SERTP – 4th Quarter Meeting

Annual Transmission Planning Summit & Assumptions Input Meeting

December 7th, 2023

GPC Headquarters

Atlanta, GA

Original Posted: 11/27/2023

Update Posted: 12/04/2023

Process Information

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

Agenda

- **Economic Planning Studies**
  - Final Results
- **Ten (10) Year Regional Transmission Plan**
  - Planning Horizon 2024-2033
- **2024 Preliminary Modeling Input Assumptions**
  - Planning Horizon 2025-2034
- **SERTP Regional Transmission Analyses**
- **Miscellaneous Updates**
- **Upcoming 2024 SERTP Process**

SERTP

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 2023 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

- **MISO to TVA**
  - 2900 MW (2028 Winter Peak)
- **South Georgia to North Georgia**
  - 1600 MW (2028 Summer Peak)
- **TVA to North Georgia**
  - 1600 MW (2028 Summer Peak)
- **MISO to LGE/KU**
  - 1242 MW (2028 Summer Peak)
- **SOCO to DEC**
  - 500 MW (2033 Summer Peak)

Economic Planning Studies

Power Flow Cases Utilized

- **Load Flow Cases:**
  - 2023 Series Version 1 SERTP Regional Models
    - 2028 Summer Peak
    - 2028 Winter Peak
    - 2033 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 identified enhancements nor implies that the enhancements could be implemented by the study dates.

- 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

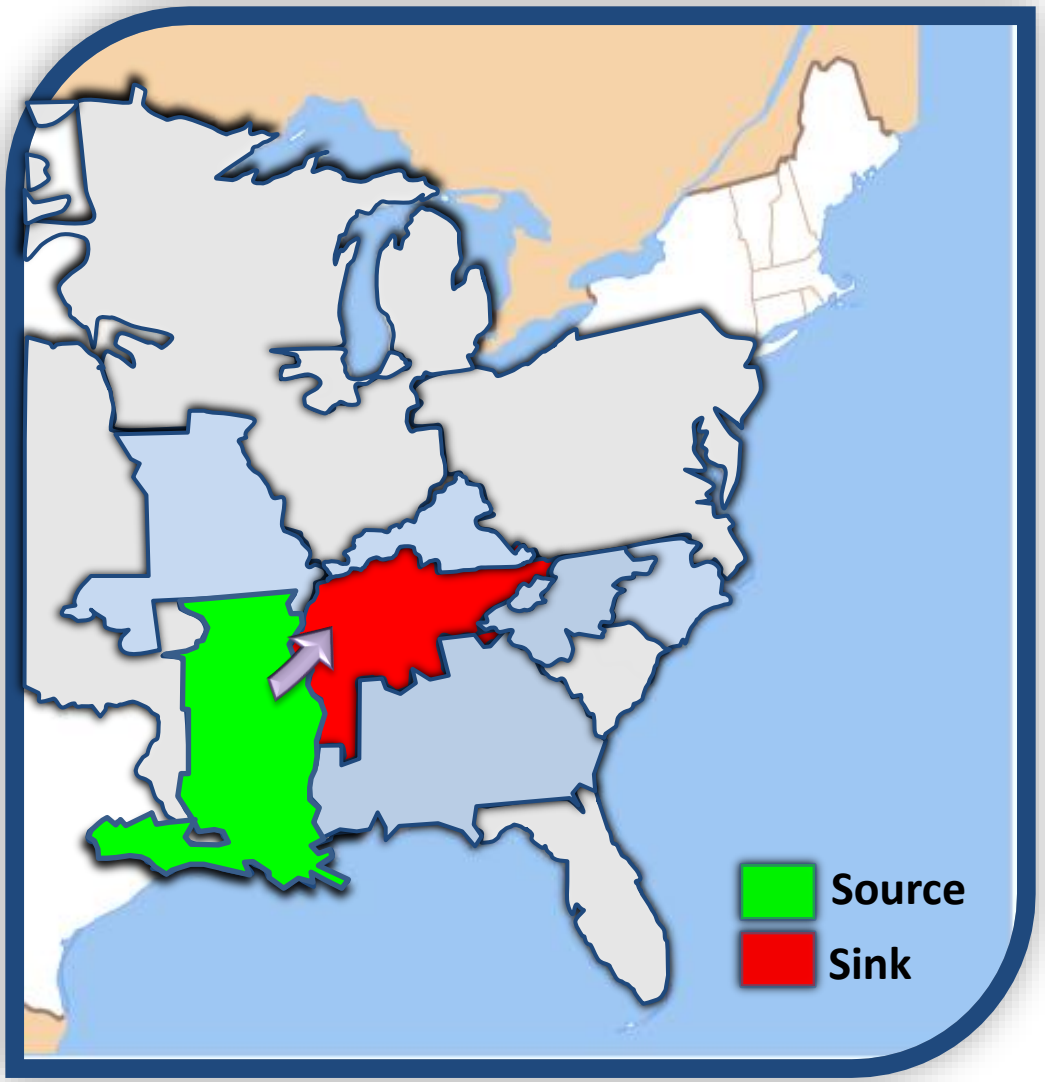
MISO to TVA – 2900 MW

Southeastern Regional TRANSMISSION PLANNING

MISO to TVA – 2900 MW

Study Assumptions

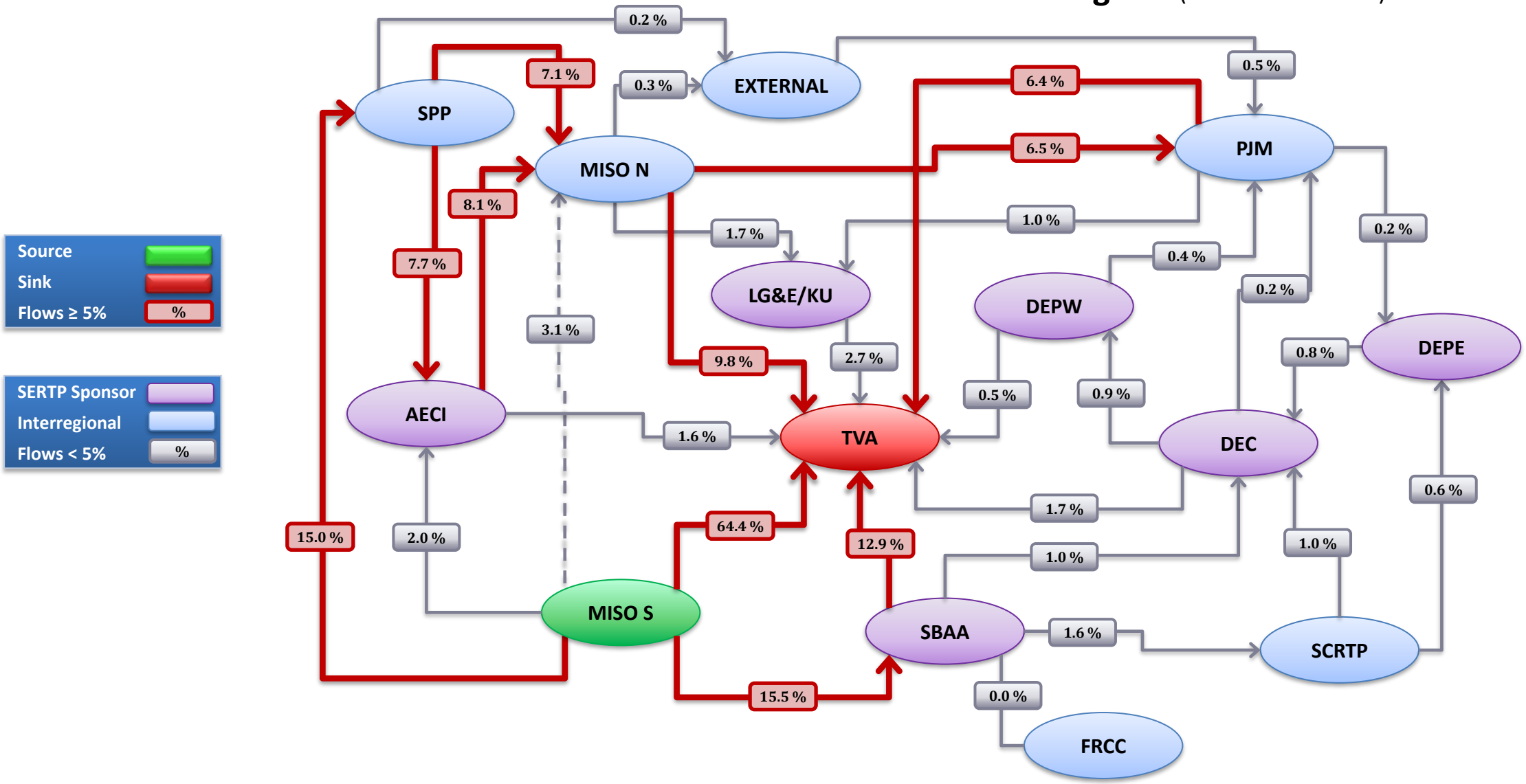
- **Source:** Generation within MISO South
- **Sink:** Generation within TVA
- **Transfer Type:** Generation to Generation
- **Year:** 2028
- **Load Level:** Winter Peak



