Southeastern Regional TRANSMISSION PLANNING

SERTP – 4th Quarter Meeting

Annual Transmission Planning Summit & Assumptions Input Meeting

December 16th, 2021

WebEx

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

- **Economic Planning Studies**
  - Final Results
- **Ten (10) Year Regional Transmission Plan**
  - Planning Horizon 2022-2031
- **2022 Preliminary Modeling Input Assumptions**
  - Planning Horizon 2023-2032
- **SERTP Regional Transmission Analyses**
- **Miscellaneous Updates**
- **Upcoming 2022 SERTP Process**

SERTP Preliminary

Economic Planning Studies

Economic Planning Studies

Economic Planning Studies Process

- Economic Planning Studies were chosen by the Regional Planning Stakeholder Group "RPSG" in March at the 2021 SERTP 1st Quarter Meeting.
- Key study criteria, methodologies, and input assumptions were finalized in May.
- These studies represent analyses of hypothetical scenarios requested by the stakeholders and **do not** represent an actual transmission need or commitment to build.

Economic Planning Studies

Economic Planning Studies Process

- **SERTP Sponsors identify the transmission requirements needed to move large amounts of power above and beyond existing long-term, firm transmission service commitments**
  - Analysis are consistent with NERC standards and company-specific planning criteria

- **Models used to perform the analysis incorporate the load forecasts and resource decisions as provided by LSEs**
  - Power flow models are made available to stakeholders to perform additional screens or analysis

Economic Planning Studies

- **MISO North Region to LGEE**
  - 300 MW (2026 Summer Peak)
- **PJM to LGEE**
  - 300 MW (2026 Summer Peak)
- **TVA to LGEE**
  - 300 MW (2026 Summer Peak)

Economic Planning Studies

Power Flow Cases Utilized

- **Study Years:**
  - 2026

- **Load Flow Cases:**
  - 2021 Series Version 1 SERTP Regional Models
  - Summer Peak

Economic Planning Studies

Final Report Components

- **The SERTP reported, at a minimum, results on elements of 115 kV and greater:**
  - Thermal loadings greater than 90% for facilities that are negatively (+5%) impacted by the proposed transfers
  - Voltages appropriate to each participating transmission owner's planning criteria
  - Overloaded facilities that had a low response to the requested transfer were excluded and issues identified that are local in nature were also excluded
- **For each economic planning study request, the results of that study include:**
  1. Limit(s) to the transfer
  2. Potential transmission enhancement(s) to address the limit(s)
  3. Planning-level cost estimates and in-service dates for the potential transmission enhancement(s)

Economic Planning Studies

Process Information

- The following information depicts potential enhancements for the proposed transfer levels above and beyond existing, firm commitments. Therefore, this information does not represent a commitment to proceed with the recommended enhancements nor implies that the recommended enhancements could be implemented by the study dates (2026).

- These potential solutions only address constraints identified within the SERTP Sponsors' areas that are associated with the proposed transfers. Other Balancing Areas were not monitored which could result in additional limitations and required system enhancements.

Economic Planning Studies

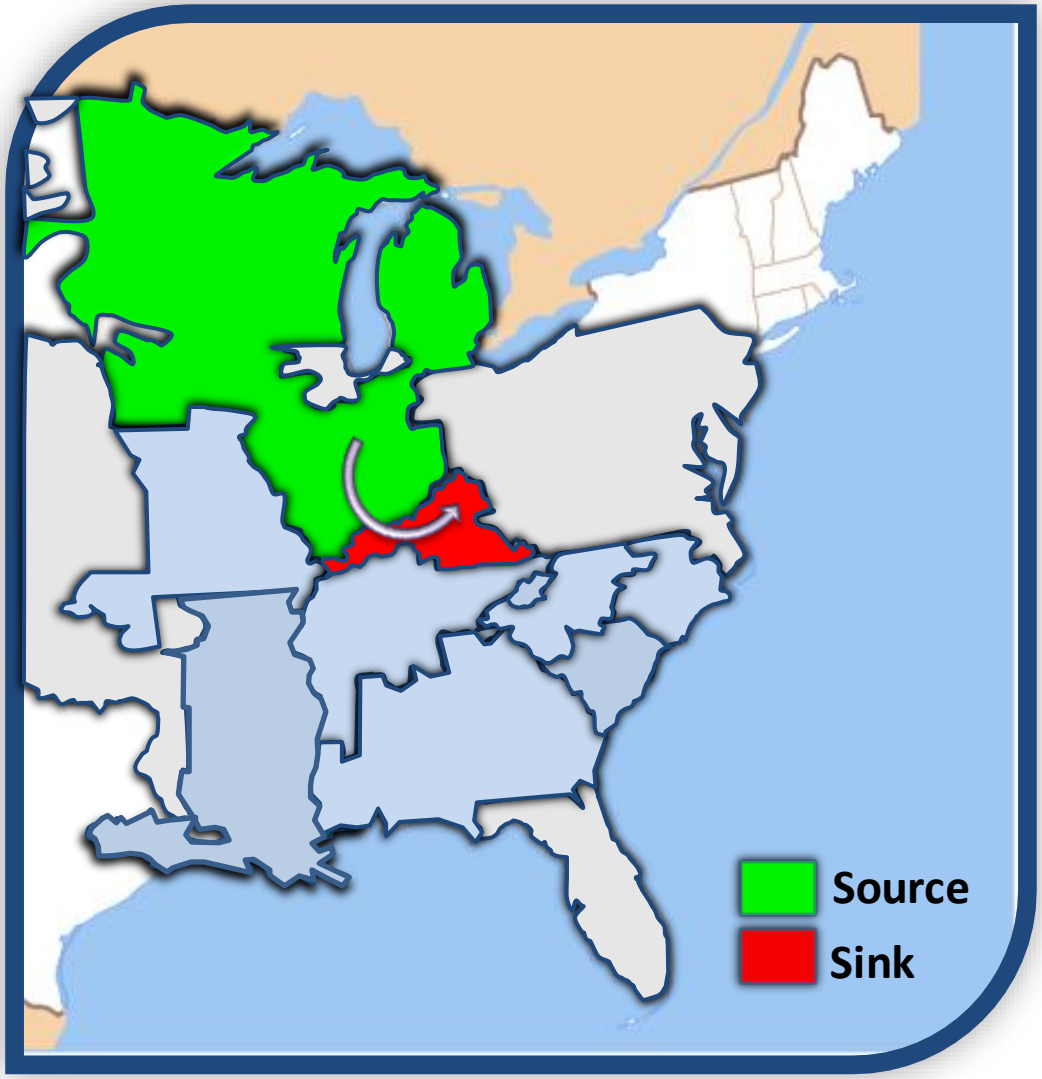
Economic Planning Studies – Preliminary Results

MISO North Region to LGEE – 300 MW

MISO North – LGEE 300 MW

Study Assumptions

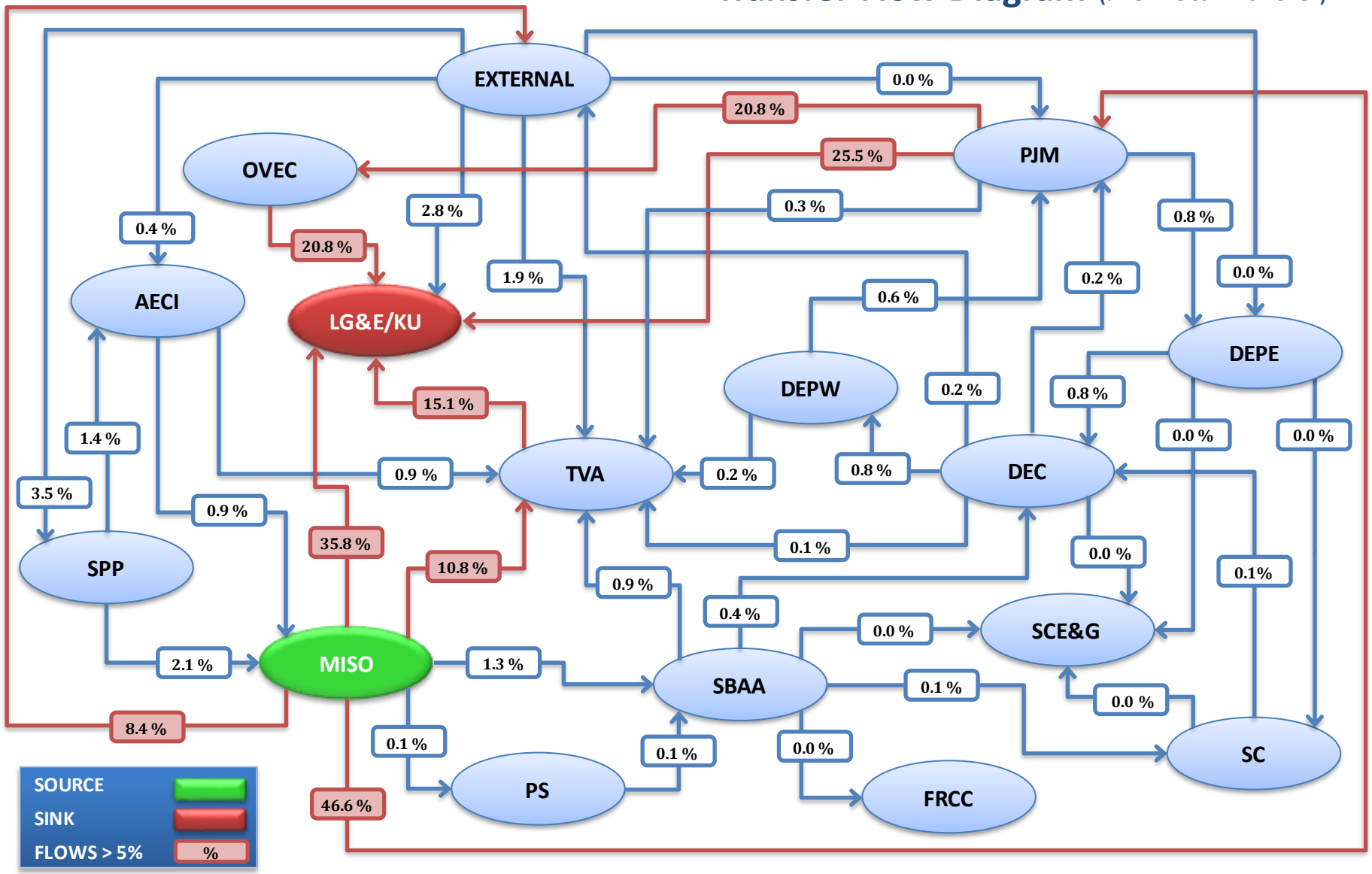
- **Source:** Uniform Generation Scale within MISO North
- **Sink:** Generation within LG&E/KU
- **Transfer Type:** Generation to Generation
- **Year:** 2026
- **Load Level:** Summer Peak



Southeastern Regional
TRANSMISSION PLANNING

MISO North – LGEE 300 MW

Transfer Flow Diagram (% of Total Transfer)



MISO North – LGEE 300 MW

Transmission System Impacts

- **Transmission System Impacts Identified:**
  - None Identified

- **Potential Transmission Enhancements Identified:**
  - None Identified

SERTP TOTAL ($2021) = $0

MISO North – LGEE 300 MW

Transmission System Impacts – *SERTP*

Table 3: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
SERTP TOTAL ($2021)	**$0**

Economic Planning Studies

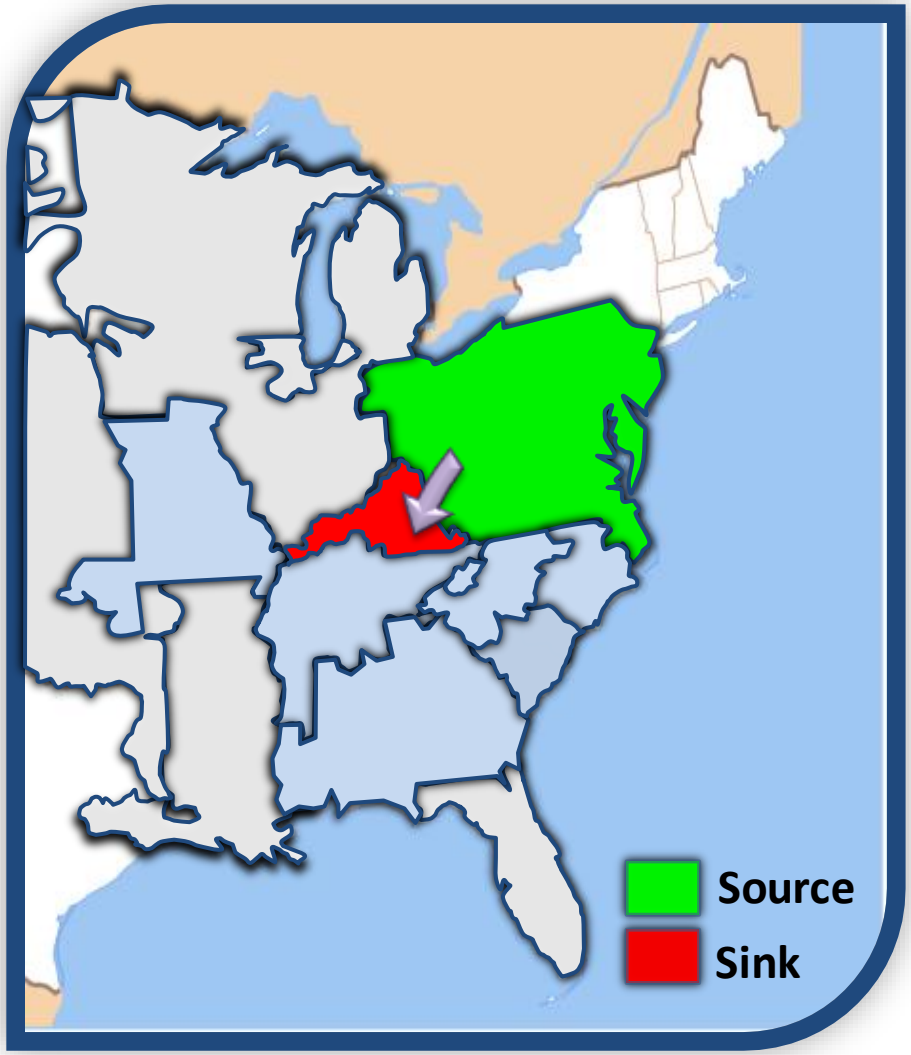
Economic Planning Studies – Preliminary Results

PJM to LGEE – 300 MW

PJM – LGEE 300 MW

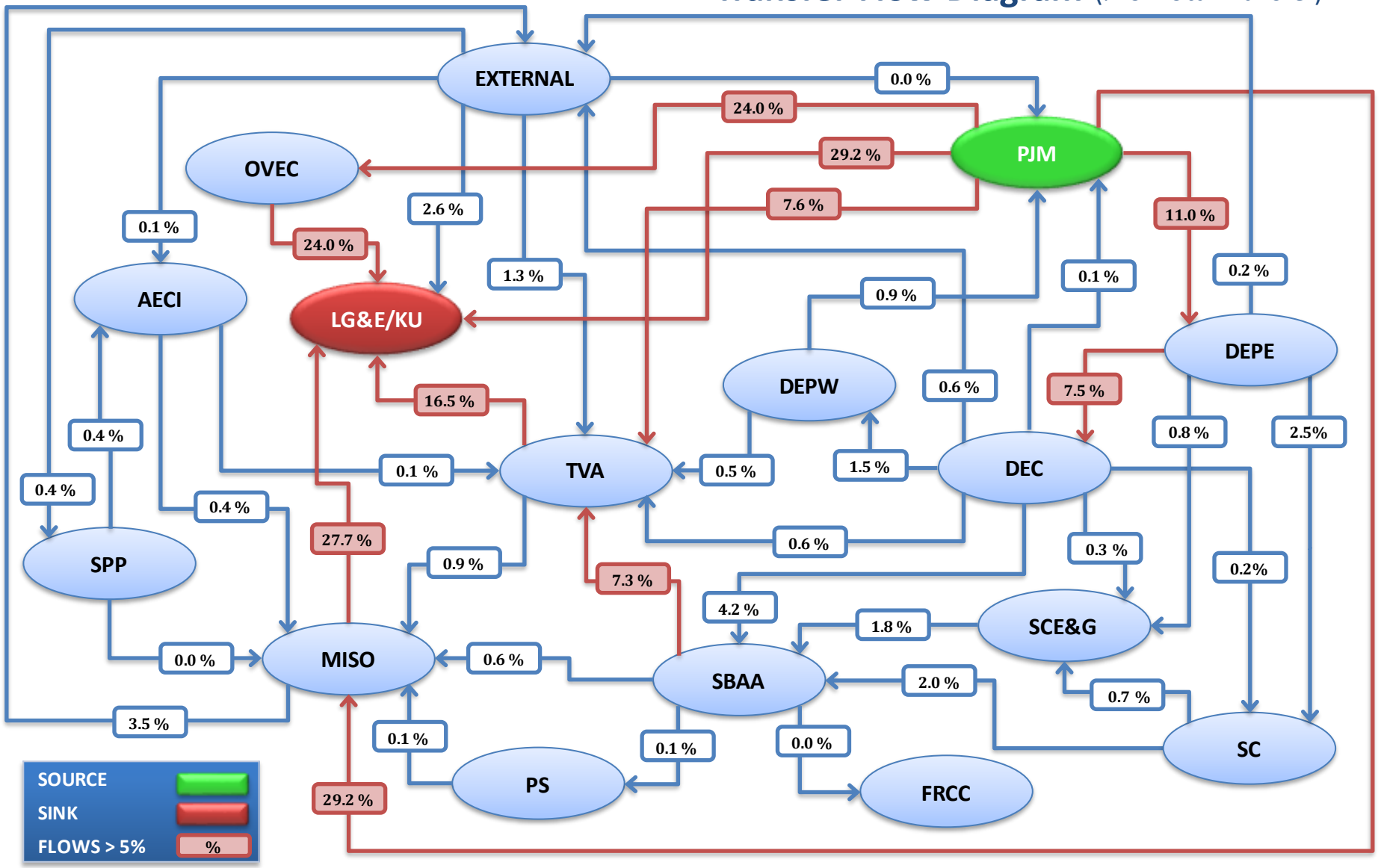
Study Assumptions

- **Source:** Uniform Generation Scale within PJM
- **Sink:** Generation with LG&E/KU
- **Transfer Type:** Generation to Generation
- **Year:** 2026
- **Load Level:** Summer Peak



PJM – LGEE 300 MW

Transfer Flow Diagram (% of Total Transfer)



PJM – LGEE 300 MW

Transmission System Impacts – *SERTP*

- **Transmission System Impacts Identified:**
  - None Identified

- **Potential Transmission Enhancements Identified:**
  - None Identified

SERTP Total ($2021) = $0

PJM – LGEE 300 MW

Transmission System Impacts – *SERTP*

Table 6: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
SERTP TOTAL ($2021)	**$0**

Economic Planning Studies

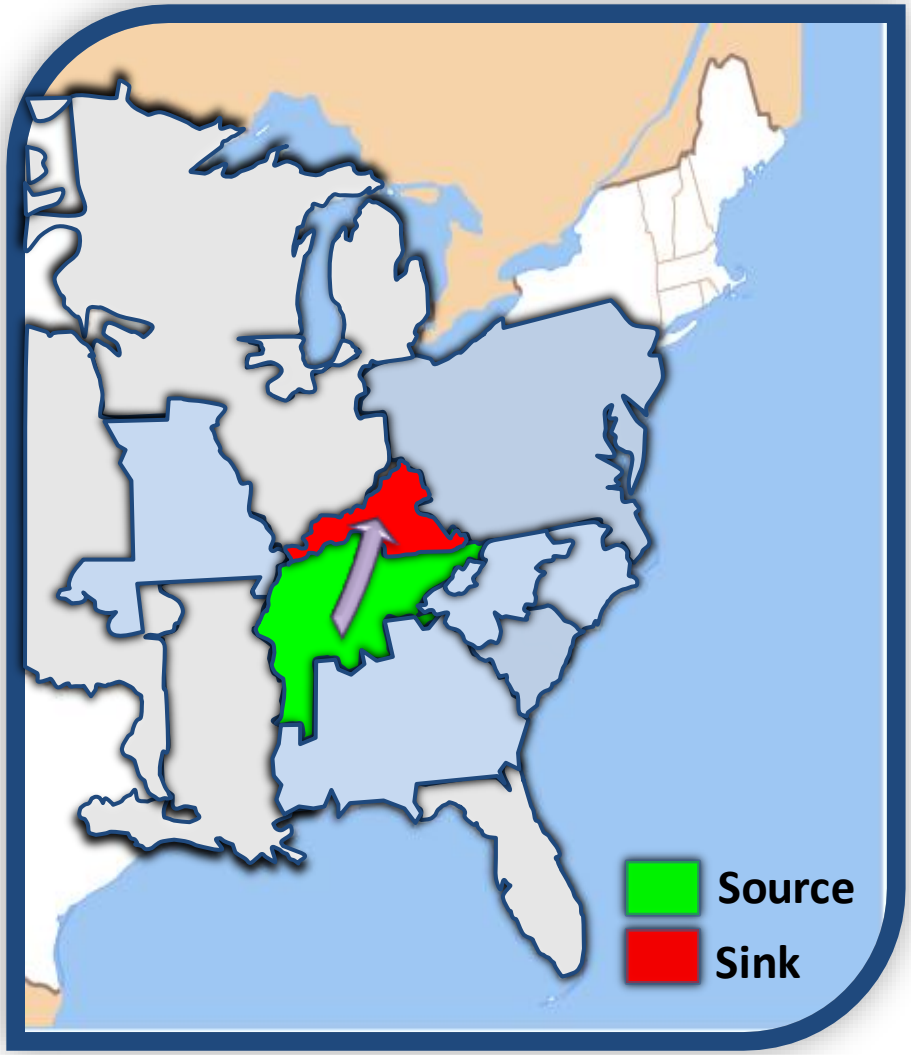
Economic Planning Studies – Preliminary Results

TVA to LGEE – 300 MW

TVA – LGEE 300 MW

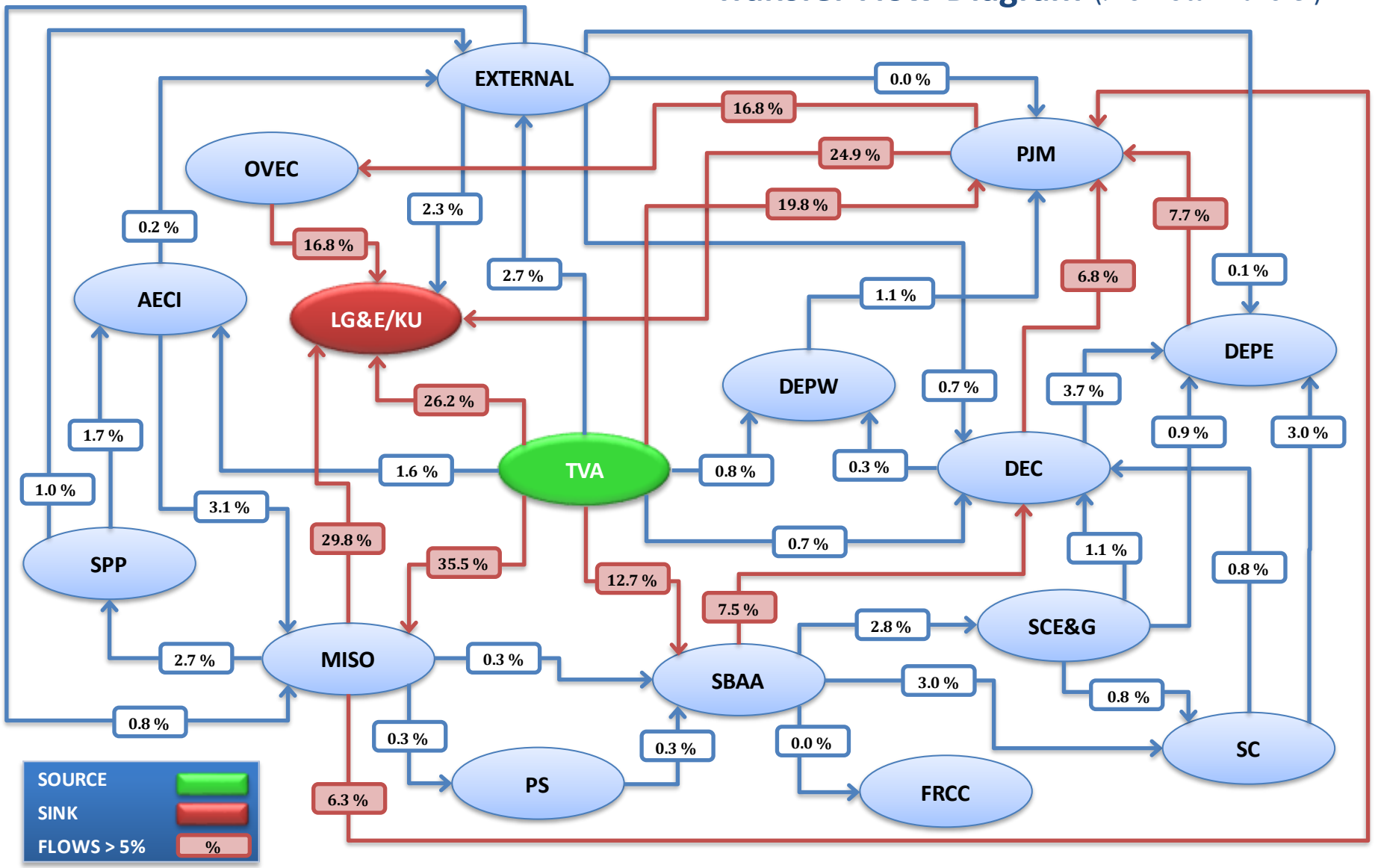
Study Assumptions

- **Source:** Uniform Generation Scale within TVA
- **Sink:** Generation with LG&E/KU
- **Transfer Type:** Generation to Generation
- **Year:** 2026
- **Load Level:** Summer Peak



TVA – LGEE 300 MW

Transfer Flow Diagram (% of Total Transfer)



Transmission System Impacts – *SERTP*

- **Transmission System Impacts Identified:**
  - None Identified

- **Potential Transmission Enhancements Identified:**
  - None Identified

SERTP Total ($2021) = $0

Transmission System Impacts – *SERTP*

Table 6: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
SERTP TOTAL ($2021)	**$0**

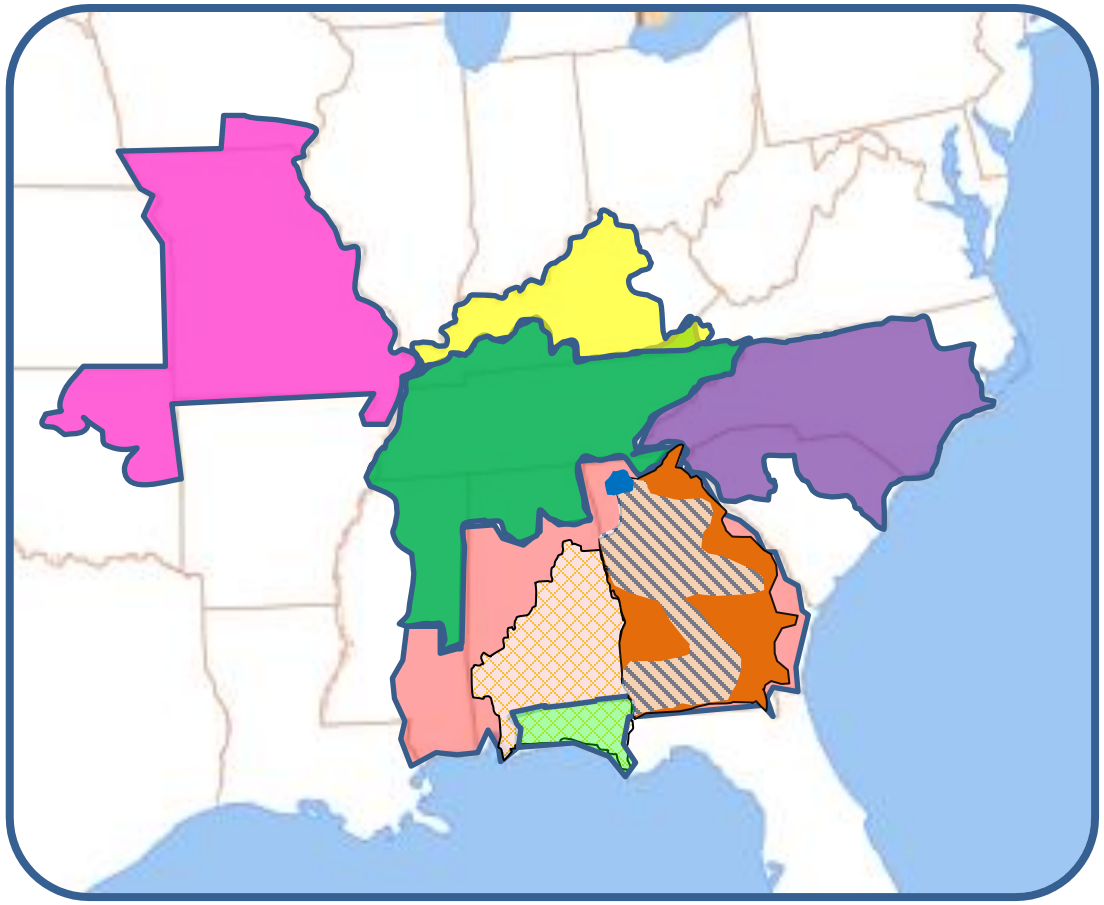
SERTP

Regional Modeling Assumptions

SERTP

Regional Transmission Plan

Southeastern Regional Transmission Planning (SERTP)



SERTP Participants

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

Southeastern Regional Transmission Planning (SERTP)

Balancing Authority Area:

AECI

Duke Carolinas

Duke Progress

LG&E/KU

PowerSouth

Southern

TVA

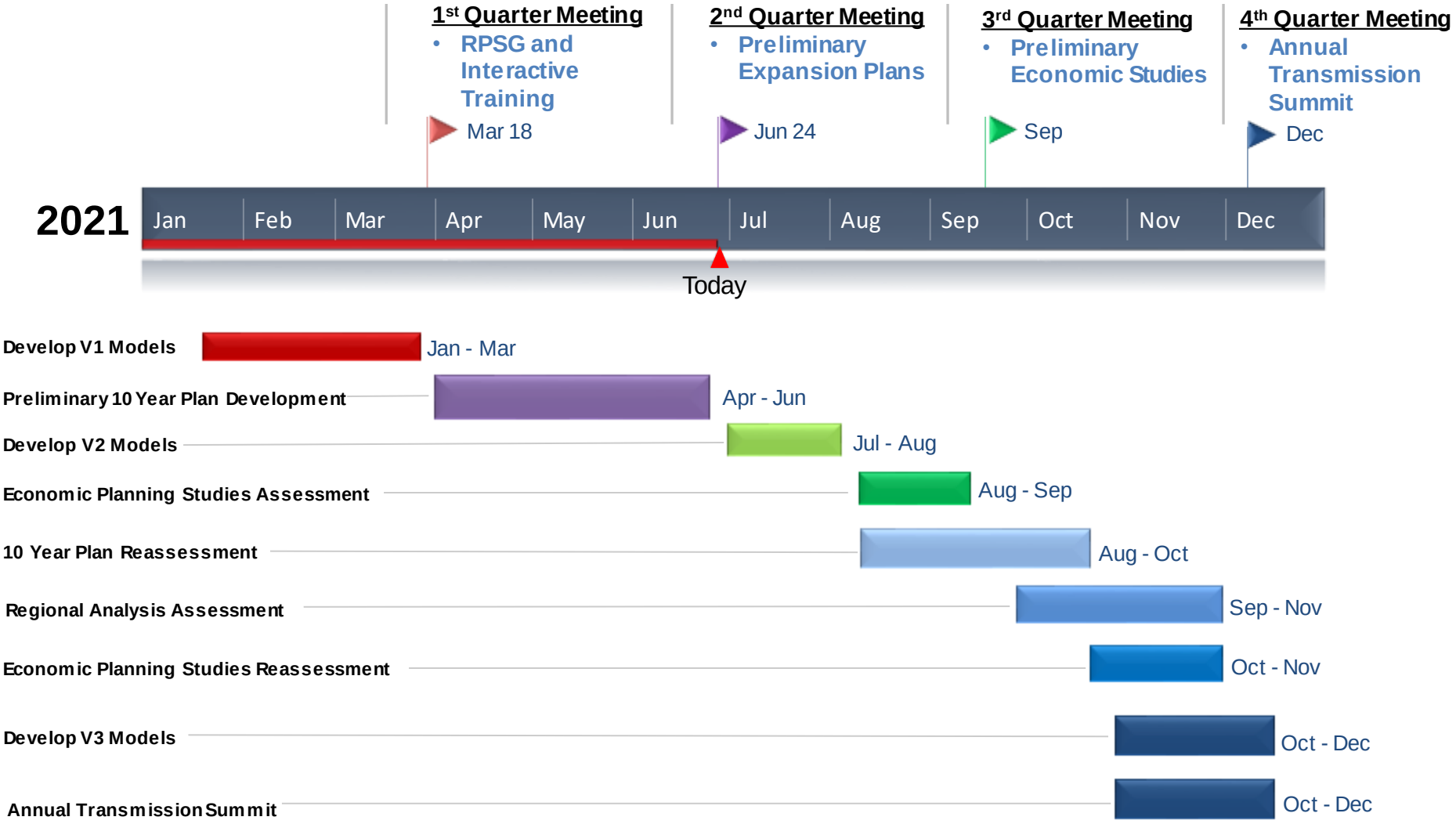
SERTP

Regional Transmission Expansion Plan Process

Southeastern Regional TRANSMISSION PLANNING

2021 SERTP

10 Year SERTP Regional Transmission Expansion Plan Process

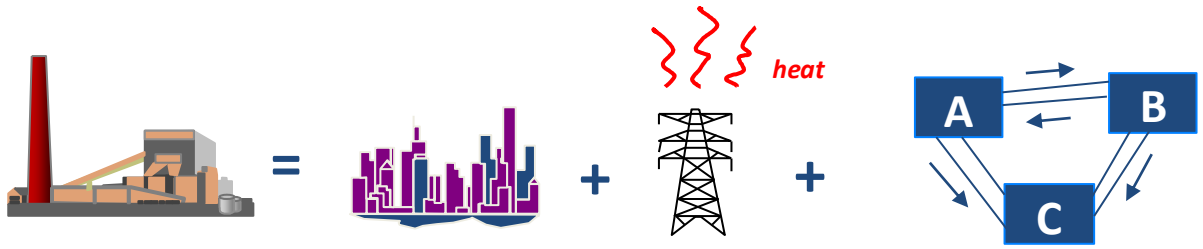


SERTP

Regional Model Assumptions

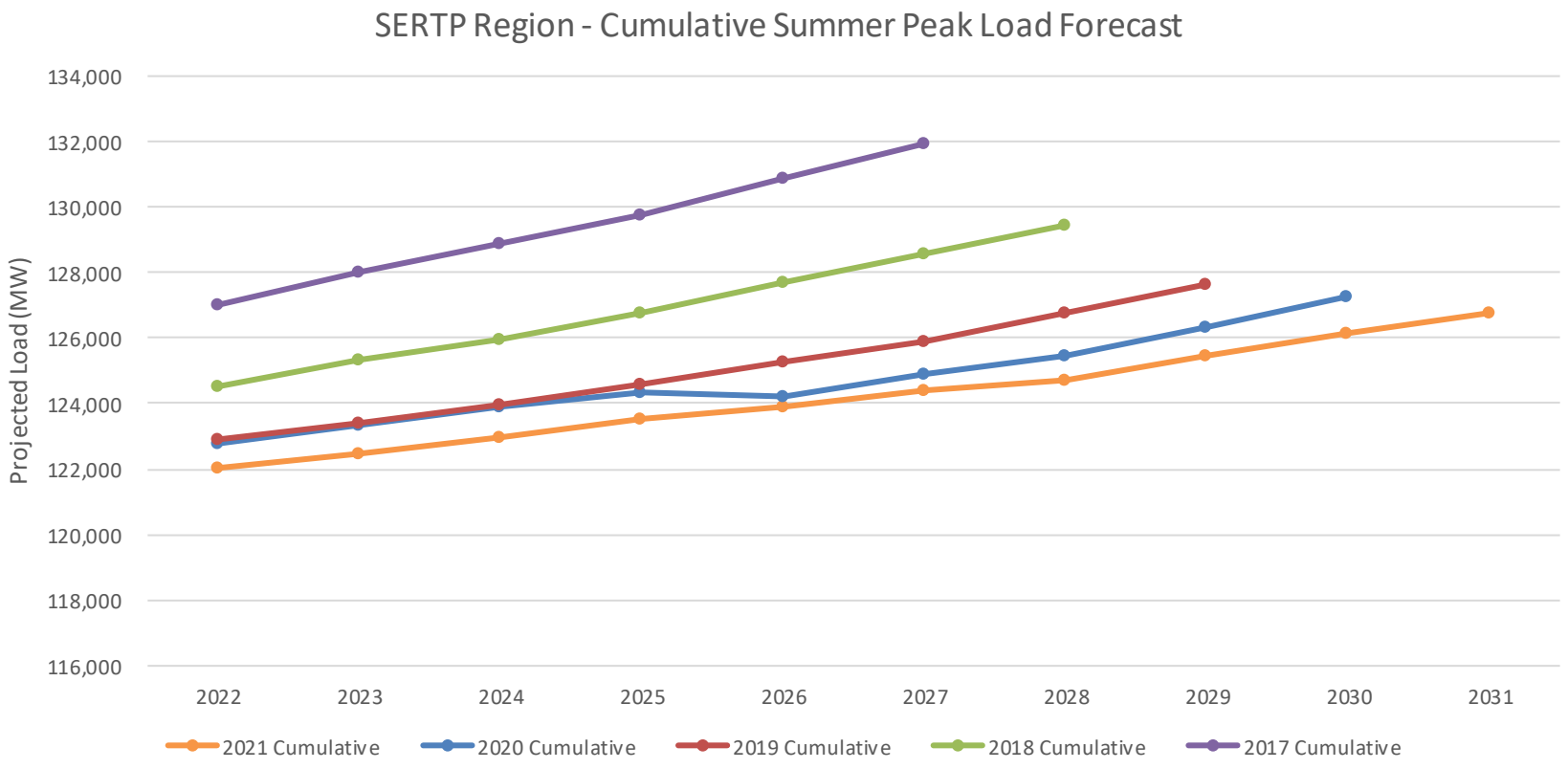
Regional Model Assumptions

Generation = Load + Losses (Topology) + Net Interchange



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

SERTP Cumulative Summer Peak Load Forecast



SERTP

Regional Transmission Expansion Plans

AECI Balancing Authority Area

AECI Balancing Authority Area

Generation Assumptions

* AECI has no generation assumptions expected to change throughout the ten year planning horizon for the 2021 SERTP Process.

AECI Balancing Authority Area

AECI Balancing Authority Area

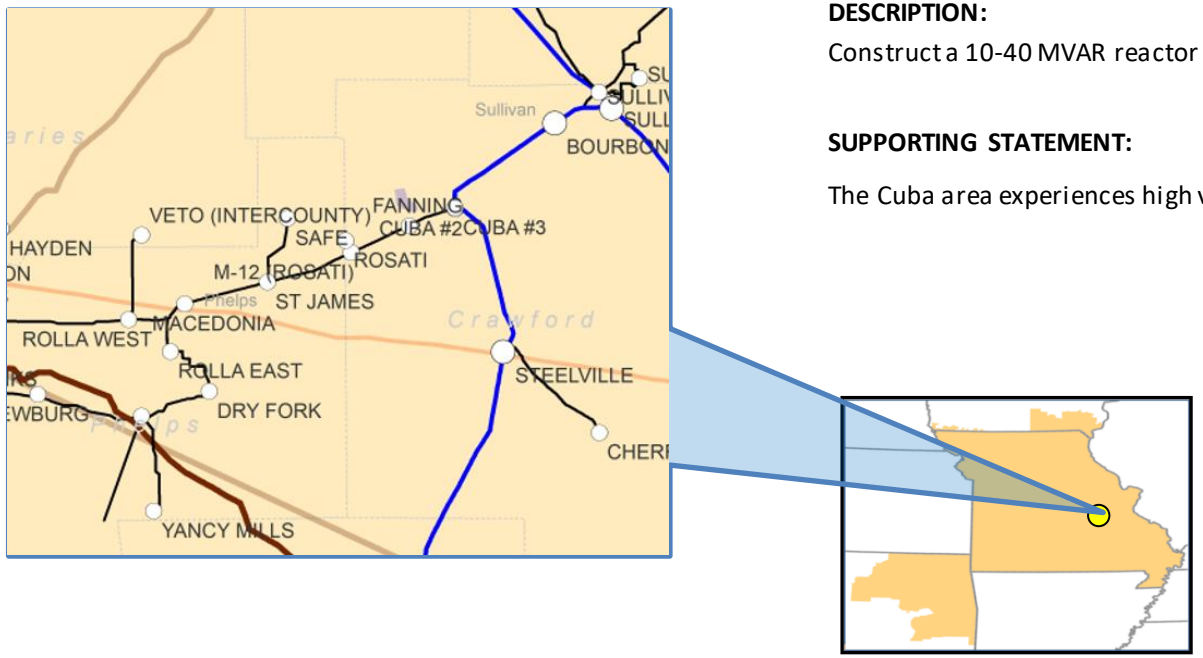
SERTP Regional Transmission Expansion Plan

AECI Balancing Authority Area

AECI – 1

- **2022**

Cuba 161 kV 40 MVAR Reactor



DESCRIPTION:

Construct a 10-40 MVAR reactor at the Cuba 161 kV substation.

SUPPORTING STATEMENT:

The Cuba area experiences high voltage during low load scenarios.

Southeastern Regional TRANSMISSION PLANNING

AECI Balancing Authority Area

AECI Balancing Authority

Upcoming 2022 Generation Assumptions

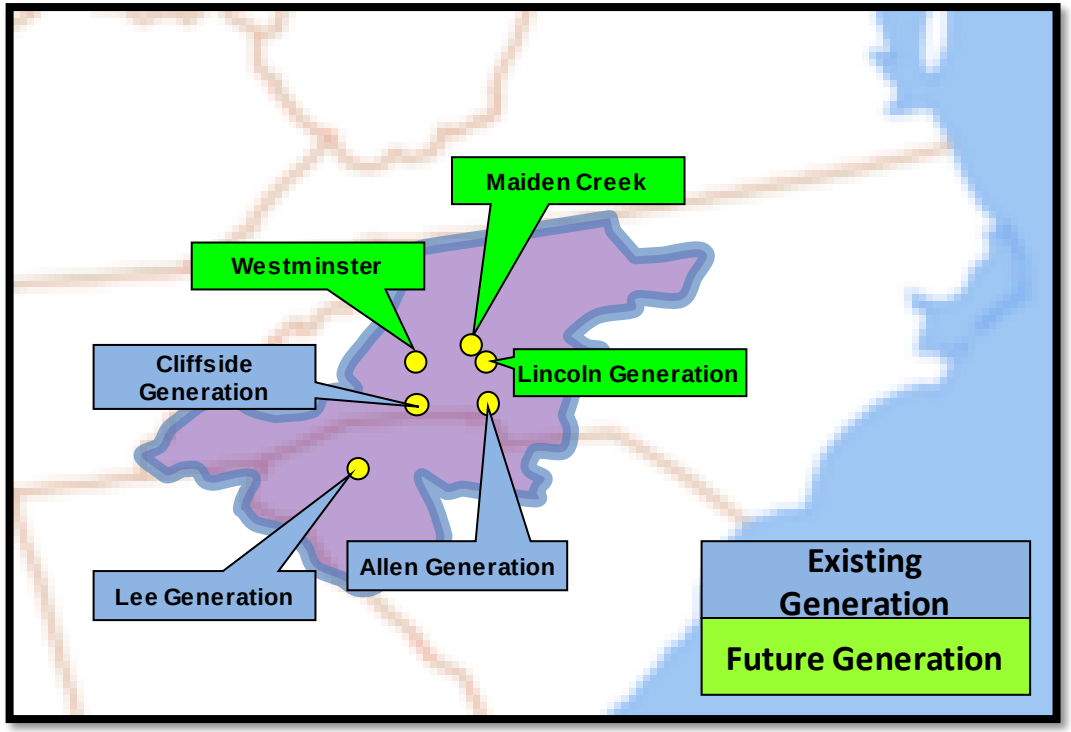
* AECI has no generation assumptions expected to change throughout the ten year planning horizon for the 2022 SERTP Process.

