Southeastern Regional
TRANSMISSION PLANNING

SERTP – 2nd Quarter Meeting

Preliminary Expansion Plan Meeting

June 27th, 2018

The Chattanoogan Hotel

Chattanooga, TN

Process Information

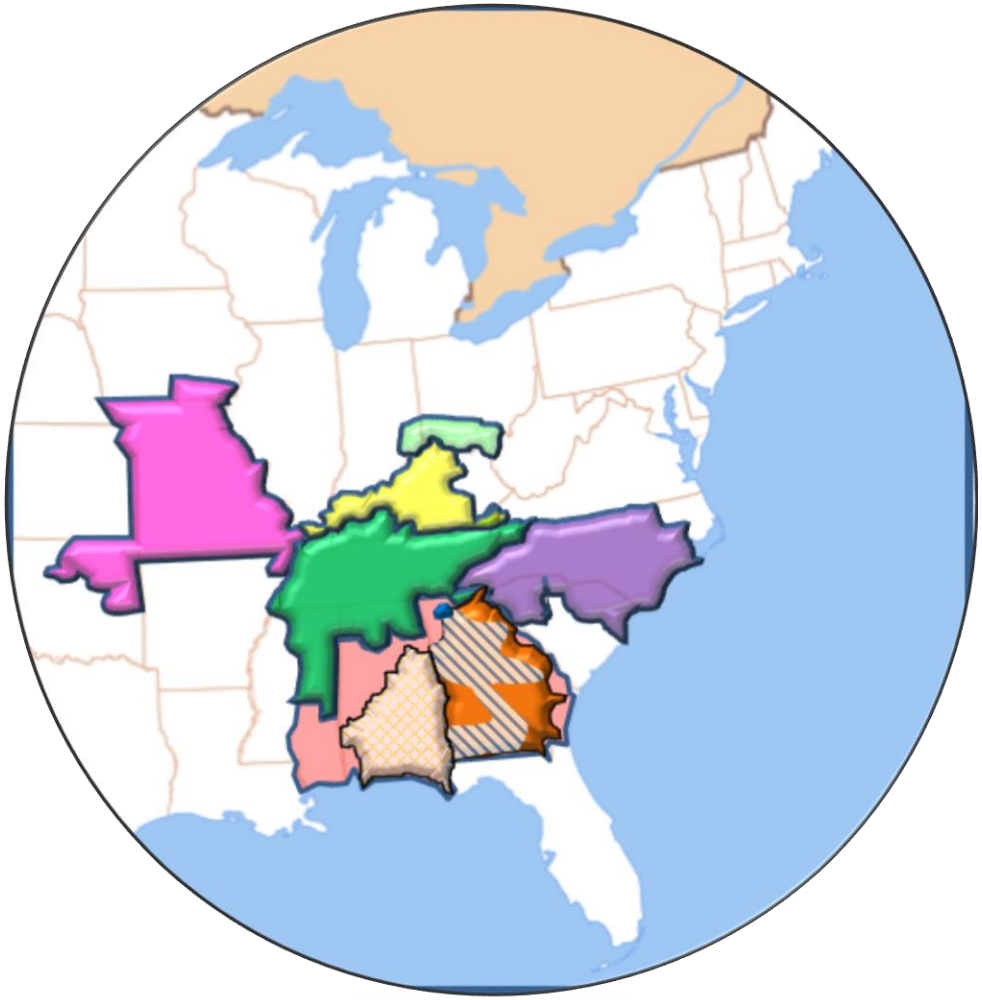
- The SERTP process is a transmission planning process.
- Please contact the respective transmission provider for questions related to real-time operations or Open Access Transmission Tariff (OATT) transmission service.
- SERTP Website Address:
  - www.southeasternrtp.com

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**

2018 SERTP

Southeastern Regional Transmission Planning (SERTP)



SERTP Sponsors

- Associated Electric Cooperative Inc.
- Dalton Utilities
- Duke Energy
- Georgia Transmission
- LG&E KU
- MEAG Power
- OVEC IKEC
- PowerSouth Energy Cooperative
- Southern Company
- TVA

Southeastern Regional Transmission Planning (SERTP)

Balancing Authority Areas

- AECI
- DUKE – Carolinas
- DUKE – Progress East
- DUKE – Progress West
- LG&E/KU
- OVEC
- PowerSouth
- Southern
- TVA

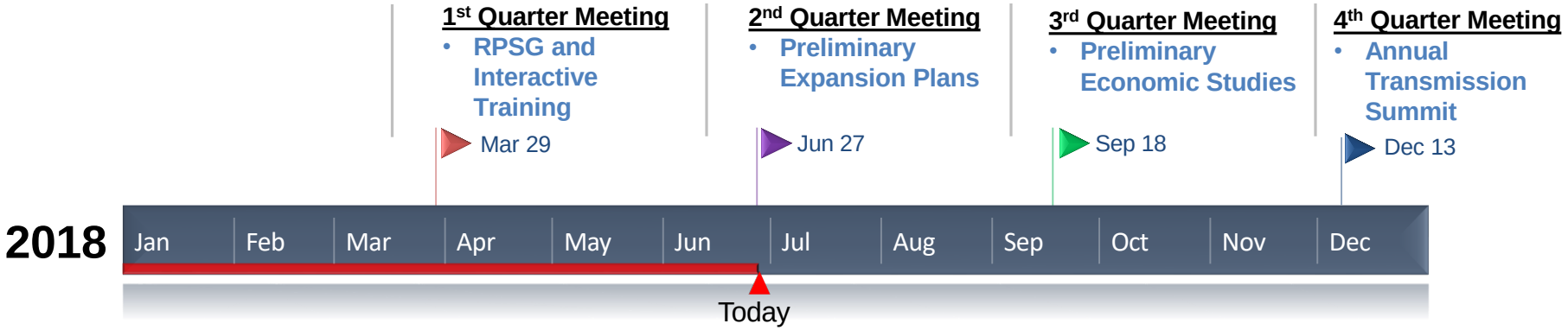
SERTP

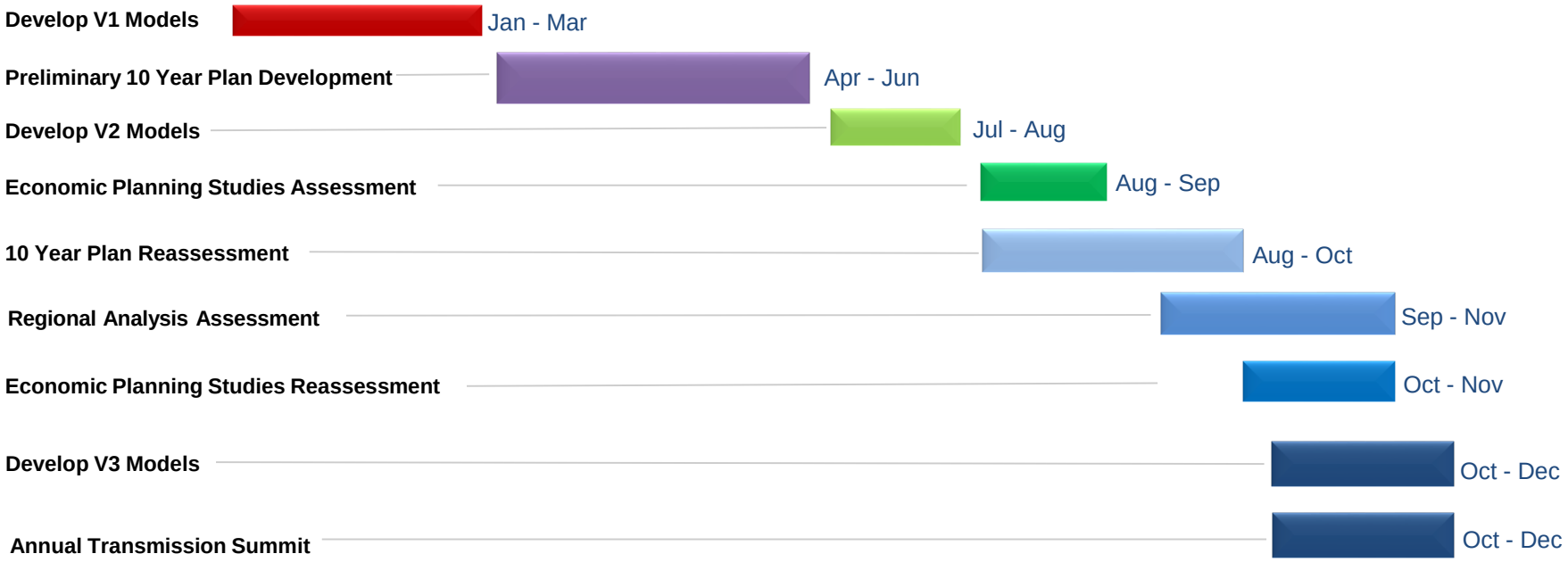
Regional Transmission Expansion Plan Process

Southeastern Regional TRANSMISSION PLANNING

2018 SERTP

10 Year SERTP Regional Transmission Expansion Plan Process



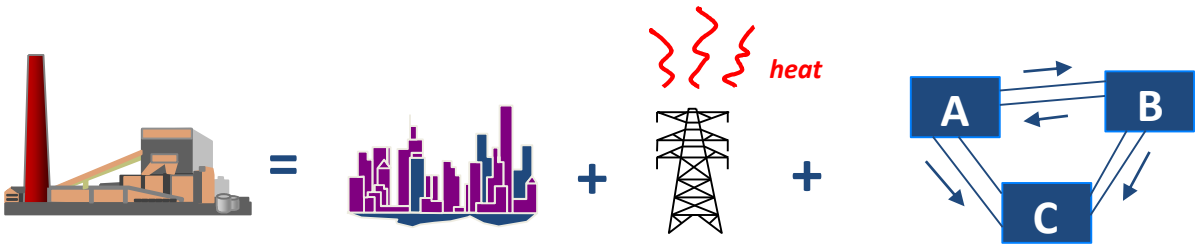


SERTP

Regional Model Assumptions

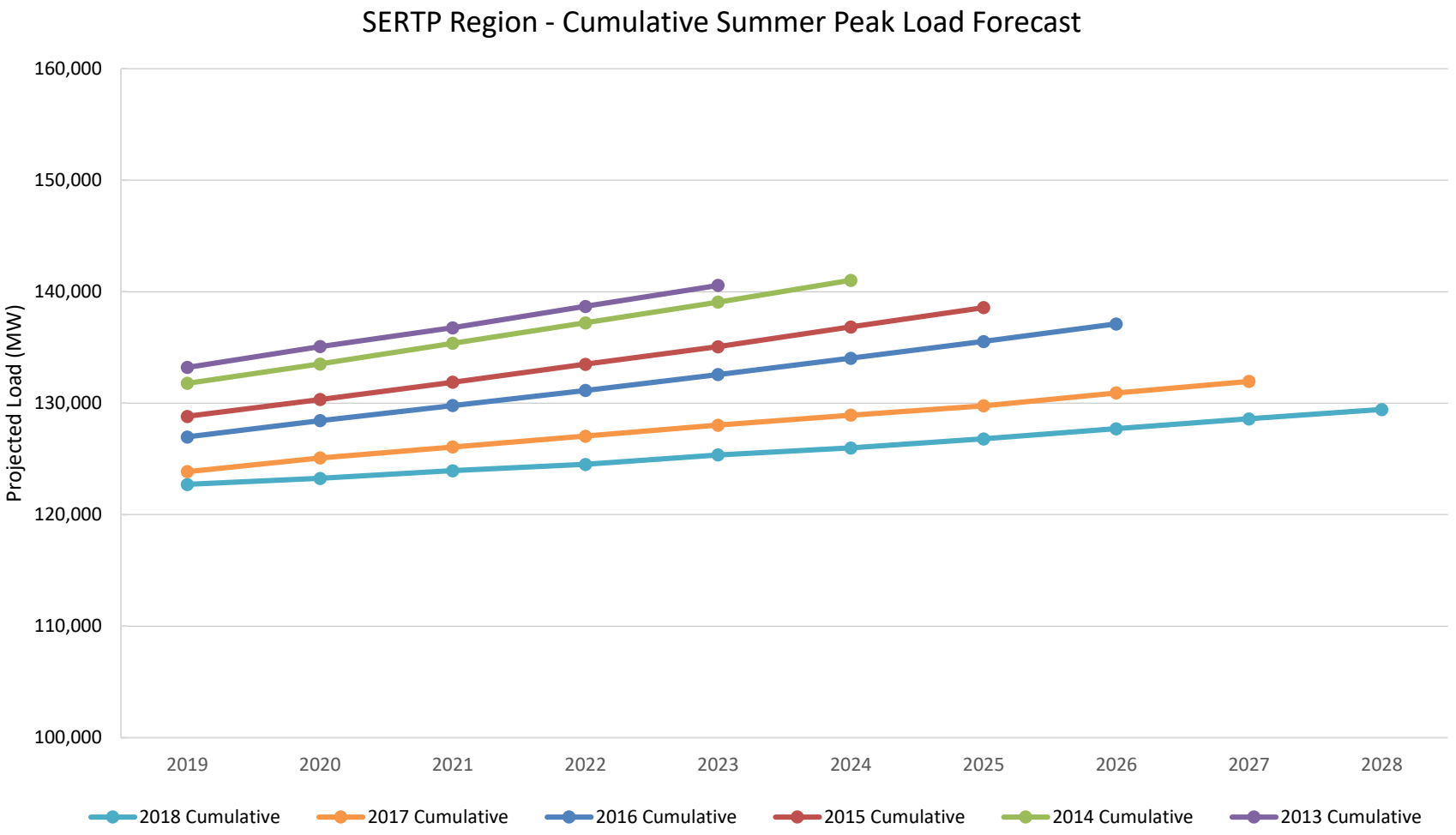
Regional Model Assumptions

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



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.

SERTP

Preliminary Transmission Expansion Plans

AECI Balancing Authority Area

AECI Balancing Authority Area

Preliminary Transmission Expansion Plan & Generation Assumptions

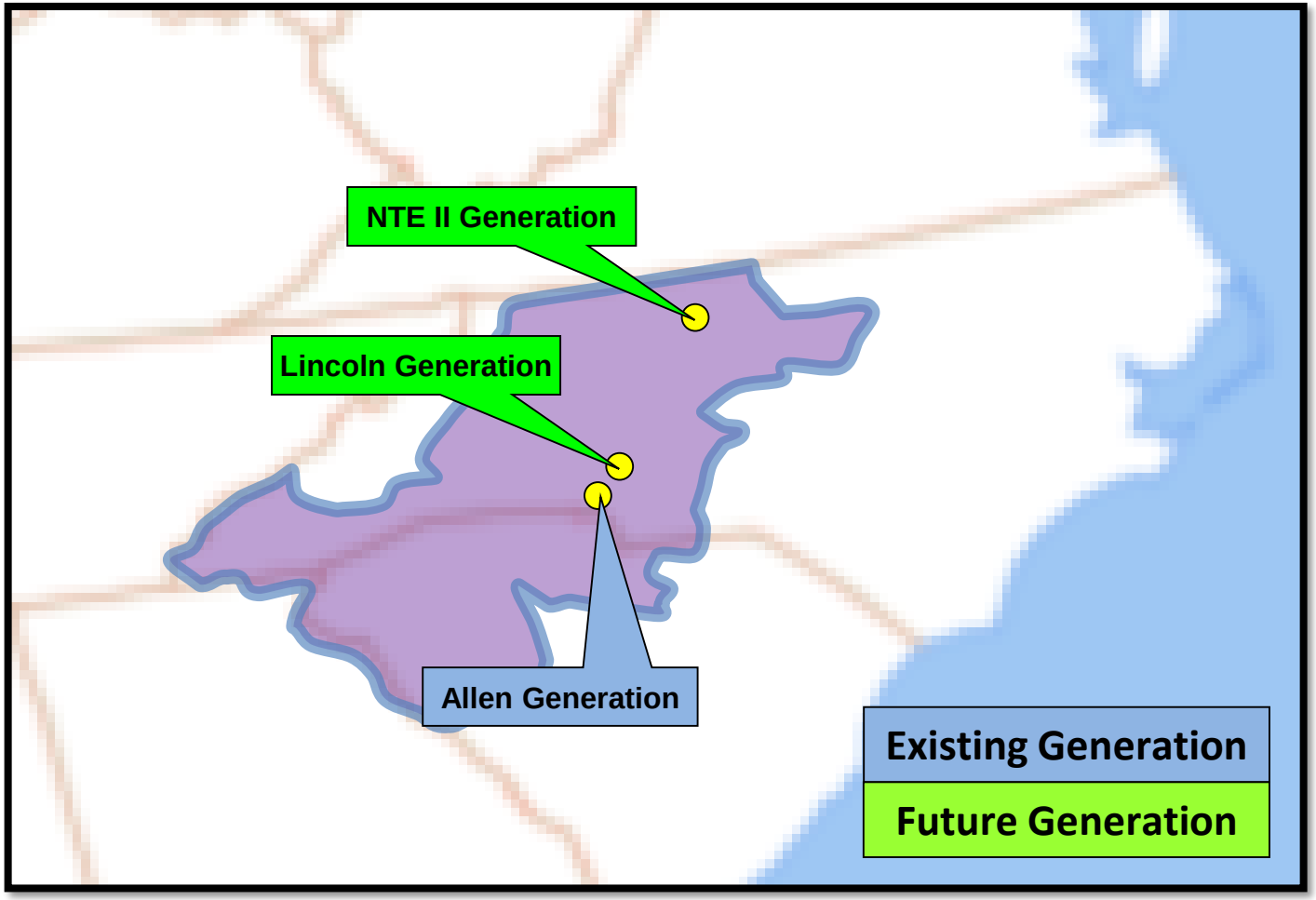
* AECI has no transmission projects included in the 2018 SERTP Preliminary Transmission Expansion Plan. In addition, AECI has no generation assumptions expected to change throughout the ten year planning horizon for the 2018 SERTP Planning Processes.

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 2018 SERTP Process.



DUKE CAROLINAS – 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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
ALLEN 1	174	174	174	174	174	174	0	--	--	--
ALLEN 2	172	172	172	172	172	172	0	--	--	--
ALLEN 3	271	271	271	271	271	271	0	--	--	--
LINCOLN 17	0	0	0	525	525	525	525	525	525	525
NTE II	0	0	474	474	474	474	474	474	474	474

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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
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

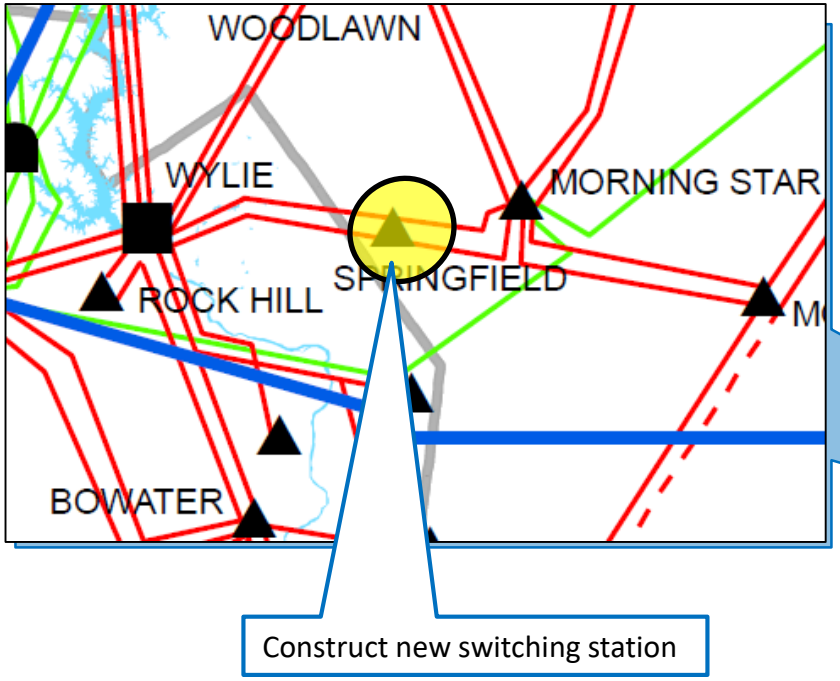
Preliminary Transmission Expansion Plan

Duke Carolinas Balancing Authority Area

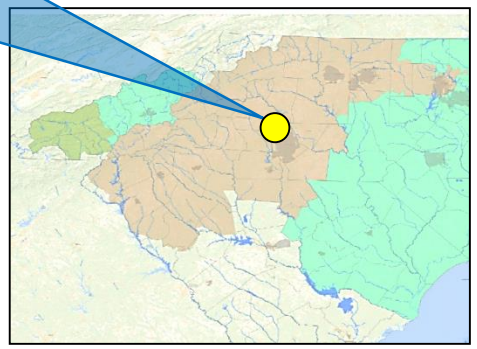
DUKE CAROLINAS – 1

- **2019**

BALLANTYNE SWITCHING STATION



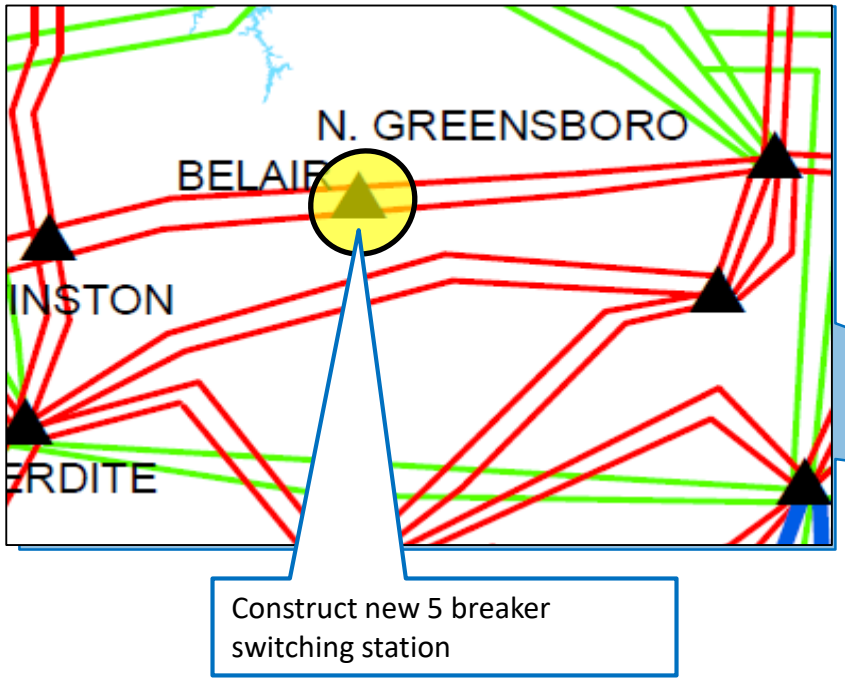
- **DESCRIPTION:**
  - Convert the Springfield Tap Station into Ballantyne switching station.
- **SUPPORTING STATEMENT:**
  - The Wylie Switching Station – Morning Star Tie 100 kV transmission line overloads under contingency.



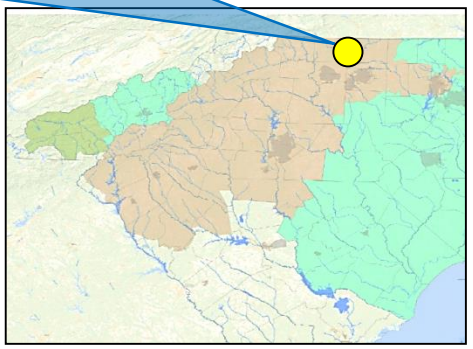
DUKE CAROLINAS – 2

- **2019**

BELAIR SWITCHING STATION



- **DESCRIPTION:**
  - Construct a new five breaker switching station on the North Greensboro – Robbins Road 100 kV double circuit transmission line.
- **SUPPORTING STATEMENT:**
  - The North Greensboro – Robbins Road 100 kV transmission line overloads under contingency.

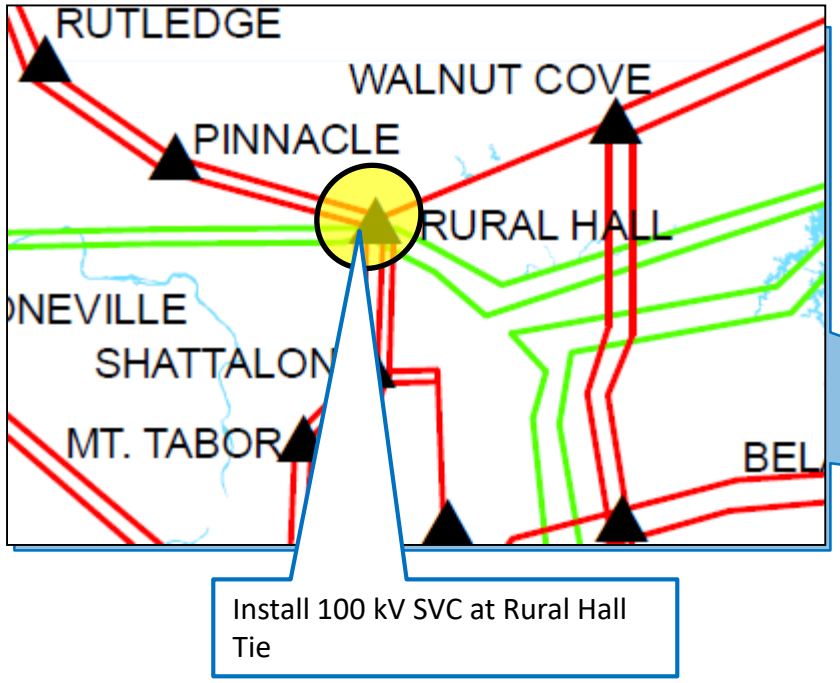


Duke Carolinas Balancing Authority Area

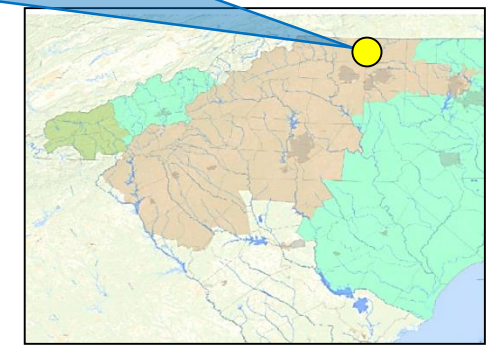
DUKE CAROLINAS – 3

- **2019**

RURAL HALL SVC



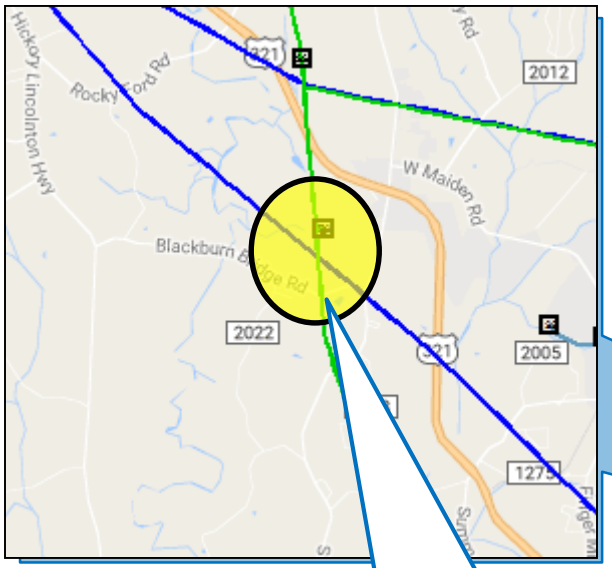
- **DESCRIPTION:**
  - Install a new 100 kV, -100/+300 MVAR Static VAR Compensator (SVC) at Rural Hall Tie.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in the northern region of the Duke Energy Carolinas Balancing Authority Area under contingency.



DUKE CAROLINAS – 4

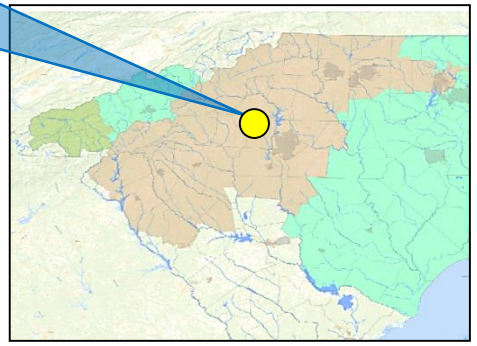
- **2020**

ORCHARD 230/100 KV TIE



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

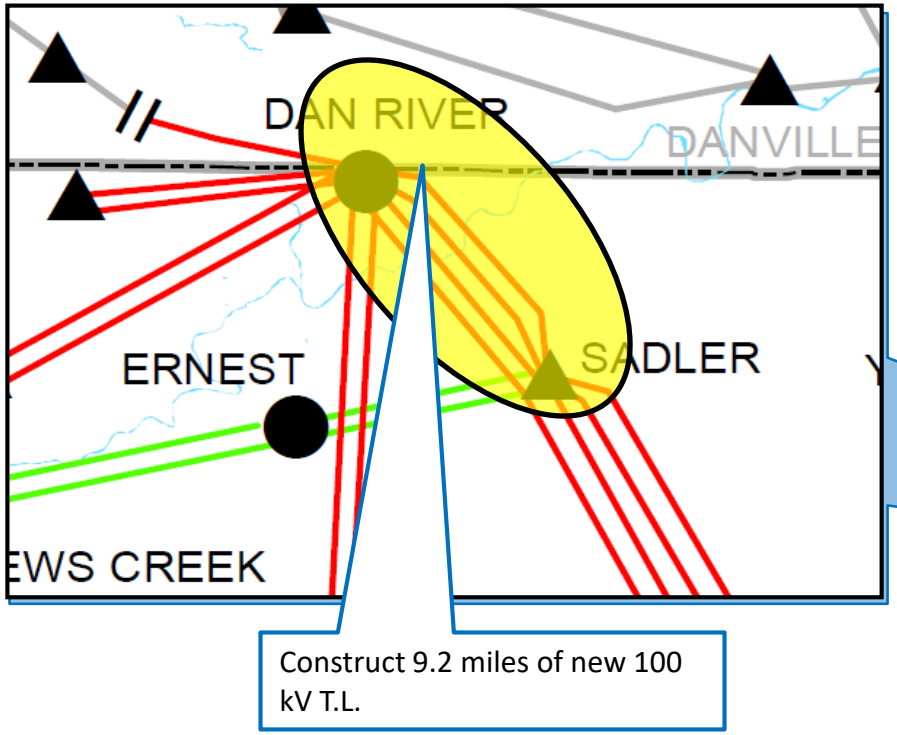
- **DESCRIPTION:**
  - Construct a new 230/100 kV Tie station, southwest of Maiden, NC at the intersection of the Lincoln CT – Longview Tie 230 kV transmission line and the Lincolnton Tie – Hickory Tie 100 kV transmission line.
- **SUPPORTING STATEMENT:**
  - To support additional load growth in the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



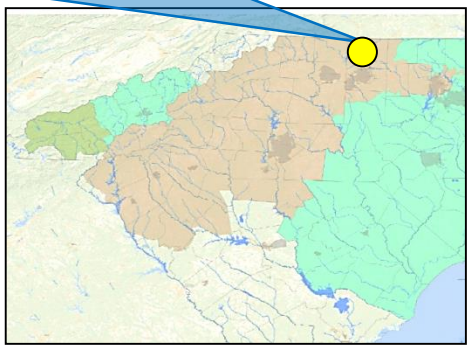
DUKE CAROLINAS – 5

- **2020**

SADLER TIE – DAN RIVER 100 KV T.L.



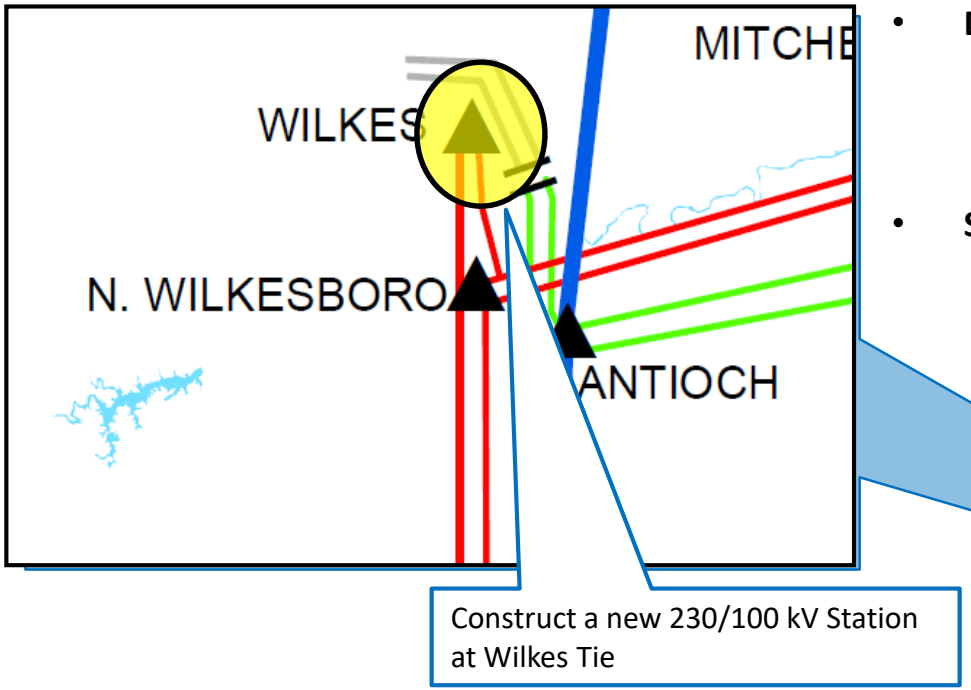
- **DESCRIPTION:**
  - Construct approximately 9.2 miles of new 100 kV transmission line between Dan River Steam Station and Sadler Tie with 954 AAC at 120°C.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur around Dan River Steam Station and Dan River Combined Cycle Station under contingency.



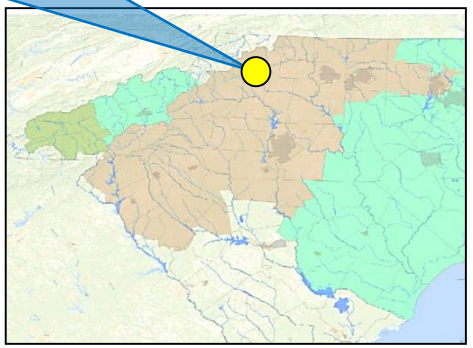
DUKE CAROLINAS – 6

- **2020**

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.

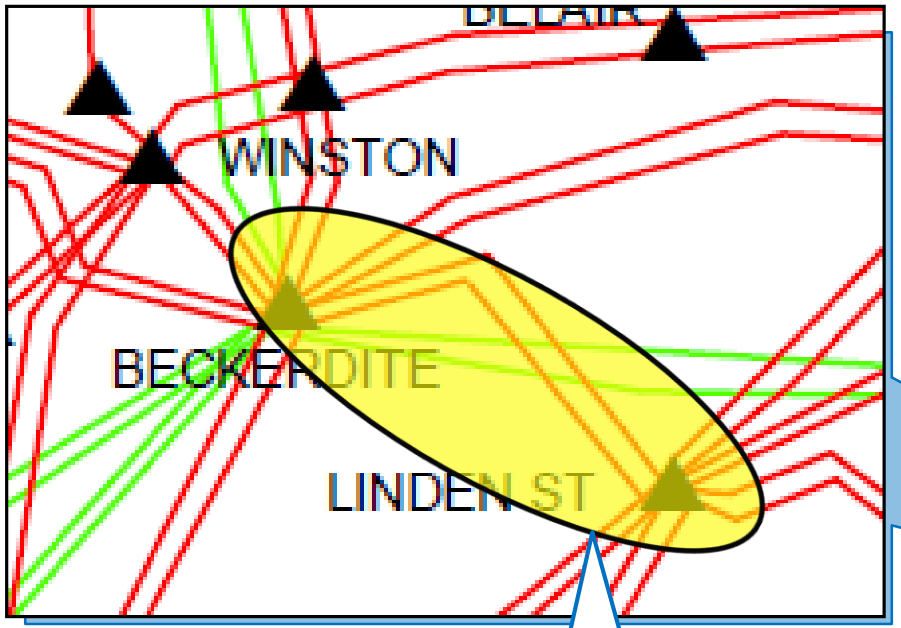


Duke Carolinas Balancing Authority Area

DUKE CAROLINAS – 7

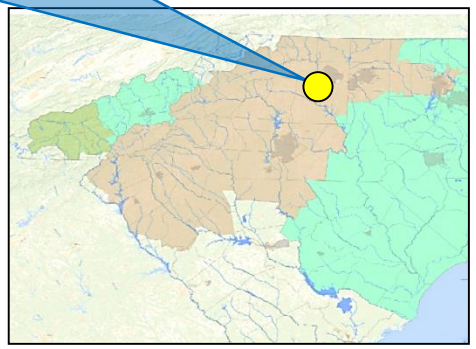
- **2024**

BECKERDITE – LINDEN STREET 100 KV T.L.