Southeastern Regional
TRANSMISSION PLANNING

MISO South to TVA – 2900 MW

Transfer Flow Diagram (% of Total Transfer)



Southeastern Regional TRANSMISSION PLANNING

MISO to TVA – 2900 MW

Transmission System Impacts - *SERTP*

- **Transmission System Impacts Identified:**
  - TVA

- **Potential Transmission Enhancements Identified:**
  - TVA

SERTP TOTAL ($2023) = $21.5 Million

MISO to TVA – 2900 MW

Potential Transmission Enhancements – *SERTP*

Potential Transmission Enhancements - 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)	$21.5 Million
SERTP TOTAL ($2023)	**$21.5 Million**

MISO to TVA – 2900 MW

Significant Constraints Identified – *TVA*

Significant Constraints - TVA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Freeport-Cordova 500 kV	1732.1	68.2	117.6
P2	Oakville-Southeast Gate 161 kV	223.1	68.8	111.5
P1	Freeport-Oakville 161 kV	279.4	72.7	106.5
P2	Shelby Drive-Southeast Gate 161 kV	253.8	66.1	103.6
P1	Freeport-Southeast Gate 161 kV	279.4	69.0	103.6
P1	Freeport-Shelby Drive 161 kV	302.3	68.8	100.1

MISO to TVA – 2900 MW

Potential Enhancements Identified – *TVA*

Potential Enhancements - TVA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	Reconductor the Freeport-Oakville 161 kV TL (approximately 10 miles) with 150C ACSS 795. Reconductor the Freeport-Southeast Gate 161 kV TL (approximately 14 miles) with 150C ACSS 795. Upgrade terminal equipment at Freeport 500 kV substation.	**$20 Million**
P2	Upgrade terminal equipment at Memphis Light Gas & Water's Southeast Gate and Oakville 161 kV substations.	**$1.5 Million**
TVA TOTAL ($2023)		**$21.5 Million**(1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southeastern Regional
TRANSMISSION PLANNING

MISO to TVA – 2900 MW

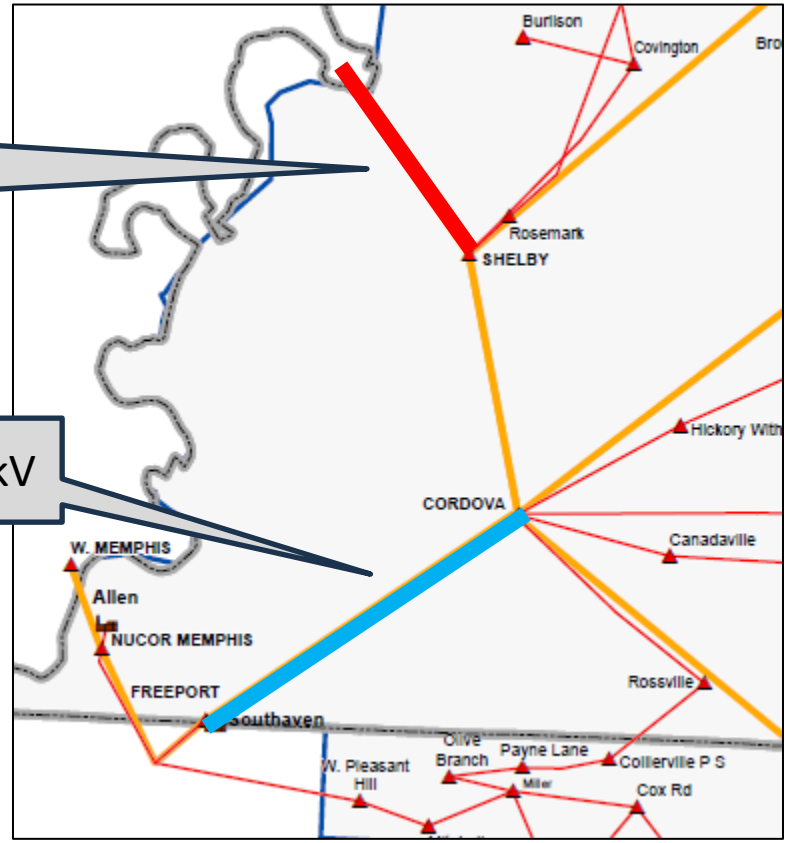
Potential Enhancement Locations – *TVA*

MISO to TVA – 2900 MW

Significant Constraint (P1) – *TVA*

Outage of Shelby 500 kV tie line with Entergy (MISO)