DUKE CAROLINAS Balancing Authority Area

Generation Assumptions

DUKE CAROLINAS – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process.



DUKE CAROLINAS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ALLEN 1	COAL	174	174	0	--	--	--	--	--	--	--
ALLEN 2	COAL	0	--	--	--	--	--	--	--	--	--
ALLEN 4	COAL	0	--	--	--	--	--	--	--	--	--
ALLEN 5	COAL	290	290	0	--	--	--	--	--	--	--
Cliffside 5	COAL	566	566	566	566	566	0	--	--	--	--
Lee 3 NG	GAS	160	160	160	160	160	160	160	160	0	--
Maiden Creek	PV	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
Westminster	PV	75	75	75	75	75	75	75	75	75	75
LINCOLN 17	GAS	--	--	402	402	402	402	402	402	402	402

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	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CLEVELAND	195	195	195	195	195	195	195	195	195	195
BROAD RIVER	850	850	875	875	875	875	875	875	875	875
CATAWBA	407	407	407	407	407	407	407	407	407	407
ROWAN	605	466	450	431	418	190	190	190	190	190
KINGS MOUNTAIN	32	32	32	32	32	32	92	92	92	92

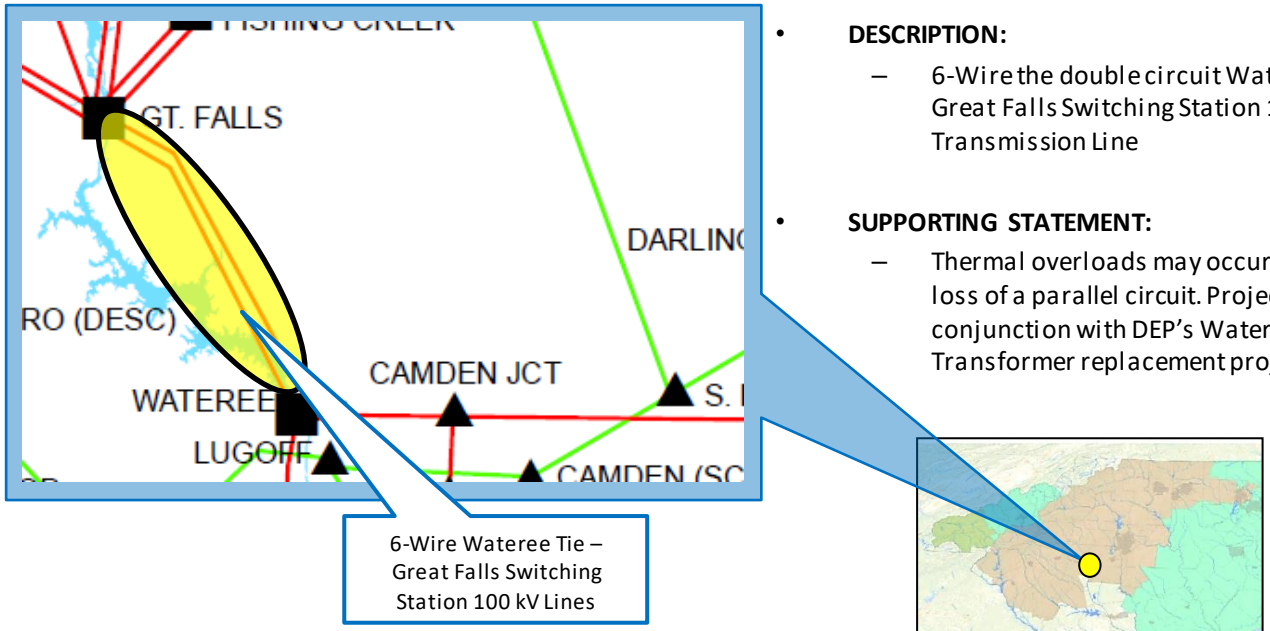
DUKE CAROLINAS Balancing Authority Area

SERTP Regional Transmission Expansion Plan

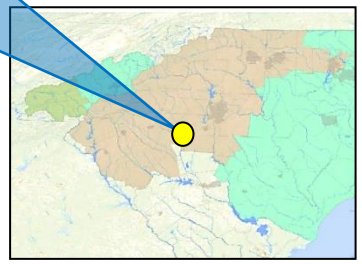
DUKE CAROLINAS - 1

- **2023**

WATEREE TIE – GREAT FALLS SWITCHING STATION 100 kV TRANMISSION LINE



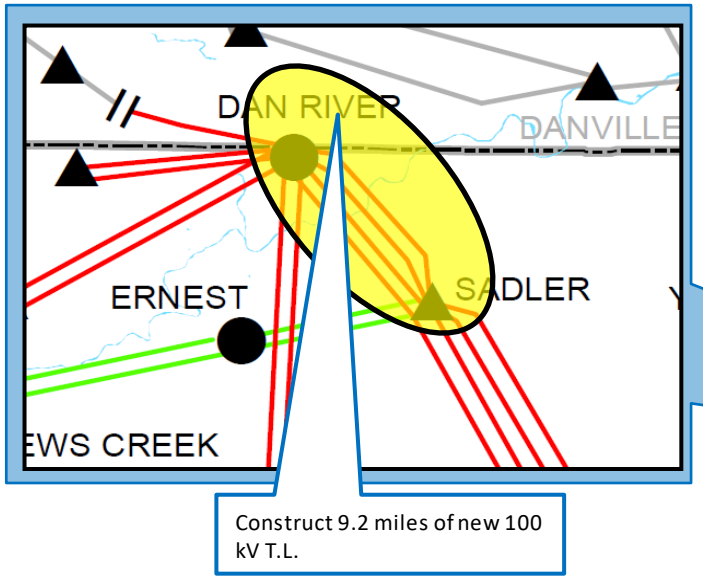
- **DESCRIPTION:**
  - 6-Wire the double circuit Wateree Tie – Great Falls Switching Station 100 kV Transmission Line
- **SUPPORTING STATEMENT:**
  - Thermal overloads may occur with the loss of a parallel circuit. Project done in conjunction with DEP's Wateree Transformer replacement project



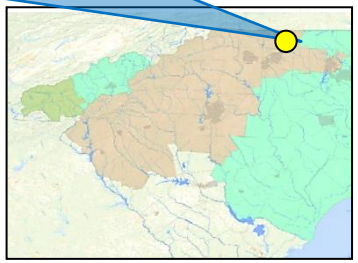
DUKE CAROLINAS – 2

- **2024**

SADLER TIE – DAN RIVER STEAM STATION 100 kV TRANSMISSION LINE



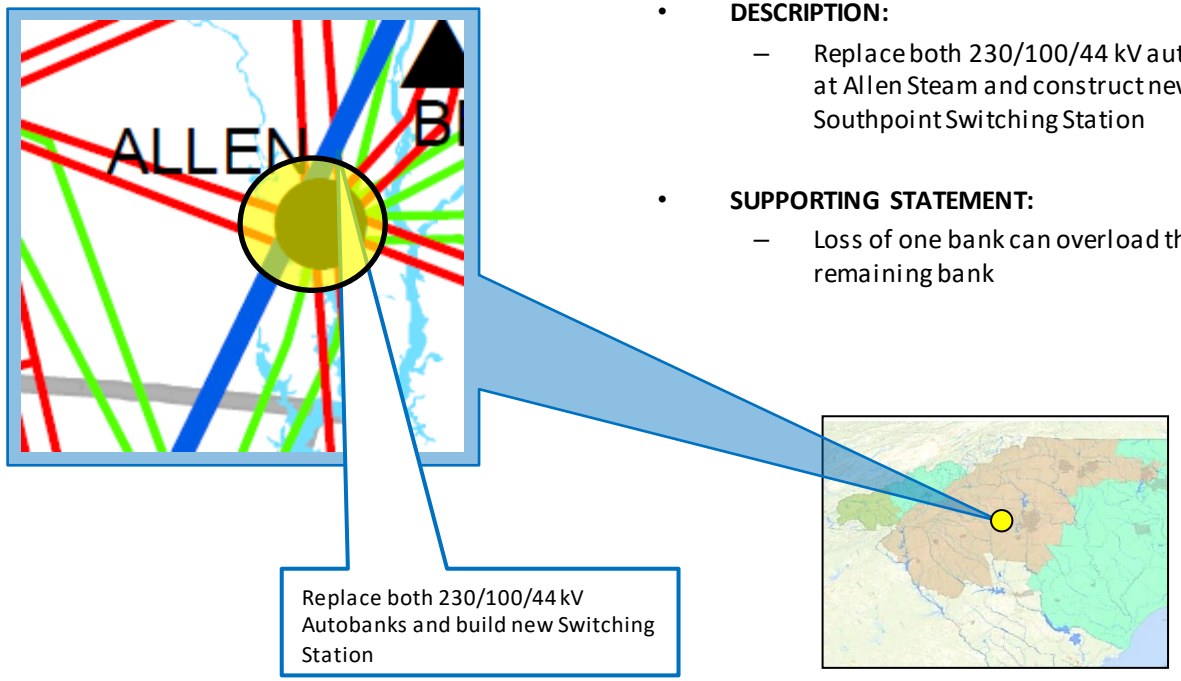
- **DESCRIPTION:**
  - Construct approximately 9.2 miles of new 100 kV transmission line between Dan River Steam Station and Sadler Tie with 954 AAC at 120°C.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur around Dan River Steam Station and Dan River Combined Cycle Station under contingency.



DUKE CAROLINAS – 3

- **2024**

ALLEN STEAM STATION AUTOBANK REPLACEMENT / SOUTHPOINT SWITCHING STATION

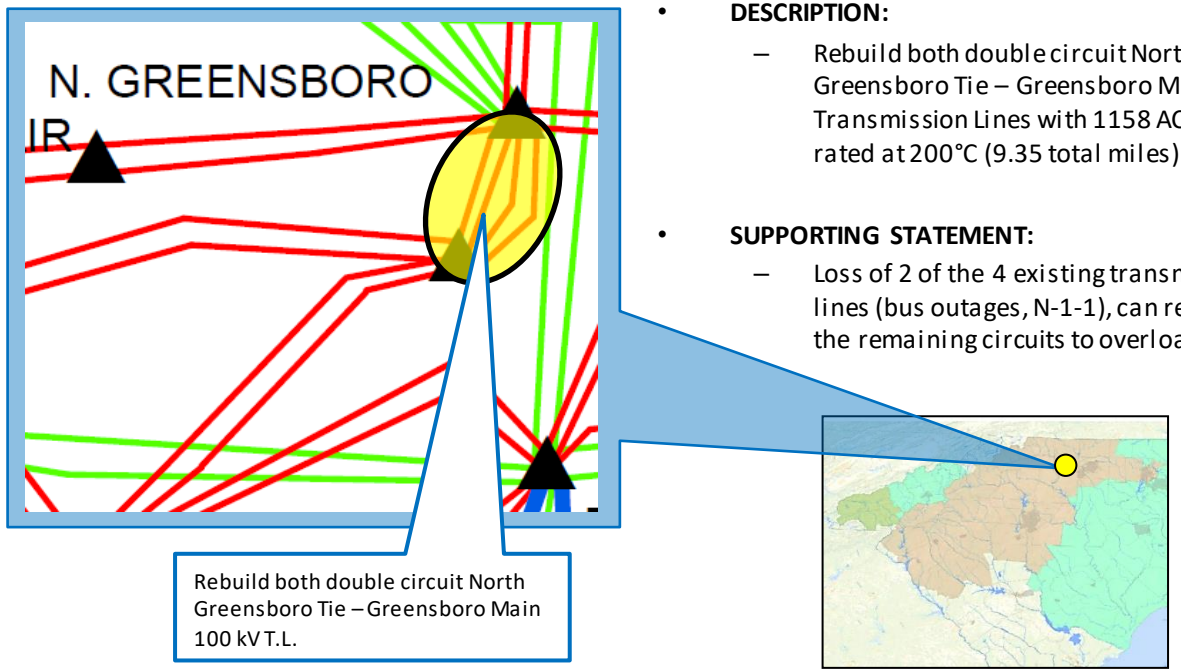


- **DESCRIPTION:**
  - Replace both 230/100/44 kV autobanks at Allen Steam and construct new Southpoint Switching Station
- **SUPPORTING STATEMENT:**
  - Loss of one bank can overload the remaining bank

DUKE CAROLINAS – 4

- **2025**

NORTH GREENSBORO TIE – GREENSBORO MAIN 100 kV TRANSMISSION LINES

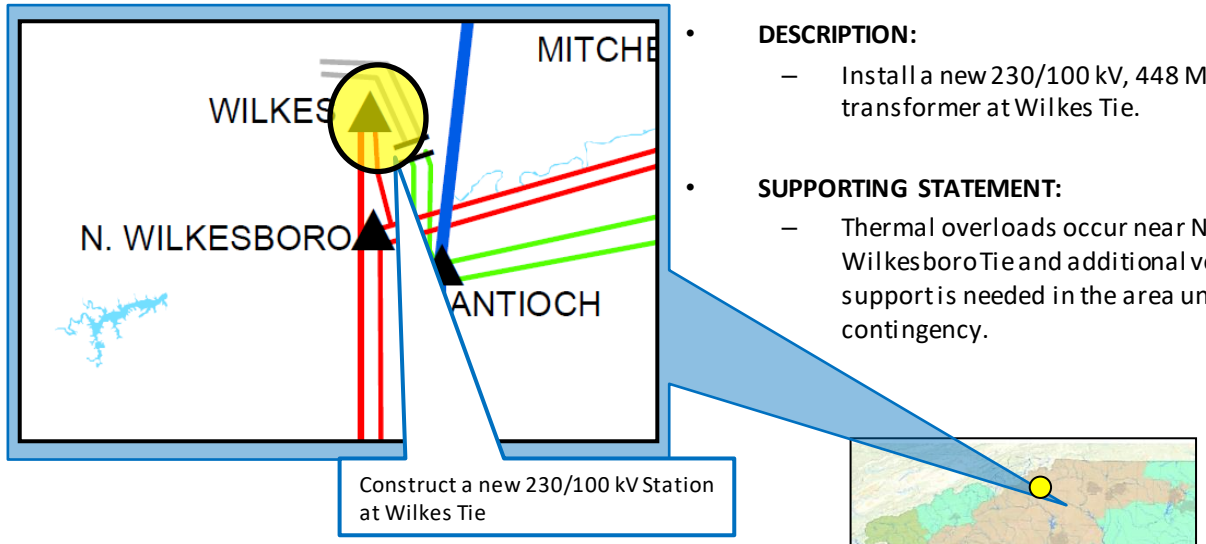


- **DESCRIPTION:**
  - Rebuild both double circuit North Greensboro Tie – Greensboro Main Transmission Lines with 1158 ACSS/TW rated at 200°C (9.35 total miles)
- **SUPPORTING STATEMENT:**
  - Loss of 2 of the 4 existing transmission lines (bus outages, N-1-1), can result in the remaining circuits to overload

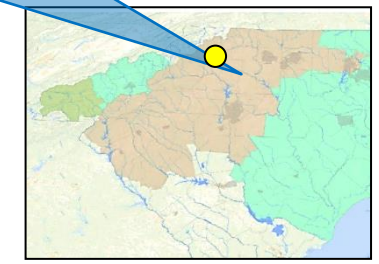
DUKE CAROLINAS – 5

- **2025**

WILKES TIE 230 KV SUBSTATION



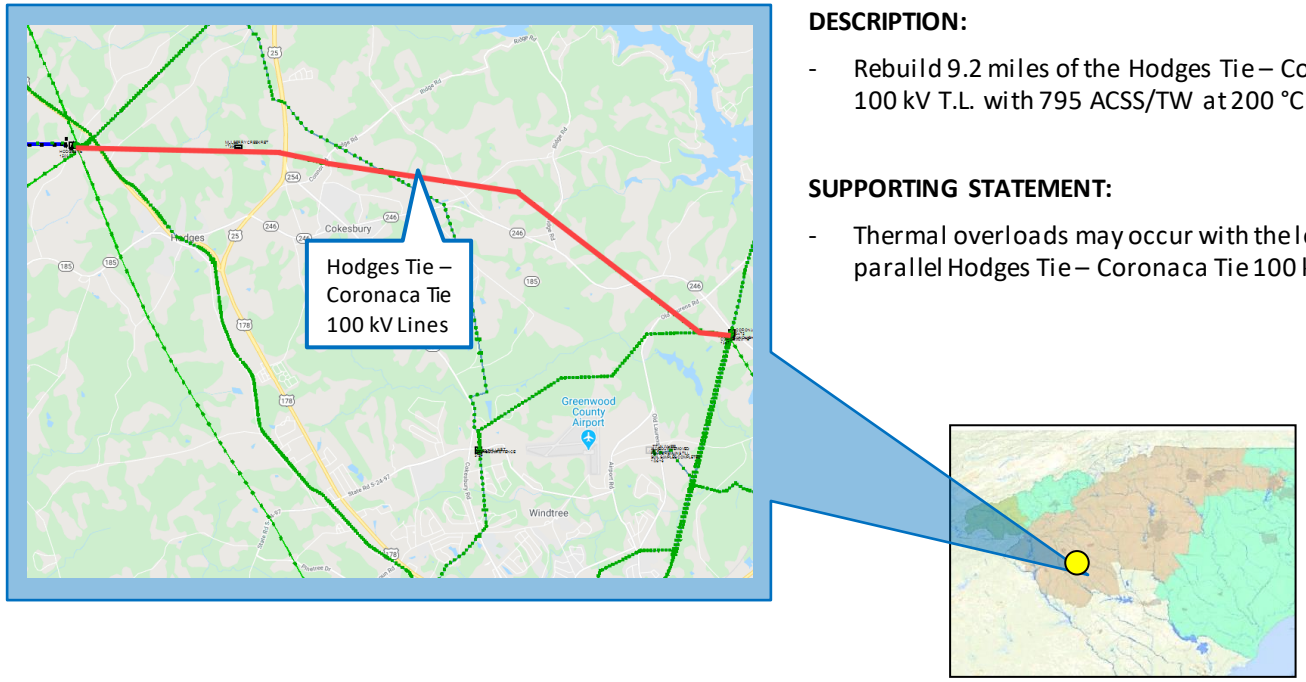
- **DESCRIPTION:**
  - Install a new 230/100 kV, 448 MVA transformer at Wilkes Tie.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur near North Wilkesboro Tie and additional voltage support is needed in the area under contingency.



DUKE CAROLINAS – 6

- **2026**

HODGES TIE – CORONACA TIE 100 kV TRANSMISSION LINE



DESCRIPTION:

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

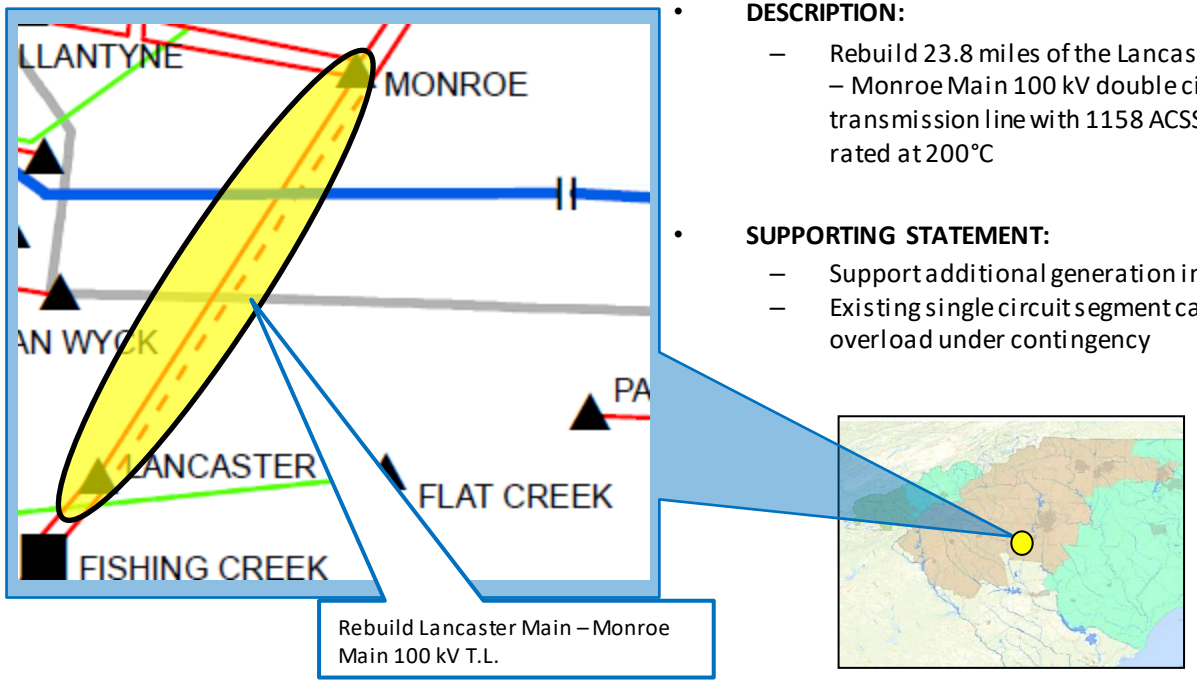
SUPPORTING STATEMENT:

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

DUKE CAROLINAS – 7

- **2027**

LANCASTER MAIN – MONROE MAIN 100 kV TRANSMISSION LINE



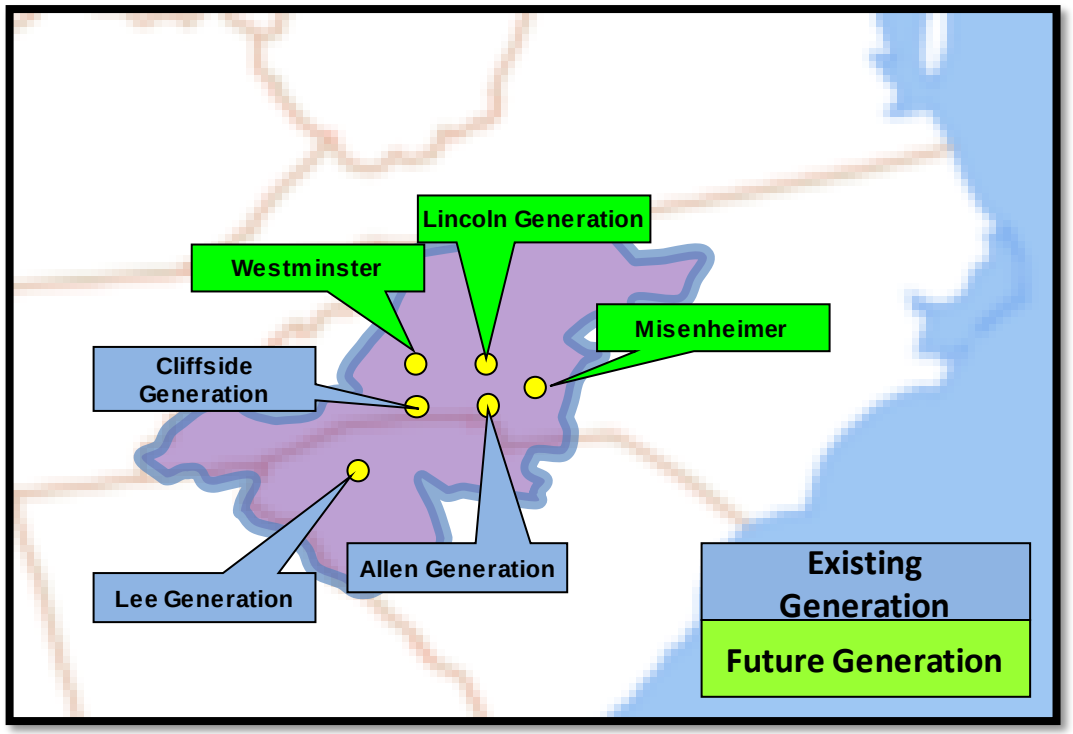
- **DESCRIPTION:**
  - Rebuild 23.8 miles of the Lancaster Main – Monroe Main 100 kV double circuit transmission line with 1158 ACSS/TW rated at 200°C
- **SUPPORTING STATEMENT:**
  - Support additional generation in the area
  - Existing single circuit segment can overload under contingency

DUKE CAROLINAS Balancing Authority

Upcoming 2022 Generation Assumptions

DUKE CAROLINAS – 2022 Generation Assumptions

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



DUKE CAROLINAS – 2022 Generation Assumptions

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

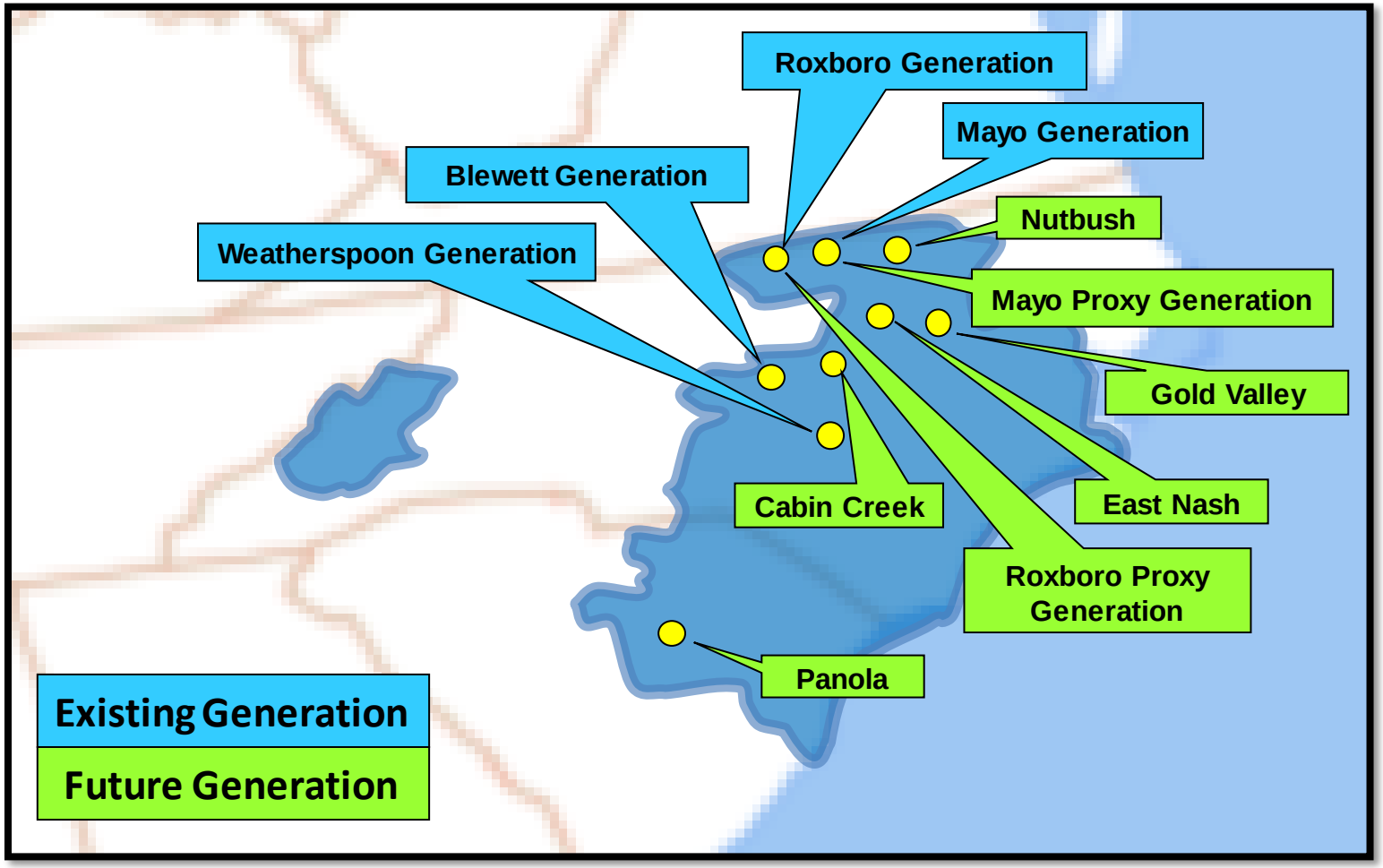
SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ALLEN 1	COAL	174	0	--	--	--	--	--	--	--	--
ALLEN 5	COAL	290	0	--	--	--	--	--	--	--	--
Cliffside 5	COAL	566	566	566	0	--	--	--	--	--	--
Lee 3 NG	GAS	160	160	160	160	160	160	160	160	0	--
LINCOLN 17	GAS	--	402	402	402	402	402	402	402	402	402
Westminster	PV	75	75	75	75	75	75	75	75	75	75
Misenheimer	PV	--	74	74	74	74	74	74	74	74	74

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 2021 SERTP Process.



DUKE PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
BLEWETT IC #1	OIL	13	13	13	0	--	--	--	--	--	--
BLEWETT IC #2	OIL	13	13	13	0	--	--	--	--	--	--
BLEWETT IC #3	OIL	13	13	13	0	--	--	--	--	--	--
BLEWETT IC #4	OIL	13	13	13	0	--	--	--	--	--	--
WEATHERSPOON IC #1	GAS/OIL	32	32	32	0	--	--	--	--	--	--
WEATHERSPOON IC #2	GAS/OIL	32	32	32	0	--	--	--	--	--	--
WEATHERSPOON IC #3	GAS/OIL	33	33	33	0	--	--	--	--	--	--
WEATHERSPOON IC #4	GAS/OIL	31	31	31	0	--	--	--	--	--	--
ROXBORO #3	COAL	691	691	691	691	691	0	--	--	--	--

DUKE PROGRESS – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ROXBORO #4 COAL	COAL	698	698	698	698	698	0	--	--	--	--
ROXBORO #1 COAL	COAL	379	379	379	379	379	379	0	--	--	--
ROXBORO #2 COAL	COAL	665	665	665	665	665	665	0	--	--	--
MAYO COAL	COAL	727	727	727	727	727	727	0	--	--	--
GOLD VALLEY PV	PV	78.8	78.8	78.8	78.8	78.8	78.8	78.8	78.8	78.8	78.8
CABIN CREEK PV	PV	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2
EAST NASH PV	PV	49.4	49.4	49.4	49.4	49.4	49.4	49.4	49.4	49.4	49.4
NUTBUSH PV	PV	35	35	35	35	35	35	35	35	35	35
PANOLA PV	PV	--	67	67	67	67	67	67	67	67	67

DUKE PROGRESS – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ROXBORO PROXY #1	--	--	--	--	--	--	1350	1350	1350	1350	1350
ROXBORO PROXY #2	--	--	--	--	--	--	--	1350	1350	1350	1350
MAYO PROXY	--	--	--	--	--	--	--	602	602	602	602

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	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
HAMLET #1	55	55	55	55	55	55	55	55	55	55
HAMLET #2	55	55	55	55	55	55	55	55	55	55
HAMLET #3	55	55	55	55	55	55	55	55	55	55

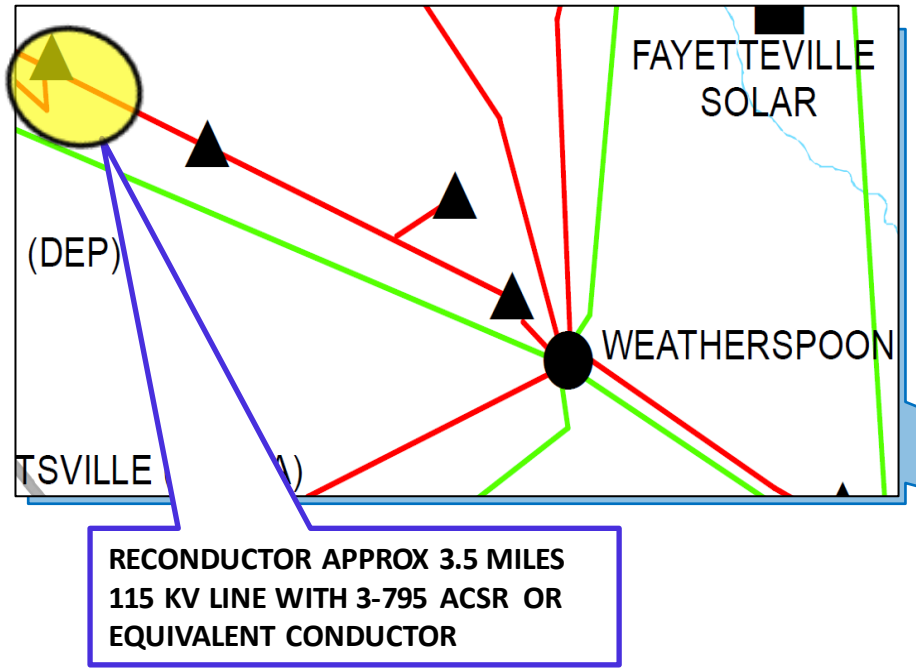
DUKE PROGRESS EAST Balancing Authority Area

SERTP Regional Transmission Expansion Plan

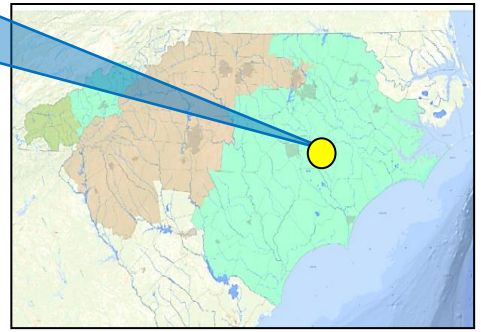
DUKE PROGRESS EAST – 1

- **2022**

IND 304440 – MAXTON 115 KV T.L. - RECONDUCTOR



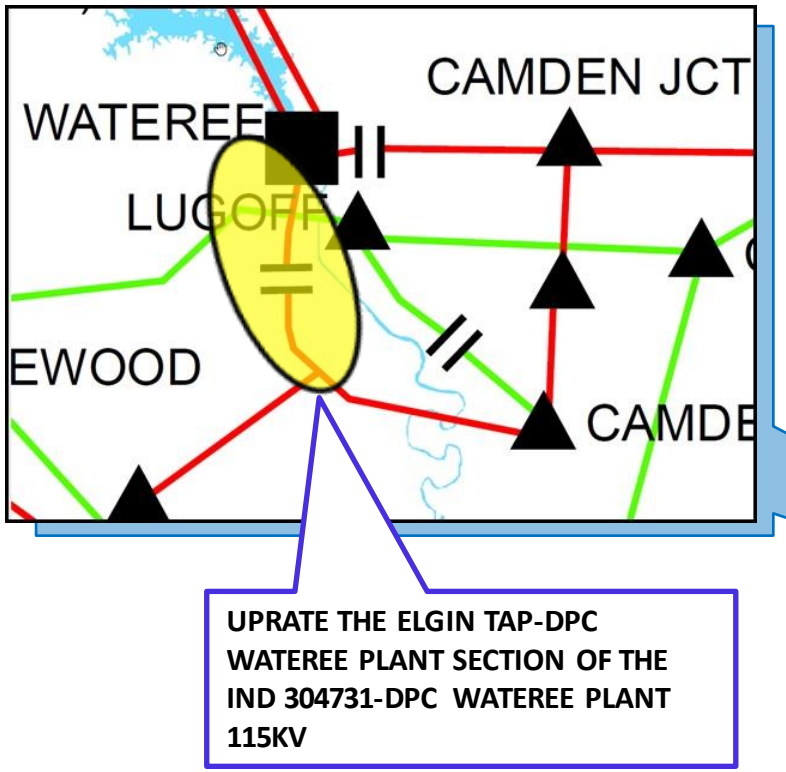
- **DESCRIPTION:**
  - Reconductor with 3-795 MCM ACSR or equivalent from IND 304440 to Maxton 115 kV substation approximately 3.5 miles. Replace existing 600A switches with 1200A switches.
- **SUPPORTING STATEMENT:**
  - The IND 304440-Maxton section of the Weatherspoon-IND 304440 115 kV transmission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



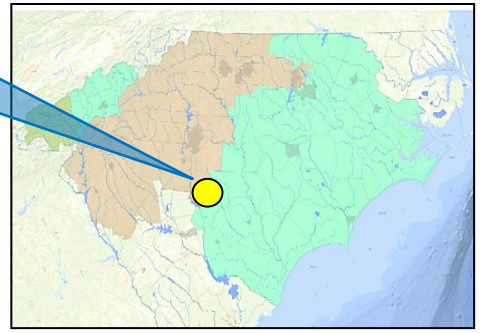
DUKE PROGRESS EAST – 2

- **2022**

IND 304731-DPC WATEREE PLANT 115 KV T.L. – UPRATE ELGIN-WATEREE SECTION



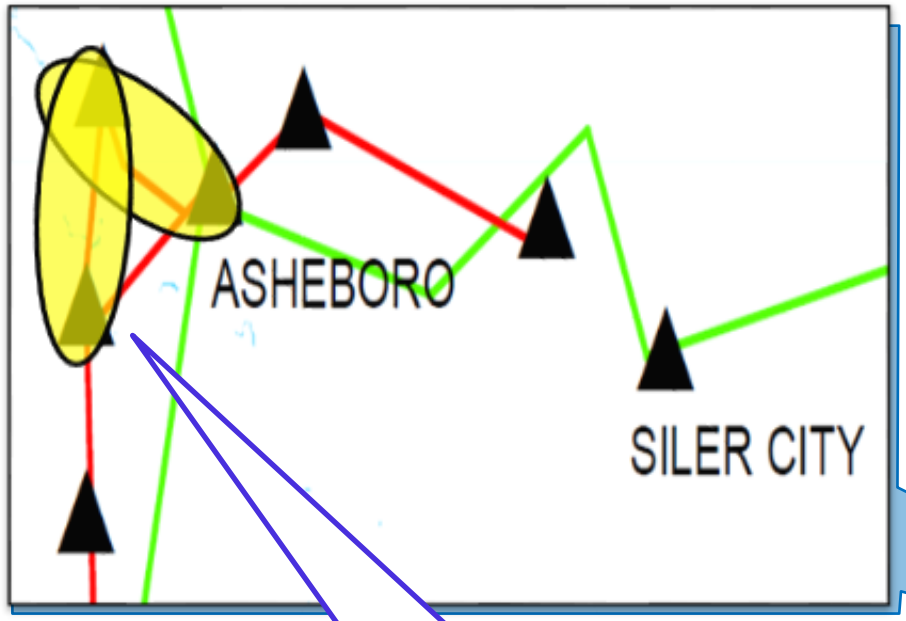
- **DESCRIPTION:**
  - Uprate the Elgin Tap – DPC Wateree Plant section (5 miles) of the IND 304731 – DPC Wateree Plant 115kV line to its full 336 MCM ACSR conductor rating (from 170 deg F to 212 deg F).
- **SUPPORTING STATEMENT:**
  - The existing line section overloads under contingency.



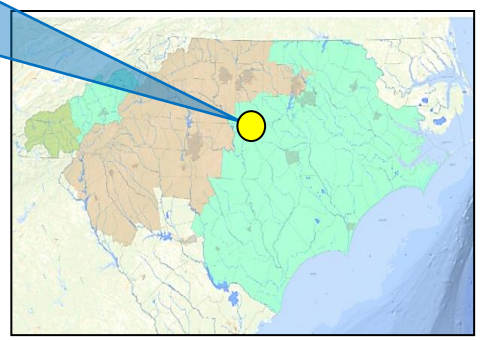
DUKE PROGRESS EAST – 3

- **2022**

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



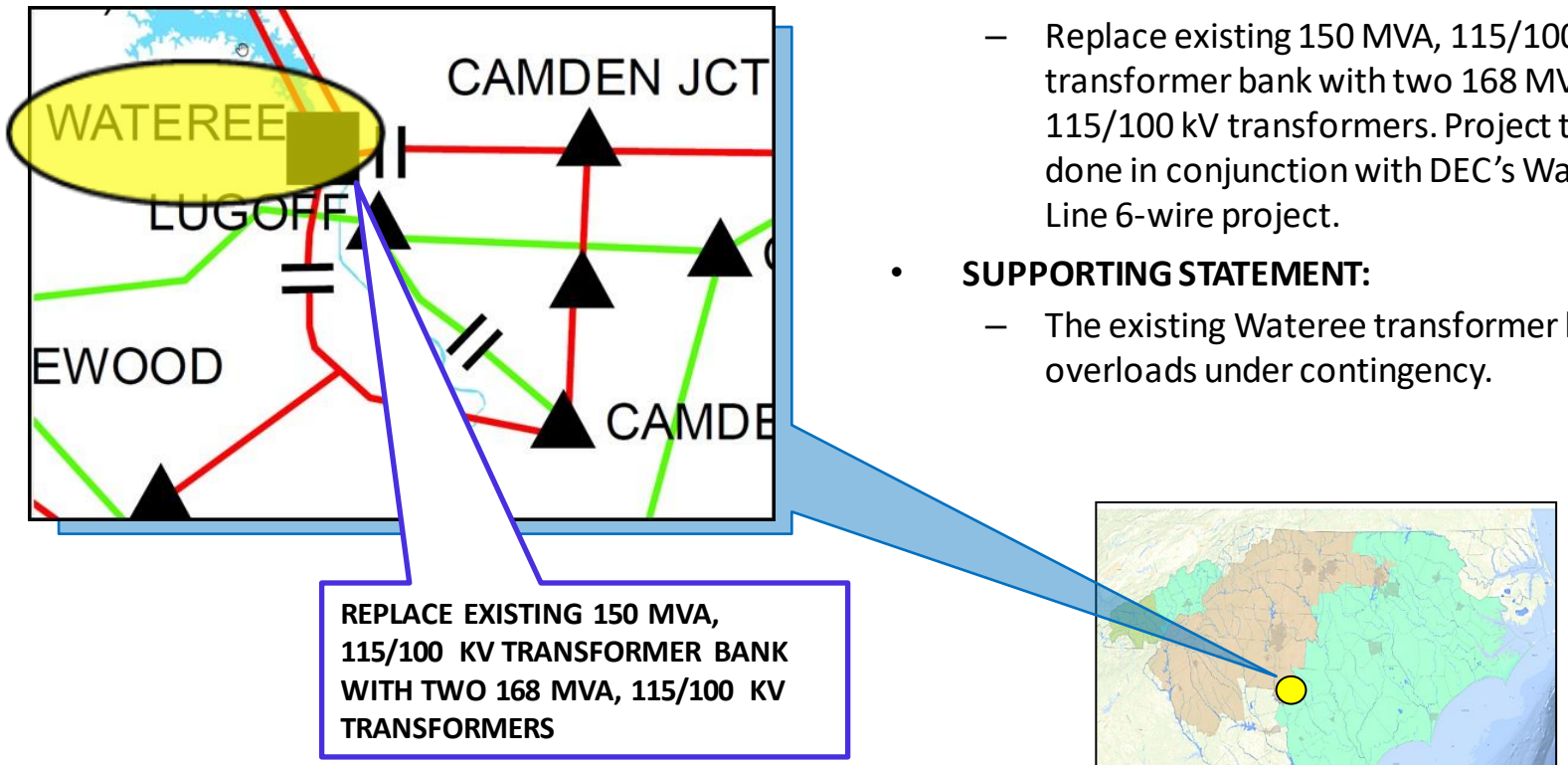
- **DESCRIPTION:**
  - Rebuild approximately 6.5 miles of the Asheboro – Asheboro East (North) 115 kV transmission line using 3-1590 ACSR rated for 307 MVA. Replace disconnect switches at Asheboro 230 kV and both the breaker and the disconnect switches at Asheboro East 115 kV with equipment of at least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



DUKE PROGRESS EAST – 4

- **2023**

WATEREE 115 KV PLANT – REPLACE 115/100 KV TRANSFORMERS

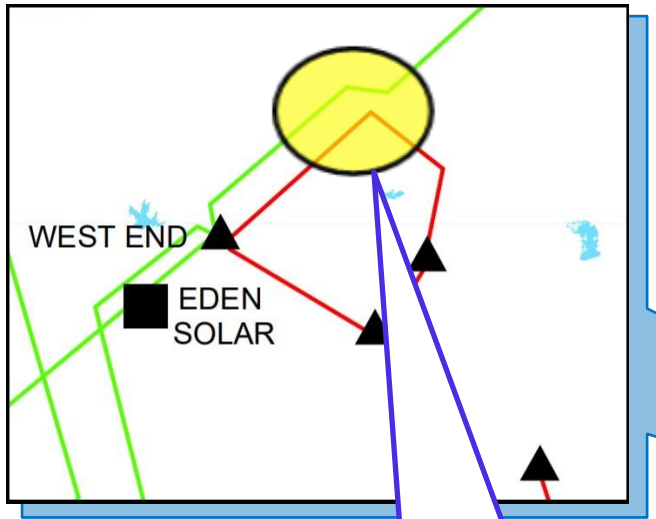


- **DESCRIPTION:**
  - Replace existing 150 MVA, 115/100 kV transformer bank with two 168 MVA, 115/100 kV transformers. Project to be done in conjunction with DEC's Wateree Line 6-wire project.
- **SUPPORTING STATEMENT:**
  - The existing Wateree transformer bank overloads under contingency.