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

RECONDUCTOR 16.0 MILES OF THE BECKERDITE – LINDEN STREET 100 KV TL WITH BUNDLED 477 ACSR

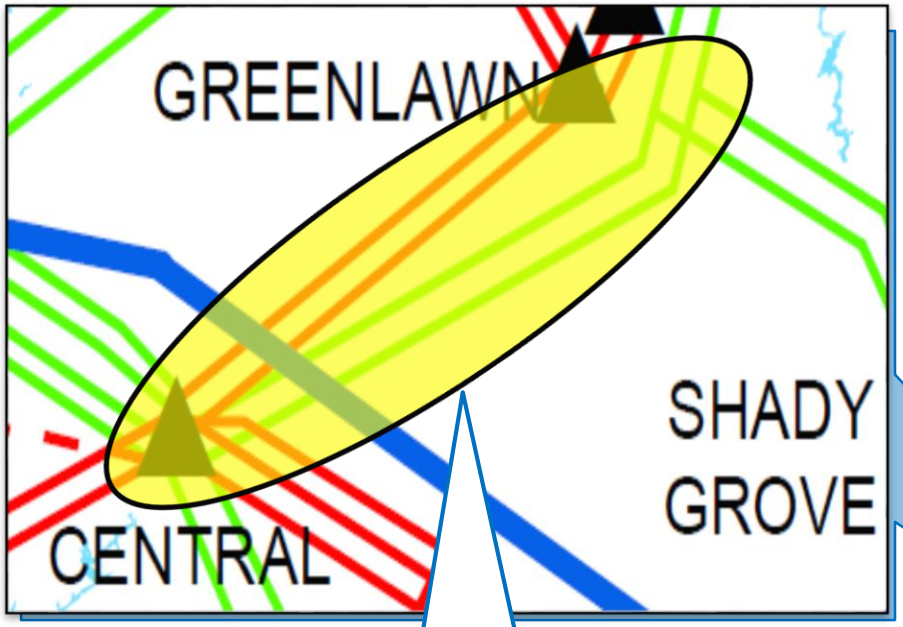


Duke Carolinas Balancing Authority Area

DUKE CAROLINAS – 8

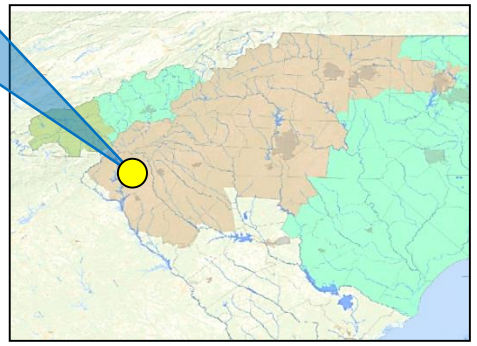
- **2024**

CENTRAL – SHADY GROVE 230 KV T.L.



RECONDUCTOR 18 MILES OF THE CENTRAL – SHADY GROVE 230 KV TL WITH BUNDLED 954 ACSR AT 120°C

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



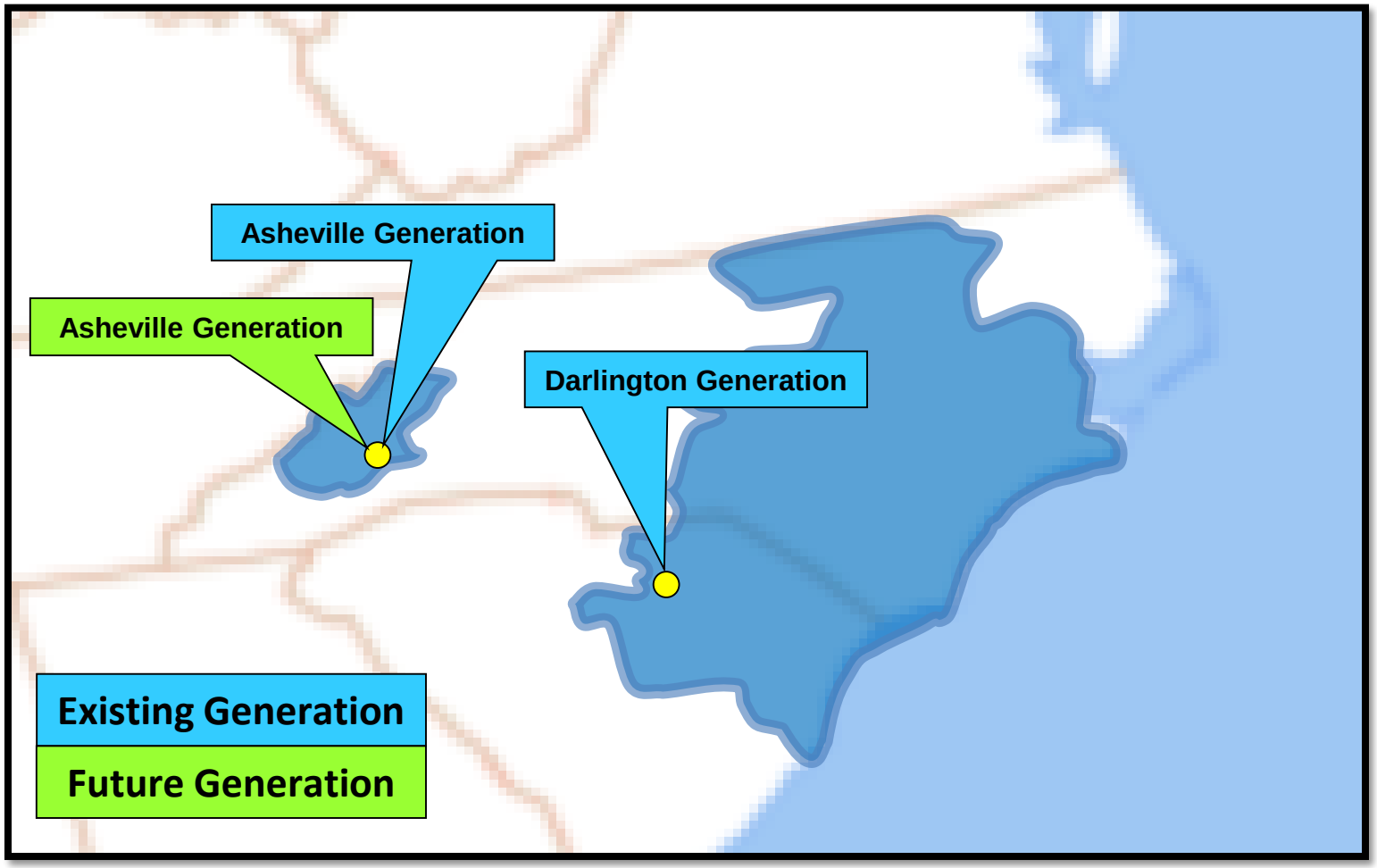
DUKE PROGRESS EAST/WEST

Balancing Authority Areas

Generation Assumptions

DUKE PROGRESS – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2018 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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
ASHEVILLE #1 COAL	191	0	--	--	--	--	--	--	--	--
ASHEVILLE #2 COAL	185	0	--	--	--	--	--	--	--	--
ASHEVILLE CC #1	--	260	260	260	260	260	260	260	260	260
ASHEVILLE CC #2	--	260	260	260	260	260	260	260	260	260
DARLINGTON CT #1	52	0	--	--	--	--	--	--	--	--
DARLINGTON CT #2	48	0	--	--	--	--	--	--	--	--
DARLINGTON CT #3	52	0	--	--	--	--	--	--	--	--
DARLINGTON CT #4	50	0	--	--	--	--	--	--	--	--
DARLINGTON CT #5	52	0	--	--	--	--	--	--	--	--
DARLINGTON CT #6	45	0	--	--	--	--	--	--	--	--

DUKE PROGRESS – Generation Assumptions (Cont.)

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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
DARLINGTON CT #7	51	0	--	--	--	--	--	--	--	--
DARLINGTON CT #8	48	0	--	--	--	--	--	--	--	--
DARLINGTON CT #9	52	0	--	--	--	--	--	--	--	--
DARLINGTON CT #10	51	0	--	--	--	--	--	--	--	--

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

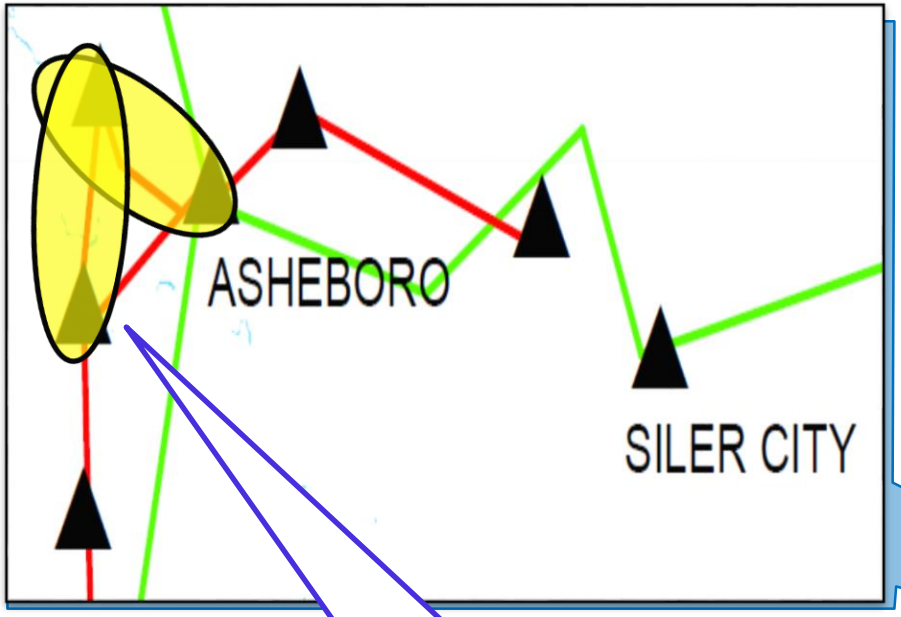
The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

SITE	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
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
INGENCO	6	6	6	6	6	6	6	6	6	6

DUKE PROGRESS EAST – 1

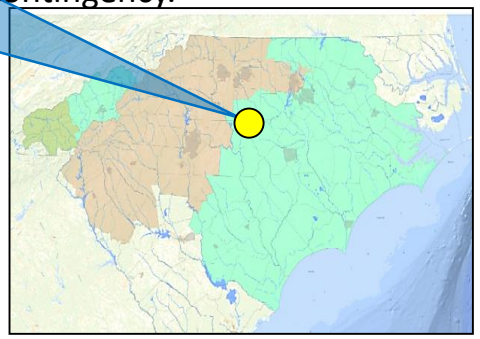
- **2019**

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

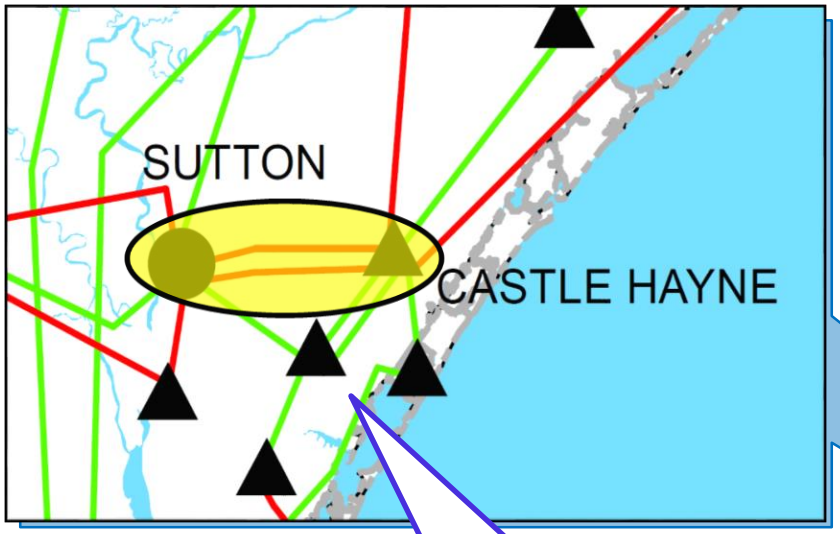
- **DESCRIPTION:**
  - Rebuild approximately 6.5 miles of the Asheboro – Asheboro East (North) 115 kV transmission line using 3-1590 ACSR rated for 307 MVA. Replace disconnect switches at Asheboro 230 kV and both the breaker and the disconnect switches at Asheboro East 115 kV with equipment of at least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



DUKE PROGRESS EAST – 2

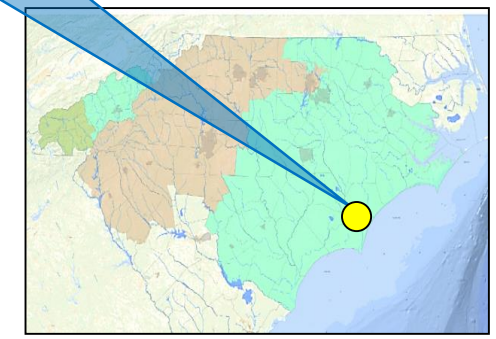
- **2019**

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



REBUILD THE SUTTON PLANT-CASTLE HAYNE 115 KV NORTH T.L.

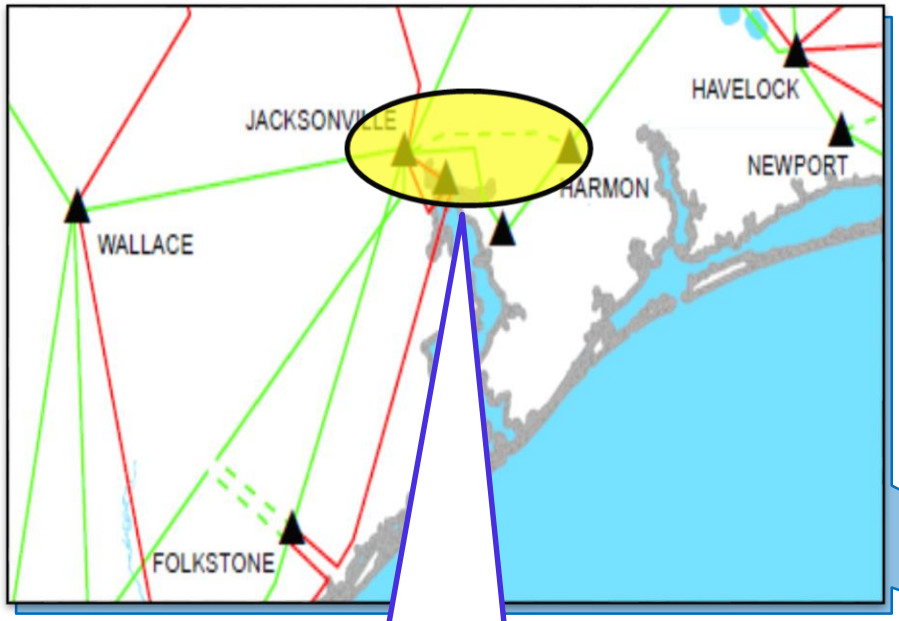
- **DESCRIPTION:**
  - Rebuild approximately 8.0 miles of the Sutton Plant – Castle Hayne 115 kV North transmission line using 1272 ACSR rated for 239 MVA.
- **SUPPORTING STATEMENT:**
  - The Sutton Plant – Castle Hayne 115 kV North transmission line overloads under contingency.



DUKE PROGRESS EAST – 3

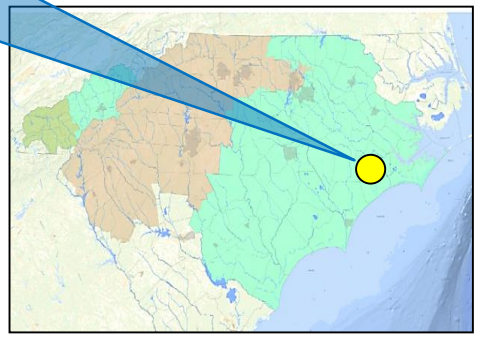
- **2020**

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

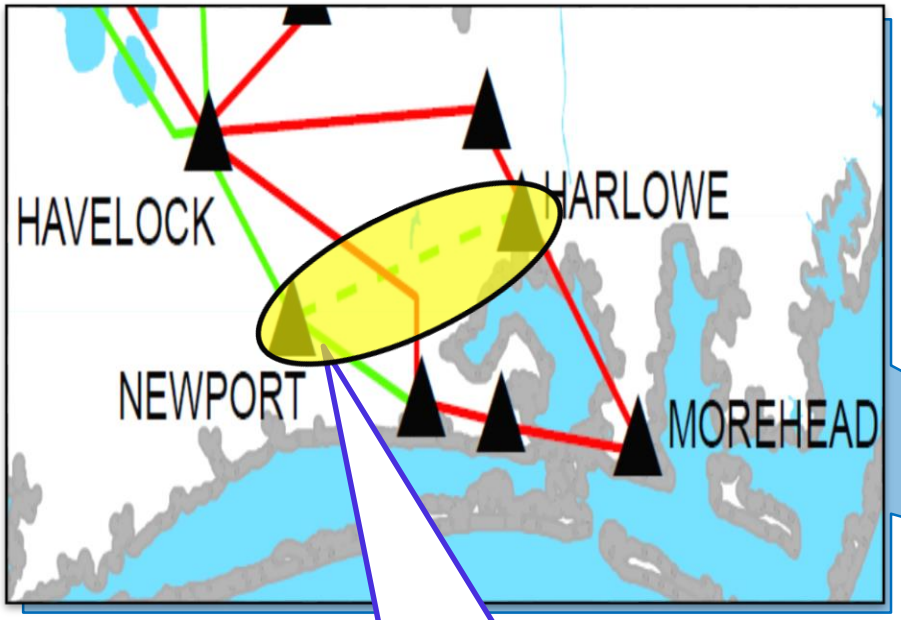
- **DESCRIPTION:**
  - Construct approximately 12.0 miles of new 230 kV transmission line from Jacksonville 230 kV substation to a new 230 kV substation at Grant's Creek with bundled 6-1590 ACSR or equivalent conductor rated for 1195 MVA. Build the new 230 kV Grant's Creek substation with four 230 kV 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 – 4

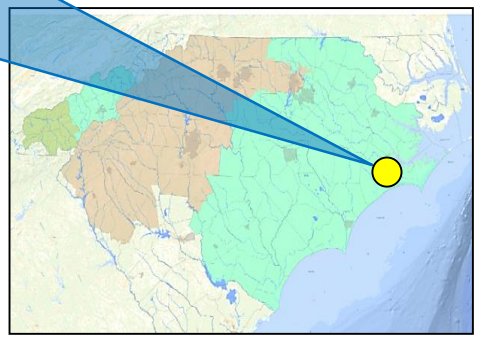
- **2020**

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

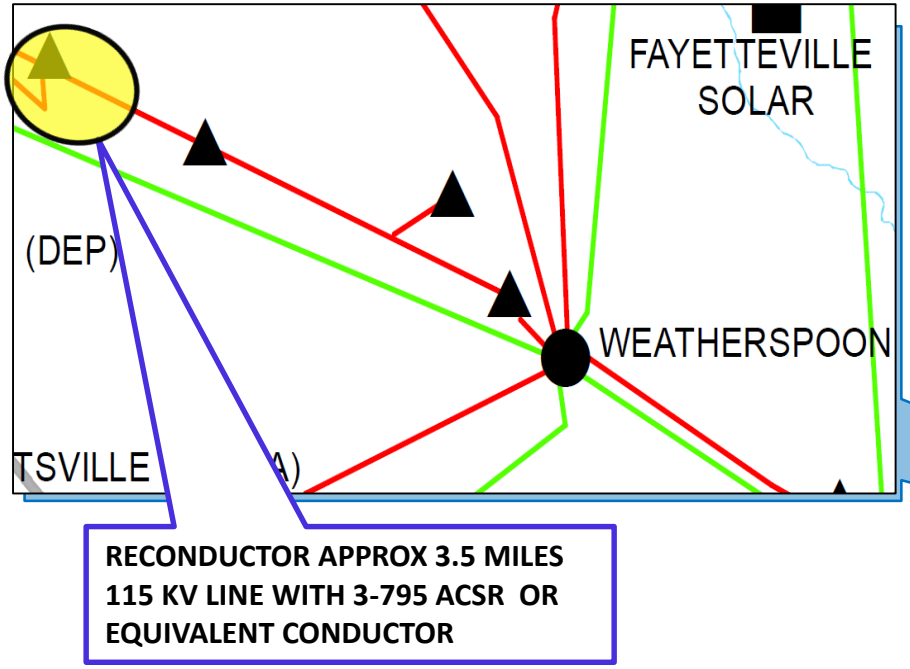
- **DESCRIPTION:**
  - Construct a new 230 kV switching station at Newport, construct a new 230 kV substation in the Harlowe Area, and construct approximately 10.0 miles of new 230 kV transmission line from the Harlowe – Newport with 3-1590 ACSR or equivalent conductor rated for 680 MVA.
- **SUPPORTING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



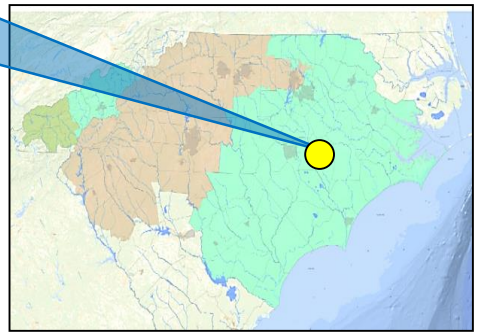
DUKE PROGRESS EAST – 5

- **2022**

IND 304440 – MAXTON 115 KV RECONDUCTOR



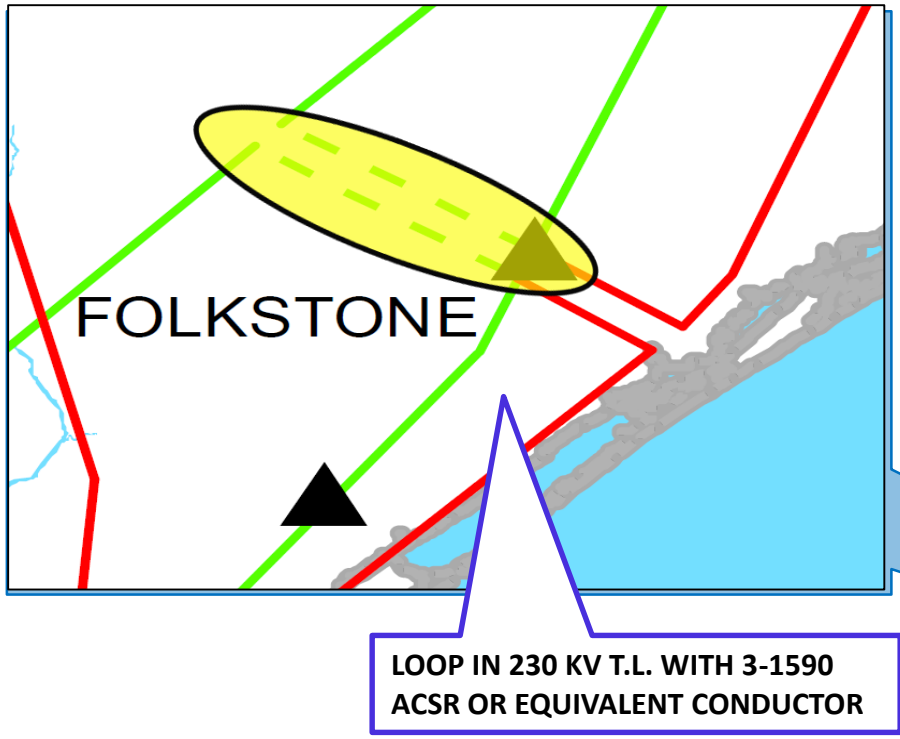
- **DESCRIPTION:**
  - Reconductor with 3-795 MCM ACSR or equivalent from IND 304440 to Maxton 115 kV substation approximately 3.5 miles. Replace existing 600A switches with 1200A switches.
- **SUPPORTING STATEMENT:**
  - The IND 304440-Maxton section of the Weatherspoon-IND 304440 115 kV transmission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



DUKE PROGRESS EAST – 6

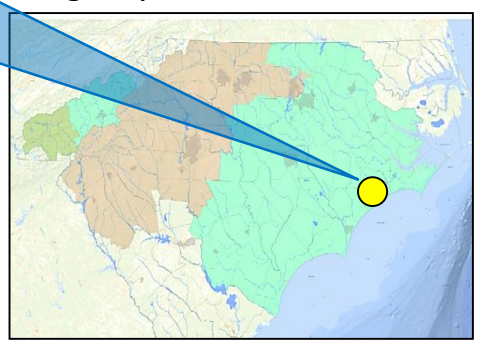
- **2024**

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.

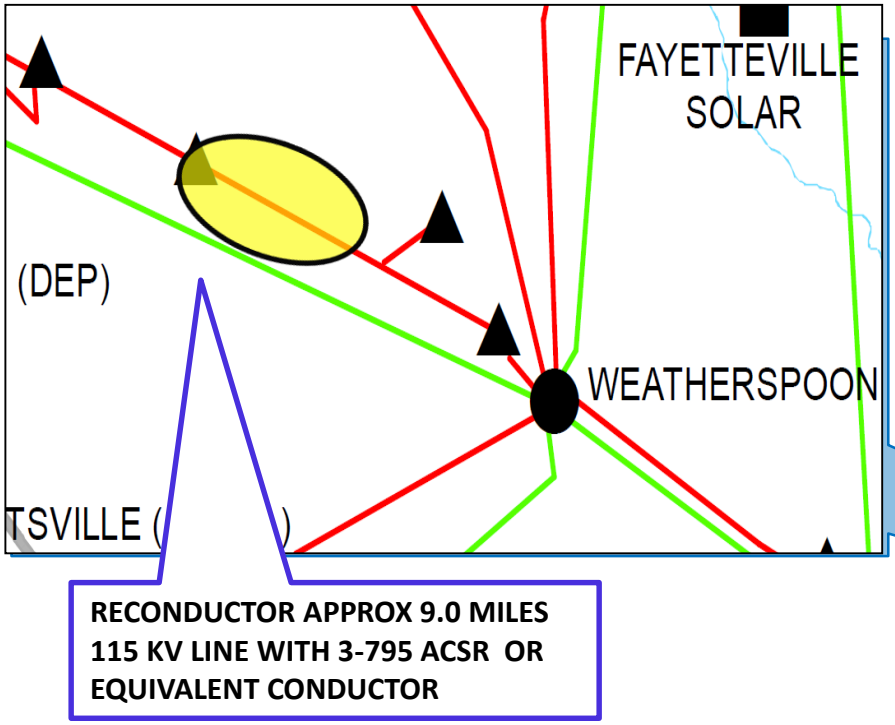
- **SUPPORTING STATEMENT:**
  - The Castle Hayne – Folkstone 115 kV transmission line overloads under contingency.



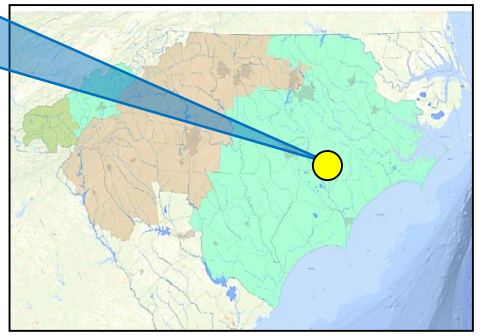
DUKE PROGRESS EAST – 7

- **2026**

WSPN – IND 304440 115 KV T.L.



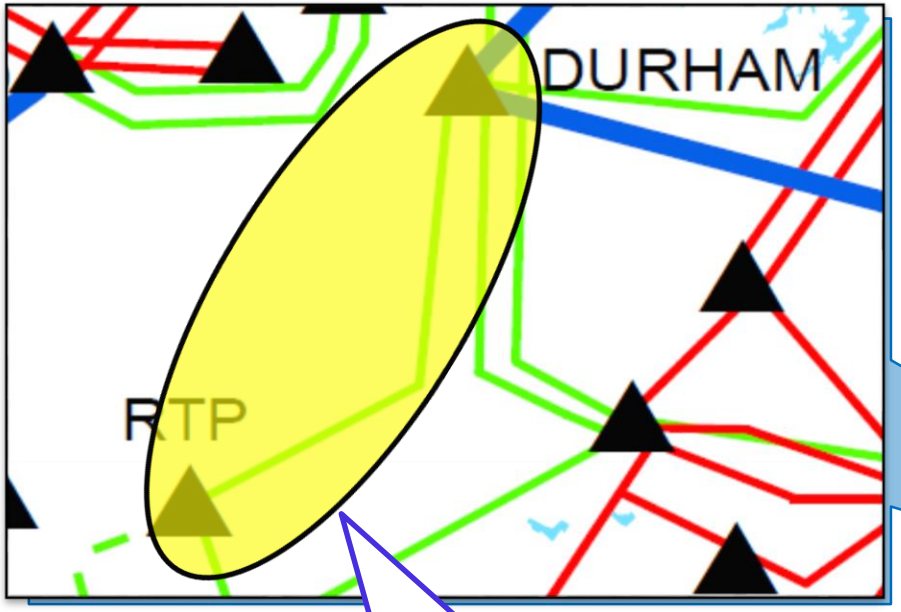
- **DESCRIPTION:**
  - Reconductor approximately 9.0 miles from Maxton to Pembroke 115 kV substation with 3-795 MCM ACSR or equivalent. Replace existing 600A switch with 1200A switch.
- **SUPPORTING STATEMENT:**
  - The Maxton-Pembroke section of the Weatherspoon-IND 304440 115 kV transmission line overloads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



DUKE PROGRESS EAST – 8

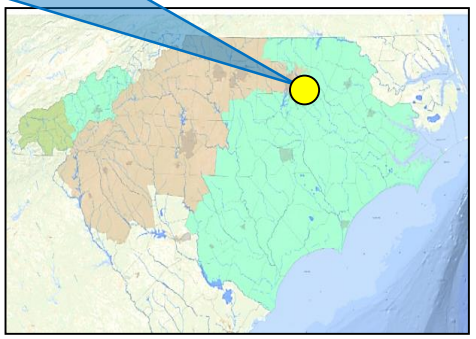
- **2027**

DURHAM – RTP 230 KV T.L.



RECONDUCTOR 10 MILES OF 230 KV T.L. WITH 6-1590 ACSR

- **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.



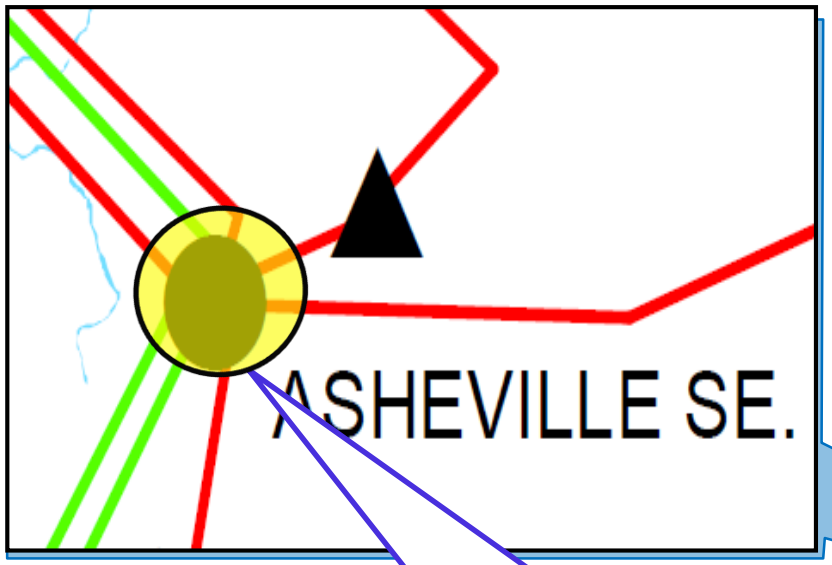
DUKE PROGRESS WEST Balancing Authority Area

Preliminary Transmission Expansion Plan

DUKE PROGRESS WEST – 1

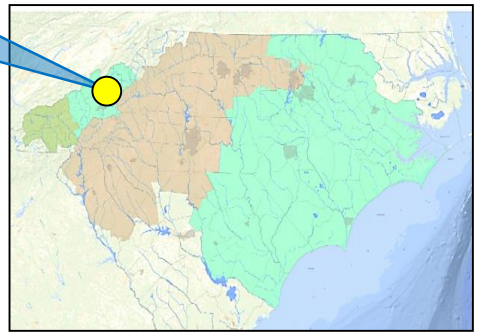
- **2019**

ASHEVILLE SE PLANT



REPLACE TRANSFORMERS. REBUILD 1.2 MILES 0F 115 KV TL WITH 1590 ACSR. REPLACE BREAKERS WITH 3000 A BREAKERS. INSTALL 72 MVAR CAPACITOR BANK. INSTALL SVC AT CANE RIVER 230 KV SUB. REPLACE TRANSFORMERS AT PISGAH FOREST 230 KV SUB.

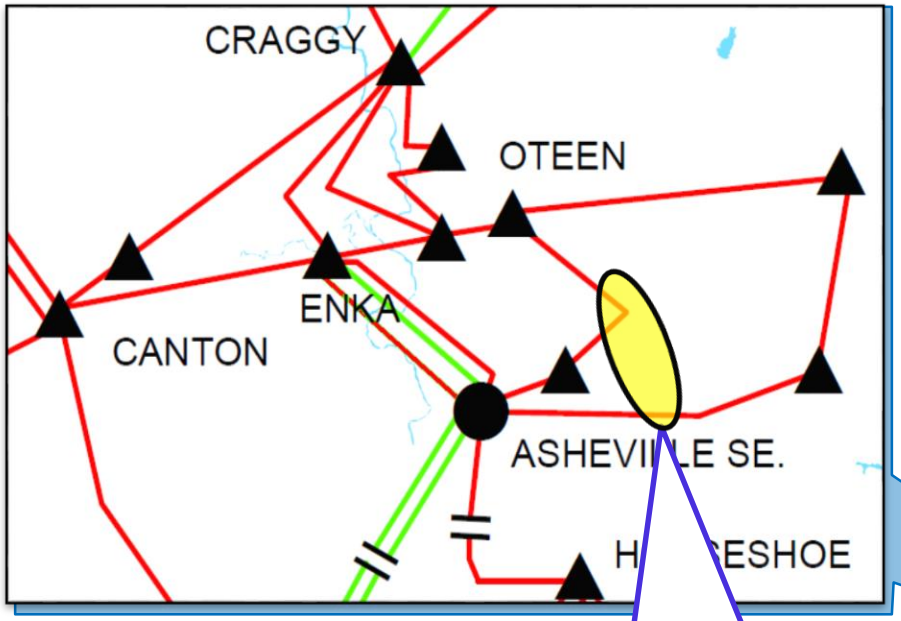
- **DESCRIPTION:**
  - Upgrade the two existing 230/115 kV transformers to 400 MVA each, reconductor approximately 1.2 miles of the 115 kV north and south transformer tie lines with 1590 ACSR at 100°C, replace the existing breakers with 3000A breakers, and install a 72 MVAR 230 kV capacitor bank. Associated projects include installation of SVC at Cane River 230 kV Substation and transformer replacement at Pisgah Forest 230 kV Substation.
- **SUPPORTING STATEMENT:**
  - Necessary upgrades to allow for the interconnection of two combined cycle units at Asheville Plant.