Freeport-Cordova 500 kV



MISO to TVA – 2900 MW

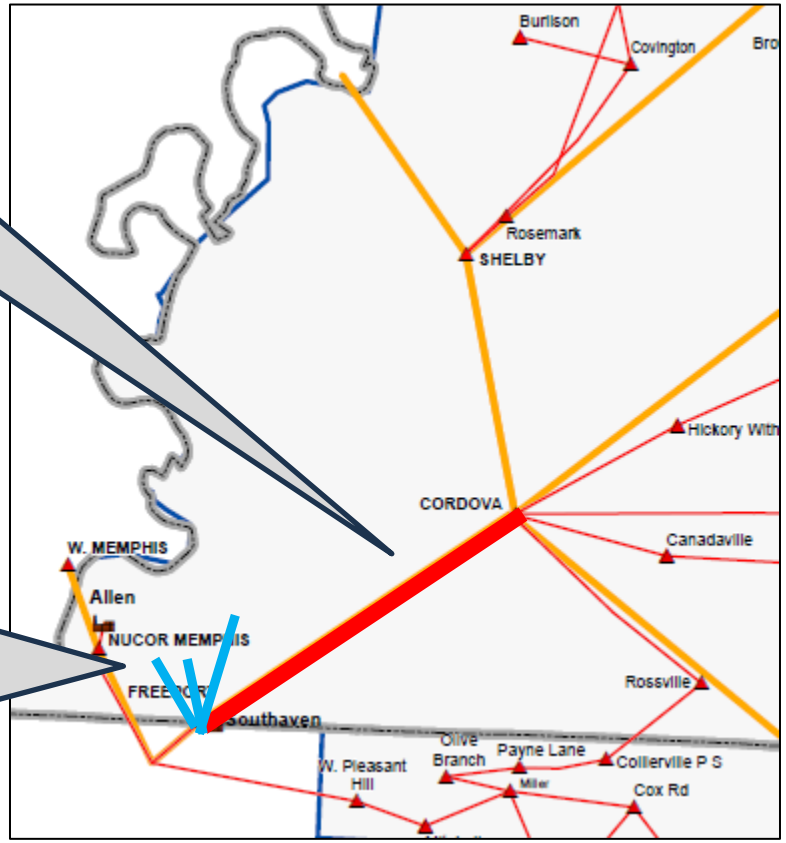
Significant Constraint (P1) – *TVA*

Outage of Freeport-Cordova 500 kV

Freeport-Oakville 161 kV

Freeport-Shelby Drive 161 kV

Freeport-Southeast Gate 161 kV



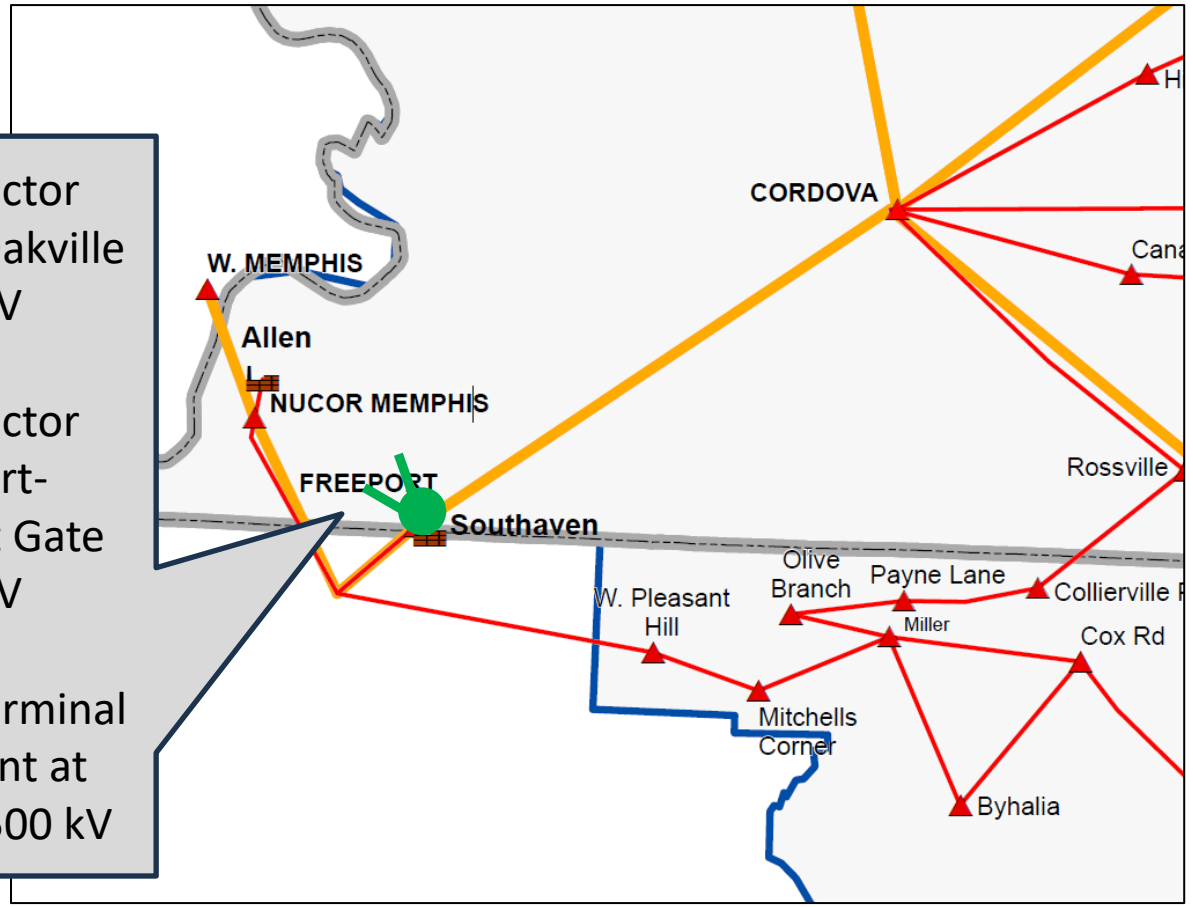
MISO to TVA – 2900 MW

Potential Enhancement (P1) – *TVA*

Reconductor Freeport-Oakville 161 kV

Reconductor Freeport-Southeast Gate 161 kV

Upgrade terminal equipment at Freeport 500 kV



Southeastern Regional TRANSMISSION PLANNING