DUKE PROGRESS EAST – 5

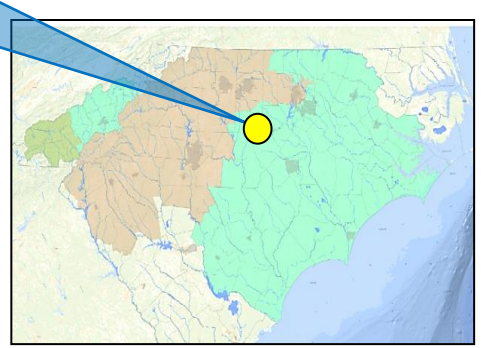
- **2025**

CARTHAGE 230/115KV SUBSTATION - CONSTRUCT



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

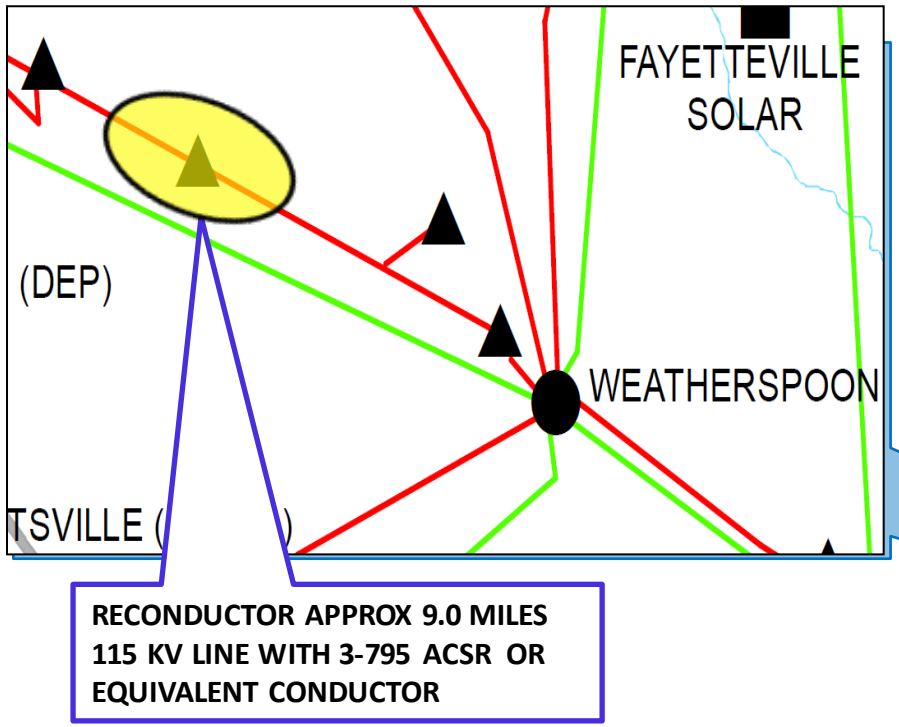
- **DESCRIPTION:**
  - Construct a new 230/115kV substation near the existing Carthage 115kV substation. Loop in the existing Cape Fear – West End 230kV line and West End – Southern Pines 115kV feeder.
- **SUPPORTING STATEMENT:**
  - Outage of one West End transformer overloads the other and voltage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



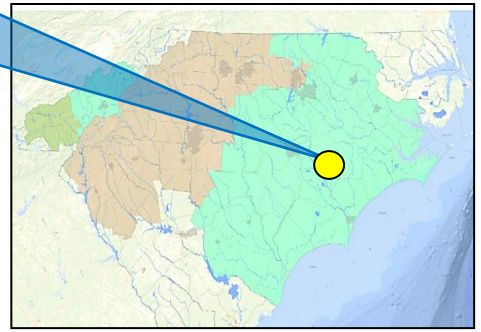
DUKE PROGRESS EAST – 6

- **2026**

WSPN – IND 304440 115 KV T.L.



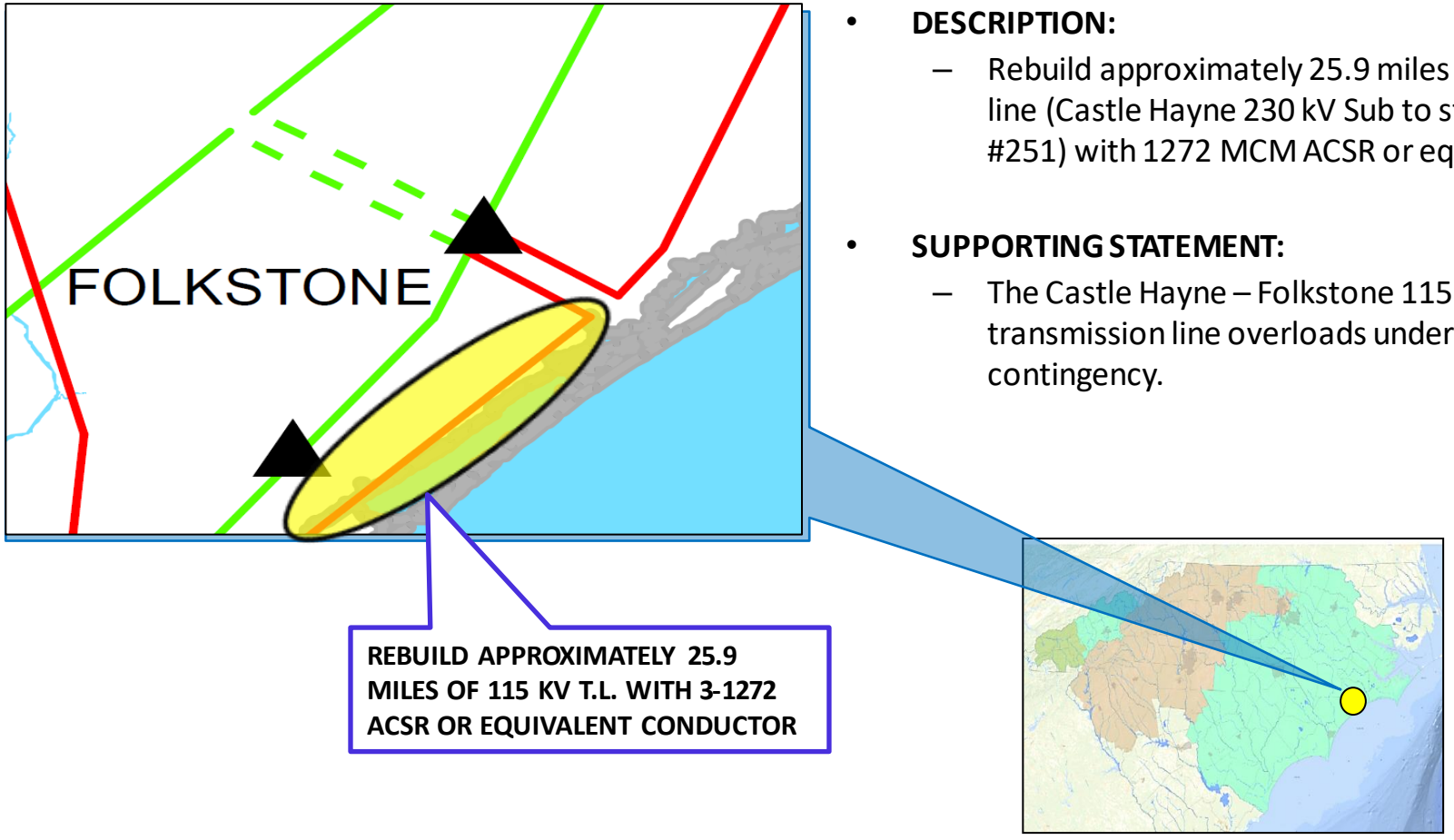
- **DESCRIPTION:**
  - Reconductor approximately 9.0 miles from Maxton to Pembroke 115 kV substation with 3-795 MCM ACSR or equivalent. Replace existing 600A switch with 1200A switch.
- **SUPPORTING STATEMENT:**
  - The Maxton-Pembroke section of the Weatherspoon-IND 304440 115 kV transmission line overloads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



DUKE PROGRESS EAST – 7

- **2026**

CASTLE HAYNE-FOLKSTONE 115 KV T.L.

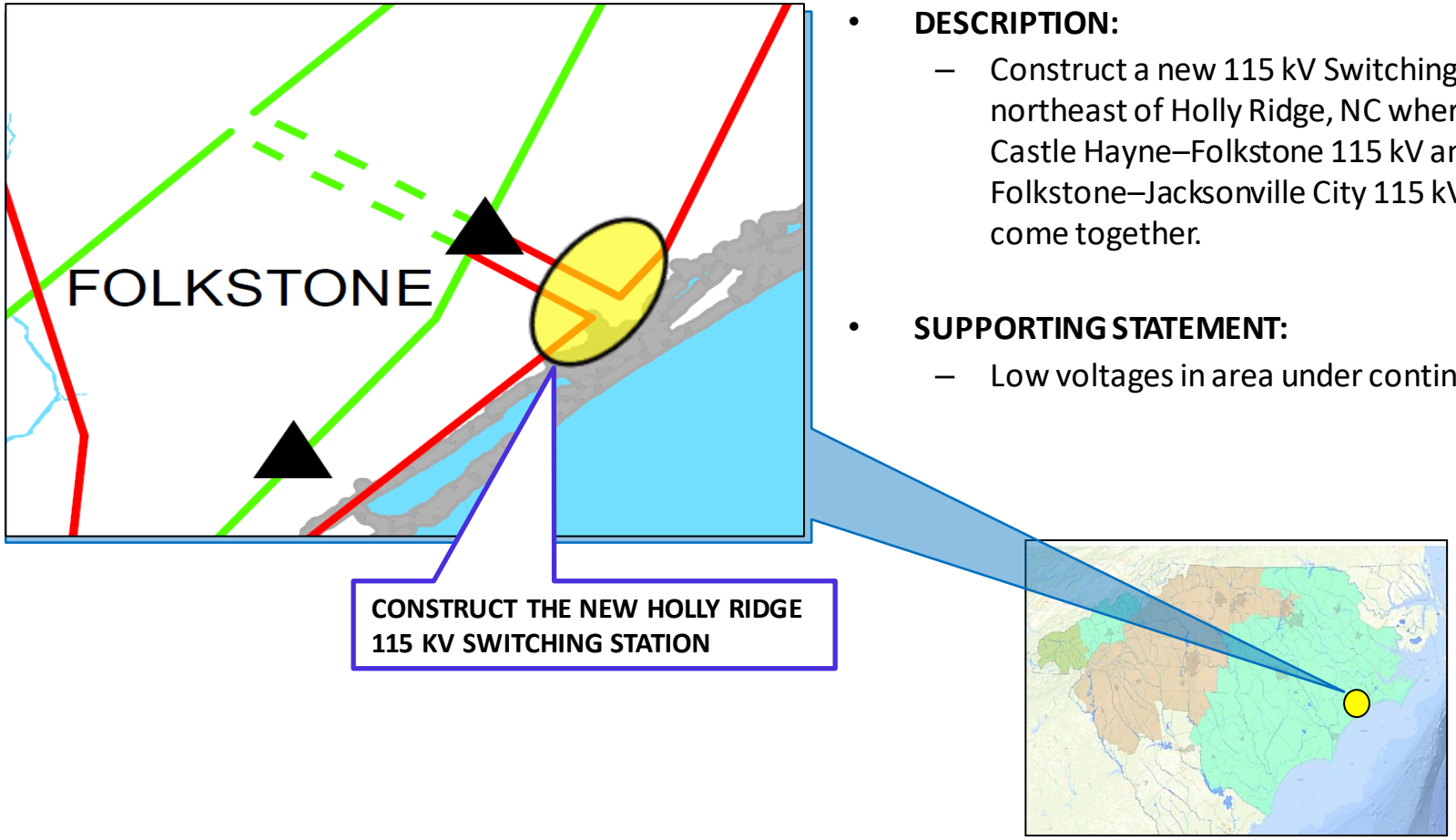


- **DESCRIPTION:**
  - Rebuild approximately 25.9 miles of 115 kV line (Castle Hayne 230 kV Sub to structure #251) with 1272 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - The Castle Hayne – Folkstone 115 kV transmission line overloads under contingency.

DUKE PROGRESS EAST – 8

- **2026**

HOLLY RIDGE NORTH 115 KV SWITCHING STATION

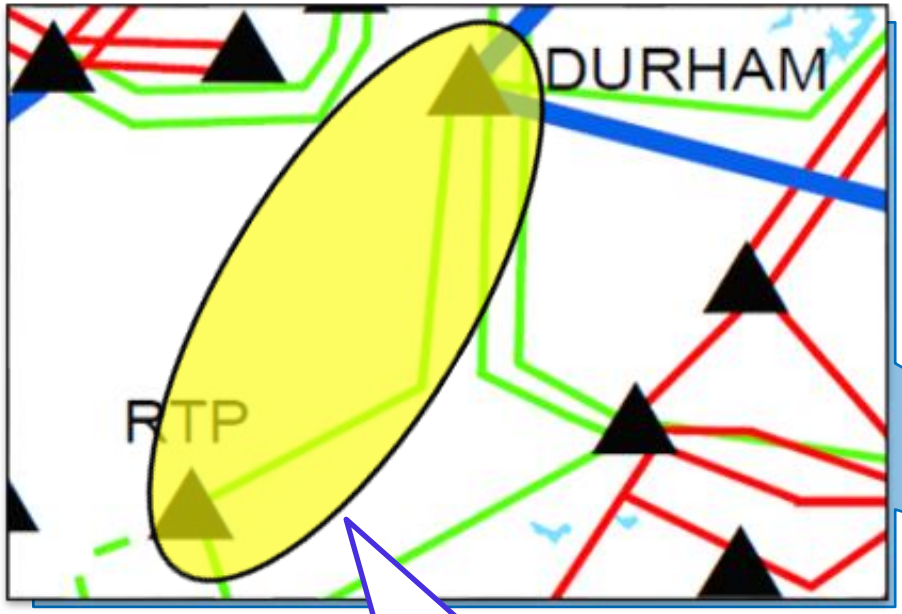


- **DESCRIPTION:**
  - Construct a new 115 kV Switching Station northeast of Holly Ridge, NC where the Castle Hayne–Folkstone 115 kV and Folkstone–Jacksonville City 115 kV lines come together.
- **SUPPORTING STATEMENT:**
  - Low voltages in area under contingency.

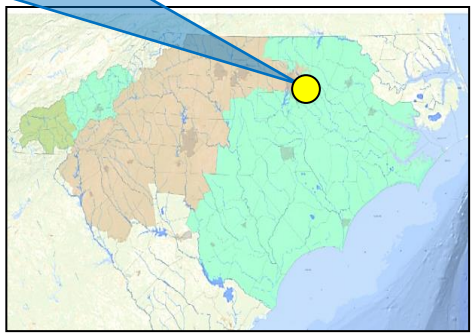
DUKE PROGRESS EAST – 9

- **2028**

DURHAM – RTP 230 KV T.L.



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



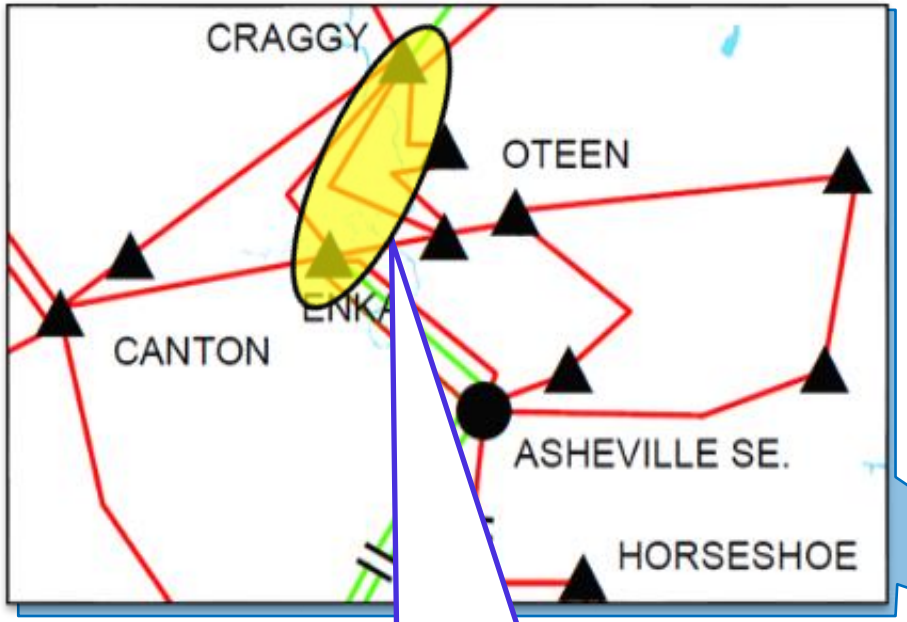
DUKE PROGRESS WEST Balancing Authority Area

SERTP Regional Transmission Expansion Plan

DUKE PROGRESS WEST – 1

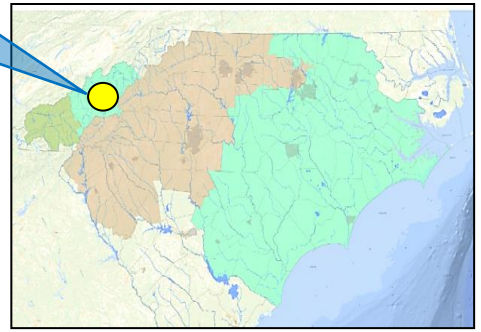
- **2025**

CRAGGY-ENKA 230 KV T.L., CONSTRUCT



CONSTRUCT APPROXIMATELY 10.0 MILES OF 230 KV TRANSMISSION LINE FROM THE CRAGGY 230 KV SUB TO THE ENKA 230 KV SUB WITH 3-954 ACSS-TW OR EQUIVALENT CONDUCTOR RATED FOR 710 MVA.

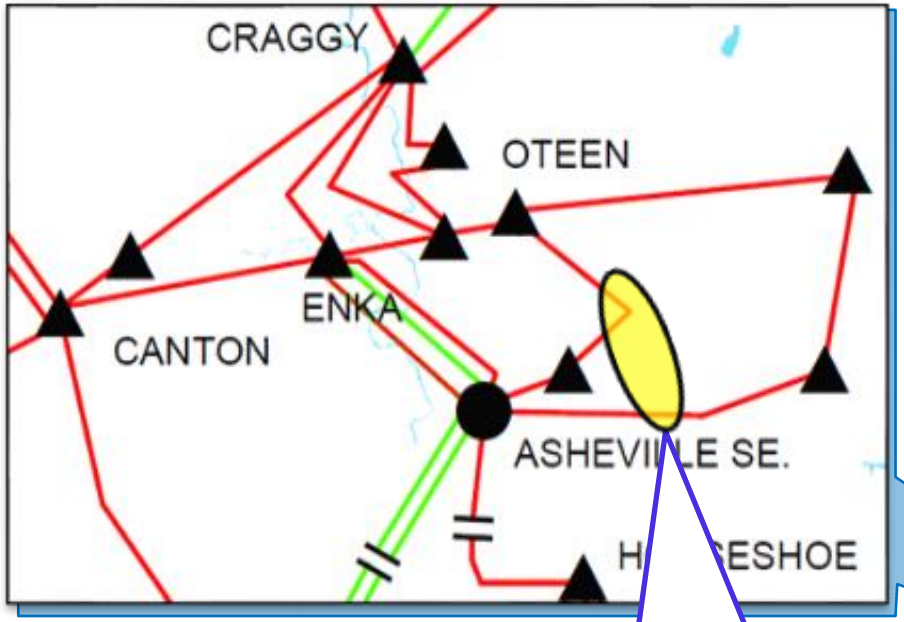
- **DESCRIPTION:**
  - Construct approximately 10.0 miles of new 230 kV transmission line from the Craggy 230 kV substation to the Enka 230 kV substation with 3-954 ACSS-TW or equivalent conductor rated for 710 MVA.
- **SUPPORTING STATEMENT:**
  - The Enka–West Asheville 115 kV line overloads under contingency.



DUKE PROGRESS WEST – 2

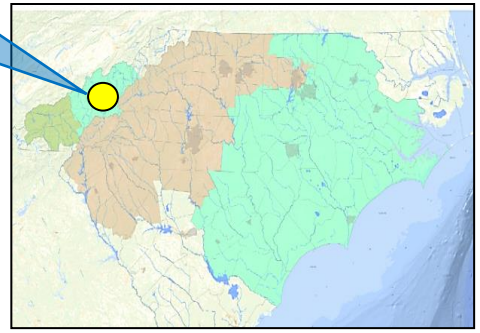
- **2026**

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.



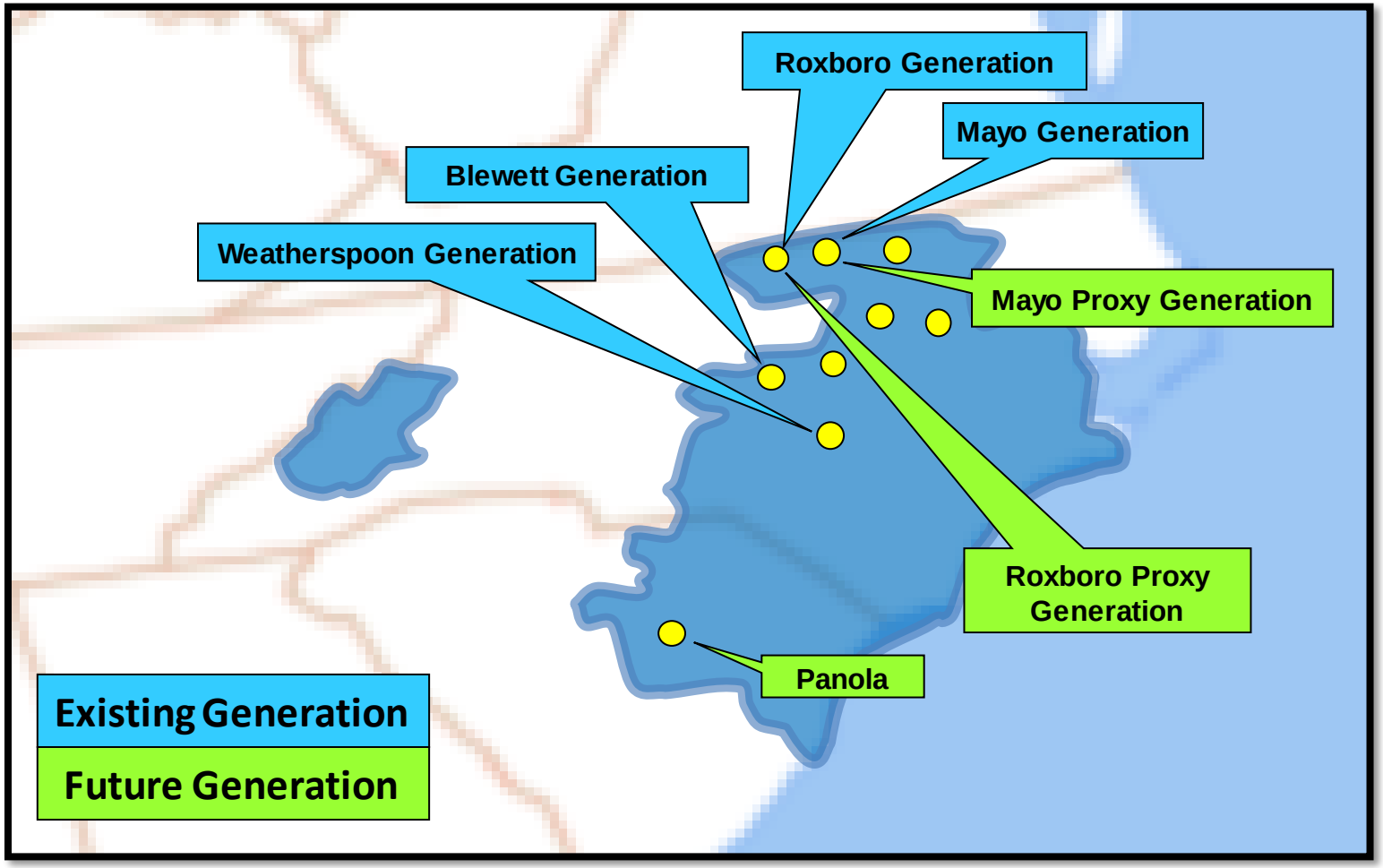
DUKE PROGRESS EAST/WEST Balancing Authority Areas

Upcoming 2022 Generation Assumptions

* Duke Progress East/West has no generation assumptions expected to change throughout the ten year planning horizon for the 2022 SERTP Process.

DUKE PROGRESS – Generation Assumptions

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



DUKE PROGRESS – Generation Assumptions

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

SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BLEWETT IC #1	OIL	13	13	0	--	--	--	--	--	--	--
BLEWETT IC #2	OIL	13	13	0	--	--	--	--	--	--	--
BLEWETT IC #3	OIL	13	13	0	--	--	--	--	--	--	--
BLEWETT IC #4	OIL	13	13	0	--	--	--	--	--	--	--
WEATHERSPOON IC #1	GAS/OIL	32	32	0	--	--	--	--	--	--	--
WEATHERSPOON IC #2	GAS/OIL	32	32	0	--	--	--	--	--	--	--
WEATHERSPOON IC #3	GAS/OIL	33	33	0	--	--	--	--	--	--	--
WEATHERSPOON IC #4	GAS/OIL	31	31	0	--	--	--	--	--	--	--
ROXBORO #3	COAL	691	691	691	691	0	--	--	--	--	--

DUKE PROGRESS – Generation Assumptions (Cont.)

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

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

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.

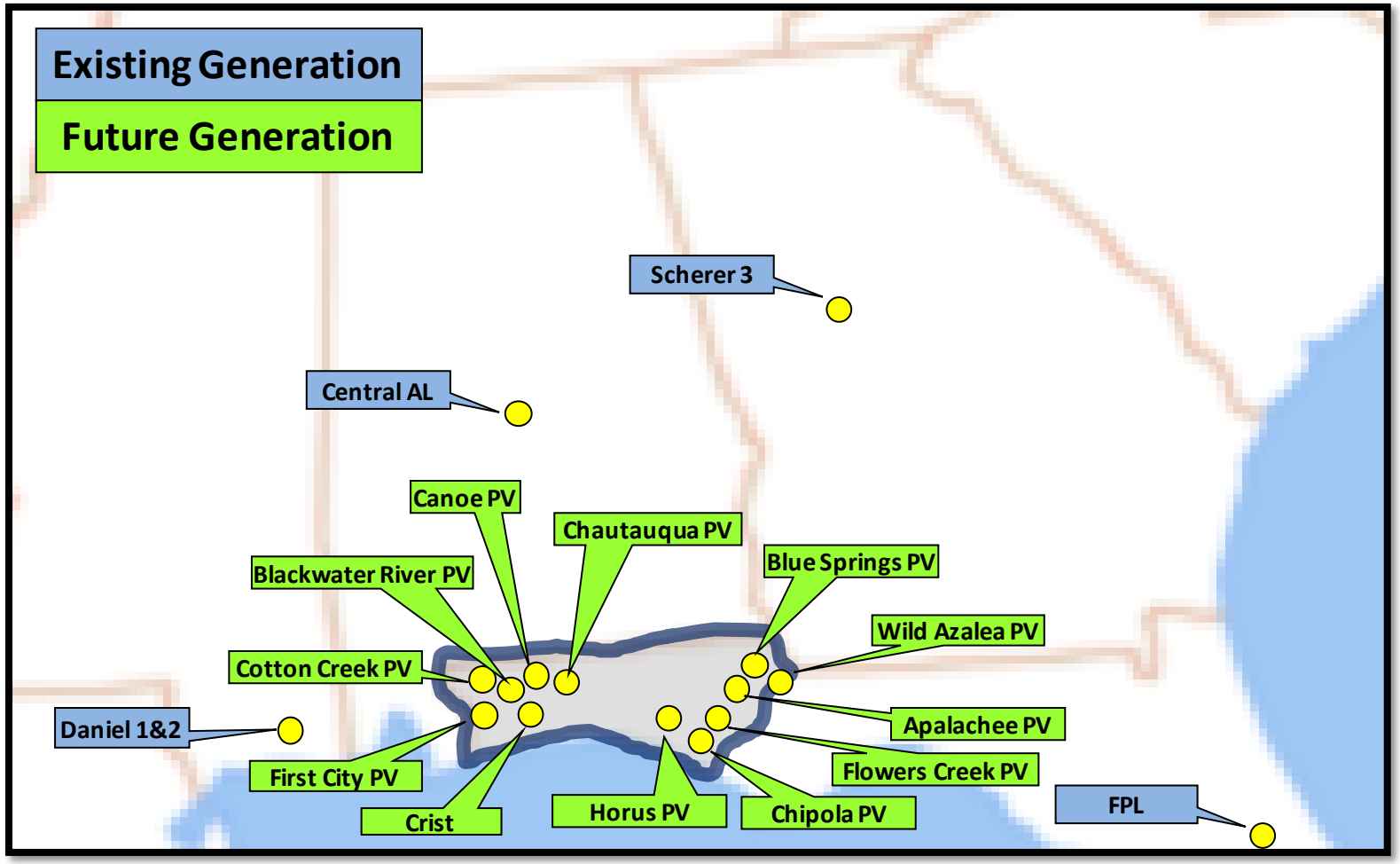
SITE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
HAMLET #1	55	55	55	55	55	55	55	55	55	55
HAMLET #2	55	55	55	55	55	55	55	55	55	55
HAMLET #3	55	55	55	55	55	55	55	55	55	55

GULF POWER Balancing Authority Area

Generation Assumptions

GULF POWER – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten-year planning horizon for the 2021 SERTP Process.



GULF POWER – Generation Assumptions

The following table depicts future generation assumptions that change throughout the ten-year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022[1]	2023	2024	2025	2026	2027	2028	2029	2030	2031
CRIST	Gas	1862	1862	1862	1862	1862	1862	1862	1862	1862	1862
COTTON CREEK PV	Solar	75	75	75	75	75	75	75	75	75	75
BLUE SPRING PV	Solar	75	75	75	75	75	75	75	75	75	75
FLOWERS CREEK PV	Solar	--	75	75	75	75	75	75	75	75	75
WILD AZALEA PV	Solar	--	75	75	75	75	75	75	75	75	75
APALACHEE PV	Solar	--	75	75	75	75	75	75	75	75	75
BLACKWATER RIVER PV	Solar	--	75	75	75	75	75	75	75	75	75
CANOE PV	Solar	--	75	75	75	75	75	75	75	75	75
CHAUTAUQUA PV	Solar	--	75	75	75	75	75	75	75	75	75
CHIPOLA PV	Solar	--	75	75	75	75	75	75	75	75	75
FIRST CITY PV	Solar	--	75	75	75	75	75	75	75	75	75
HORUS PV	Solar	--	75	75	75	75	75	75	75	75	75

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

GULF POWER Balancing Authority Area

GULF POWER – Generation Assumptions (Delivery Service)

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

SITE	2022[1]	2023	2024	2025	2026	2027	2028	2029	2030	2031
DANIEL	500	500	0	0	0	0	0	0	0	0
SCHERER	220	220	220	220	220	220	220	220	220	220
CENTRAL ALABAMA	885	--	--	--	--	--	--	--	--	--
FPL[1]	500	500	850	850	-600	-600	-700	-700	-850	-850

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

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

GULF POWER Balancing Authority Area

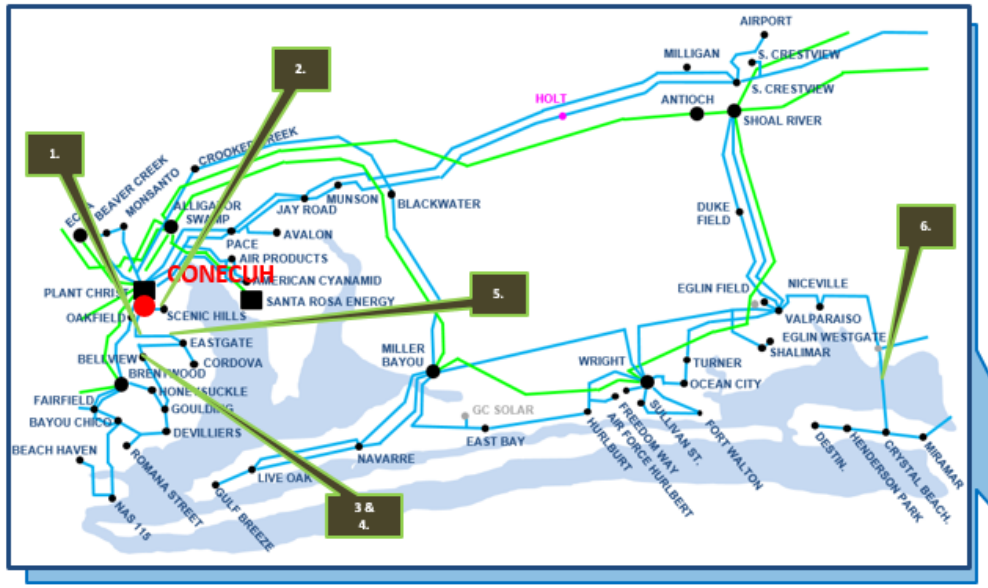
SERTP Regional Transmission Expansion Plan

GULF POWER Balancing Authority Area

GULF - 1

- **2021**

CRIST GENERATION EXPANSION PROJECT



PROJECT DESCRIPTION:

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

Transmission upgrades:

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

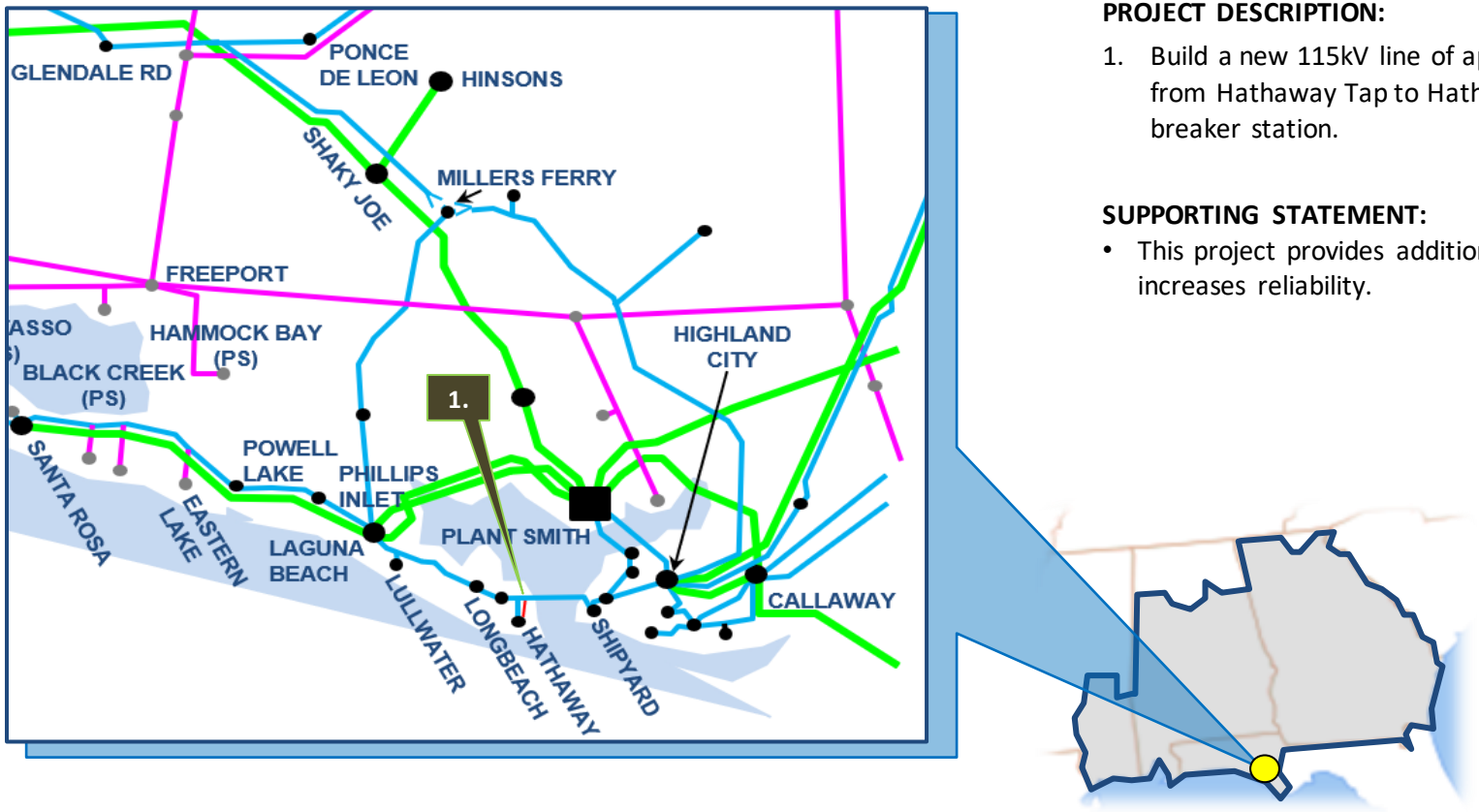
SUPPORTING STATEMENT:

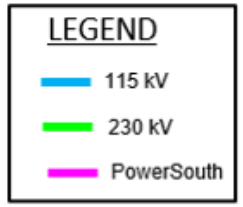
- Revised resource integration in Gulf Power Area.