DUKE PROGRESS WEST – 2

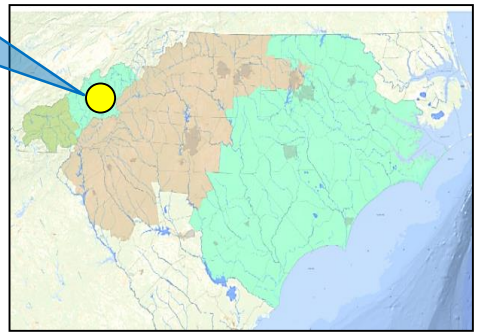
- **2022**

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

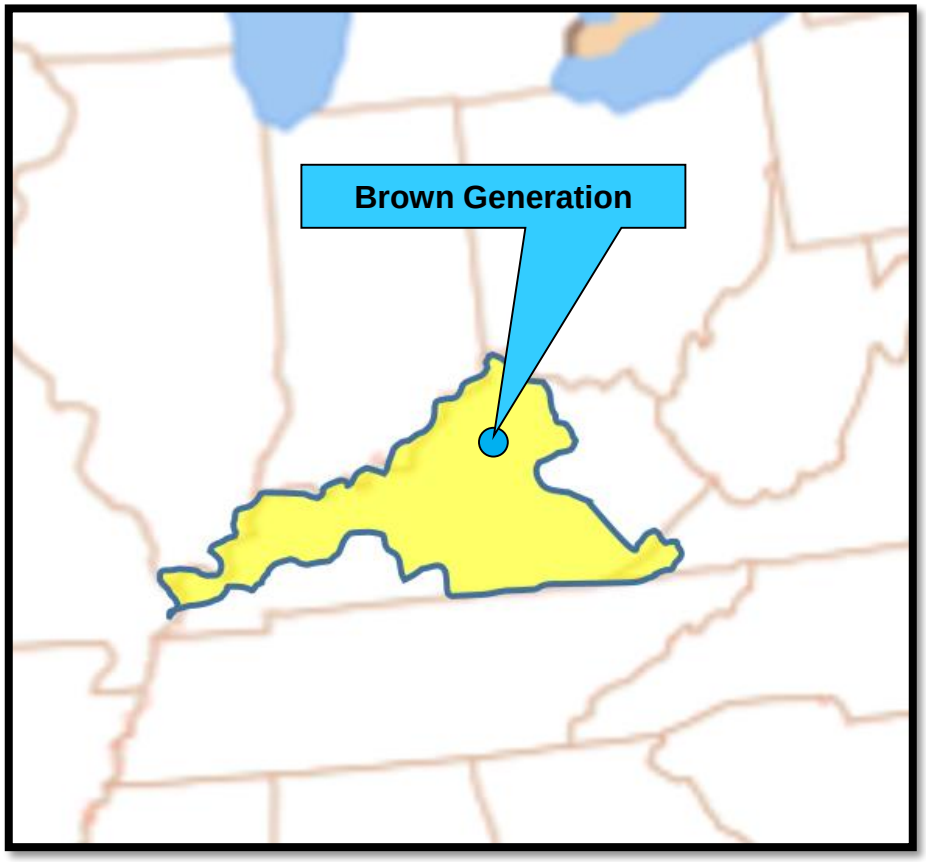
Generation Assumptions

Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2018 SERTP Process.



Existing Generation

Future Generation

Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU – 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	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BROWN 1	112	0	--	--	--	--	--	--	--	--	--
BROWN 2	176	0	--	--	--	--	--	--	--	--	--

Southeastern Regional TRANSMISSION PLANNING

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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

LG&E/KU Balancing Authority Area

Preliminary Transmission Expansion Plan

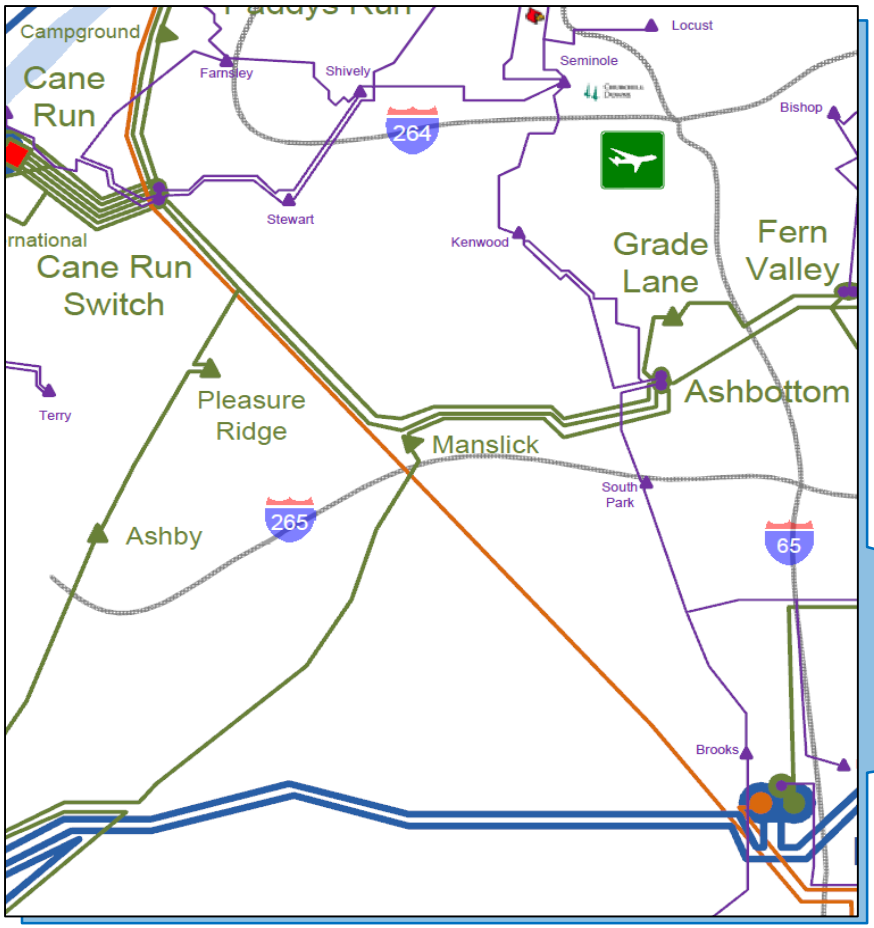
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

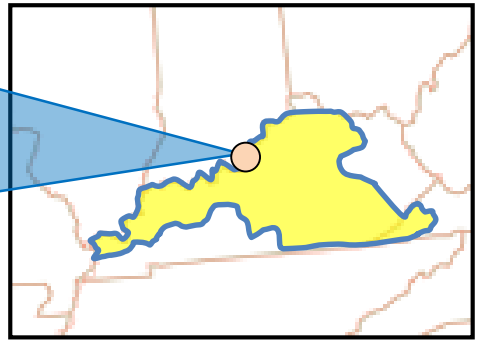
LG&E/KU - 1

• **2019**

CANE RUN SWITCHING 138 KV REDUNDANT RELAYS



- **DESCRIPTION:**
  - Add redundant bus differential and lockout relays at Cane Run 138 kV bus.
- **SUPPORTING STATEMENT:**
  - Low voltage and generator issues occur in the area under contingency.



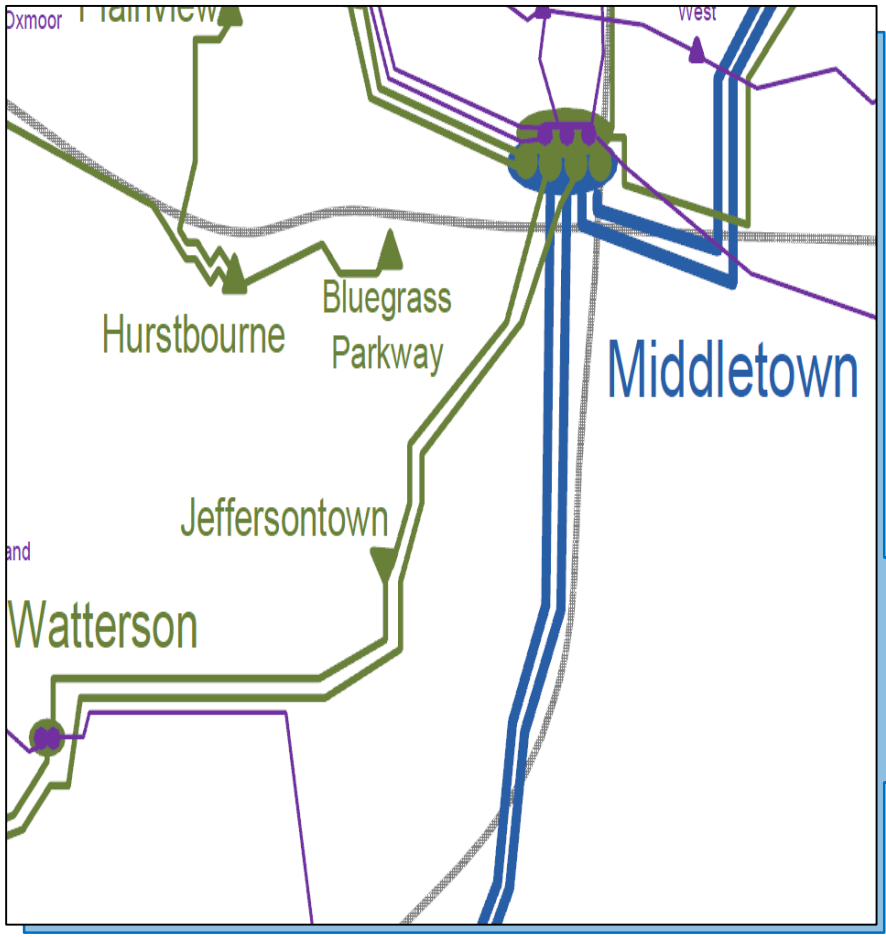
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

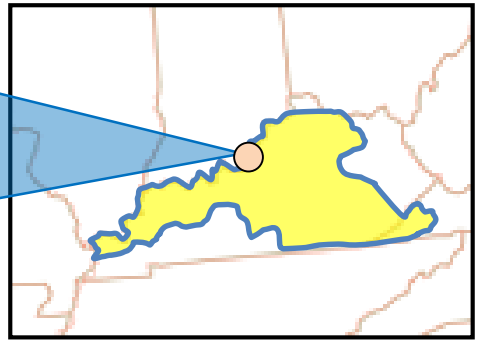
LG&E/KU - 2

- **2019**

MIDDLETOWN 345 KV REDUNDANT RELAYS



- **DESCRIPTION:**
  - Install redundant bus differential and lockout relays at the Middletown 345 kV bus.
- **SUPPORTING STATEMENT:**
  - Low voltage and flow issues occur in the area under contingency.



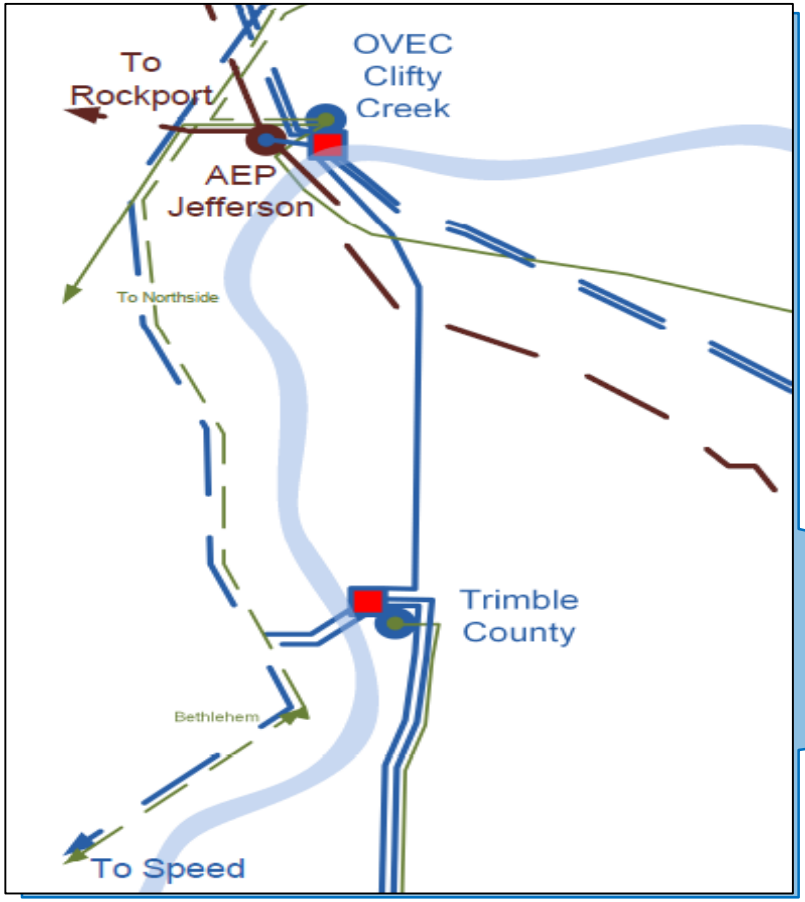
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

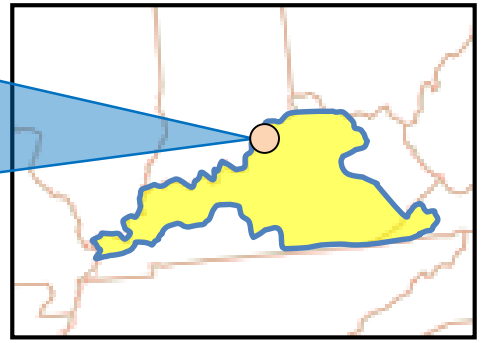
LG&E/KU - 3

- **2019**

TRIMBLE COUNTY - CLIFTY 345 KV REACTOR



- **DESCRIPTION:**
  - Install a 0.66% 345 kV reactor at Trimble County on the Trimble County - Clifty 345 kV transmission line.
- **SUPPORTING STATEMENT:**
  - The Trimble County - Clifty Creek 345 kV transmission line overloads under contingency.



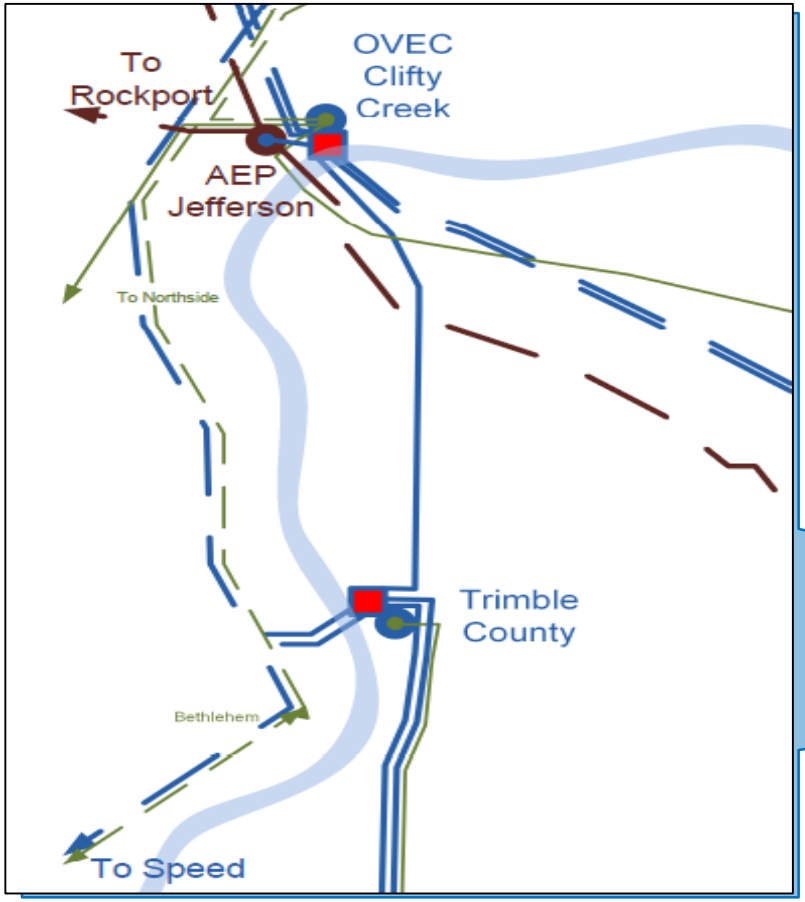
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

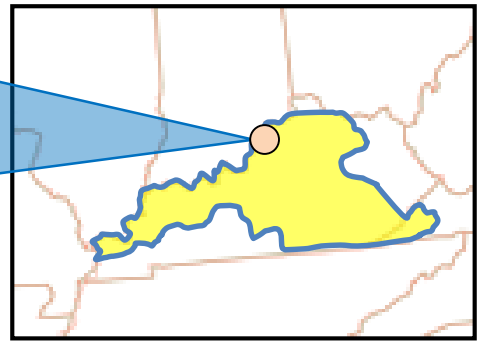
LG&E/KU - 4

- **2019**

TRIMBLE COUNTY 345 KV REDUNDANT RELAYS



- **DESCRIPTION:**
  - Add redundant bus differential and lockout relays at Trimble Co. 345 kV bus.
- **SUPPORTING STATEMENT:**
  - Low voltage and flow issues occur in the area under contingency.



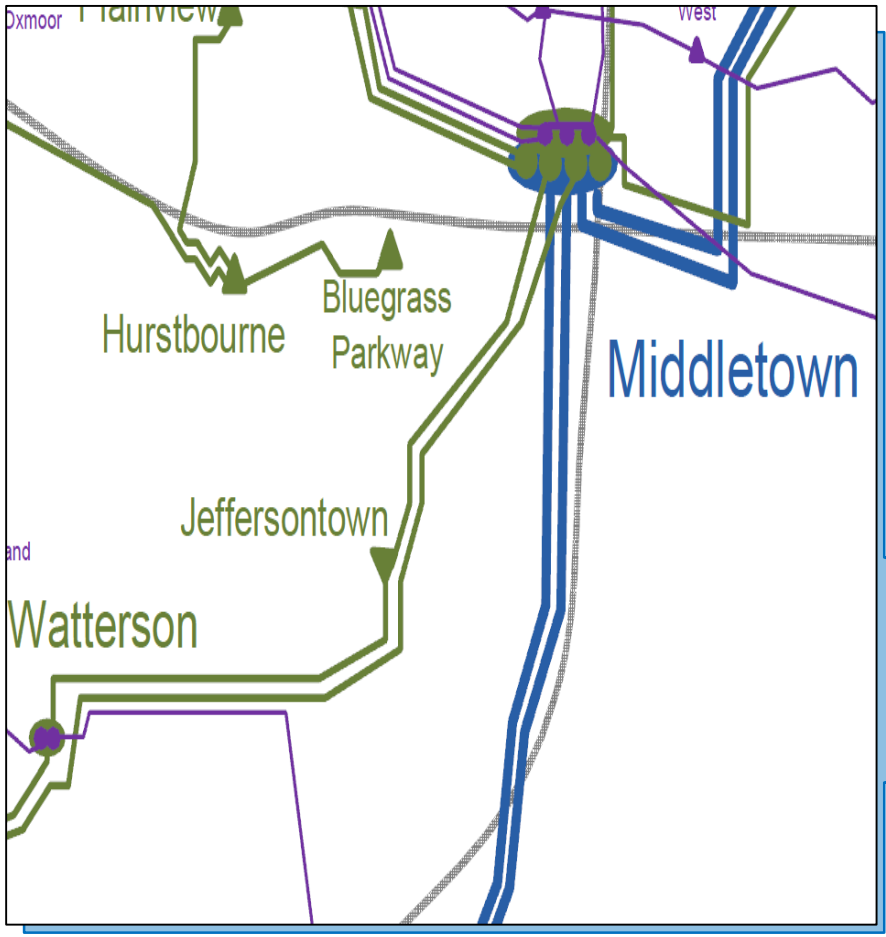
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

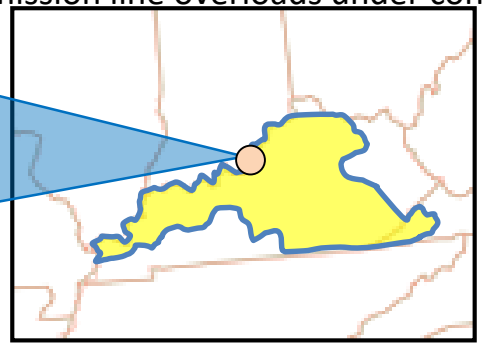
LG&E/KU - 5

• **2019**

WATTERSON - JEFFERSONTOWN TAP 138 KV T.L.



- **DESCRIPTION:**
  - Replace the 138 kV terminal equipment rated less than or equal to 1281A (306 MVA) at Watterson associated with the Watterson-Jefferson Tap 138 kV transmission line with equipment capable of a minimum of 1428A (341MVA).
- **SUPPORTING STATEMENT:**
  - The Watterson - Jeffersontown Tap 138 kV transmission line overloads under contingency.



Southeastern Regional TRANSMISSION PLANNING

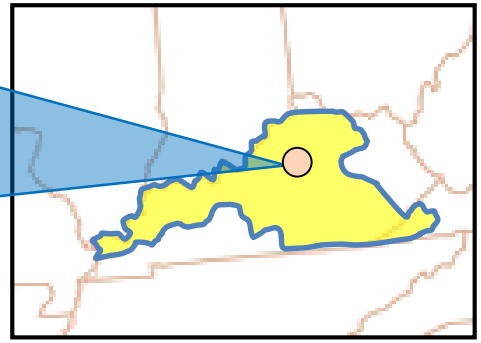
LG&E/KU Balancing Authority Area

LG&E/KU - 6

• **2019**

WEST LEXINGTON 138 KV REDUNDANT RELAYS

- **DESCRIPTION:**
  - Add redundant bus differential and lockout relays at West Lexington 138 kV bus.
- **SUPPORTING STATEMENT:**
  - Low voltage and flow issues occur in the area under contingency.



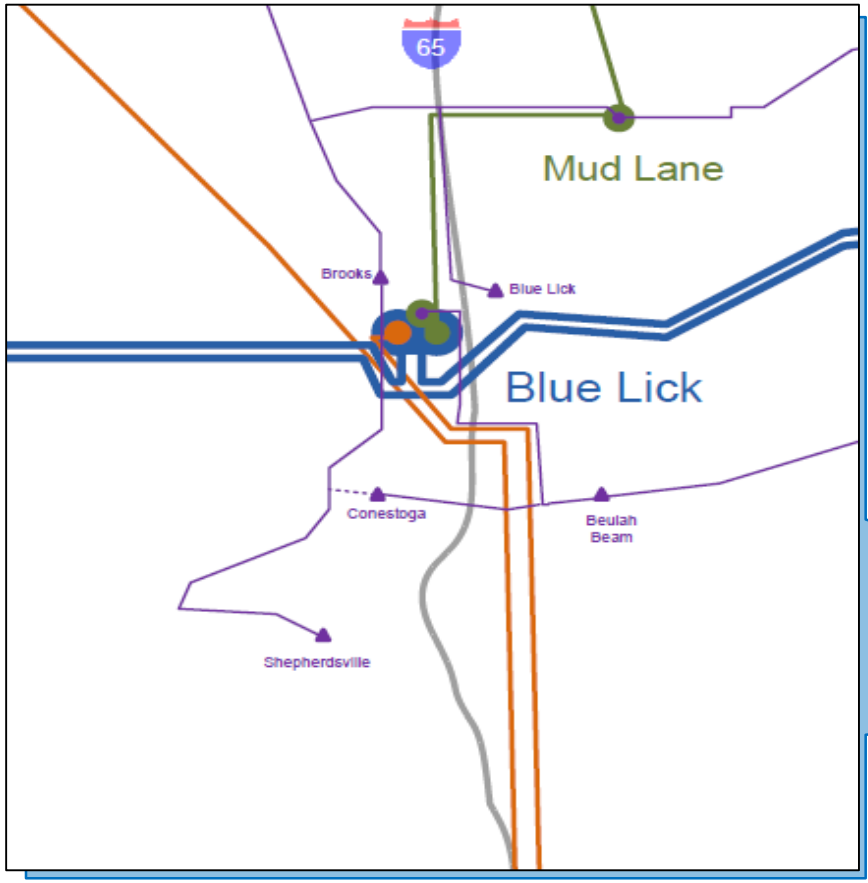
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

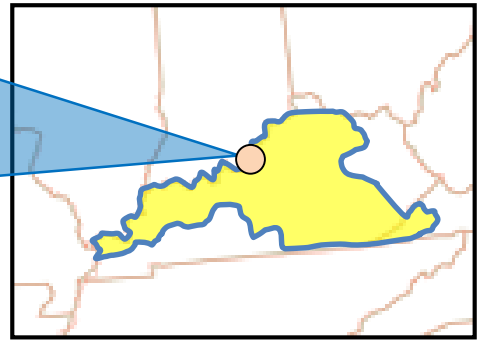
LG&E/KU - 7

• **2020**

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 Blue Lick 345/161 kV transformer overloads under contingency.



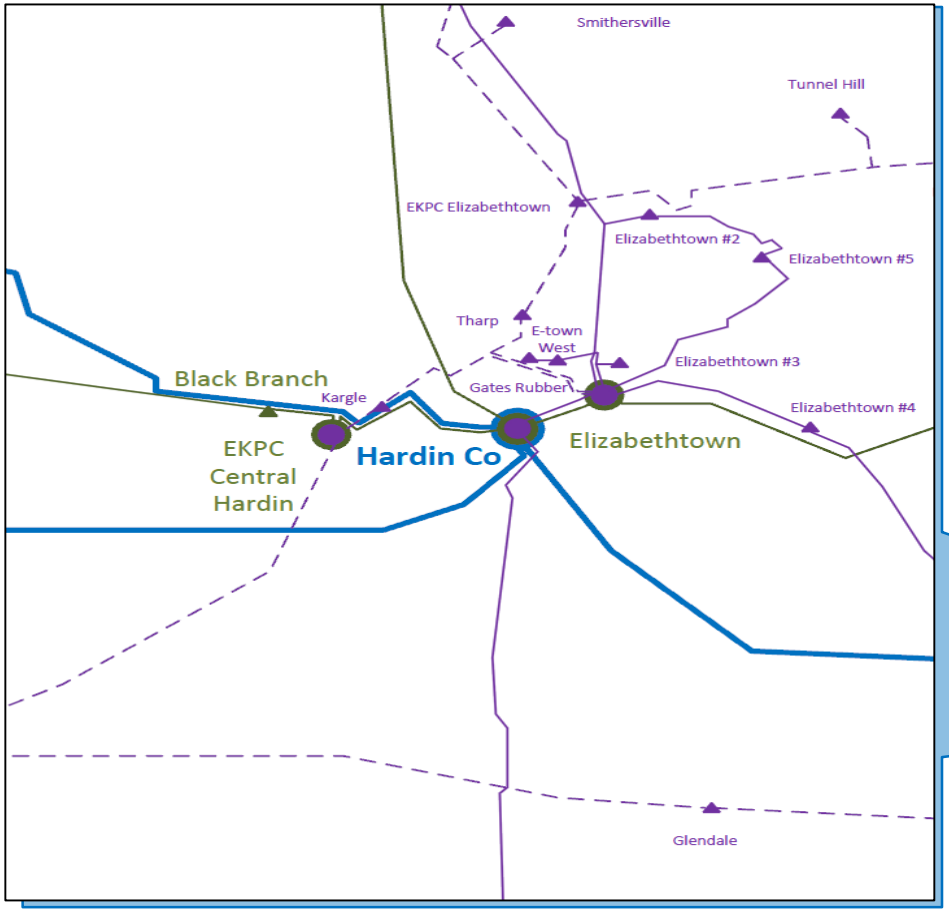
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

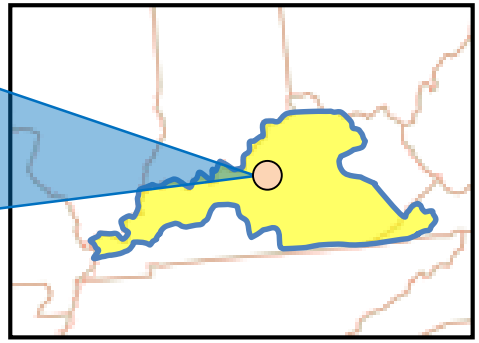
LG&E/KU - 8

- **2020**

HARDIN CO 345/138 KV #2 TRANSFORMER



- **DESCRIPTION:**
  - Install a second 345/138 kV, 450 MVA transformer at Hardin County.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in the Elizabethtown area under contingency.



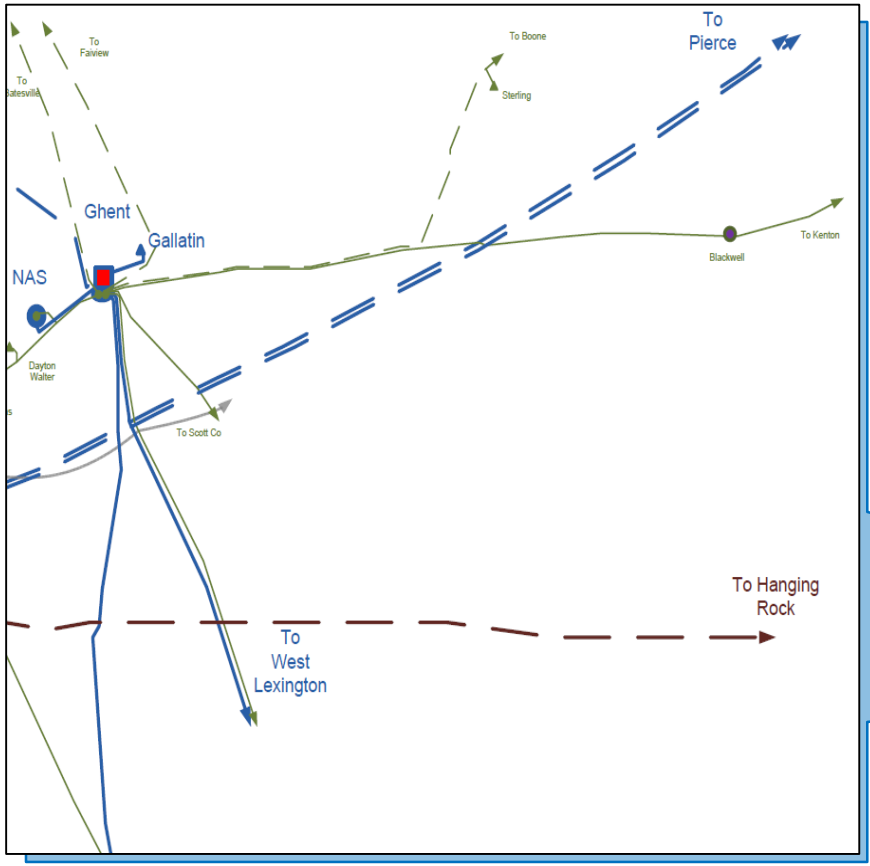
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

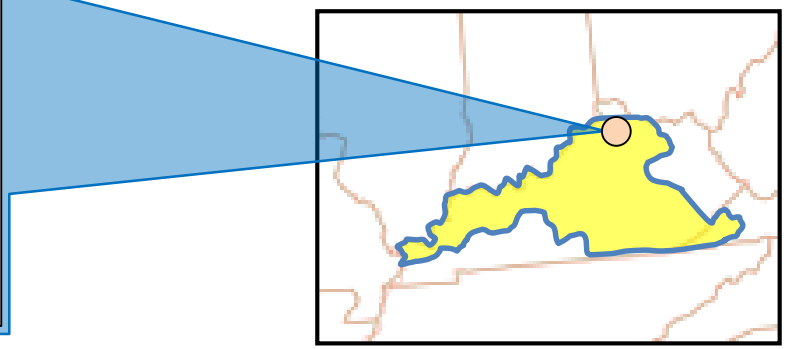
LG&E/KU - 9

- **2021**

GHENT - BLACKWELL 138 KV T.L.



- **DESCRIPTION**:
  - Upgrade approximately 23.54 miles of the Ghent to Blackwell 138 kV transmission line to increase the maximum operating temperature of the conductor to at least 160°F.
- **SUPPORTING STATEMENT:**
  - The Ghent - Blackwell 138 kV transmission line overloads under contingency.



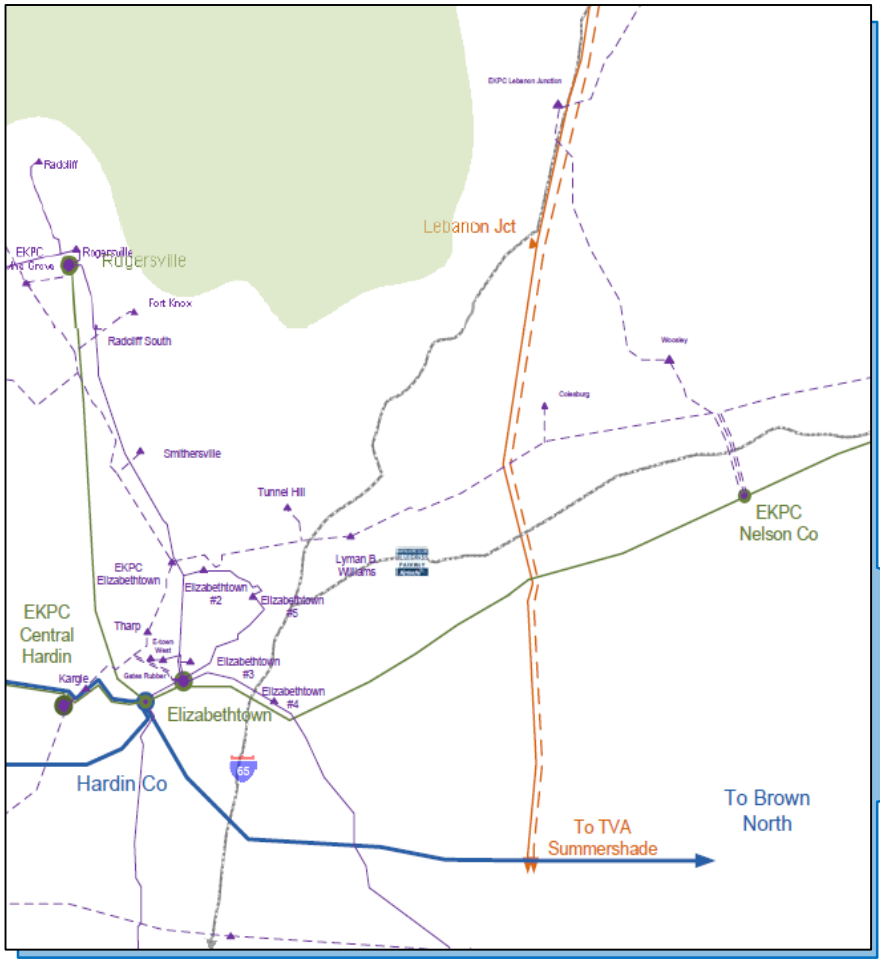
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 10

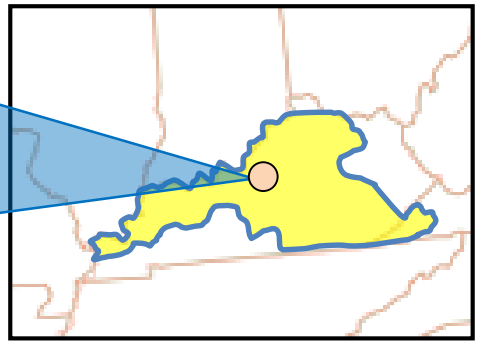
- **2022**

ELIZABETHTOWN - NELSON COUNTY 138 KV T.L.