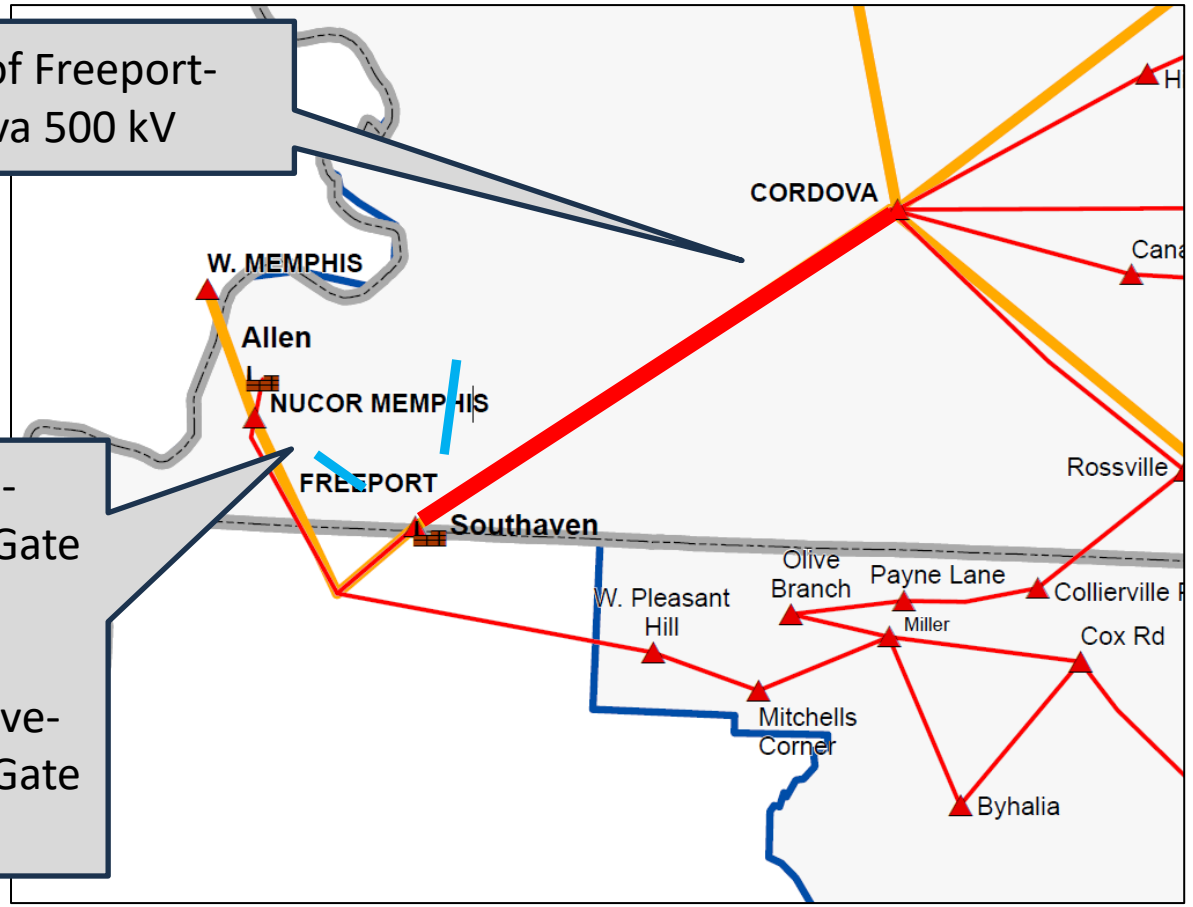
MISO to TVA – 2900 MW

Significant Constraint (P2) – *TVA*

Outage of Freeport-Cordova 500 kV

Oakville-Southeast Gate 161 kV

Shelby Drive-Southeast Gate 161 kV

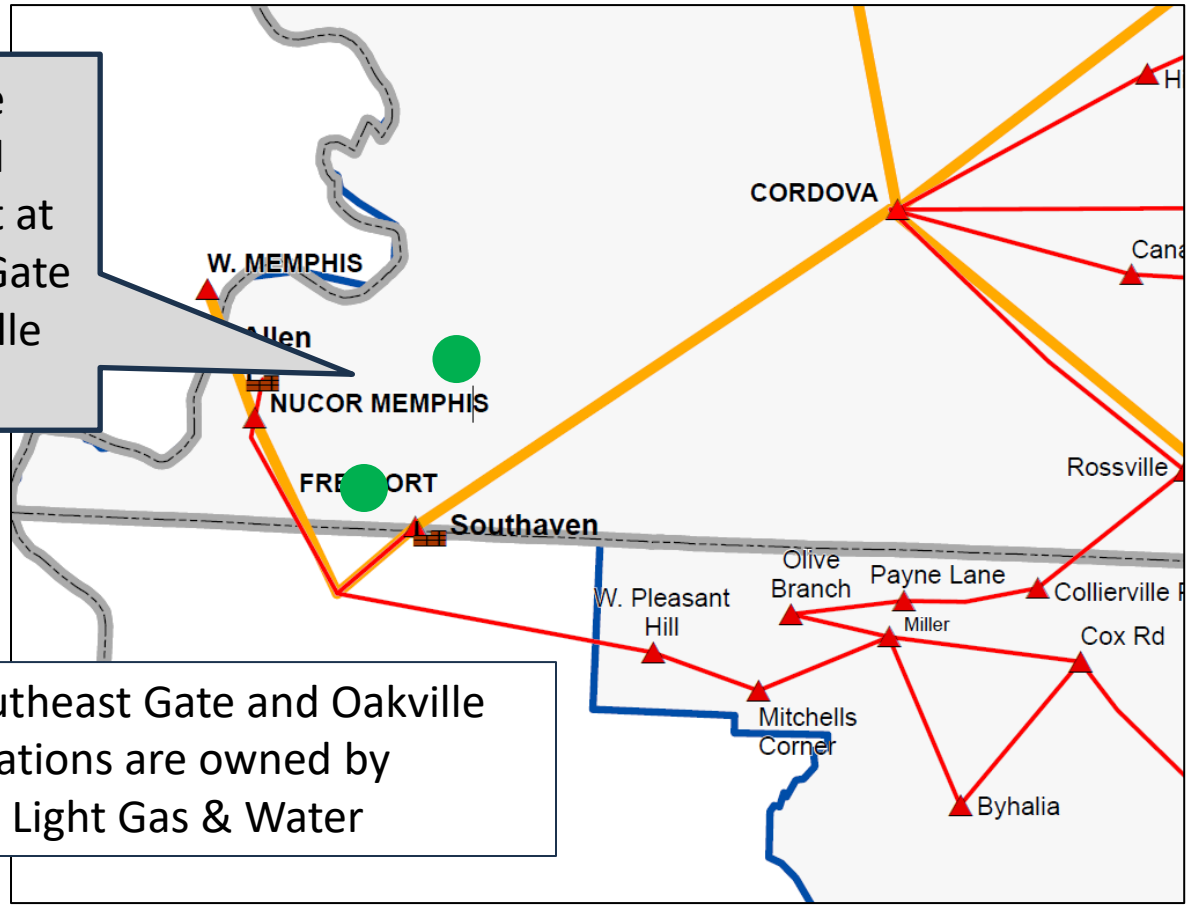


Southeastern Regional TRANSMISSION PLANNING

MISO to TVA – 2900 MW

Potential Enhancement (P2) – *TVA*

Upgrade terminal equipment at Southeast Gate and Oakville 161 kV



Note: Southeast Gate and Oakville 161 kV stations are owned by Memphis Light Gas & Water