GULF - 2

- **2021**

HATAWAY 115KV LOOP PROJECT





PROJECT DESCRIPTION:

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

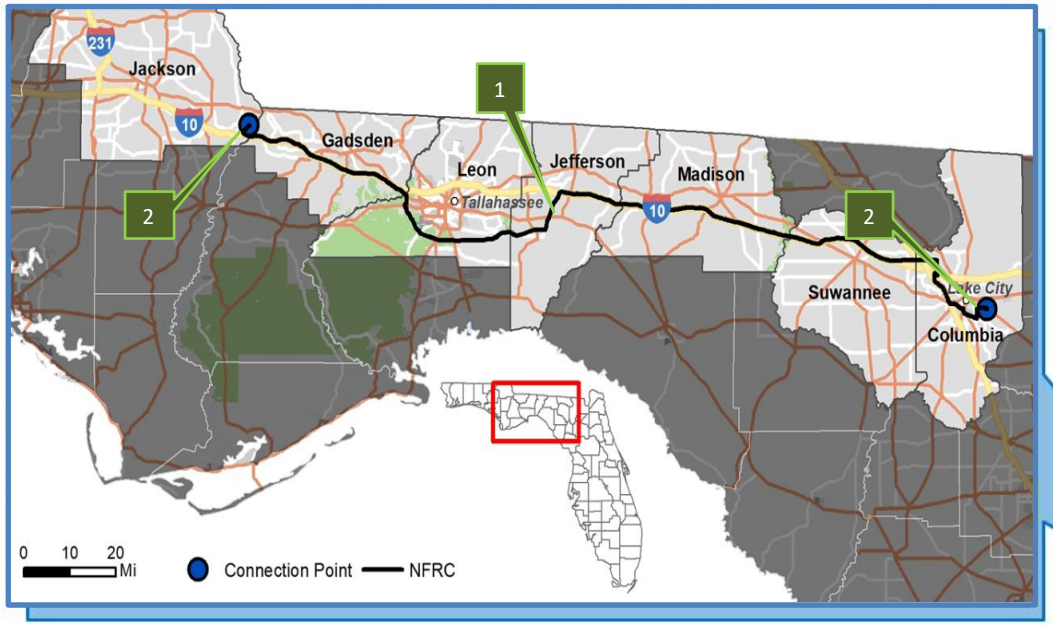
SUPPORTING STATEMENT:

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

GULF - 3

- **2022**

RAVEN-SINAI CEMETARY 161kV TRANSMISSION LINE PROJECT



PROJECT DESCRIPTION:

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

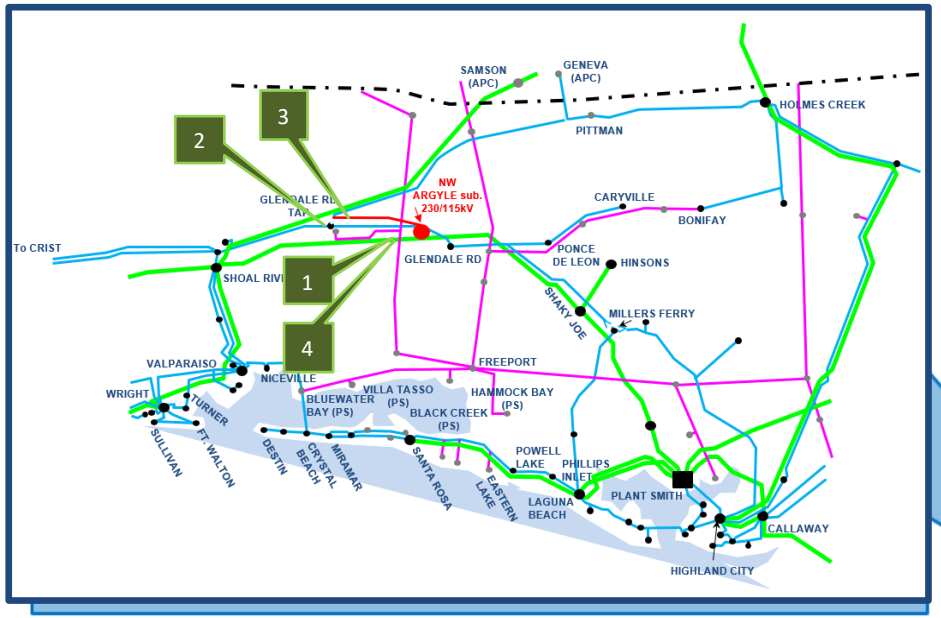
SUPPORTING STATEMENT:

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

GULF - 4

- **2022**

ARGYLE INJECTION

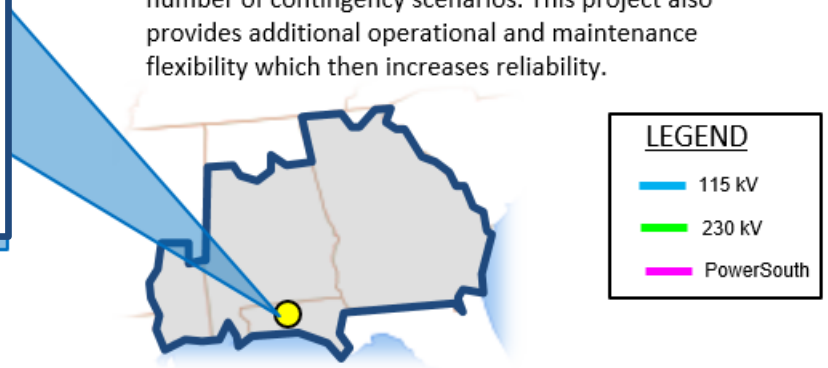


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

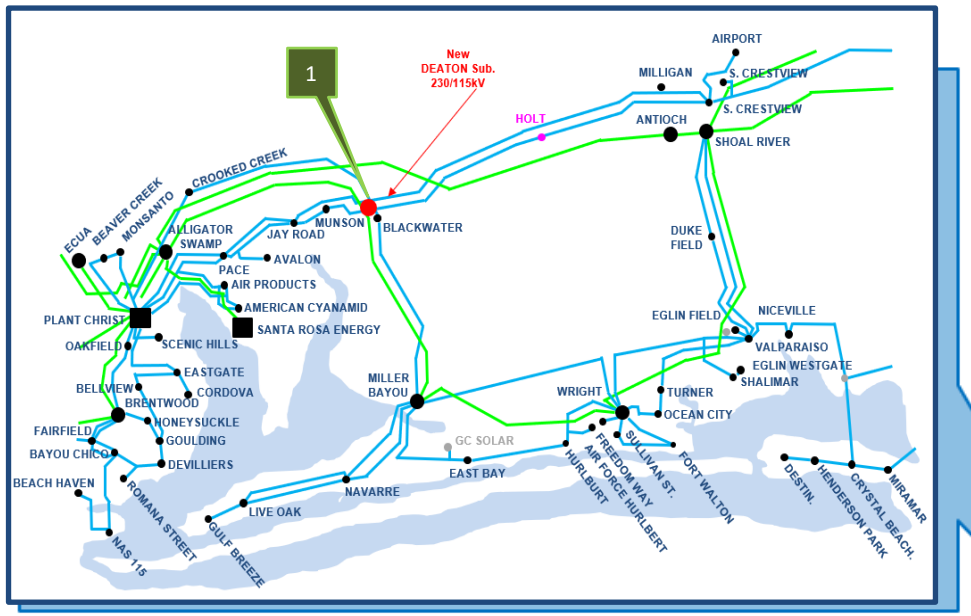


GULF POWER Balancing Authority Area

GULF - 5

- **2022**

DEATON INJECTION

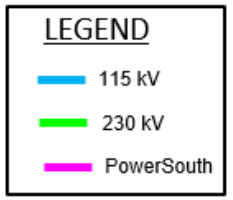


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

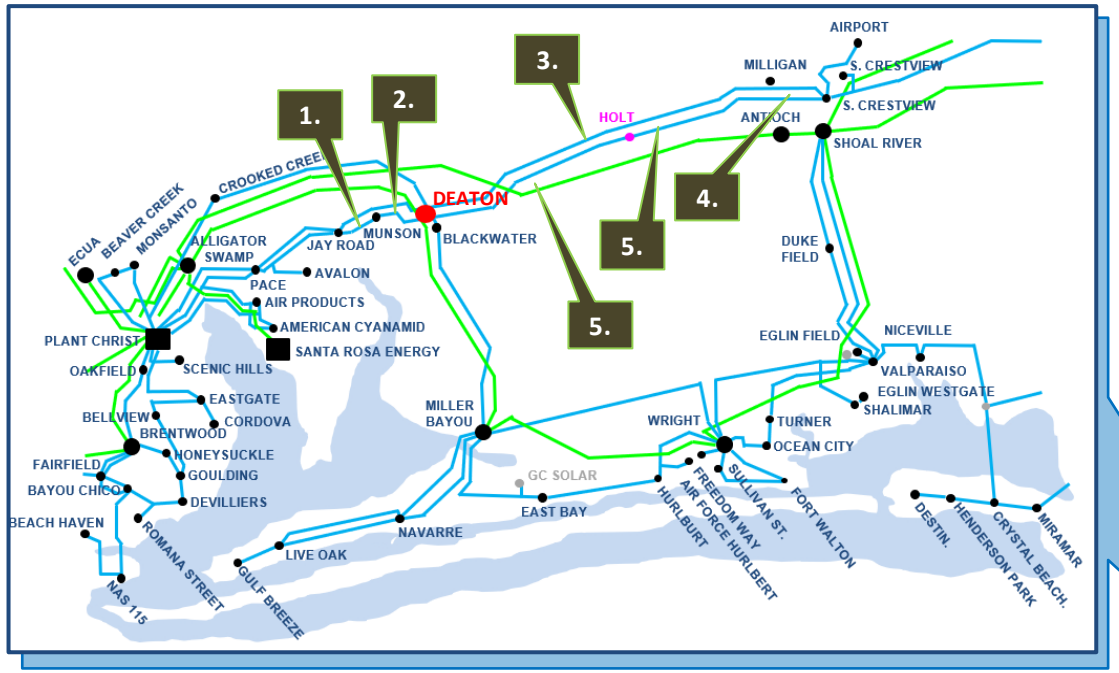
- This project eliminates several overloads under a number of contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.



GULF - 6

- **2022-2023**

CRIST – DEATON-SOUTH CRESTVIEW 115 KV RECONDUCTORINGS

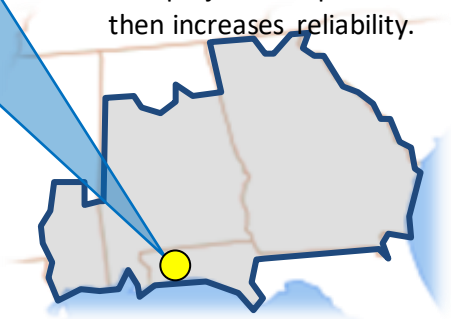


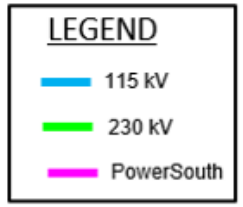
PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

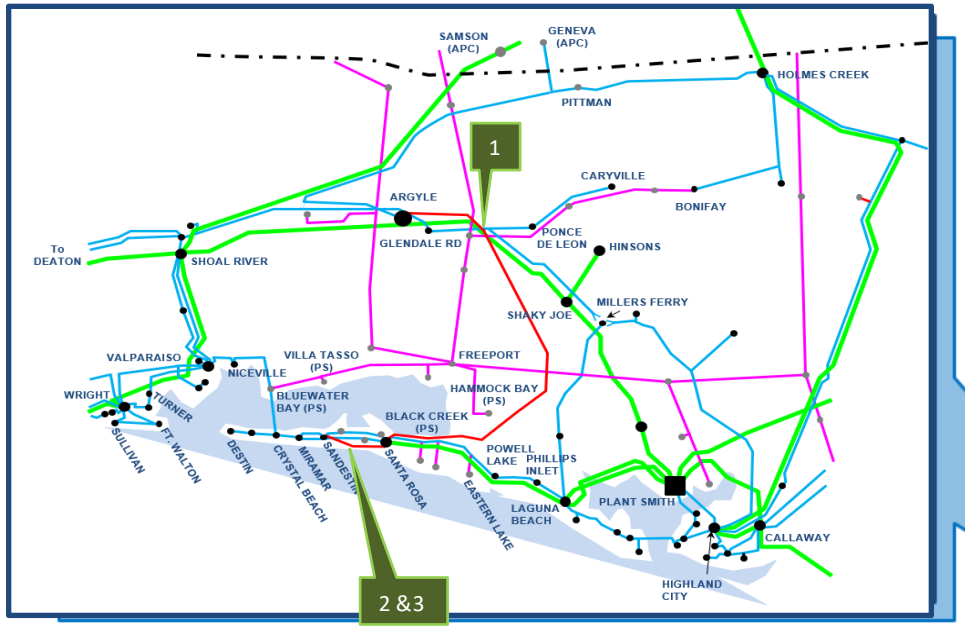




GULF - 7

- **2023**

ARGYLE – SANTA ROSA 115 KV TRANSMISSION LINE



PROJECT DESCRIPTION:

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

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

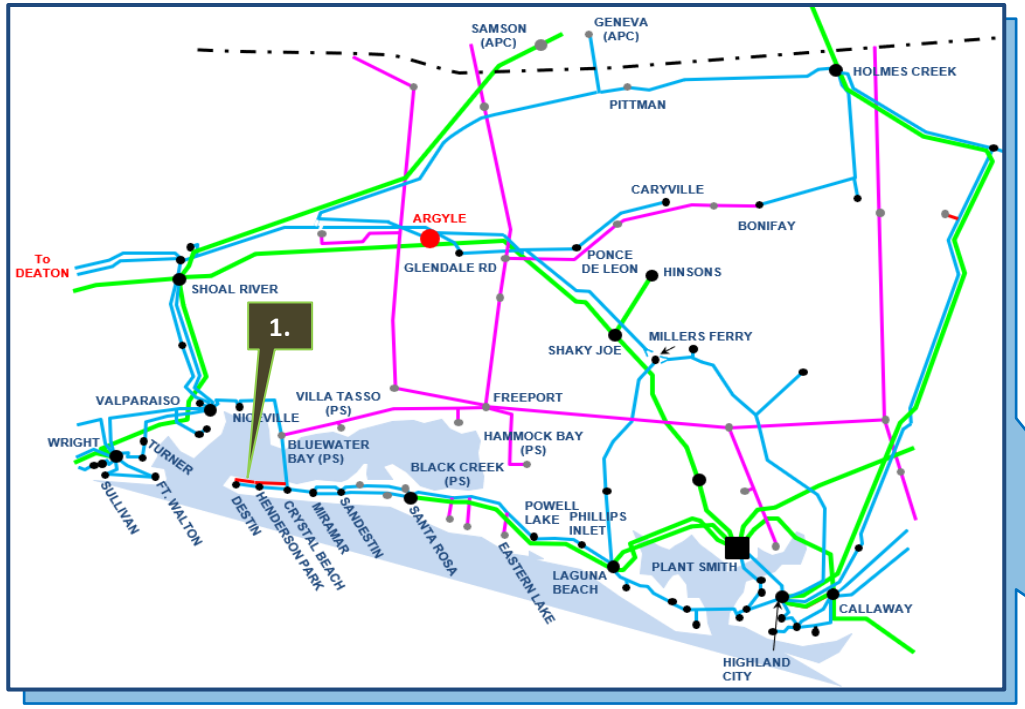
LEGEND

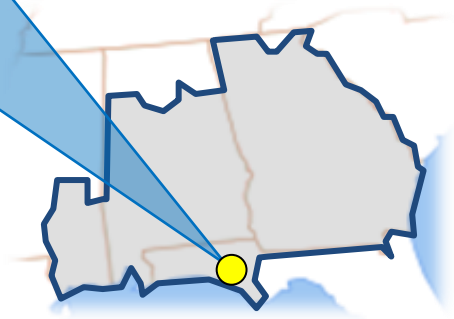
- 115 kV
- 230 kV
- PowerSouth

GULF - 8

• **2023**

DESTIN 115KV LOOP PROJECT



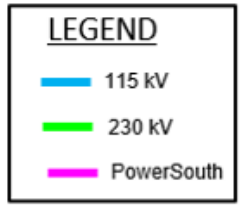


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

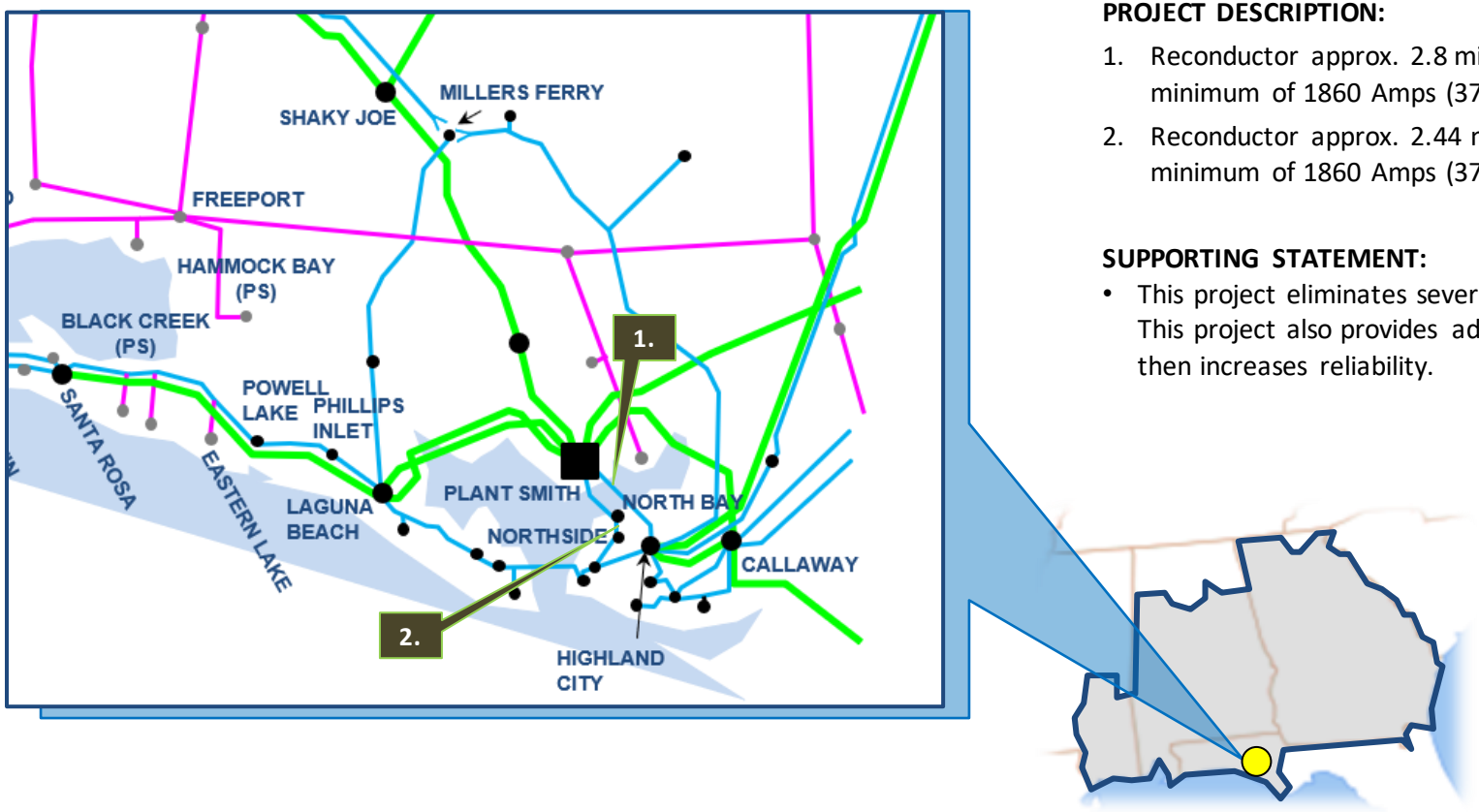
- This project provides additional operational and maintenance flexibility which then increases reliability.



GULF - 9

- **2023**

GREENWOOD-LANSING SMITH #1-115 KV RECONDUCTORINGS

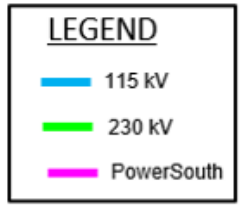


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

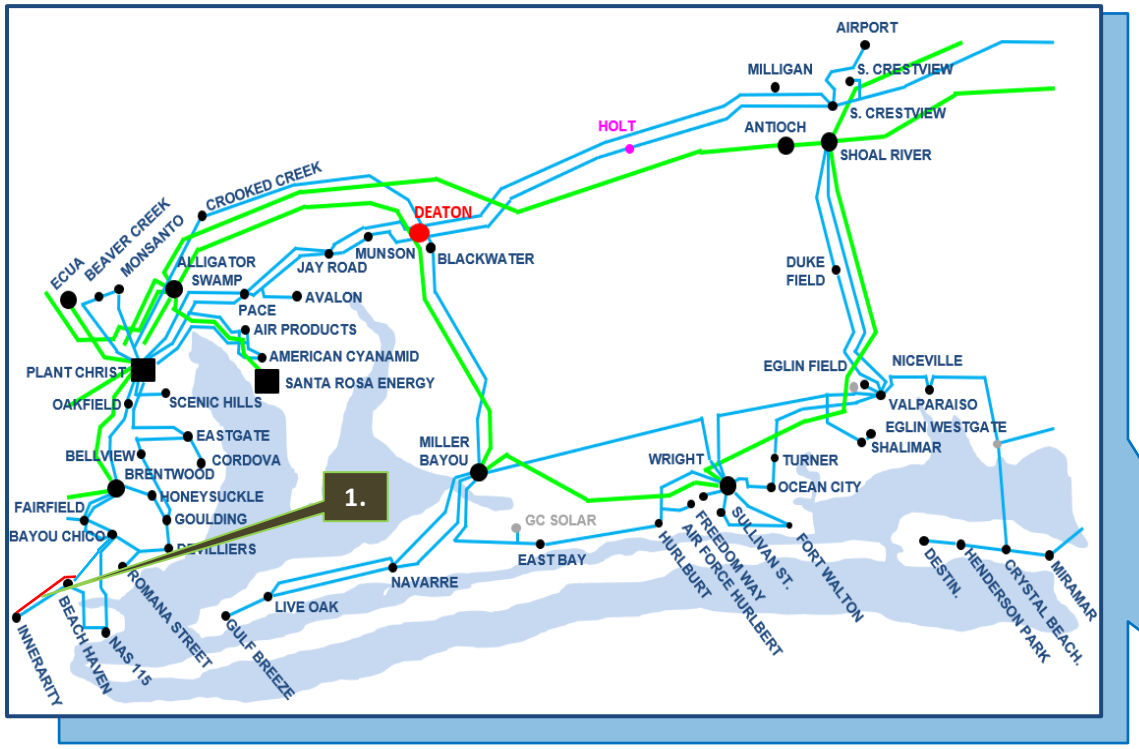
- This project eliminates several overloads under a number of contingency scenarios. This project also provides additional operational and maintenance flexibility which then increases reliability.



GULF - 10

- **2023**

INNERARITY 115KV LOOP PROJECT

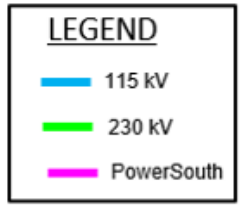


PROJECT DESCRIPTION:

1. Build a new 115kV line of approximately 8.5 miles rated at 1495 Amps (298 MVA) from Beach Haven to Innerarity to provide loop service.

SUPPORTING STATEMENT:

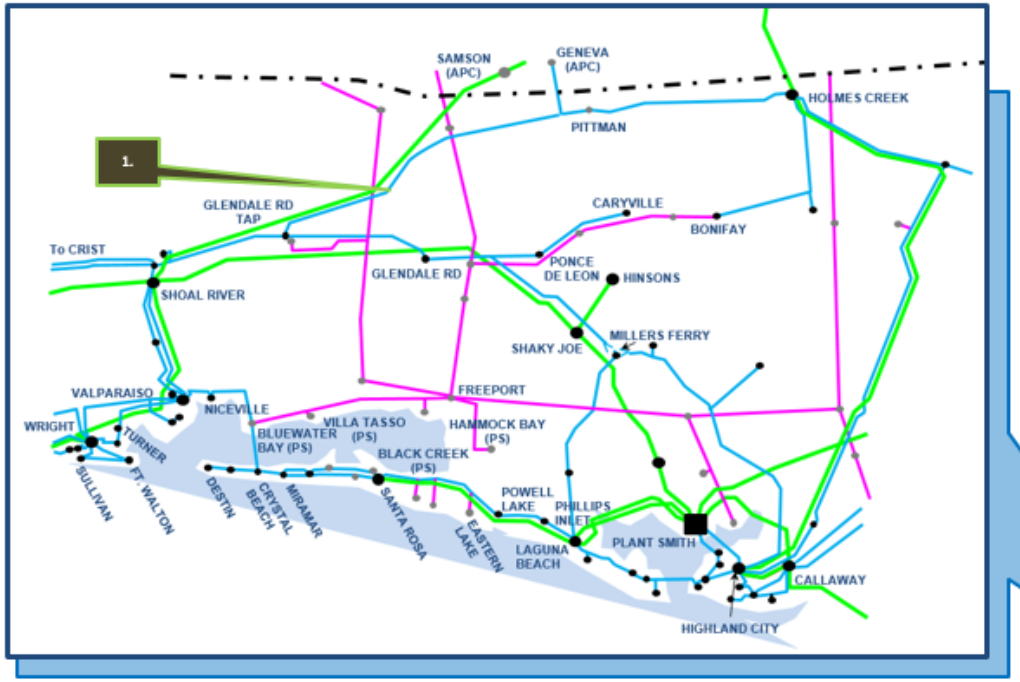
- This project provides additional operational and maintenance flexibility which then increases reliability.



GULF - 11

- **2024**

HOLMES CREEK – SOUTH CRESTVIEW 115 KV TRANSMISSION LINE

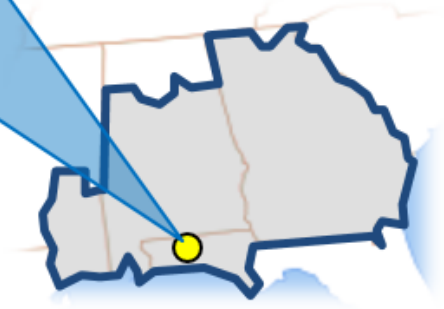


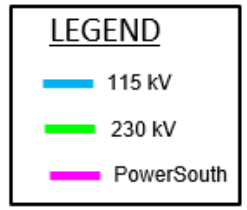
PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

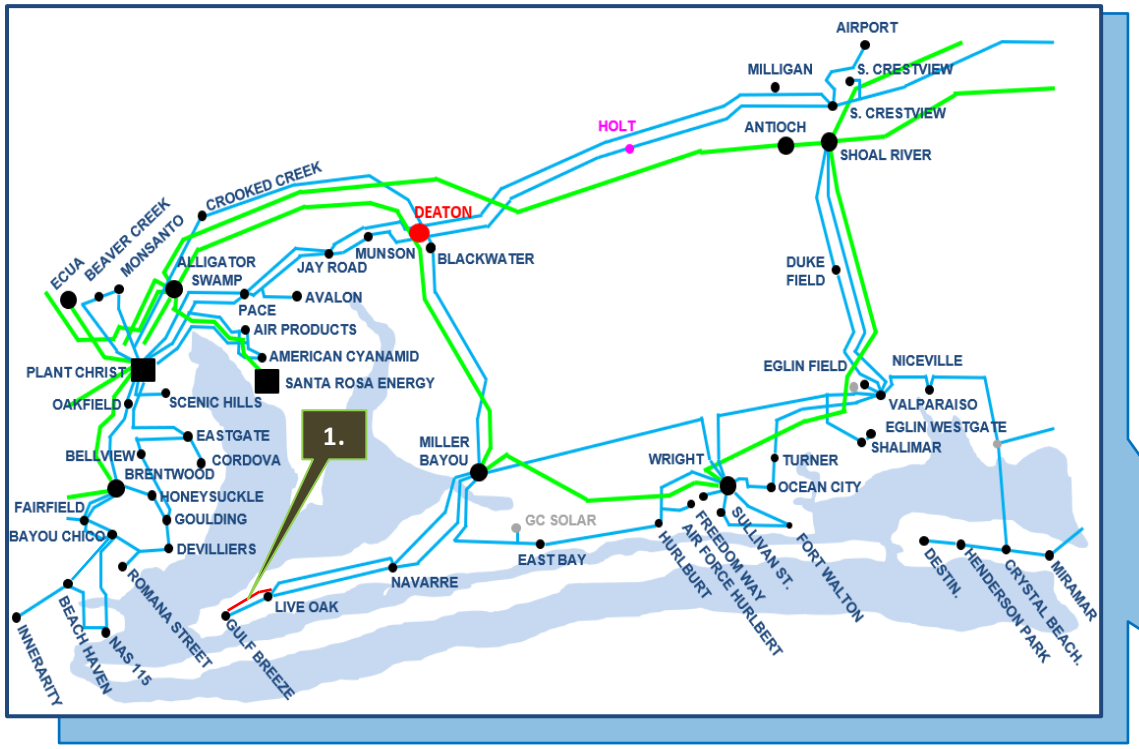




GULF - 12

- **2024**

GULF BREEZE 115KV LOOP PROJECT

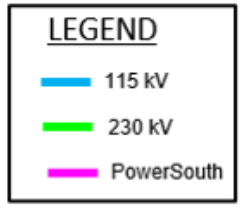


PROJECT DESCRIPTION:

1. Build a new 115kV line of approximately 3.5 miles rated at 1495 Amps (298 MVA) from Live Oak to Gulf Breeze to provide loop service.

SUPPORTING STATEMENT:

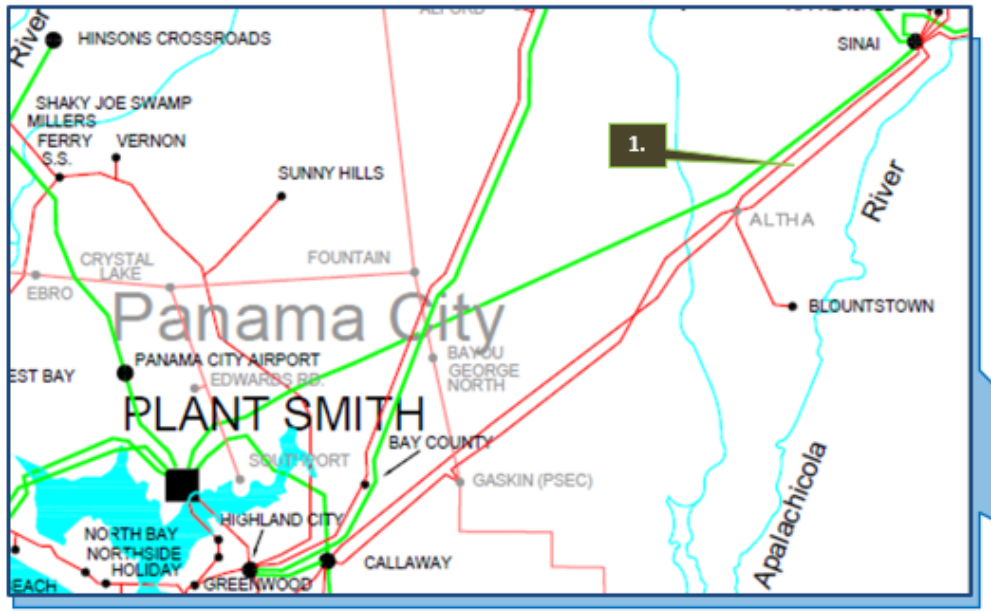
- This project provides additional operational and maintenance flexibility which then increases reliability.



GULF - 13

- **2027**

SINAI-GASKIN 115 KV TRANSMISSION LINE

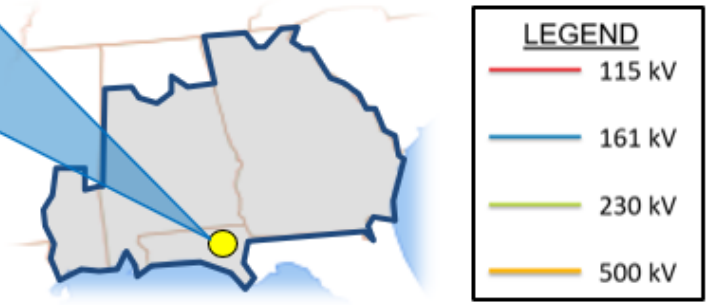


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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



GULF POWER Balancing Authority Areas

Upcoming 2022 Generation Assumptions

* GULF has no generation assumptions expected to change throughout the ten year planning horizon for the 2022 SERTP Process.

LG&E/KU Balancing Authority Area

Generation Assumptions

LG&E/KU – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Ashwood	Solar	0	86	86	86	86	86	86	86	86	86

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	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

LG&E/KU Balancing Authority Area

SERTP Regional Transmission Expansion Plan

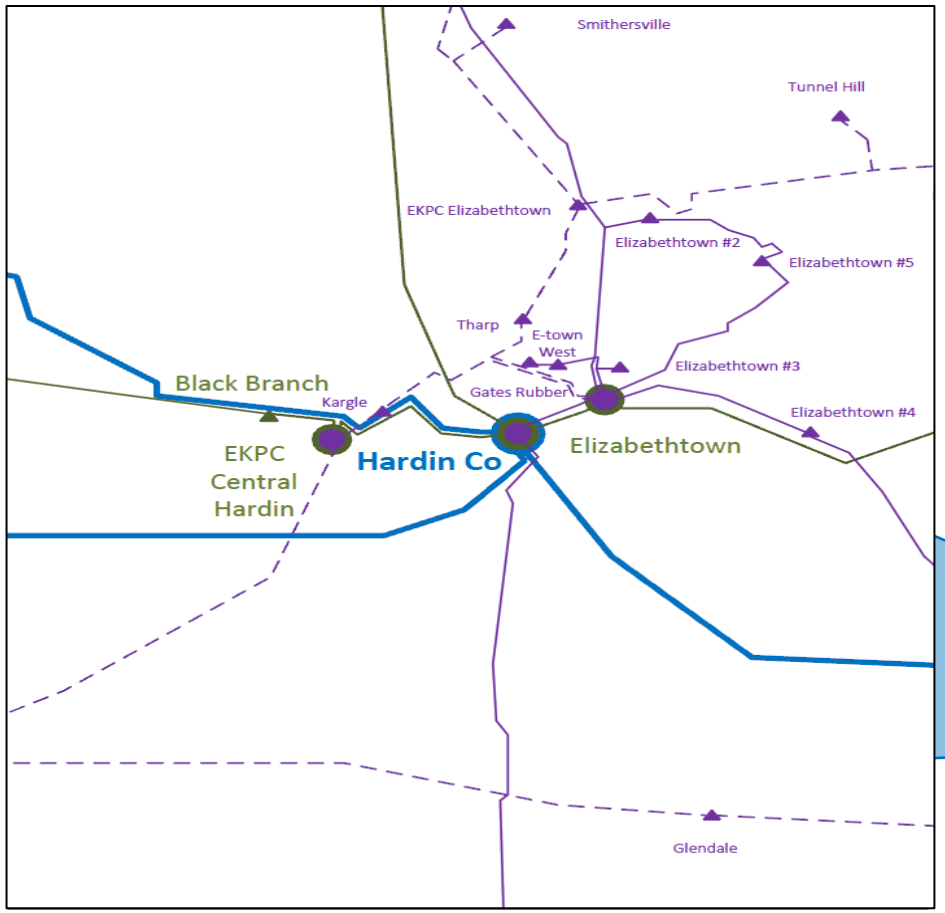
Southeastern Regional TRANSMISSION PLANNING

LG&E/KU Balancing Authority Area

LG&E/KU - 1

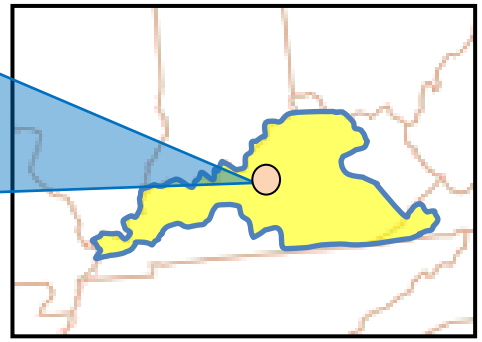
- **2022**

HARDIN CO SUBSTATION ADDITIONS



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

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

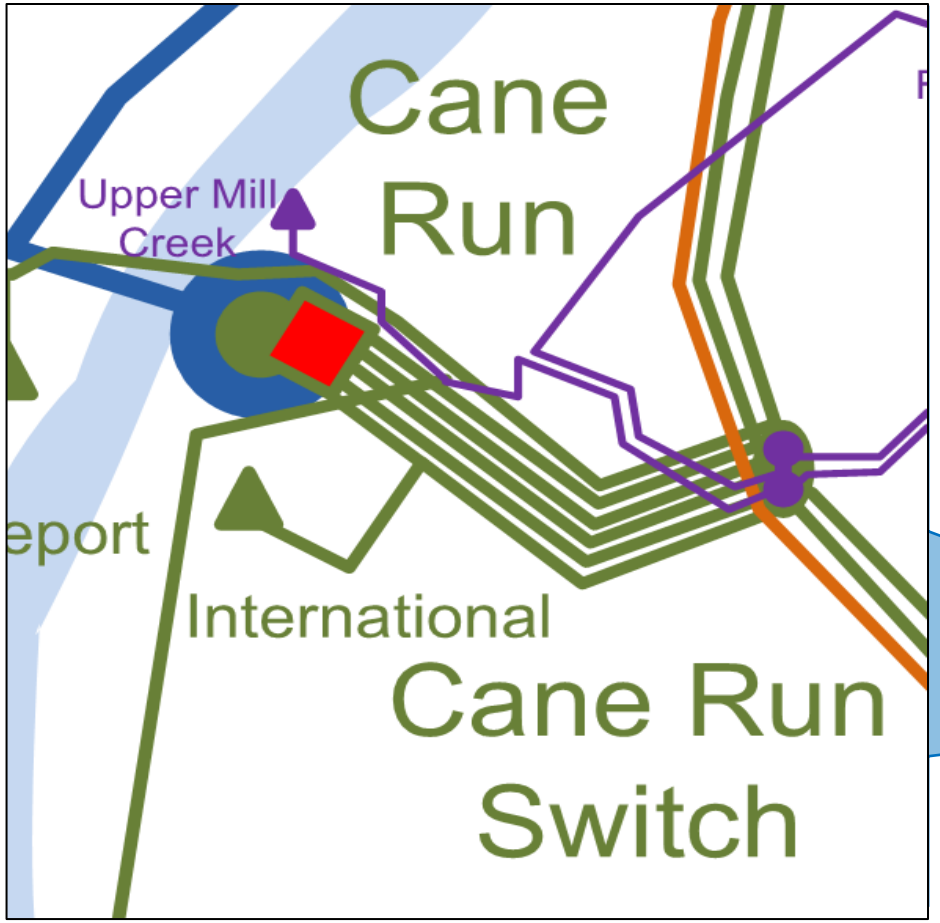


LG&E/KU Balancing Authority Area

LG&E/KU - 2

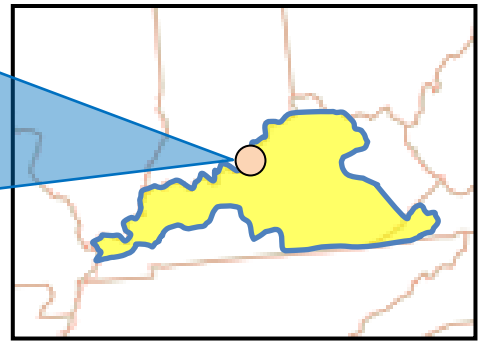
- **2022**

CANE RUN SWITCHING – CANE RUN 11 TAP 138KV



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

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

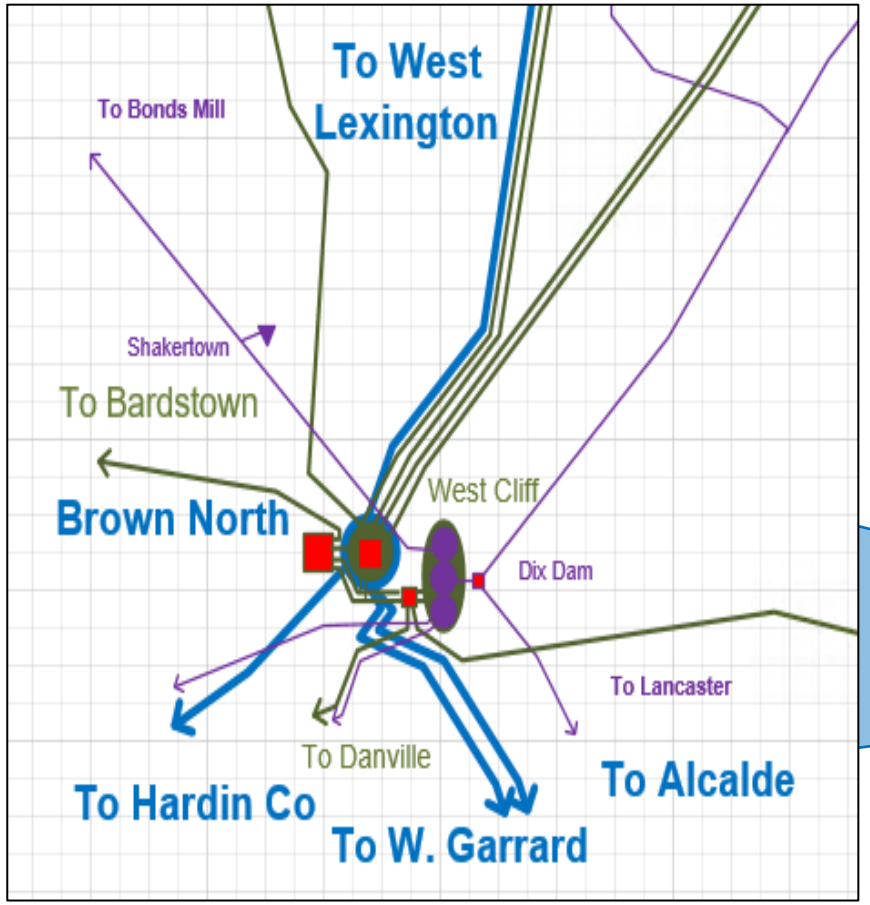


LG&E/KU Balancing Authority Area

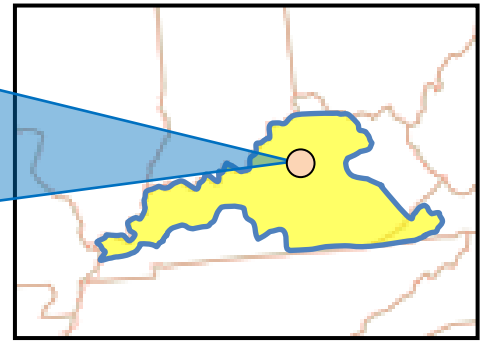
LG&E/KU - 3

- **2023**

BROWN NORTH 345/138 KV #2 TRANSFORMER



- **DESCRIPTION:**
  - Install a second Brown North 450 MVA, 345/138 kV transformer.
- **SUPPORTING STATEMENT:**
  - The Brown North 345/138 kV Transformer #1 overloads under contingency.
  - Additional voltage support is need in the Lexington area under contingency.

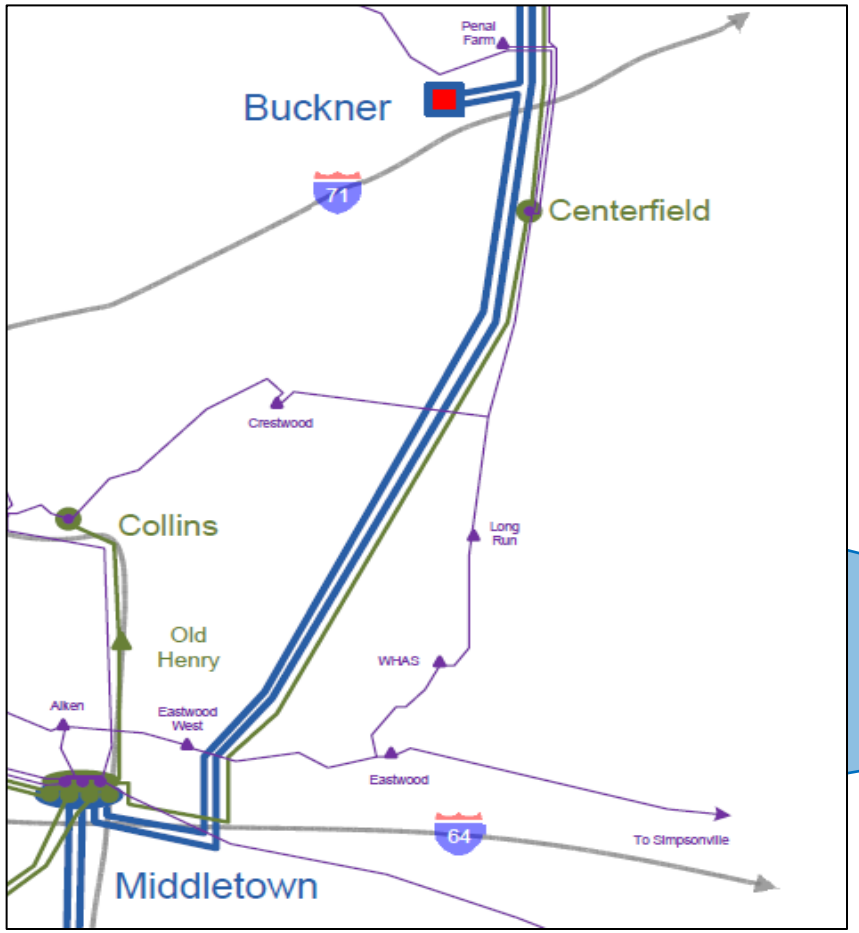


LG&E/KU Balancing Authority Area

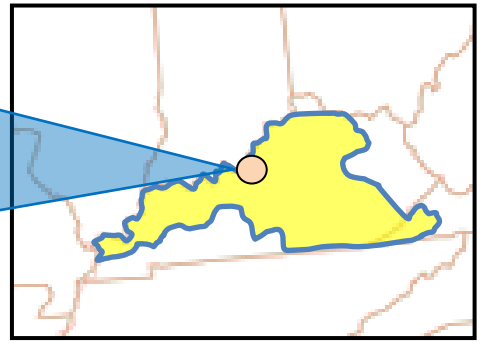
LG&E/KU - 4

- **2025**

MIDDLETOWN – BUCKNER 345 KV



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



LG&E/KU Balancing Authority Area

LG&E/KU POWER Balancing Authority Areas

Upcoming 2022 Generation Assumptions

LG&E/KU – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

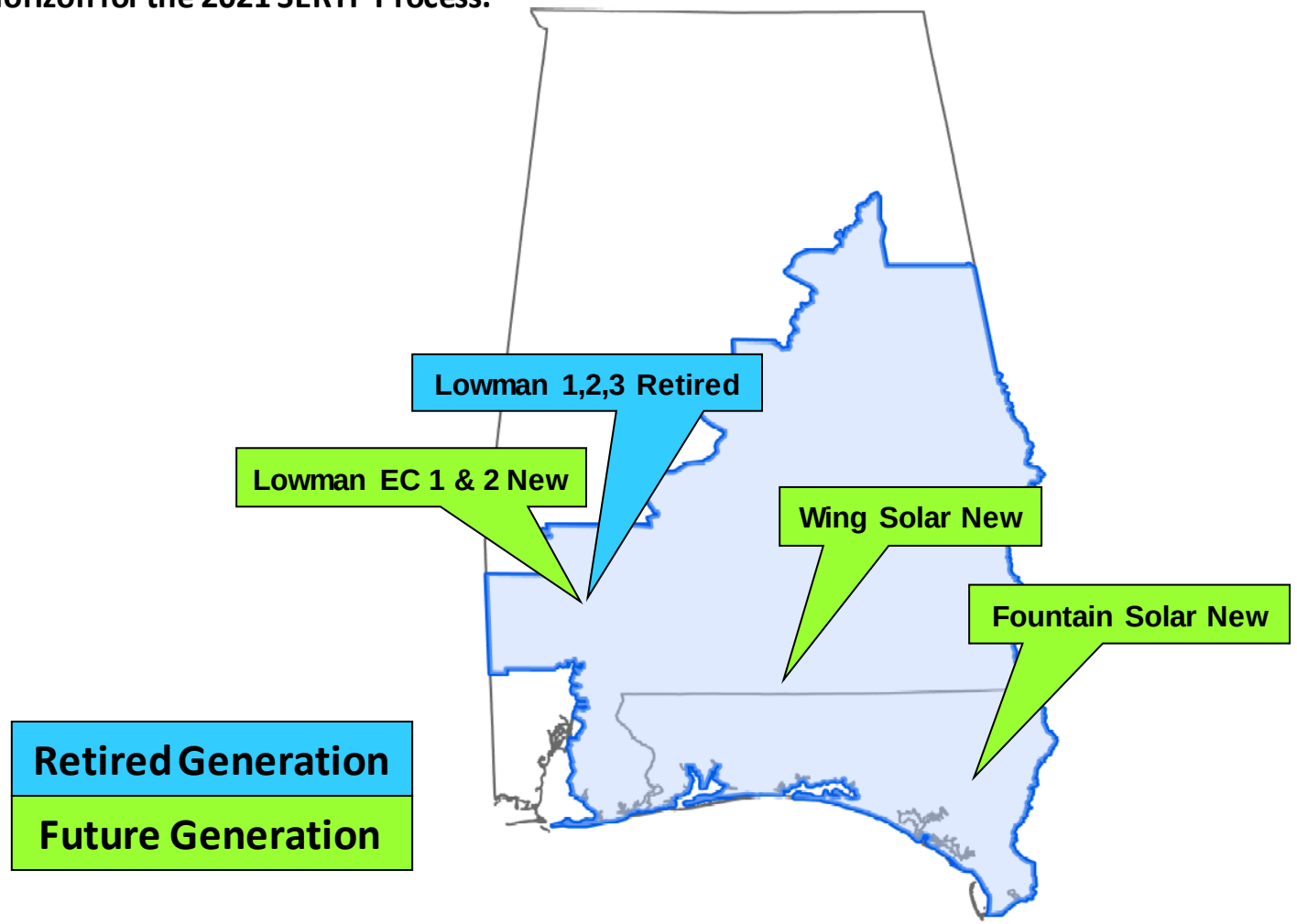
SITE	FUEL TYPE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Ashwood	Solar	86	86	86	86	86	86	86	86	86	86
Rhudes Creek	Solar	100	100	100	100	100	100	100	100	100	100

POWERSOUTH Planning Authority Area

Generation Assumptions

POWERSOUTH – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2021 SERTP Process.