- **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

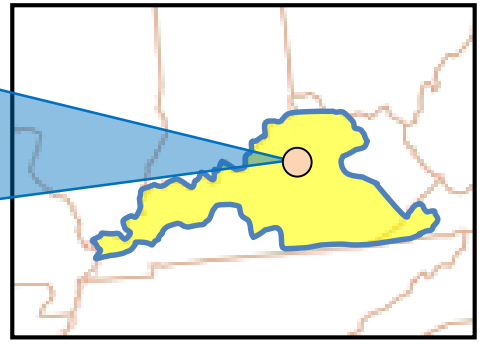
LG&E/KU Balancing Authority Area

LG&E/KU - 11

- **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

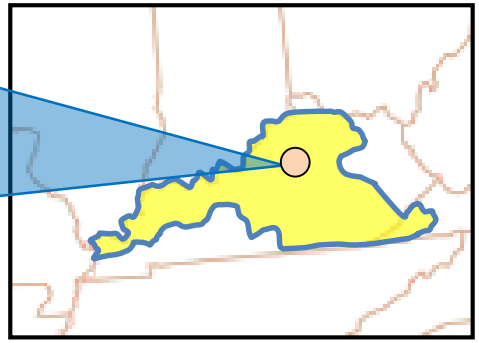
LG&E/KU Balancing Authority Area

LG&E/KU - 12

• **2022**

WEST LEXINGTON - HAEFLING 138 KV T.L.

- **DESCRIPTION:**
  - Reconductor approximately 7.34 miles of the West Lexington - Haefling 138 kV transmission line, using high-temperature conductor capable of at least 1500A.
- **SUPPORTING STATEMENT:**
  - The West Lexington - Haefling 138 kV transmission line overloads under contingency.



Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

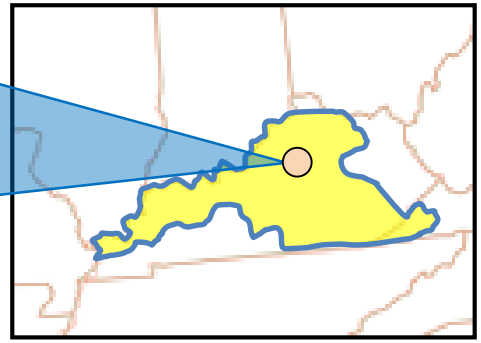
LG&E/KU - 13

- **2022**

WEST LEXINGTON - VILEY ROAD 138 KV T.L.

- **DESCRIPTION:**
  - Reconductor approximately 5.19 miles of the West Lexington - Viley Road section of the West Lexington - Viley Road - Haefling 138 kV transmission line, using high-temperature conductor capable of at least 1500A.

- **SUPPORTING STATEMENT:**
  - The West Lexington - Viley Road 138 kV transmission line section overloads under contingency.



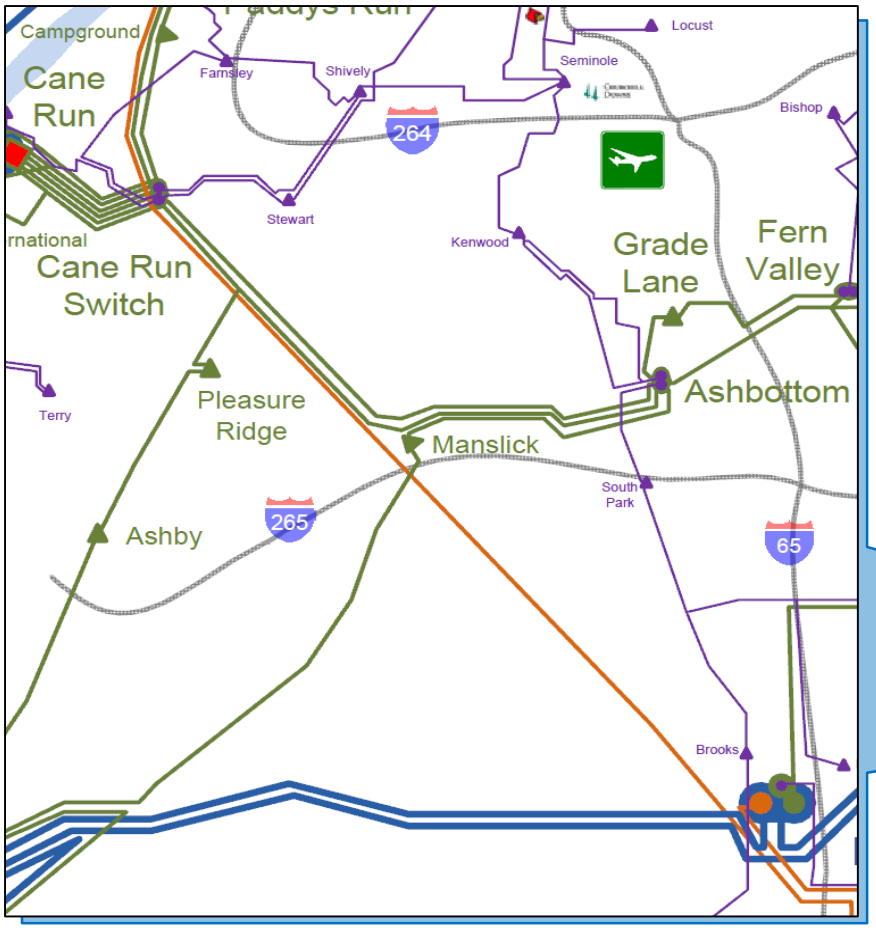
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 14

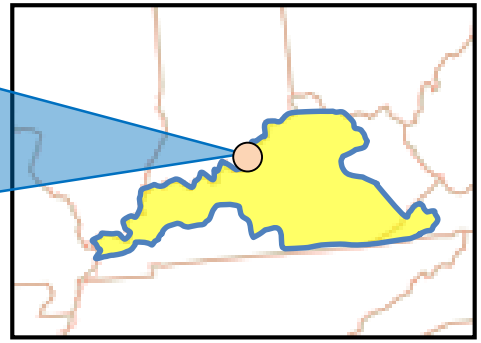
• **2024**

ASHBOTTOM - CANE RUN SWITCHING 138 KV T.L.



- **DESCRIPTION:**
  - Upgrade approximately 8.04 miles of the Ashbottom to Cane Run Switch 138 kV transmission line (Bundled 795 ACSR) to increase the maximum operating temperature from 150°F to 155°F.

- **SUPPORTING STATEMENT:**
  - The Ashbottom to Cane Run Switch 138 kV transmission line overloads under contingency.



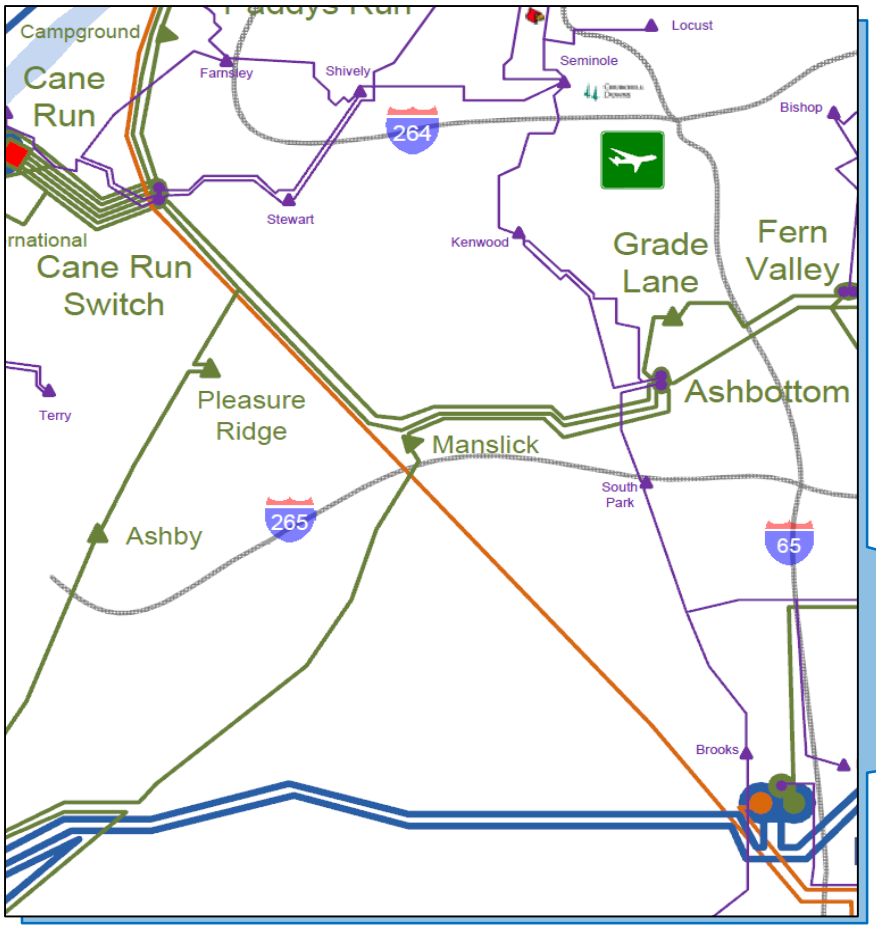
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

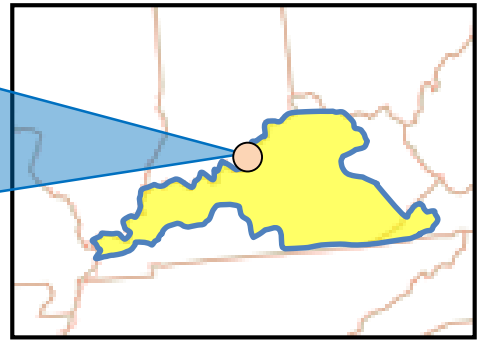
LG&E/KU - 15

• **2024**

CANE RUN SWITCHING 138 KV REDUNDANT TRIP COILS



- **DESCRIPTION:**
  - Add redundant trip coils at the Cane Run 138 kV bus.
- **SUPPORTING STATEMENT:**
  - Low voltage and generator slipping issues occur in the area under contingency.



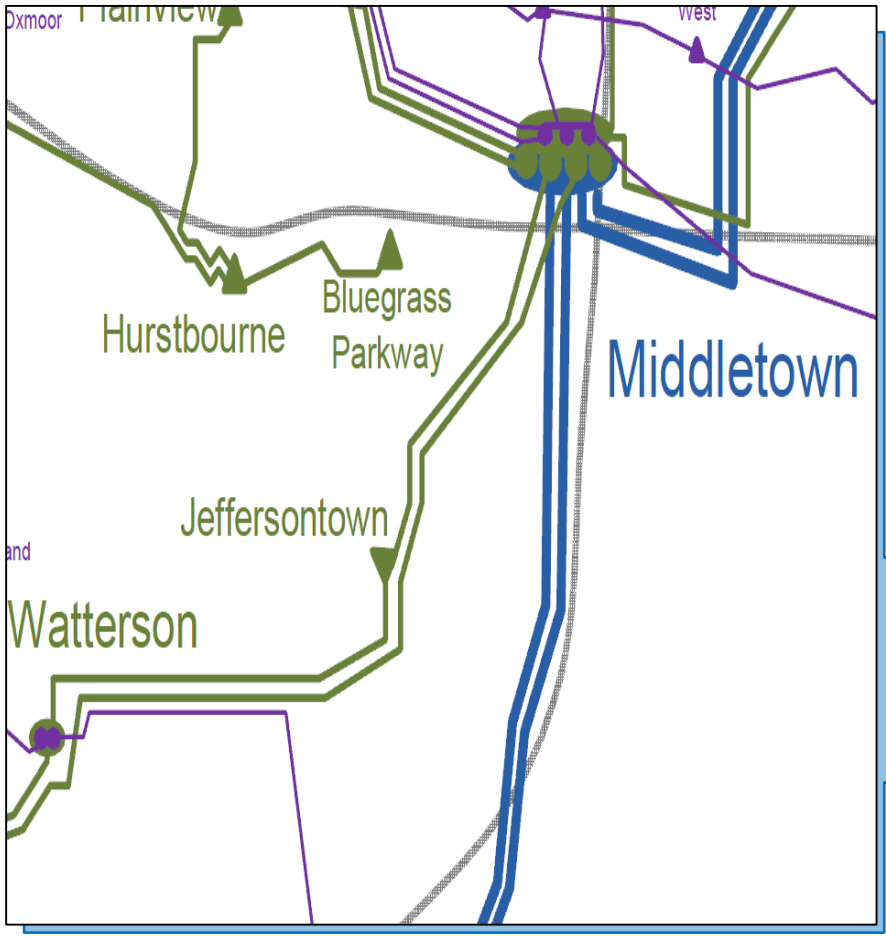
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

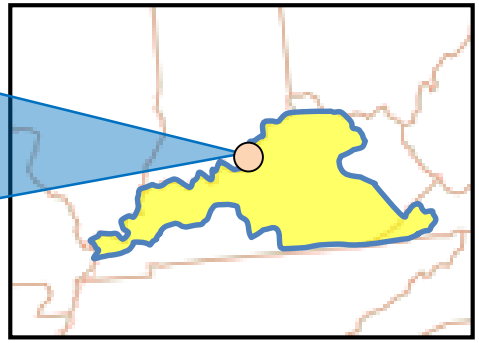
LG&E/KU - 16

• **2024**

MIDDLETOWN 345 KV REDUNDANT TRIP COILS



- **DESCRIPTION:**
  - Add redundant trip coils at the Middletown 345 kV bus.
- **SUPPORTING STATEMENT:**
  - Low voltage and flow issues occur in the area under contingency.



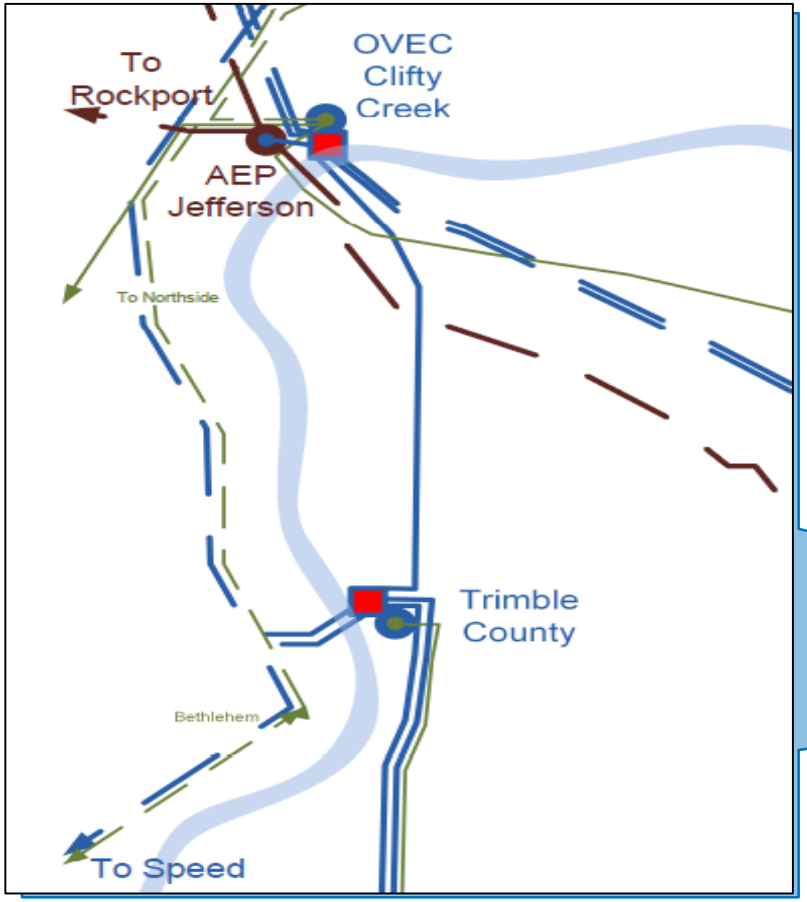
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

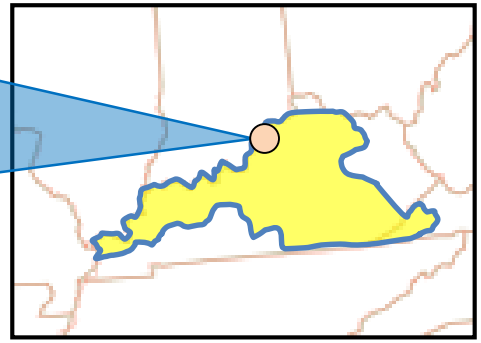
LG&E/KU - 17

- **2024**

TRIMBLE COUNTY 345 KV REDUNDANT TRIP COILS



- **DESCRIPTION:**
  - Add redundant trip coils at both Trimble Co. 345 kV bus
- **SUPPORTING STATEMENT:**
  - Low voltage and flow issues occur in the area under contingency



Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

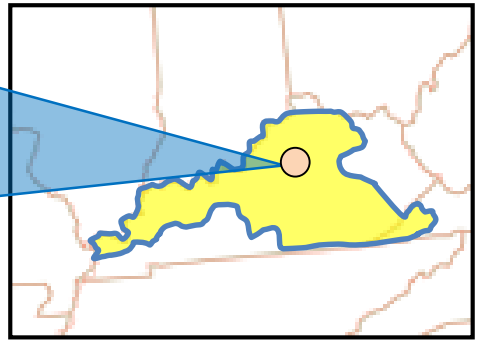
LG&E/KU - 18

- **2024**

WEST LEXINGTON 138 KV REDUNDANT TRIP COILS

- **DESCRIPTION:**
  - Add redundant trip coils at the West Lexington 138 kV bus.

- **SUPPORTING STATEMENT:**
  - Low voltage and generator stability issues occur in the area under contingency.



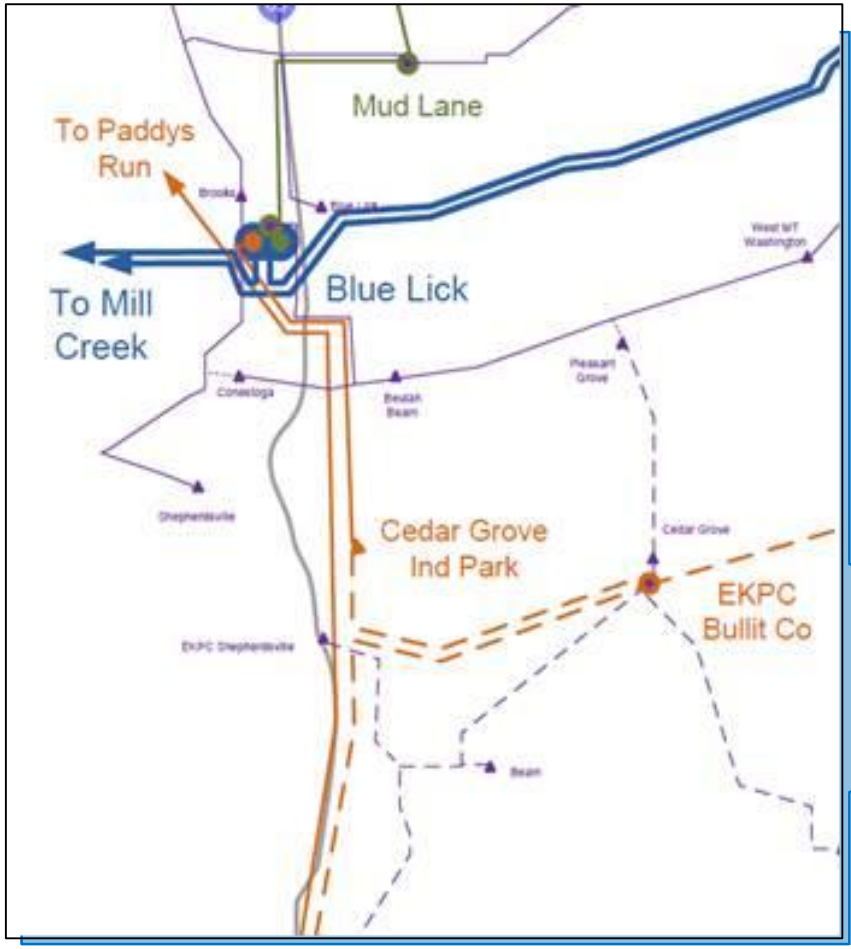
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

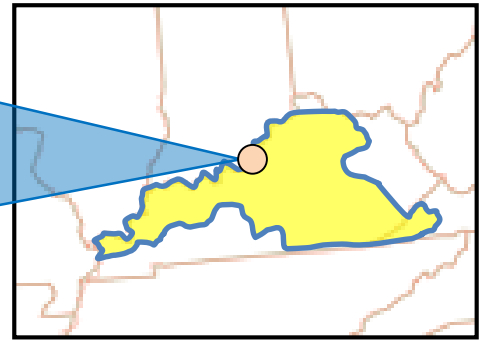
LG&E/KU - 19

- **2026**

BLUE LICK – CEDAR GROVE 161 KV T.L.



- **DESCRIPTION:**
  - Reconductor approximately 4.7 miles of the Blue Lick - Cedar Grove 161 kV transmission line with 795 ACSR at 100 °C.
- **SUPPORTING STATEMENT:**
  - The Blue Lick – Cedar Grove 161 KV transmission line overloads under contingency.



OVEC Balancing Authority Area

OVEC Balancing Authority Area

Preliminary Transmission Expansion Plan & Generation Assumptions

* OVEC has no transmission projects included in the 2018 SERTP Preliminary Transmission Expansion Plan. In addition, OVEC has no generation assumptions expected to change throughout the ten year planning horizon for the 2018 SERTP Planning Processes.

POWERSOUTH Balancing Authority Area

Generation Assumptions

* POWERSOUTH has no generation assumptions expected to change throughout the ten year planning horizon for the 2018 SERTP Process.

POWERSOUTH Balancing Authority Area

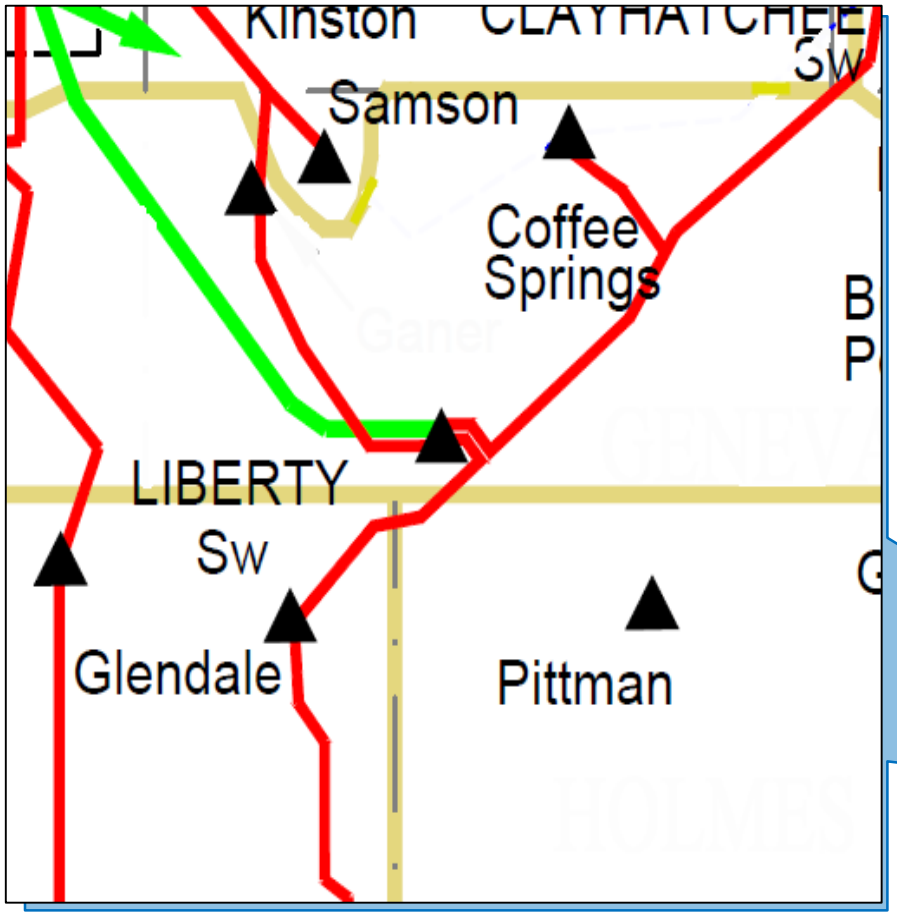
Preliminary Transmission Expansion Plan

POWERSOUTH Balancing Authority Area

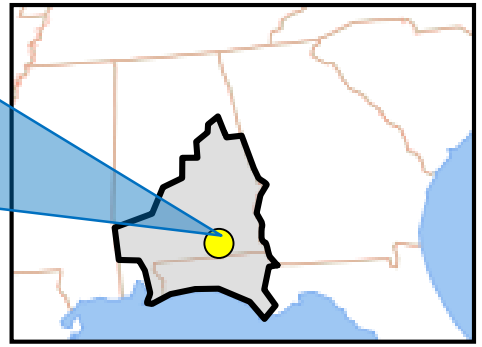
POWERSOUTH – 1

- **2019**

LIBERTY 230/115 KV TRANSFORMER UPGRADE



- **DESCRIPTION:**
  - Replace the existing 230/115 kV, 150 MVA transformers with 400 MVA transformers.
- **SUPPORTING STATEMENT:**
  - The existing 230/115 kV, 150 MVA transformers at Liberty Substation overload under contingency.



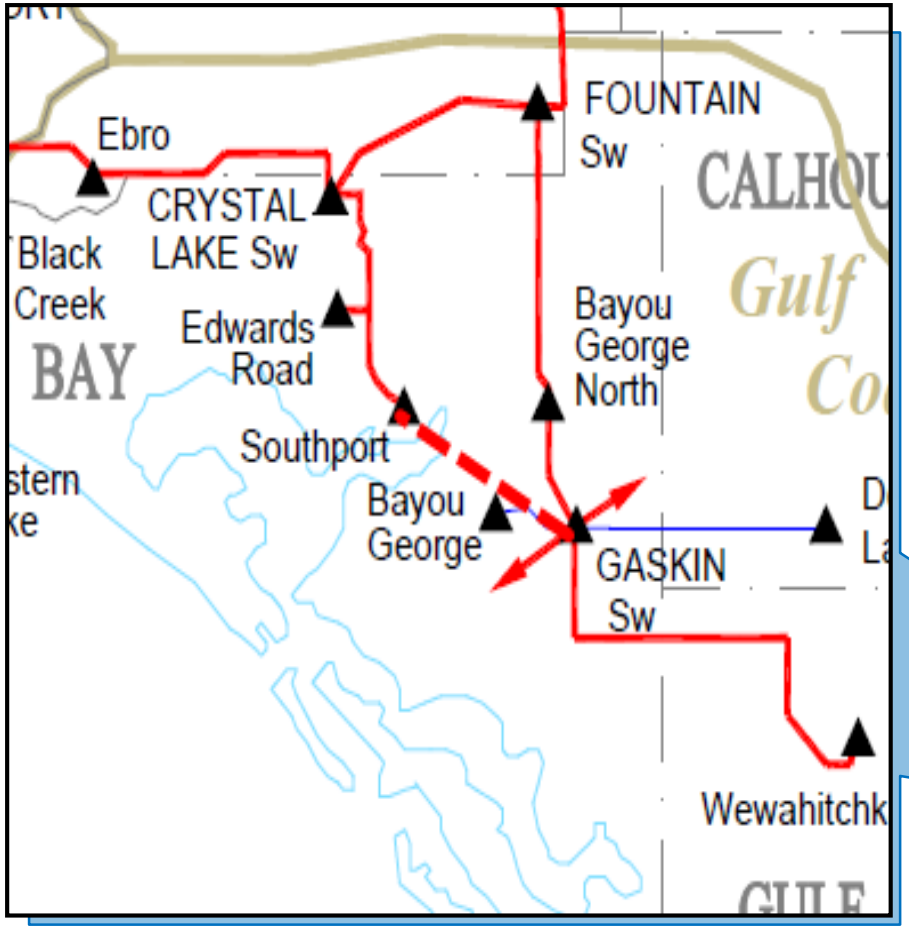
Southeastern Regional TRANSMISSION PLANNING

POWERSOUTH Balancing Authority Area

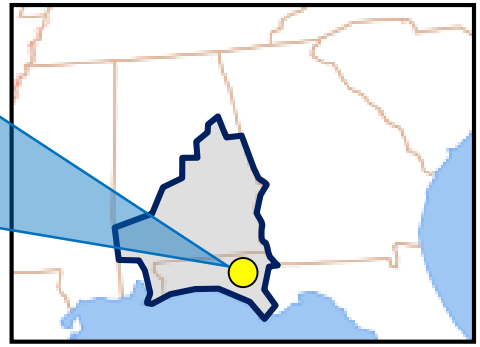
POWERSOUTH – 2

- **2020**

GASKIN – SOUTHPORT 115 KV T.L.



- **DESCRIPTION:**
  - Construct approximately 9.0 miles of new 115 kV transmission line from Gaskin Switching Station – 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.

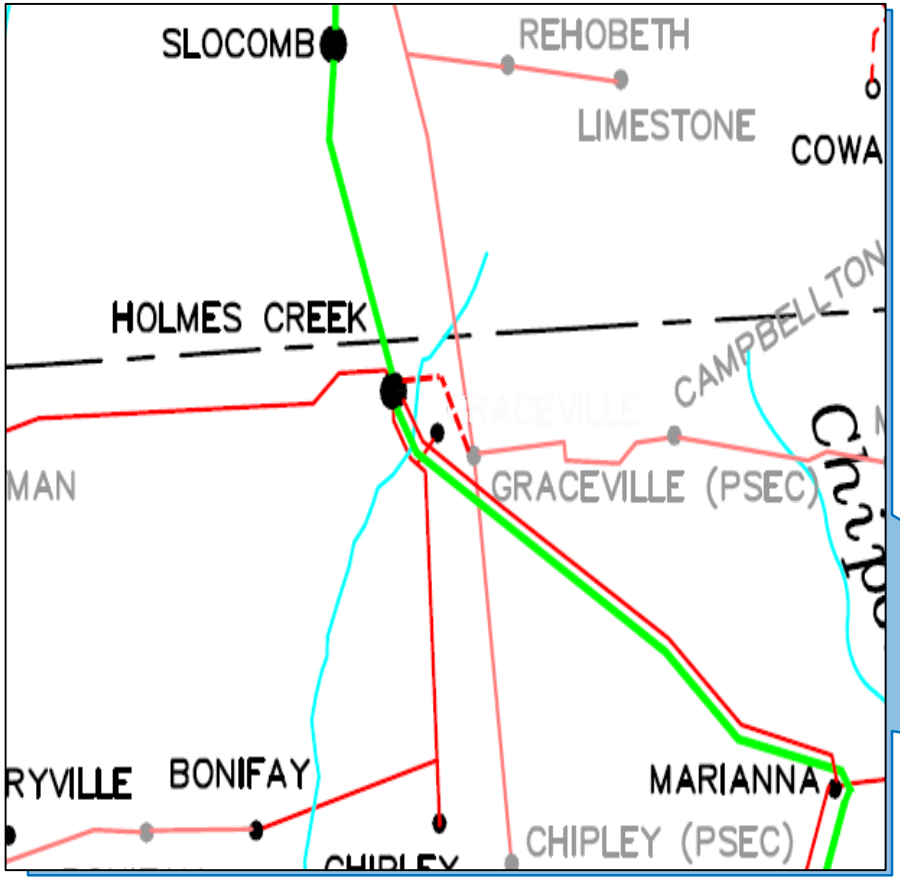


POWERSOUTH Balancing Authority Area

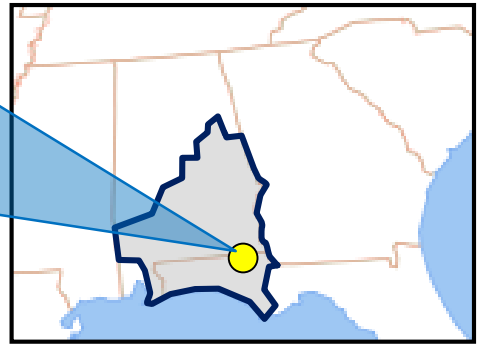
POWERSOUTH – 3

- **2020**

GRACEVILLE – HOLMES CREEK 115 KV T.L.



- **DESCRIPTION:**
  - Construct approximately 0.5 mile of new 115 kV transmission line from Graceville 115 kV substation to Gulf Power Holmes Creek substation with 795 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed at Graceville and Fountain under contingency.



