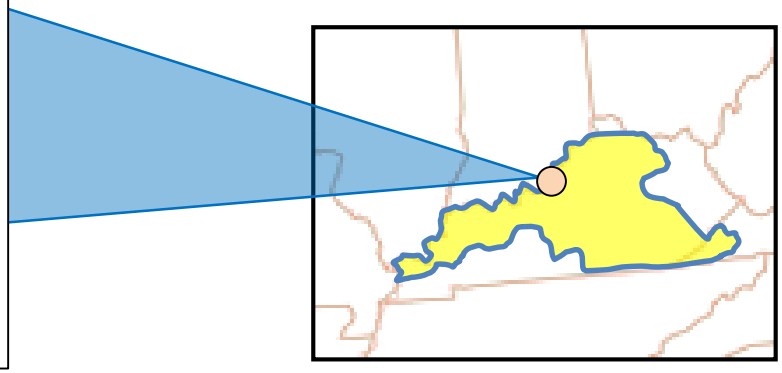
LG&E/KU Balancing Authority Area

LG&E/KU - 3

- **2021**

BLUE LICK 345/161 KV TRANSFORMER

- **DESCRIPTION:**
  - Replace the Blue Lick 345/161 kV, 240 MVA transformer with a 345/161 KV, 450 MVA transformer, reset/replace any CTs less than 2000A and increase the loadability of relays.
- **SUPPORTING STATEMENT:**
  - The existing Blue Lick 345/161 kV transformer overloads under contingency.

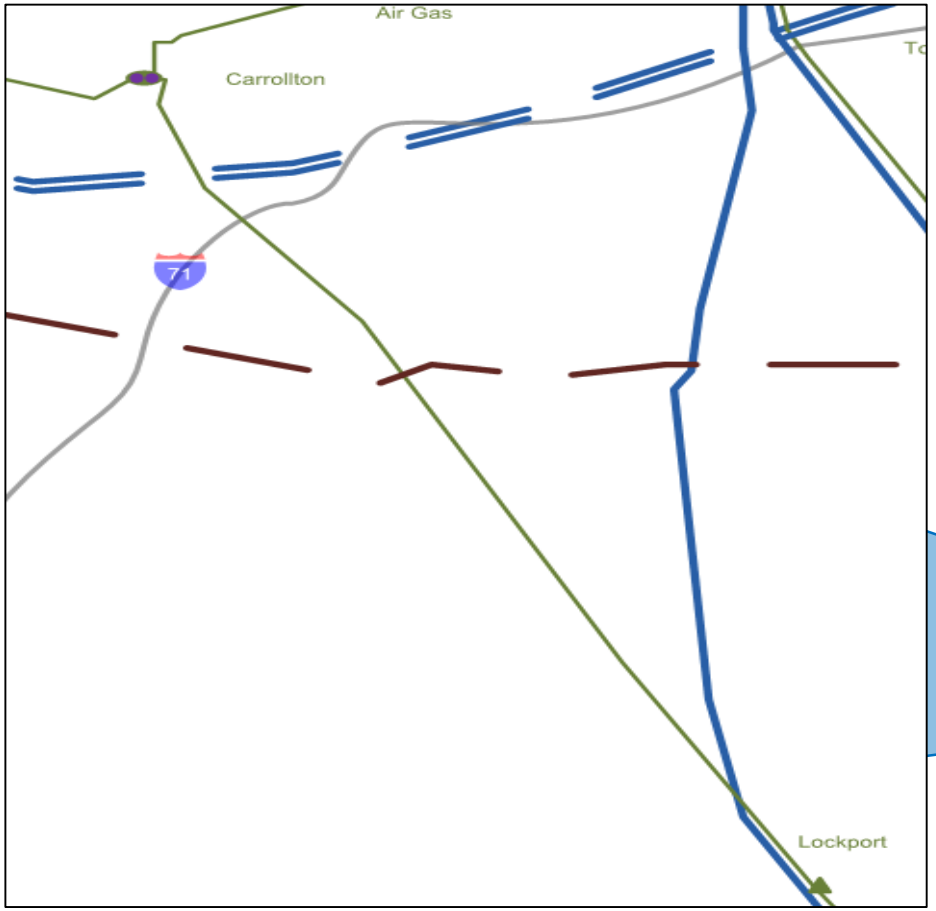


LG&E/KU Balancing Authority Area

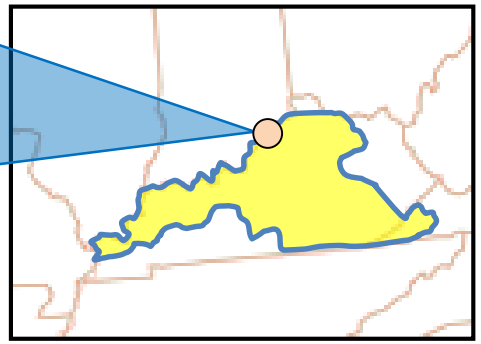
LG&E/KU - 4

- **2022**

CARROLLTON – LOCKPORT 138KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Upgrade the switches associated with breaker 067-704 at Carrollton from 600A to 1200A.
- **SUPPORTING STATEMENT:**
  - The Carrollton to Lockport 138 kV transmission line overloads under contingency.



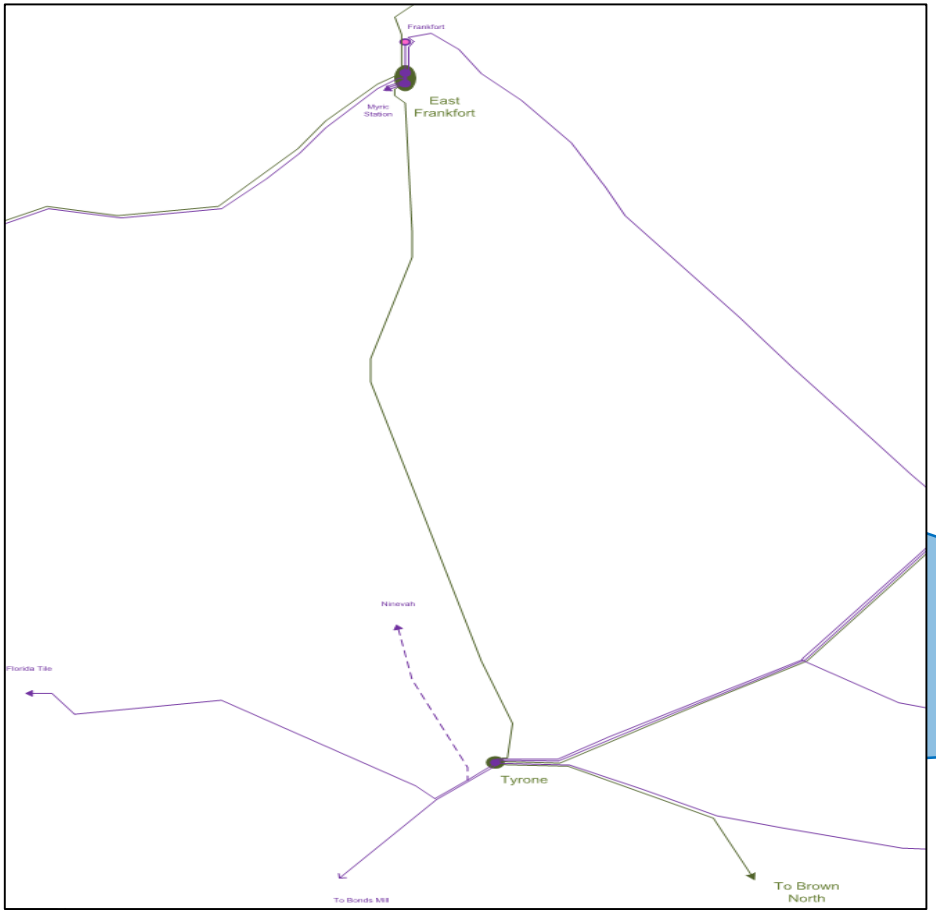
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 5

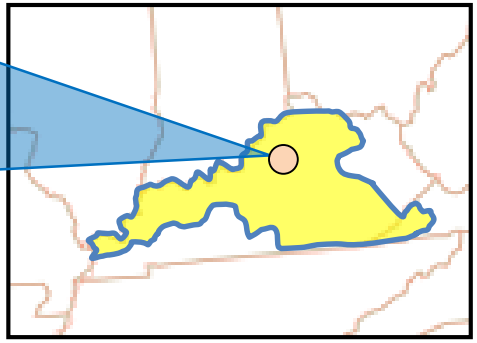
- **2022**

EAST FRANKFORT - TYRONE 138KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Replace breaker 136-704 and associated Bushing CTs at East Frankfort with 1600A equipment. Change the relay settings so protection will not trip under load for less than 1914A.

- **SUPPORTING STATEMENT:**
  - The East Frankfort to Tyrone 138 kV transmission line overloads under contingency.



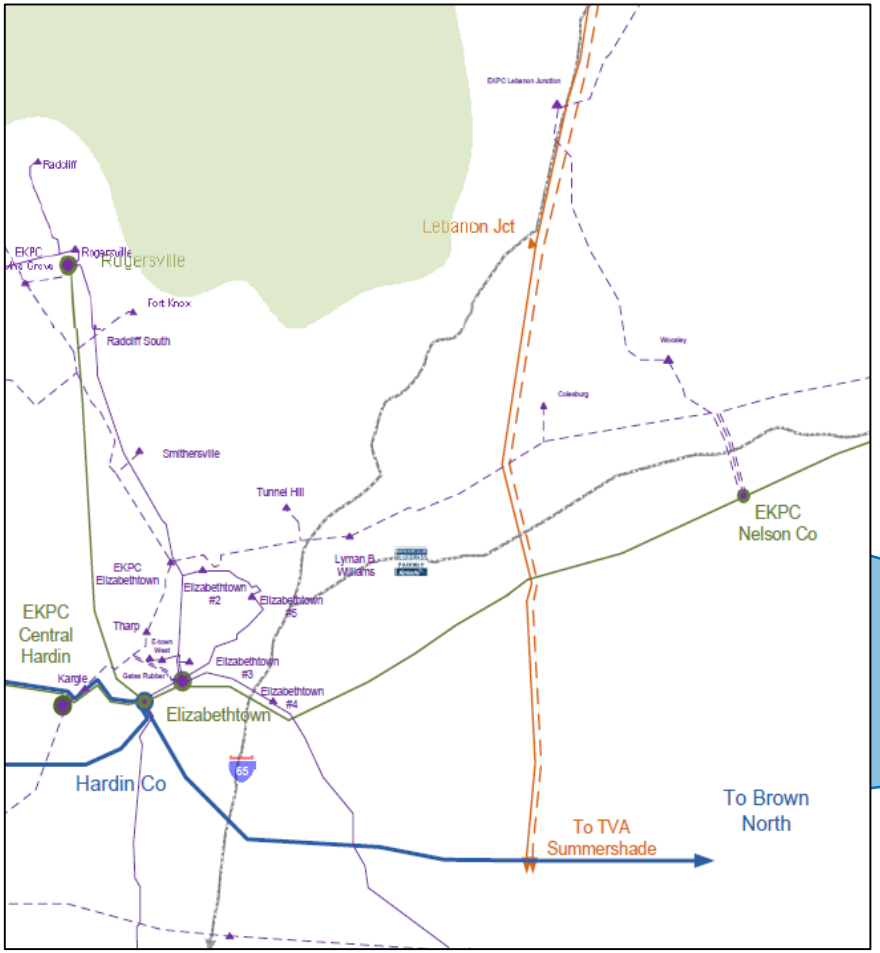
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 6

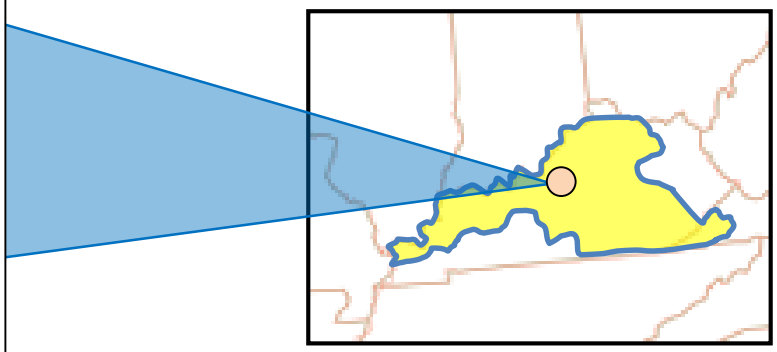
- **2022**

ELIZABETHTOWN - NELSON COUNTY 138 KV TRANSMISSION LINE



- **DESCRIPTION**:
  - Upgrade approximately 15.5 miles of the Nelson County to Elizabethtown 138 kV transmission line to a maximum operating temperature of 176°F.

- **SUPPORTING STATEMENT:**
  - The Nelson County to Elizabethtown 138 kV transmission line overloads under contingency.



Southeastern Regional TRANSMISSION PLANNING

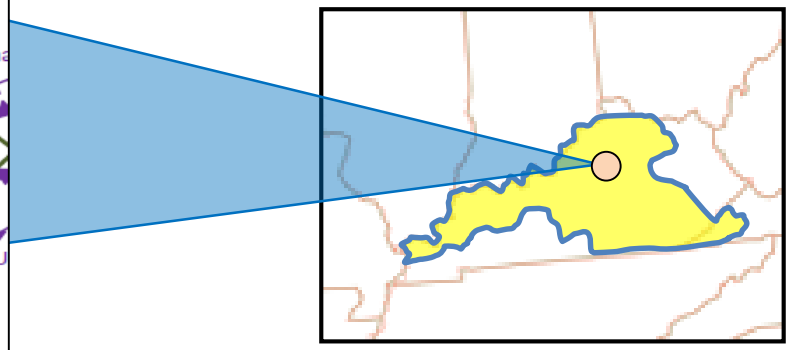
LG&E/KU Balancing Authority Area

LG&E/KU - 7

• **2022**

WEST LEXINGTON 345/138 KV #2 TRANSFORMER

- **DESCRIPTION:**
  - Install a second West Lexington 450 MVA, 345/138 kV transformer.
- **SUPPORTING STATEMENT:**
  - The West Lexington 345/138 kV Transformer #1 overloads under contingency.



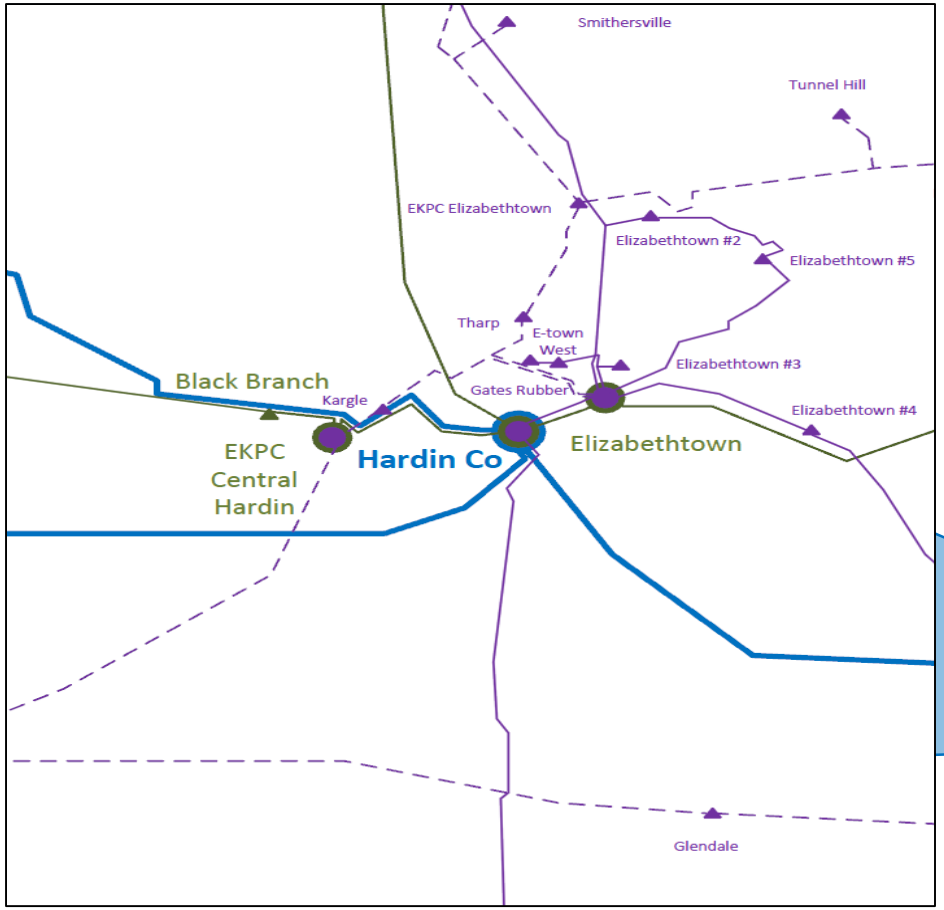
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 8

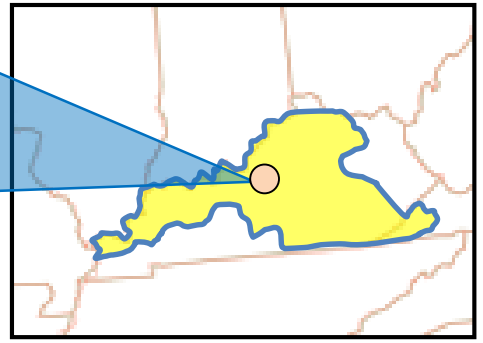
- **2023**

HARDIN CO SUBSTATION ADDITIONS



- **DESCRIPTION:**
  - Install a second 345/138 kV, transformer at Hardin County.
  - Install a second 138/69 kV, transformer at Hardin County
  - Install a second 69 kV line Elizabethtown – Hardin County

- **SUPPORTING STATEMENT:**
  - Additional voltage support in needed in the Hardin Co/Elizabethtown area under contingency.



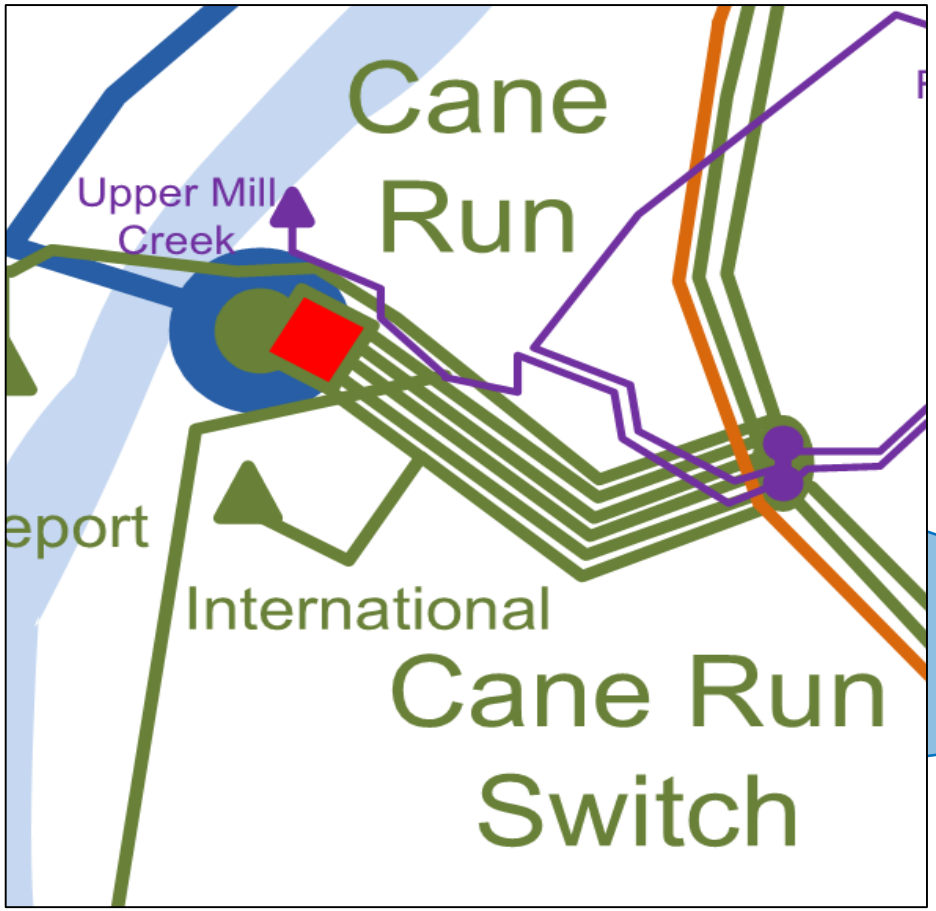
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 9

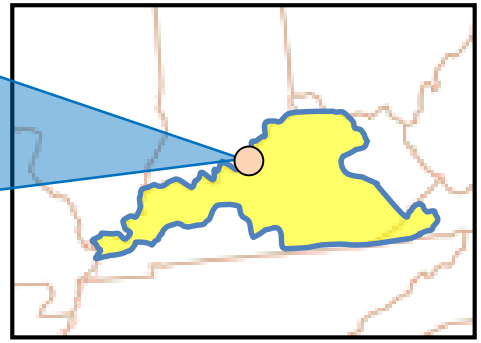
- **2024**

CANE RUN SWITCHING – CANE RUN 11 TAP 138KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Upgrade approximately 1.82 miles of the Cane Run Switching to Cane Run 11 Tap 138 kV transmission line to a maximum operating temperature of 212°F.

- **SUPPORTING STATEMENT:**
  - The Cane Run Switching to Cane Run 11 Tap 138 kV transmission line overloads under contingency.