POWERSOUTH – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lowman EC 1 & 2	Gas	--	632	632	632	632	632	632	632	632	632
Wing	Solar		80	80	80	80	80	80	80	80	80
Fountain	Solar			75	75	75	75	75	75	75	75

POWERSOUTH Planning Authority Area

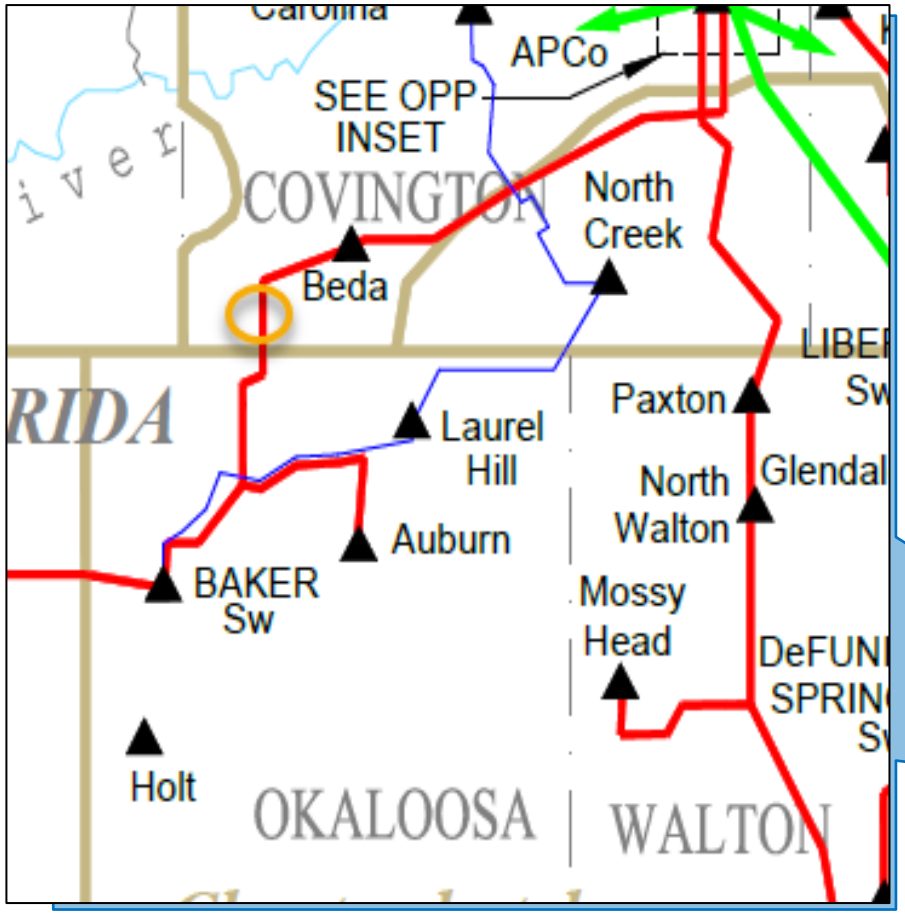
SERTP Regional Transmission Expansion Plan

POWERSOUTH Planning Authority Area

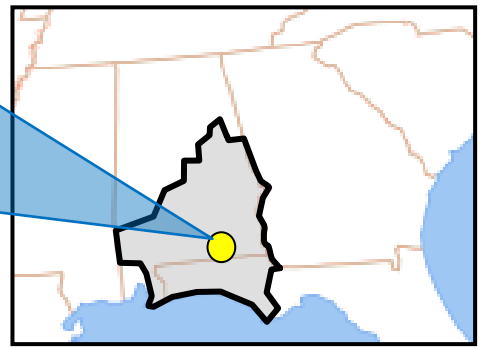
POWERSOUTH – 1

- **2022**

Wing 115kV Switching Station



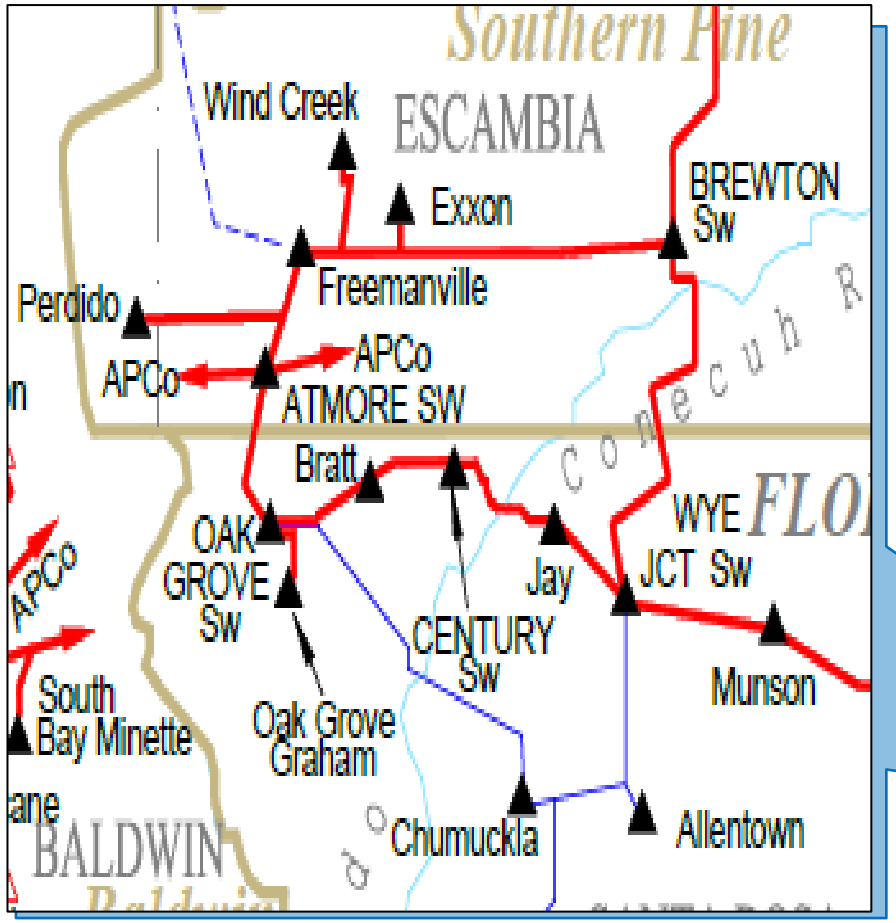
- **DESCRIPTION:**
  - New 3 Terminal 115kV Switching Station
    - Ring Bus Configuration
- **SUPPORTING STATEMENT:**
  - This new station will serve as the POI for the Wing Solar facility in southern Covington County, AL.



POWERSOUTH - 2

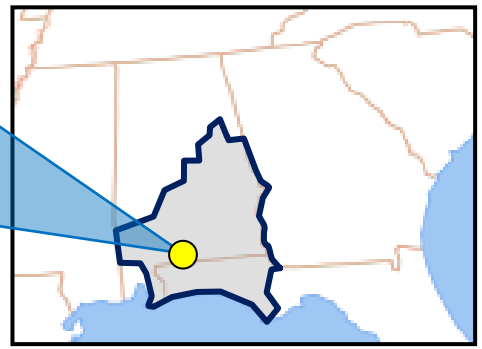
- **2022**

Brewton – Exxon – Freemanville 115 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Operating temperature upgrade on approximately 25.0 miles of 115 kV transmission line from Brewton 115kV Station to Freemanville Substation to 75°C.

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

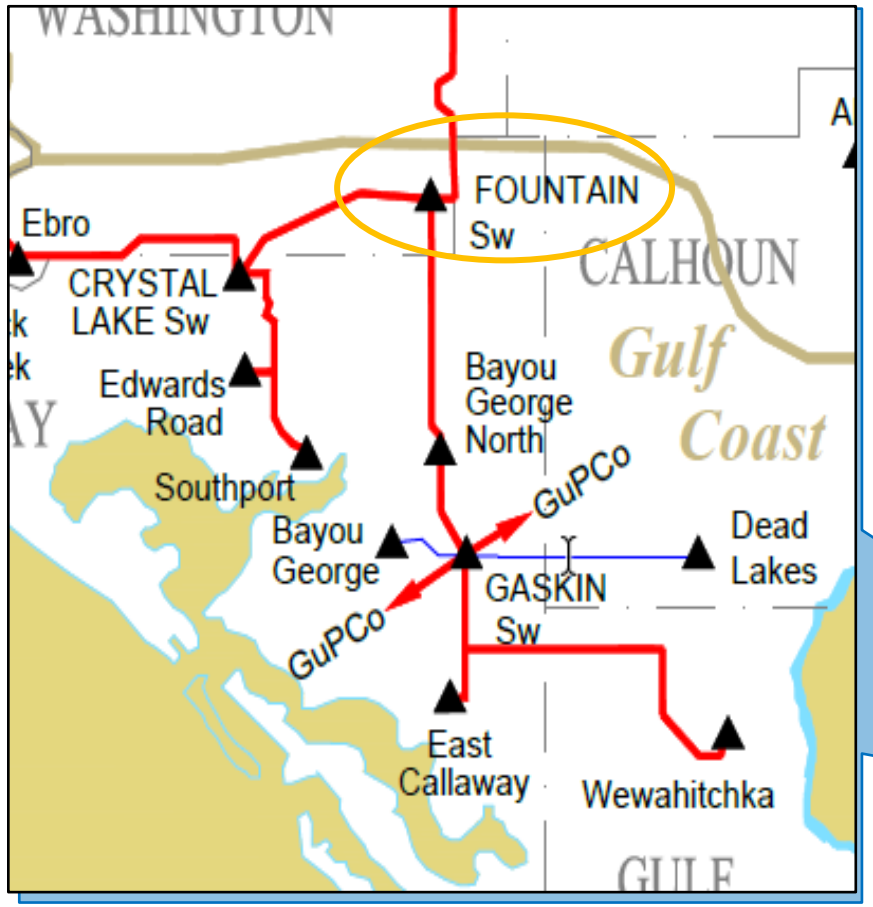


POWERSOUTH Planning Authority Area

POWERSOUTH – 3

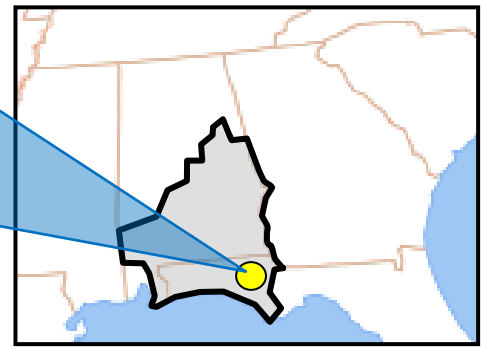
- **2023**

Fountain 115kV Switching Station Upgrade



- **DESCRIPTION:**
  - Upgrades to existing 115kV Switching Station
    - Bus Conductor Upgrade
    - Bus Extension
    - Terminal Addition

- **SUPPORTING STATEMENT:**
  - This station will serve as the POI for the Fountain Solar facility in southern Washington County, FL.

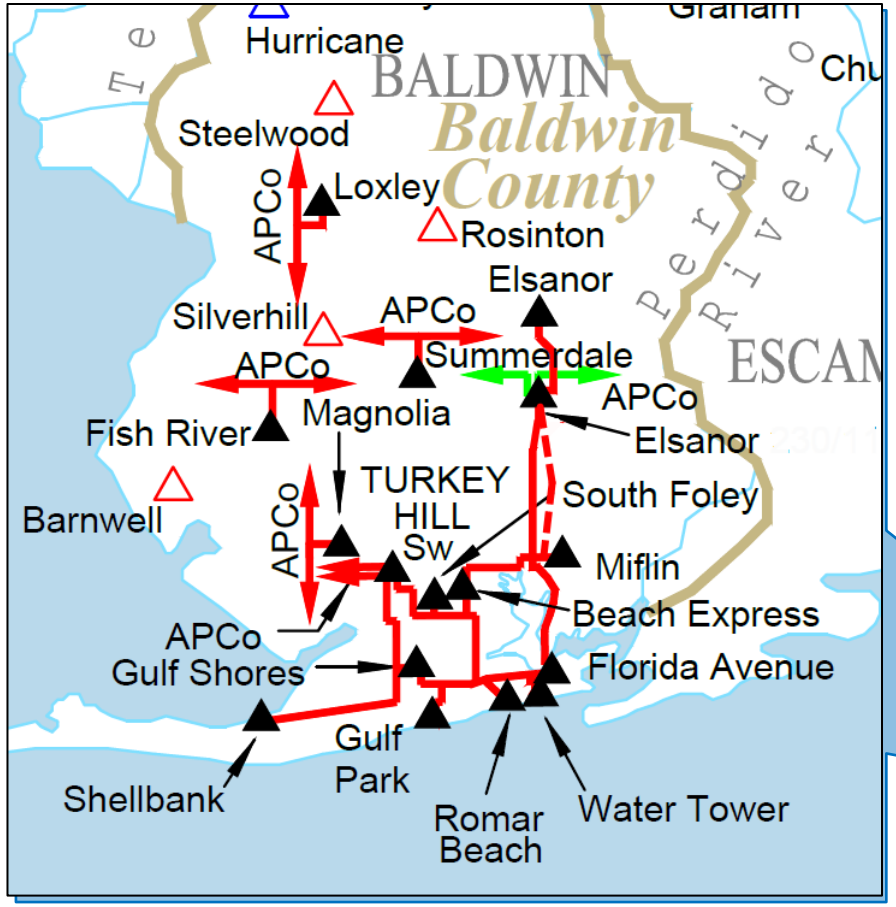


POWERSOUTH Planning Authority Area

POWERSOUTH - 4

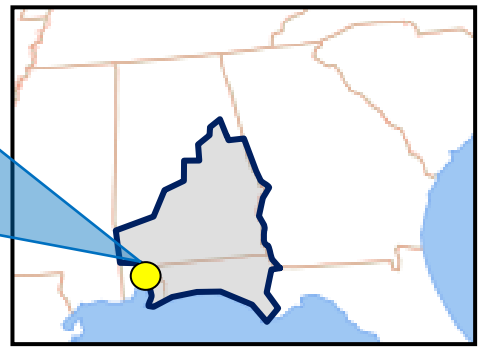
- **2023**

ELSANOR-MIFLIN 2ND 115 KV TRANSMISSION LINE



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

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

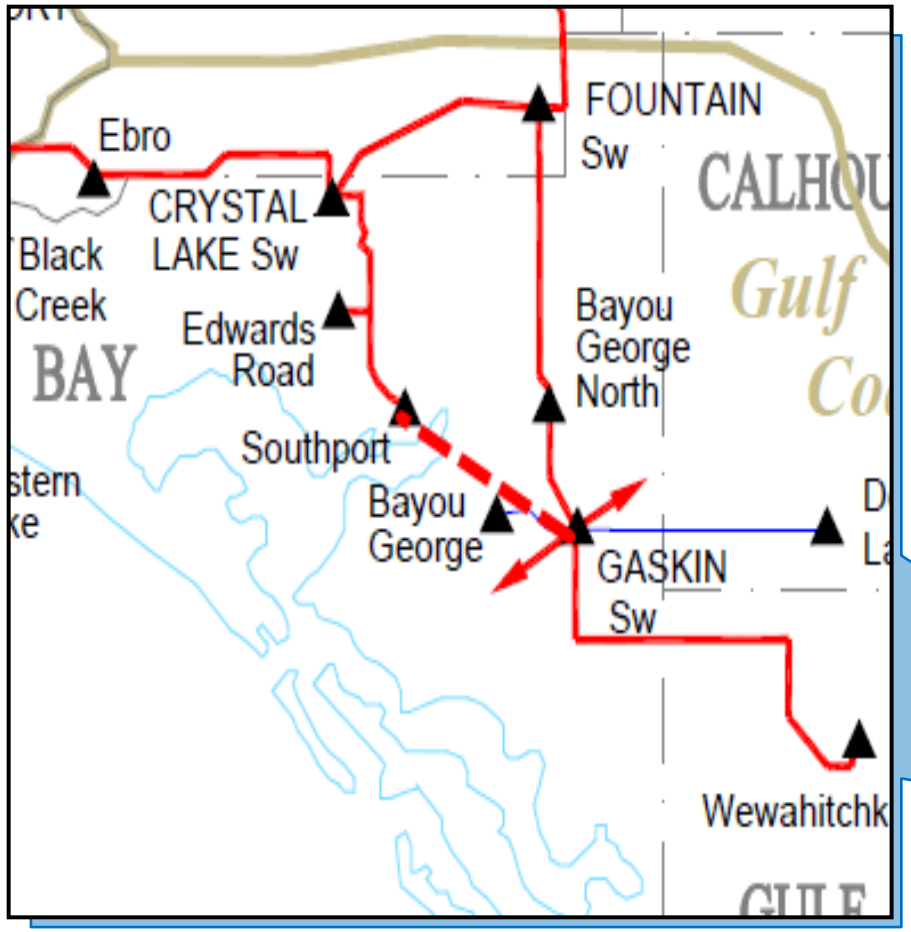


POWERSOUTH Planning Authority Area

POWERSOUTH - 5

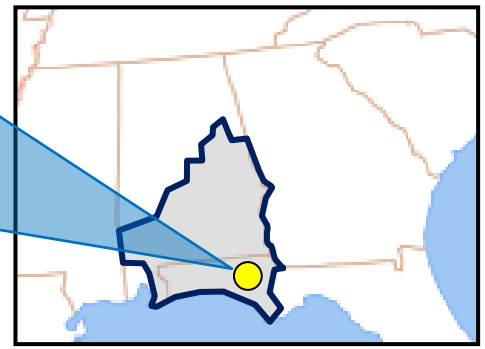
- **2024**

GASKIN – SOUTHPORT 115 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct approximately 9.0 miles of new 115 kV transmission line from Gaskin Switching Station to Southport Substation with 795 ACSR at 100°C.

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

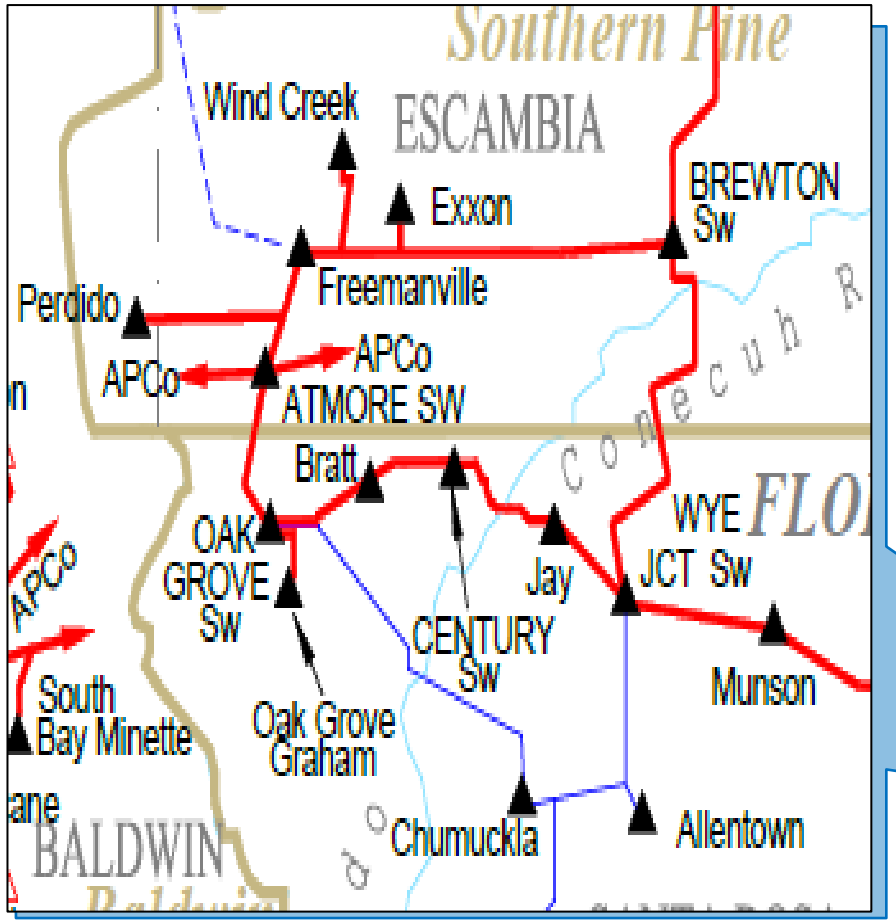


POWERSOUTH Planning Authority Area

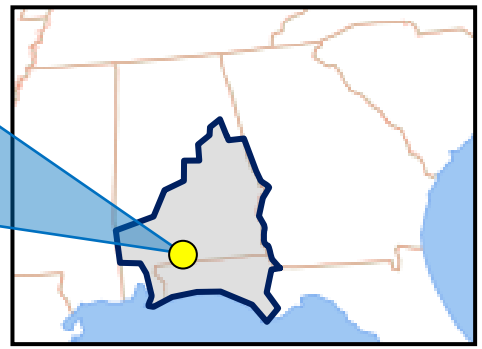
POWERSOUTH - 6

- **2025**

Wye Switching – Oak Grove Switching 115 KV Conversion



- **DESCRIPTION:**
  - Conversion of approximately 35.0 miles of 46 kV transmission line from Oak Grove Sw 115kV Station to Wye 115kV Sw station and 3 delivery points to 115kV service.
- **SUPPORTING STATEMENT:**
  - The existing 46kV transmission line lacks thermal capacity and voltage support during contingency to accommodate future load growth in the area.



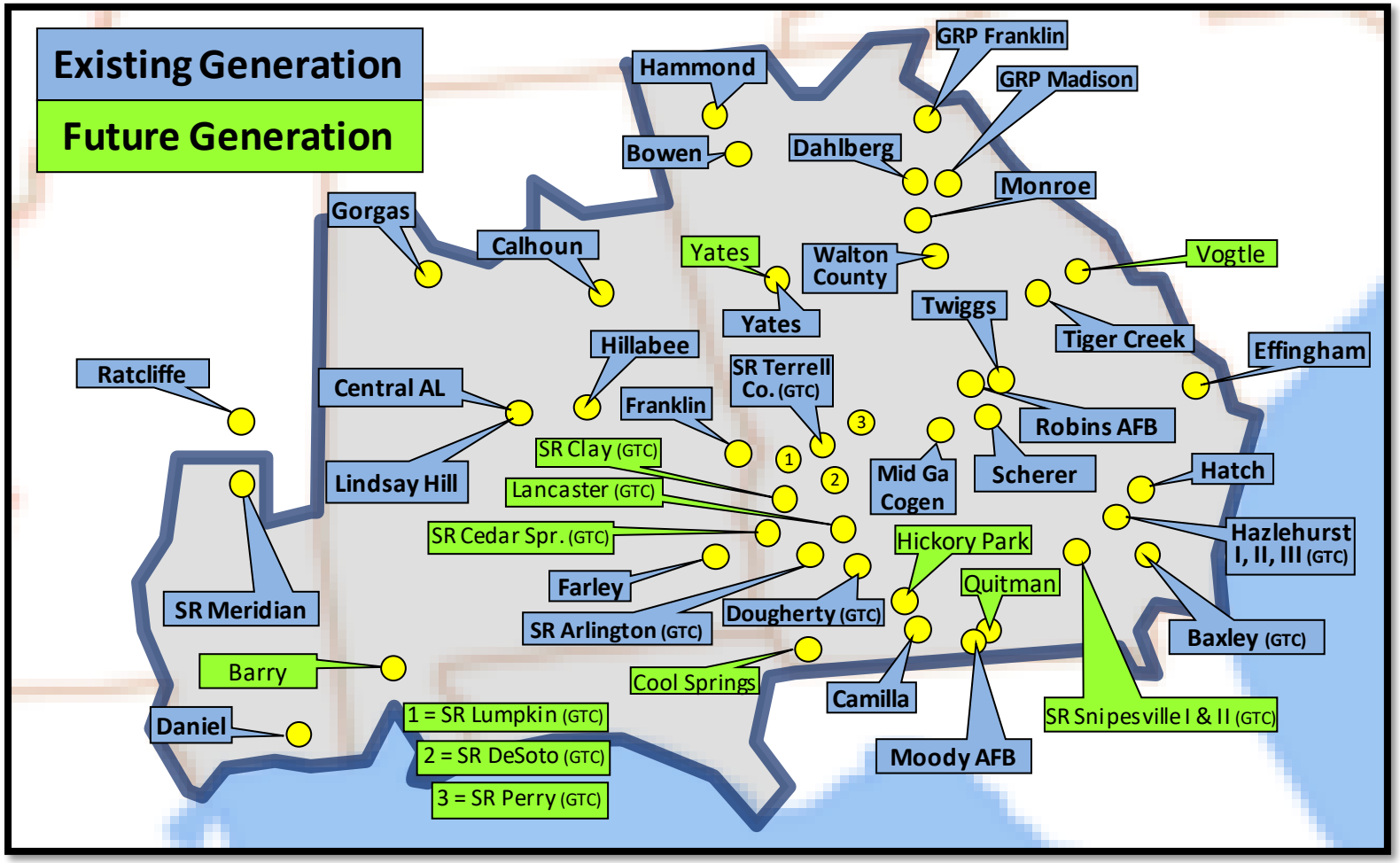
SOUTHERN Balancing Authority Area

Generation Assumptions

SOUTHERN Balancing Authority Area

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2021 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 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ADDISON 1&3	Gas	305	305	305	305	305	305	305	305	0	--
DAHLBERG 2, 6, 8, 10	Gas	298	298	298	0	--	--	--	--	--	--
DAHLBERG 4	Gas	75	75	75	75	75	75	75	75	0	--
Harris 1	Gas	640	640	640	640	640	640	640	640	0	--
MID GA COGEN	Gas	300	300	300	300	300	300	0	--	--	--
MONROE POWER	Gas	309	309	0	--	--	--	--	--	--	--
TIGER CREEK 1&4	Gas	313	313	0	--	--	--	--	--	--	--
TENASKA HEAR 1-6	Gas	945	945	945	945	945	945	945	945	0	--
WALTON COUNTY	Gas	465	465	0	--	--	--	--	--	--	--

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
BARRY[1]	Gas	--	685	685	685	685	685	685	685	685	685
FARLEY 1	Nuclear	898	898	898	898	898	898	898	898	898	898
FARLEY 2	Nuclear	901	901	901	901	901	901	901	901	901	901
GASTON 1-4	Gas	465	465	515	515	515	515	515	515	515	515
VOGTLE 3	Nuclear	504	504	504	504	504	504	504	504	504	504
VOGTLE 4	Nuclear	504	504	504	504	504	504	504	504	504	504
YATES 6-7	Gas	649	649	714	714	714	714	714	714	714	714
CENTRAL ALABAMA	Gas	--	890	890	890	890	890	890	890	890	890
CALHOUN 1-4	Gas	632	690	690	690	690	690	690	690	690	690

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

Southern Company – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2020 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
BIRD DOG SOLAR	Solar	--	40	40	40	40	40	40	40	40	40
BROKEN SPOKE	Solar	195	195	195	195	195	195	195	195	195	195
BULLDOG SOLAR	Solar	--	80	80	80	80	80	80	80	80	80
COOL SPRINGS	Solar	213	213	213	213	213	213	213	213	213	213
PEAK CLEAN SOLAR	Solar	--	80	80	80	80	80	80	80	80	80
QUITMAN 2	Solar	150	150	150	150	150	150	150	150	150	150
SONNY SOLAR	Solar	--	40	40	40	40	40	40	40	40	40
WADLEY SOLAR	Solar	--	--	260	260	260	260	260	260	260	260

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

Southern Company – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2020 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
BLACK WATER SOLAR	Solar	--	80	80	80	80	80	80	80	80	80
WOLFSKIN SOLAR	Solar	--	38	38	38	38	38	38	38	38	38
DOUBLE RUN SOLAR	Solar	--	--	220	220	220	220	220	220	220	220
DECATUR SOLAR	Solar	--	--	200	200	200	200	200	200	200	200
WASHINGTON CO	Solar	--	--	150	150	150	150	150	150	150	150
TIMBERLAND SOLAR	Solar	--	--	140	140	140	140	140	140	140	140
HOBNAIL SOLAR	Solar	--	70	70	70	70	70	70	70	70	70
FORT STEWART SOLAR	Solar	30	30	43	43	43	43	43	43	43	43

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

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	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
BOWEN	159	159	159	159	159	159	159	159	159	159
CENTRAL ALABAMA	885	0	--	--	--	--	--	--	--	--
DAHLBERG	494	494	494	494	494	494	494	494	494	494
DANIEL	650	650	600	600	600	600	600	600	600	600
HAMMOND	10	10	10	10	10	10	10	10	10	10
HILLABEE	350	350	350	350	350	350	350	350	350	350
LINDSAY HILL	220	220	220	220	220	220	220	220	220	220
SCHERER	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131
VOGTLE	206	206	206	206	206	206	206	206	206	206

GTC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
LANCASTER	SOLAR	80	80	80	80	80	80	80	80	80	80
SR CEDAR SPRINGS	SOLAR	--	70	70	70	70	70	70	70	70	70
SR CLAY	SOLAR	--	106	106	106	106	106	106	106	106	106
SR DESOTO	SOLAR	250	250	250	250	250	250	250	250	250	250
SR LUMPKIN	SOLAR	100	100	100	100	100	100	100	100	100	100
SR PERRY	SOLAR	68	68	68	68	68	68	68	68	68	68
SR SNIPESVILLE I	SOLAR	86	86	86	86	86	86	86	86	86	86
SR SNIPESVILLE II	SOLAR	107	107	107	107	107	107	107	107	107	107
VOGTLE 4	NUCLEAR	330	330	330	330	330	330	330	330	330	330
EFFINGHAM	GAS	518	518	545	545	545	545	545	545	545	545

MEAG – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2020 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
VOGTLE 4	NUCLEAR	250	250	250	250	250	250	250	250	250	250

DALTON – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2020 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
VOGTLE 4	NUCLEAR	19	19	19	19	19	19	19	19	19	19

Southeastern Regional
TRANSMISSION PLANNING

SOUTHERN Balancing Authority Area

2022 Upcoming Generation Assumptions

* SBAA has no generation assumptions expected to change throughout the ten year planning horizon for the 2022 SERTP Process.

SOUTHERN (EAST) Balancing Authority Area

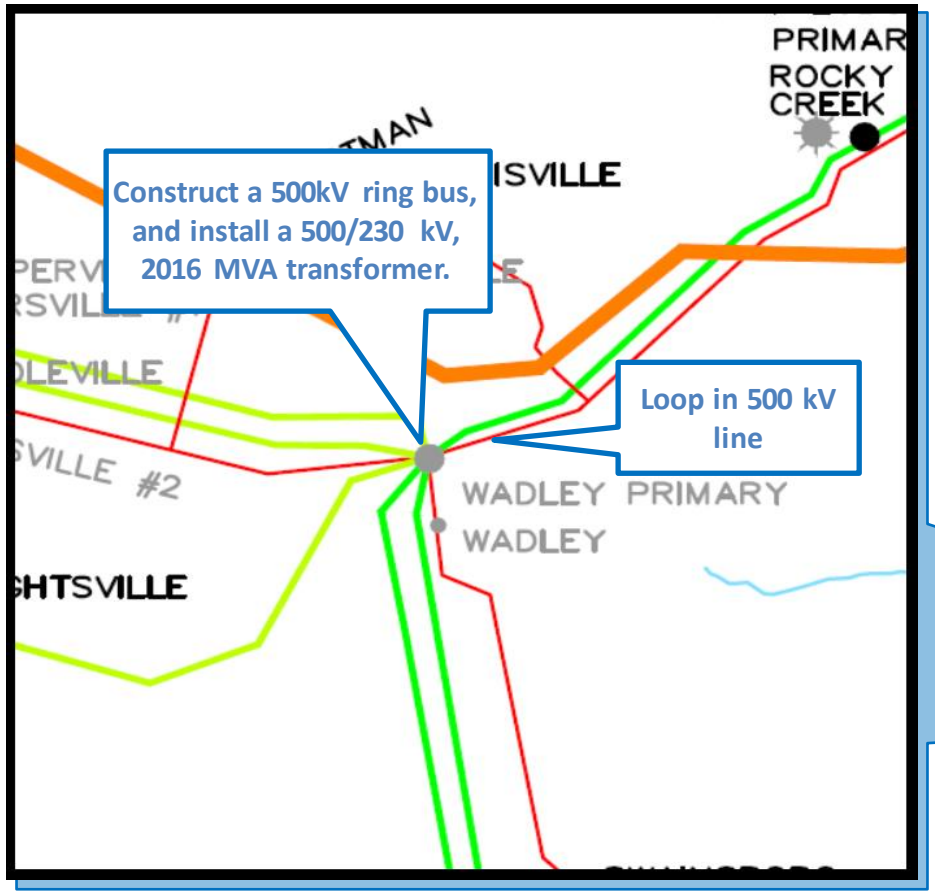
SERTP Regional Transmission Expansion Plan

SOUTHERN Balancing Authority Area

SOUTHERN – 1E

• **2021**

WADLEY PRIMARY 500/230 KV PROJECT

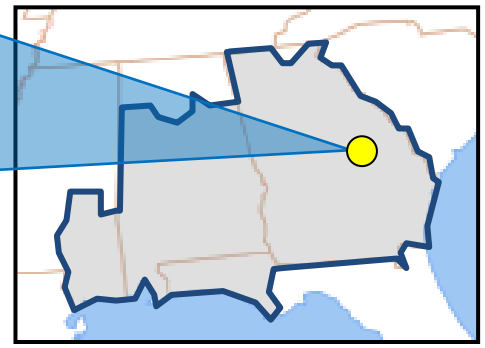


DESCRIPTION:

- MEAG: Construct a new 500 kV ring bus and install a 500/230 kV, 2016 MVA transformer
- GPC: Loop in the Vogtle – Warthen 500 kV line.

SUPPORTING STATEMENT:

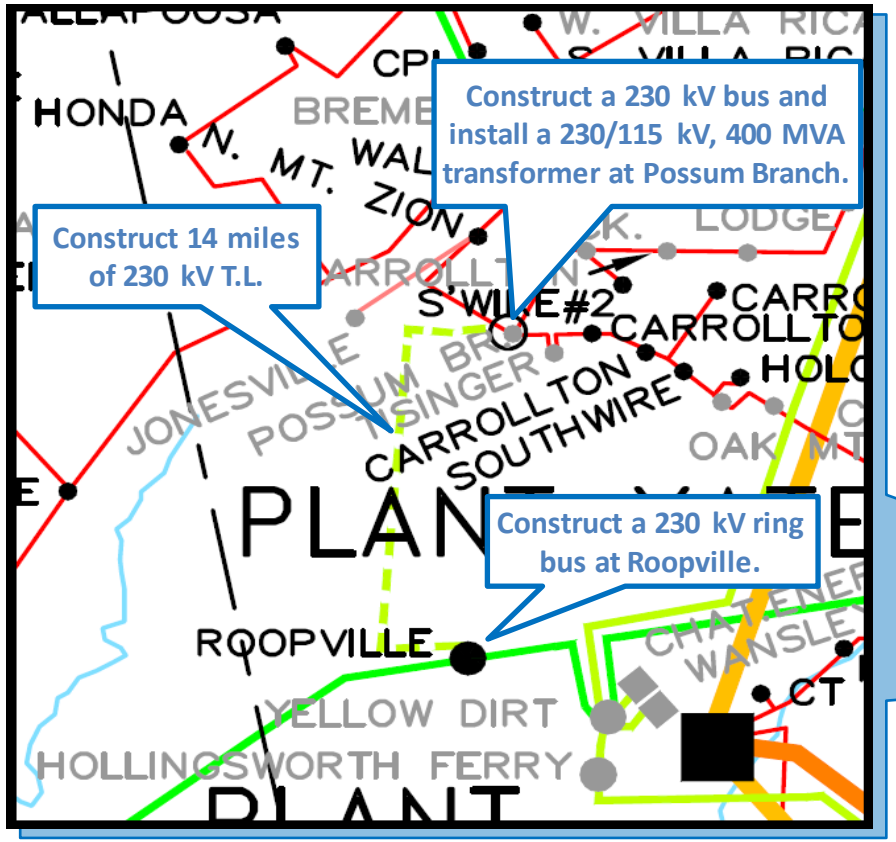
- Project to enhance reliability in the Augusta area and to support the expansion of Plant Vogtle.



SOUTHERN – 2E

• **2022**

POSSUM BRANCH 230/115 KV PROJECT

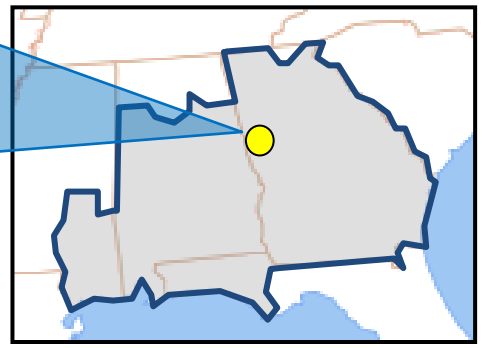


DESCRIPTION:

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

SUPPORTING STATEMENT:

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

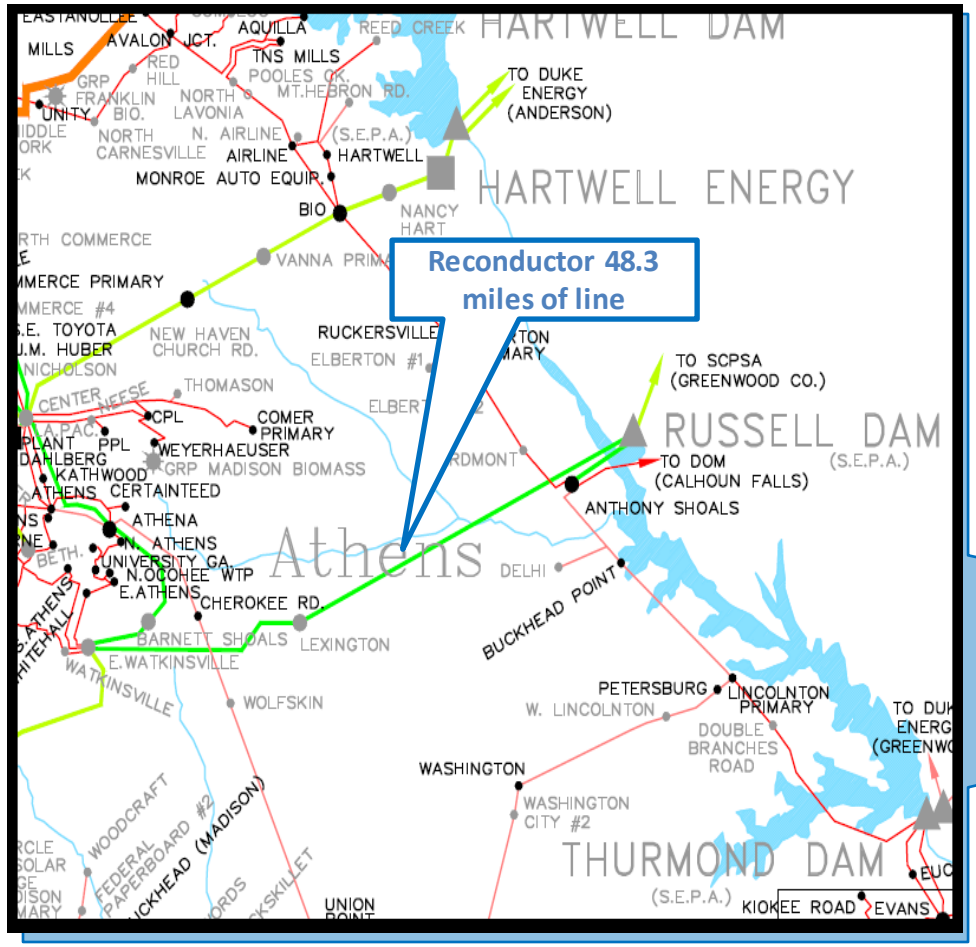


SOUTHERN Balancing Authority Area

SOUTHERN – 3E

• **2023**

EAST WATKINSVILLE - RUSSELL DAM 230 KV TRANSMISSION LINE

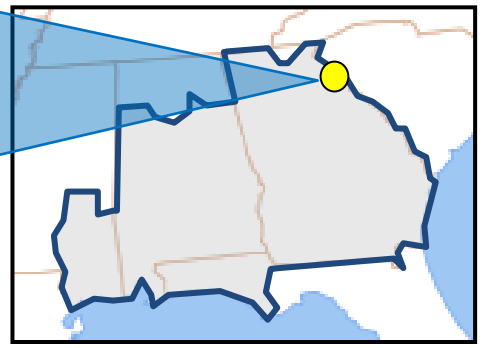


DESCRIPTION:

- Reconductor approximately 48.3 miles of 100°C 1351.5 ACSR/SD conductor with 200°C 1351.5 ACCR conductor. Replace the Overhead Ground Wire.