SOUTHERN Balancing Authority Area

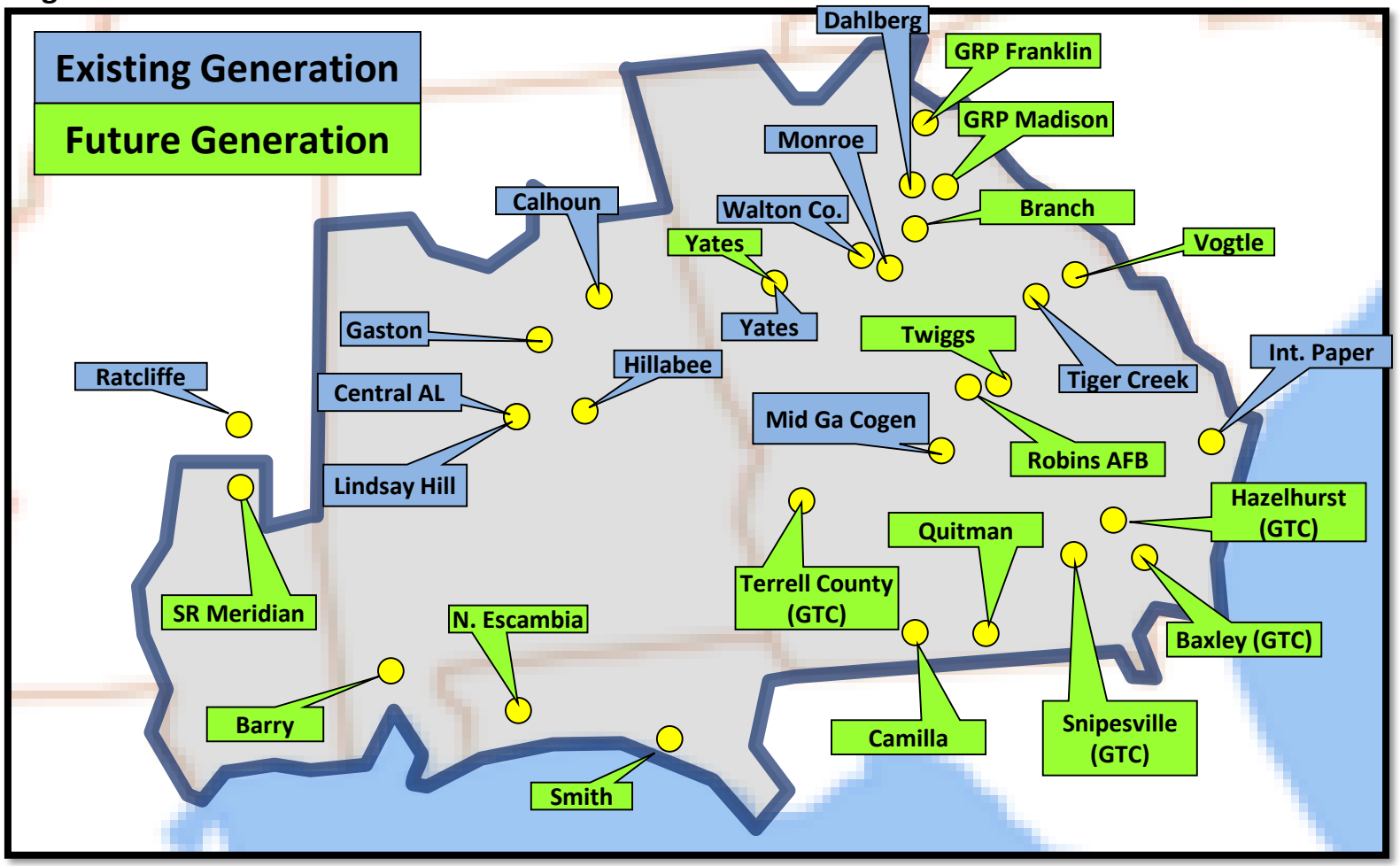
Generation Assumptions

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 2018 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 2018 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
CALHOUN 1-4	632	632	632	632	0	--	--	--	--	--
CAMILLA	--	160	160	160	160	160	160	160	160	160
CENTRAL ALABAMA	885	885	885	885	0	--	--	--	--	--
DAHLBERG 2, 6, 8, 10	298	298	298	298	298	298	0	--	--	--
GASTON 1-4	465	465	465	465	465	515	515	515	515	515
GRP FRANKLIN	58	58	58	58	58	58	58	58	58	58
GRP MADISON	58	58	58	58	58	58	58	58	58	58
INT. PAPER - PW BIOMASS	20	20	20	20	20	20	20	20	0	--
MID GA COGEN	300	300	300	300	300	300	300	300	300	0
MONROE POWER	309	309	309	309	309	0	--	--	--	--

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 2018 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
QUITMAN SOLAR	--	150	150	150	150	150	150	150	150	150
RATCLIFFE CC	696	696	696	696	696	696	696	696	696	696
ROBINS AFB	139	139	139	139	139	139	139	139	139	139
SR MERIDIAN III	--	52	52	52	52	52	52	52	52	52
TIGER CREEK 1&4	313	313	313	313	313	0	--	--	--	--
TWIGGS	--	200	200	200	200	200	200	200	200	200
VOGTLE 3	--	--	--	504	504	504	504	504	504	504
VOGTLE 4	--	--	--	--	504	504	504	504	504	504
WALTON COUNTY	465	465	465	465	465	0	--	--	--	--
YATES 6-7	649	649	649	649	649	714	714	714	714	714

Southern Company – Generation Assumptions

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

SITE	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BARRY[1]	--	--	--	--	610	610	610	610	610	610
BRANCH[1]	--	--	--	--	--	--	--	--	940	940
LANSING SMITH [1]	--	--	--	--	230	230	230	230	230	230
NORTH ESCAMBIA [1]	--	--	--	--	610	610	610	610	610	610
YATES[1]	--	--	--	--	--	--	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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BOWEN	159	159	159	159	159	159	159	159	159	159
DAHLBERG	494	494	494	494	494	494	494	494	494	494
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	911	911	911	911	911	911	911	911	911
VOGTLE	206	206	206	206	206	206	206	206	206	206

GTC – Generation Assumptions

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

SITE	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BAXLEY	--	24	24	24	24	24	24	24	24	24
SNIPESVILLE	--	60	60	60	60	60	60	60	60	60
SR HAZELHURST 3	--	41	41	41	41	41	41	41	41	41
TERRELL COUNTY	--	--	74	74	74	74	74	74	74	74
VOGTLE 3	--	--	--	330	330	330	330	330	330	330
VOGTLE 4	--	--	--	--	330	330	330	330	330	330

MEAG – 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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VOGTLE 3	--	--	--	250	250	250	250	250	250	250
VOGTLE 4	--	--	--	--	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 2018 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VOGTLE 3	--	--	--	19	19	19	19	19	19	19
VOGTLE 4	--	--	--	--	19	19	19	19	19	19

SOUTHERN (WEST) Balancing Authority Area

Preliminary Transmission Expansion Plan

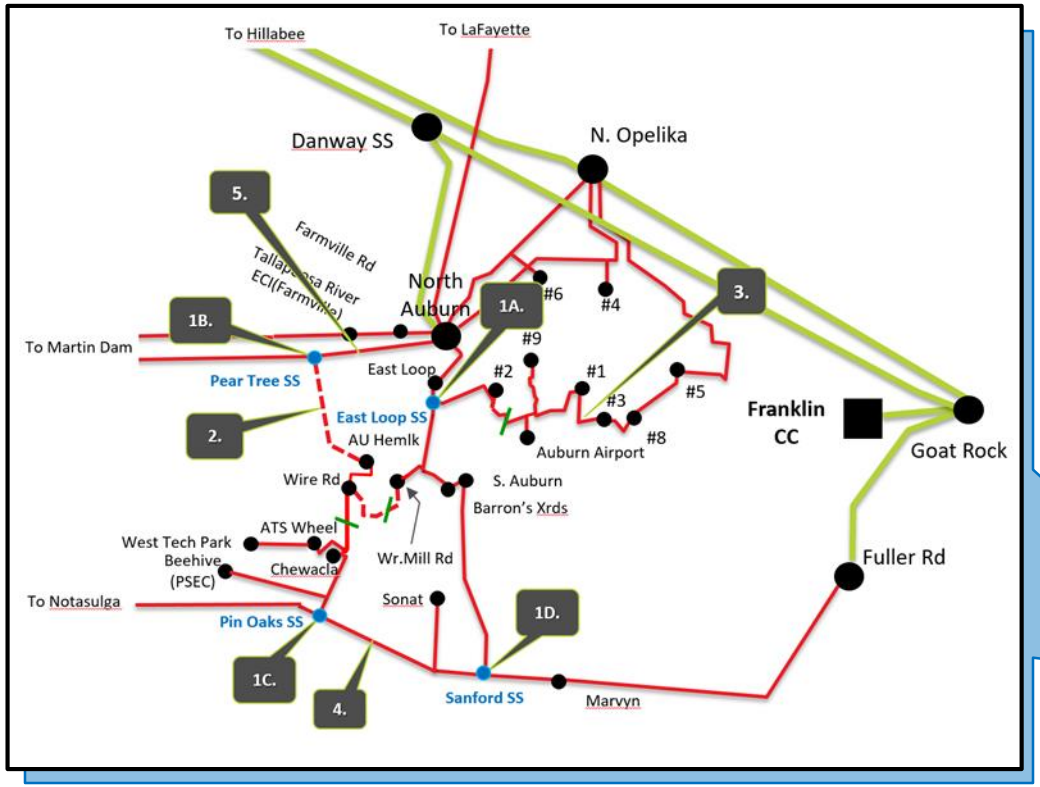
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 1W

- **2019**

AUBURN – OPELIKA 115 kV T.L. NETWORKING

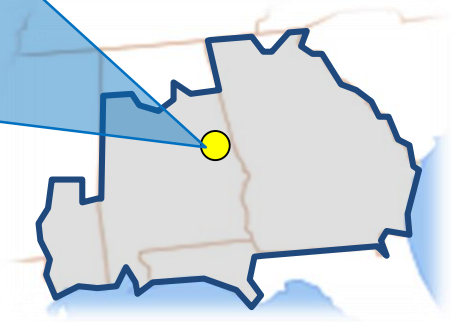


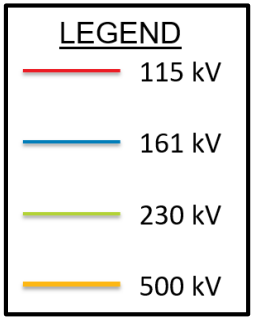
PROJECT DESCRIPTION:

1. Add four new 115 kV switching stations.
2. Construct approximately 4 miles of 115 kV transmission line from Pear Tree SS to AU Hemlock.
3. Reconductor approximately 1.8 miles of 115 kV transmission line between Opelika #1 and Opelika #3 with 795 ACSR at 100°C.
4. Reconductor approximately 14.5 miles of 115 kV transmission line between Sanford SS – Sonat Tap – Pin Oaks – Beehive Tap – Chewacla with 397 ACSS at 200°C.
5. Reconductor approximately 6 miles of 115 kV transmission line between North Auburn – Pear Tree SS with 795 ACSS at 200°C.

SUPPORTING STATEMENT:

Provides additional operational and maintenance flexibility which then increases reliability. This project also provides voltage support and eliminates heavy loading during load restoration events.





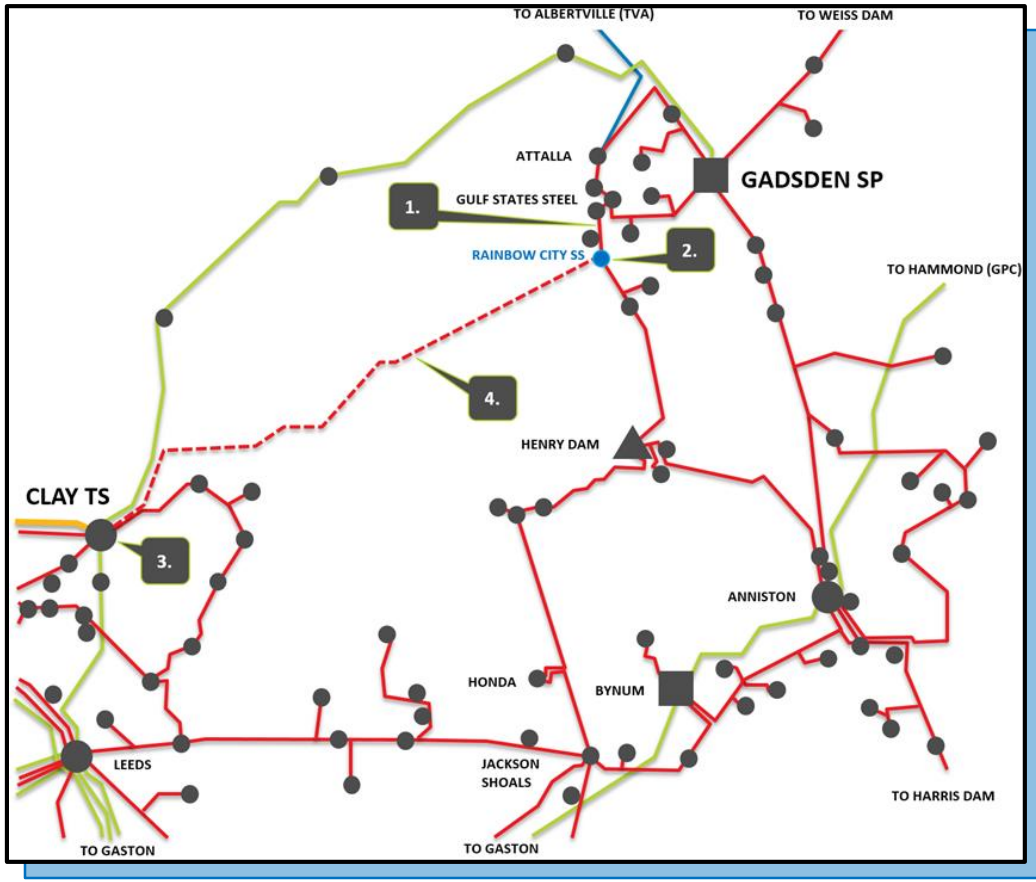
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 2W

- **2019**

EASTERN AL AREA 115 KV PROJECT

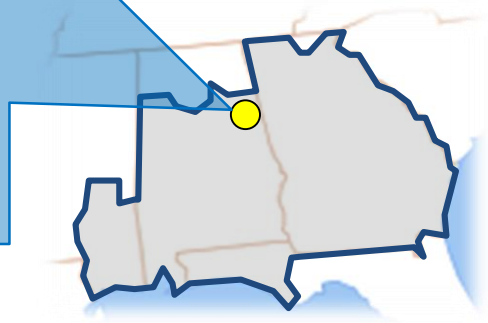


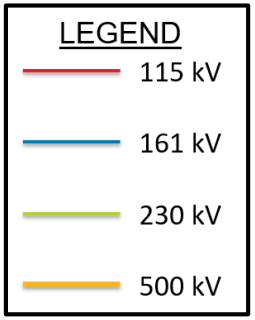
PROJECT DESCRIPTION:

1. Reconductor approximately 5.3 miles of 115 kV transmission line between Gulf States Steel and Rainbow City SS with 795 ACSS at 200°C.
2. Install new 115 kV switching station around Rainbow City.
3. Install new 115kV terminal at Clay TS and upgrade the existing 230/115 kV transformer at Clay TS to 477 MVA.
4. Construct approximately 34 miles of 115 kV transmission line between Clay TS and the new Rainbow City SS with 795 ACSS at 200°C

SUPPORTING STATEMENT:

This project eliminates high loadings on several transmission facilities under various contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.





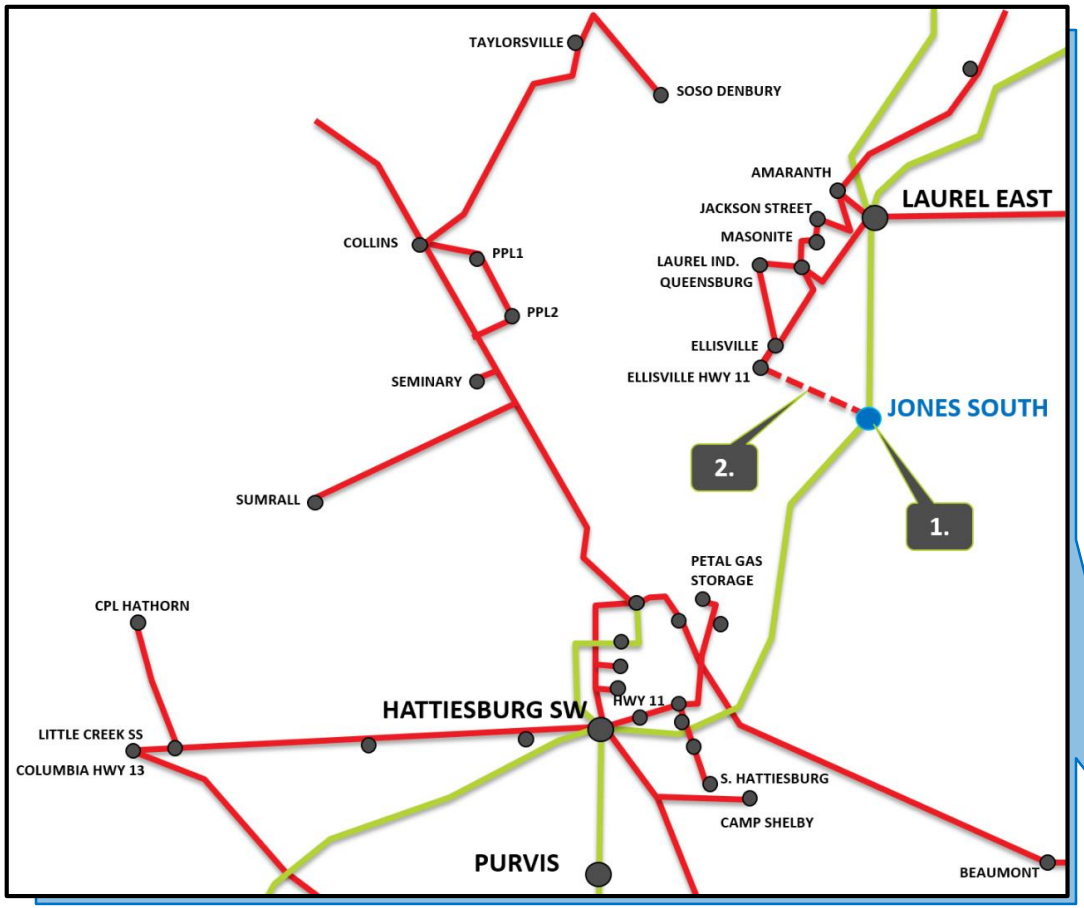
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 3W

- **2019**

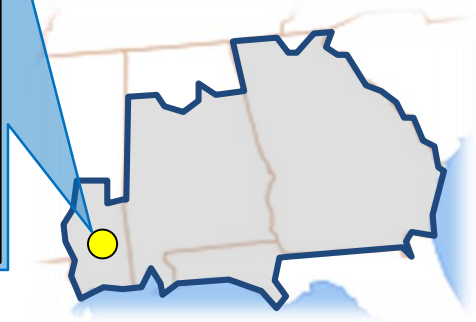
JONES SOUTH 230/115 kV SUBSTATION PROJECT

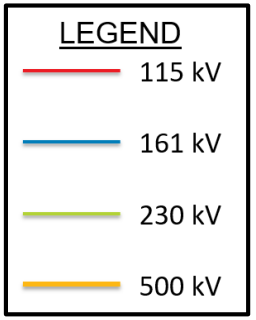


PROJECT DESCRIPTION:

1. Construct a new 230/115 kV substation on the Laurel East to Hattiesburg Southwest 230 kV line.
2. Construct a new 10 mile 1033 ACSR 115 kV line from Ellisville, MS to the new substation.

SUPPORTING STATEMENT:
Provides additional operational and maintenance flexibility which then increases reliability.





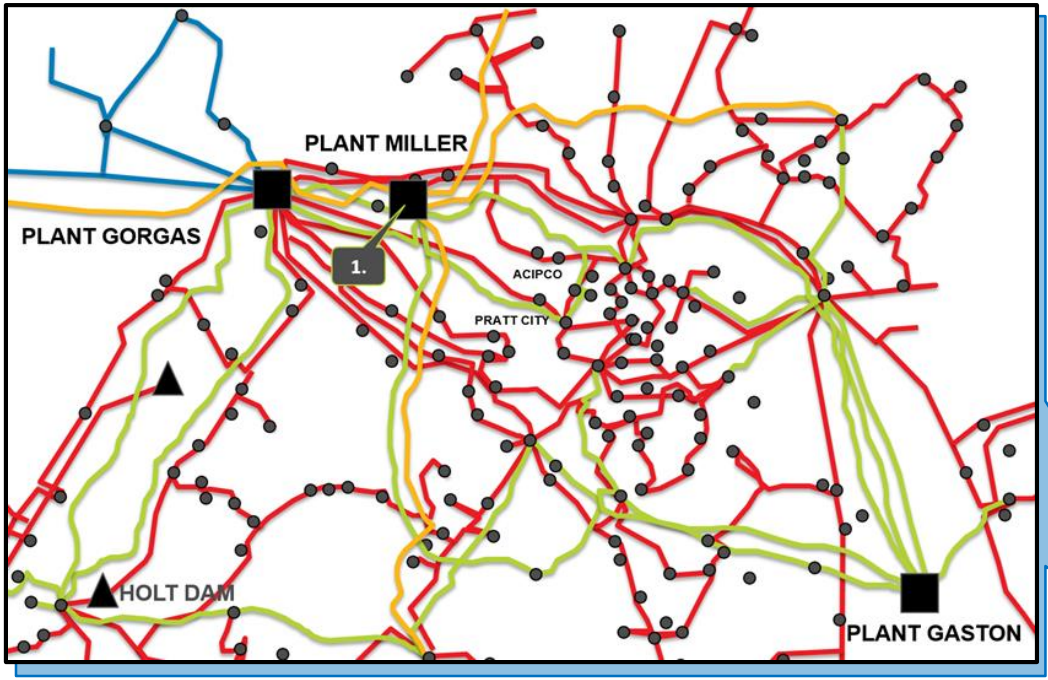
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 4W

- **2019**

MILLER UNIT 4 RELOCATION PROJECT

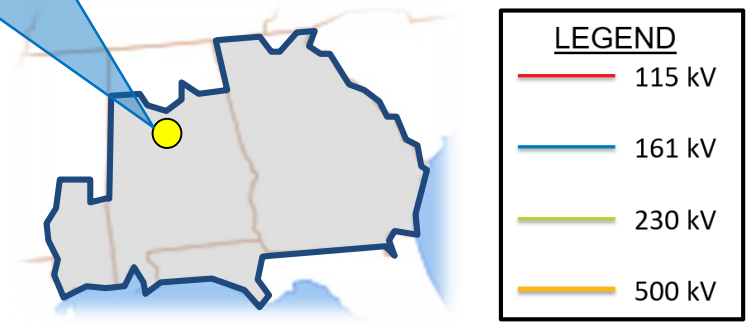


PROJECT DESCRIPTION:

1. Move Miller generating unit connection from the 500 kV system to the 230 kV system.

SUPPORTING STATEMENT:

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



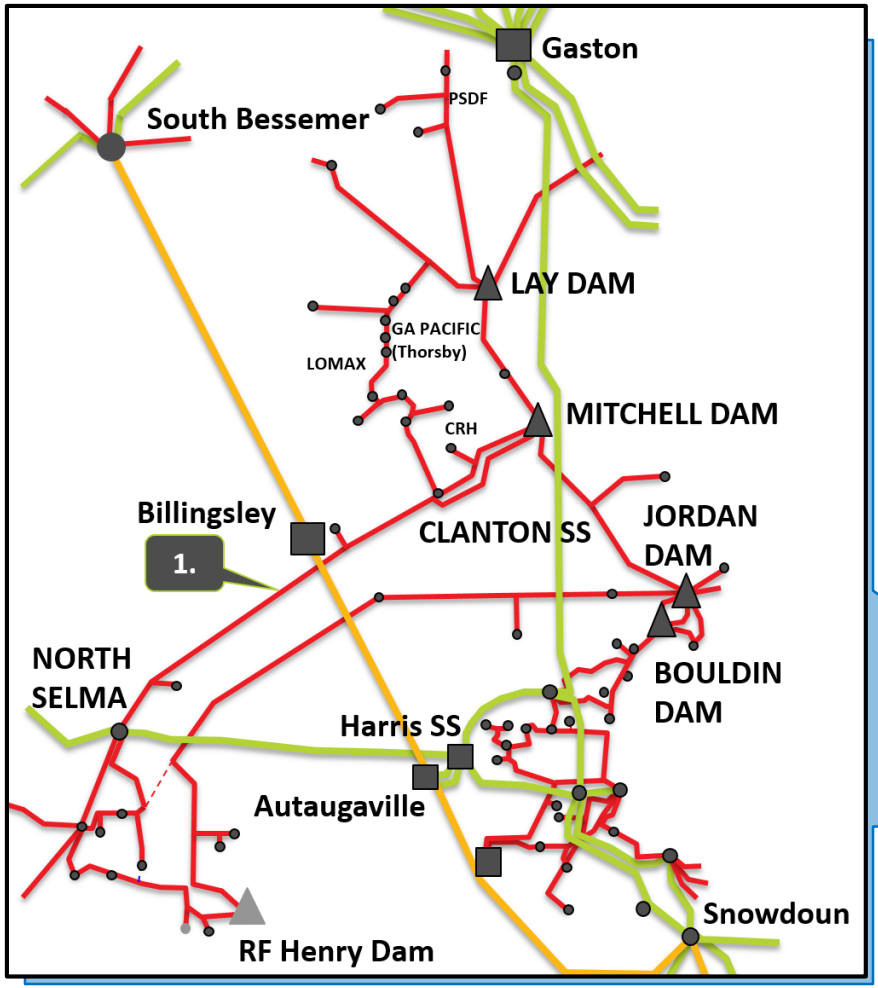
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 5W

- **2019**

NORTH SELMA – CLANTON 115 KV T.L.

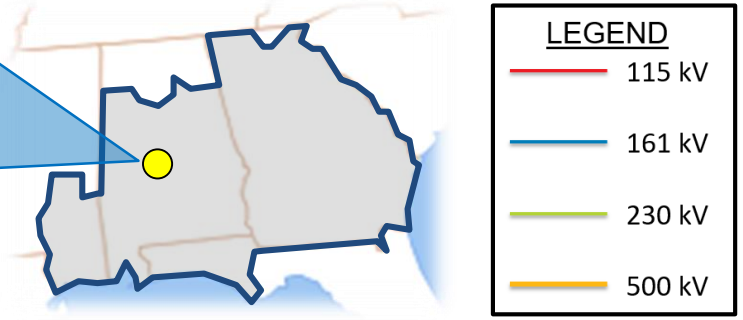


PROJECT DESCRIPTION:

1. Rebuild approximately 28.0 miles of 115 kV line between Clanton SS and North Selma with 795 ACSS at 200˚C.

SUPPORTING STATEMENT:

The North Selma to Clanton SS 115 kV transmission line overloads under contingency.



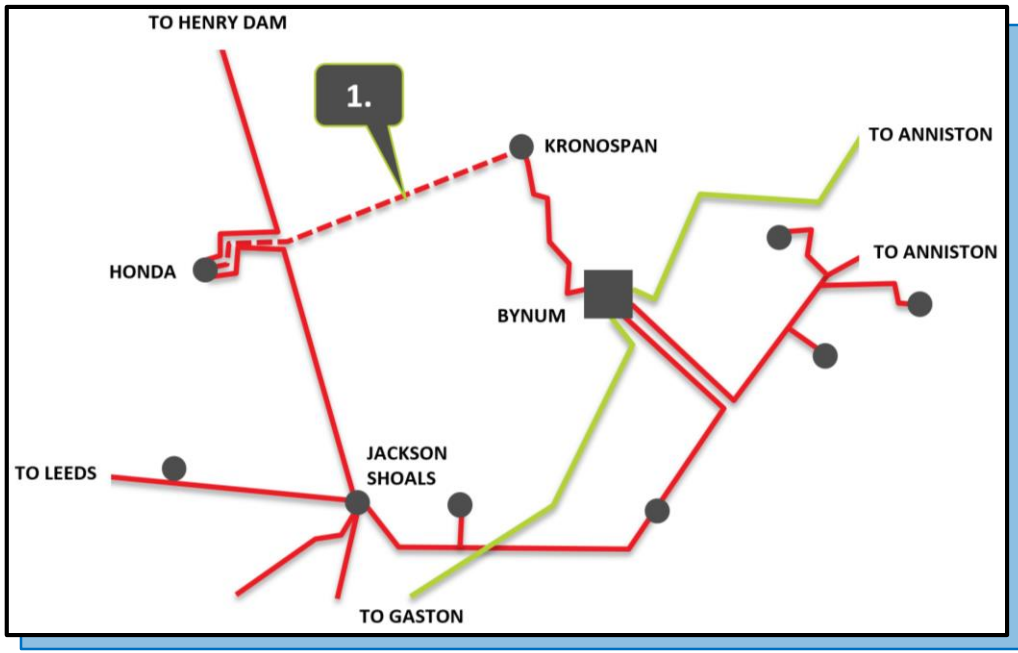
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 6W

- **2019**

HONDA – KRONOSPAN 115 kV T.L.

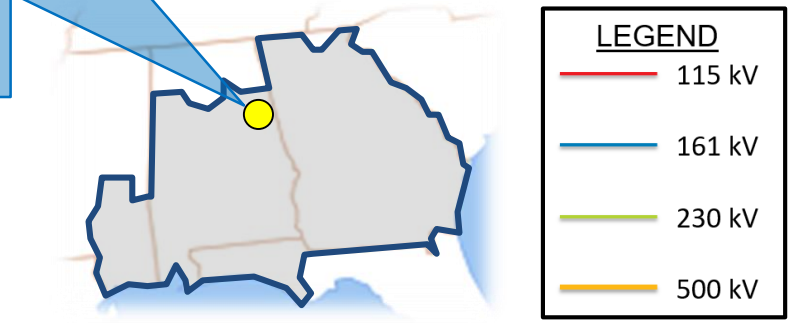


PROJECT DESCRIPTION:

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.



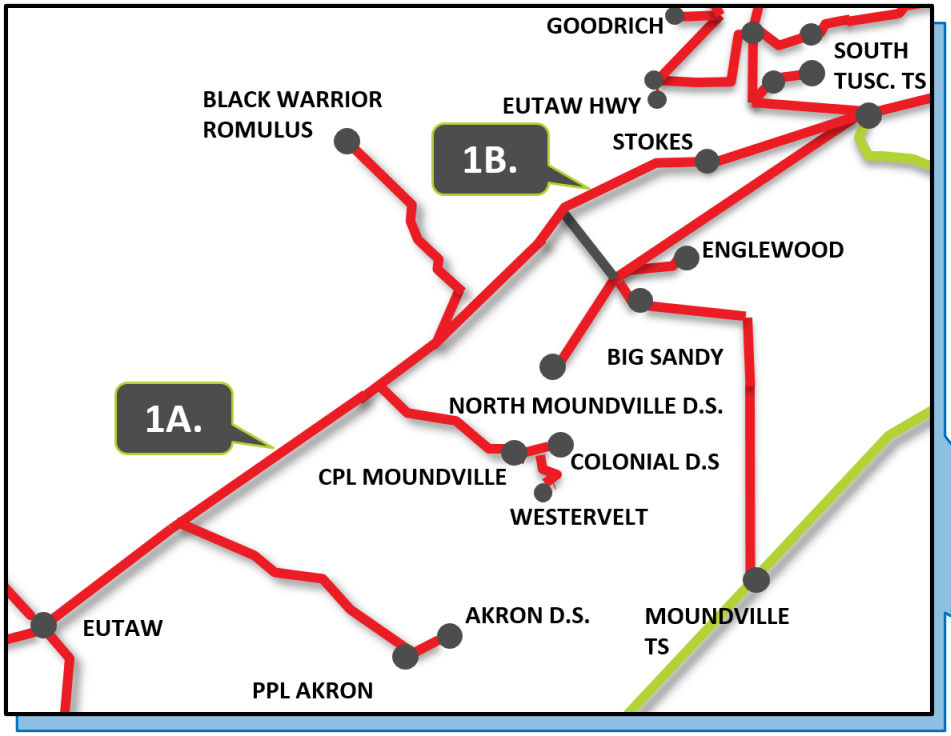
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 7W

- **2020**

EUTAW – SOUTH TUSCALOOSA 115 KV T.L.

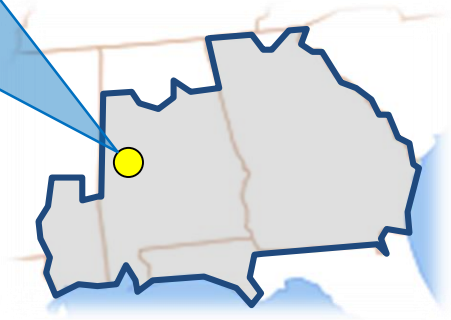


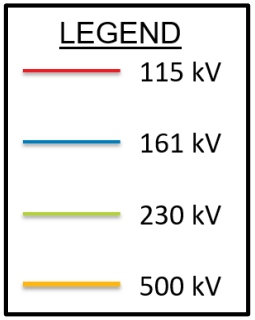
PROJECT DESCRIPTION:

1. Rebuild approximately 30.0 miles of 397 ACSR 115 kV transmission line from Eutaw to South Tuscaloosa TS with 1033 ACSR at 100°C.

SUPPORTING STATEMENT:

The Eutaw to South Tuscaloosa 115 kV transmission line overloads under contingency.





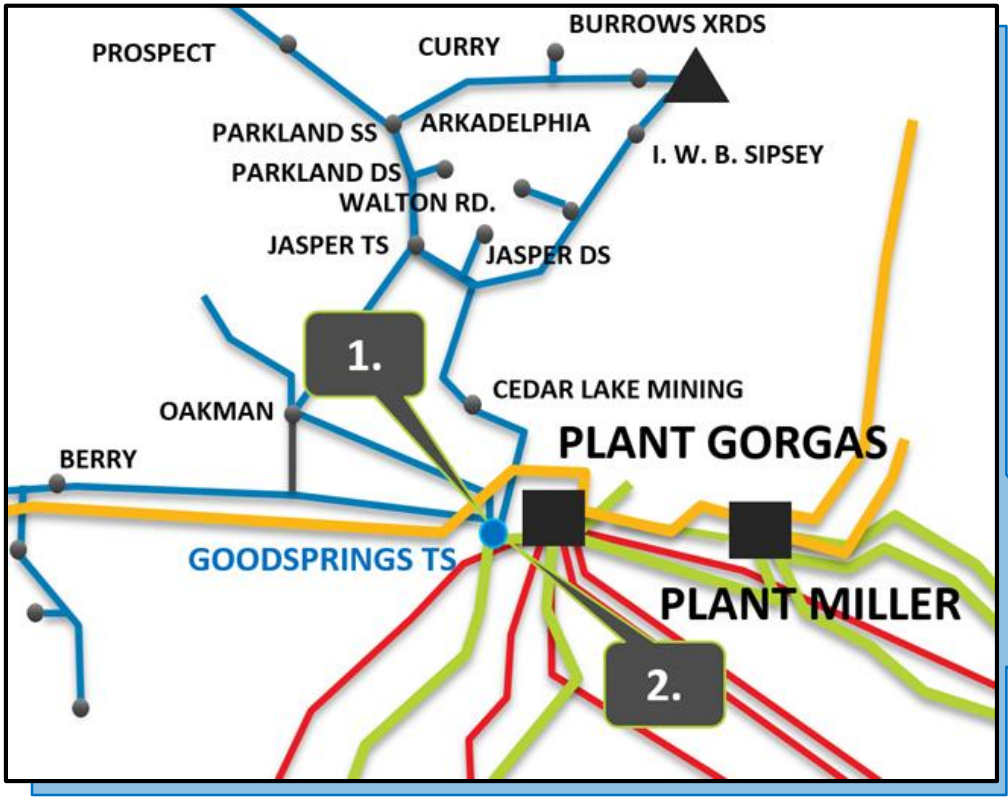
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 8W

- **2020**

GOODSPRINGS 230/161 KV T.S.

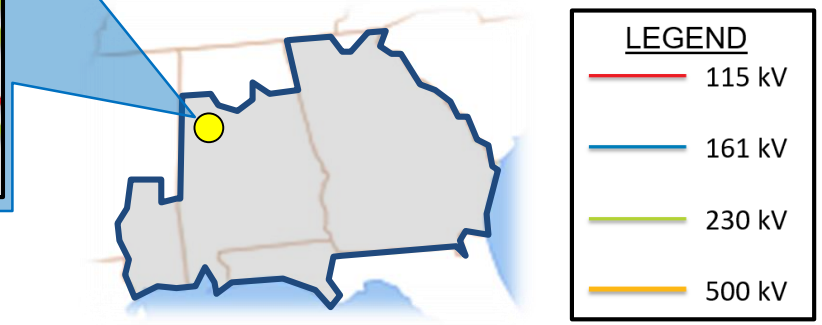


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

The Gorgas 230/115 kV transformer overloads under contingency.



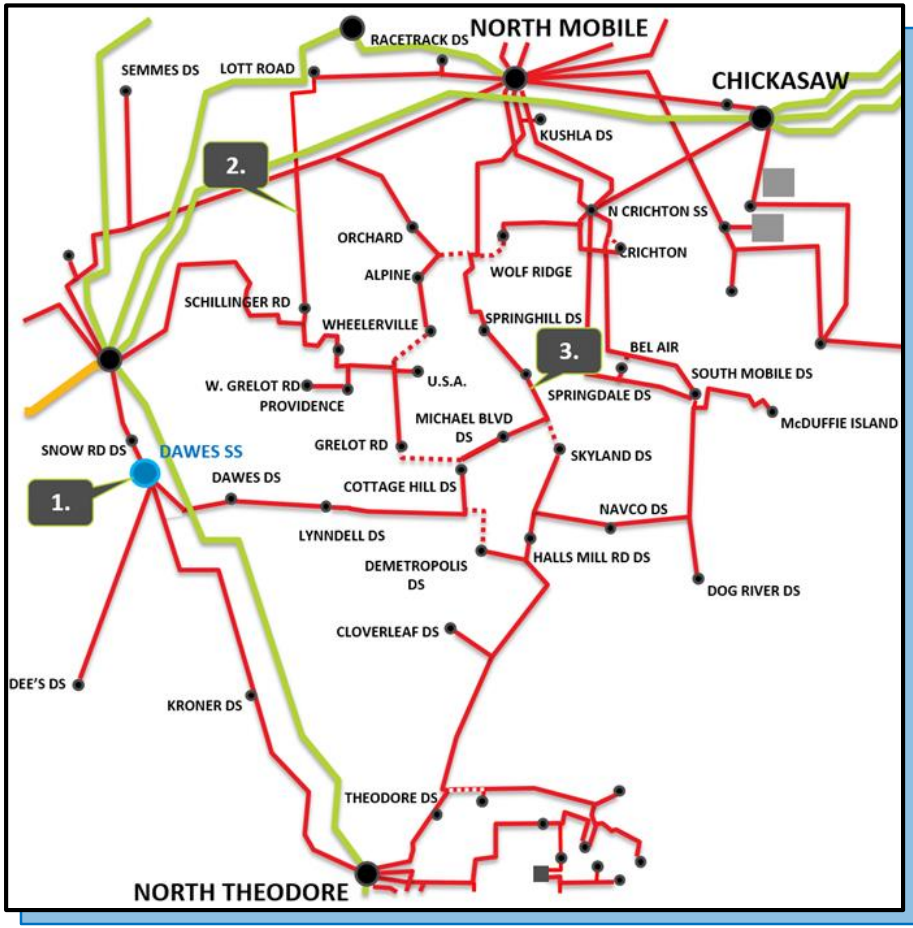
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 9W

- **2020**

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.