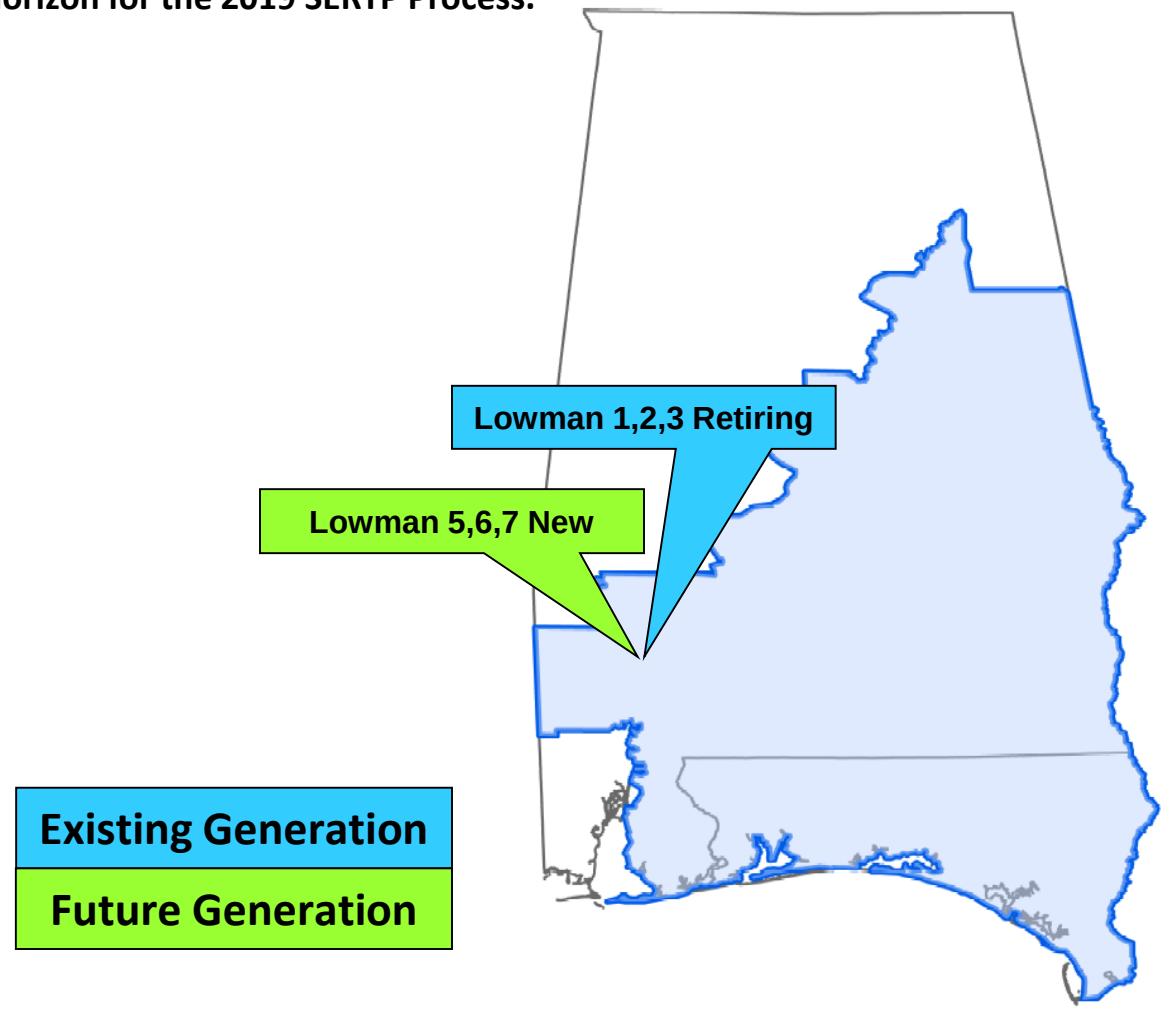


POWERSOUTH Balancing Authority Area

Generation Assumptions

POWERSOUTH – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process.



POWERSOUTH – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Lowman 1,2,3	Coal	551	0	--	--	--	--	--	--	--	--
Lowman 5,6	Gas	--	--	--	586	586	586	586	586	586	586
Lowman 7	Gas	--	--	--	--	--	--	--	179	179	179

POWERSOUTH Balancing Authority Area

Preliminary Transmission Expansion Plan

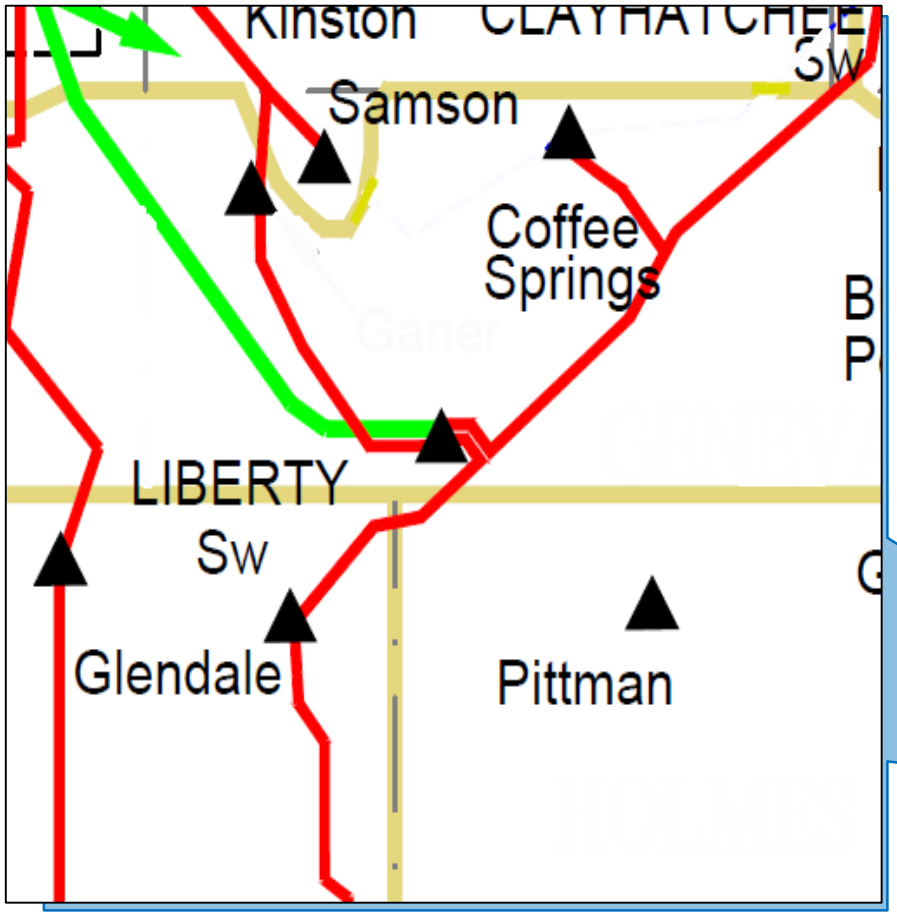
Southeastern Regional TRANSMISSION PLANNING

POWERSOUTH Balancing Authority Area

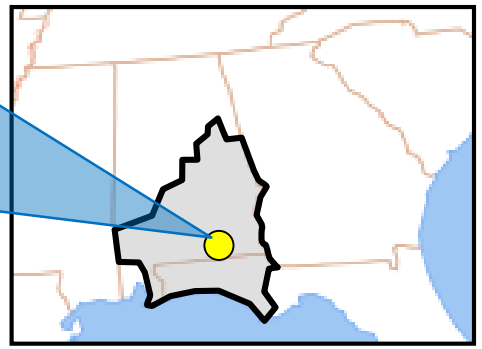
POWERSOUTH – 1

• **2021**

ADD THIRD LIBERTY 230/115 KV TRANSFORMER



- **DESCRIPTION:**
  - Add a third 230/115 kV, 150 MVA transformer.
- **SUPPORTING STATEMENT:**
  - The existing 230/115 kV, 150 MVA transformers at Liberty Substation overload under contingency.

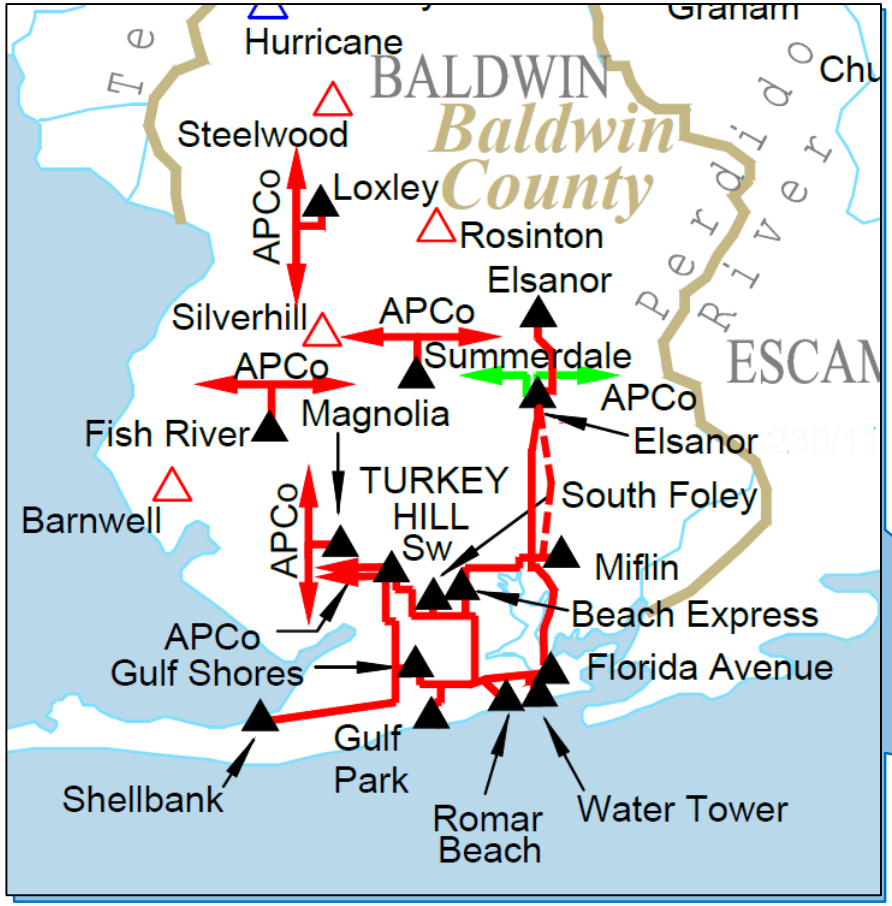


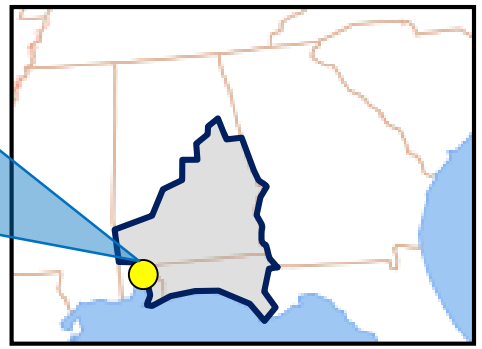
POWERSOUTH Balancing Authority Area

POWERSOUTH - 2

• **2021**

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.

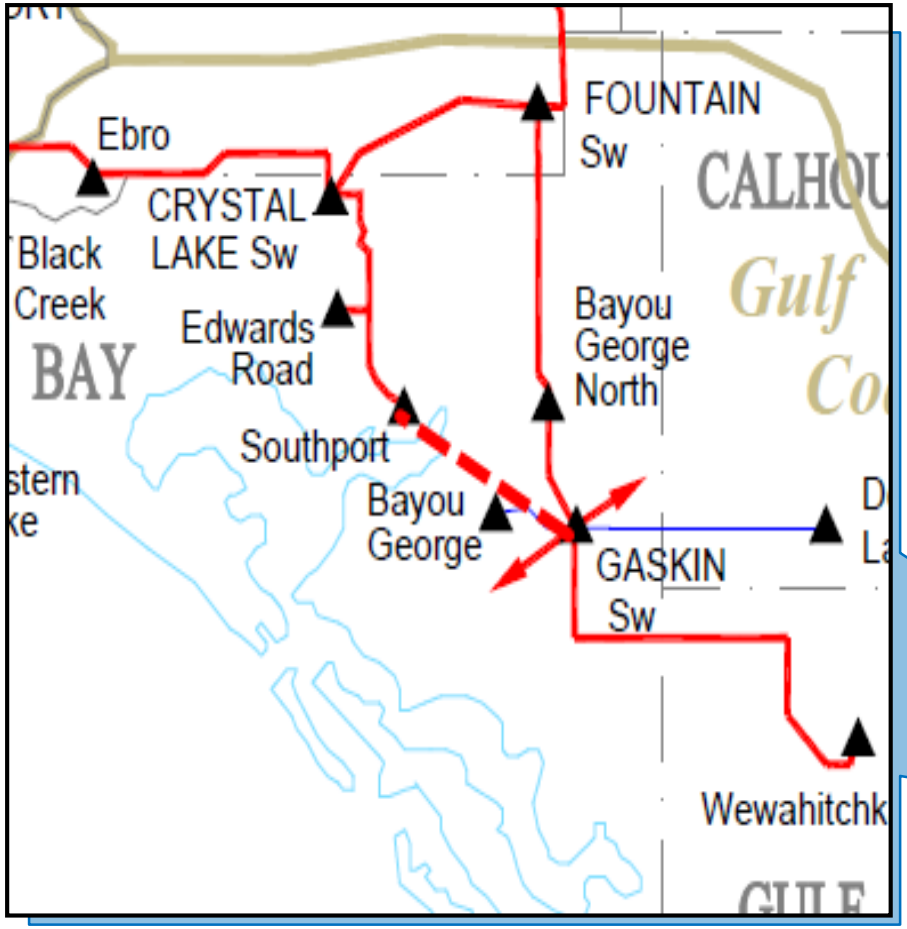
Southeastern Regional TRANSMISSION PLANNING

POWERSOUTH Balancing Authority Area

POWERSOUTH - 3

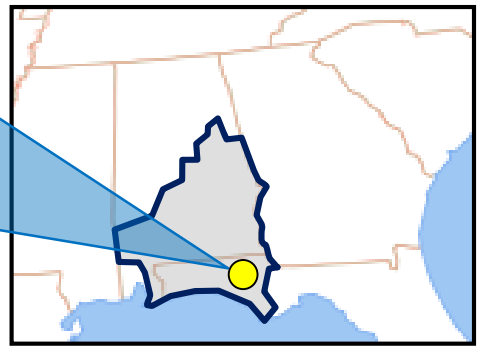
- **2021**

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.



SOUTHERN Balancing Authority Area

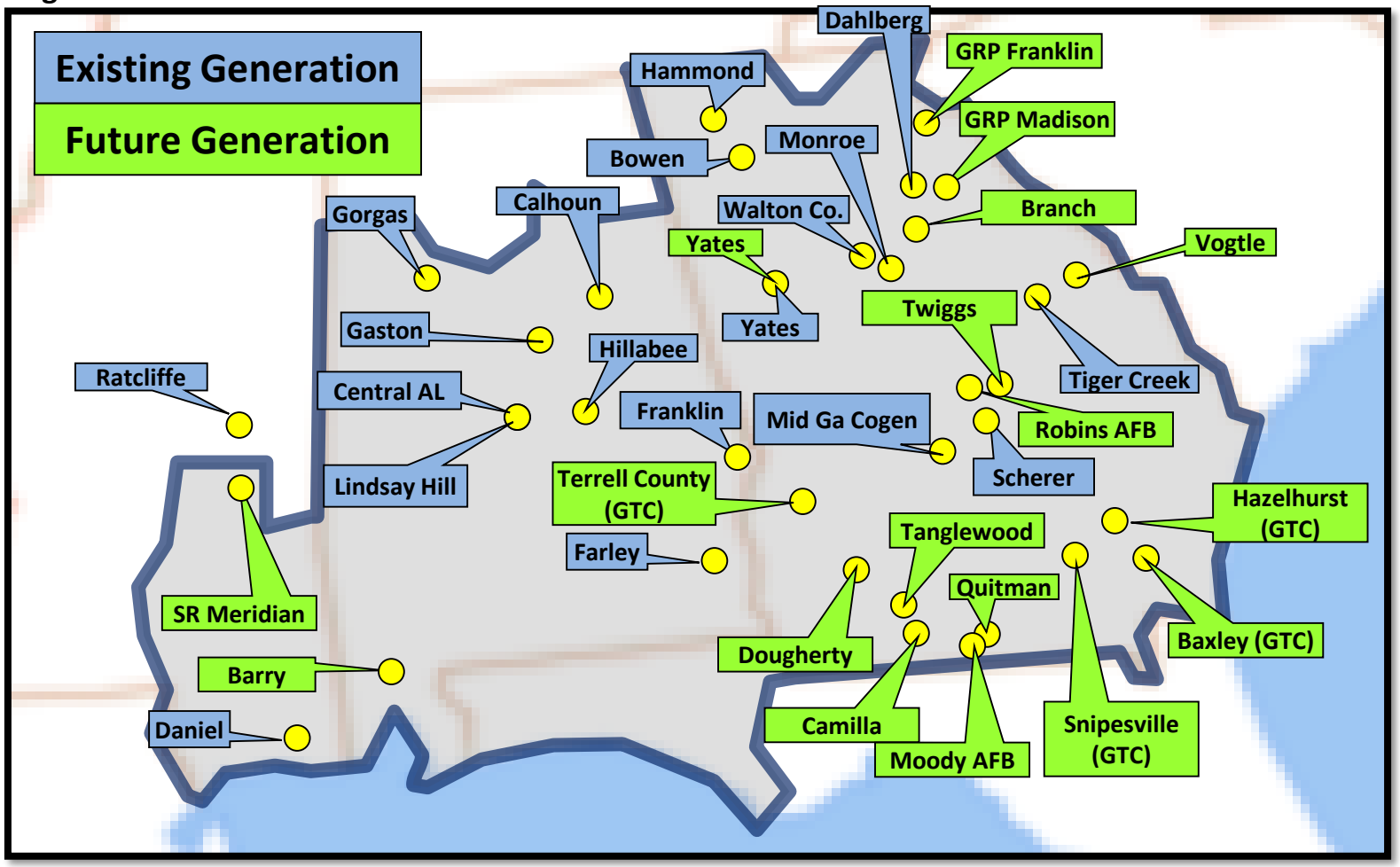
Generation Assumptions

Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process.



Southern Company – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
CALHOUN 1-4	Gas	632	632	632	0	--	--	--	--	--	--
CENTRAL AL	Gas	885	--	--	--	--	--	--	--	--	--
DAHLBERG 2, 6, 8, 10	Gas	298	298	298	298	298	0	--	--	--	--
MID GA COGEN	Gas	300	300	300	300	300	300	300	300	0	--
MONROE POWER	Gas	309	309	309	309	0	--	--	--	--	--
TIGER CREEK 1&4	Gas	313	313	313	0	--	--	--	--	--	--
WALTON COUNTY	Gas	465	465	465	0	--	--	--	--	--	--

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
GASTON 1-4	Gas	465	465	465	465	515	515	515	515	515	515
YATES 6-7	Gas	649	649	649	649	714	714	714	714	714	714

Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

Southern Company – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
CAMILLA	Solar	160	160	160	160	160	160	160	160	160	160
DOUGHERTY	Solar	120	120	120	120	120	120	120	120	120	120
QUITMAN SOLAR	Solar	150	150	150	150	150	150	150	150	150	150
SR MERIDIAN III	Solar	52	52	52	52	52	52	52	52	52	52
MOODY AFB	Solar	48	48	48	48	48	48	48	48	48	48
TANGLEWOOD	Solar	58	58	58	58	58	58	58	58	58	58
TWIGGS	Solar	200	200	200	200	200	200	200	200	200	200
VOGTLE 3	Nuclear	--	504	504	504	504	504	504	504	504	504
VOGTLE 4	Nuclear	--	--	504	504	504	504	504	504	504	504

Southern Company – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
FARLEY 1	Nuclear	874	874	898	898	898	898	898	898	898	898
FARLEY 2	Nuclear	877	901	901	901	901	901	901	901	901	901
Gorgas 8-10	Coal	--	--	--	--	--	--	--	--	--	--

Southern Company – Generation Assumptions

The following table depicts future generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BARRY[1]	--	--	--	610	610	610	610	610	610	610
BRANCH[1]	--	--	--	--	--	--	--	940	940	940
YATES[1]	--	--	--	--	--	1200	1200	1200	1200	1200

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

Southeastern Regional TRANSMISSION PLANNING

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	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BOWEN	159	159	159	159	159	159	159	159	159	159
CENTRAL ALABAMA	--	885	885	885	--	--	--	--	--	--
DAHLBERG	494	494	494	494	494	494	494	494	494	494
DANIEL	--	650	650	650	600	600	600	600	600	600
FRANKLIN	424	424	424	424	424	424	424	424	424	424
HAMMOND	10	10	10	10	10	10	10	10	10	10
HILLABEE	350	350	350	350	350	350	350	350	350	350
LINDSAY HILL	300	300	300	300	300	300	300	300	300	300
SCHERER	911	1131	1131	1131	1131	1131	1131	1131	1131	1131
VOGTLE	206	206	206	206	206	206	206	206	206	206

Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

GTC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
SANDHILLS	SOLAR	--	--	--	--	--	--	--	--	--	--
SR HAZELHURST 3	SOLAR	40	40	40	40	40	40	40	40	40	40
TERRELL COUNTY	SOLAR	--	74	74	74	74	74	74	74	74	74
ARLINGTON	SOLAR	123	123	123	123	123	123	123	123	123	123
LANCASTER	SOLAR	--	80	80	80	80	80	80	80	80	80
ODOM	SOLAR	--	20	20	20	20	20	20	20	20	20
VOGTLE 3	NUCLEAR	--	330	330	330	330	330	330	330	330	330
VOGTLE 4	NUCLEAR	--	--	330	330	330	330	330	330	330	330

MEAG – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
VOGTLE 3	NUCLEAR	--	250	250	250	250	250	250	250	250	250
VOGTLE 4	NUCLEAR	--	--	250	250	250	250	250	250	250	250

DALTON – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
VOGTLE 3	NUCLEAR	--	19	19	19	19	19	19	19	19	19
VOGTLE 4	NUCLEAR	--	--	19	19	19	19	19	19	19	19

SOUTHERN Balancing Authority Area

SOUTHERN (WEST) Balancing Authority Area

Preliminary Transmission Expansion Plan

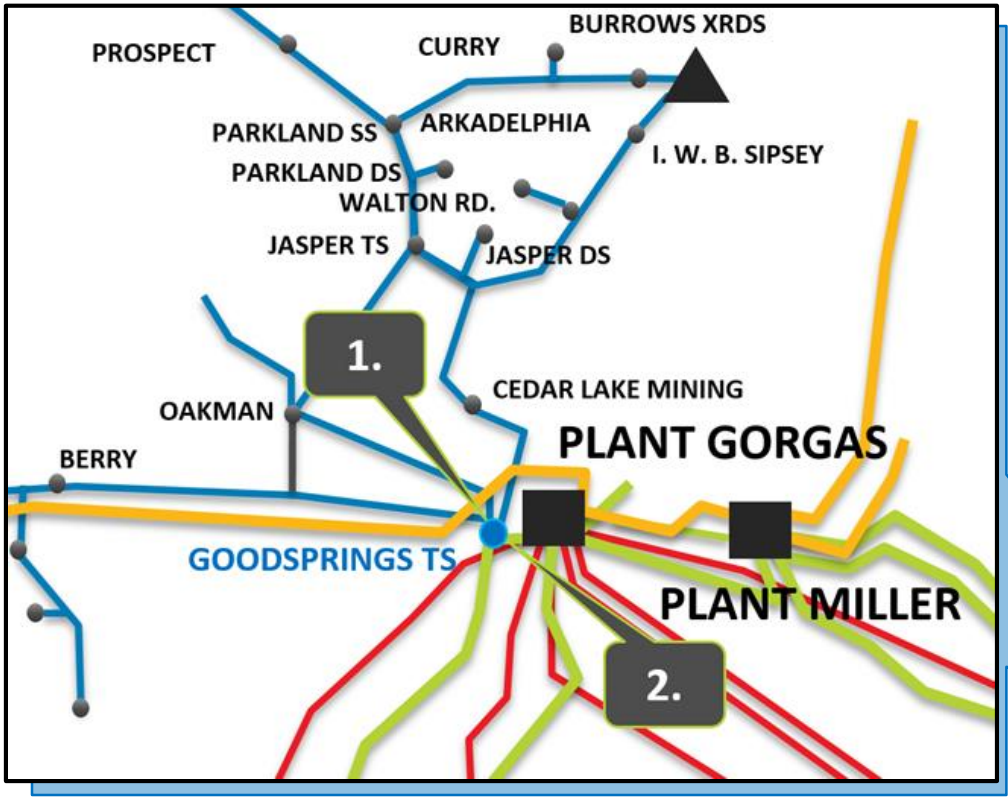
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 1W

• **2020**

GOODSPRINGS 230/161 KV T.S.