SUPPORTING STATEMENT:

- The existing self-damping conductor has reached the end of its service life. Also, the existing rating is exceeded under contingency in import scenarios.

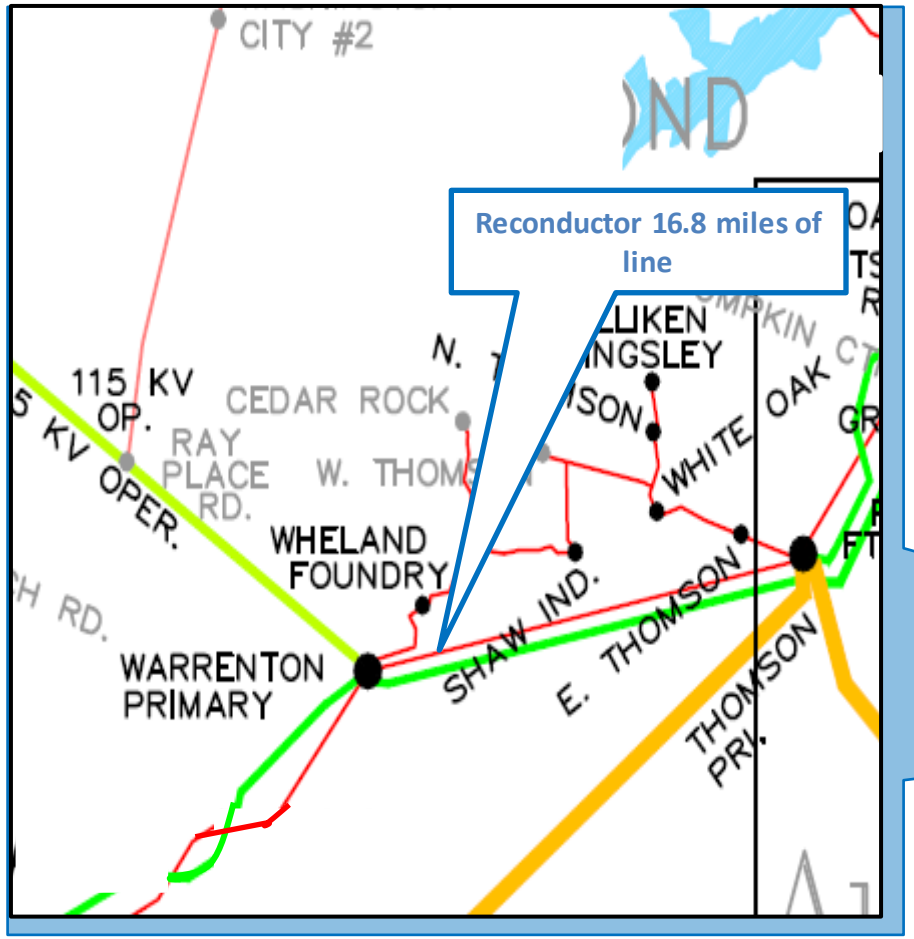


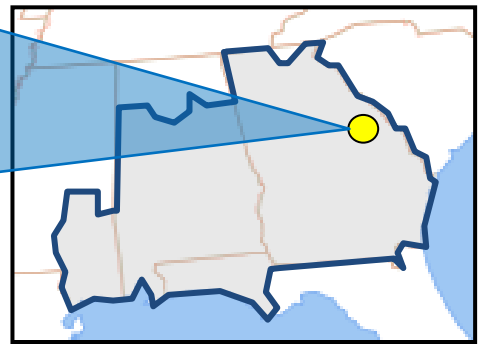
SOUTHERN Balancing Authority Area

SOUTHERN – 4E

• **2023**

THOMSON PRI – WARRENTON PRI (WHITE) 115KV TRANSMISSION LINE





DESCRIPTION:

- Reconductor approximately 16.8 miles of 336 ACSR at 100°C on the Thomson Primary - Warrenton Primary 115 kV (White) transmission line with 795 ACSR at 100°C.

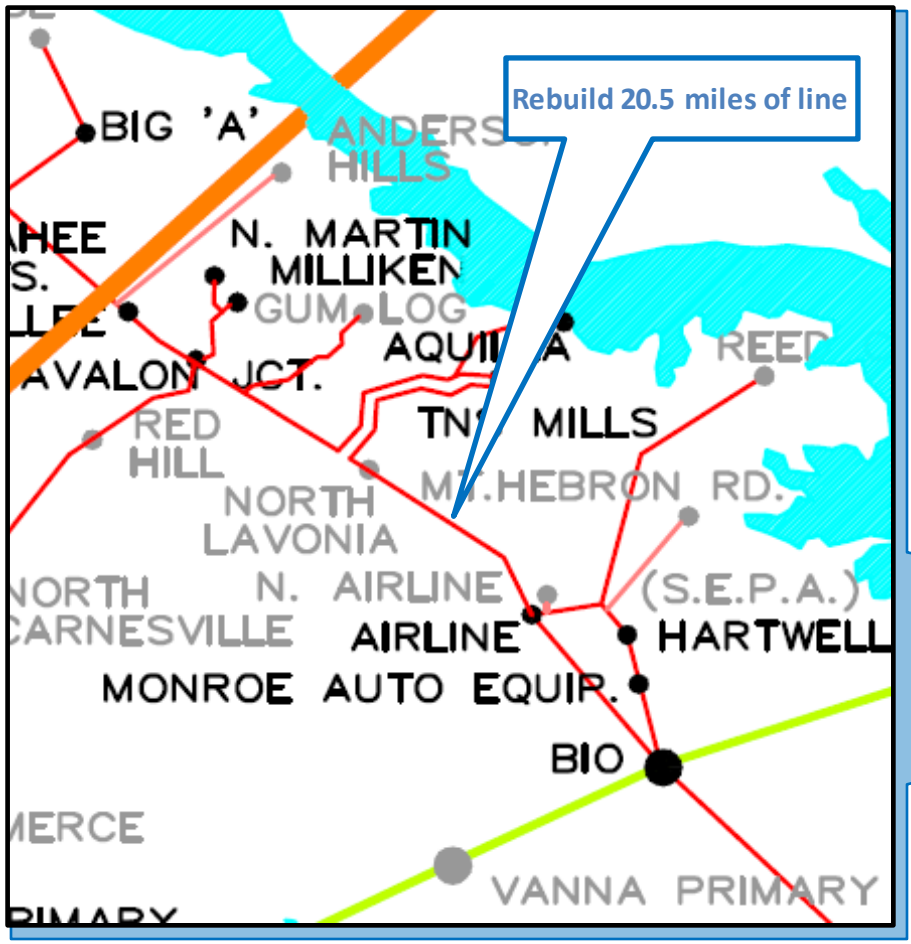
SUPPORTING STATEMENT:

- The Thomson Primary - Warrenton Primary line overloads under contingency.

SOUTHERN – 5E

- **2024**

AVALON JUNCTION – BIO 115 KV TRANSMISSION LINE

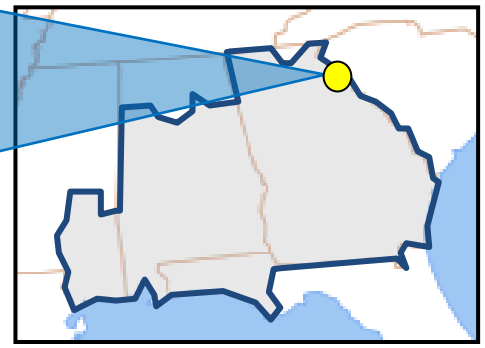


DESCRIPTION:

- Rebuild approximately 20.5 miles of the Avalon Junction - Bio 115 kV transmission line (636 ACSR/795 ACSR) with 100°C 1351 ACSR and replace the terminal equipment at various substations.

SUPPORTING STATEMENT:

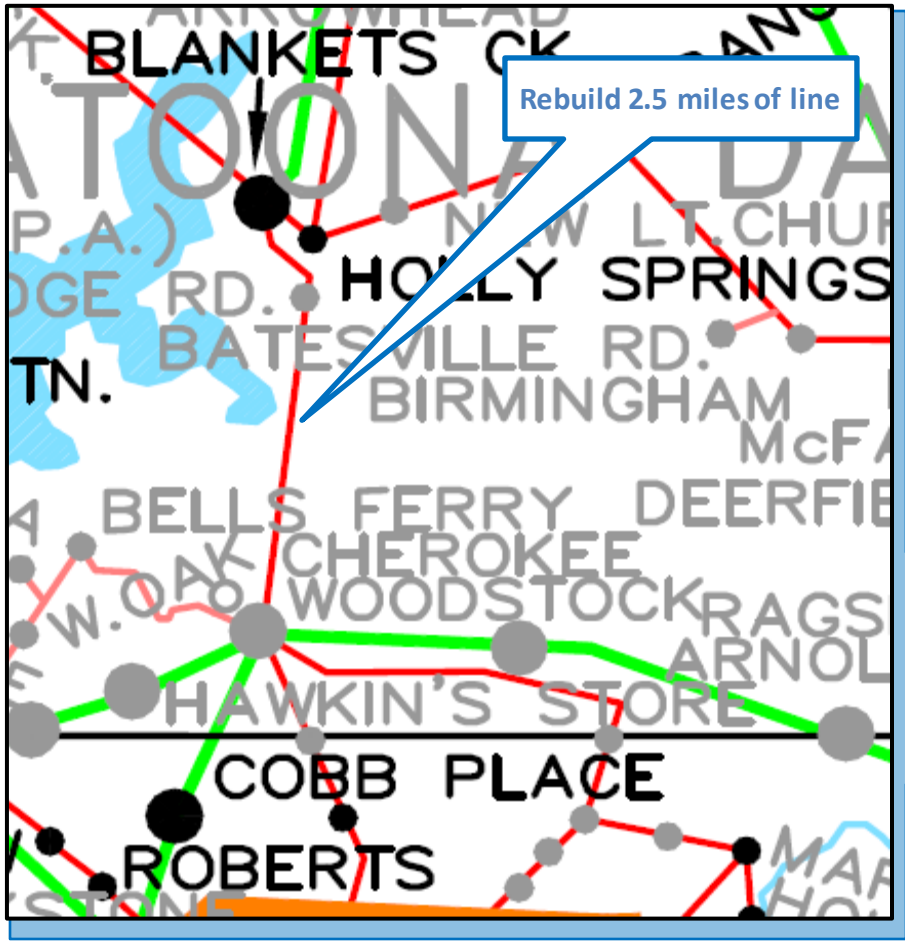
- The Avalon Junction-Bio 115 kV transmission line overloads under contingency in import scenarios.



SOUTHERN – 6E

• **2026**

BLANKETS CREEK-WOODSTOCK 115 KV TRANSMISSION LINE

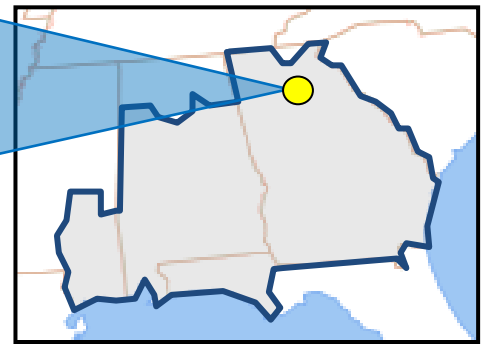


DESCRIPTION:

- Rebuild approximately 2.5 miles of the Blankets Creek – Woodstock 115 kV transmission line with 1351 ACSR conductor at 100°C.

SUPPORTING STATEMENT:

- The Blankets Creek – Woodstock 115 kV transmission line overloads under contingency.

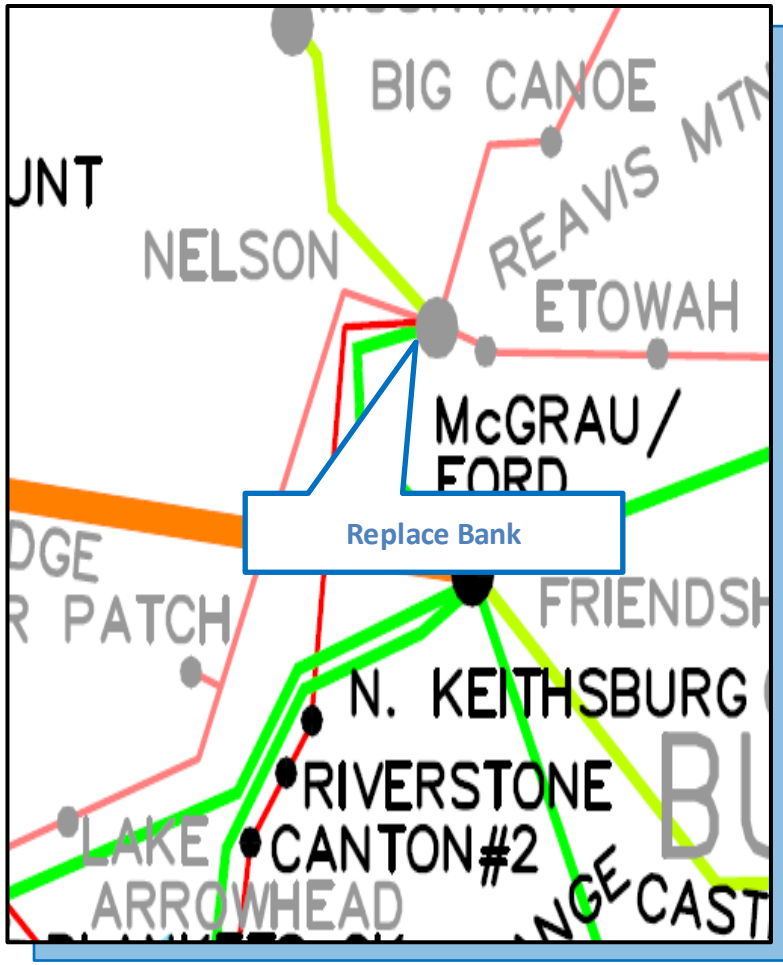


SOUTHERN Balancing Authority Area

SOUTHERN – 7E

- **2028**

NELSON 230/115 KV SUBSTATION

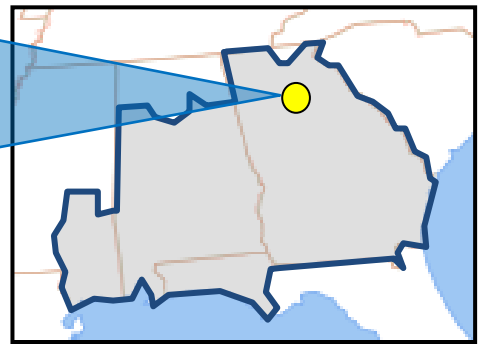


DESCRIPTION:

- Replace both existing 230/115 kV autotransformers at Nelson substation with two new 300 MVA 230/115 kV autotransformers.

SUPPORTING STATEMENT:

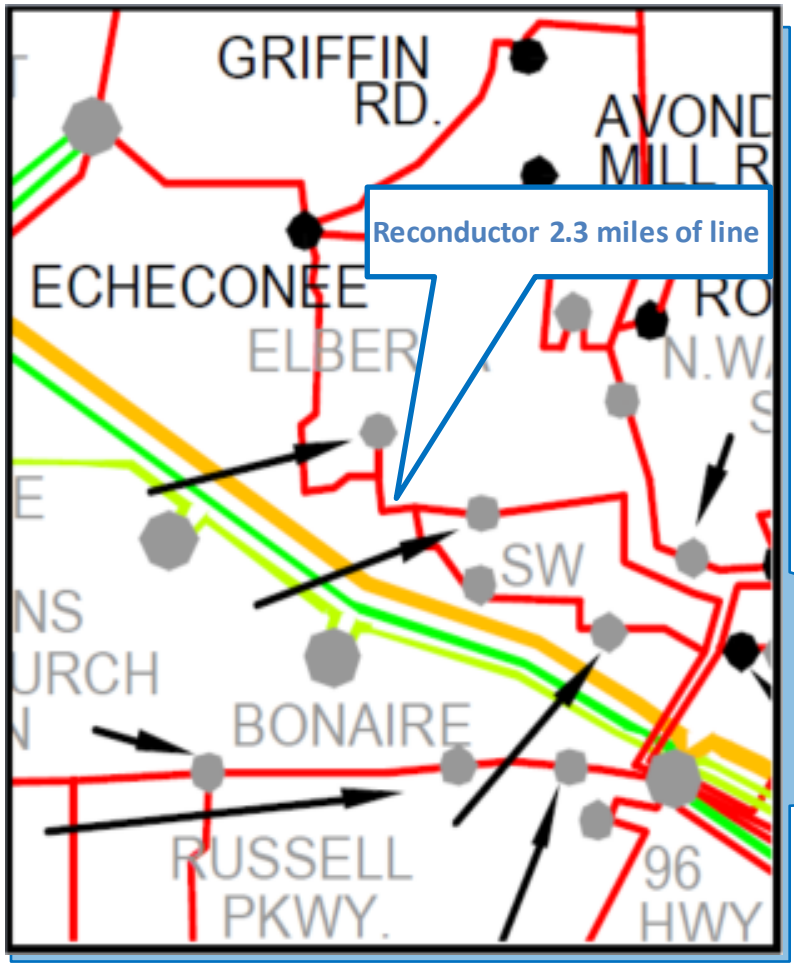
- The existing 230/115 kV autobanks overload under contingency.



SOUTHERN – 8E

- **2030**

BONAIRE PRIMARY - ECHECONNEE 115 KV TRANSMISSION LINE

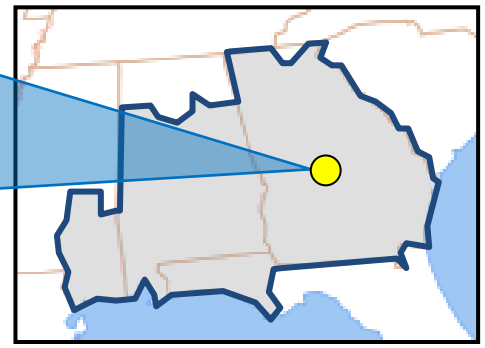


DESCRIPTION:

- Reconductor 2.3 miles of 100°C 636 ACSR conductor along the Bonaire Primary – Echeconnee 115kV line using 100°C 795 ACSR conductor.

SUPPORTING STATEMENT:

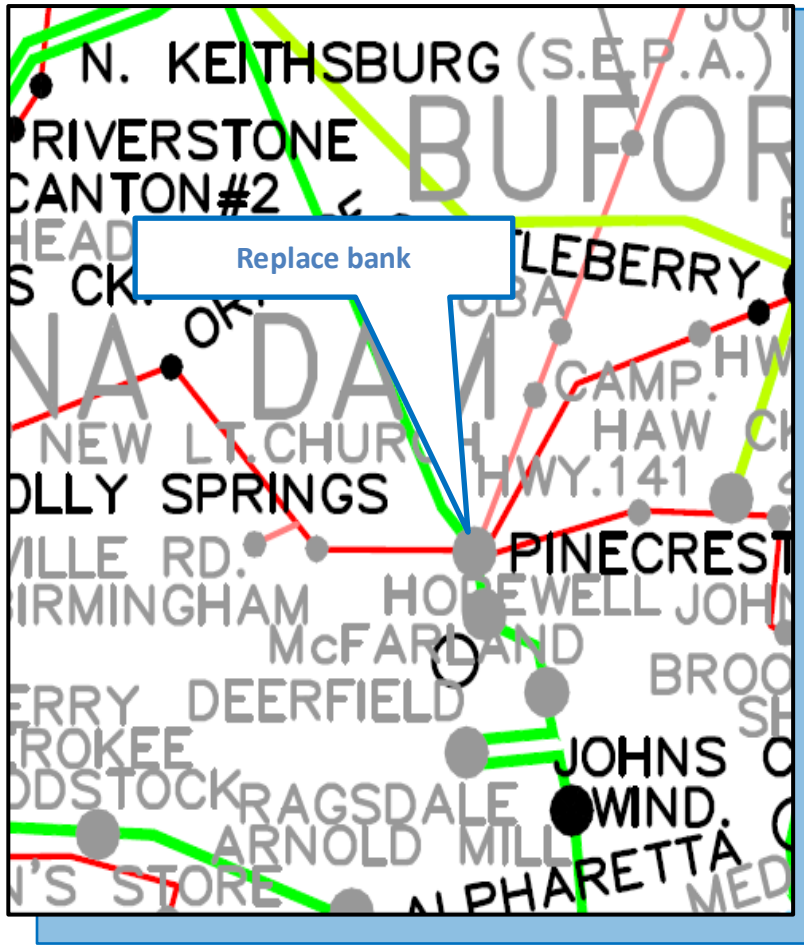
- The Bonaire Primary – Echeconnee 115kV line overloads under contingency.



SOUTHERN – 9E

- **2031**

HOPEWELL 230/115 KV SUBSTATION

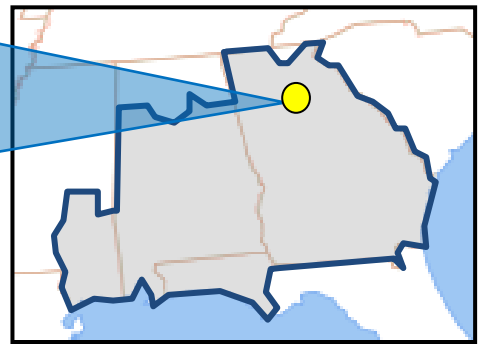


DESCRIPTION:

- Replace the 280 MVA 230/115 kV autobank at Hopewell with a 400MVA bank.

SUPPORTING STATEMENT:

- The Hopewell 230/115kV autobank A overloads under contingency.



SOUTHERN (WEST) Balancing Authority Area

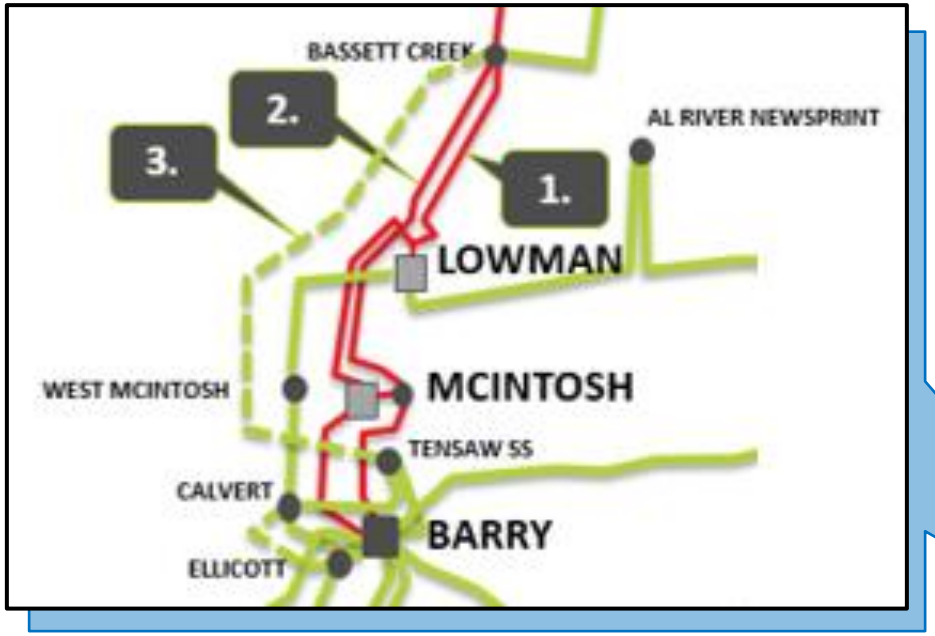
SERTP Regional Transmission Expansion Plan

SOUTHERN Balancing Authority Area

SOUTHERN – 1W

• **2022**

BASSETT CREEK CORRIDOR PROJECTS

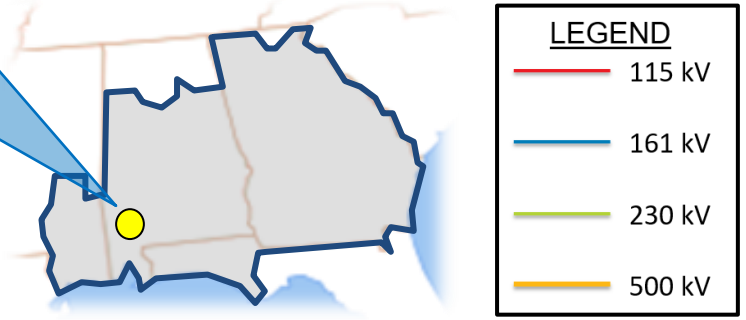


PROJECT DESCRIPTION:

1. Reconductor approximately 24.0 miles along the Bassett Creek to Lowman 115 kV transmission line with 1033.5 ACSS at 200°C. (Complete)
2. Reconductor approximately 46.0 miles along the Bassett Creek to McIntosh 115 kV transmission line with 1033.5 ACSS at 200°C. (Complete)
3. Construct approximately 61.0 miles of 1351 ACSS 230 kV transmission line at 200°C from Bassett Creek to Tensaw then Calvert to Ellicott.

SUPPORTING STATEMENT:

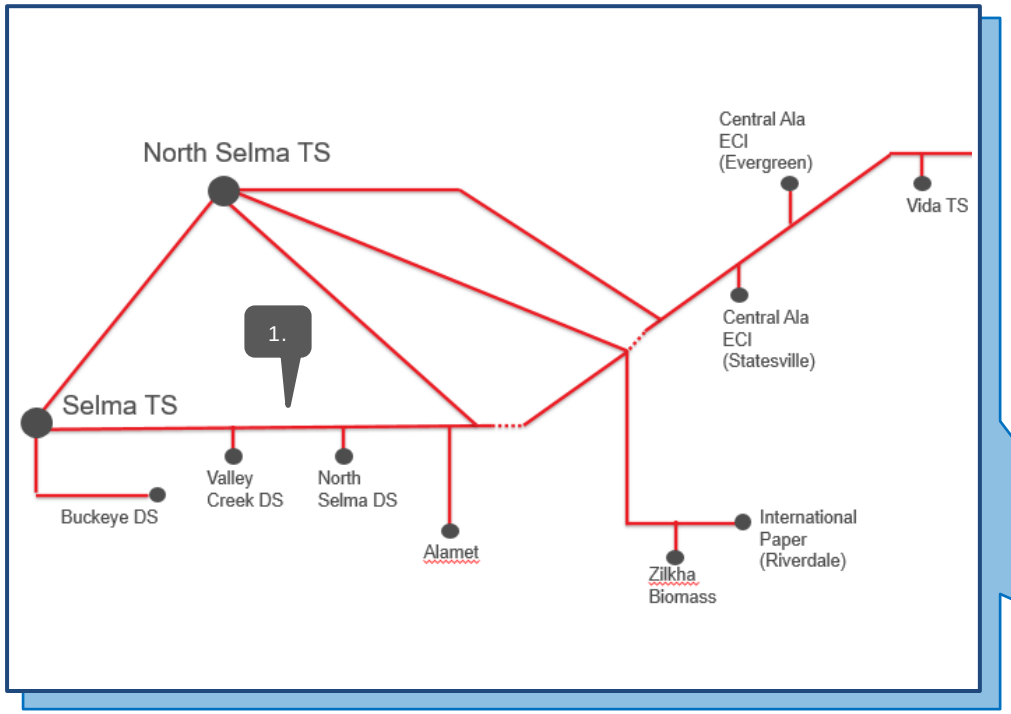
- There are multiple transmission lines in the local area that overload under contingency. These projects provide additional operational and maintenance flexibility which then increases reliability.



SOUTHERN – 2W

• **2023**

NORTH SELMA – SELMA #2 115 KV TRANSMISSION LINE

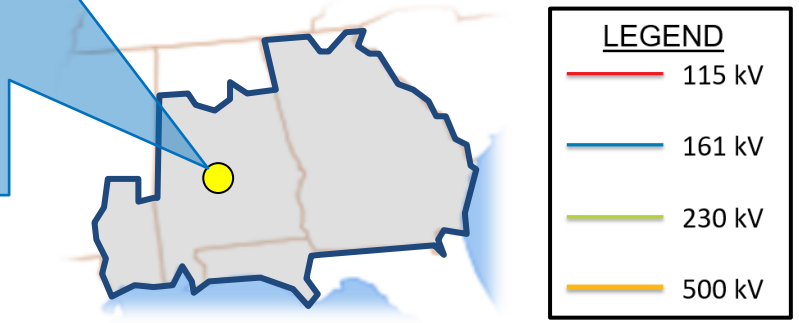


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

- The Selma TS – Vida TS 115 kV transmission line overloads under contingency.

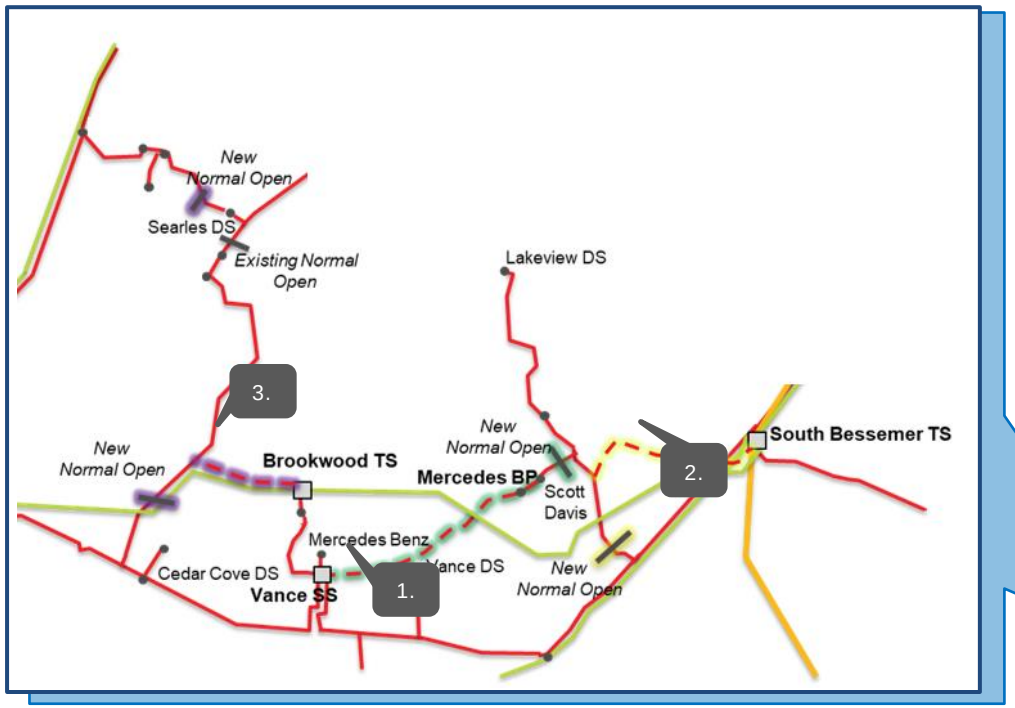


SOUTHERN Balancing Authority Area

SOUTHERN – 3W

• **2023**

HWY 11 BROOKWOOD AREA SOLUTION

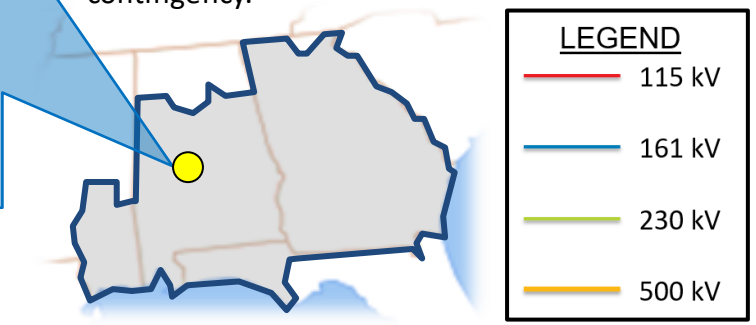


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

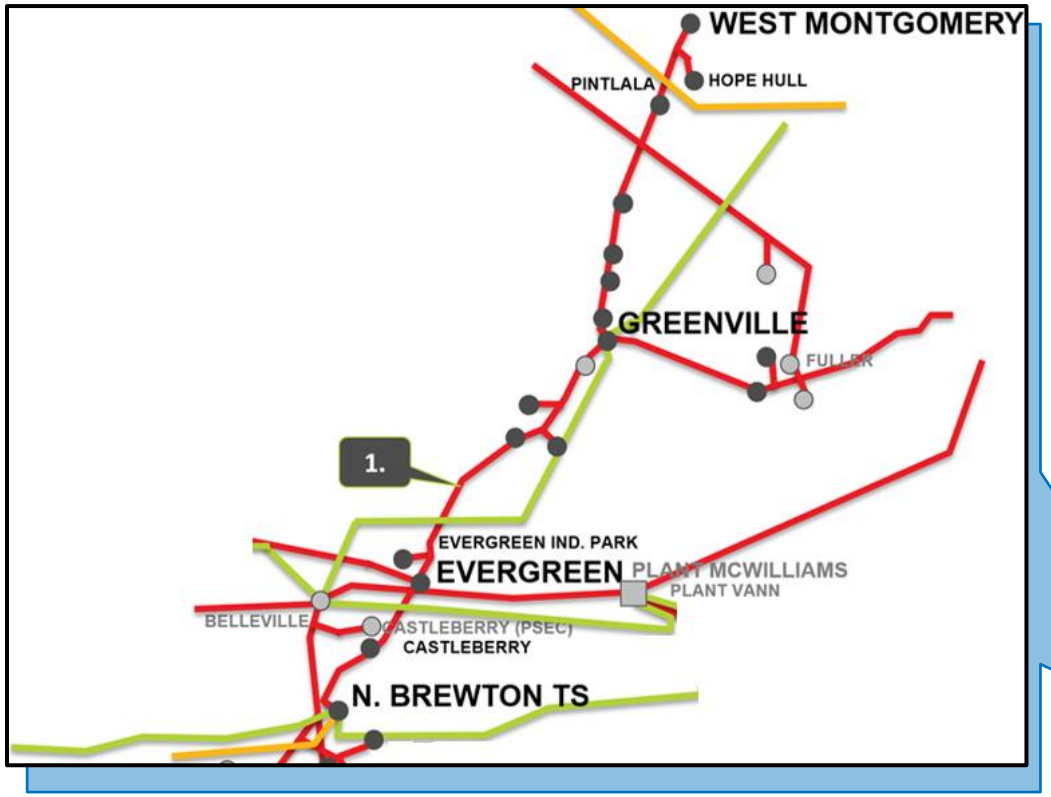
- The Vance SS – South Bessemer TS 115 kV transmission line overloads under contingency. This project also addresses voltage constraints under contingency.



SOUTHERN – 4W

- **2023**

CENTRAL CORRIDOR SOLUTION 115 KV PROJECT

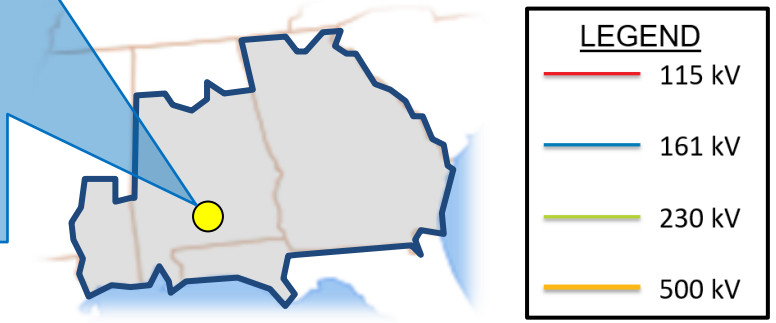


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

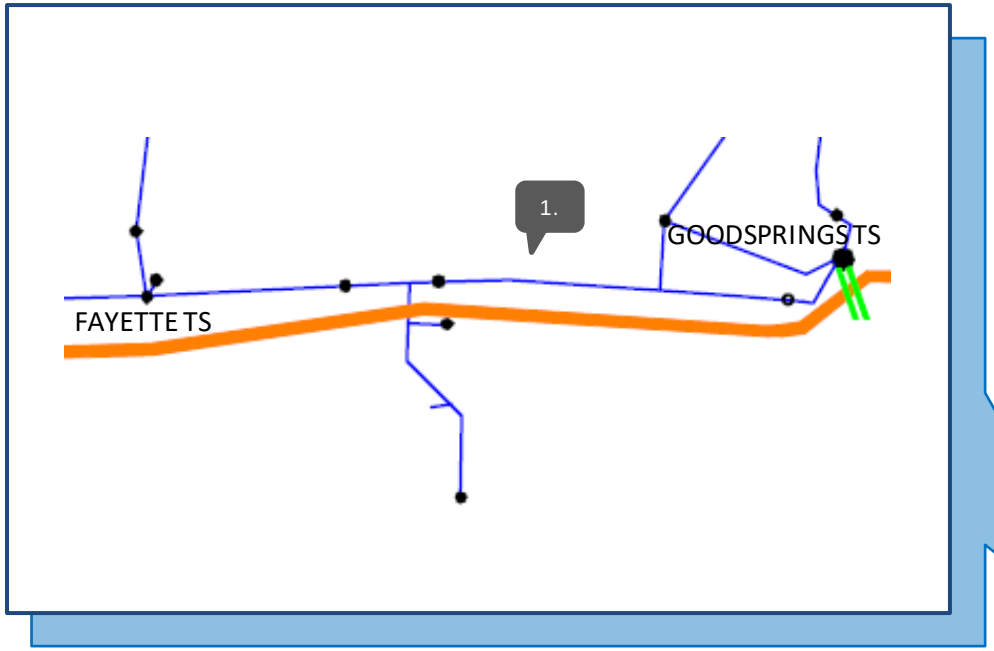
- Multiple sections of the central corridor overload under contingency. This project also provides additional operational and maintenance flexibility which then increases reliability.