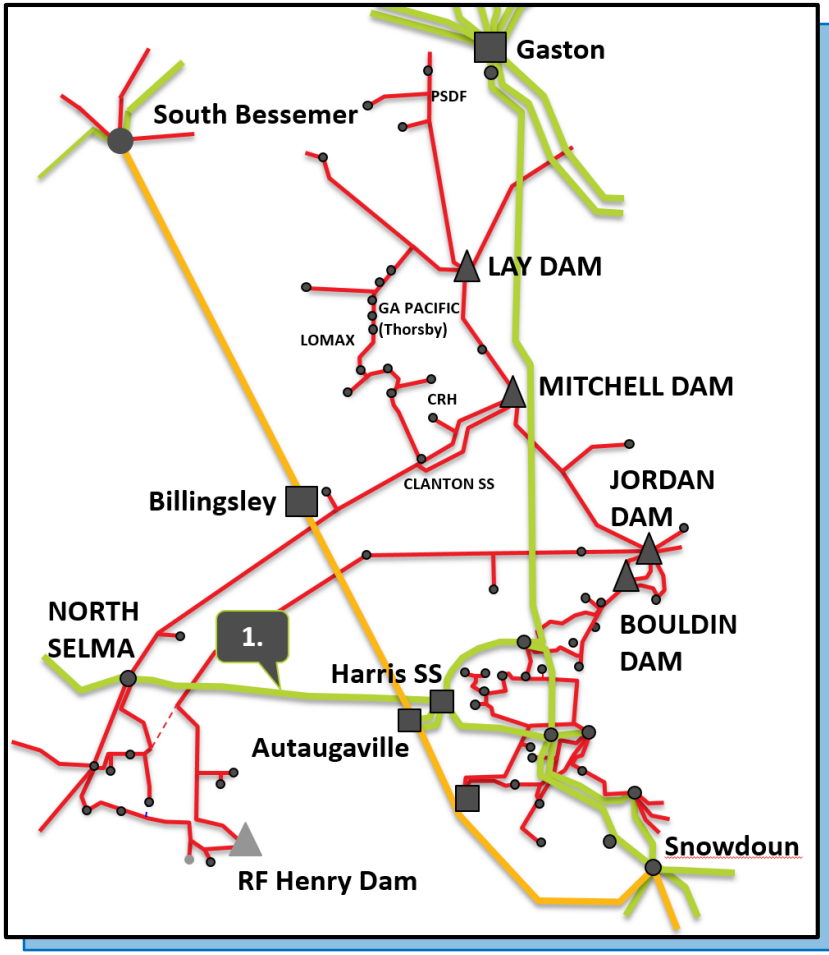
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 10W

- **2021**

HARRIS – NORTH SLEMA 230 KV T.L.

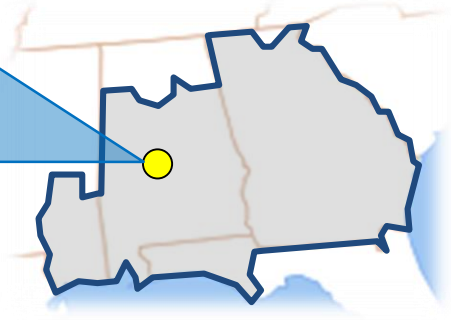


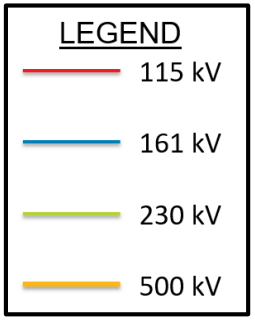
PROJECT DESCRIPTION:

1. Rebuild approximately 26 miles of the Harris SS – North Selma 230 kV transmission line with 1033 ACCR at 200°C.

SUPPORTING STATEMENT:

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





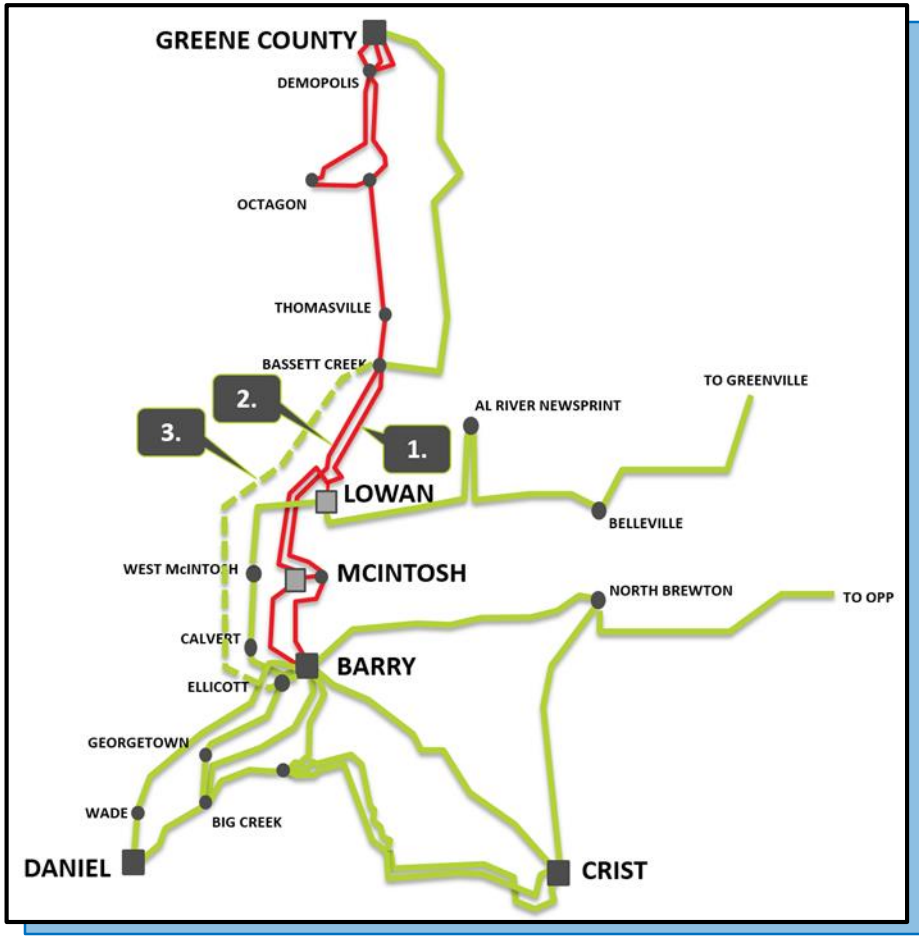
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 11W

- **2022**

BASSETT CREEK CORRIDOR PROJECTS

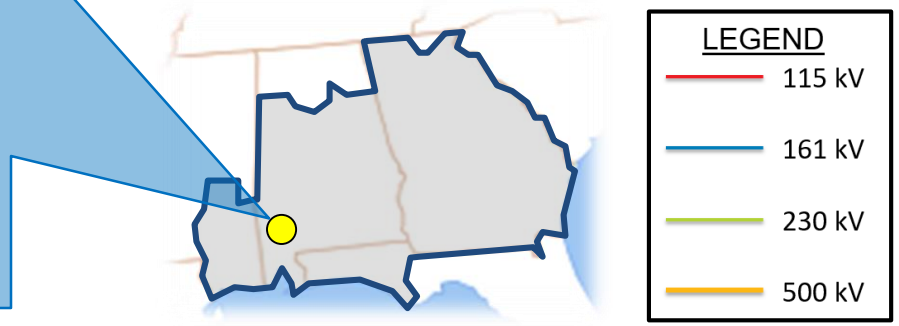


PROJECT DESCRIPTION:

1. Reconductor approximately 24.0 miles along the Bassett Creek – Lowman 115 kV transmission line with 1033.5 ACSS at 200°C.
2. Reconductor approximately 46.0 miles along the Bassett Creek – McIntosh 115 kV transmission line with 1033.5 ACSS at 200°C.
3. Construct approximately 70.0 miles of 1351 ACSS 230 kV transmission line at 200°C from Bassett Creek to Ellicott.

SUPPORTING STATEMENT:

These projects provide additional operational and maintenance flexibility which then increases reliability.



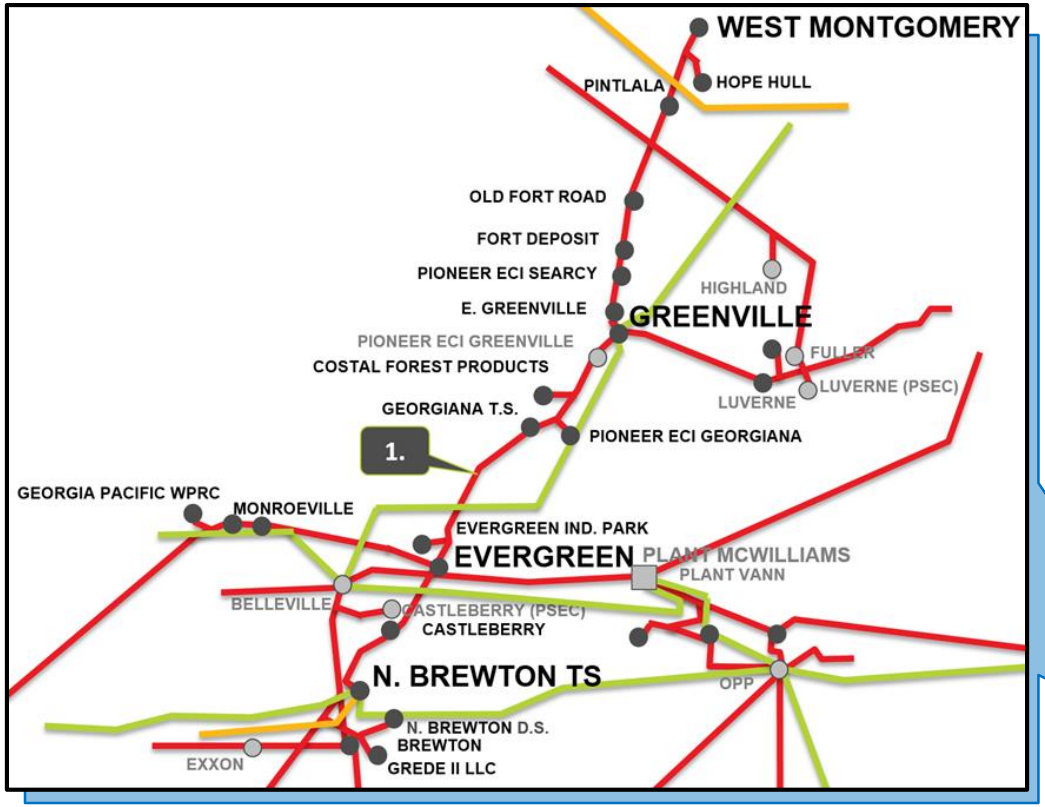
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 12W

- **2023**

CENTRAL ALABAMA AREA 115 kV PROJECT

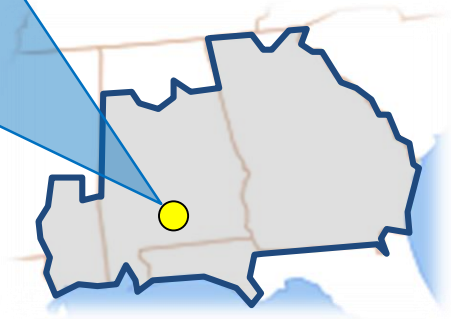


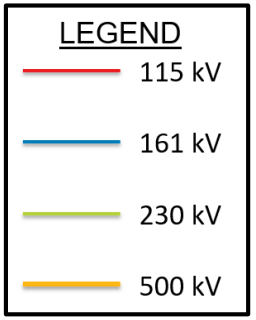
PROJECT DESCRIPTION:

1. Rebuild approximately 90.0 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.





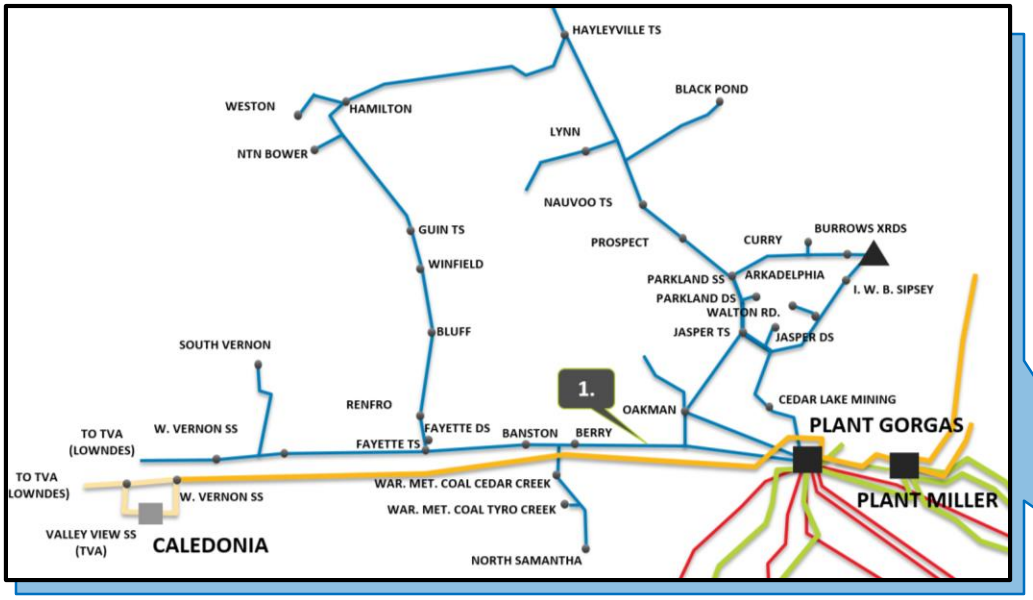
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 13W

- **2023**

FAYETTE – GORGAS 161 KV T.L.

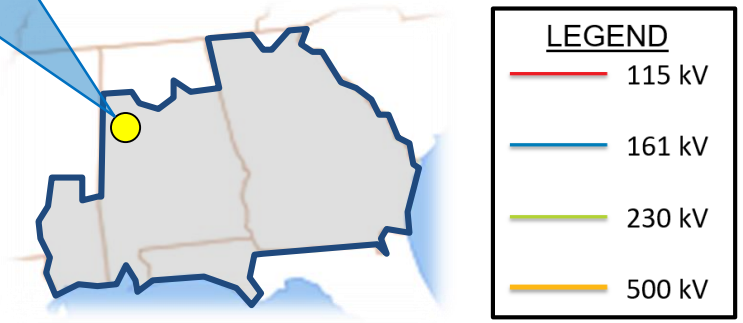


PROJECT DESCRIPTION:

1. Rebuild approximately 36.7 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.



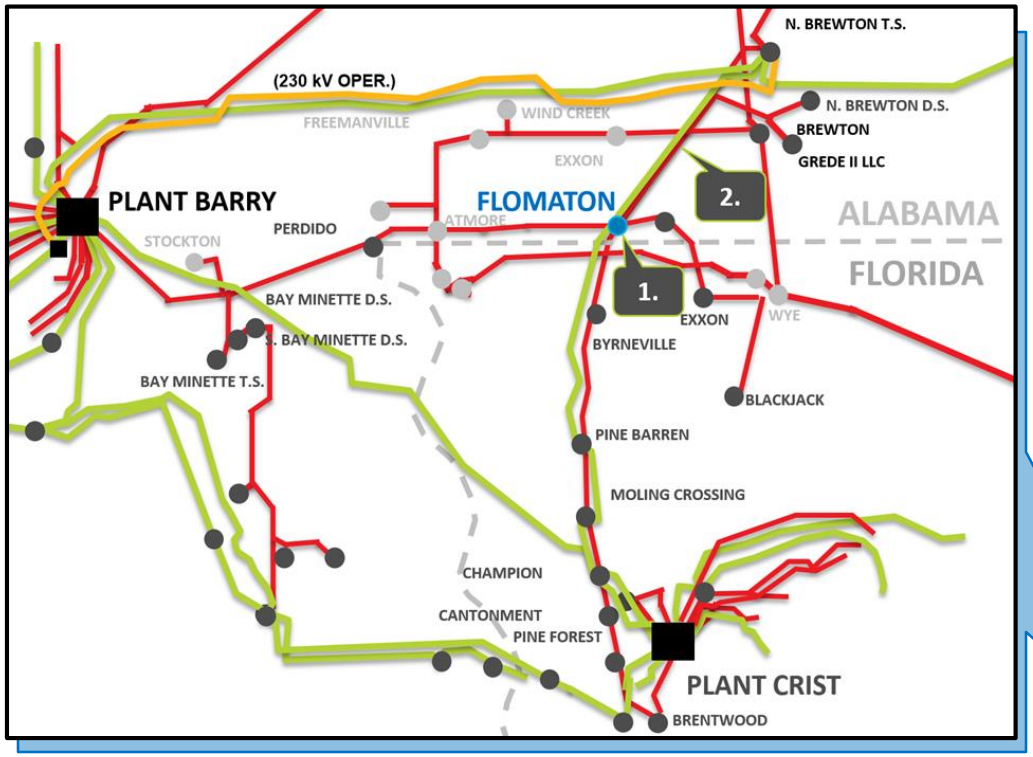
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 14W

- **2023**

FLOMATON 230/115 KV SUBSTATION

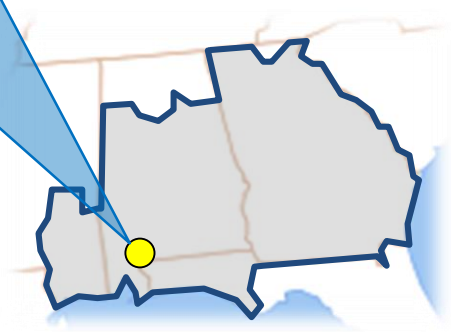


PROJECT DESCRIPTION:

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.



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

SOUTHERN (EAST) Balancing Authority Area

Preliminary Transmission Expansion Plan

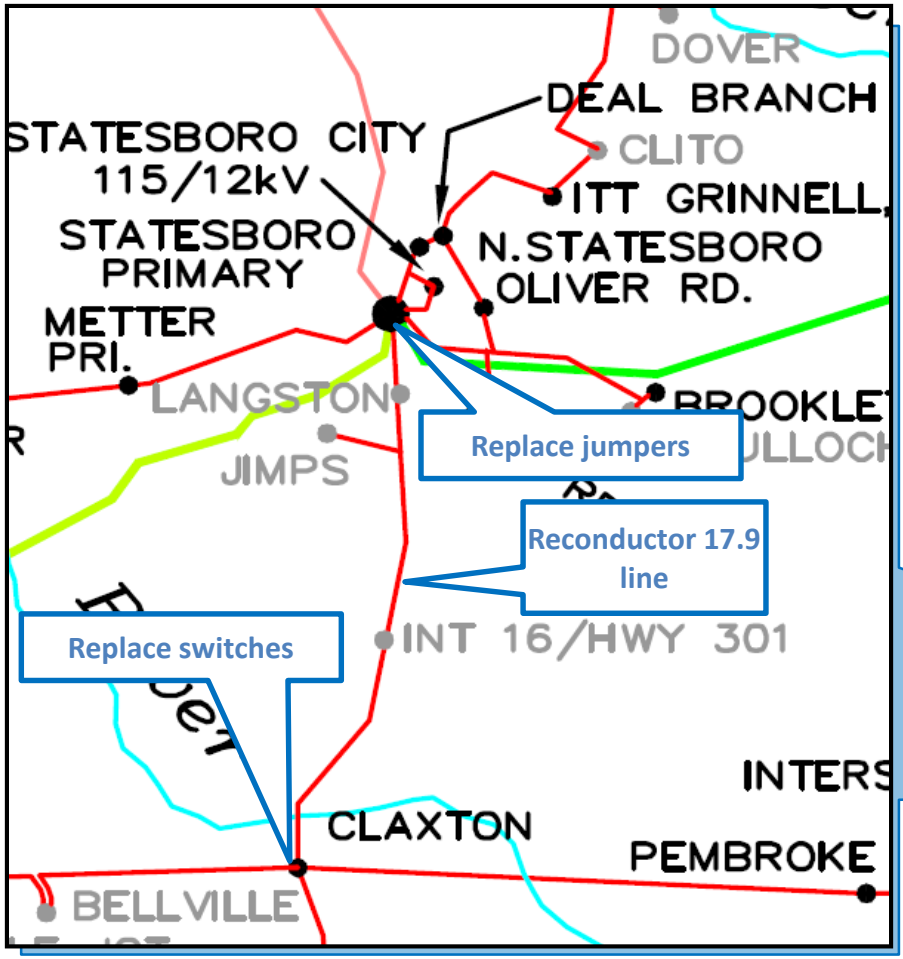
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

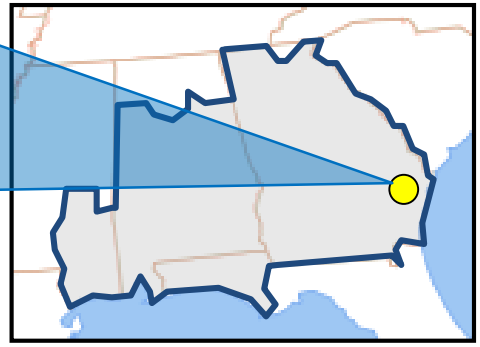
SOUTHERN – 1E

- **2019**

CLAXTON – STATESBORO PRIMARY 115 KV T.L.



- **DESCRIPTION:**
  - Reconductor approximately 17.9 miles, along the Claxton – Statesboro Primary 115 kV transmission line with 1351 ACSR at 100°C. Replace 600A switches at Claxton with 2000A switches and replace 500 CU jumpers at Statesboro Primary with 1590 AAC jumpers.
- **SUPPORTING STATEMENT:**
  - The Claxton – Statesboro 115 kV transmission line overloads under contingency.



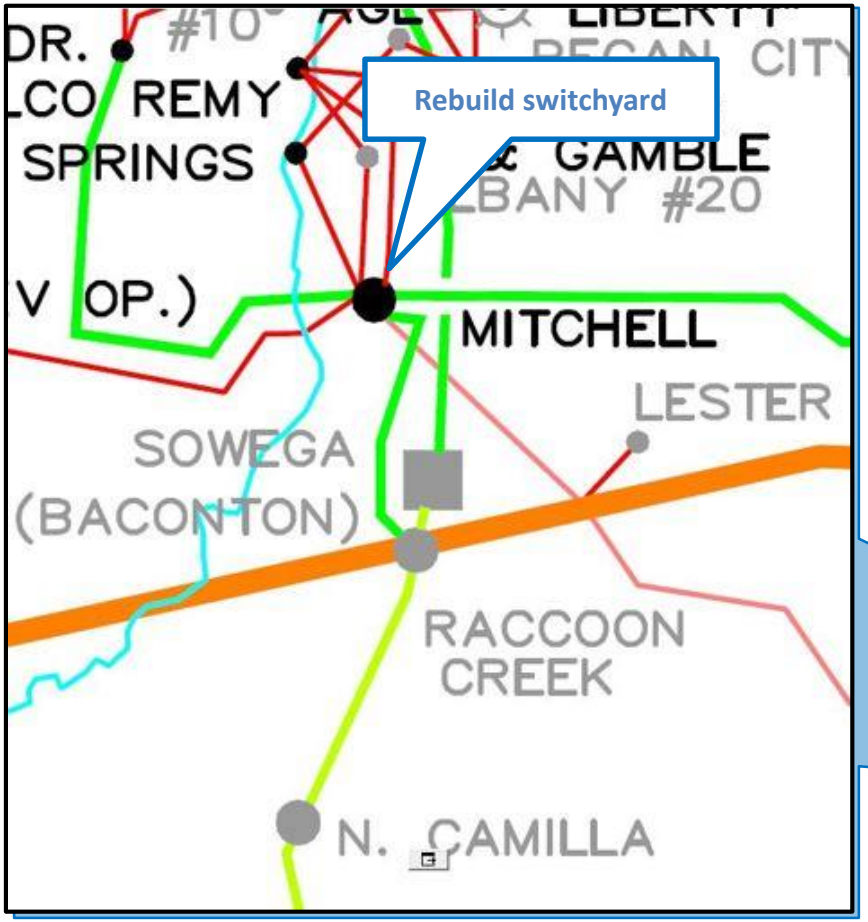
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

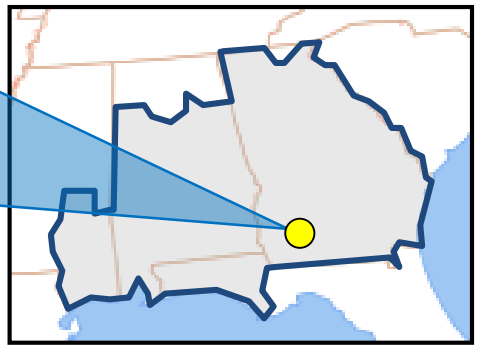
SOUTHERN – 2E

- **2019**

MITCHELL 230 KV REBUILD



- **DESCRIPTION:**
  - Rebuild of the Plant Mitchell switchyard to allow the spare transformer and the new transformer to both be in-service.
- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in the Albany area under contingency.

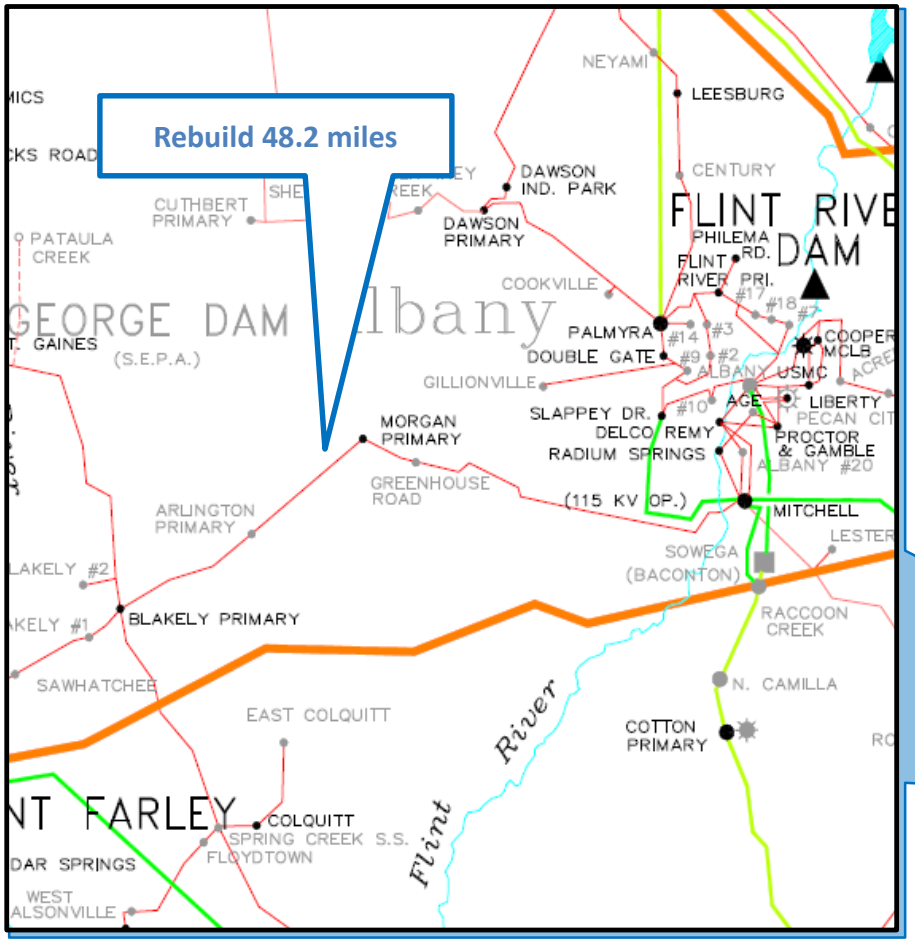


SOUTHERN Balancing Authority Area

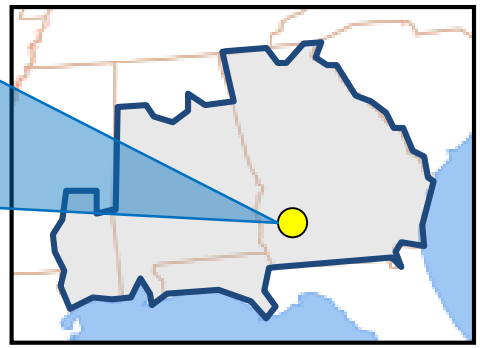
SOUTHERN – 3E

- **2020**

BLAKELY - MITCHELL 115 KV T.L.



- **DESCRIPTION:**
  - Rebuild 48.2 miles of 50°C 266 ACSR with 100°C 795 ACSR from Blakely Primary to Mitchell.
- **SUPPORTING STATEMENT:**
  - The Blakely Primary – Mitchell 115 kV transmission line overloads under contingency.

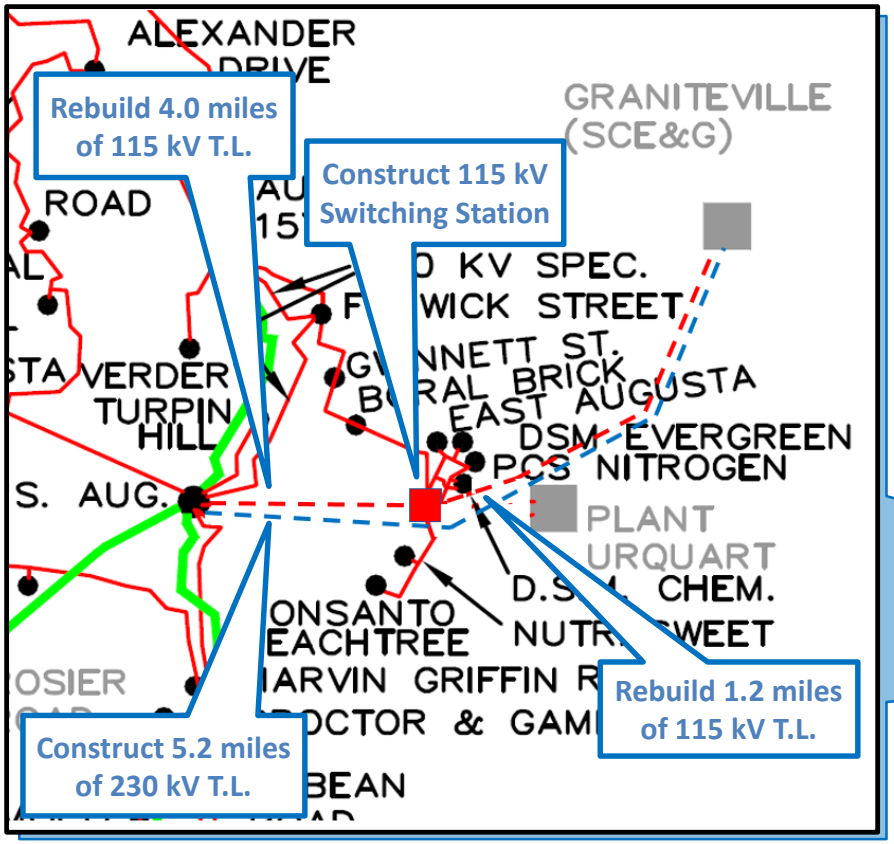


SOUTHERN Balancing Authority Area

SOUTHERN – 4E

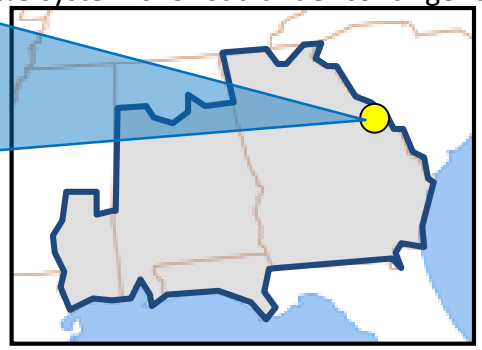
- **2020**

GRANITEVILLE - SOUTH AUGUSTA 115 & 230 KV T.L.



- **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) – Vogtle 230 kV tie – line and multiple other transmission facilities on the SCE&G system overload under contingency.



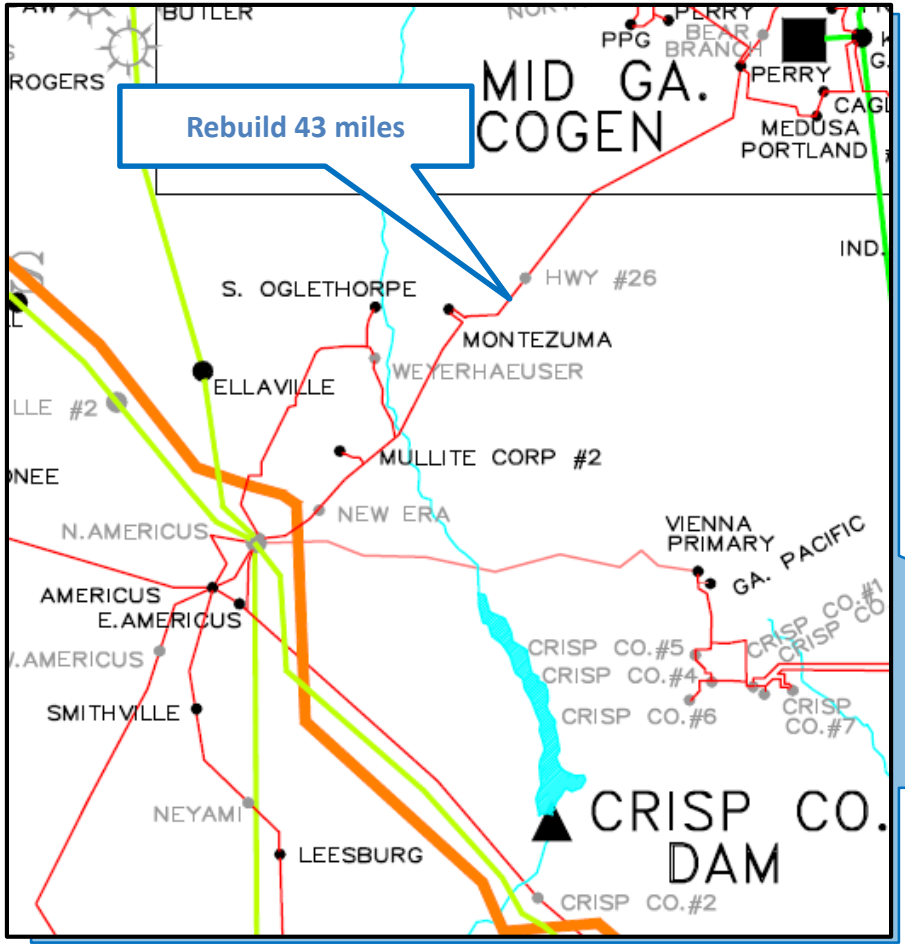
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 5E

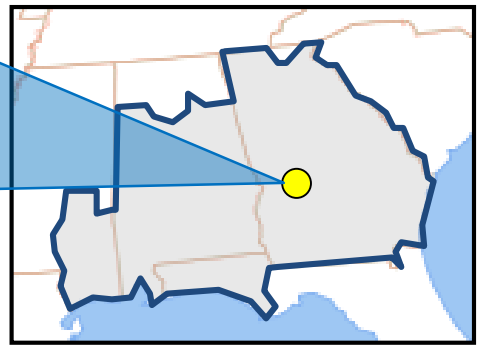
- **2020**

NORTH AMERICUS – PERRY 115 KV T.L.



- **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 – Perry 115 kV transmission line overloads under contingency.