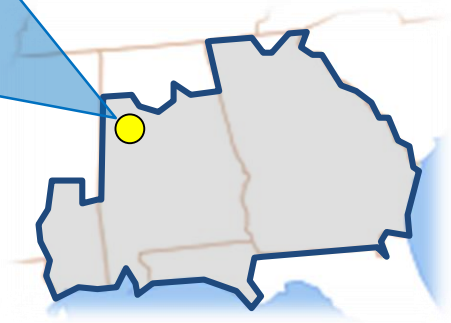


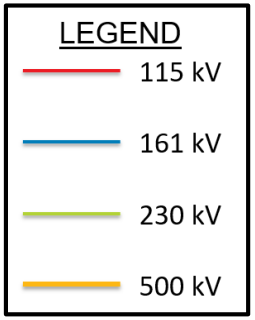
PROJECT DESCRIPTION:

1. Construct Goodsprings 230/161 TS
2. Rebuild Gorgas to Holt No. 1 230 kV Transmission line from Gorgas to Goodsprings TS.

SUPPORTING STATEMENT:

- The Gorgas 230/115 kV transformer overloads under contingency.





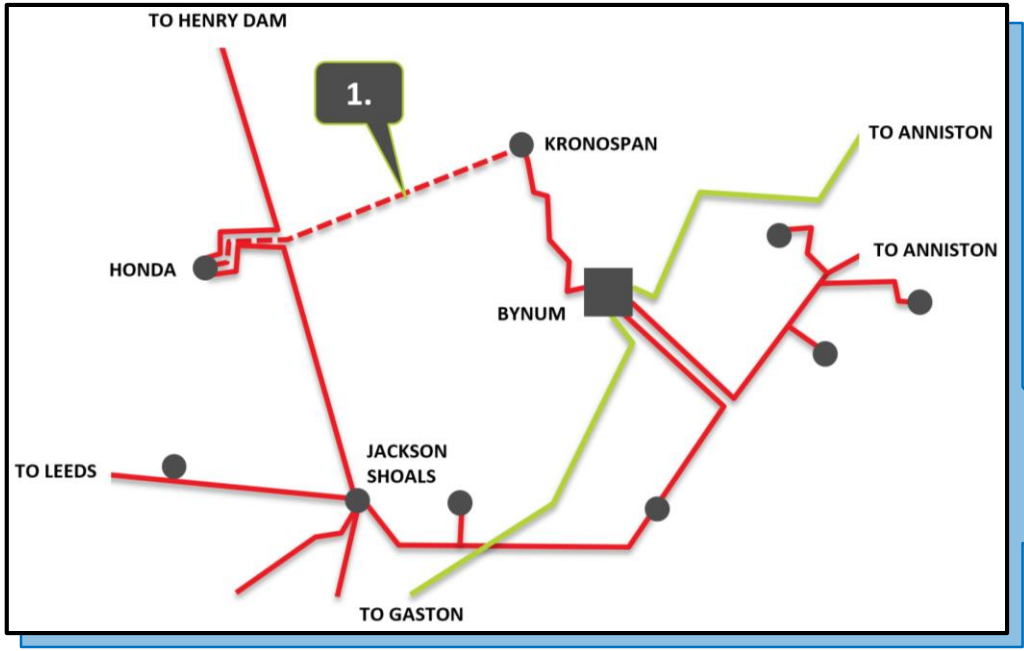
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 2W

• **2020**

HONDA – KRONOSPAN 115 KV TRANSMISSION LINE

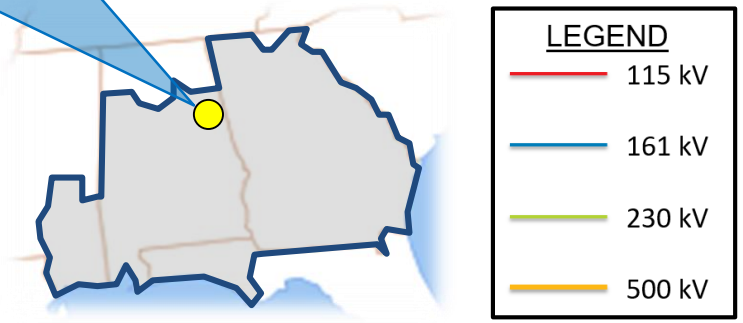


PROJECT DESCRIPTION:

1. Construct approximately 10.3 miles of 795 ACSR 115 kV transmission line at 100°C from Honda to Kronospan.

SUPPORTING STATEMENT:

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



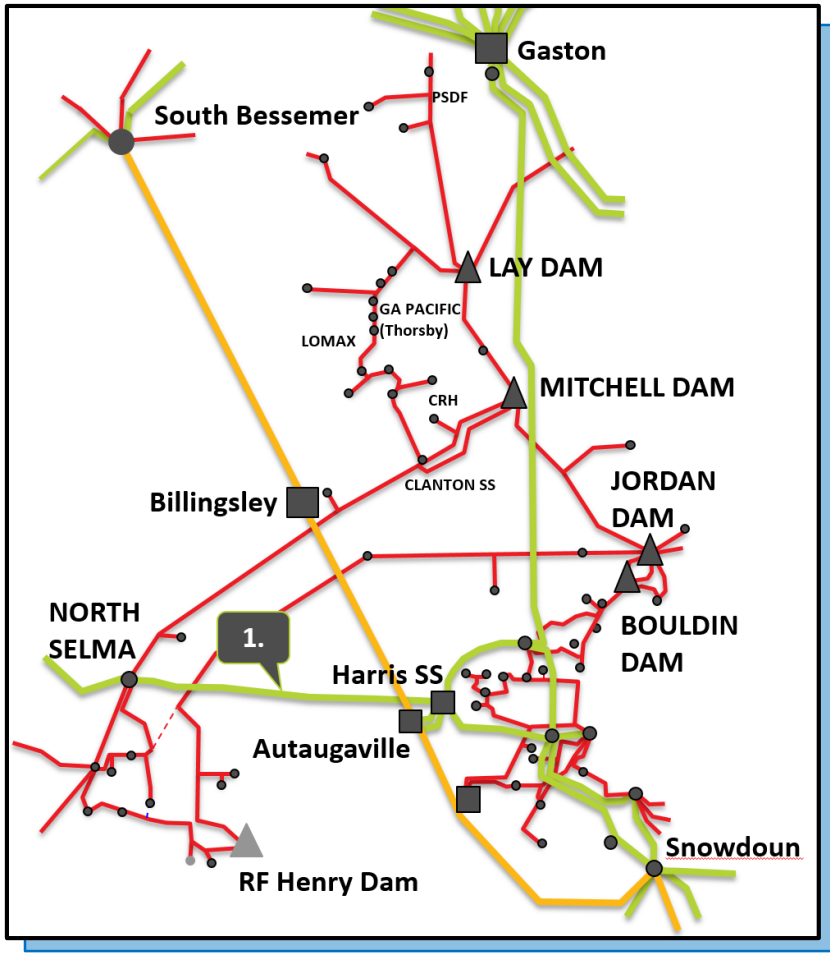
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 3W

• **2020**

HARRIS – NORTH SLEMA 230 KV TRANSMISSION LINE

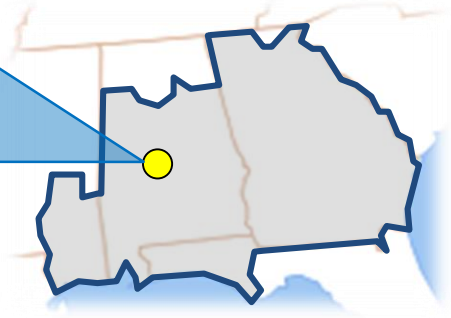


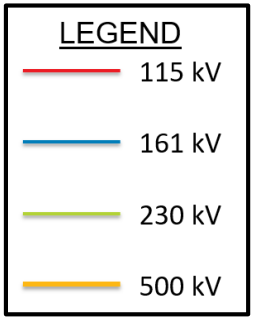
PROJECT DESCRIPTION:

1. Rebuild approximately 26.0 miles of the Harris SS to North Selma 230 kV transmission line with 1033 ACCR at 200°C.

SUPPORTING STATEMENT:

- The Harris to North Selma 230 kV transmission line overloads under contingency.





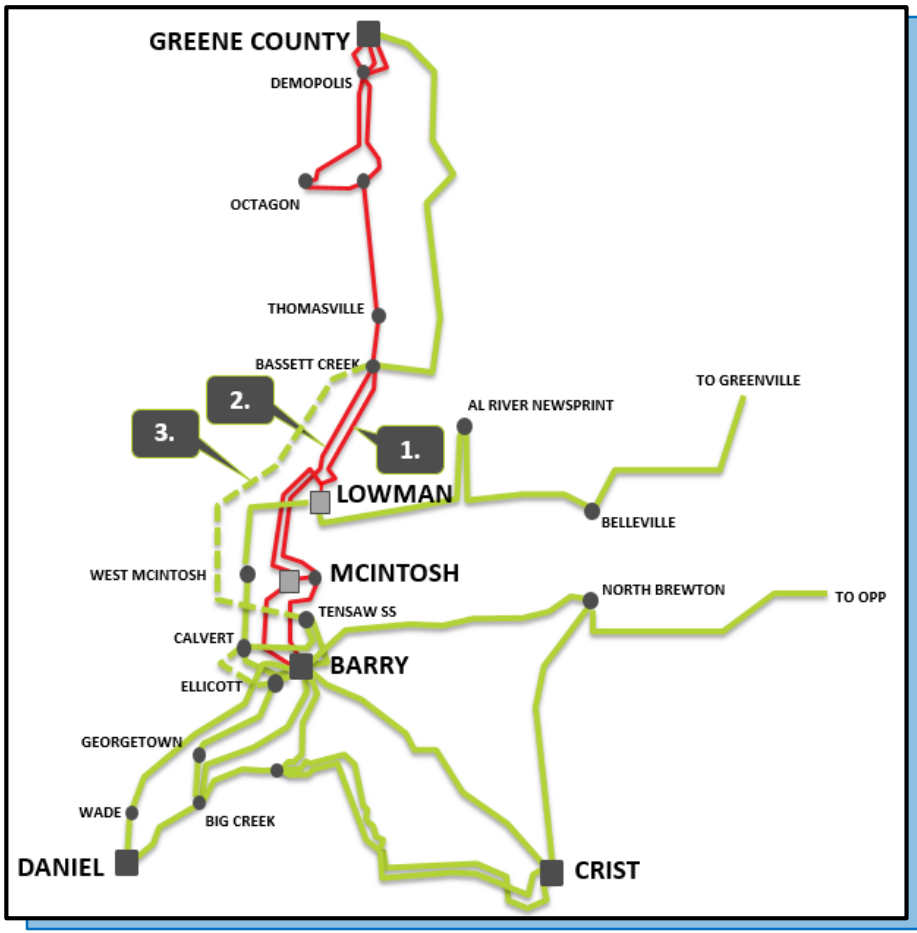
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 4W

• **2022**

BASSETT CREEK CORRIDOR PROJECTS

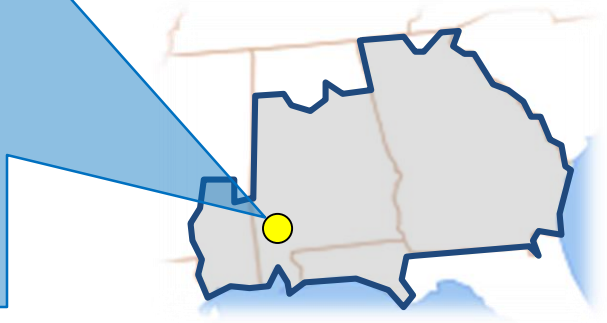


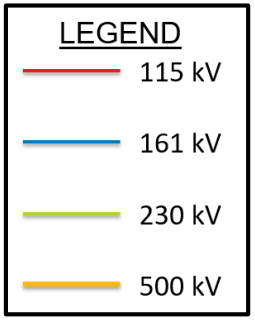
PROJECT DESCRIPTION:

1. Reconductor approximately 24.0 miles along the Bassett Creek to Lowman 115 kV transmission line with 1033.5 ACSS at 200°C.
2. Reconductor approximately 46.0 miles along the Bassett Creek to McIntosh 115 kV transmission line with 1033.5 ACSS at 200°C.
3. Construct approximately 60.0 miles of 1351 ACSS 230 kV transmission line at 200°C from Bassett Creek to Tensaw then Calvert to Ellicott.

SUPPORTING STATEMENT:

- The Bassett Creek to McIntosh 115 kV transmission lines overload under contingency. These projects provide additional operational and maintenance flexibility which then increases reliability.





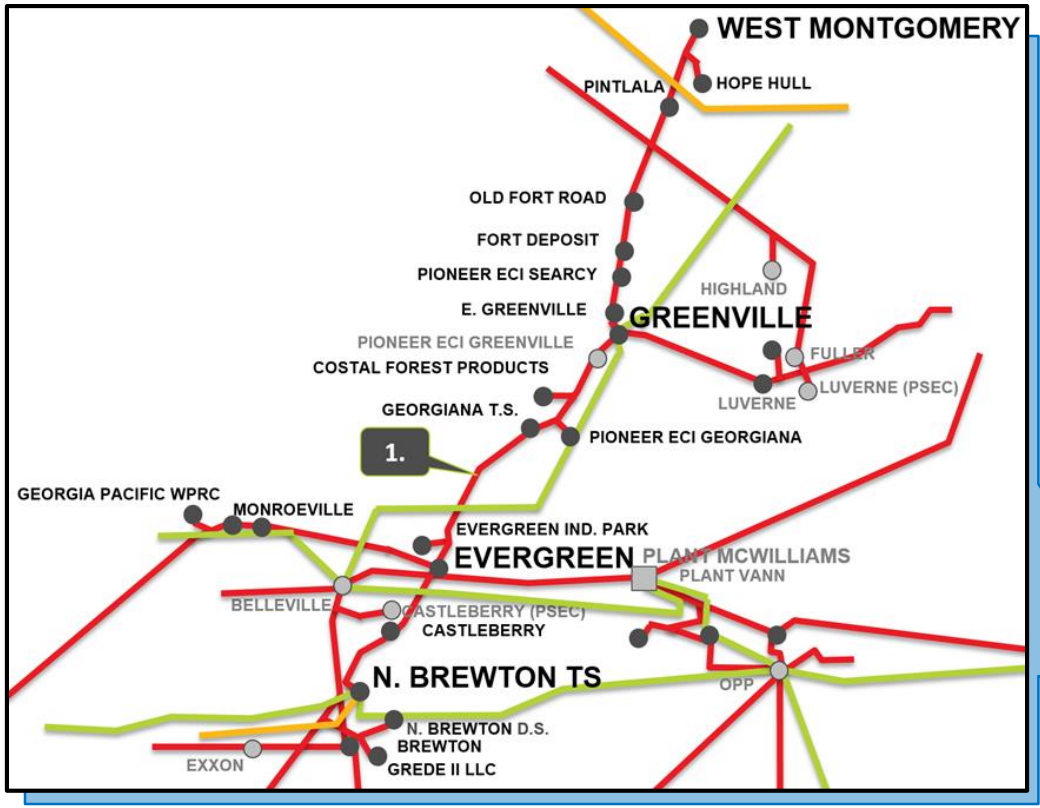
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 5W

• **2023**

CENTRAL CORRIDOR SOLUTION 115 KV PROJECT

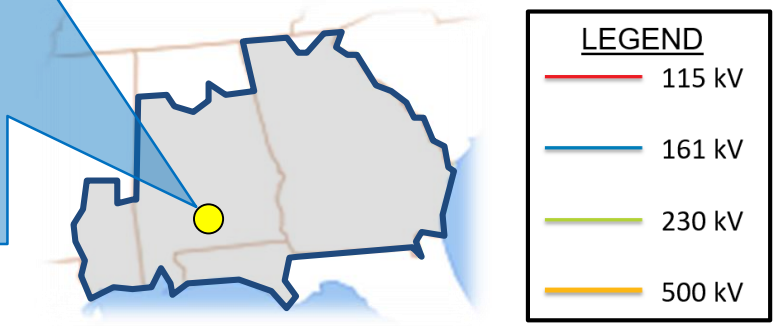


PROJECT DESCRIPTION:

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:

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



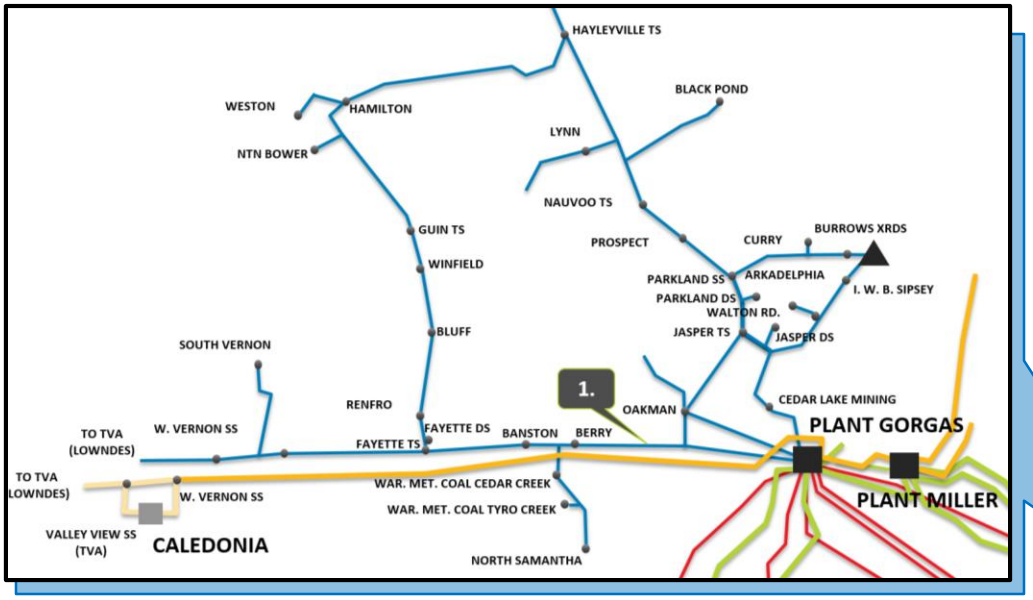
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 6W

• **2023**

FAYETTE – GORGAS 161 KV TRANSMISSION LINE

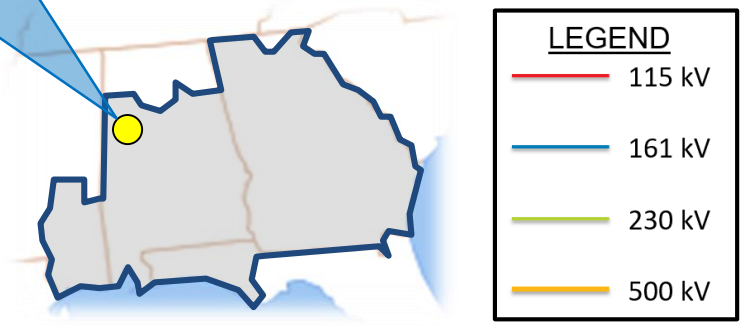


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

- The Fayette to Gorgas 161 kV transmission line overloads under contingency.



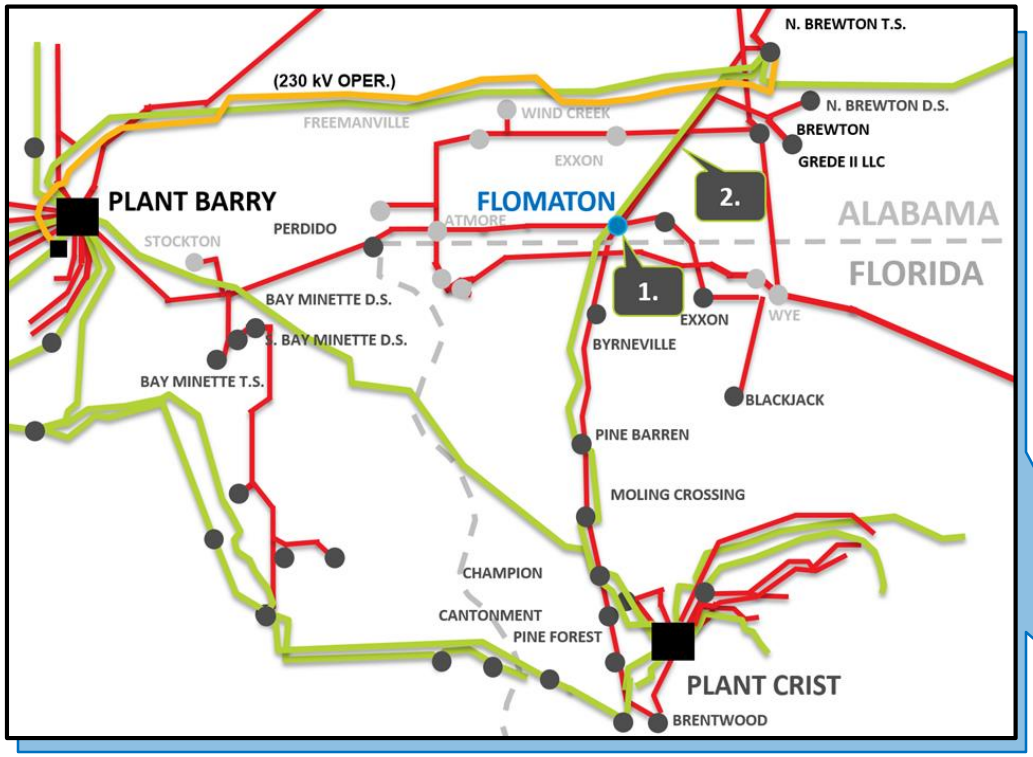
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 7W

• **2023**

FLOMATON 230/115 KV SUBSTATION

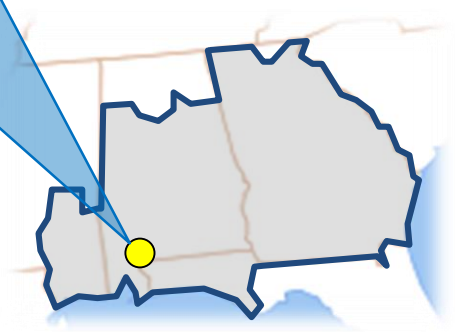


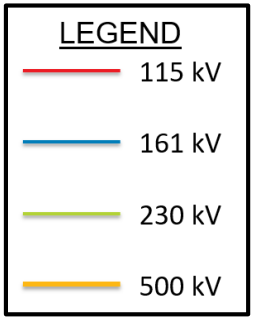
PROJECT DESCRIPTION:

1. Construct a new Flomaton 230/115 kV, 480 MVA transformer at Flomaton TS.
2. Reconductor approximately 16.0 miles of 795 ACSR from N. Brewton to Flomaton 115 kV with 795 ACSS at 200°C.