SOUTHERN – 5W

- **2023**

FAYETTE – GOODSPRINGS TS 161 KV TRANSMISSION LINE

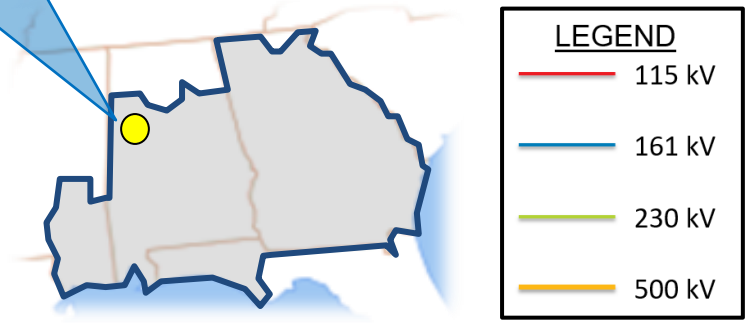


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

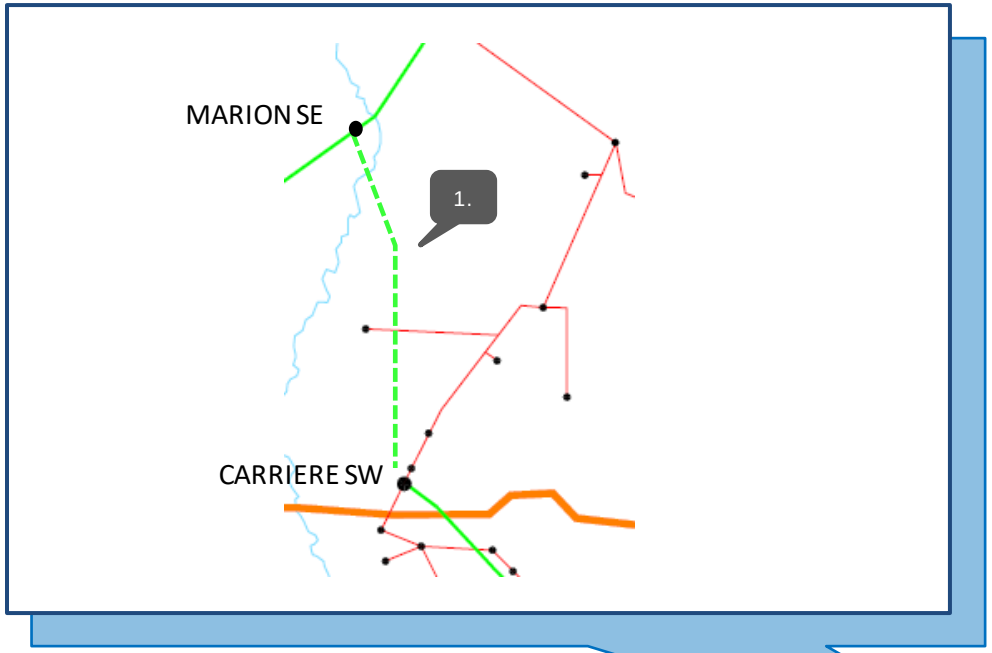


SOUTHERN Balancing Authority Area

SOUTHERN – 6W

- **2023**

CARRIERE SW – MARION SE 230 KV TRANSMISSION LINE

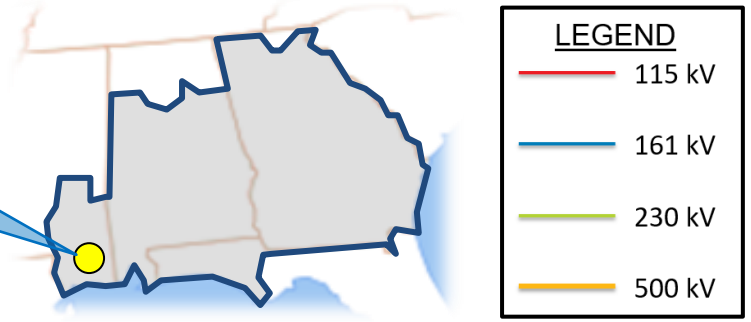


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

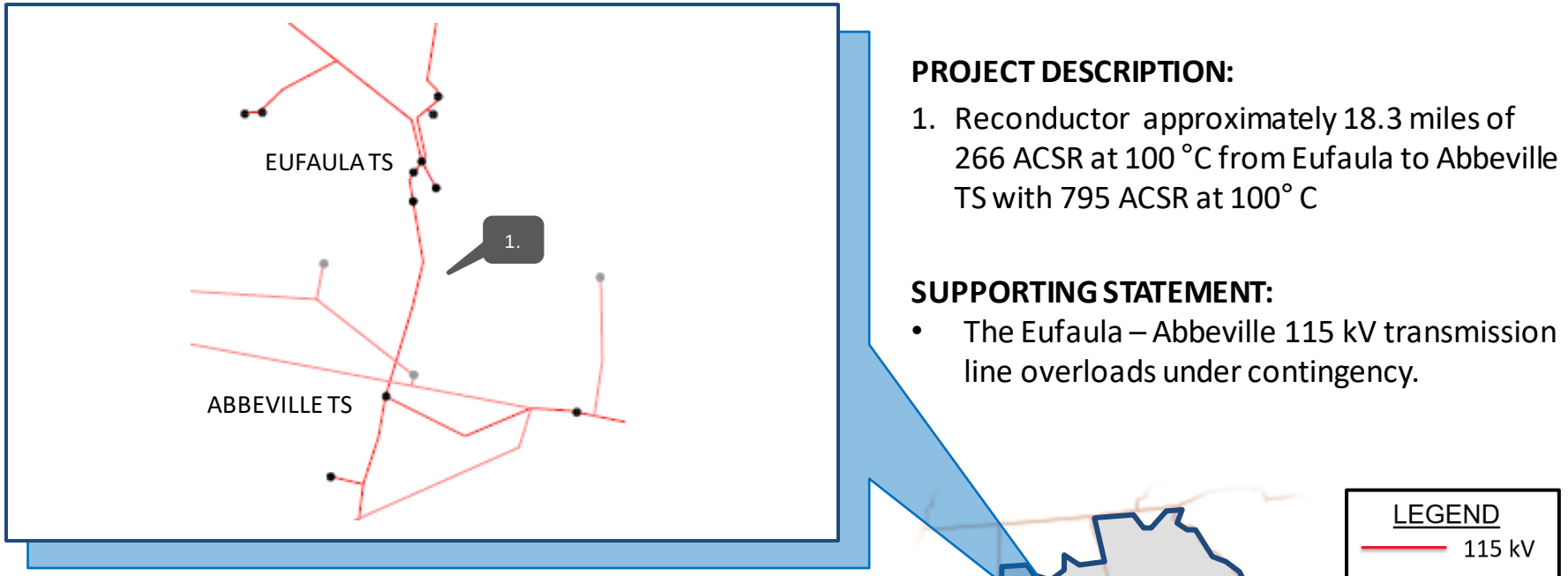


SOUTHERN Balancing Authority Area

SOUTHERN – 7W

• **2023**

EUFALA – GEORGE DAM – WEBB 115 KV TRANSMISSION LINE



PROJECT DESCRIPTION:

1. Reconductor approximately 18.3 miles of 266 ACSR at 100 °C from Eufaula to Abbeville TS with 795 ACSR at 100° C

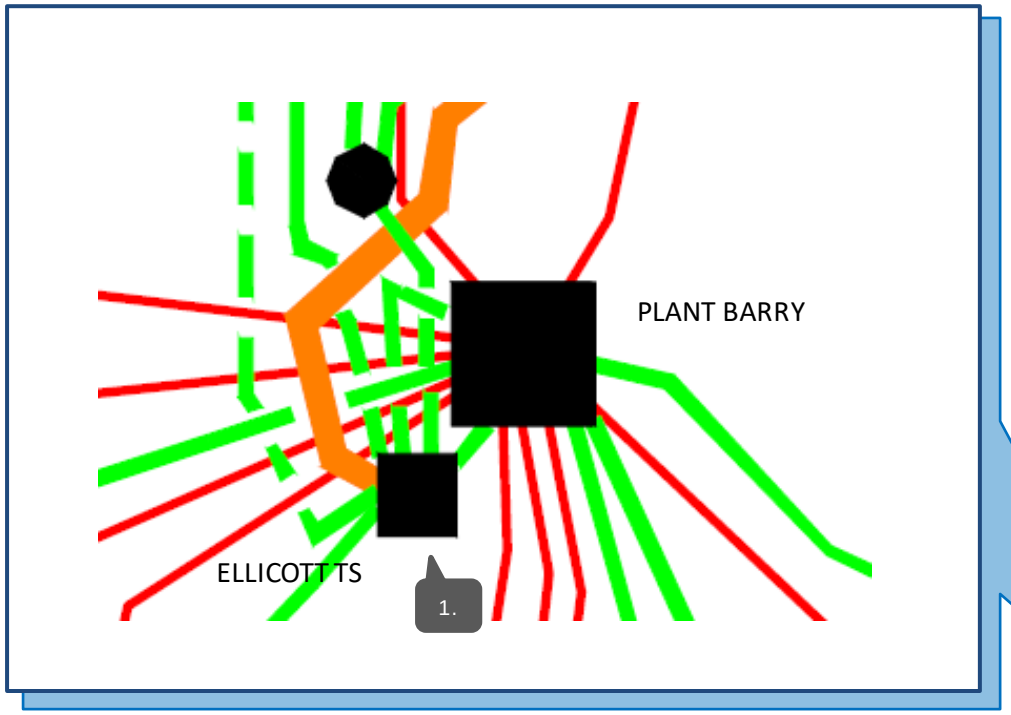
SUPPORTING STATEMENT:

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

SOUTHERN – 8W

- **2024**

ELLICOTT SUBSTATION EXPANSION PROJECT

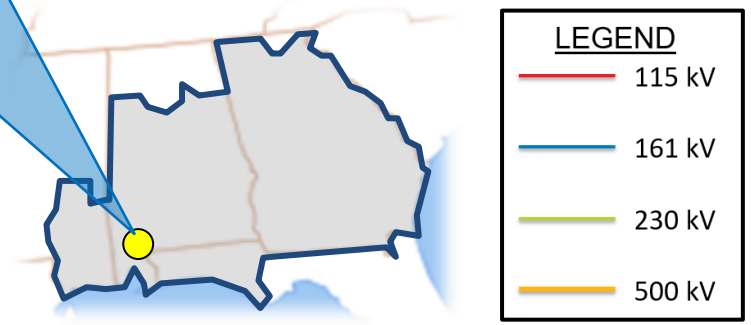


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

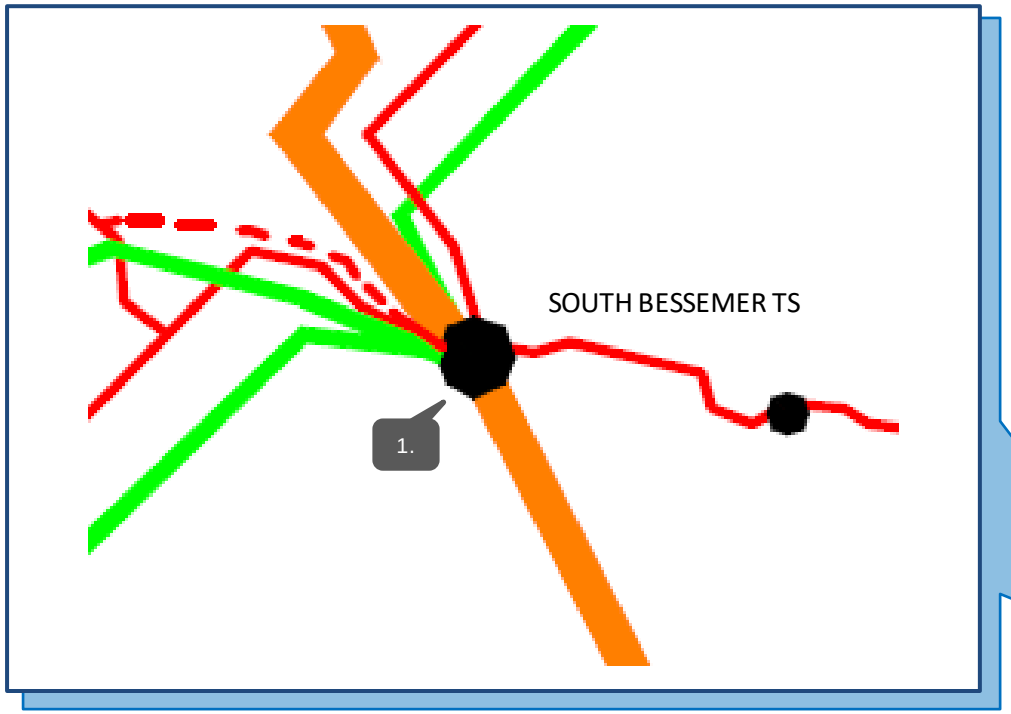


SOUTHERN Balancing Authority Area

SOUTHERN – 9W

• **2026**

2ND SOUTH BESSEMER 500/230 AUTOBANK

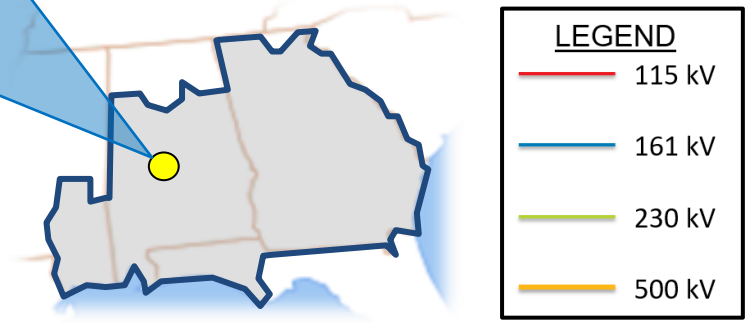


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

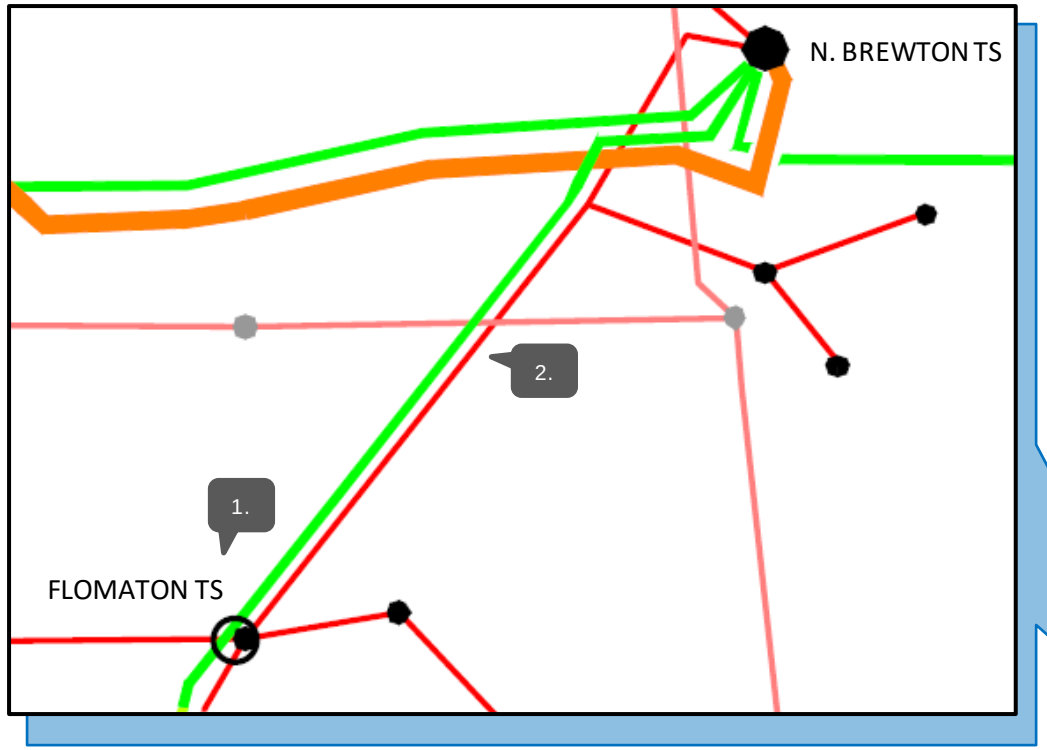


SOUTHERN Balancing Authority Area

SOUTHERN – 10W

- **2028**

FLOMATON 230/115 KV SUBSTATION

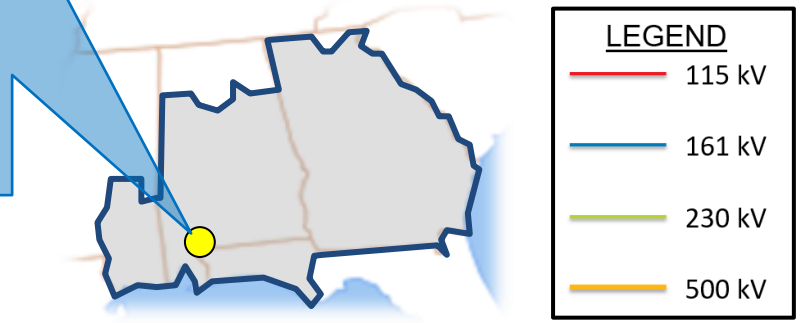


PROJECT DESCRIPTION:

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.

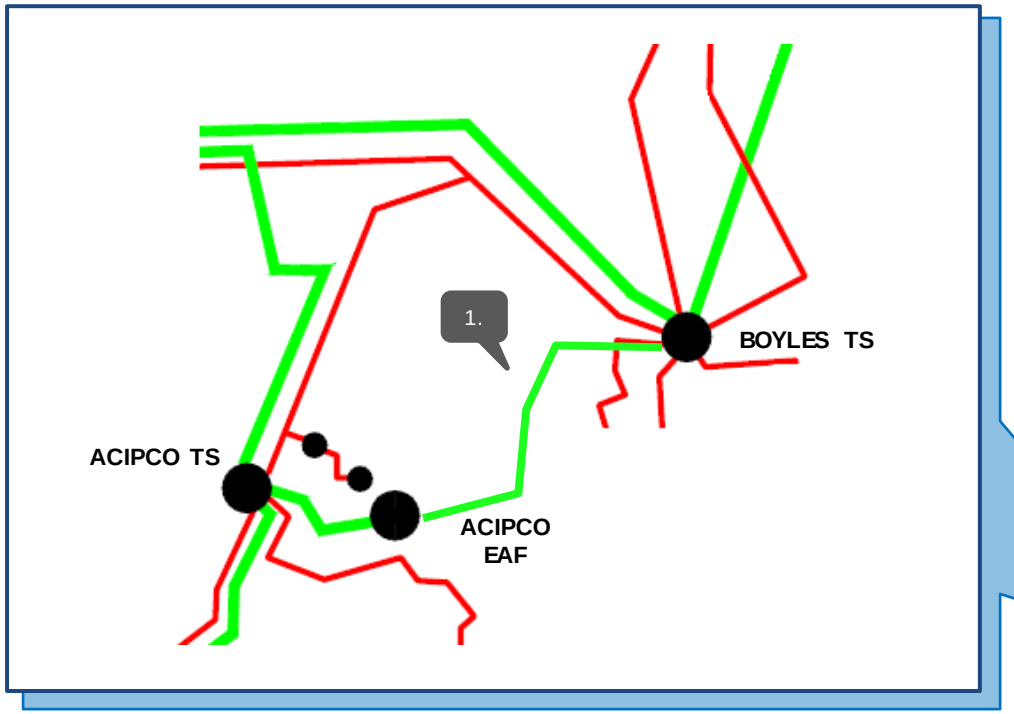


SOUTHERN Balancing Authority Area

SOUTHERN – 11W

- **2028**

ACIPCO EAF – BOYLES 230 KV NEW TRANSMISSION LINE

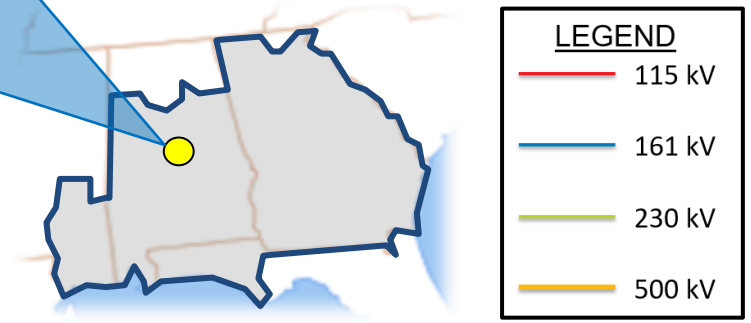


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

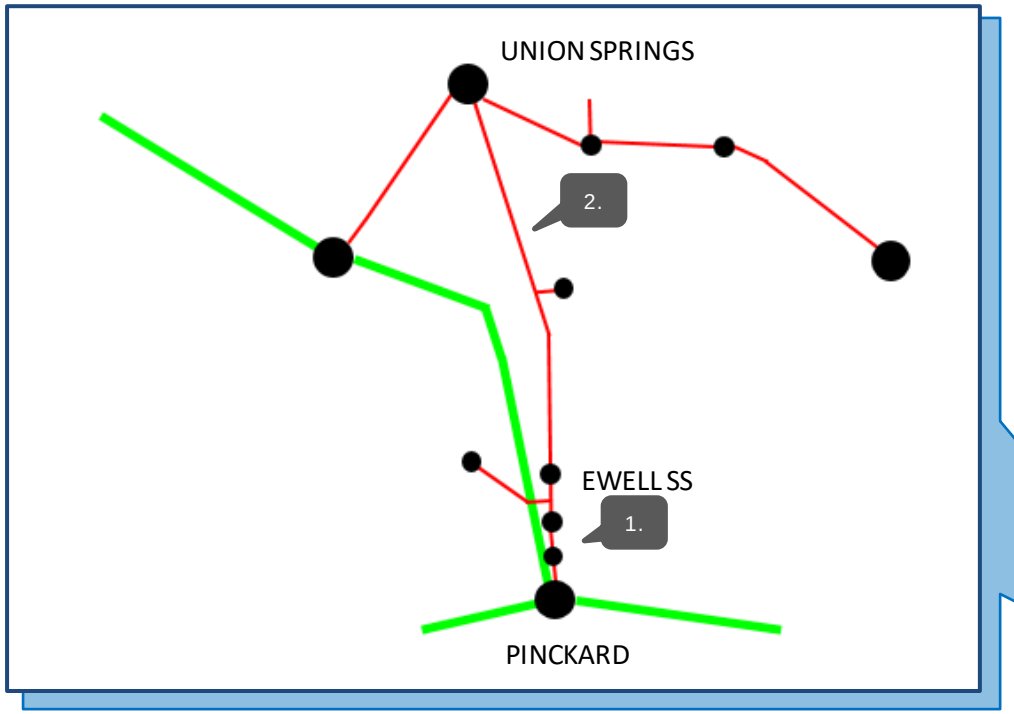


SOUTHERN Balancing Authority Area

SOUTHERN – 12W

• **2030**

UNION SPRINGS - PINCKARD 115 KV TRANSMISSION LINE

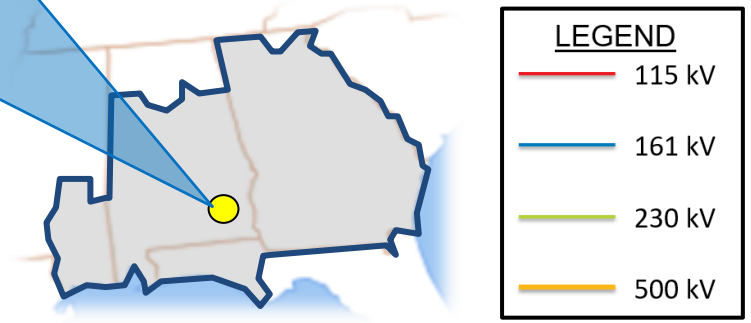


PROJECT DESCRIPTION:

1. Rebuild ~8.1 miles of 397 ACSR of the Pinckard – Ewell SS 115 kV TL from 397 ACSR at 49°C to 795 ACSR at 100° C
2. Reconductor ~50 miles of 397 ACSR at 50 °C Union Springs – Ewell 115 kV TL to 795 ACSR at 100° C

SUPPORTING STATEMENT:

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



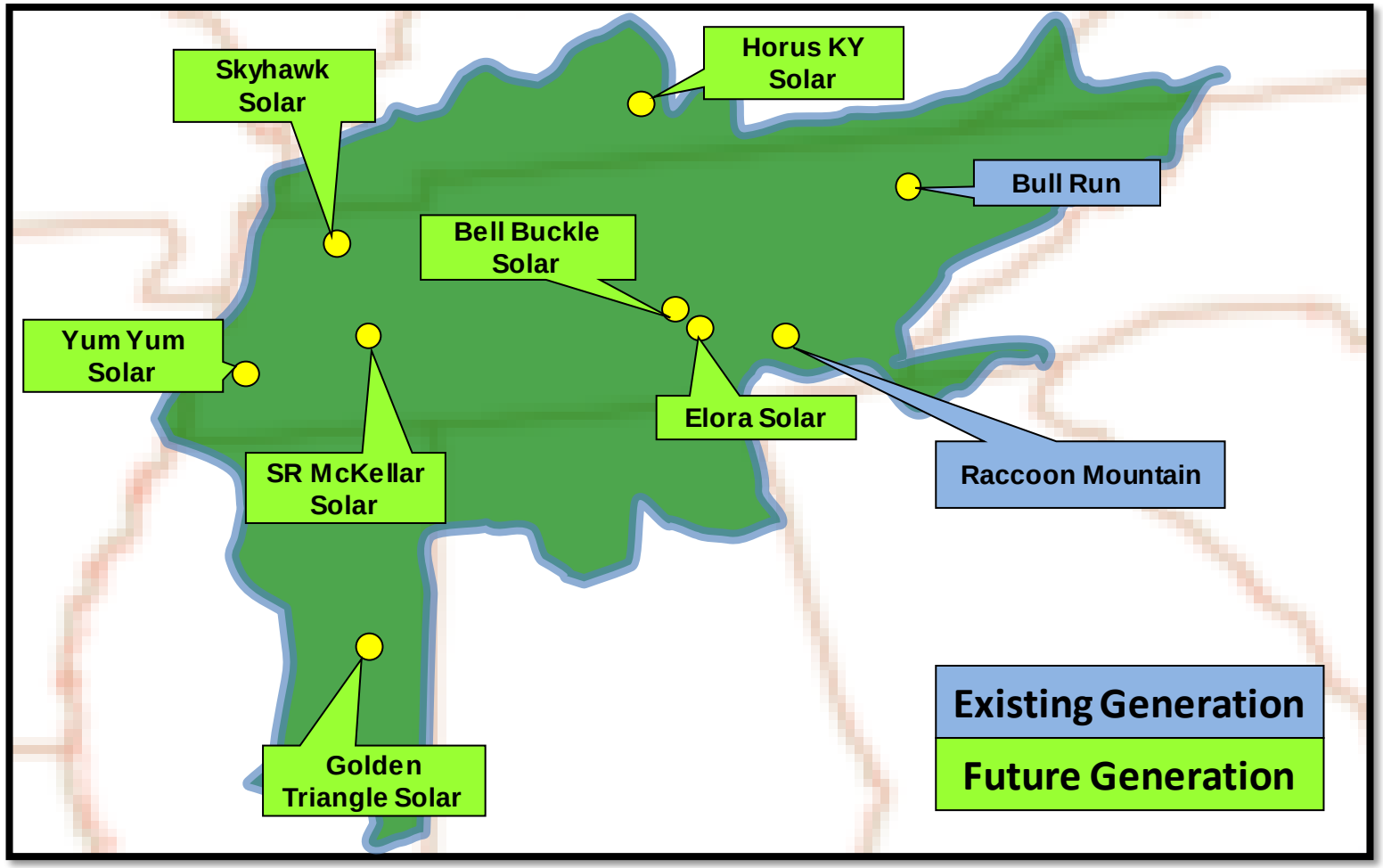
TVA Balancing Authority Area

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 2021 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 2021 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
RACOON MTN GEN 3	440	440	440	440	440	440	440	440	440	440
BULL RUN FP UNIT 1	870	870	870	0	--	--	--	--	--	--
ELORA SOLAR	150	150	150	150	150	150	150	150	150	150
GOLDEN TRIANGLE SOLAR	--	200	200	200	200	200	200	200	200	200
HORUS KY SOLAR	--	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
YUM YUM SOLAR	147	147	147	147	147	147	147	147	147	147
SKYHAWK SOLAR	--	100	100	100	100	100	100	100	100	100
SR MCKELLAR SOLAR	--	80	80	80	80	80	80	80	80	80
BELL BUCKLE SOLAR	--	35	35	35	35	35	35	35	35	35

TVA Balancing Authority Area

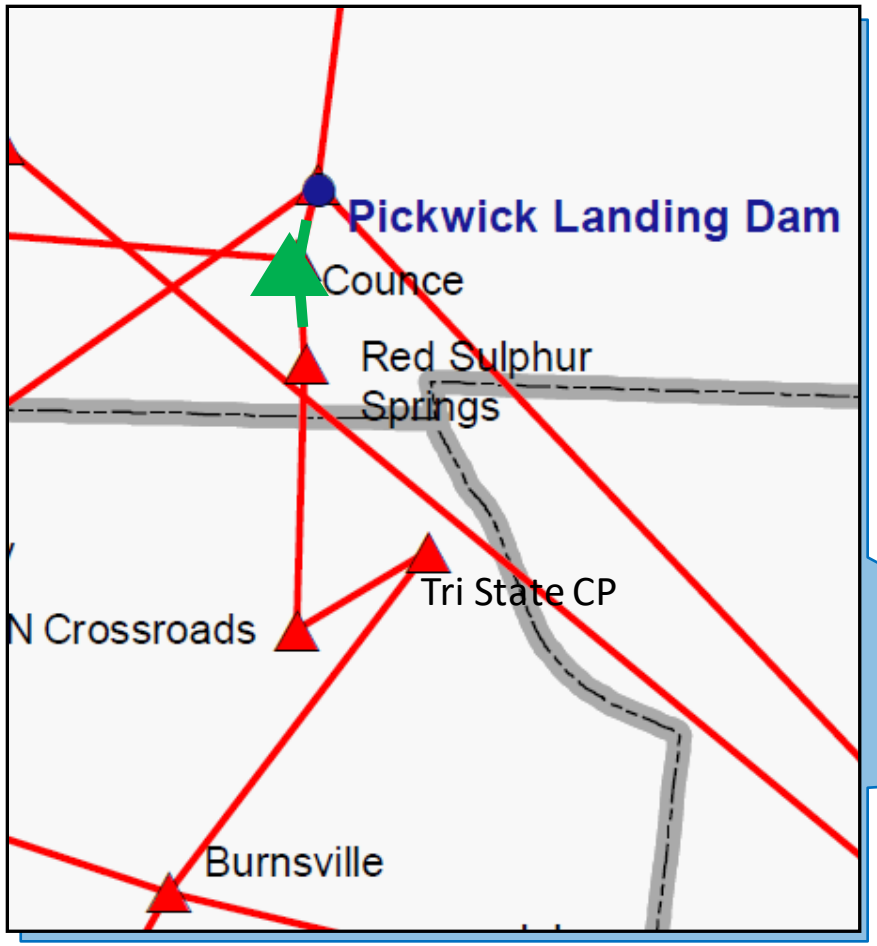
SERTP Regional Transmission Expansion Plan

TVA Balancing Authority Area

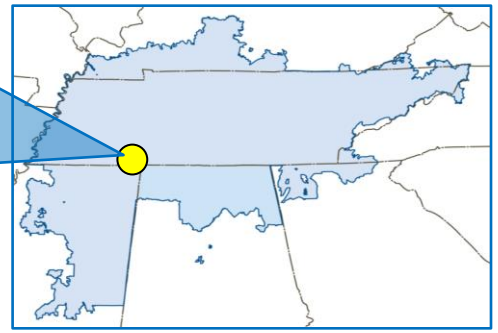
TVA – 1

- **2021**

COUNCE 161 KV SUBSTATION



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

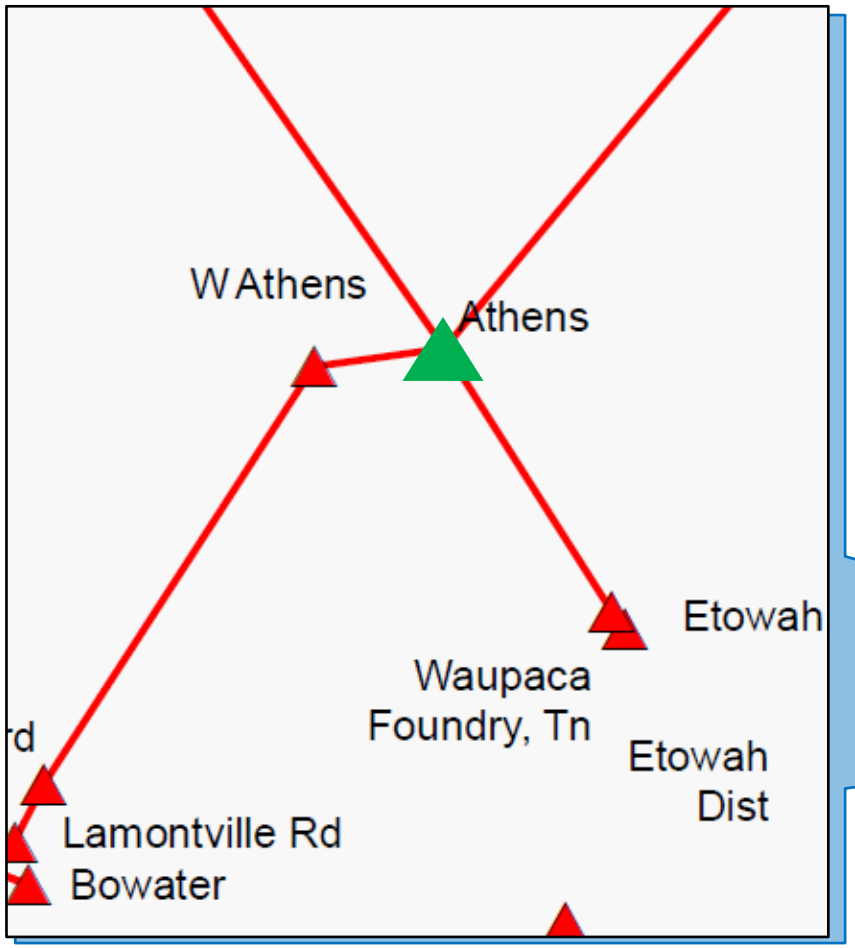


TVA Balancing Authority Area

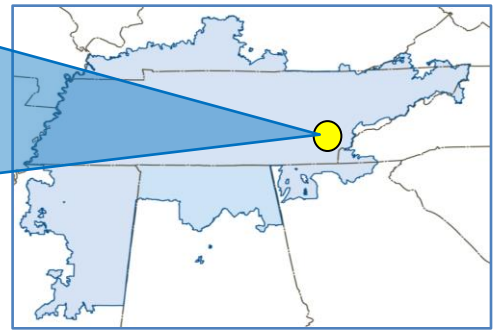
TVA – 2

- **2021**

ATHENS, TN 161KV SUBSTATION



- **DESCRIPTION:**
  - Upgrade bus work and terminal equipment at the Athens, TN 161 kV substation to 836 MVA.
- **SUPPORTING STATEMENT:**
  - The terminal equipment and bus work at Athens TN 161 kV overloads under contingency.

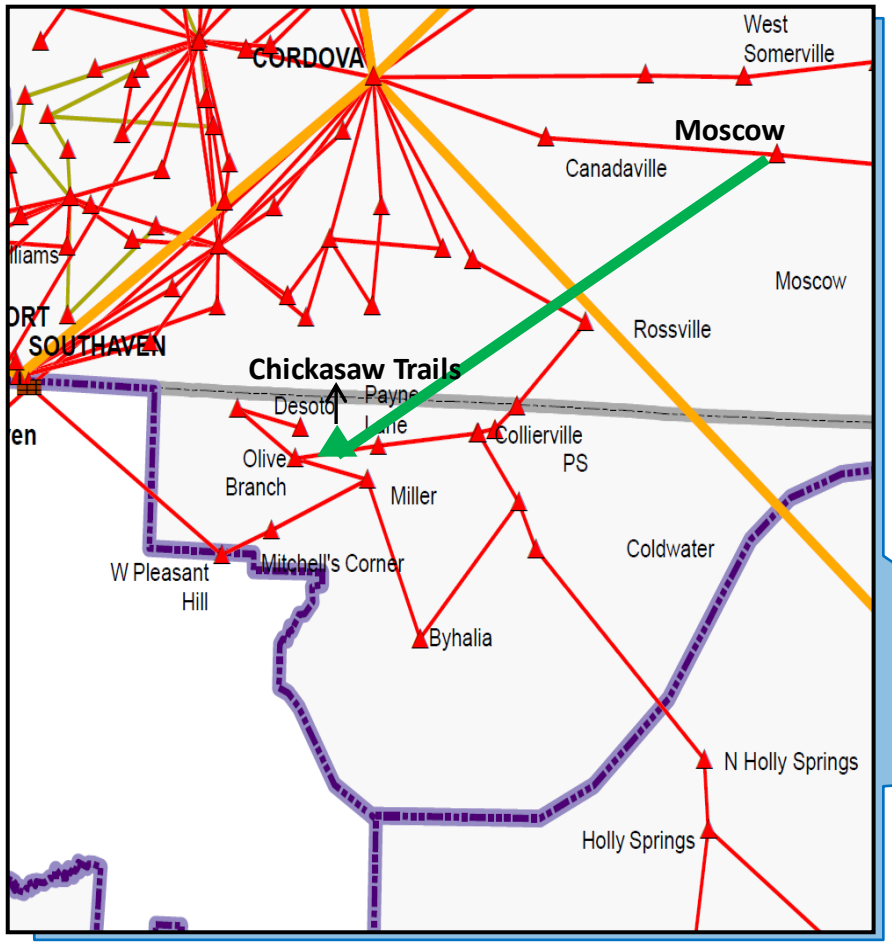


TVA Balancing Authority Area

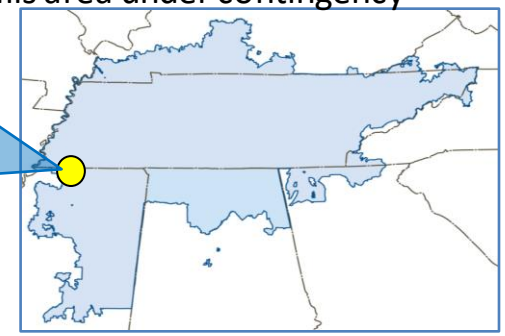
TVA – 3

- **2021**

MOSCOW – CHICKASAW TRAILS 161 KV TRANSMISSION LINE



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

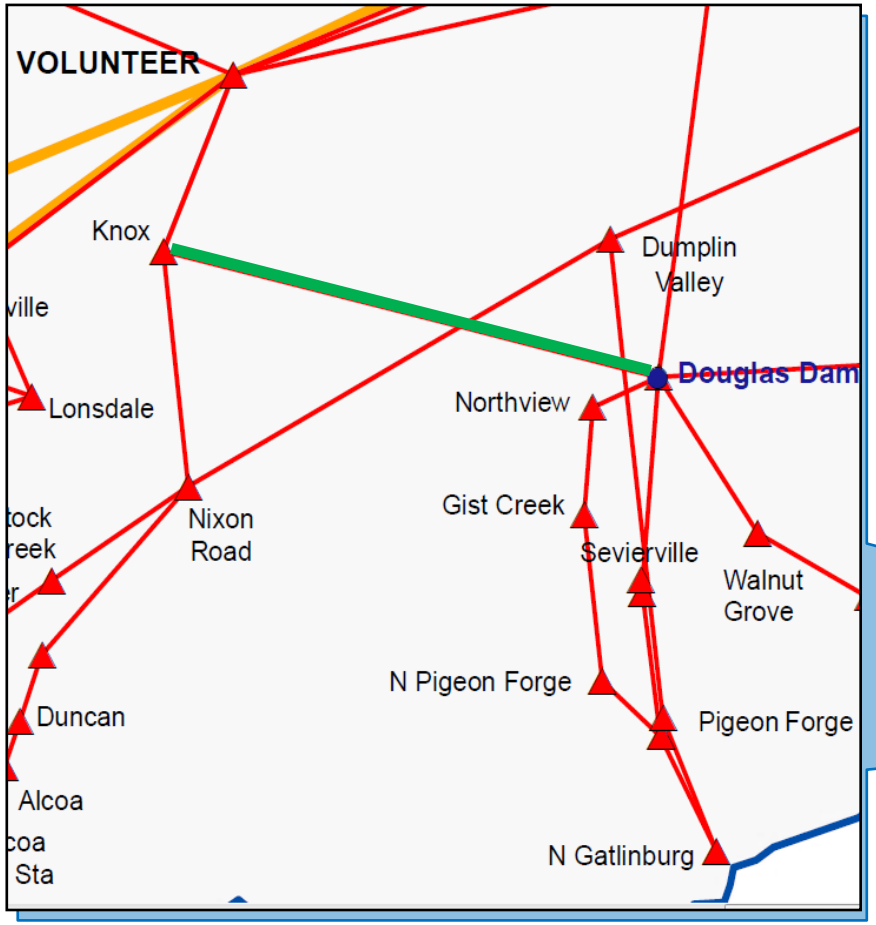


TVA Balancing Authority Area

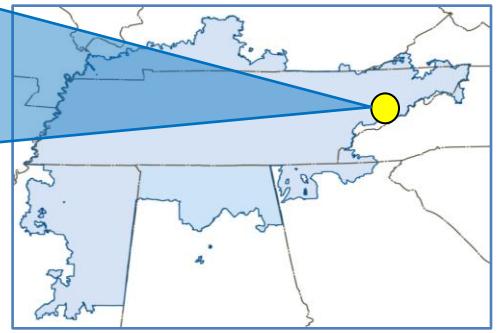
TVA – 4

- **2022**

KNOX – DOUGLAS 161 KV TRANSMISSION LINE



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

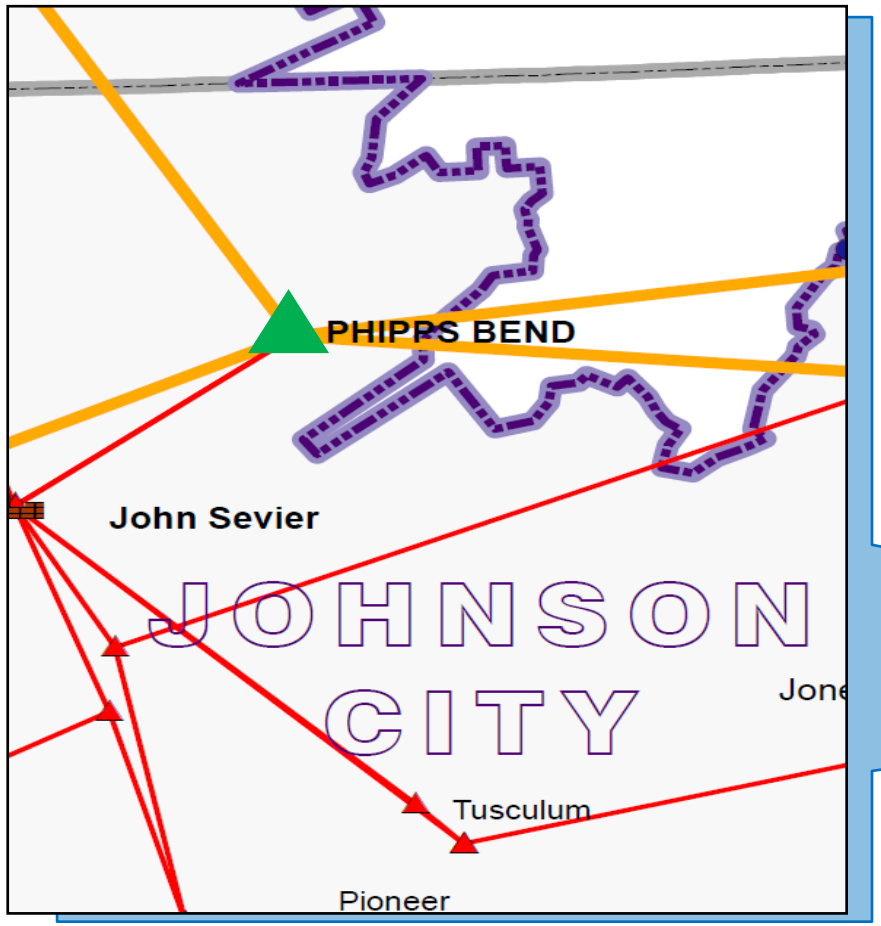


TVA Balancing Authority Area

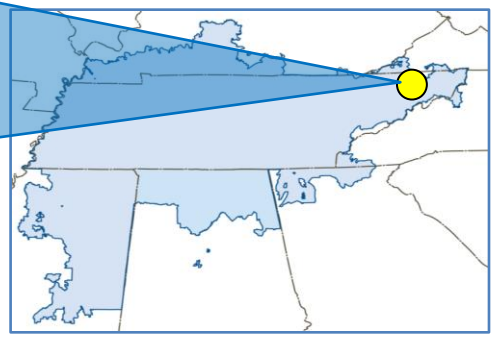
TVA – 5

- **2022**

PHIPPS BEND 500 KV SUBSTATION



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

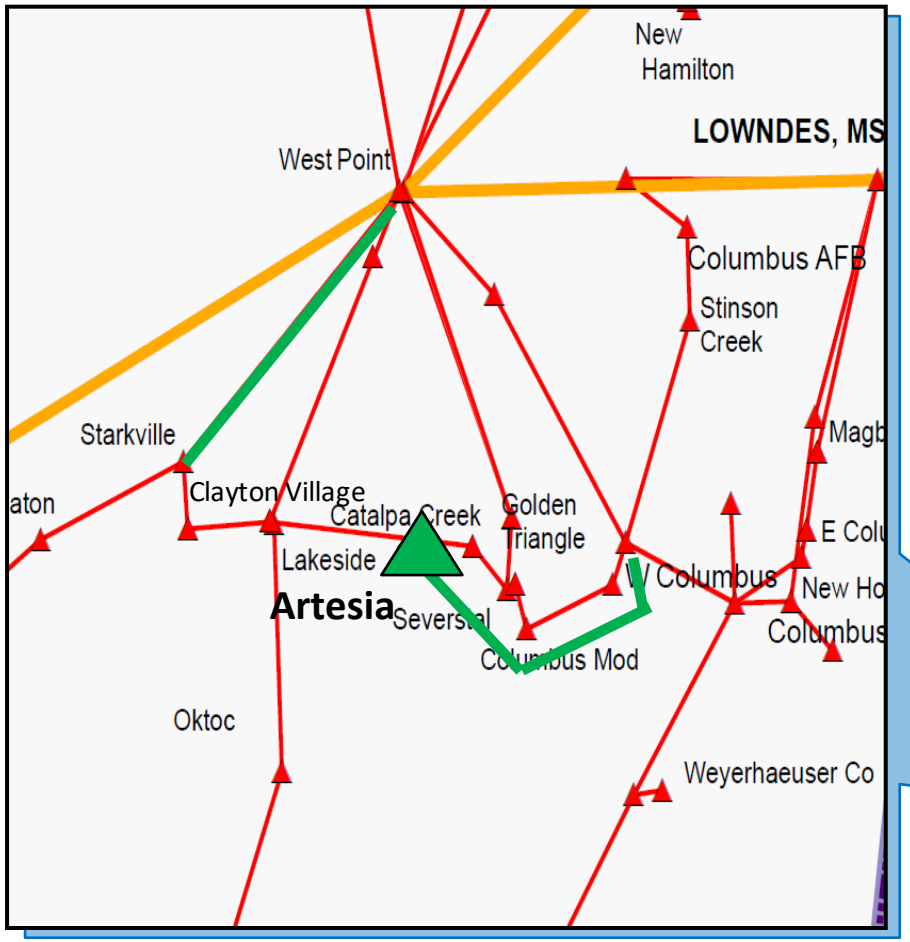


TVA Balancing Authority Area

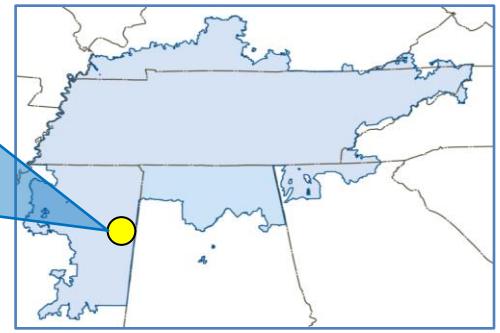
TVA – 6

- **2022**

ARTESIA – W. COLUMBUS 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct the Artesia 161 kV Substation. Construct approximately 12.0 miles for Artesia to West Columbus with 954 ACSS at 150°C. Reconductor approximately 15.0 miles of West Point to Starkville 161 kV with 954 ACSS at 150°C.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur and voltage support is needed in the West Point and Columbus area under contingency.