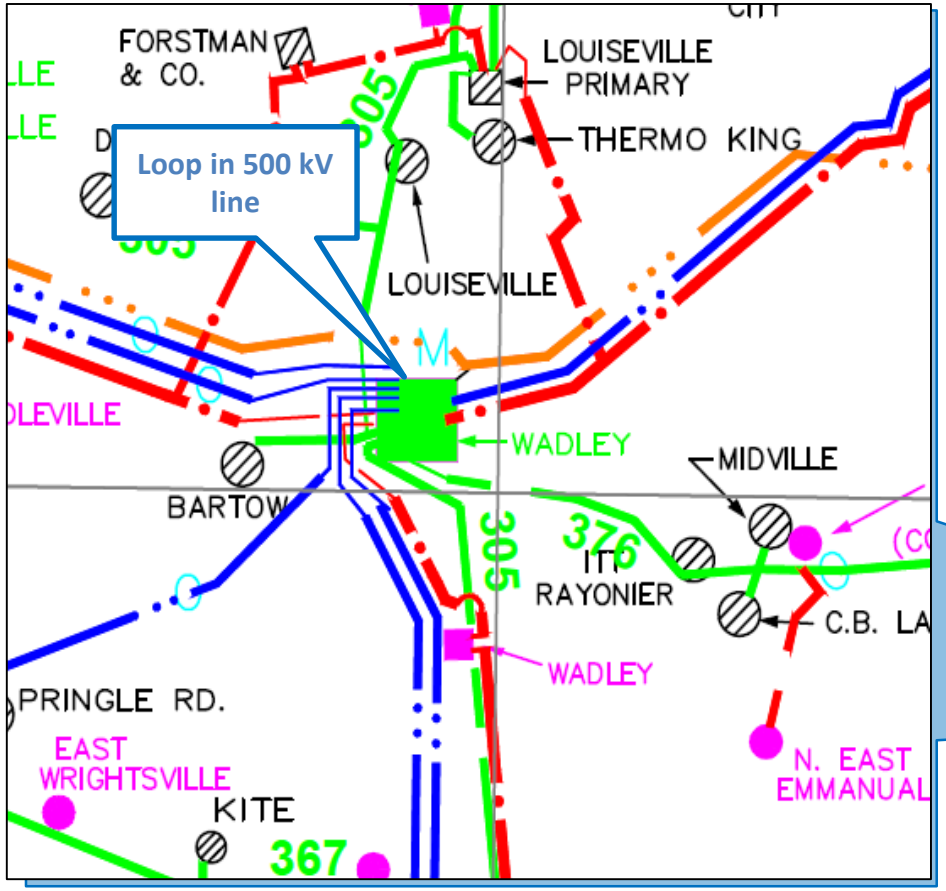
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

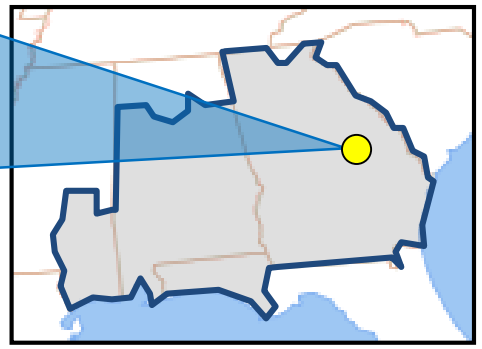
SOUTHERN – 6E

- **2021**

WADLEY PRIMARY 500/230 KV PROJECT (PHASE 2)



- **DESCRIPTION:**
  - GPC SCOPE: Loop in the Vogtle - 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.



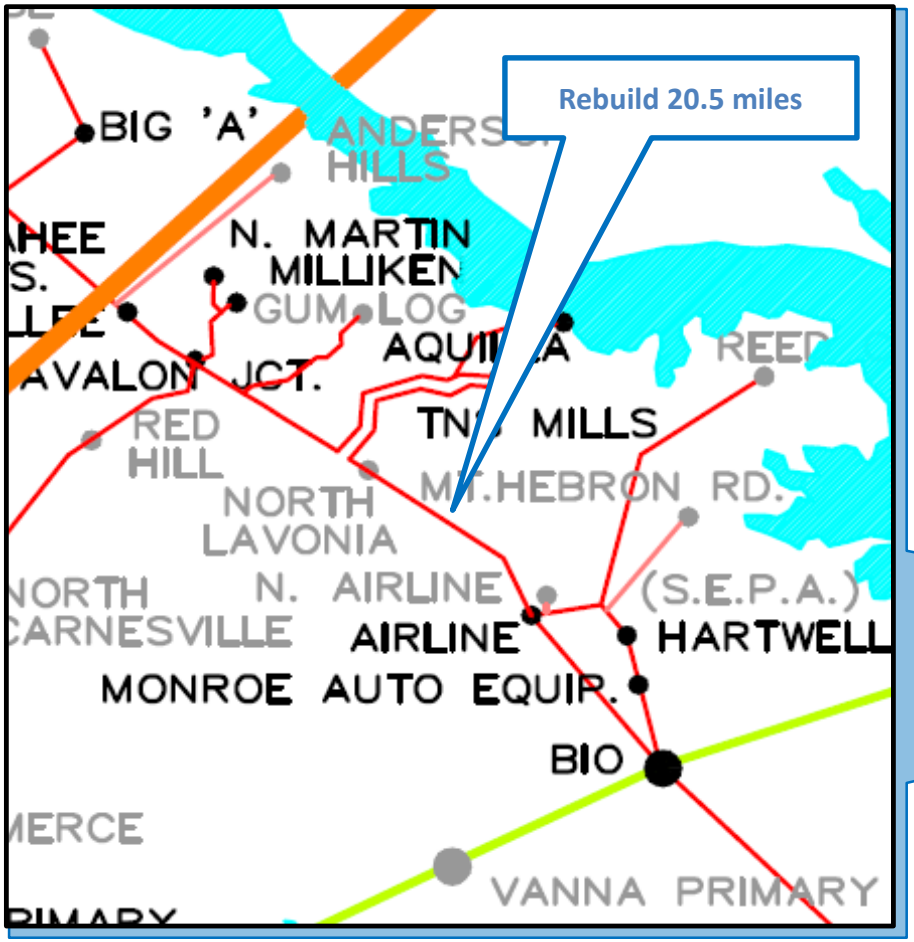
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 7E

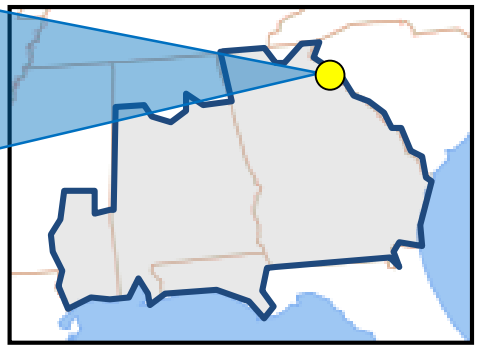
- **2022**

AVALON JUNCTION – BIO 115 KV T.L.



- **DESCRIPTION:**
  - Rebuild approximately 20.5 miles of the Avalon Junction - 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 – Bio 115 kV transmission line overloads under contingency.



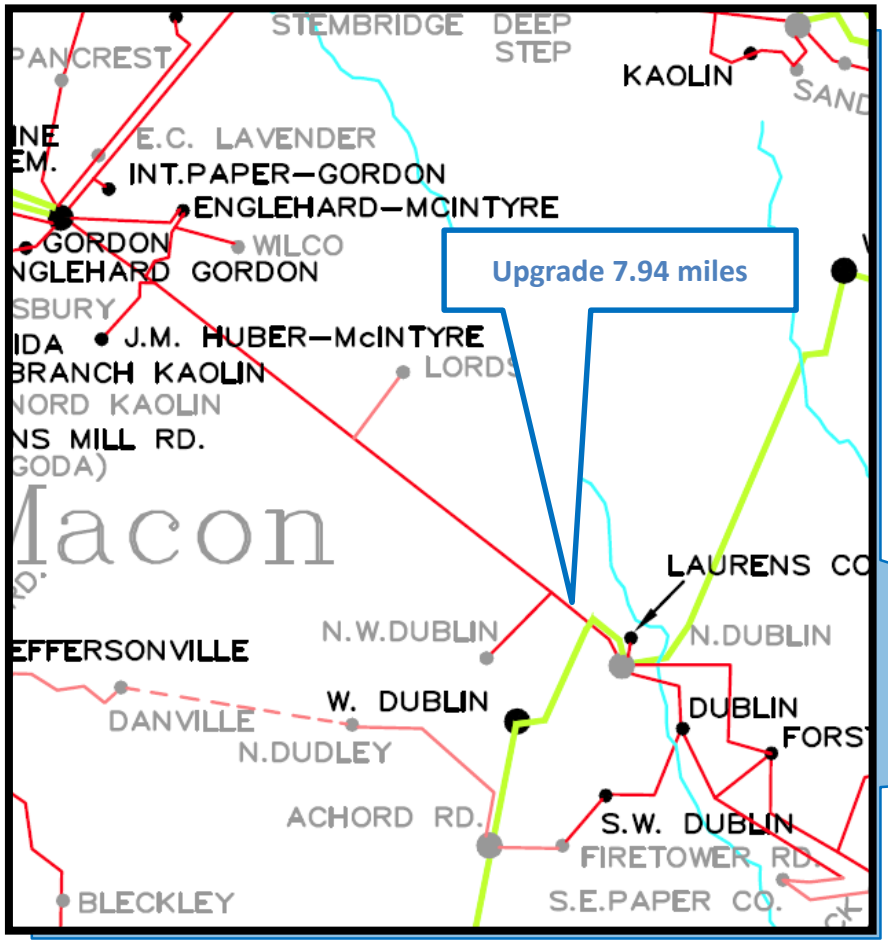
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 8E

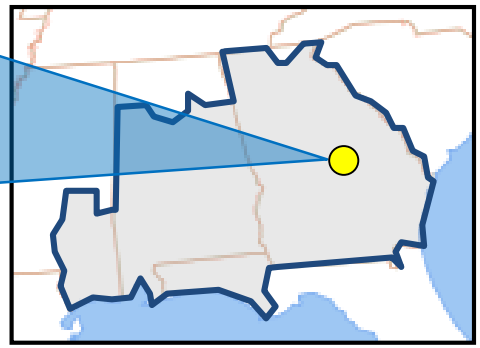
- **2022**

GORDON - N. DUBLIN (N. DUBLIN - EVERGRN CH) 115 KV UPGRADE



- **DESCRIPTION:**
  - Upgrade 7.94 miles of 4/0 Cu, 115 kV transmission line to operate at 75°C from N. Dublin - NW Dublin - Evergreen Church on the Gordon - N. Dublin 115 kV transmission line.

- **SUPPORTING STATEMENT:**
  - The N. Dublin - Evergreen Church 115 kV transmission line overloads under contingency.



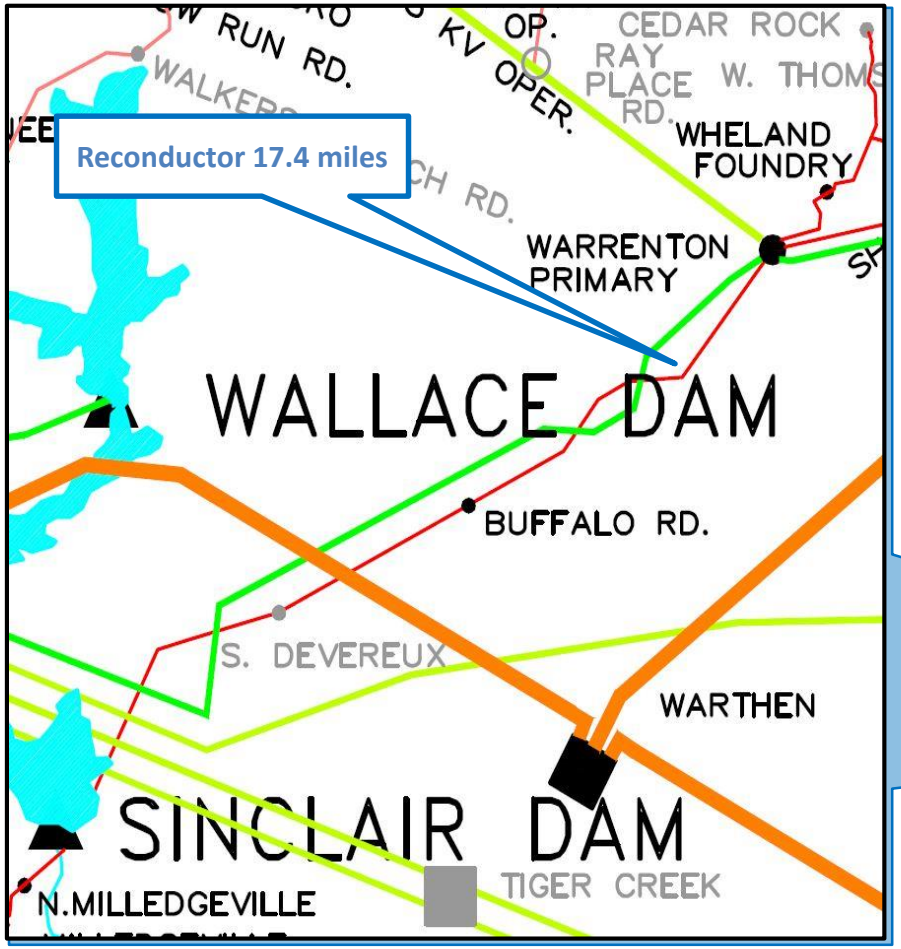
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

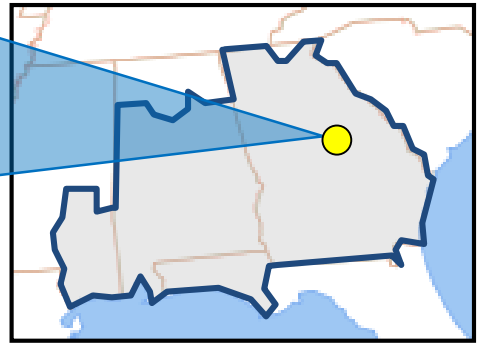
SOUTHERN – 9E

- **2024**

SINCLAIR DAM – WARRENTON PRIMARY 115 KV T.L.



- **DESCRIPTION:**
  - Reconductor approximately 17.4 miles of 115 kV transmission line from Buffalo Road – Warrenton along the Sinclair Dam – Warrenton Primary 115 kV transmission line with 795 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - The Sinclair Dam – Warrenton Primary 115 kV transmission line overloads under contingency.

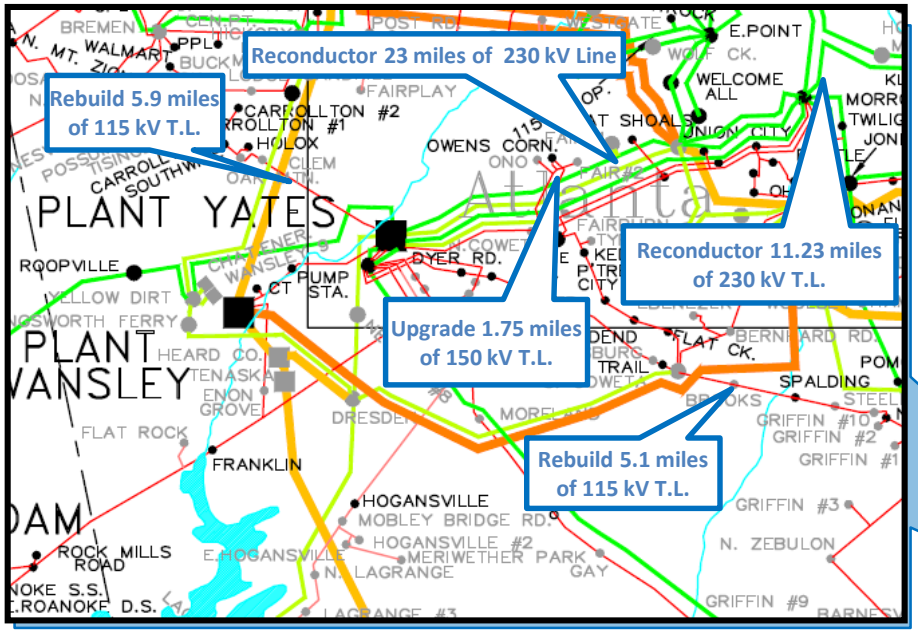


SOUTHERN Balancing Authority Area

SOUTHERN – 10E

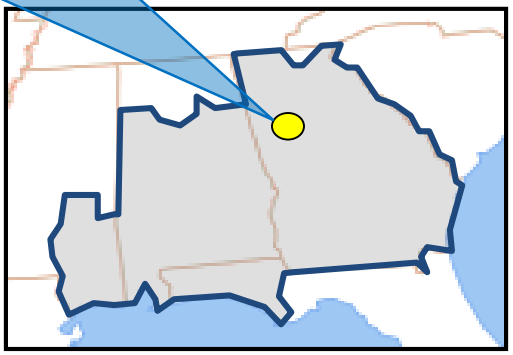
- **2025**

YATES UNIT 8 NETWORK IMPROVEMENTS



- **DESCRIPTION:**
  - Reconductor First Avenue - Fuller Road (APC) 115 KV (795 ACSR for 1 mile), Union City – Yates (White) 230 kV Line (23 miles with 200°C 1033 ACSS), Klondike - Morrow 230kV Line (11.23 miles of 1351 ACSR)
  - Rebuild Possum Branch – Yates Common kV Line (5.9 miles with 100°C 1351 ACSR, South Coweta – South Griffin 115 kV Line (5.1 miles of 100C 1033 ACSR)
  - Upgrade Clarkston - Scottdale 115kV Line (2.7 miles to 160C rating),Line Creek - Fairburn 2 115kv line (1.75 mile to 336 ACSR 100°C)

- **SUPPORTING STATEMENT:**
  - The addition of Plant Yates Unit 8 generation causes various facilities in the northwestern Georgia area to overload.



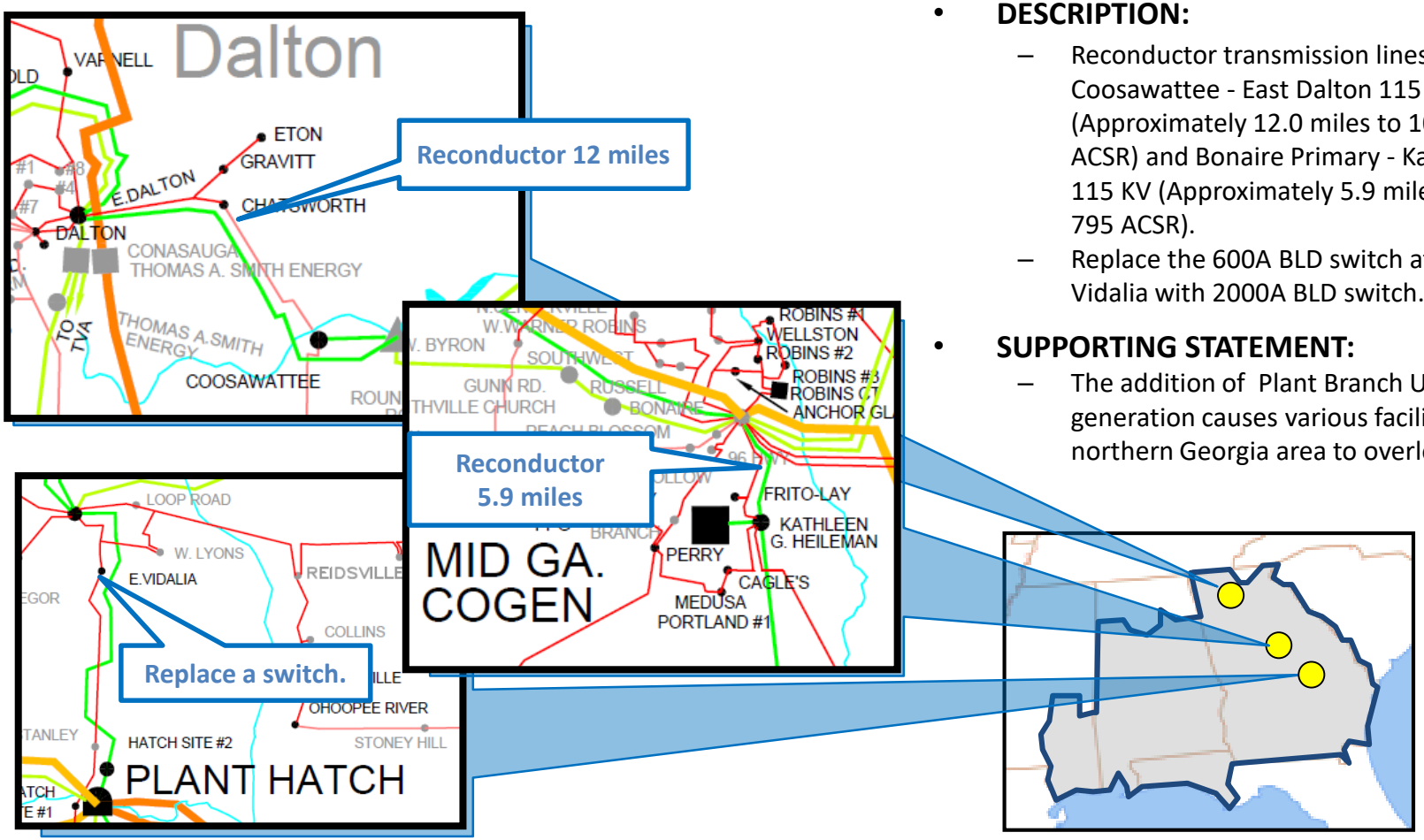
Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

SOUTHERN – 11E

- **2027**

BRANCH UNIT 5 NETWORK IMPROVEMENTS



- **DESCRIPTION:**
  - Reconductor transmission lines: Coosawattee - East Dalton 115 KV (Approximately 12.0 miles to 100°C 795 ACSR) and Bonaire Primary - Kathleen 115 KV (Approximately 5.9 miles 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.

Southeastern Regional TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

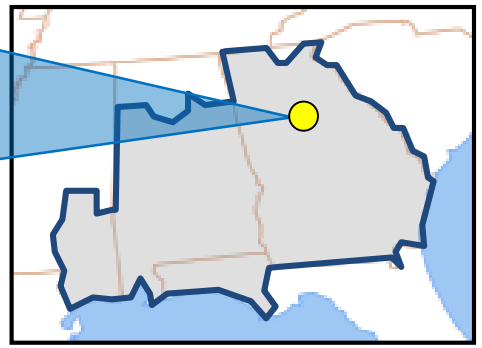
SOUTHERN – 12E

- **2027**

SOUTH HALL 500/230 KV SUBSTATION

- **DESCRIPTION:**
  - Install a second 500/230 kV, 2016 MVA transformer at the South Hall 500/230 kV substation.

- **SUPPORTING STATEMENT:**
  - The Cumming - McGrau Ford 230 kV transmission line overloads under contingency.



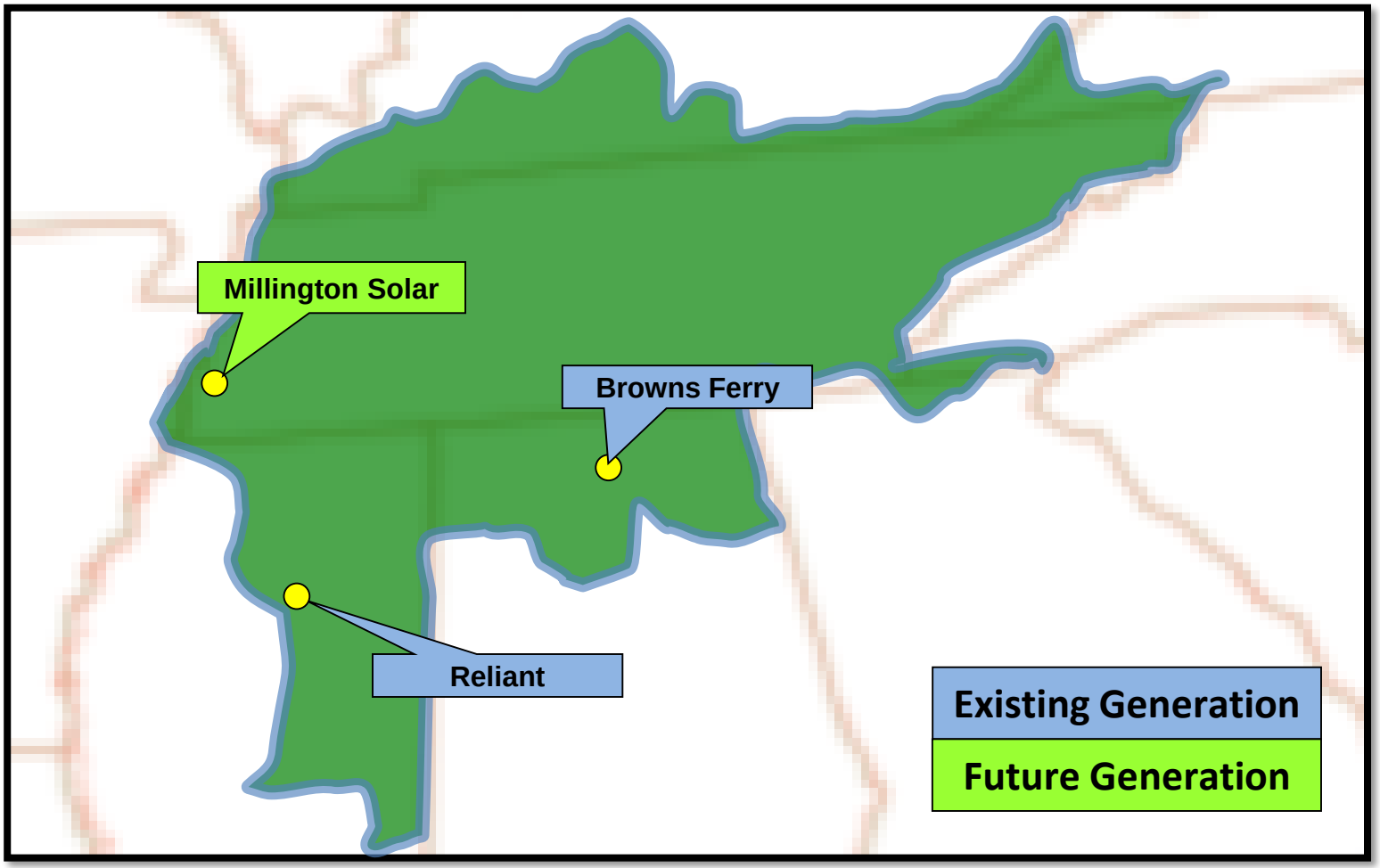
TVA Balancing Authority Area

Generation Assumptions

TVA Balancing Authority Area

TVA – Generation Assumptions

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

SITE	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BROWNS FERRY UNIT 1	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262
BROWNS FERRY UNIT 2	1266	1266	1266	1266	1266	1266	1266	1266	1266	1266
MILLINGTON SOLAR	53	53	53	53	53	53	53	53	53	53

Southeastern Regional
TRANSMISSION PLANNING

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	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
RELIANT	800	800	800	800	800	800	800	800	800	800

TVA Balancing Authority Area

Preliminary Transmission Expansion Plan

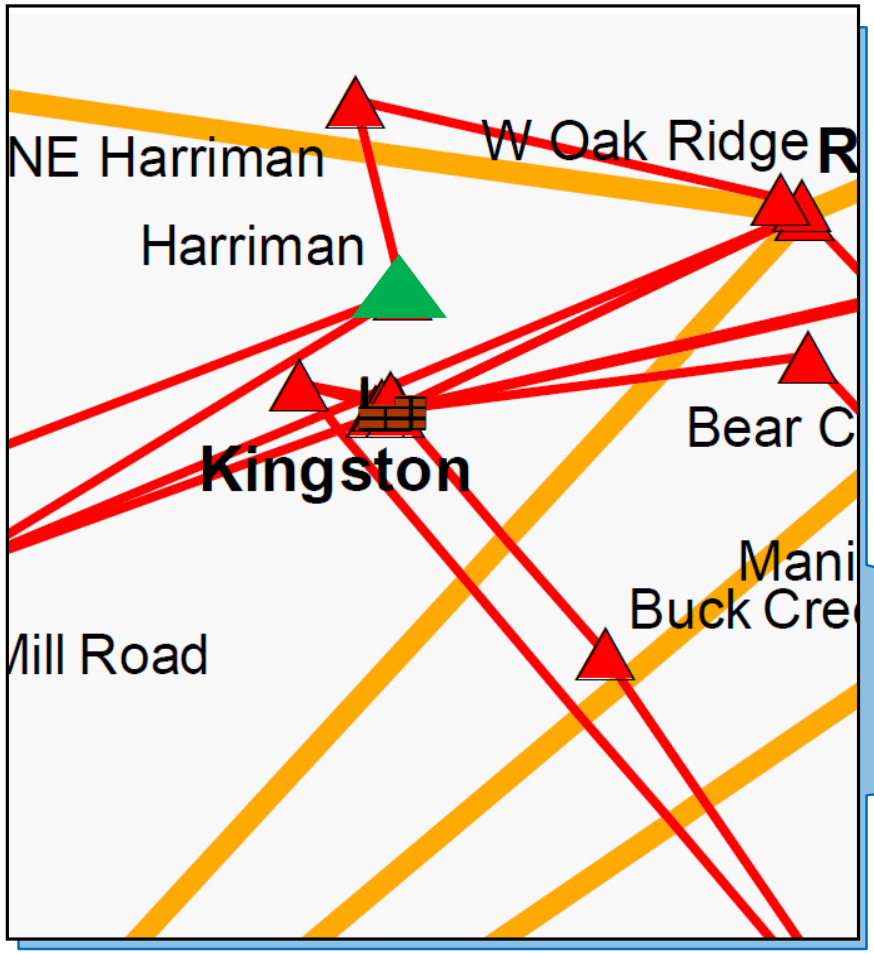
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 1

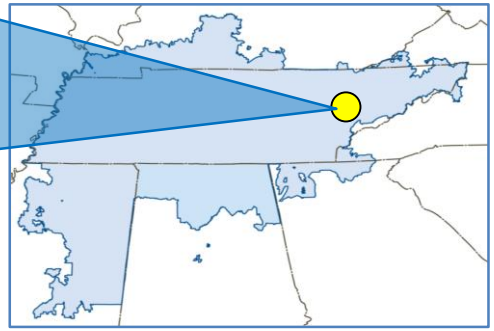
- **2019**

HARRIMAN, TN 161 KV SUBSTATION



- **DESCRIPTION:**
  - Reconfigure the Harriman, TN 161 kV substation by looping an additional 161 kV transmission line into the substation and installing 3, 161 kV breakers.

- **SUPPORTING STATEMENT:**
  - Additional voltage support is needed in the Harriman, TN area under contingency.



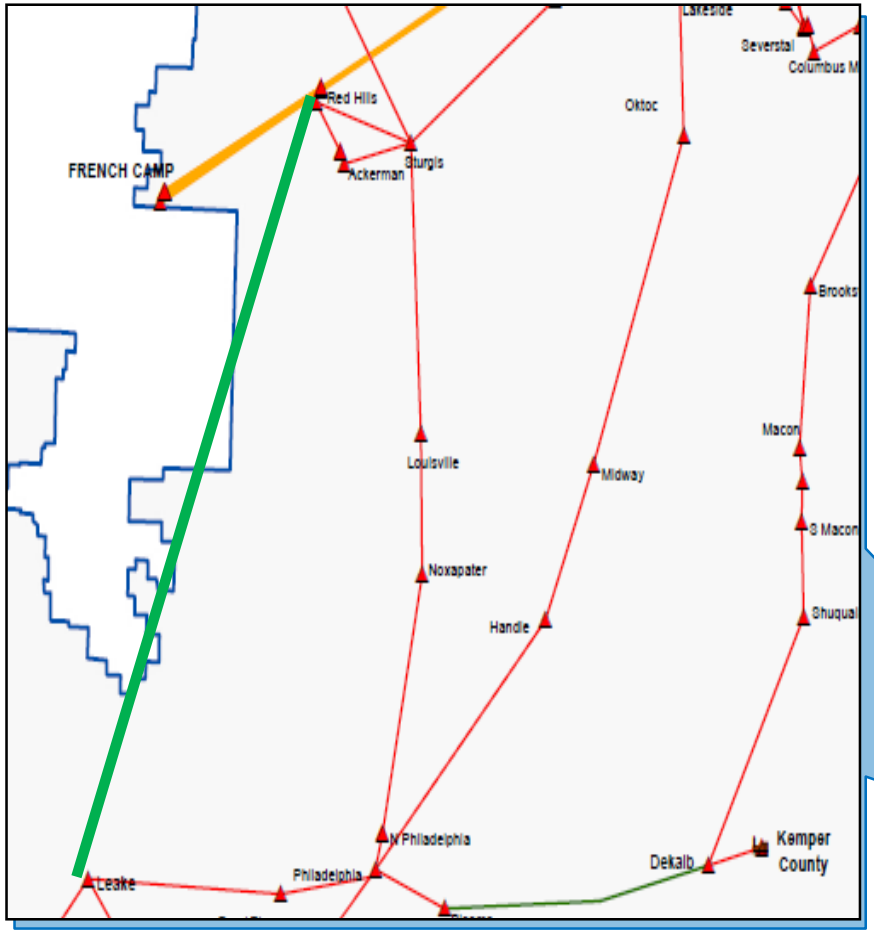
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

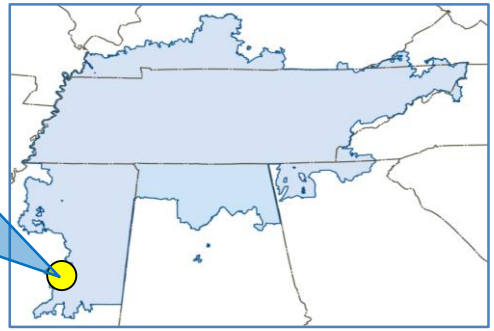
TVA – 2

- **2019**

RED HILLS – LEAKE 161 KV T.L.



- **DESCRIPTION:**
  - Construct approximately 60.0 miles of 161 kV transmission line from Red Hills to Leake with 954 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - Multiple 161 kV transmission lines in the lower MS area overload under contingency and additional voltage support is needed in the lower MS area under contingency.



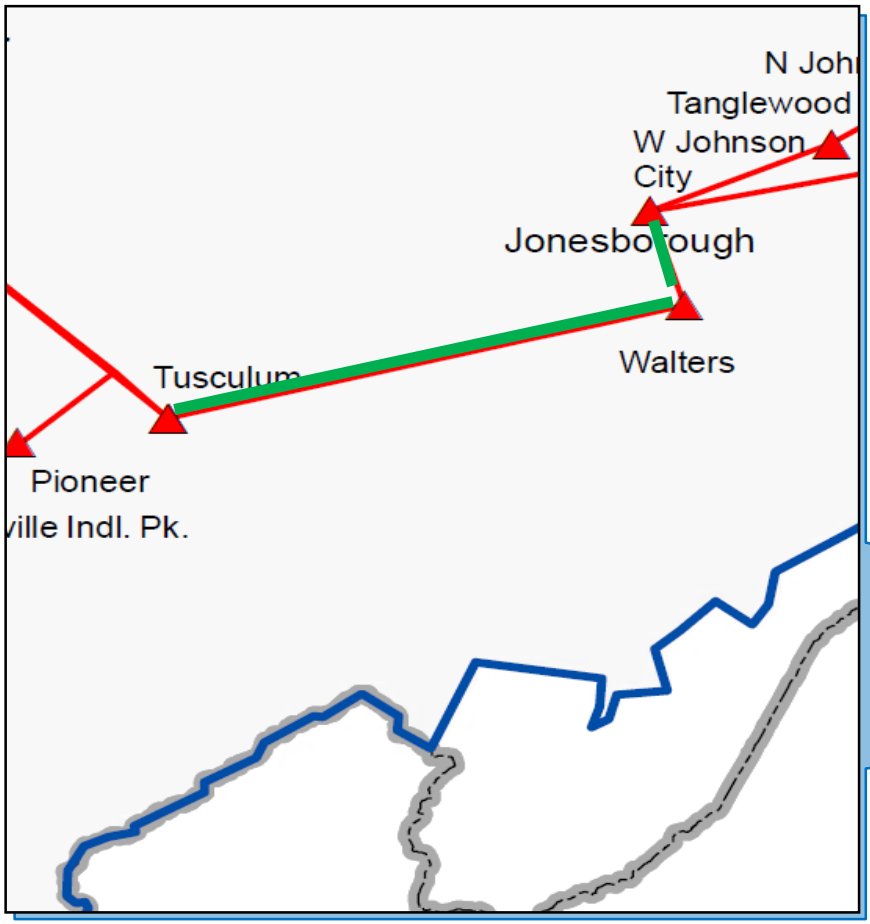
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

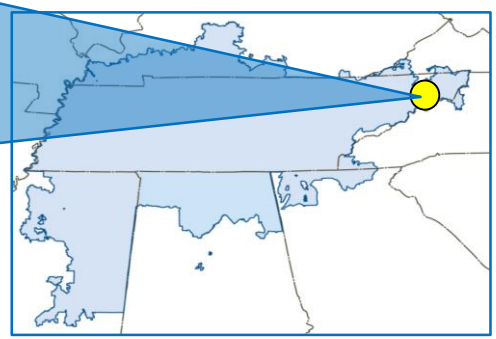
TVA – 3

- **2019**

TUSCULUM – JONESBOROUGH 161 KV T.L.