SUPPORTING STATEMENT:

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





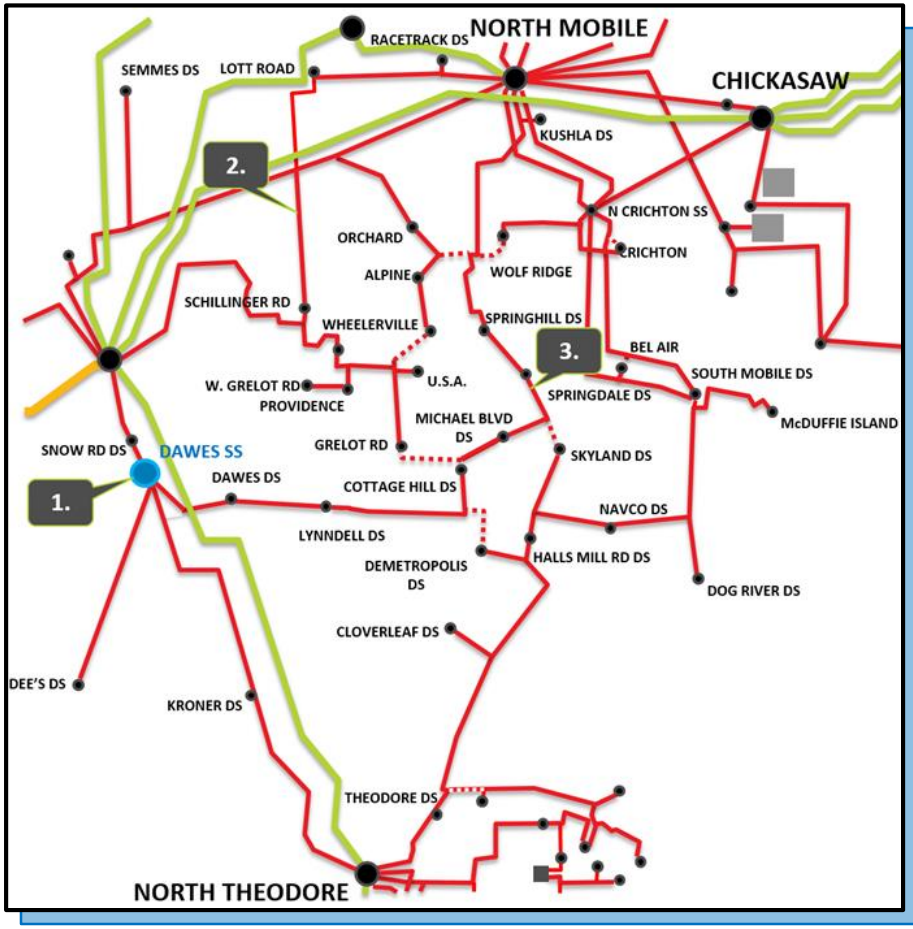
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 8W

• **2023**

MOBILE AREA NETWORKING

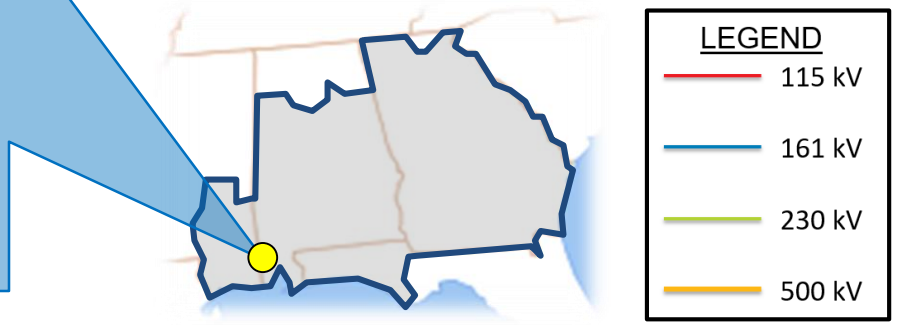


PROJECT DESCRIPTION:

1. Construct a new substation at Dawes Tap on the Big Creek to N. Theodore 115 kV transmission line.
2. Reconductor approximately 4.0 miles of 115 kV transmission line from Lott Road to Schillinger Road with 795 ACSS at 200°C.
3. Reconductor approximately 6.3 miles of 115 kV transmission line from North Mobile to Michael Blvd with 397 ACSS at 200°C.

SUPPORTING STATEMENT:

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



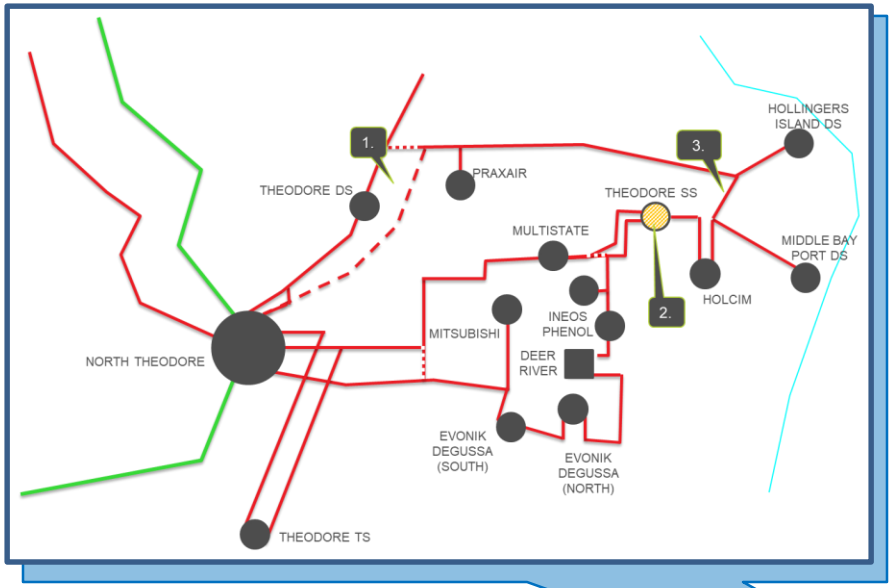
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 9W

• **2023**

NORTH THODODRE AREA 115 KV PROJECT

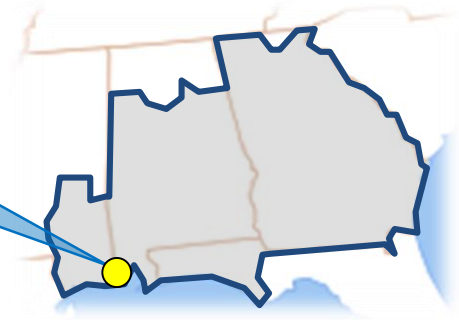


PROJECT DESCRIPTION:

1. Construct approximately 5.3 miles of new 115kV transmission line to the Praxair Tap from North Theodore.
2. Construct a switching station near Multistate CU.
3. Reconductor approximately 1.0 mile of the Hollinger's Island DS – Holcim CU 115kV transmission line to 795 ACSR at 100°C

SUPPORTING STATEMENT:

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



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

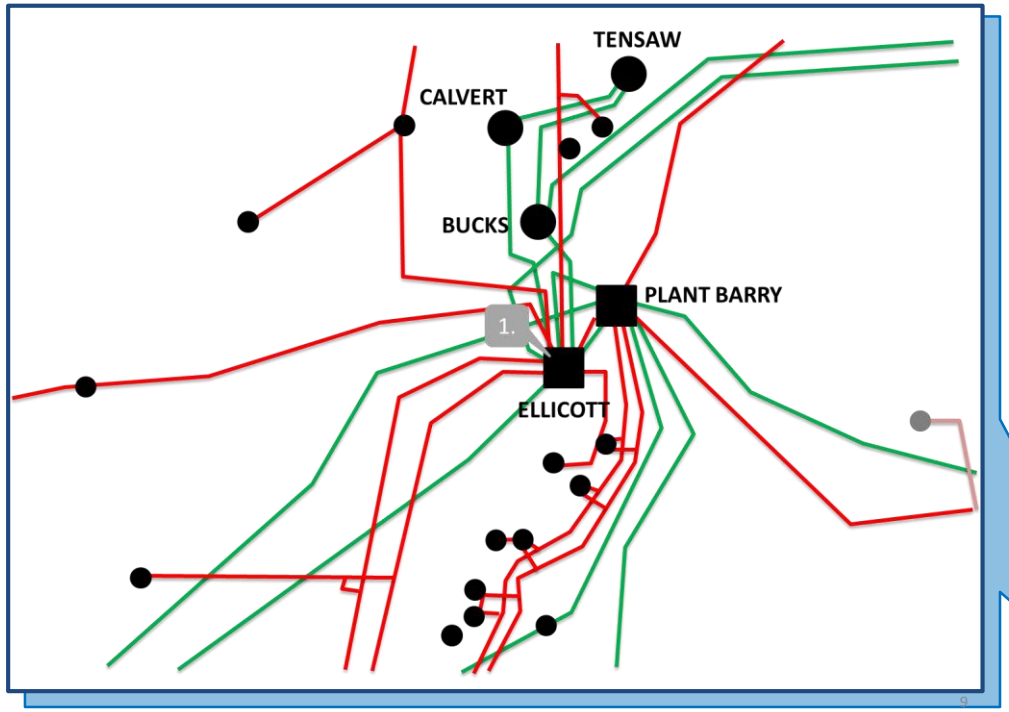
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 10W

• **2024**

ELLICOTT SUBSTATION EXPANSION PROJECT

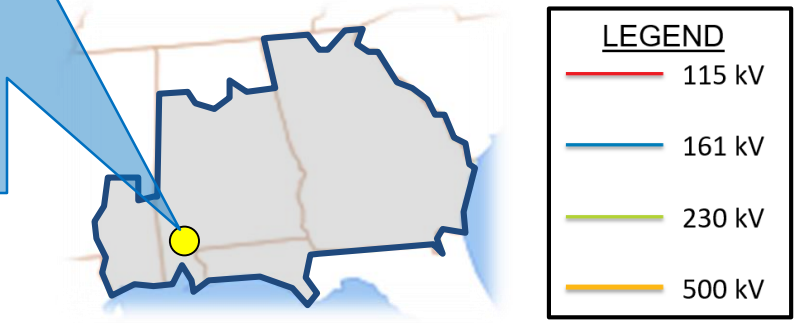


PROJECT DESCRIPTION:

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 (EAST) Balancing Authority Area

Preliminary Transmission Expansion Plan

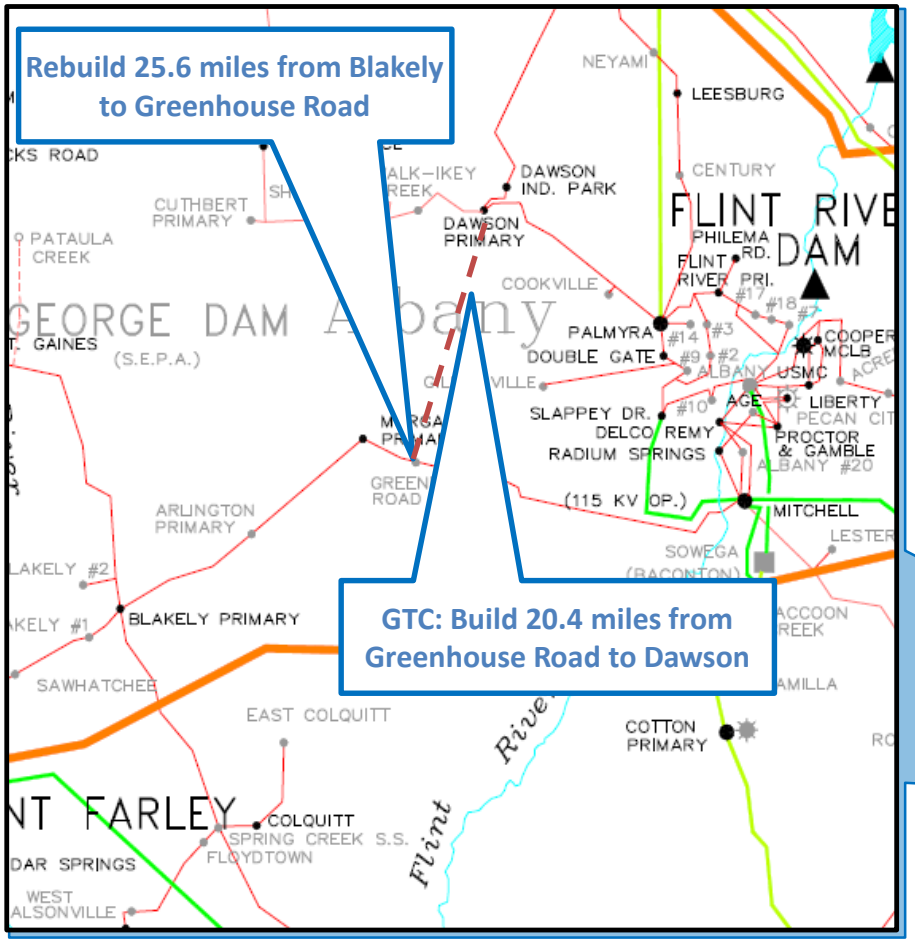
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

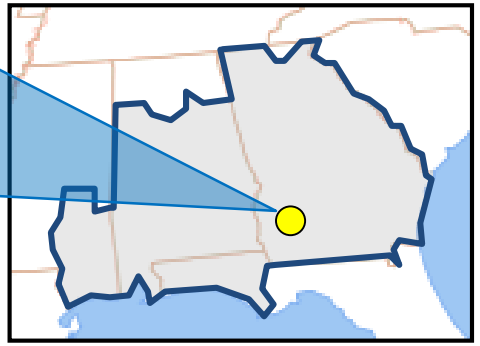
SOUTHERN – 1E

• **2020**

BLAKELY PRIMARY – DAWSON PRIMARY 115 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - GPC to rebuild approximately 25.6 miles of 50°C 266 ACSR 115 kV transmission line from Blakely Primary to Greenhouse Road with 100°C 765 ACSR.
  - GTC to build approximately 20.4 miles of new 115 kV transmission line from Greenhouse Road to Dawson Primary with 100°C 765 ACSR.
- **SUPPORTING STATEMENT:**
  - The Blakely Primary to Mitchell 115 kV transmission line overloads under contingency.



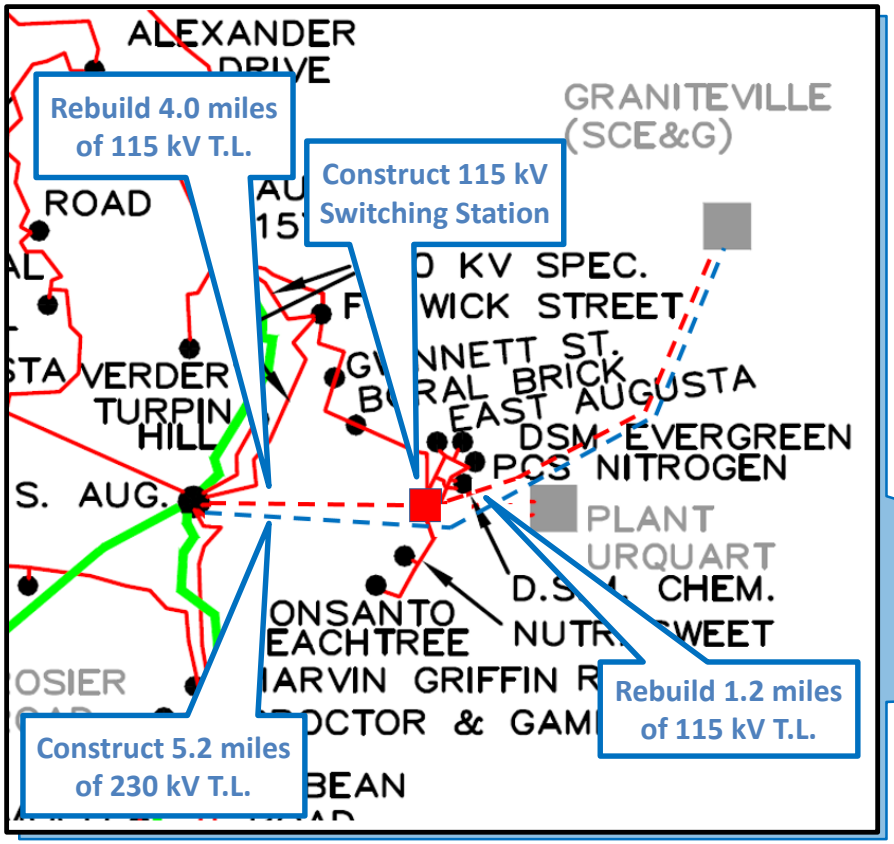
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

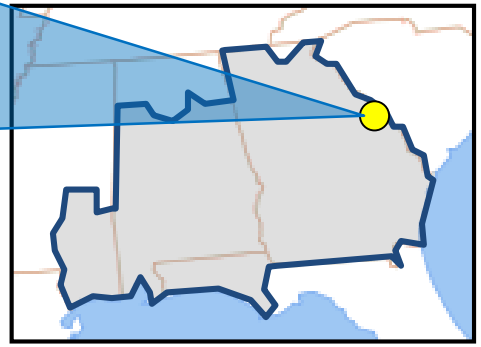
SOUTHERN – 2E

• **2020**

GRANITEVILLE - SOUTH AUGUSTA 115 & 230 KV TRANSMISSION LINES



- **DESCRIPTION:**
  - Construct a new 5.2 mile 230 kV tie-line (GPC to SCE&G) from the South Augusta 230/115 kV substation to the GA/SC state-line with bundled 1351 ACSR at 100°C. Construct a 5-breaker 115 kV switching station. Rebuild existing transmission line from the switching station to the GA/SC state line (1.2 miles) with 1351 ACSR at 100°C. Rebuild 4.0 miles of existing line between South Augusta and the new switching station with 1351 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - The Savannah River (SCE&G) to Vogtle 230 kV tie – line and multiple other transmission facilities on the SCE&G system overload under contingency.



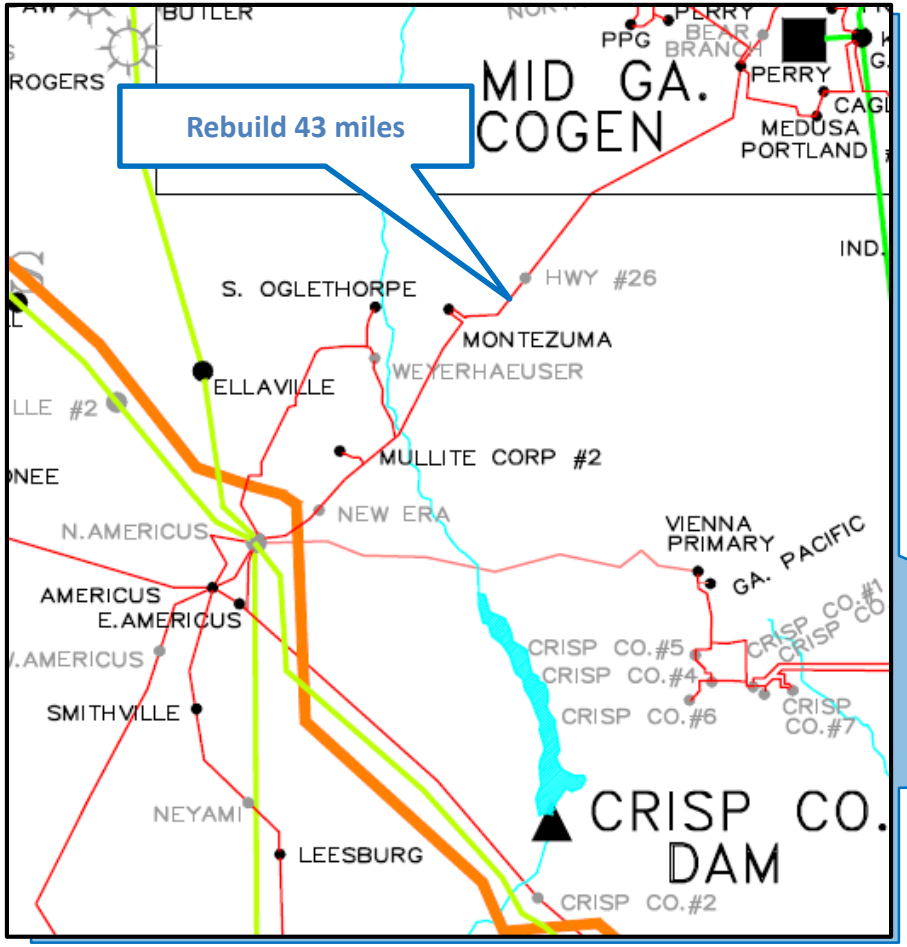
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 3E

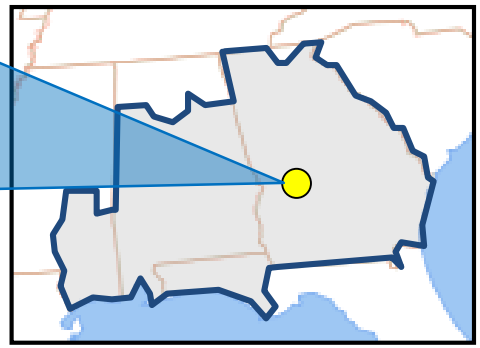
• **2020**

NORTH AMERICUS – PERRY 115 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Rebuild approximately 43.0 miles of the existing 115 kV transmission line from North Americus to Perry substation with 795 ACSR at 100°C.

- **SUPPORTING STATEMENT:**
  - The North Americus to Perry 115 kV transmission line overloads under contingency.