Economic Planning Studies

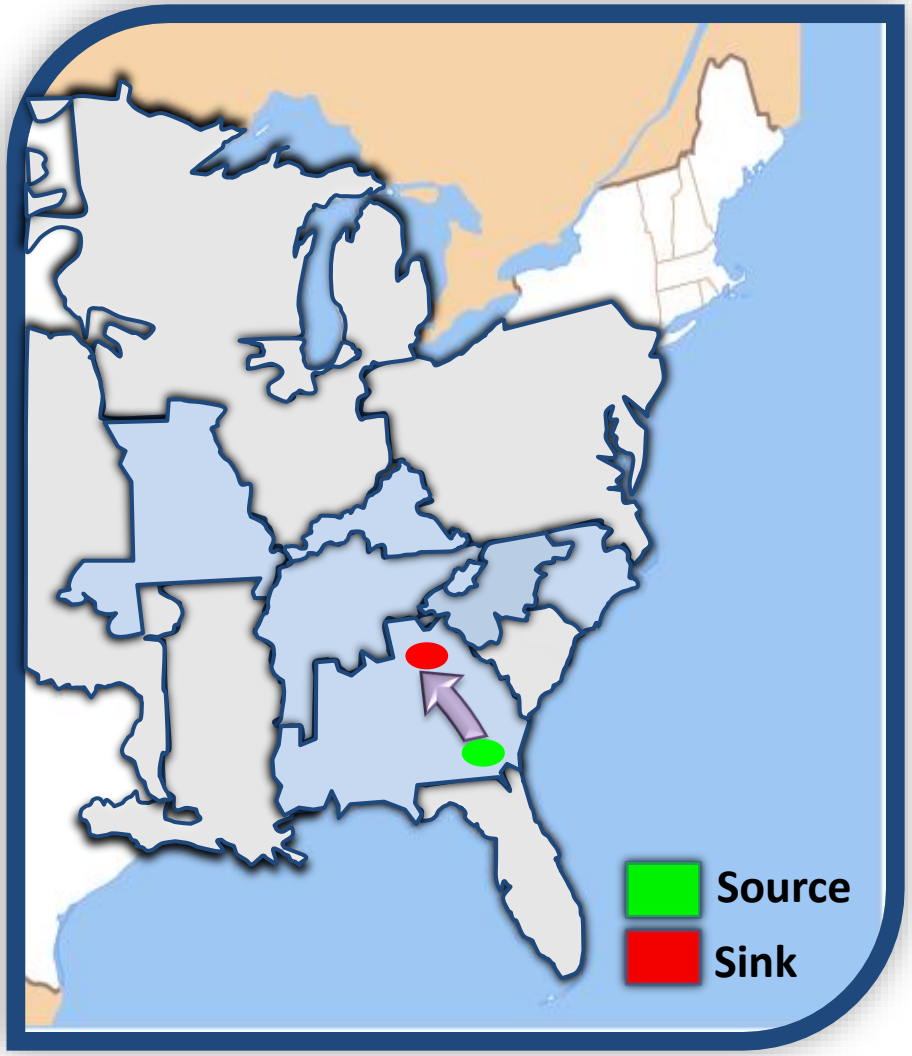
South Georgia to North Georgia – 1600 MW

Southeastern Regional TRANSMISSION PLANNING

South Georgia – North Georgia 1600 MW

Study Assumptions

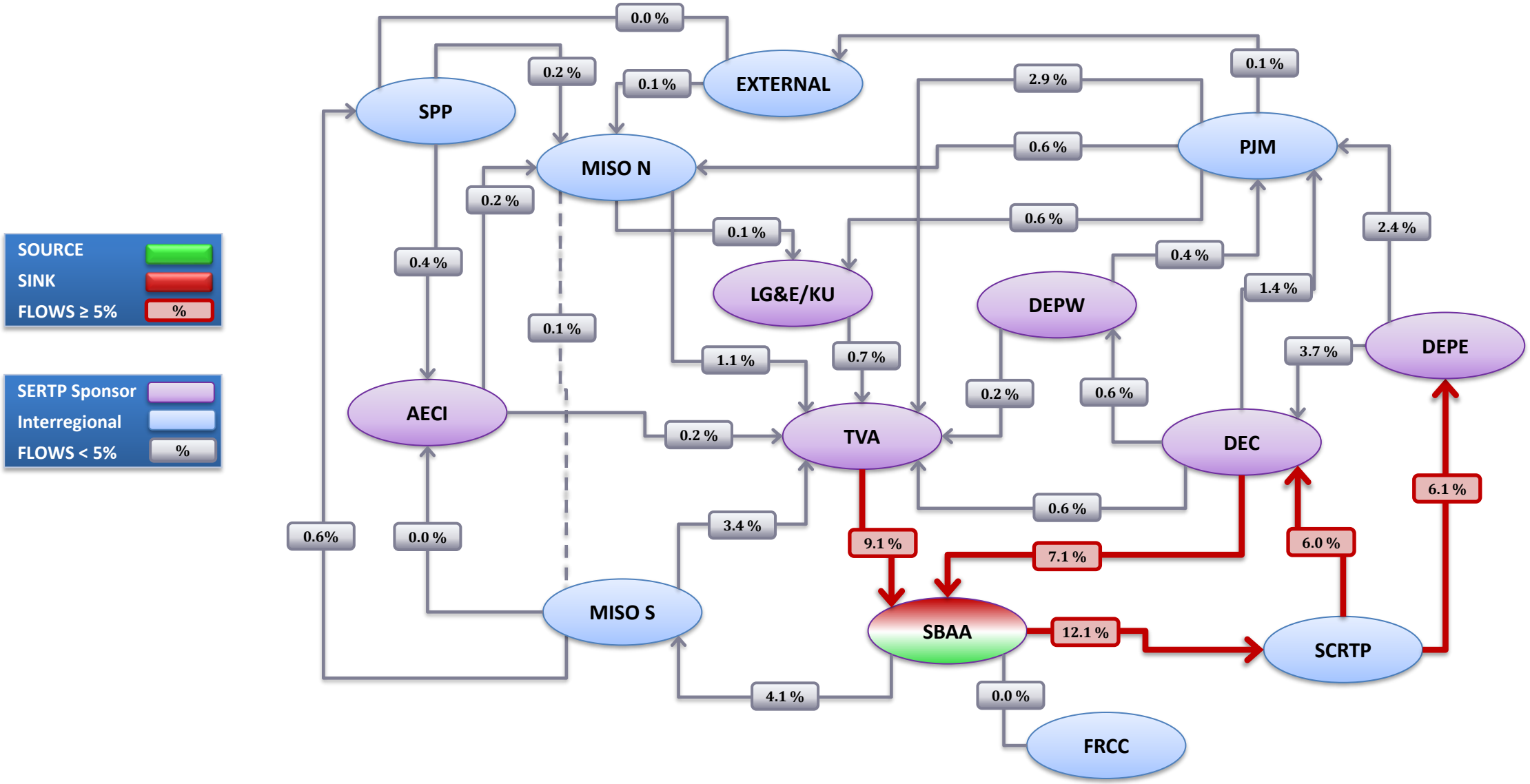
- **Source:** Uniform Generation Scale within South Georgia
- **Sink:** Generation within North Georgia (Bowen Units)
- **Transfer Type:** Generation to Generation
- **Year:** 2028
- **Load Level:** Summer Peak



Southeastern Regional
TRANSMISSION PLANNING

South Georgia – North Georgia 1600 MW

Transfer Flow Diagram (% of Total Transfer)



South Georgia – North Georgia 1600 MW

Transmission System Impacts – *SERTP*

- **Transmission System Impacts Identified:**
  - SBAA
  - TVA

- **Potential Transmission Enhancements Identified:**
  - SBAA
  - TVA

SERTP Total ($2023) = $ 95.915 Million

South Georgia – North Georgia 1600 MW

Potential Transmission Enhancements – *SERTP*

Potential Transmission Enhancements - 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)	$94,990,000
Tennessee Valley Authority (TVA)	$925,000
SERTP TOTAL ($2023)	**$95.915 Million**

South Georgia – North Georgia 1600 MW

Significant Constraints Identified – *SBAA*

Significant Constraints – SBAA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Fairburn 1 – Union City B2 230kV Line	602	89.0	106.4
P2	Fairburn 1 – Line Creek 230kV Line	596	90.6	108.2
NA*	Line Creek – Union City B1 230kV Line	602	89.9	107.4
P3	Branch – Oasis 230kV Line	596	91.4	101.0
P4	Eatonton Primary – Oasis 230kV Line	602	93.8	103.2
P5	Crooked Creek – Swagg 115kV Line	140	73.3	101.5