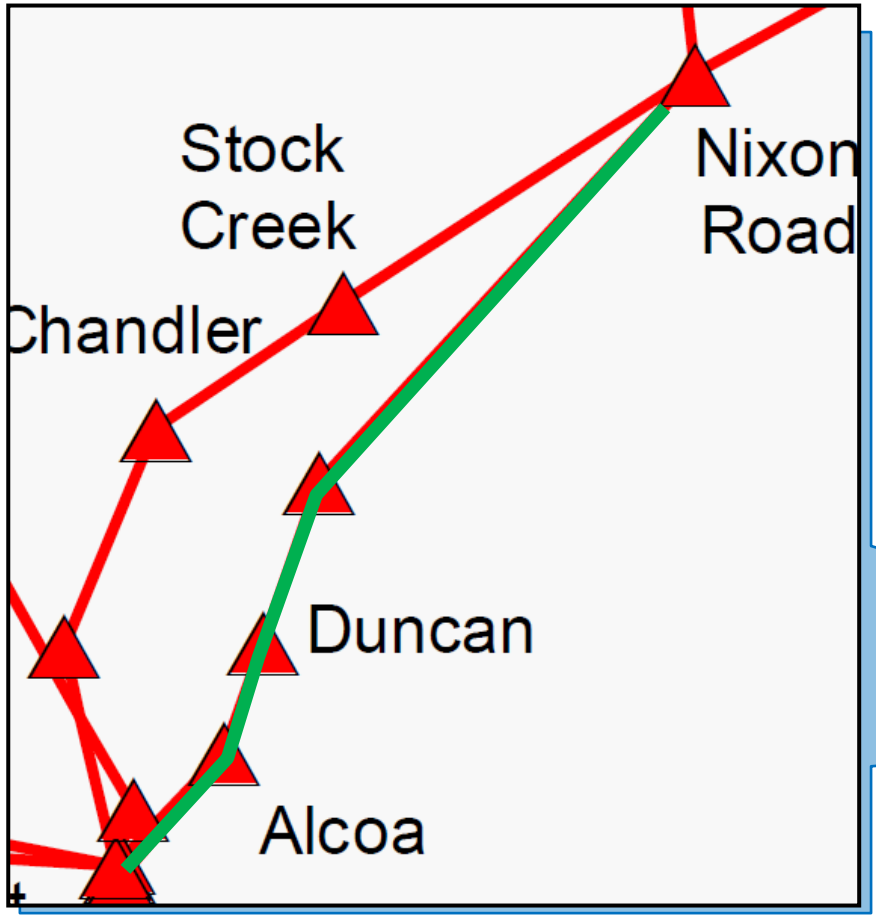


TVA Balancing Authority Area

TVA – 7

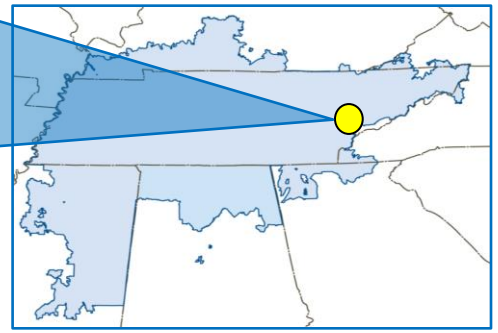
- **2023**

ALCOA SS – NIXON ROAD 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Rebuild approximately 12.0 miles of the Alcoa North to Nixon Road 161 kV transmission line with 1590 ACSR at 100°C and construct approximately 2.0 miles of new transmission line to create the Alcoa SS to Nixon Rd 161 kV #2 transmission line.

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

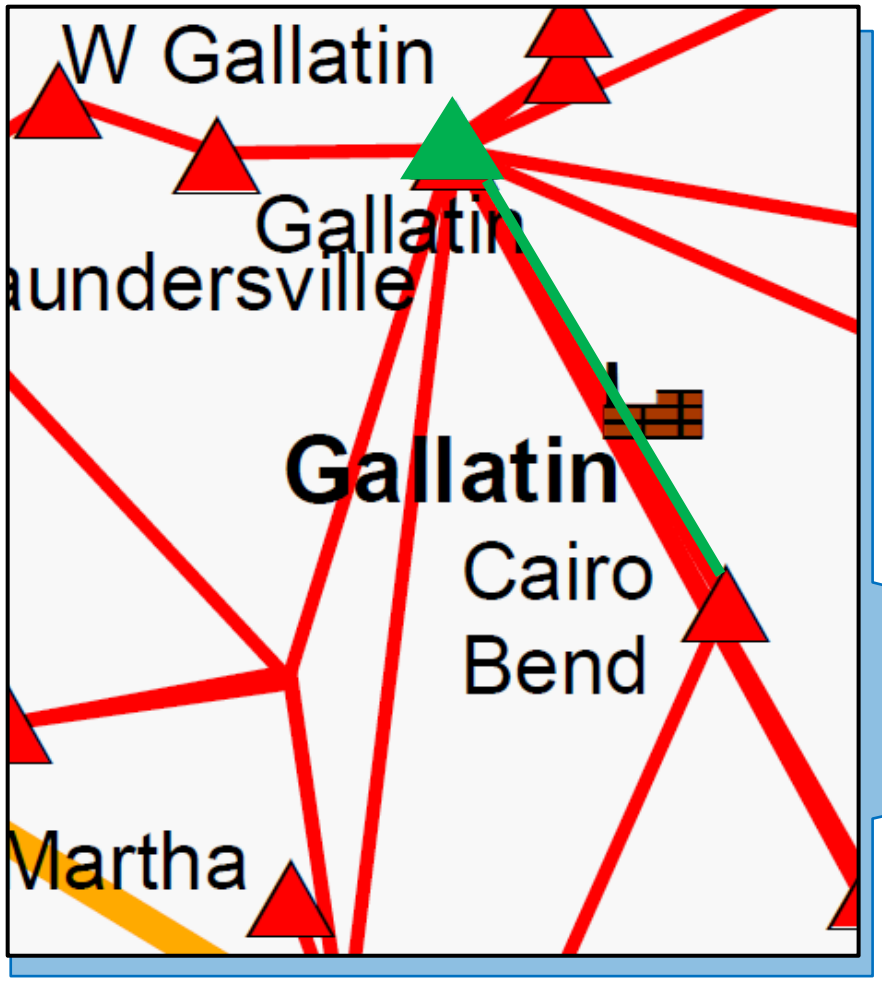


TVA Balancing Authority Area

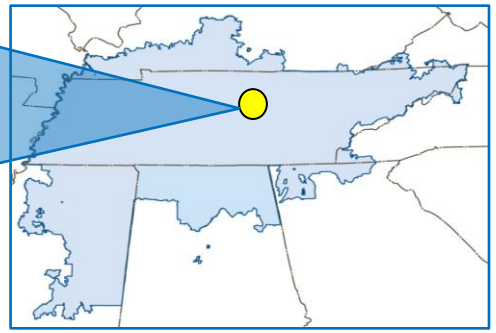
TVA – 8

- **2023**

GALLATIN - CAIRO BEND 161 KV TRANSMISSION LINE



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

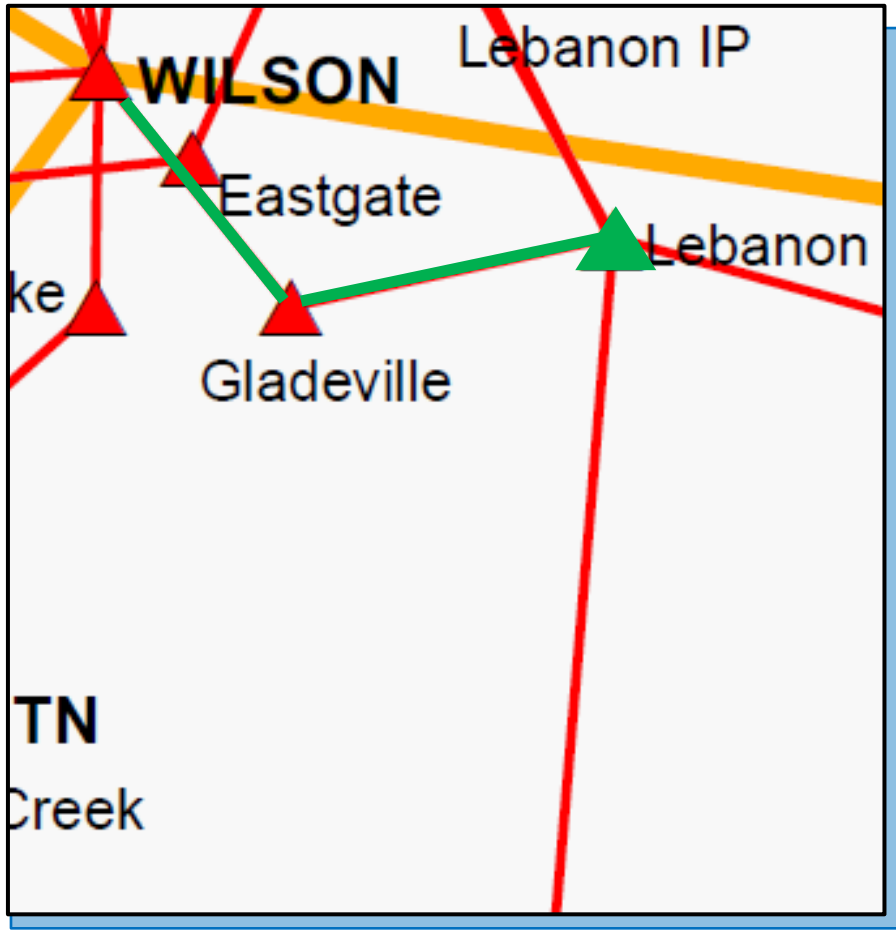


TVA Balancing Authority Area

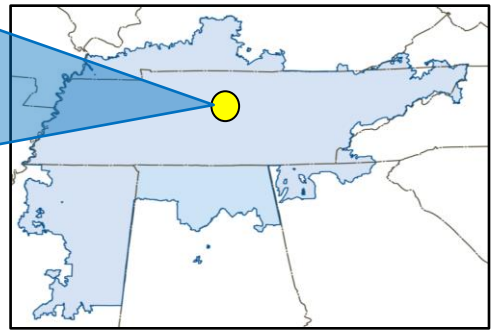
TVA – 9

- **2023**

WILSON - LEBANON 161 KV TRANSMISSION LINE



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

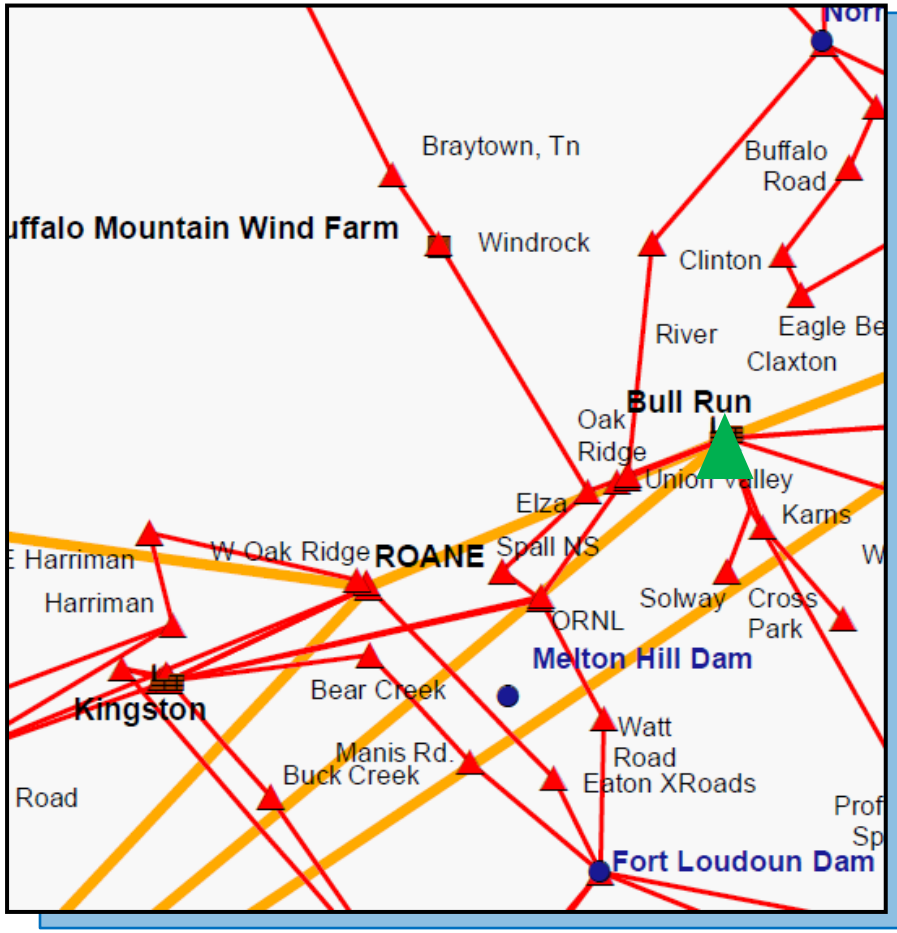


TVA Balancing Authority Area

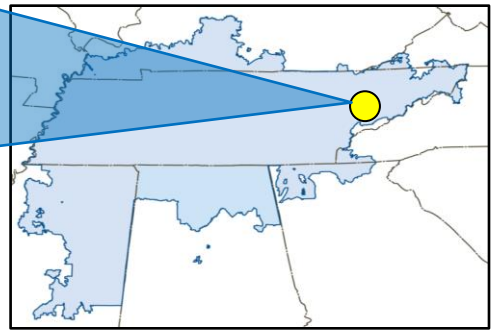
TVA – 10

- **2023**

ANDERSON 500 KV SUBSTATION



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



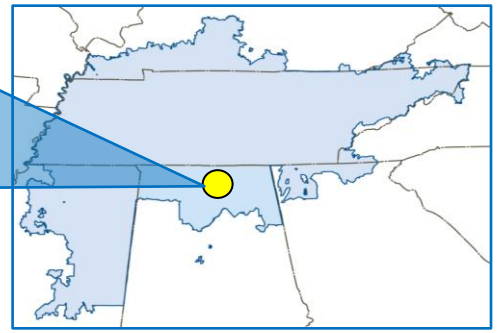
TVA Balancing Authority Area

TVA – 11

- **2023**

LIMESTONE – SEWELL 161 KV #2 TRANSMISSION LINE

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

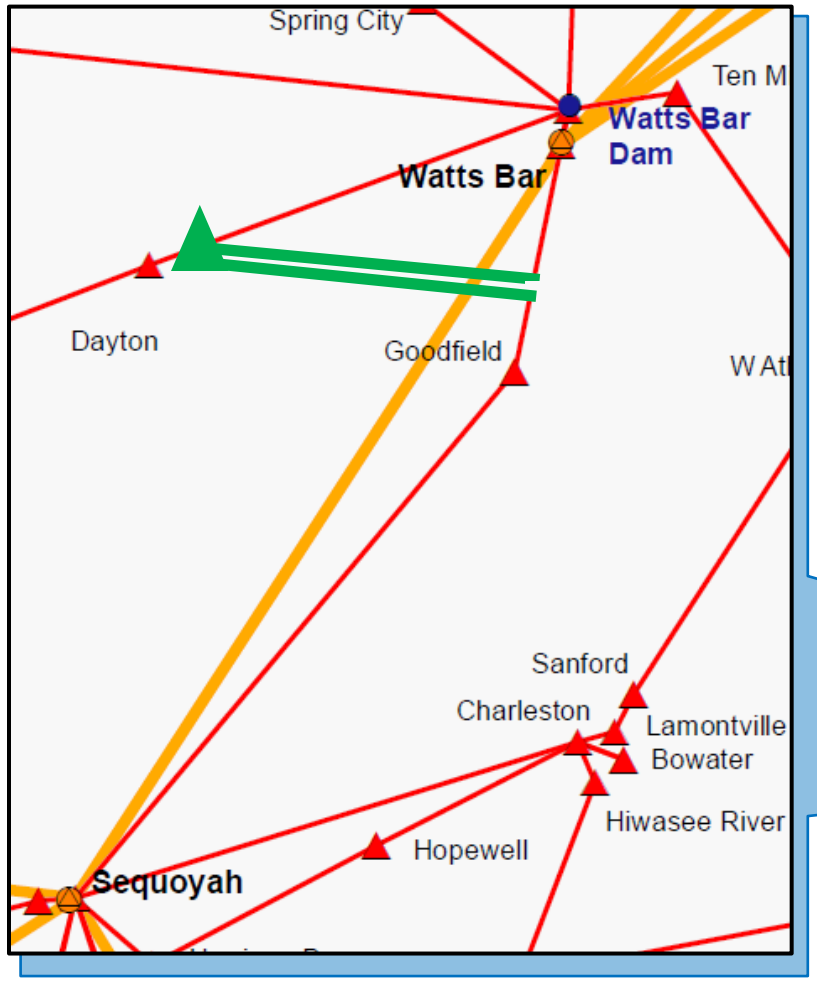


TVA Balancing Authority Area

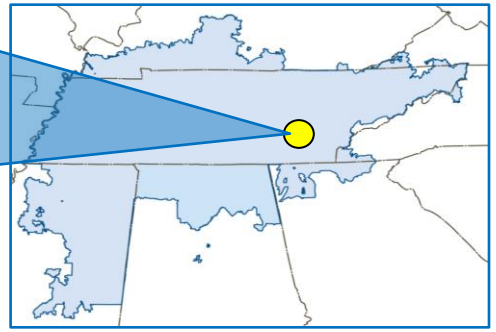
TVA – 12

- **2024**

N. DAYTON SUBSTATION



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

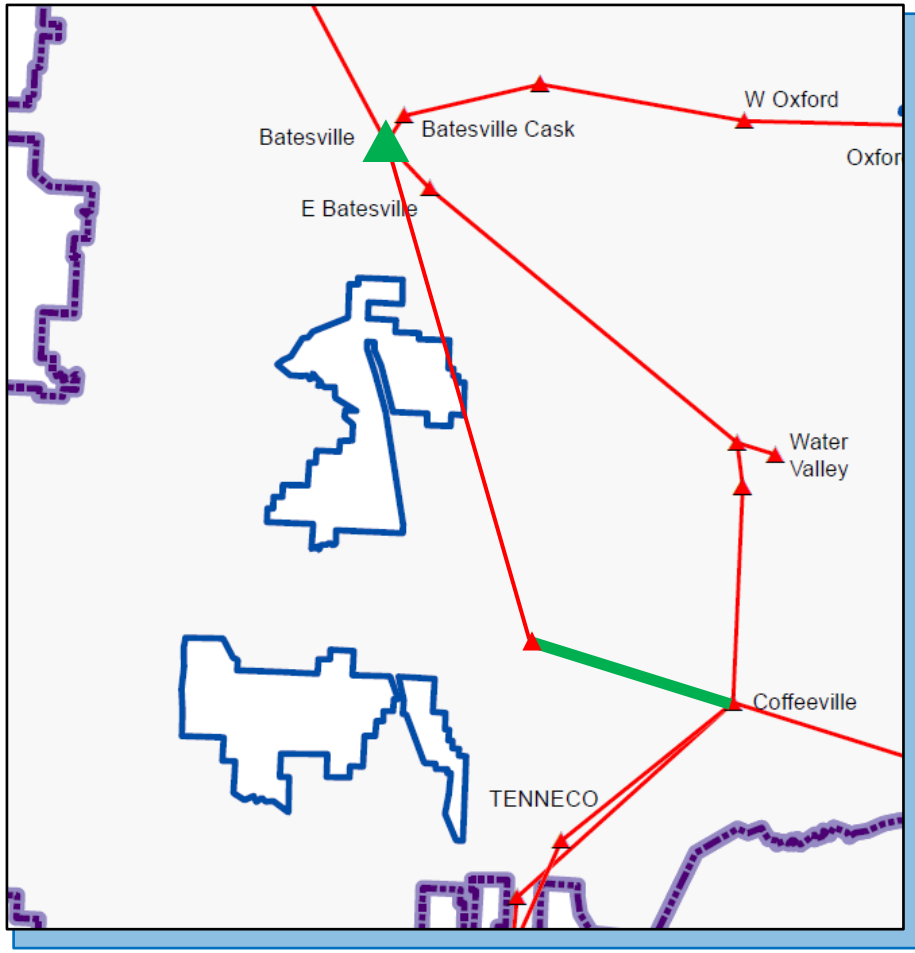


TVA Balancing Authority Area

TVA – 13

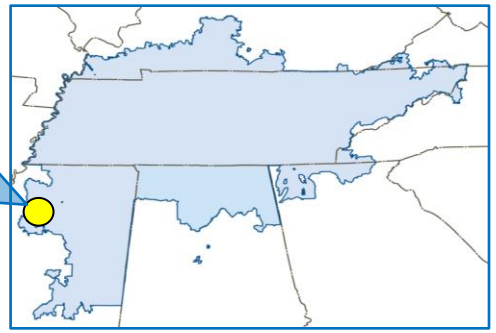
- **2024**

N. OAKLAND – COFFEEVILLE 161 KV TRANSMISSION LINE



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

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

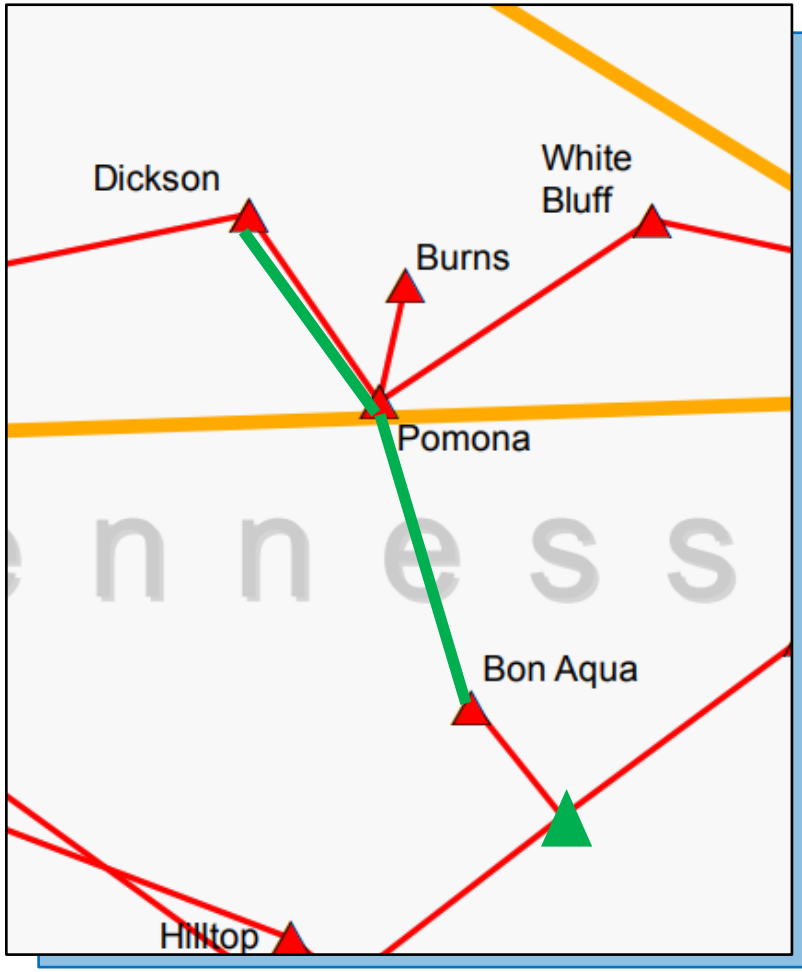


TVA Balancing Authority Area

TVA – 14

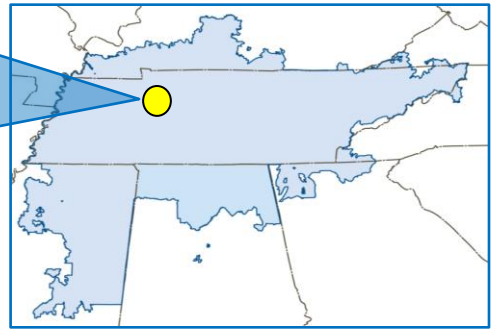
- **2025**

DICKSON 161 KV AREA IMPROVEMENT



- **DESCRIPTION:**
  - Construct approximately 19.5 miles of new 161 kV transmission line from Bon Aqua to Burns, construct approximately 4.3 miles new 161 kV double circuit into Dickson, and construct a new Locust Creek 161 kV

- **SUPPORTING STATEMENT:**
  - Voltage support is needed in the Dickson, TN area under contingency.

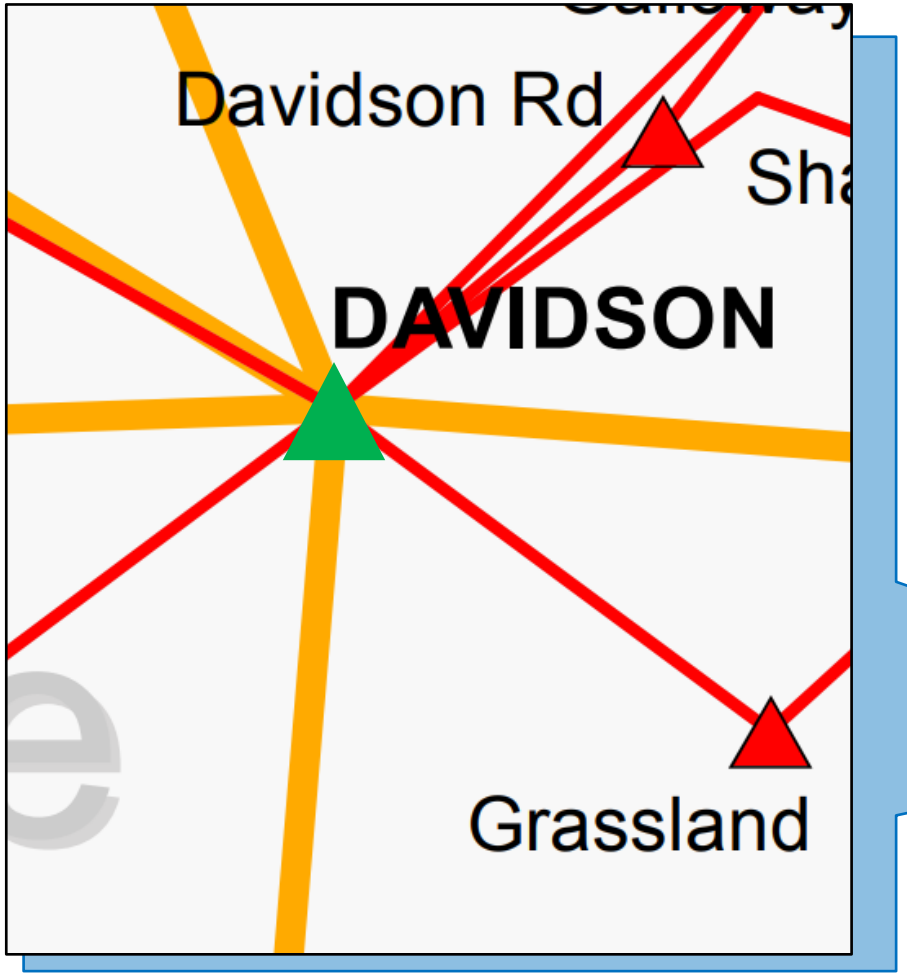


TVA Balancing Authority Area

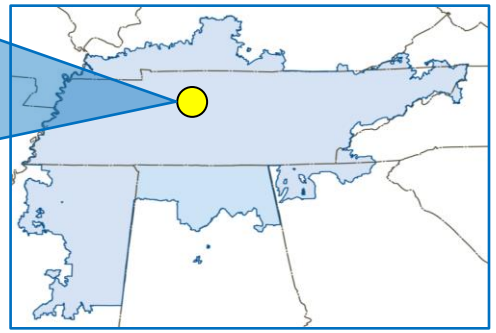
TVA – 15

- **2026**

DAVIDSON 500 KV SWITCH HOUSE



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

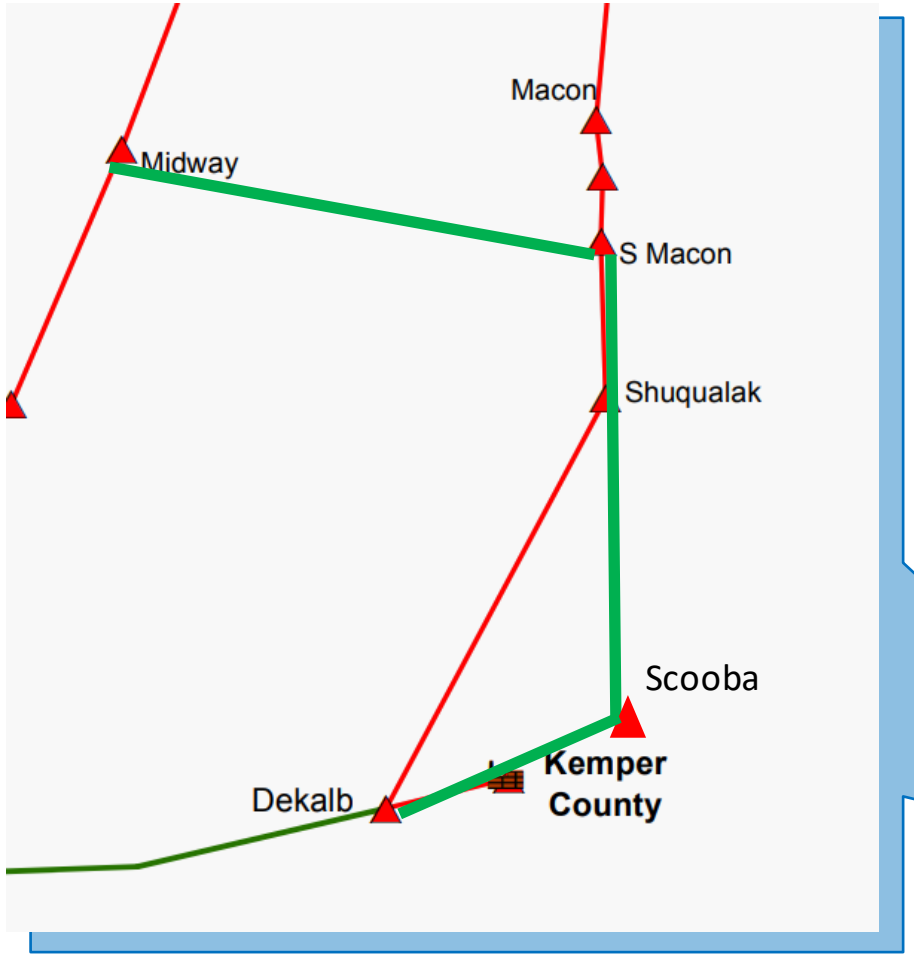


TVA Balancing Authority Area

TVA – 16

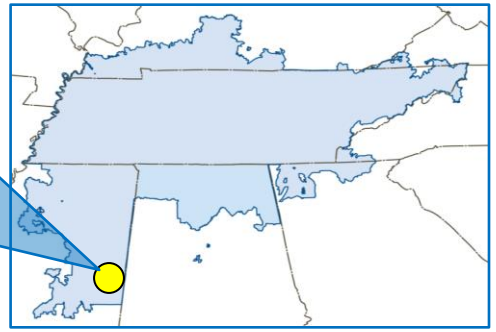
- **2026**

MIDWAY – S MACON – DEKALB 161 KV TRANSMISSION LINE



- **DESCRIPTION:**
  - Construct approximately 20 miles new 161 kV transmission line from Midway to S Macon and approximately 31.3 miles new 161 kV transmission line from S Macon to Dekalb via Scooba.

- **SUPPORTING STATEMENT:**
  - Voltage support is needed in TVA's Mississippi area under contingency.



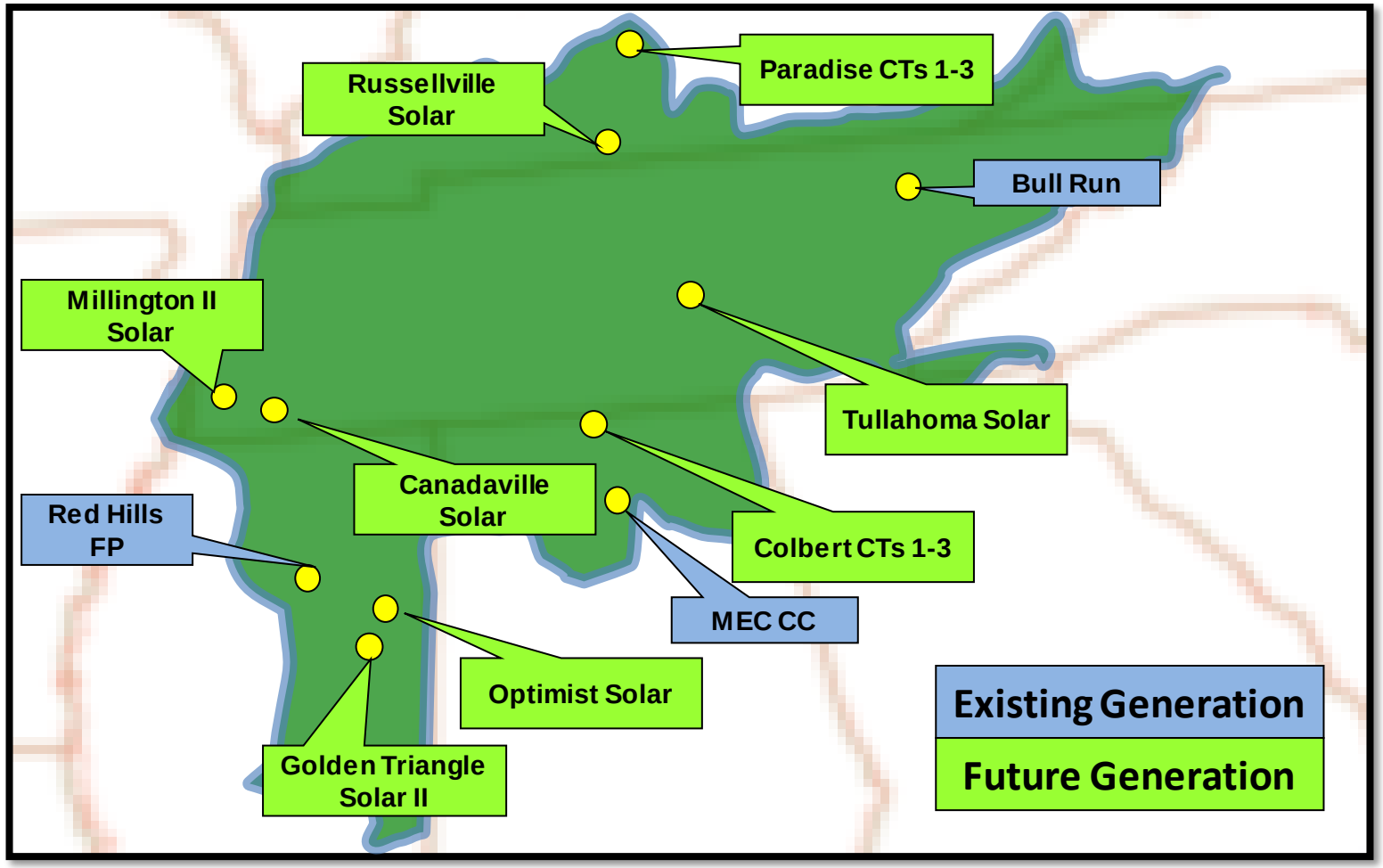
TVA Balancing Authority Area

Upcoming 2022 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 2022 SERTP Process.



TVA – Generation Assumptions

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

SITE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BULL RUN FP UNIT 1	870	0	--	--	--	--	--	--	--	--
GOLDEN TRIANGLE SOLAR II	--	150	150	150	150	150	150	150	150	150
OPTIMIST SOLAR	--	200	200	200	200	200	200	200	200	200
TULLAHOMA SOLAR	--	200	200	200	200	200	200	200	200	200
CANADAVILLE SOLAR	--	16	16	16	16	16	16	16	16	16
RUSSELLVILLE SOLAR	--	173	173	173	173	173	173	173	173	173
MILLINGTON SOLAR II	--	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9
COLBERT CTS 1-3	--	720	720	720	720	720	720	720	720	720
PARADISE CTS 1-3	--	720	720	720	720	720	720	720	720	720
RED HILLS FP	440	440	440	440	440	440	440	440	440	0
MEC CC	821	821	821	821	821	821	821	821	821	0

SERTP

Regional Transmission Analyses Overview

Regional Transmission Analysis

Regional Transmission Analyses Overview

- Assess if the then current regional transmission plan addresses the Transmission Provider's transmission needs

- Assess whether there may be more efficient or cost effective transmission projects to address transmission needs

Regional Transmission Analysis

Assessment of Current Regional Plan

- **SERTP Sponsors developed 6 coordinated regional models***
- **Models include latest transmission planning model information within the SERTP region**
- **Contingency analysis was performed to identify potential constraints that may result from the regional coordination of latest input assumptions**

*Available on the secure area of the SERTP website upon satisfying access requirements

No.	Season	Year
1	Summer	2023
2		2026
3		2031
4	Shoulder	2026
5	Winter	2026
6		2031

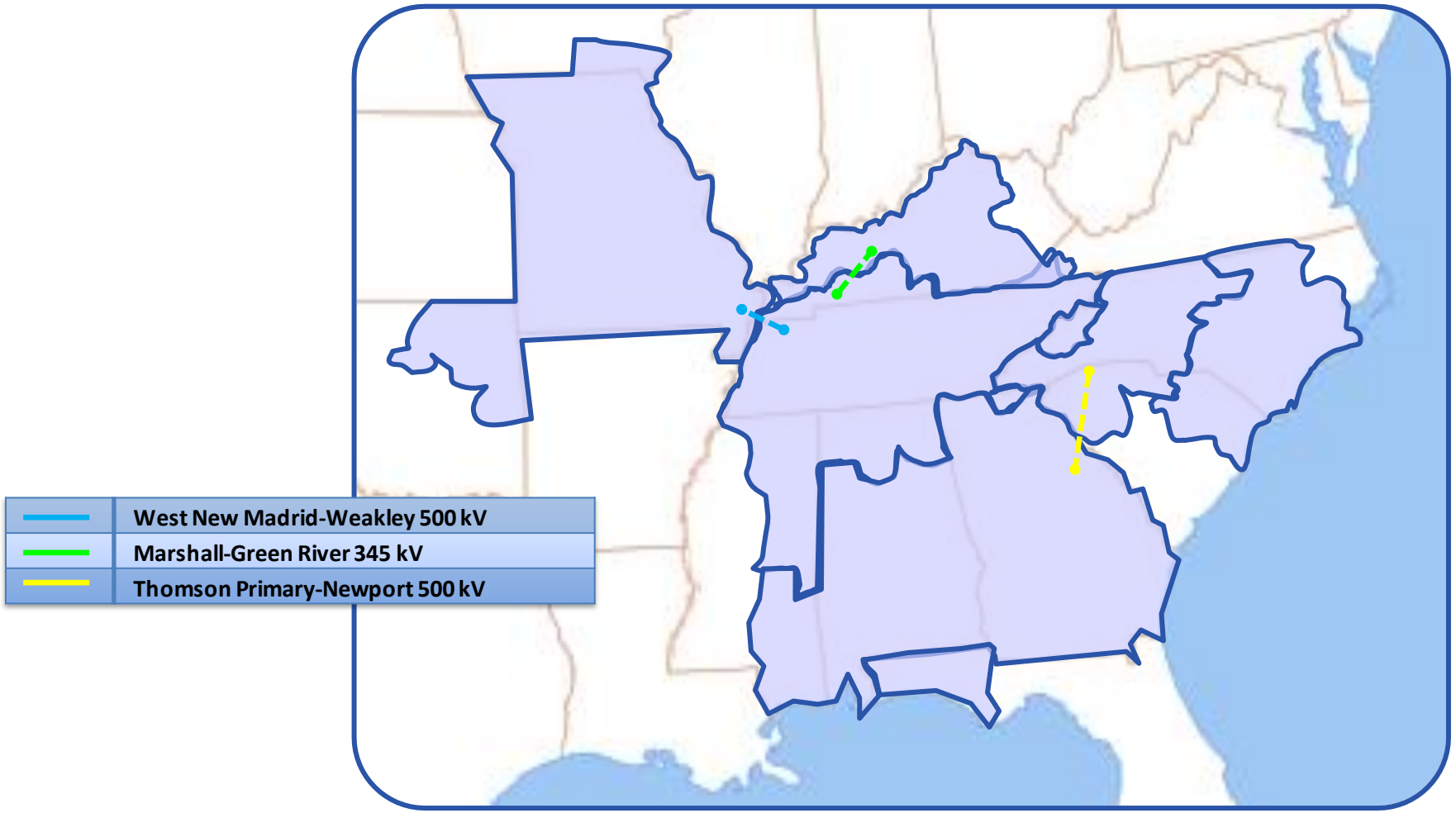
2021 Regional Transmission Analyses

Preliminary List of Alternative Regional Transmission Projects

Alternative Regional Transmission Projects	Miles	From	To
		BAA (State)	BAA (State)
West New Madrid-Weakley 500 kV	50	AECI (MO)	TVA (TN)
Marshall-Green River 345 kV	85	TVA (KY)	LG&E/KU (KY)
Thomson Primary- Newport 500 kV	140	SBAA (GA)	DEC (SC)

2021 Regional Transmission Analyses

List of Alternative Regional Transmission Projects



2021 Regional Transmission Analyses

Regional Transmission Analyses Overview

- **No significantly constrained transmission facilities were identified in the assessment of the current regional transmission plan.**

- **No evaluated transmission project alternatives were found to be more efficient or cost effective.**
  - Estimated cost of transmission project alternatives significantly outweighed potential benefits.

- **The regional transmission analyses summary is posted on the SERTP website.**

SERTP

Miscellaneous Updates

Regional Planning Updates

- Version 3 SERTP Regional Models available on SERTP Website

- Interregional Data Exchange:
  - Exchanged the latest transmission models for the ten year planning horizon with all inter-regional entities

Upcoming 2022 SERTP Process

- **SERTP 1st Quarter – *1st RPSG Meeting & Interactive Training Session***

  March 2022

  – Form Regional Planning Stakeholder Group "RPSG"
  – Select Economic Planning Studies
    - RPSG Economic Study Request Form
  – Interactive Training Session

- **SERTP 2nd Quarter – *Preliminary Expansion Plan Meeting***

  June 2022

  – Review Modeling Assumptions1
  – Preliminary 10 Year Expansion Plan
  – Stakeholder Input & Feedback Regarding the Plan

Upcoming 2022 SERTP Process

- **SERTP 3rd Quarter – *2nd RPSG Meeting***

  September 2022

  – Preliminary Results of the Economic Studies
  – Stakeholder Input & Feedback Regarding the Study Results
  – Discuss Previous Stakeholder Input on the Expansion Plan

- **SERTP 4th Quarter – *Annual Transmission Planning Summit & Input Assumptions***

  December 2022

  – Final Results of the Economic Studies
  – Regional Transmission Plan
  – Regional Analyses
  – Stakeholder Input on the 2023 Transmission Model Input Assumptions

2021 SERTP

Questions?

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