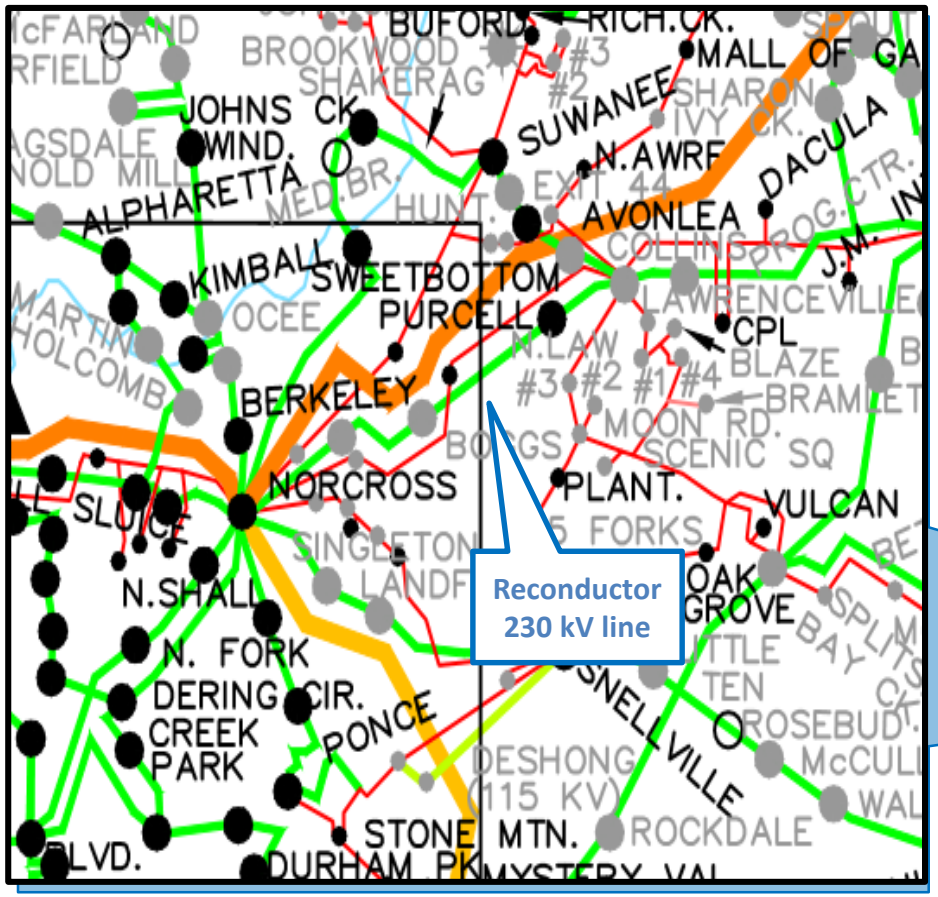
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

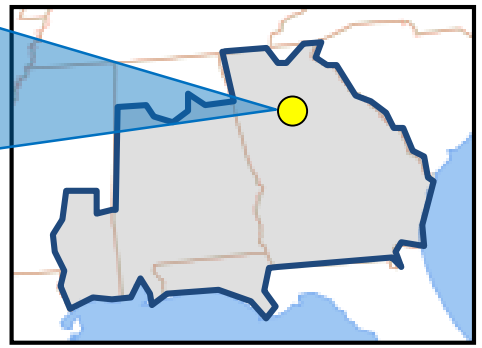
SOUTHERN – 4E

• **2021**

LAWRENCEVILLE – NORCROSS 230KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Reconductor approximately 5.9 miles of the Boggs Road – Lawrenceville section of the Lawrenceville – Norcross 230 kV transmission line with 1351 ACSS at 170°C.
- **SUPPORTING STATEMENT:**
  - The Lawrenceville - Norcross 230 kV transmission line overloads under contingency.



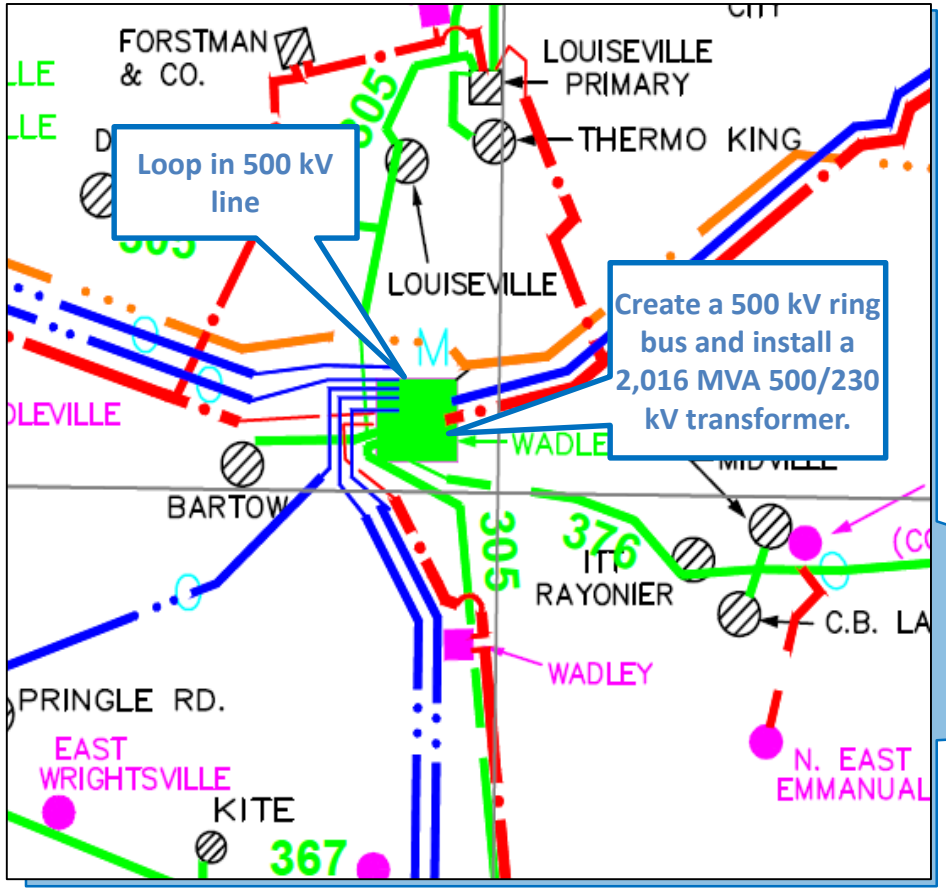
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

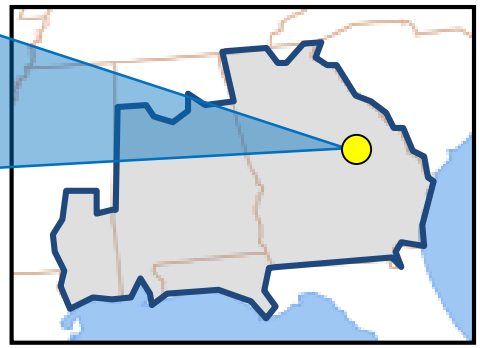
SOUTHERN – 5E

• **2021**

WADLEY PRIMARY 500/230 KV PROJECT



- **DESCRIPTION:**
  - Loop in the Vogtle to Warthen 500 kV transmission line into the new 500 kV ring bus at Wadley Primary. Install a 500/230 kV, 2016 MVA transformer that ties to the Wadley Primary 230 kV bus.
- **SUPPORTING STATEMENT:**
  - Project to enhance reliability in the Augusta area and to support the expansion of Plant Vogtle.

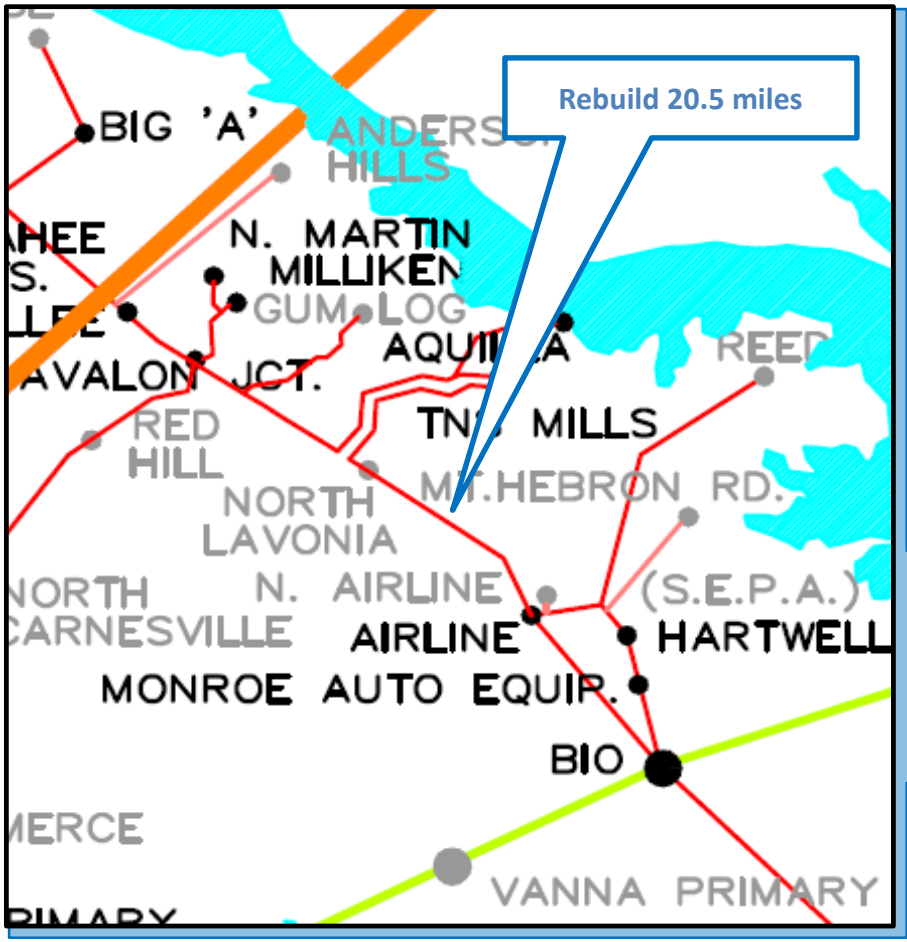


SOUTHERN Balancing Authority Area

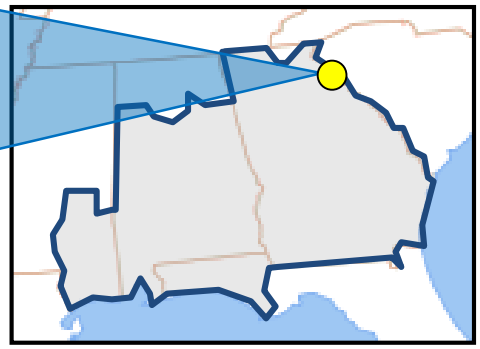
SOUTHERN – 6E

• **2022**

AVALON JUNCTION – BIO 115 KV TRANSMISSION LINE REBUILD



- **DESCRIPTION:**
  - Rebuild approximately 20.5 miles of the Avalon Junction to Bio 115 kV transmission line (636 ACSR/795ACSR) with 100°C 1351 ACSR and replace the terminal equipment at various substations.
- **SUPPORTING STATEMENT:**
  - The Avalon Junction to Bio 115 kV transmission line overloads under contingency.



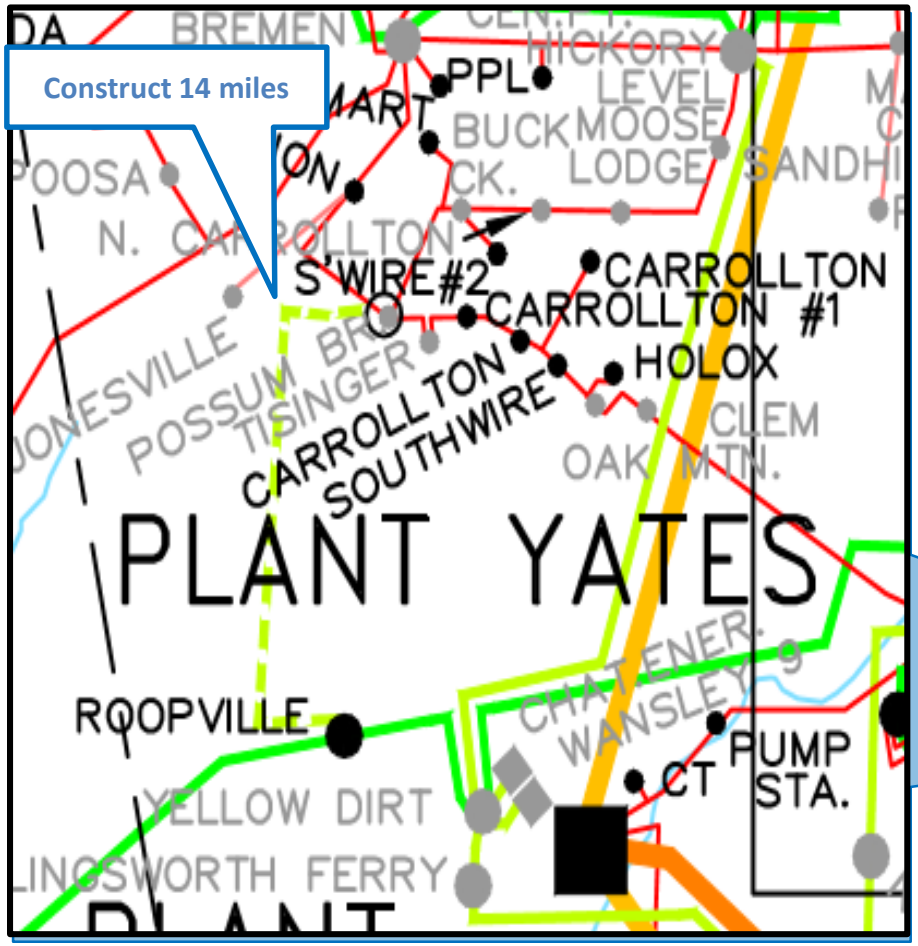
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

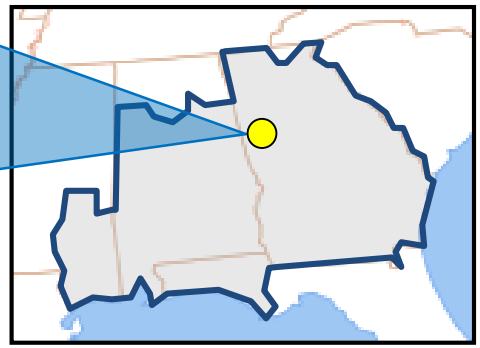
SOUTHERN – 7E

• **2022**

POSSUM BRANCH 230/115KV PROJECT



- **DESCRIPTION:**
  - Construct a new 14 mile Possum Branch – Roopville 230 kV Line with 100°C 1351 ACSR conductor. Install a 230/115 kV, 400 MVA transformer at Possum Branch with a 230 kV bus. Construct a 230 kV a ring bus switching station at Roopville along with additional substation modifications.
- **SUPPORTING STATEMENT:**
  - Reliability issues identified.



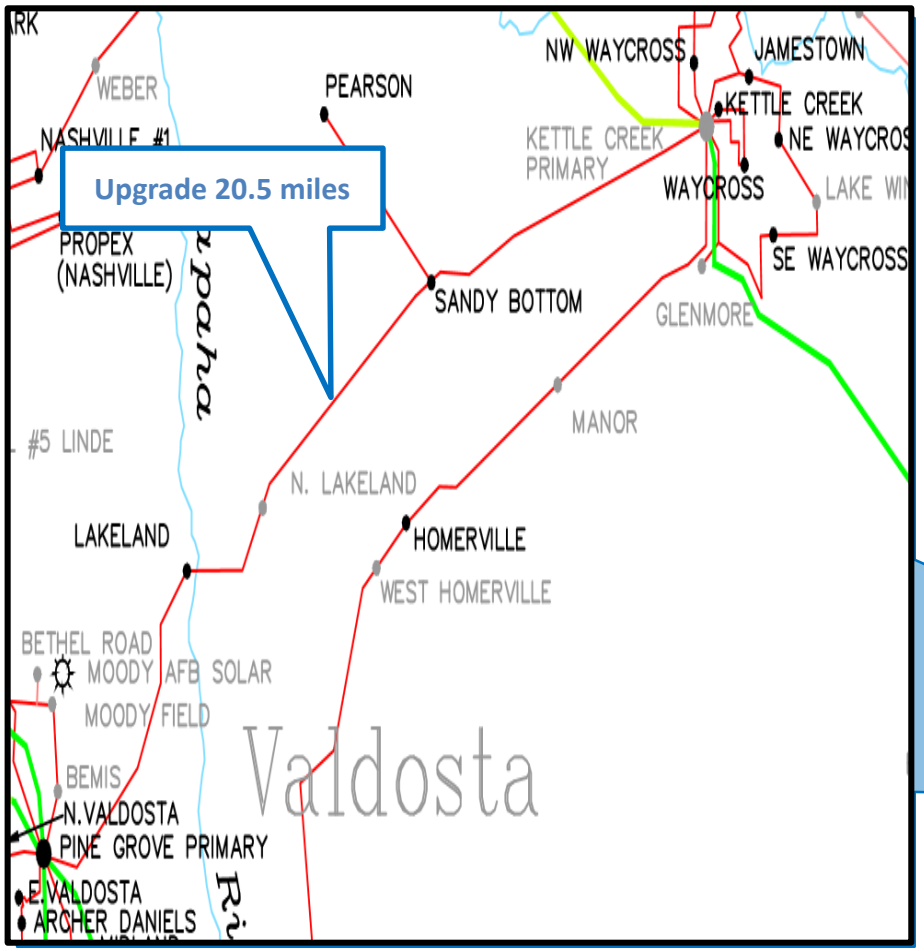
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

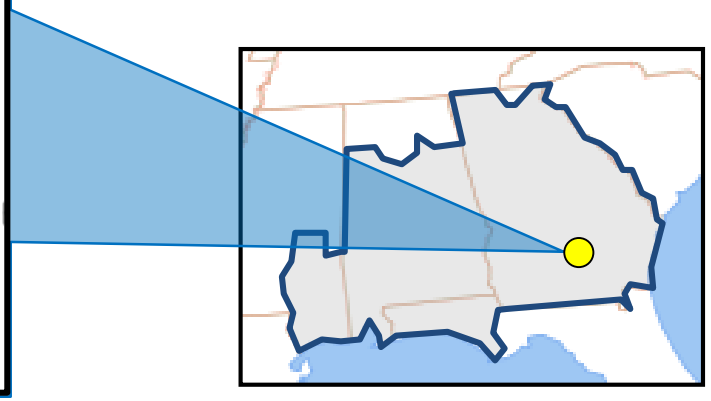
SOUTHERN – 8E

• **2023**

KETTLE CREEK PRIMARY – PINE GROVE PRIMARY 115KV



- **DESCRIPTION:**
  - Upgrade approximately 20.5 miles of 50°C 4/0 ACSR to75°C operation from Kettle Creek Primary to Sandy Bottom.
- **SUPPORTING STATEMENT:**
  - Kettle Creek Primary to Sandy Bottom line segment overloads under contingency.

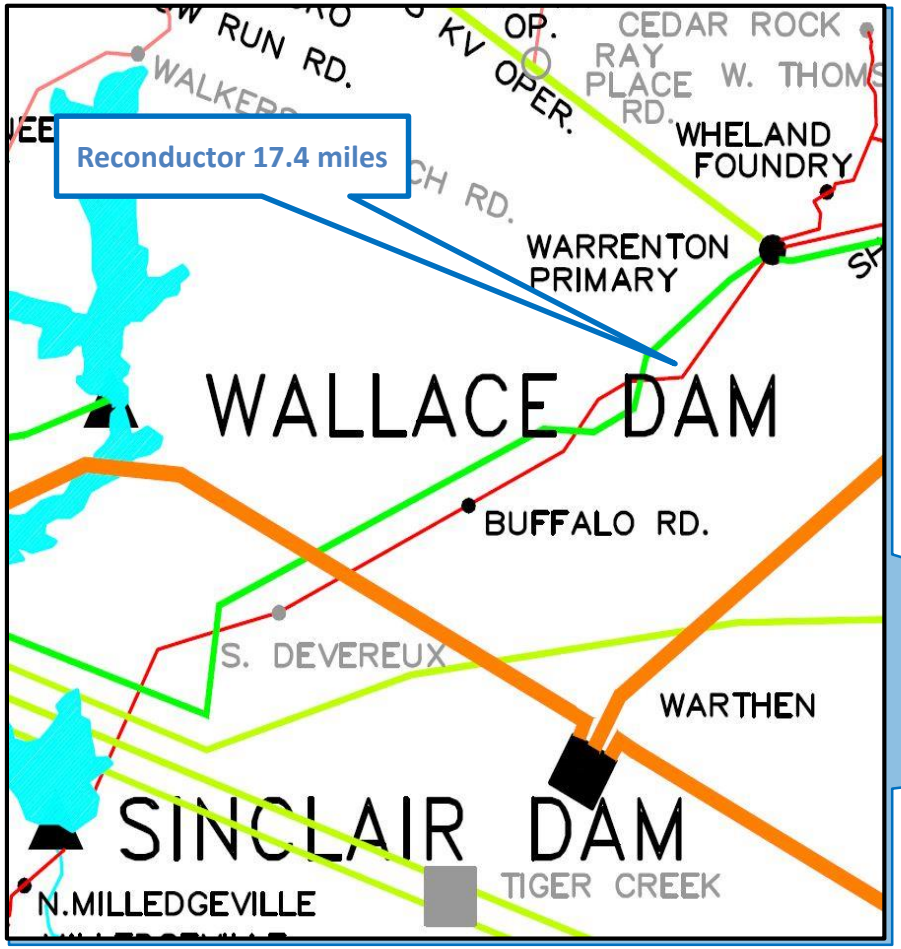


SOUTHERN Balancing Authority Area

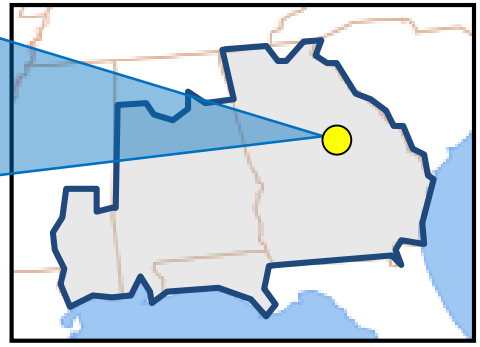
SOUTHERN – 9E

• **2025**

SINCLAIR DAM – WARRENTON PRIMARY 115 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Reconductor 17.4 miles of 50°C 4/0 CU on the Buffalo Road to Warrenton Primary line section with 100°C 795 ACSR.
  - Replace 90°C 4/0 CU jumpers with AAC 1590 at Buffalo Road.
- **SUPPORTING STATEMENT:**
  - The Sinclair Dam to Warrenton Primary 115 kV transmission line overloads under contingency.