*Project not in version 1 models, but is in the 2023 Expansion Plan

South Georgia – North Georgia 1600 MW

Potential Enhancements Identified – *SBAA*

Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	**Fairburn 1 – Union City B2 230kV Line** • SOCO: Rebuild with bundled 200C 1351 ACSS Martin conductor. Replace the 2000A line trap at Union City with 4000A line trap. Replace switches at Union City and Fairburn #1 with 4000A switches.	**$8.75 Million**
P2	**Fairburn 1 – Line Creek 230kV Line** • SOCO: Rebuild the line with bundled 200C 1351 ACSS Martin conductor. Replace a switch at Fairburn #1 with 4000A switch. Replace the 1590 AAC jumper at Fairburn #1 with 3-1590 AAC jumper.	**$10.65 Million**
P3	**Branch – Oasis 230kV Line** • SOCO: Rebuild the line with 160C 1351 ACSS conductor. Replace the 2-750 AAC jumper at Eatonton Primary with 2-1590 AAC.	**$3.69 Million**

South Georgia – North Georgia 1600 MW

Potential Enhancements Identified – *SBAA*

Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P4	**Eatonton Primary – Oasis 230kV Line** • SOCO: Rebuild the line with 160C 1351 ACSS conductor. Replace the 1590 AAC jumper at Branch with 2-1590 AAC.	**$71.9 Million**
P5	**Crooked Creek – Indian Creek Metering Station** • SOCO: Project to reconductor the line from 397 30/7 ACSR 100°C to 795 26/7 ACSR 100°C from Crooked Creek TS to Indian Creek Metering Station planned for 2029 cannot be advanced.	--
SBAA TOTAL ($2023)		**$ 94.99 Million**(1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southeastern Regional
TRANSMISSION PLANNING