- **DESCRIPTION:**
  - Double circuit approximately 17.0 miles of the Tusculum - Jonesborough 161 kV transmission line with 954 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - The Tusculum - Jonesborough 161 kV transmission line overloads under contingency.



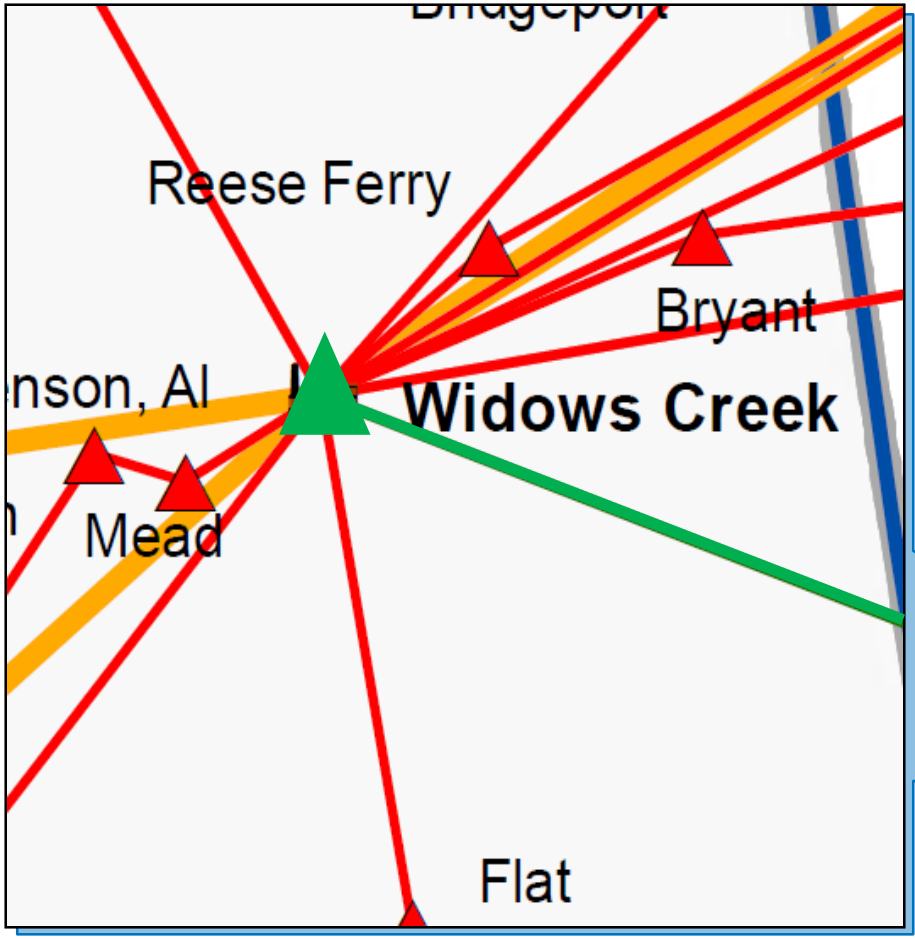
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

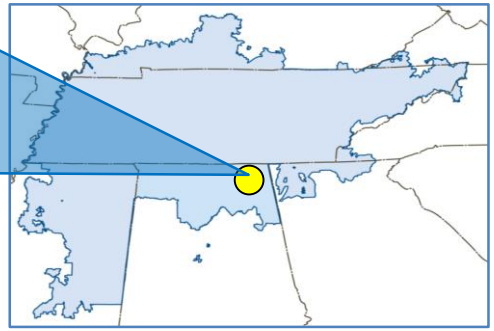
TVA – 4

- **2019**

WIDOWS CREEK FP SUBSTATION



- **DESCRIPTION:**
  - Install a second 500/161 kV transformer at the Widows Creek Fossil Plant Substation.
- **SUPPORTING STATEMENT:**
  - Multiple transmission lines overload and additional voltage support needed in the Huntsville, AL area under contingency.



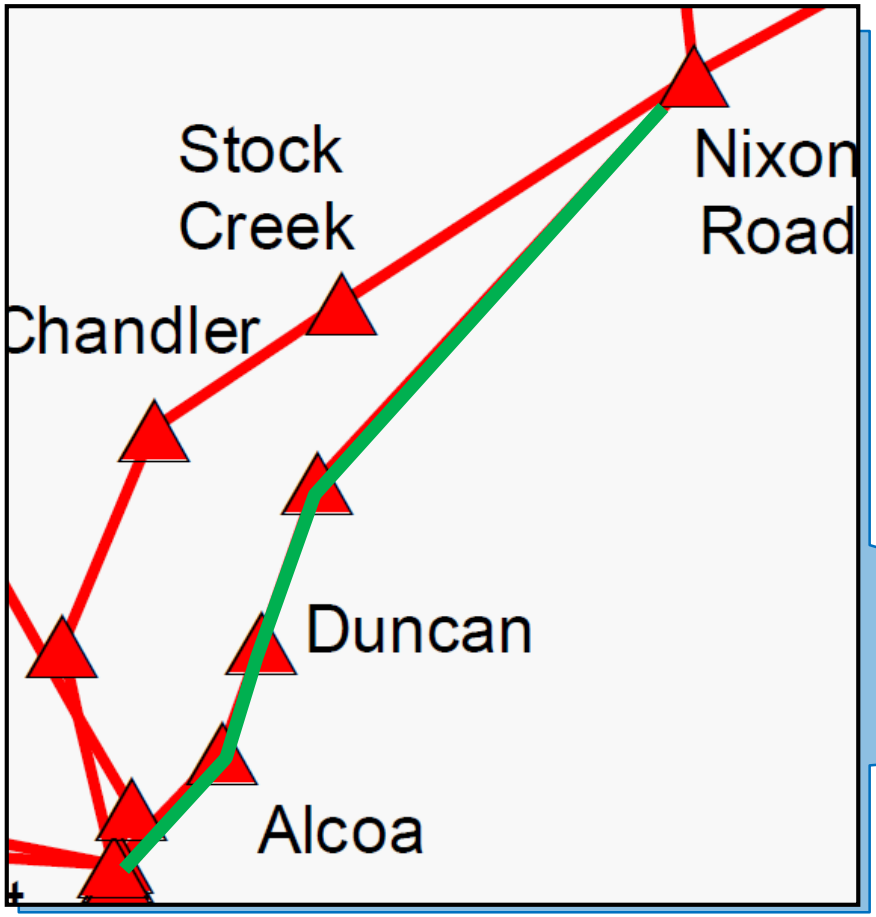
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 5

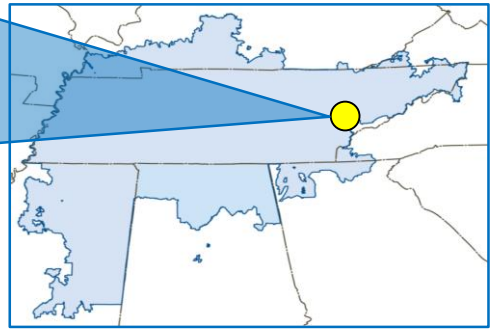
- **2020**

ALCOA SS – NIXON ROAD 161 KV T.L.



- **DESCRIPTION:**
  - Rebuild approximately 12.0 miles of the Alcoa North – 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 – Nixon Rd 161 kV #2 transmission line.

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



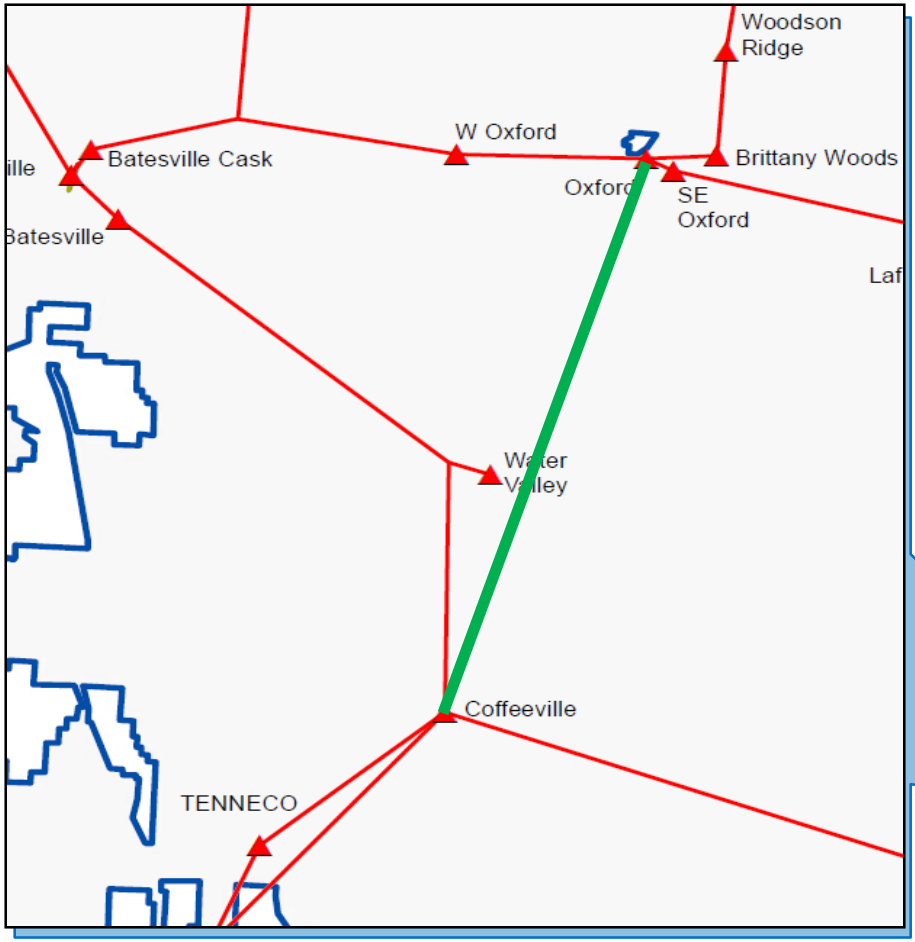
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

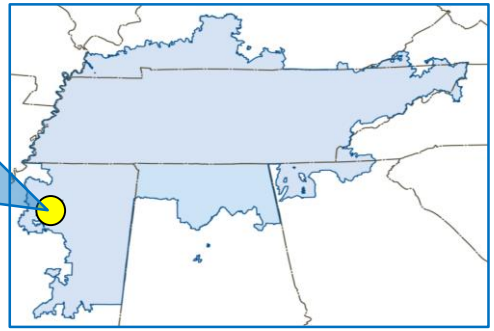
TVA – 6

- **2020**

OXFORD – COFFEEVILLE 161 KV T.L.



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



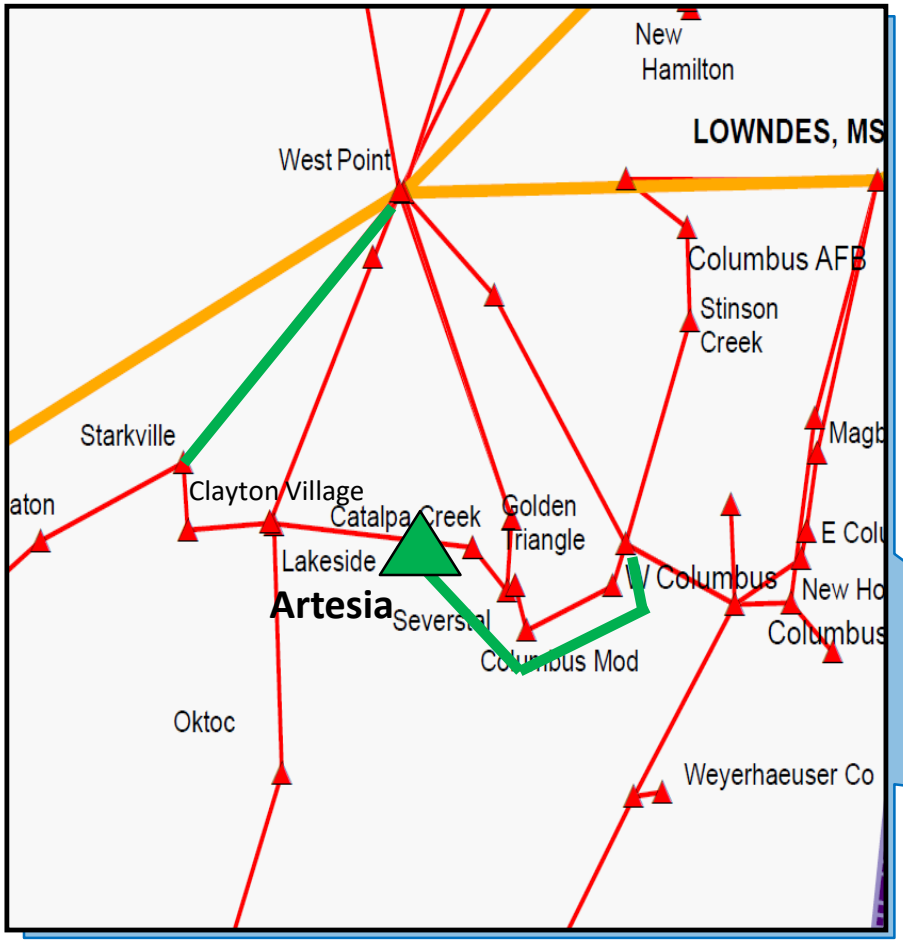
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 7

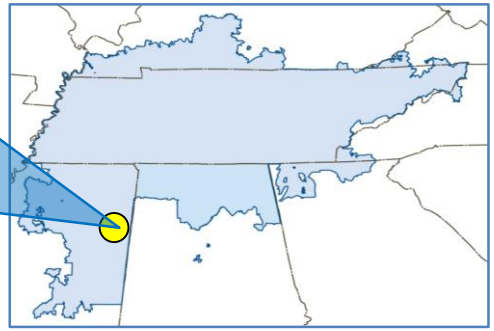
- **2021**

ARTESIA - W. COLUMBUS 161 KV T.L.



- **DESCRIPTION:**
  - Construct the Artesia 161 kV Substation and build approximately 12.0 miles of 161 kV transmission line from Artesia to W. Columbus. Additionally, reconductor approximately 15.0 miles of 161 kV transmission line from W. Point to Starkville.

- **SUPPORTING STATEMENT:**
  - Additional operational flexibility is needed in the West Point and Columbus area under contingency.



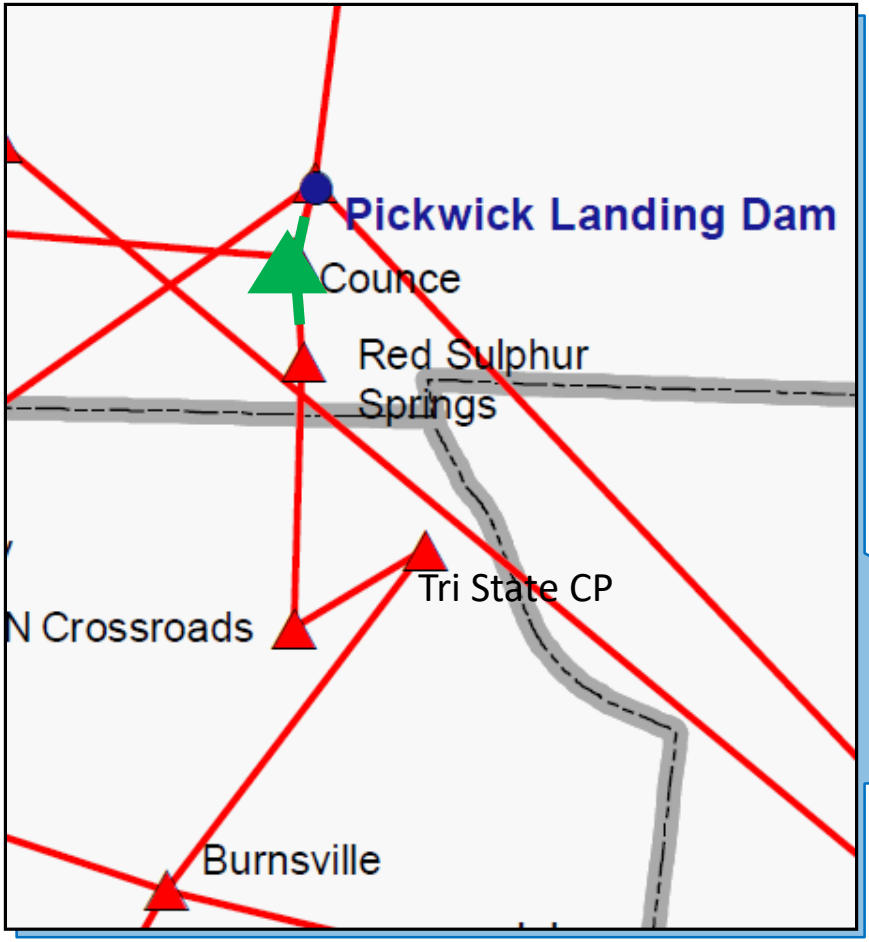
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 8

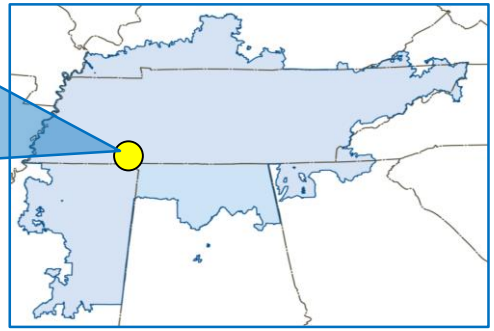
- **2021**

COUNCE, TN 161 KV SUBSTATION



- **DESCRIPTION:**
  - Convert Counce 161 kV switchyard to a double breaker arrangement. Loop the existing Pickwick - 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.



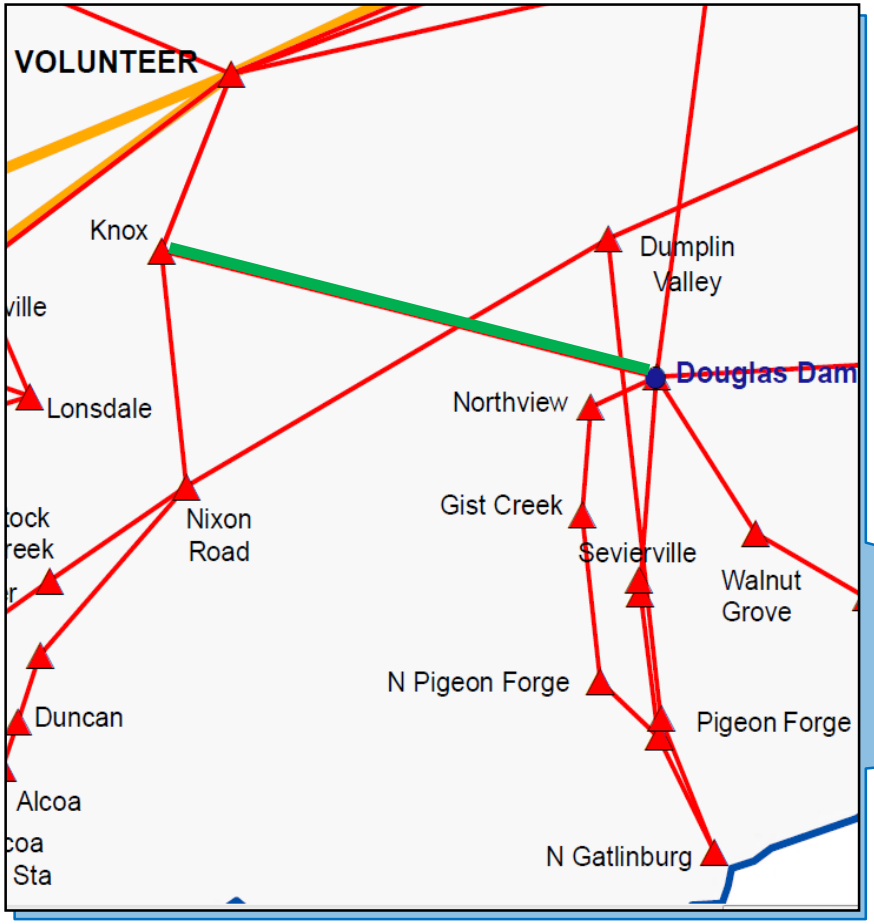
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

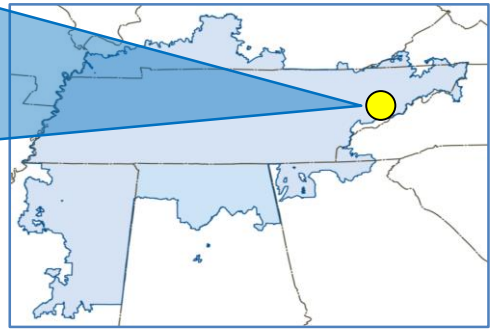
TVA – 9

- **2021**

KNOX – DOUGLAS 161 KV T.L.



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



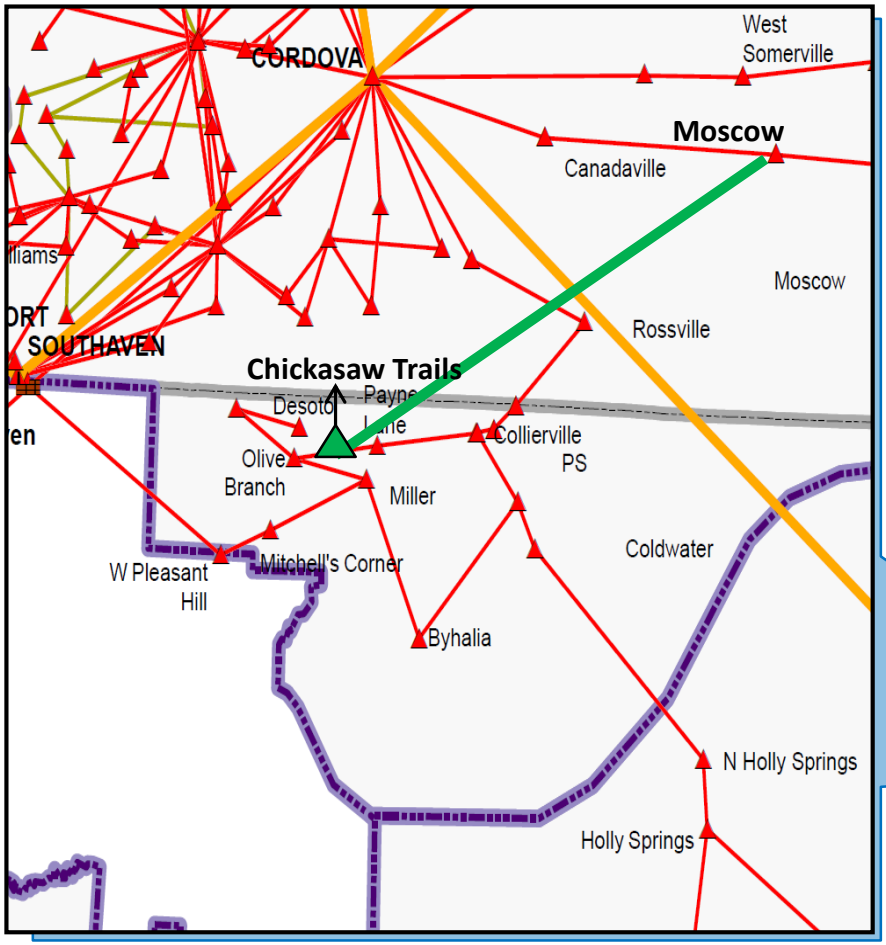
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

TVA – 10

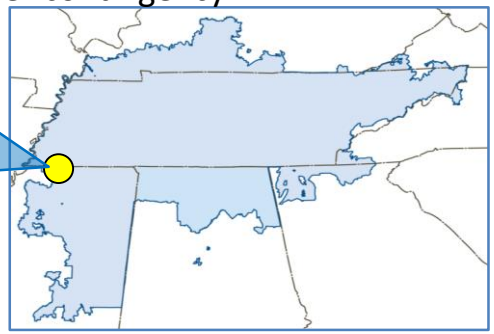
- **2021**

MOSCOW – CHICKASAW TRAILS 161 KV T.L.



- **DESCRIPTION:**
  - Construct the Chickasaw Trails 161 kV Substation and build approximately 17.0 miles of 161 kV transmission line from Chickasaw Trails to Moscow. Additionally, loop in the Miller – Holly Springs 161 kV transmission line into the new Chickasaw Trails substation.

- **SUPPORTING STATEMENT:**
  - Additional operational flexibility is needed in the Olive Branch and Chickasaw Trails area under contingency.



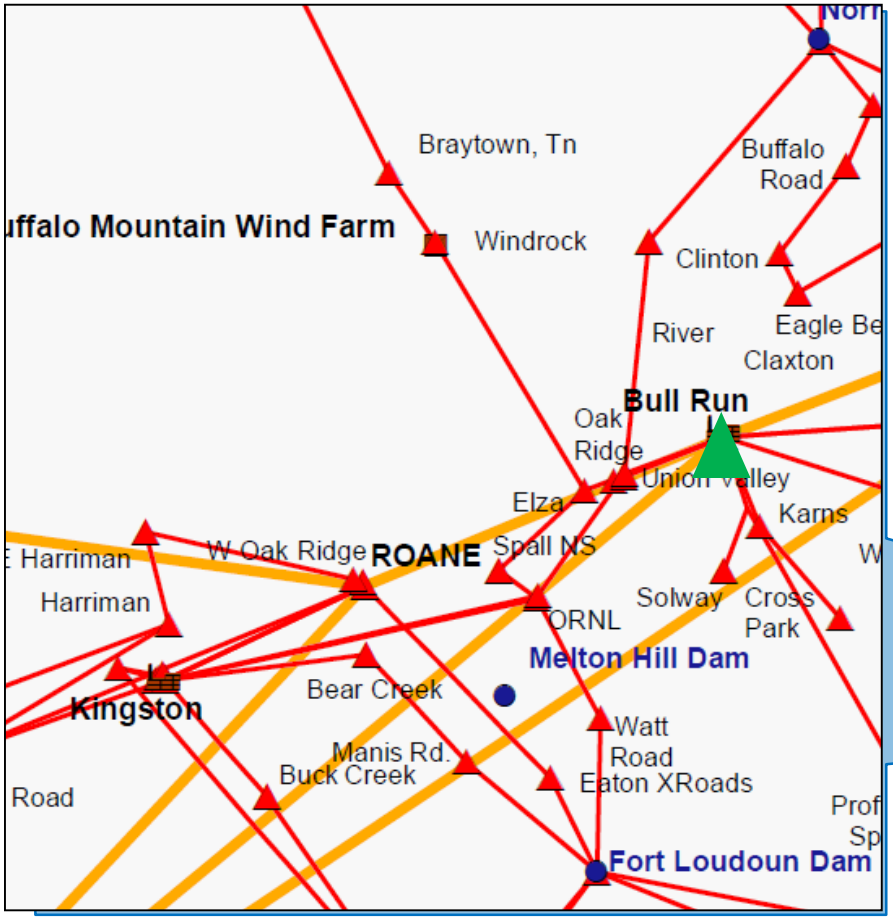
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

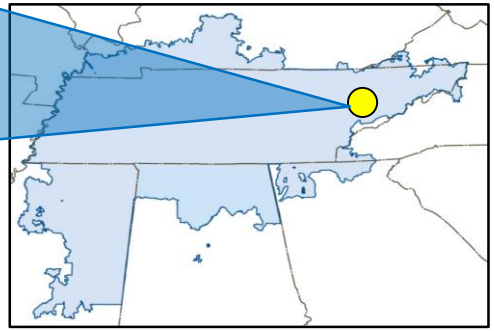
TVA – 11

- **2024**

BULL RUN FP 500 kV SUBSTATION



- **DESCRIPTION:**
  - Install a second 500/161 kV transformer at the Bull Run Fossil Plant Substation.
- **SUPPORTING STATEMENT:**
  - The existing Bull Run 500/161 kV Transformer overloads under contingency.



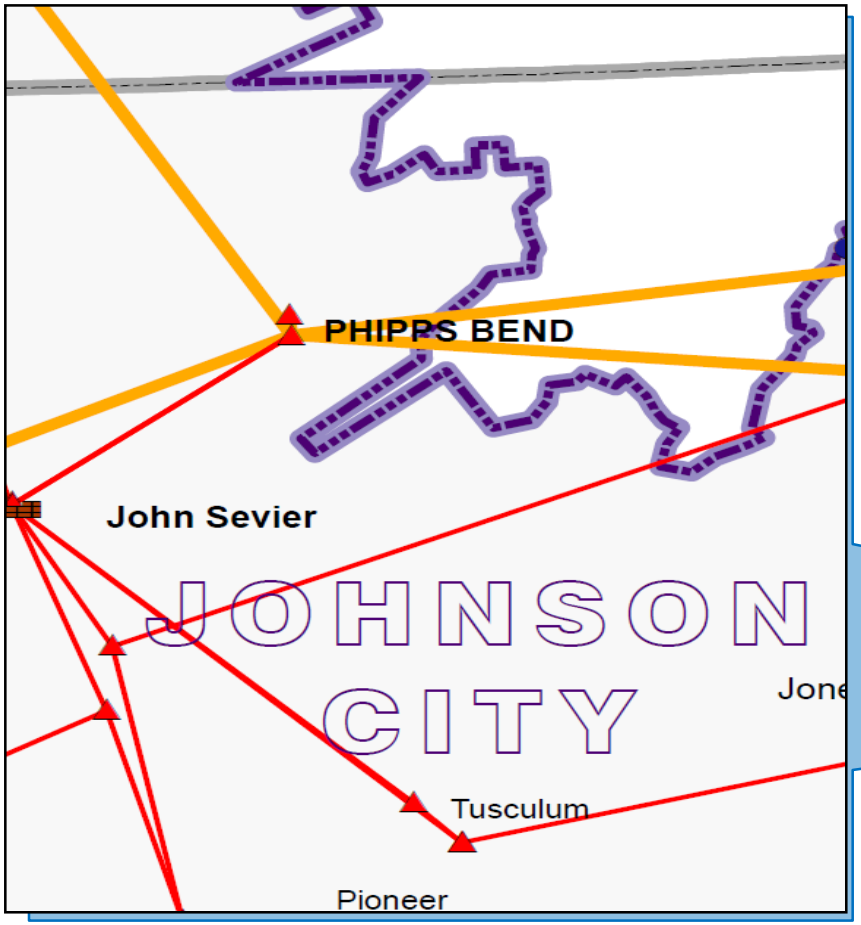
Southeastern Regional TRANSMISSION PLANNING

TVA Balancing Authority Area

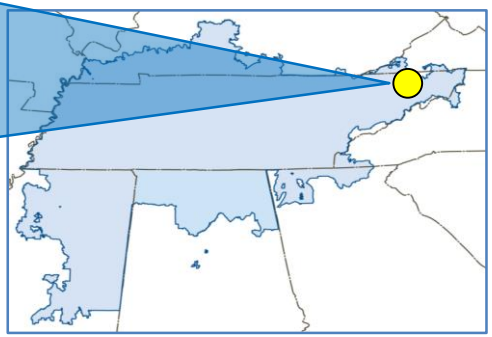
TVA – 12

- **2024**

PHIPPS BEND 500 kV Substation



- **DESCRIPTION:**
  - Install 500 kV breakers on the Pocket and Nagel transmission lines at the Phipps Bend 500 kV substation.
- **SUPPORTING STATEMENT:**
  - John Sevier – Tusculum 161 kV, Lafollette – Norris 161 kV, Boone HP – Greenville 161 kV transmission lines overload under contingency.



SERTP

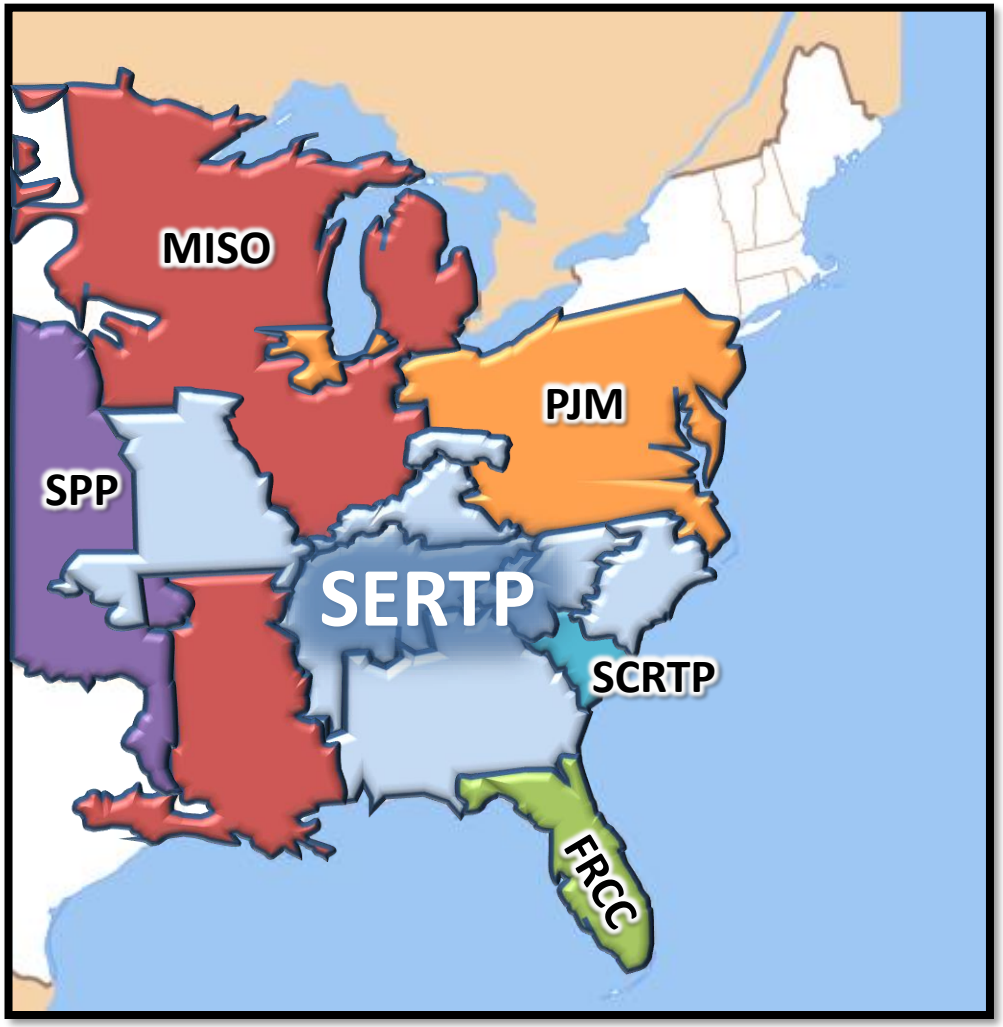
Miscellaneous Updates

Regional Analyses Update

- SERTP Sponsors are currently developing a list of potential alternative transmission projects to evaluate during the 2018 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
- Biennial regional plan review meetings have occurred along the MISO and PJM seams. Similar biennial regional plan review meetings are scheduled with SCRTP, SPP, and FRCC.

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.

OVEC Integration into PJM

- **December 15, 2017**
  - Ohio Valley Electric Corporation submitted a filing to the Federal Energy Regulatory Commission (FERC) in connection with its' proposed integration into PJM
- **February 13, 2018**
  - FERC approved OVEC's integration proposal to join PJM
- **Status Update**
  - The OVEC integration into PJM has been delayed. SERTP will provide additional information as updates become available

Next Meeting Activities

- **2018 SERTP 3rd Quarter Meeting** – *Second RPSG Meeting*
  - **Location: Web Conference**
  - **Date: September 18, 2018**
  - **Purpose:**
    - Discuss Preliminary Economic Planning Study Results
    - Discuss Previous Stakeholder Input on Transmission Expansion Plans

2018 SERTP

Questions?

www.southeasternrtp.com