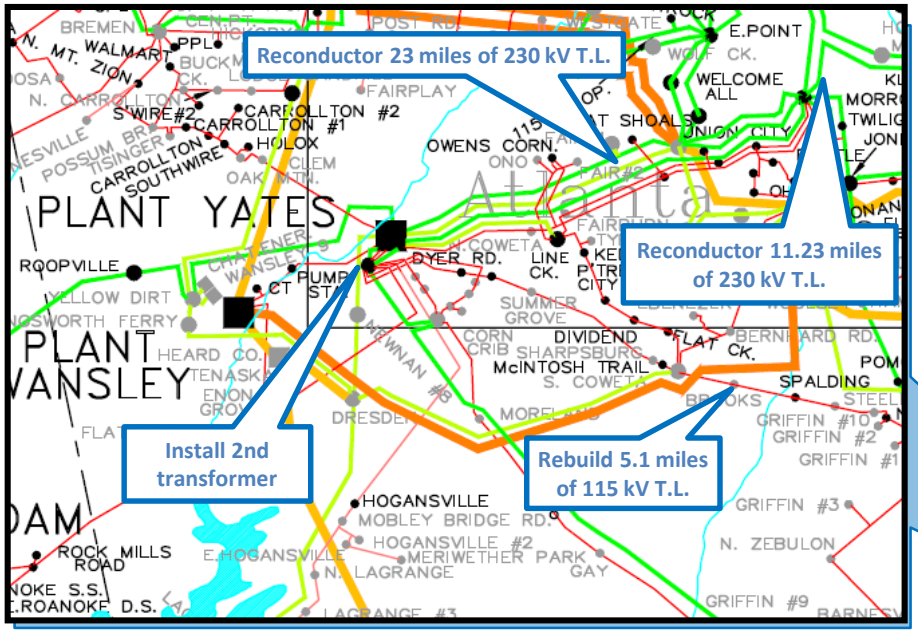


SOUTHERN Balancing Authority Area

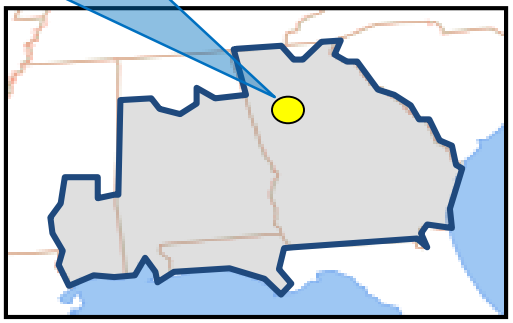
SOUTHERN – 10E

• **2025**

YATES UNIT 8 NETWORK IMPROVEMENTS



- **DESCRIPTION:**
  - Reconductor Union City to Yates (White) 230 kV (23.0 miles with 200°C 1033 ACSS), Klondike - Morrow 230 kV Line (11.23 miles with 2-795 ACSR)
  - Rebuild South Coweta to South Griffin 115 kV Line (5.1 miles of 100°C 1033 ACSR)
  - Install second Dyer Road 230/115 kV transformer
  - Rebuild Conyers Substation 230 kV bus
- **SUPPORTING STATEMENT:**
  - The addition of Plant Yates Unit 8 generation causes various facilities in the northwestern Georgia area to overload.



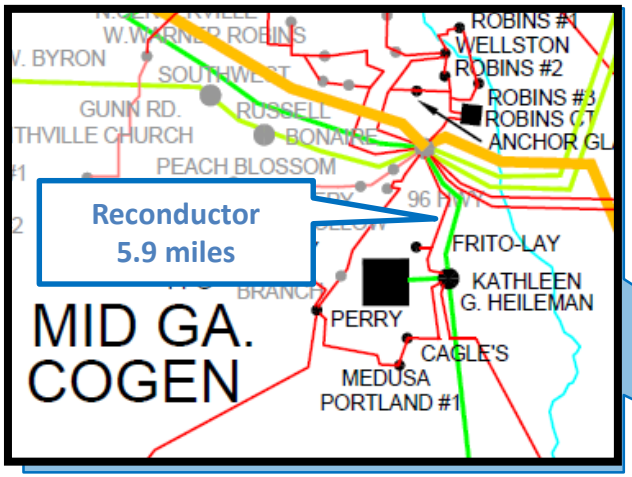
Southeastern Regional TRANSMISSION PLANNING

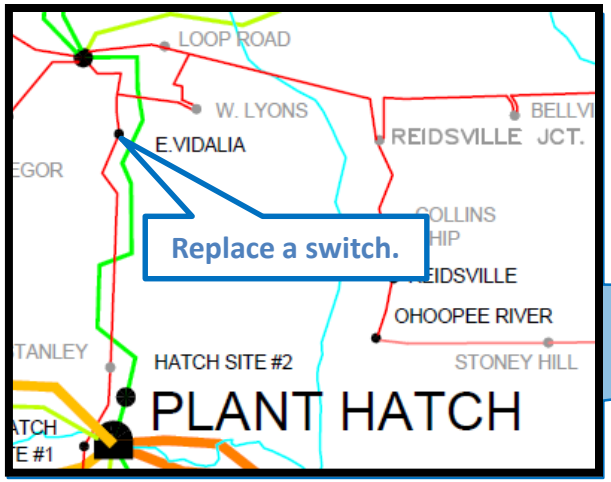
SOUTHERN Balancing Authority Area

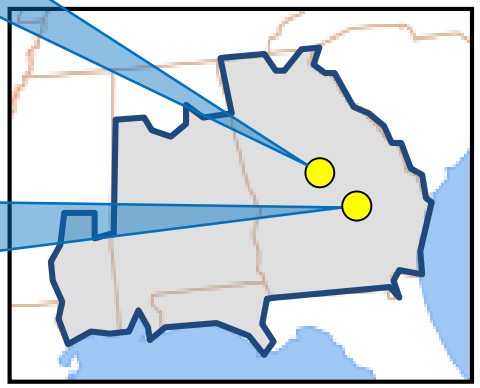
SOUTHERN – 11E

• **2027**

BRANCH UNIT 5 NETWORK IMPROVEMENTS





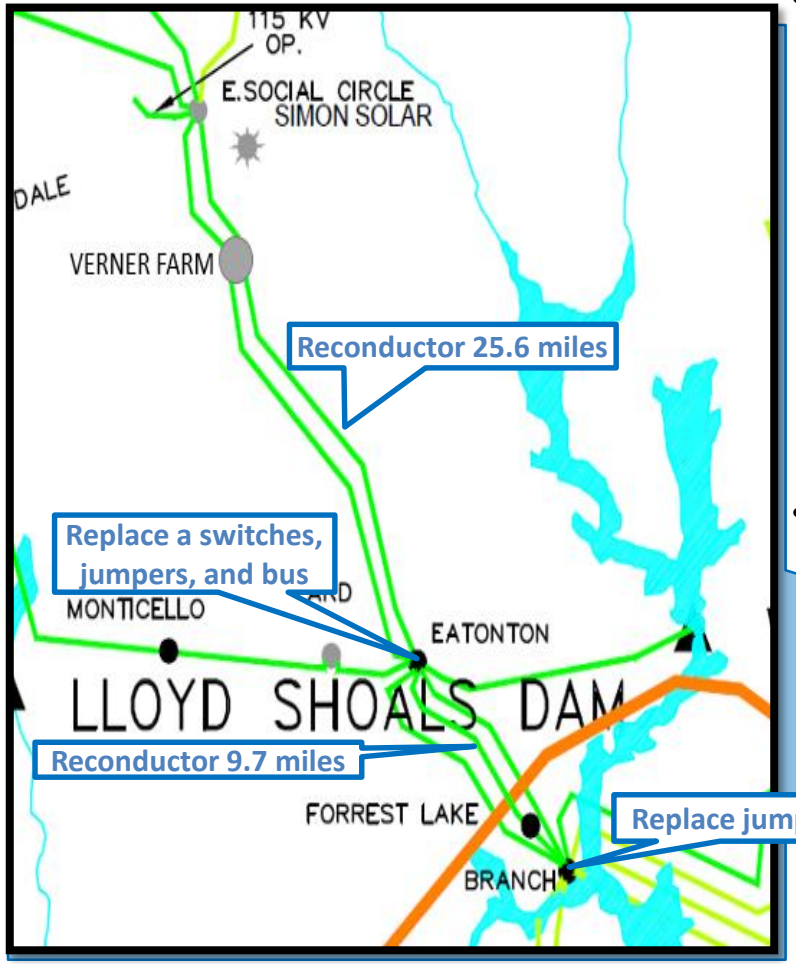


- **DESCRIPTION:**
  - Reconductor 5.9 miles Bonaire Primary-Kathleen 115 KV to 100°C 795 ACSR.
  - Replace the 600A BLD switch at East Vidalia with 2000A BLD switch.
- **SUPPORTING STATEMENT:**
  - The addition of Plant Branch Unit 5 generation causes various facilities in the northern Georgia area to overload.

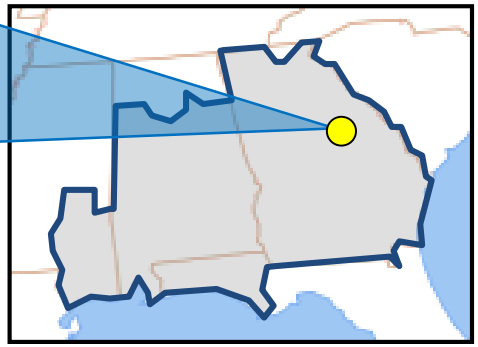
SOUTHERN – 11E (Continued)

• **2027**

BRANCH UNIT 5 NETWORK IMPROVEMENTS



- **DESCRIPTION:**
  - Reconductor the Branch to Verner Farms 230kV line (9.7 miles of 100°C 1351 ACSR) using 160°C 1351 ACSS. Replace 1590 AAC main bus, jumpers at Eatonton Primary, and jumpers at Branch, with 2-1590 AAC. Replace switches at Eatonton Primary with 2000A switches.
  - Reconductor the Eatonton Primary to Verner Farms 230KV line (25.6 miles of 100°C 1351 ACSR) using 160°C 1351 ACSS. Replace switches at Eatonton Primary with 2000A switches.
- **SUPPORTING STATEMENT:**
  - The addition of Plant Branch Unit 5 generation causes various facilities in the northern Georgia area to overload.



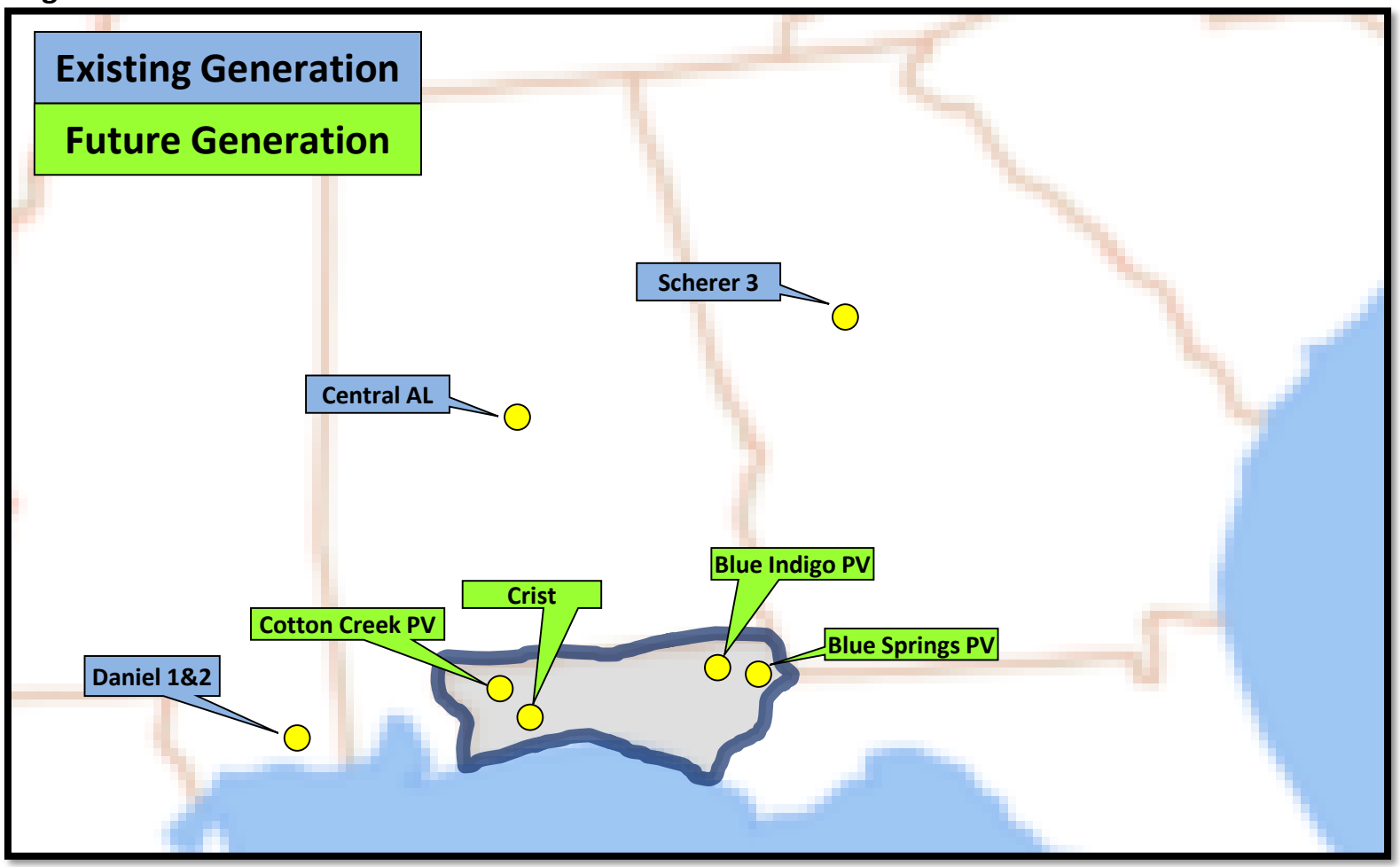
GULF POWER Balancing Authority Area

Generation Assumptions

GULF POWER Balancing Authority Area

GULF POWER – Generation Assumptions 2021

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 SERTP Process.



GULF POWER – Generation Assumptions

The following table depicts future generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2020[2]	2021	2022	2023	2024	2025	2026	2027	2028	2029
CRIST[1]	Gas	972	1754	1754	1754	1754	1754	1754	1754	1754	1754
BLUE INDIGO PV[1]	Solar	--	75	75	75	75	75	75	75	75	75
COTTON CREEK PV[1]	Solar	--	75	75	75	75	75	75	75	75	75
BLUE SPRING PV[1]	Solar	--	--	75	75	75	75	75	75	75	75

1) This assumption may be modified as resource decisions are made by the corresponding LSEs pursuant to applicable regulatory processes.
2) Gulf Power is currently in the SBAA, but has preliminary plans to leave the SBAA in December 2020

GULF POWER Balancing Authority Area

GULF POWER – 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	2020[1]	2021	2022	2023	2024	2025	2026	2027	2028	2029
DANIEL 1 & 2	--	500	500	500	500	500	500	500	500	500
SCHERER 3	--	220	220	220	220	220	220	220	220	220
CENTRAL ALABAMA	--	885	885	885	--	--	--	--	--	--

1) Gulf Power is currently in the SBAA, but has preliminary plans to leave the SBAA in December 2020

GULF POWER Balancing Authority Area

Preliminary Transmission Expansion Plan

Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 1

• **2021**

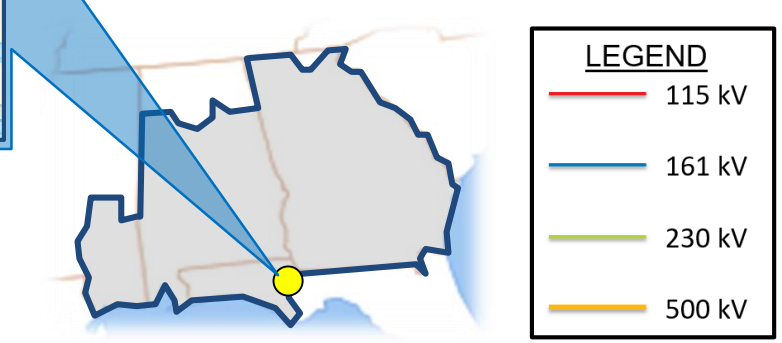
RAVEN-SINAI CEMETARY 161kV TRANSMISSION LINE PROJECT

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.



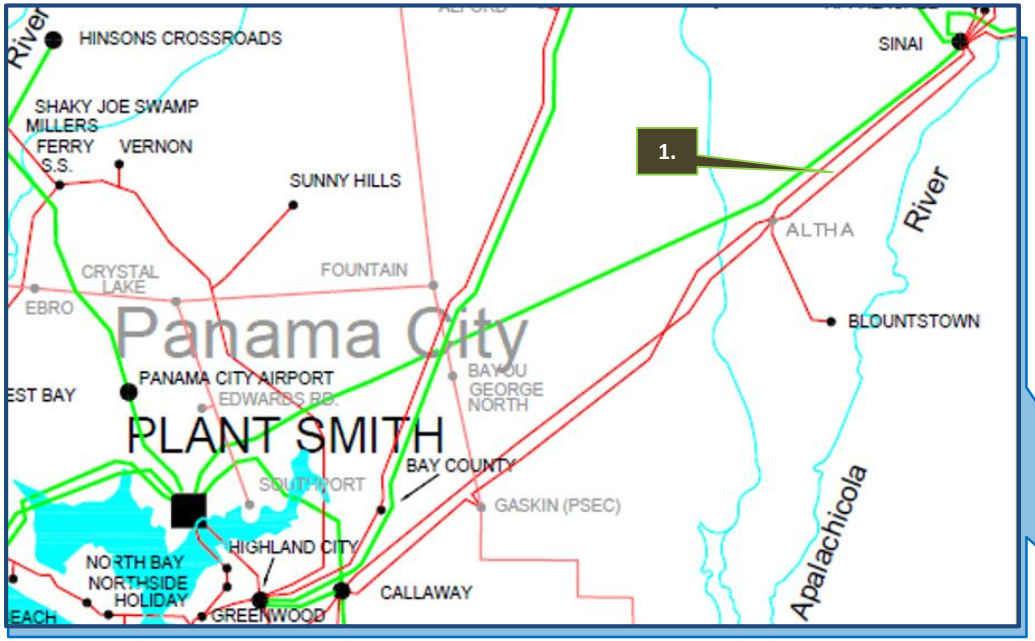
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 2

• **2021**

SINAI-CALLAWAY 115 KV TRANSMISSION LINE

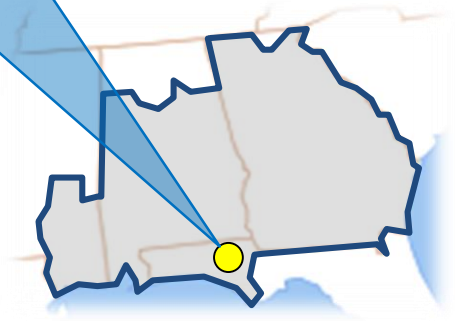


PROJECT DESCRIPTION:

1. Rebuild/upgrade approximately 17.3 miles of 115 kV transmission line between Sinai-Altha (PS) 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.



Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 3

• **2021**

CRIST GENERATION EXPANSION PROJECT

PROJECT DESCRIPTION:

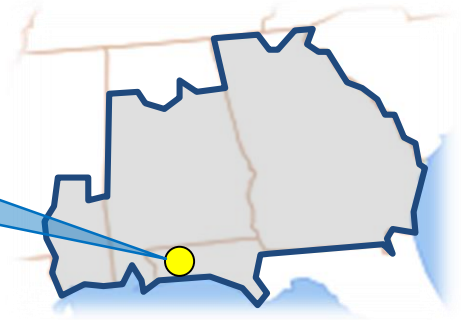
- Construct new 230kV Crist CT switchyard (Conecuh) to connect 4-235MW CTs. Loop existing Crist-Alligator Swamp #2-230kV and Crist-Bellview 230kV lines into new Crist CT switchyard.

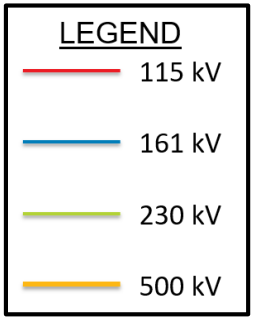
Transmission upgrades:

1. Brentwood-Crist 230kV (1928A, 768MVA)(7.6miles)
2. Crist-Scenic Hills 115kV #1 (1800A, 359MVA)(2.9miles)
3. Bellview-Crist 230kV (1928A, 768MVA)(8.9miles)
4. Bellview 230/115kV Transformer (increase to 500MVA)
5. Eastgate-Scenic Hills 115kV (1005A, 200MVA)(4.8miles)
6. Crystal Beach-Bluewater 115kV 7-minutes Emergency Rating (1110A, 221MVA)
7. 1-55MVAR, 230kV cap bank at Laguna Beach

SUPPORTING STATEMENT:

- Revised resource integration in Gulf Power Area.