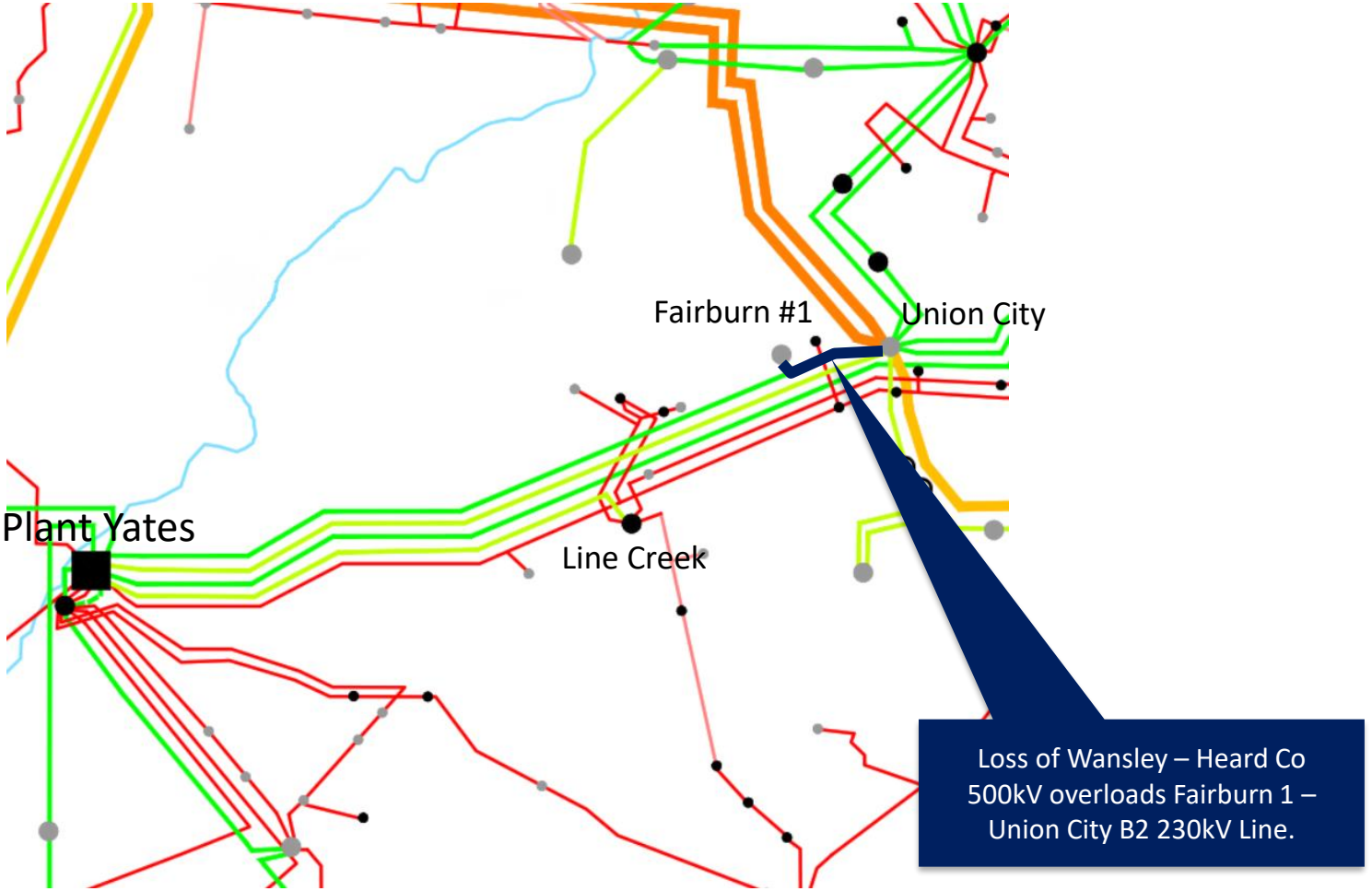
South Georgia – North Georgia 1600 MW

Potential Enhancement Locations – *SBAA*

Southeastern Regional TRANSMISSION PLANNING

South Georgia – North Georgia 1600 MW

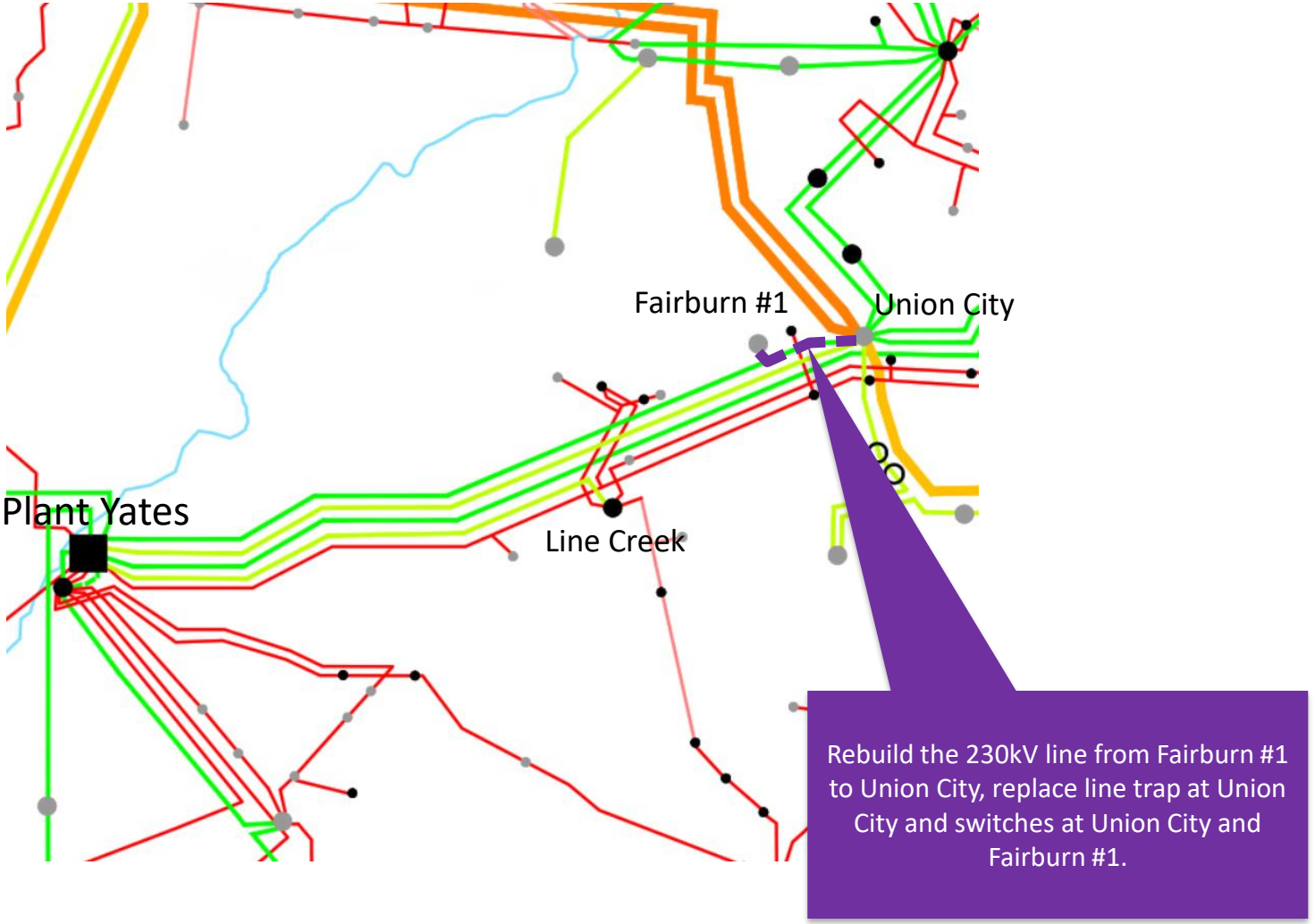
Significant Constraint (P1) – *SBAA*



Southeastern Regional TRANSMISSION PLANNING

South Georgia – North Georgia 1600 MW

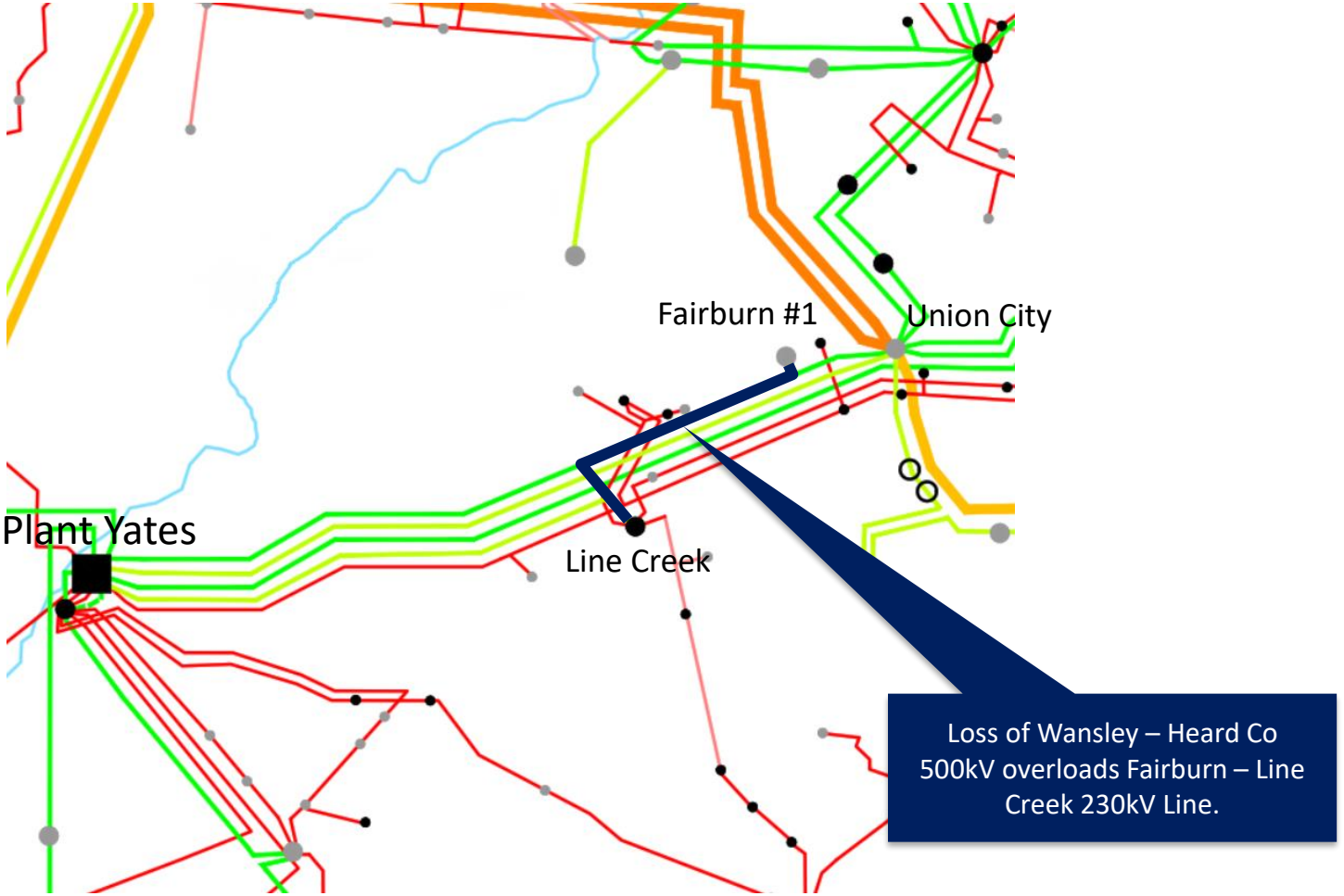
Potential Enhancement (P1) – *SBAA*