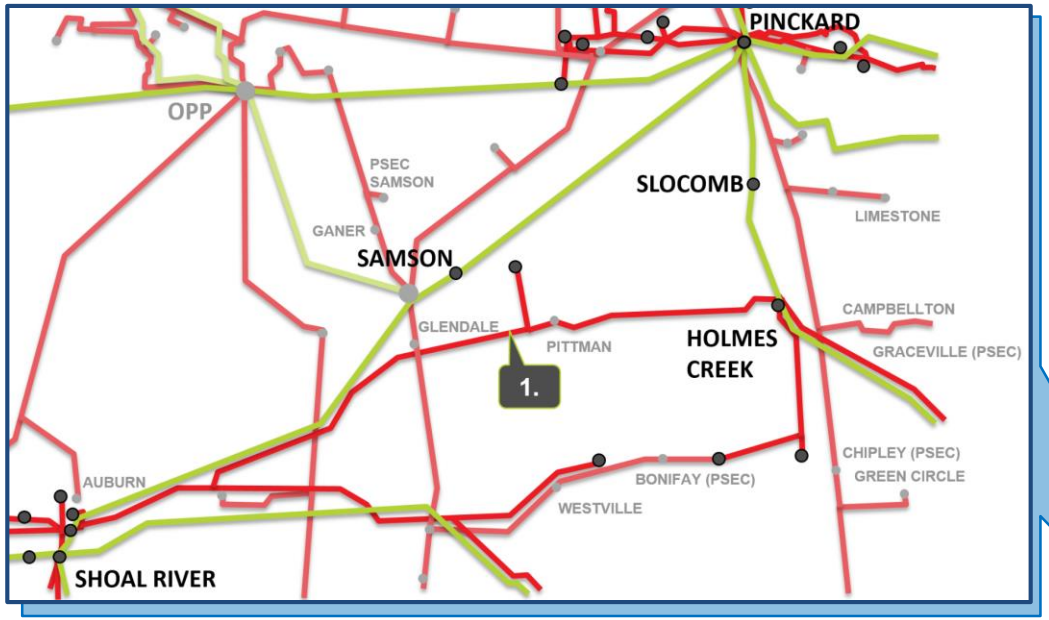
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 4

• **2022**

HOLMES CREEK – SOUTH CRESTVIEW 115 KV TRANSMISSION LINE

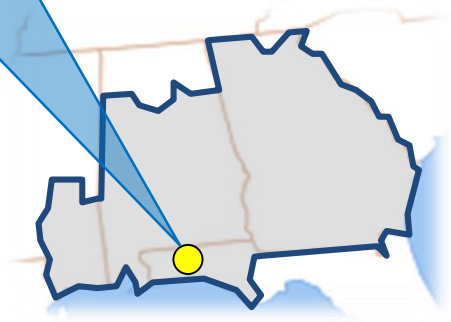


PROJECT DESCRIPTION:

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
161 kV
230 kV
500 kV

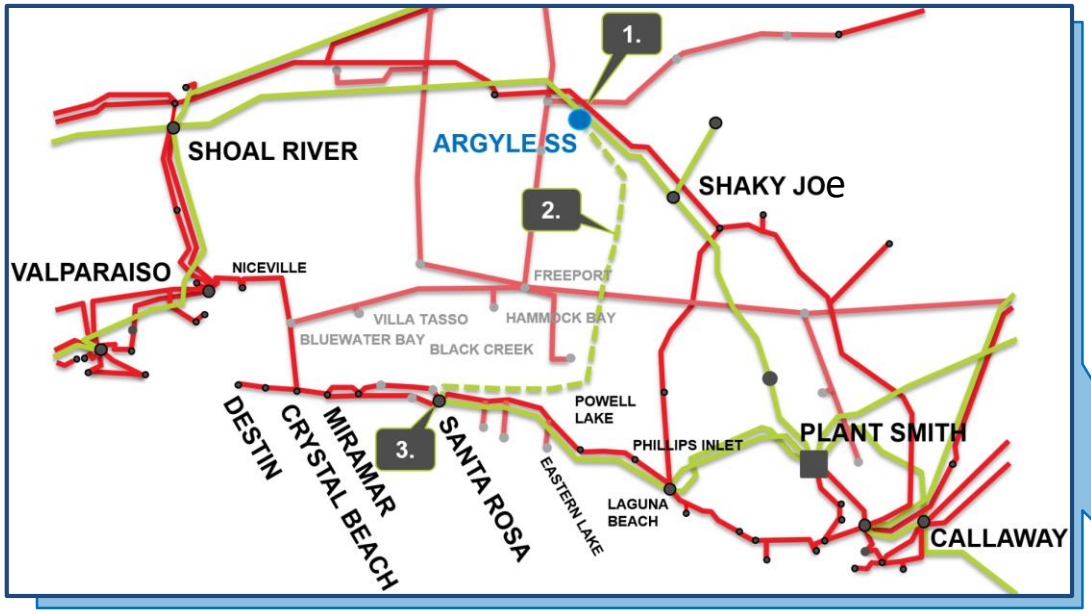
Southeastern Regional TRANSMISSION PLANNING

GULF POWER Balancing Authority Area

GULF - 5

• **2023**

ARGYLE – SANTA ROSA 230 KV TRANSMISSION LINE

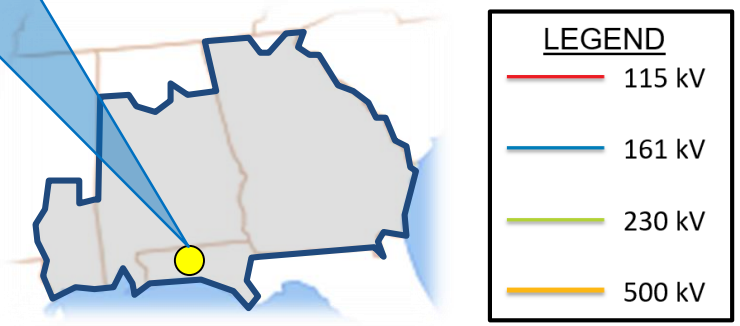


PROJECT DESCRIPTION:

1. Construct of new switching station along the existing Shoal River-Shaky Joe transmission line.
2. Construct approximately 45.0 miles of new 1351 ACSR 230 kV transmission line at 100˚C rated at 1,512 Amps (602MVA) from a new 230 KV substation (Argyle) north of Shaky Joe to Santa Rosa transmission line.
3. Install a second 230/115 kV transformer at Santa Rosa substation

SUPPORTING STATEMENT:

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



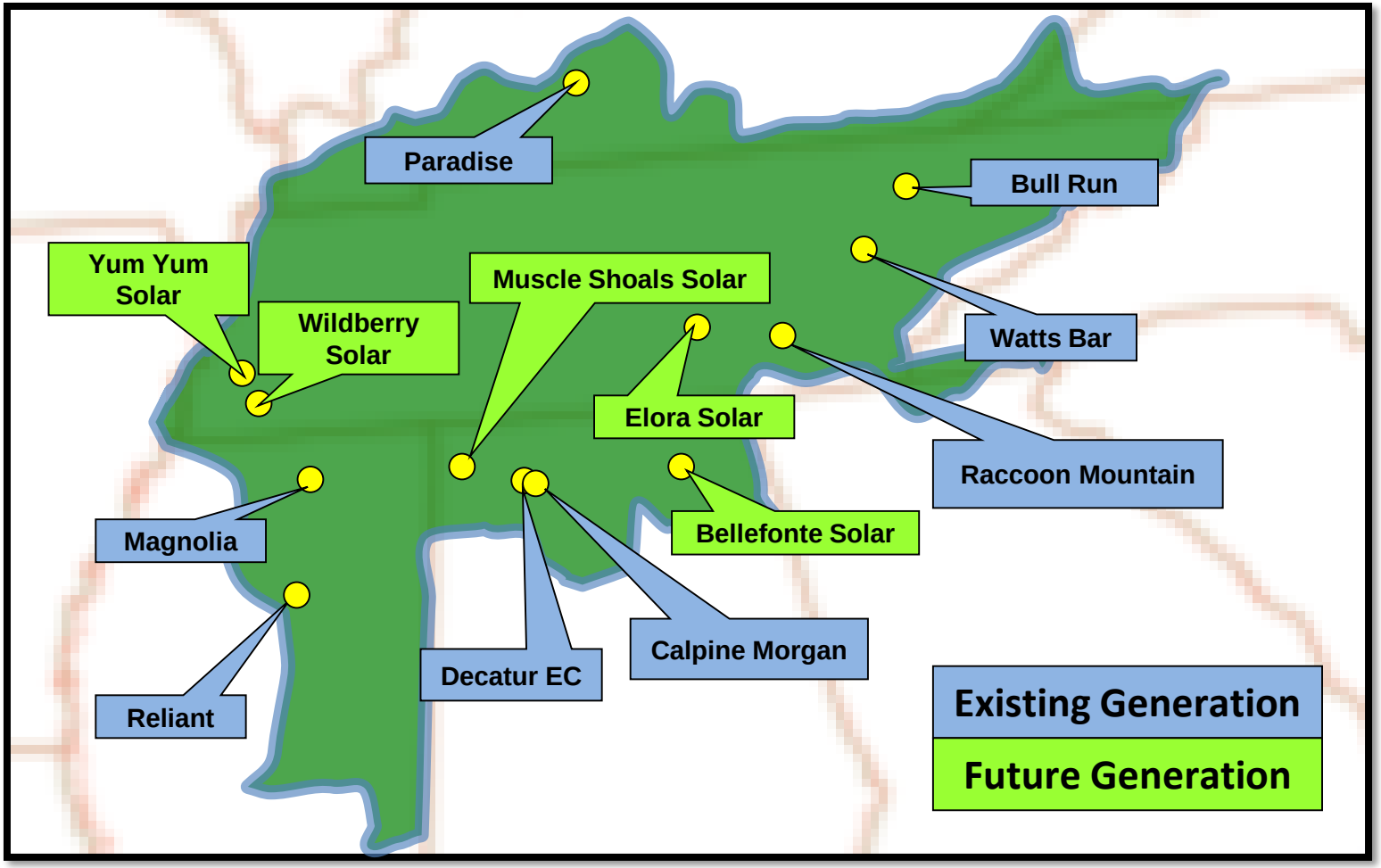
TVA Balancing Authority Area

Generation Assumptions

TVA Balancing Authority Area

TVA – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2019 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 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
WATTS BAR UNIT 2	1216	1216	1216	1216	1216	1216	1216	1216	1216	1216
RACOON MTN GEN 1	429	440	440	440	440	440	440	440	440	440
RACOON MTN GEN 2	413	440	440	440	440	440	440	440	440	440
RACOON MTN GEN 3	413	413	440	440	440	440	440	440	440	440
RACOON MTN GEN 4	440	440	440	440	440	440	440	440	440	440
MAGNOLIA CC	984	984	984	984	984	984	984	984	984	984
CALPINE MORGAN CC	614	614	614	614	614	614	0	--	--	--
DECATUR EC CC	700	700	700	0	--	--	--	--	--	--
BULL RUN FP UNIT 1	925	925	925	925	0	--	--	--	--	--
PARADISE FP UNIT 3	1007	0	--	--	--	--	--	--	--	--

TVA Balancing Authority Area

TVA – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2019 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
BELLEFONTE SOLAR	--	--	150	150	150	150	150	150	150	150
ELORA SOLAR	--	--	150	150	150	150	150	150	150	150
MUSCLE SHOALS SOLAR	--	227	227	227	227	227	227	227	227	227
WILDBERRY SOLAR	15	15	15	15	15	15	15	15	15	15
YUM YUM SOLAR	--	--	147	147	147	147	147	147	147	147

TVA Balancing Authority Area

TVA – 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	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
RELIANT	800	800	800	800	800	800	800	800	800	800

TVA Balancing Authority Area

Preliminary Transmission Expansion Plan

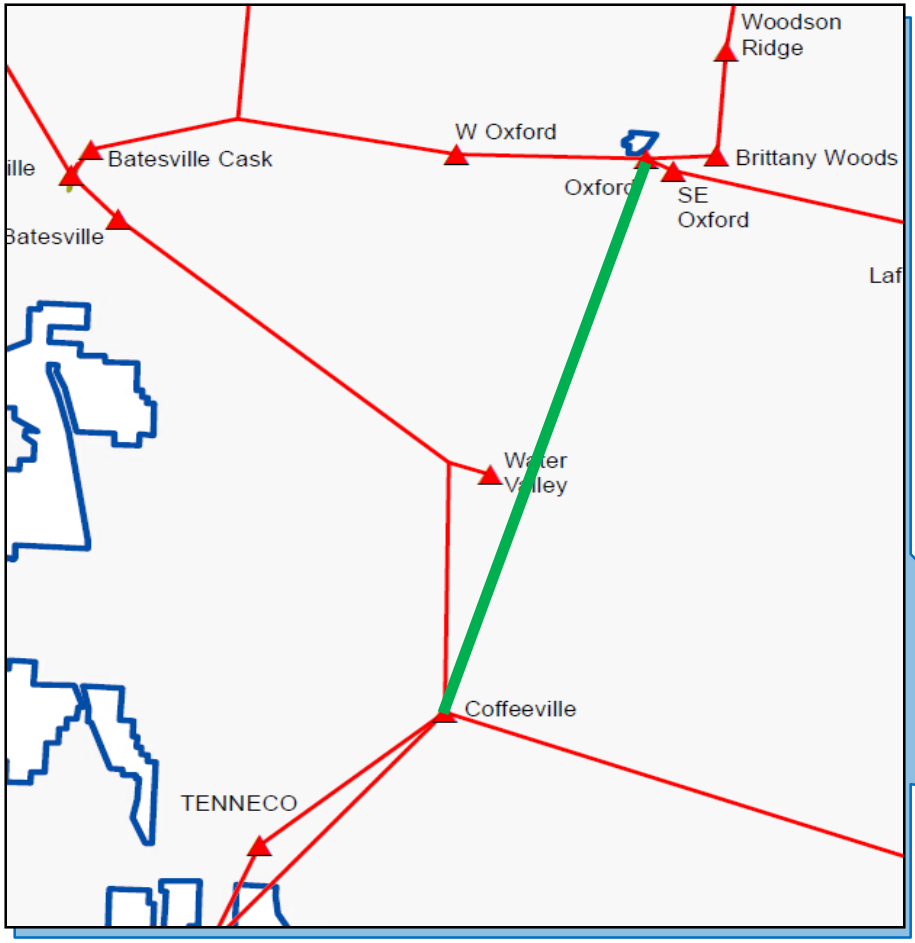
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

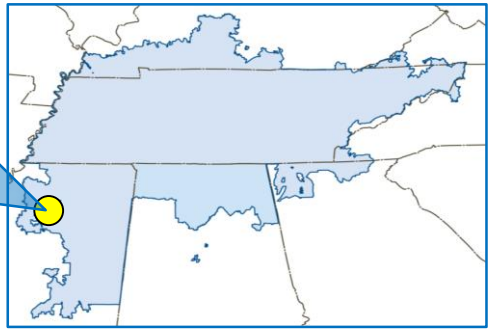
TVA – 1

- **2020**

OXFORD – COFFEEVILLE 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct approximately 30.0 miles of the new Oxford to Coffeeville 161 kV transmission line with 954 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in the Oxford, MS and Coffeeville, MS areas under contingency.

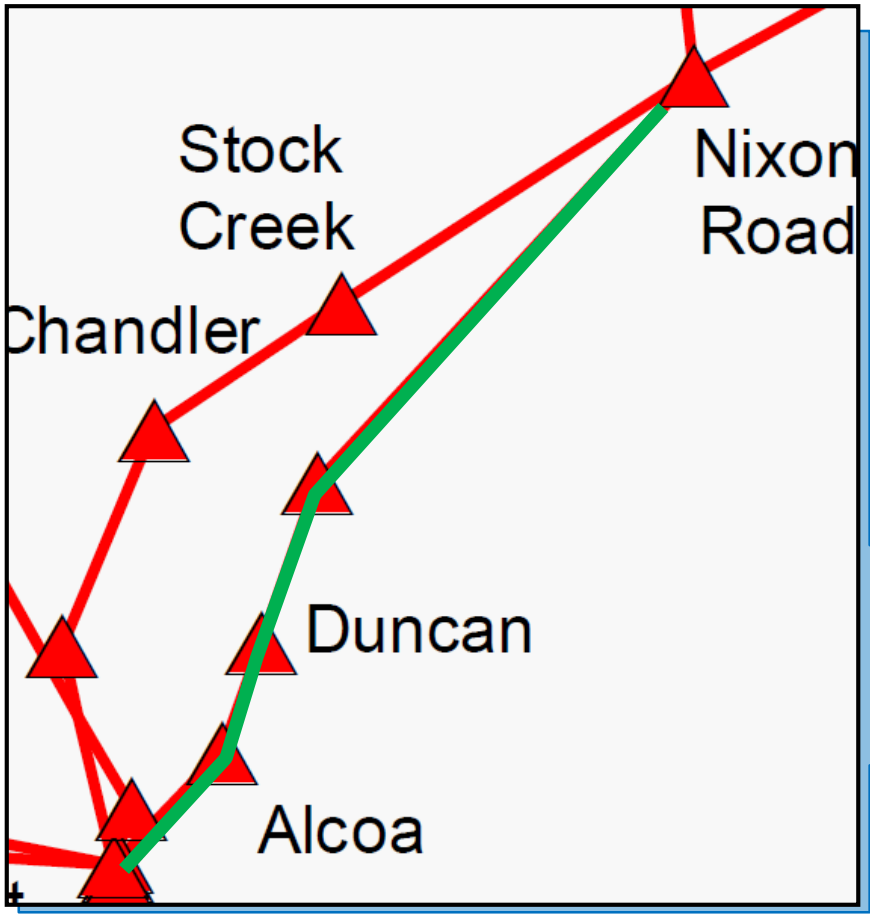


TVA Balancing Authority Area

TVA – 2

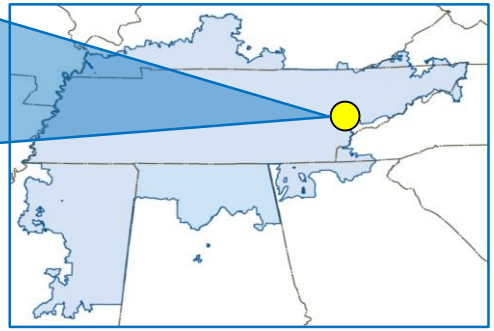
- **2021**

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.



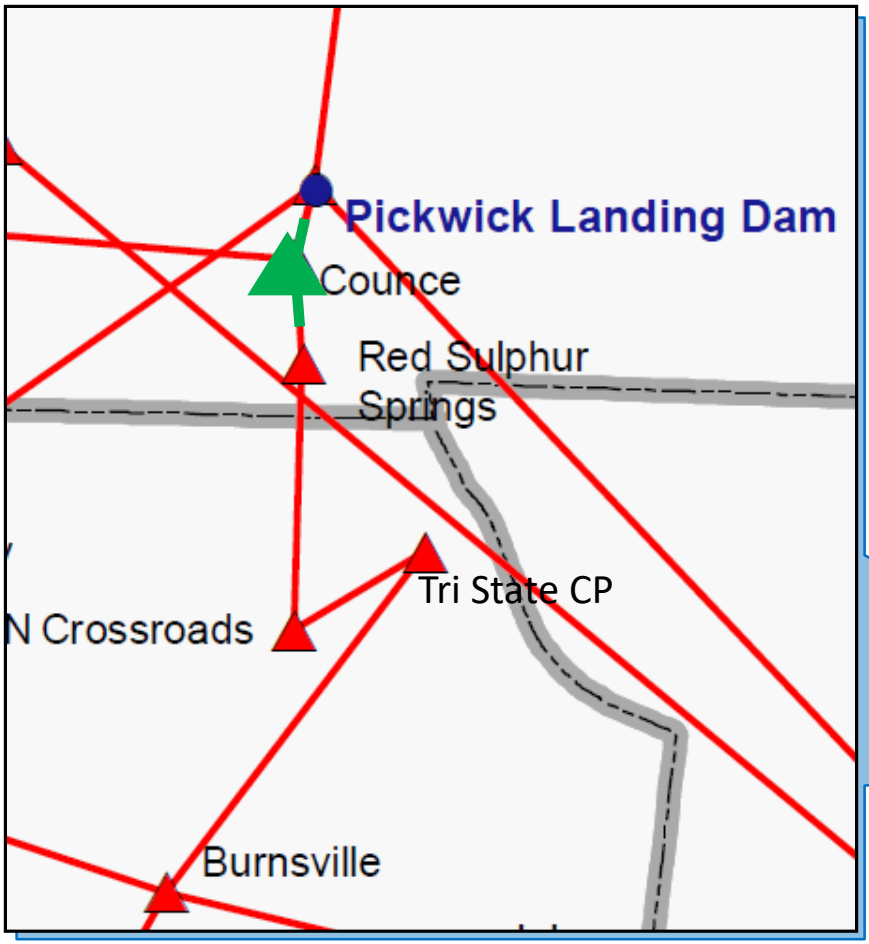
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

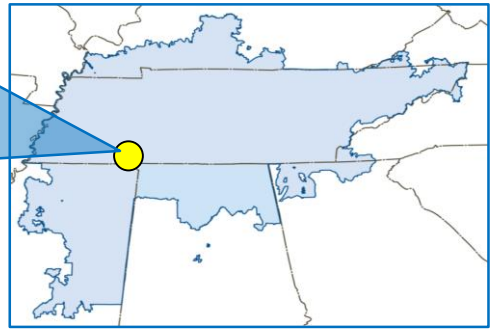
TVA – 3

• **2021**

COUNCE 161 KV SUBSTATION



- **DESCRIPTION:**
  - Convert Counce 161 kV switchyard to a double breaker arrangement. Loop the existing Pickwick to Tri State Commerce Park 161 kV transmission line into the Counce 161 kV station.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in the Counce, TN area under contingency.



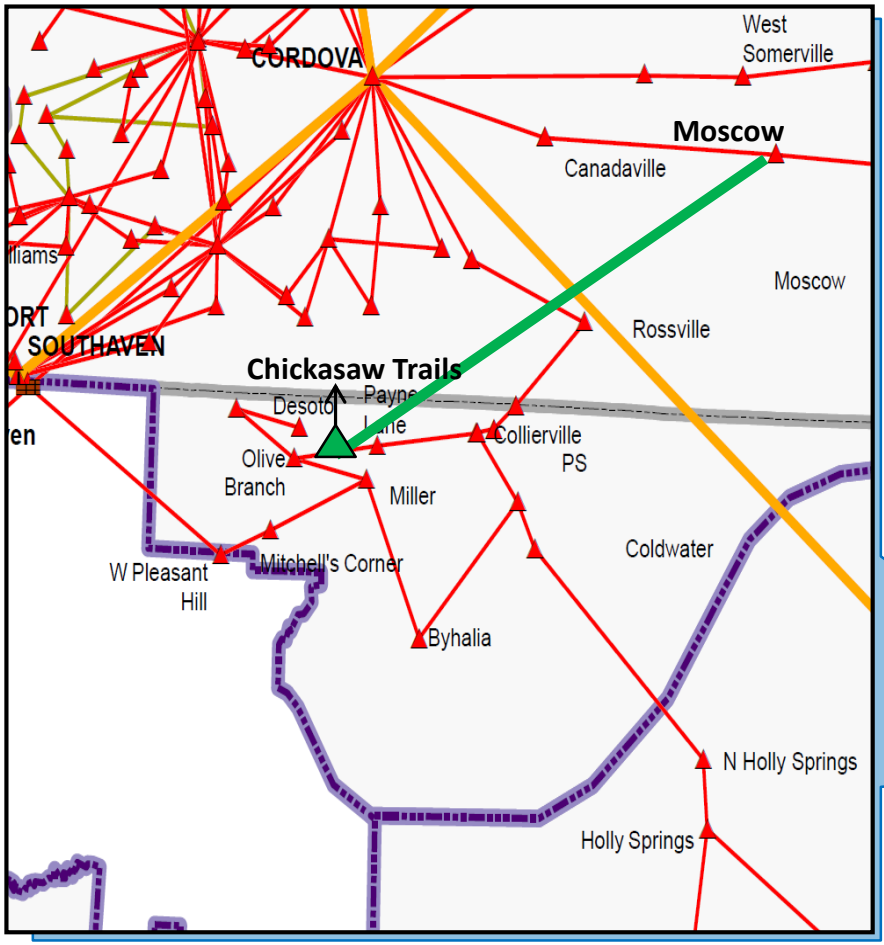
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

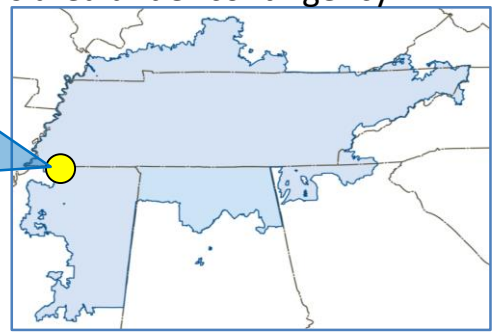
TVA – 4

- **2021**

MOSCOW – CHICKASAW TRAILS 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct the Chickasaw Trails 161 kV Substation and the Diffee 161 kV Substation. Construct approximately 17.0 miles for new Chickasaw Trails to Moscow 161 kV transmission line with 954 ACSR at 100°C. Loop existing Miller to Holly Springs 161 kV transmission line into the Chickasaw Trails Substation.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur and voltage support is needed in the Olive Branch and Chickasaw Trails area under contingency



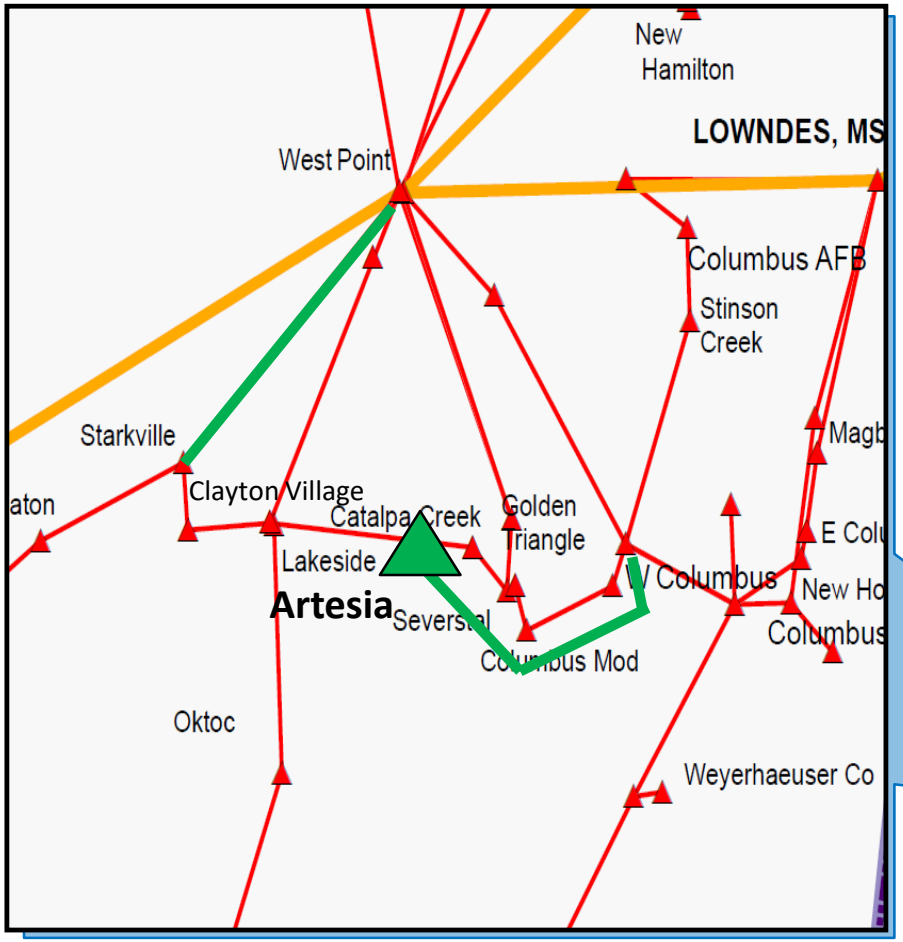
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 5

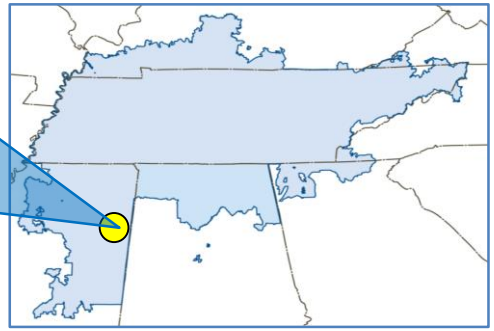
• **2022**

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.

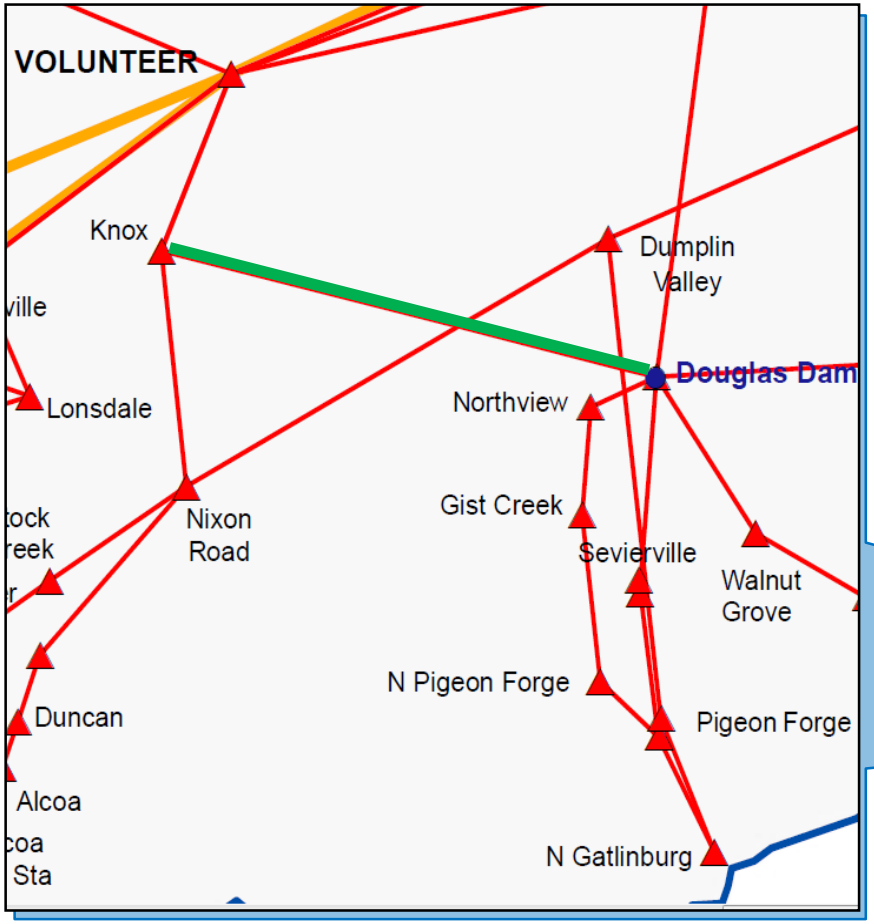


TVA Balancing Authority Area

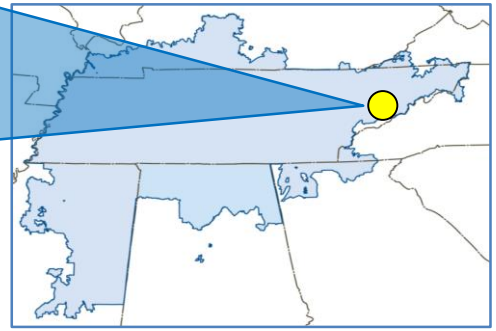
TVA – 6

- **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.



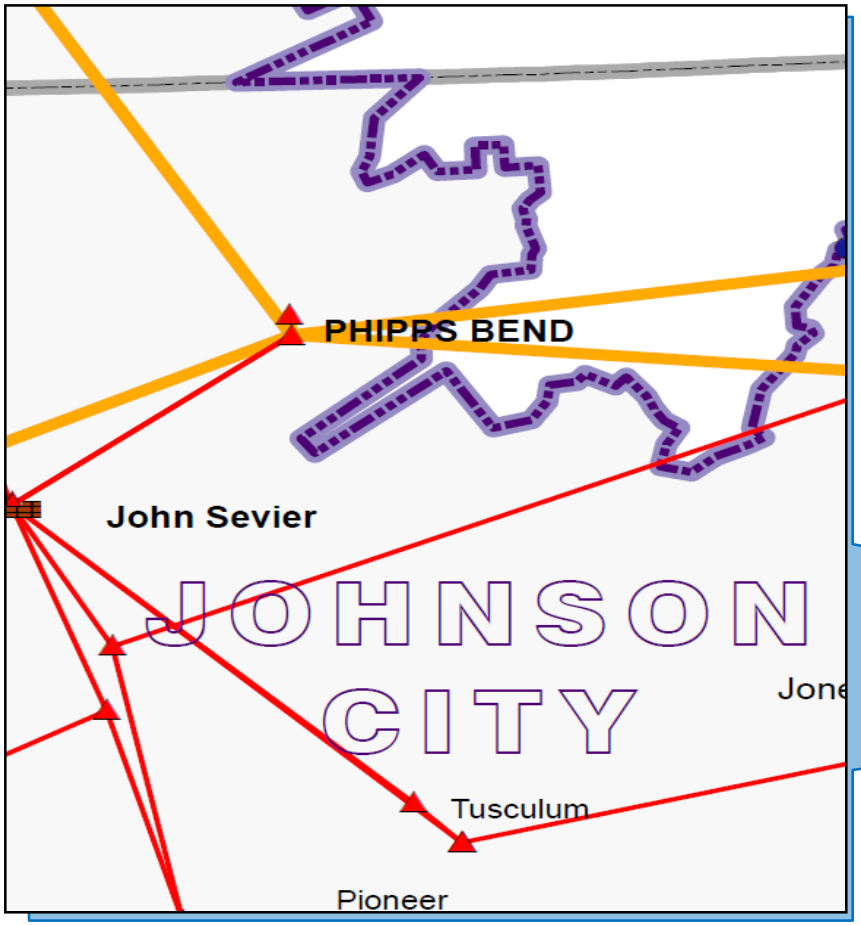
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

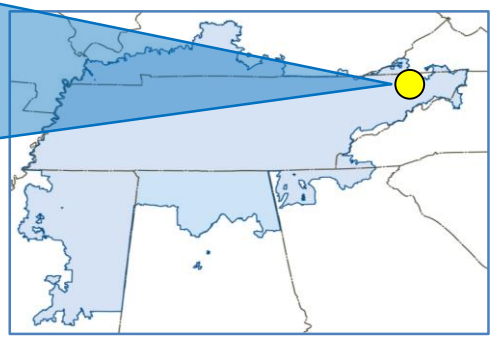
TVA – 7

- **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.



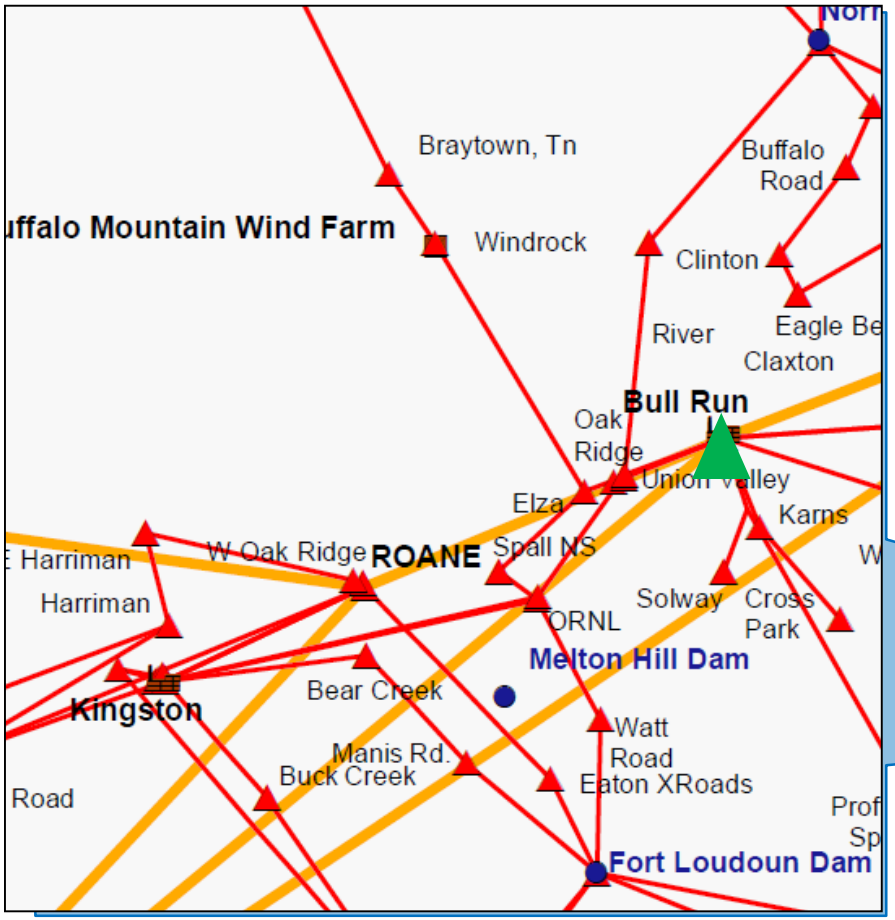
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

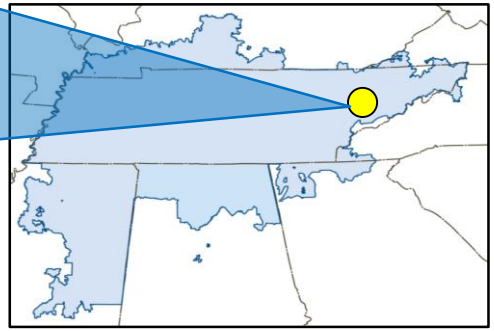
TVA – 8

- **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.



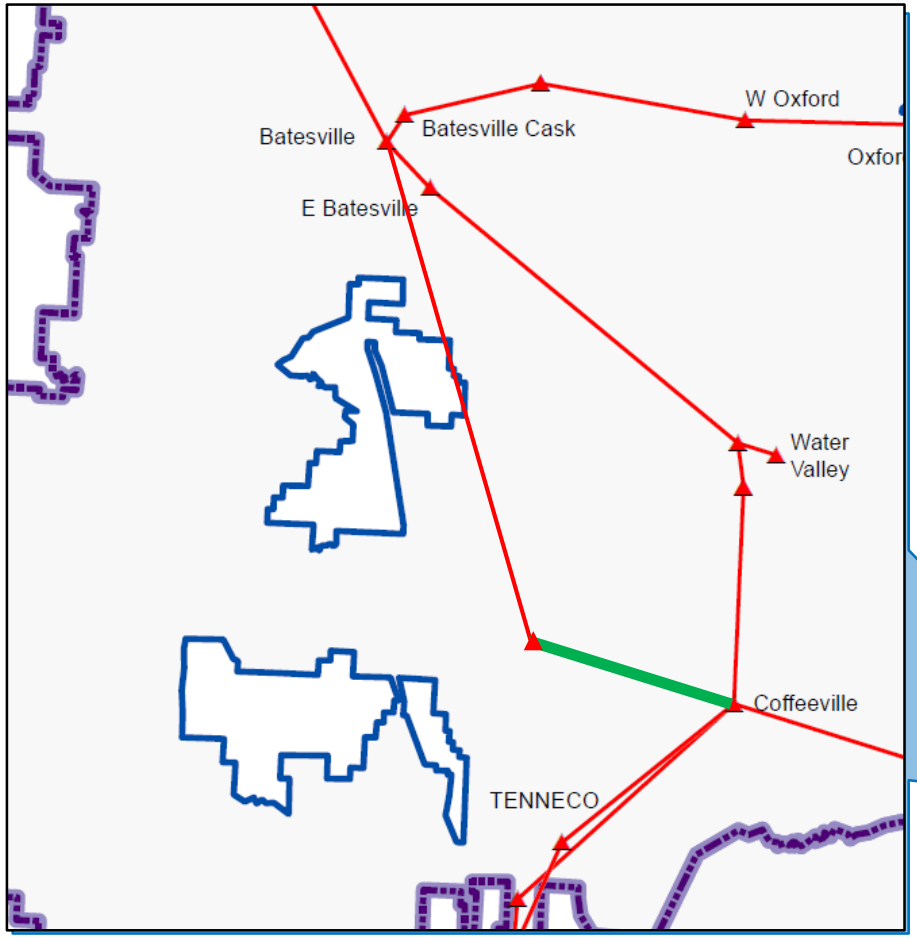
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 9

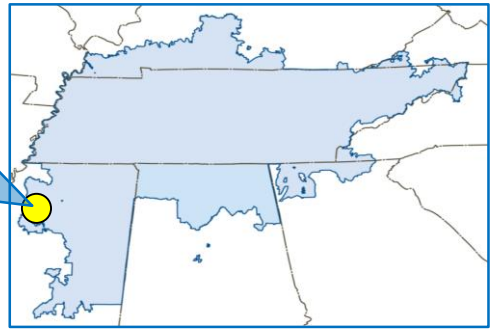
- **2023**

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.



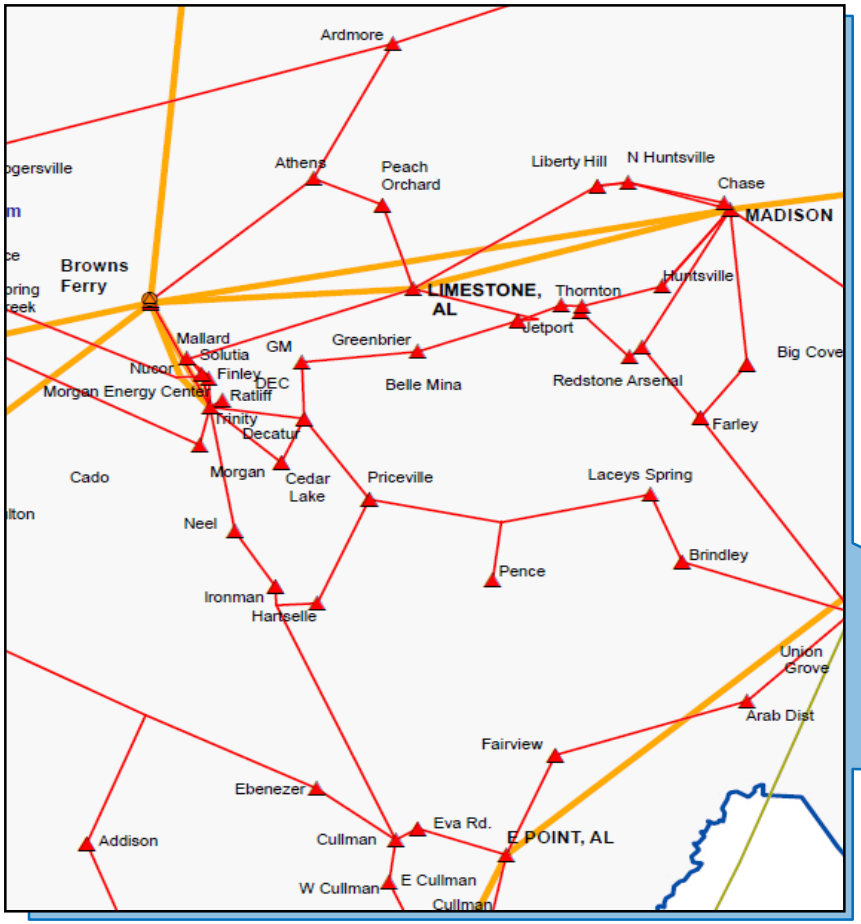
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

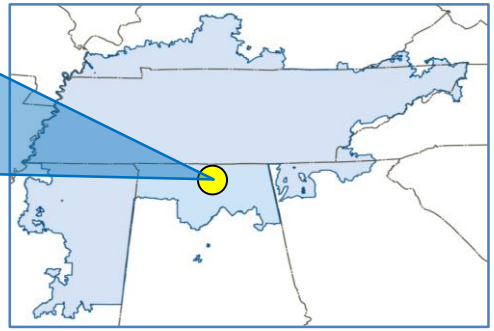
TVA – 10

- **2028**

LIMESTONE 500 KV SUBSTATION



- **DESCRIPTION:**
  - Install 500 kV breakers on the Browns Ferry and Madison lines at the Limestone 500 kV substation.
- **SUPPORTING STATEMENT:**
  - Area 500/161kV transformer overloads under contingency.



SERTP

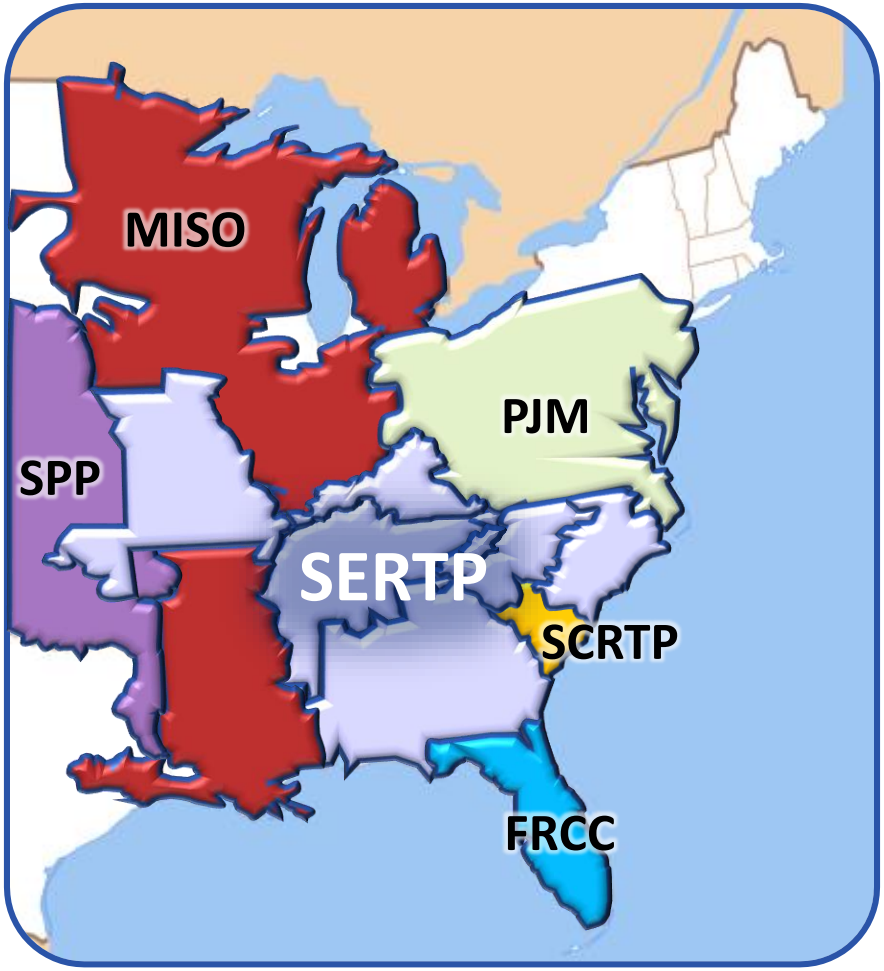
Miscellaneous Updates

Regional Analyses Update

- SERTP Sponsors are currently developing a list of potential alternative transmission projects to evaluate during the 2019 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 have occurred with the MISO and PJM seams to facilitate the exchange of power-flow models and transmission expansion plans. Similar interregional data exchange meetings are scheduled with SCRTP, SPP, and FRCC.
- Coordination study currently on-going to assess the impact of the proposed tie line between FPL and Gulf Power with a 850MW transfer between FPL and Gulf Power
  - Years: 2021-2027

Regional Model Update

- Plan in place to facilitate the exchange of the latest transmission models for the ten year planning horizon with FRCC.

- FRCC models will be incorporated into subsequent regional power flow models.

Next Meeting Activities

- **2019 SERTP 3rd Quarter Meeting** – *Second RPSG Meeting*
  - **Location: Web Conference**
  - **Date: September 2019**
  - **Purpose:**
    - Discuss Preliminary Economic Planning Study Results
    - Discuss Previous Stakeholder Input on Transmission Expansion Plans

2019 SERTP

Questions?

www.southeasternrtp.com