Southeastern Regional TRANSMISSION PLANNING

South Georgia – North Georgia 1600 MW

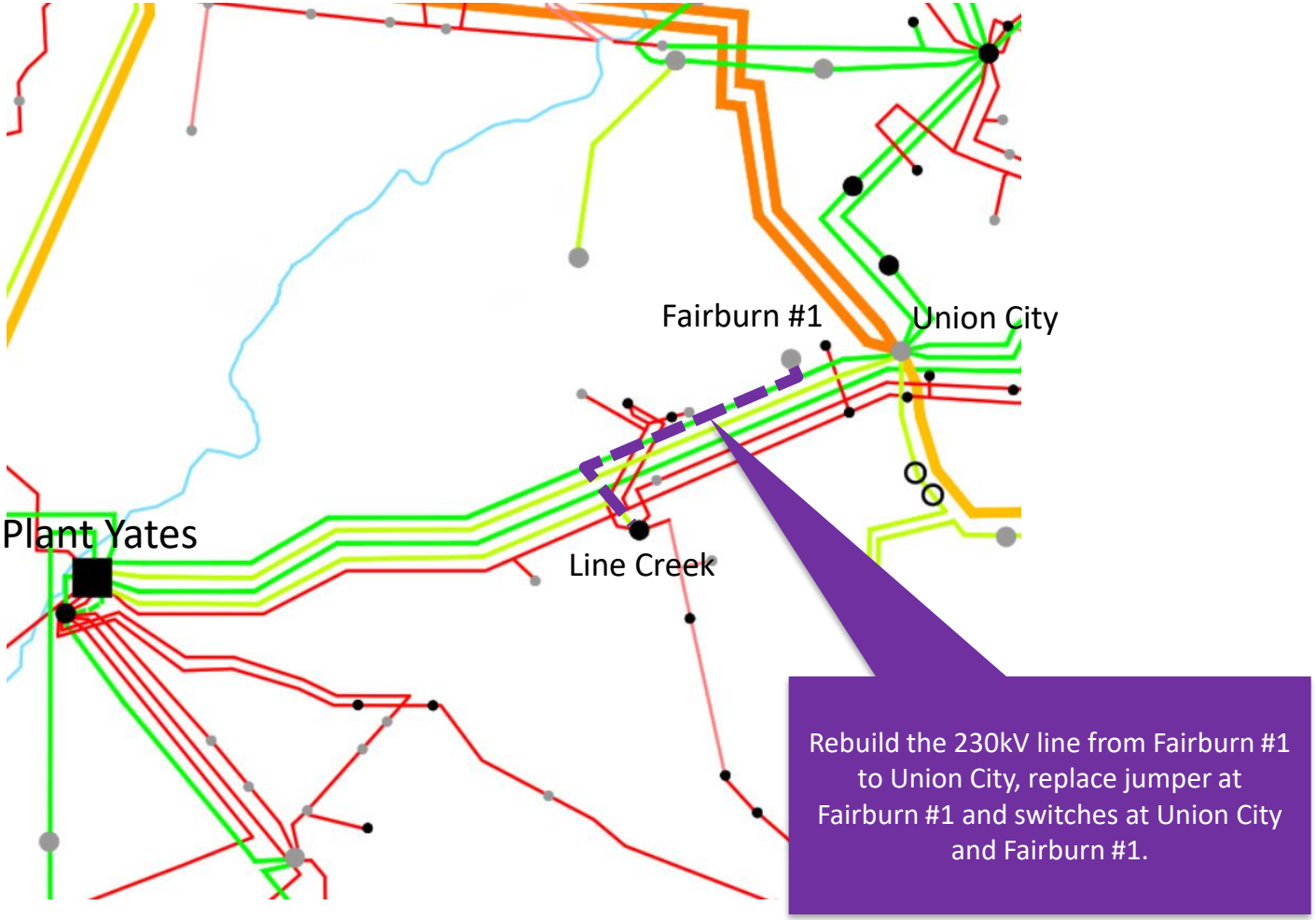
Significant Constraint (P2) – *SBAA*



Southeastern Regional TRANSMISSION PLANNING

South Georgia – North Georgia 1600 MW

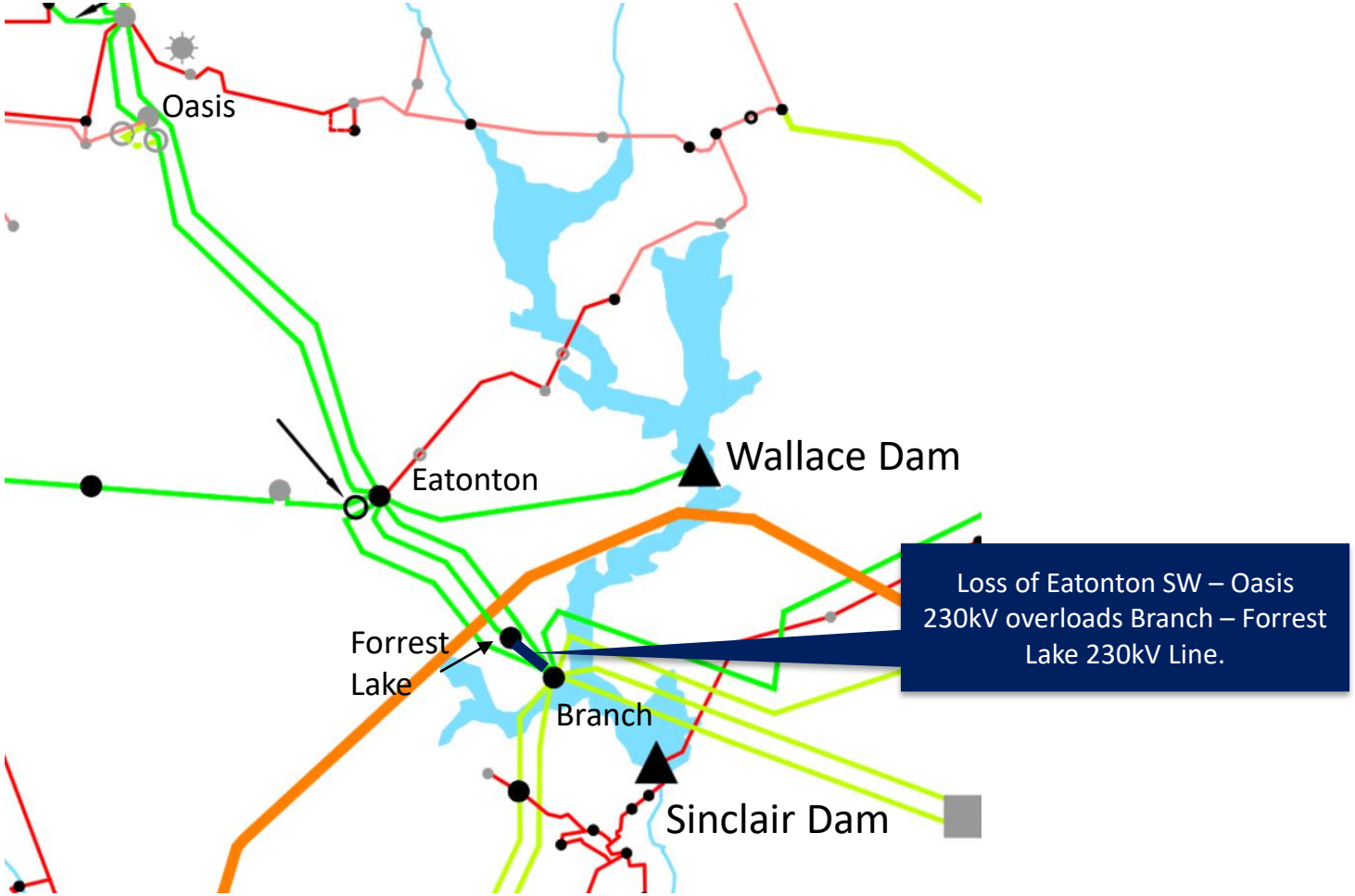
Potential Enhancement (P2) – *SBAA*



Southeastern Regional
TRANSMISSION PLANNING

South Georgia – North Georgia 1600 MW

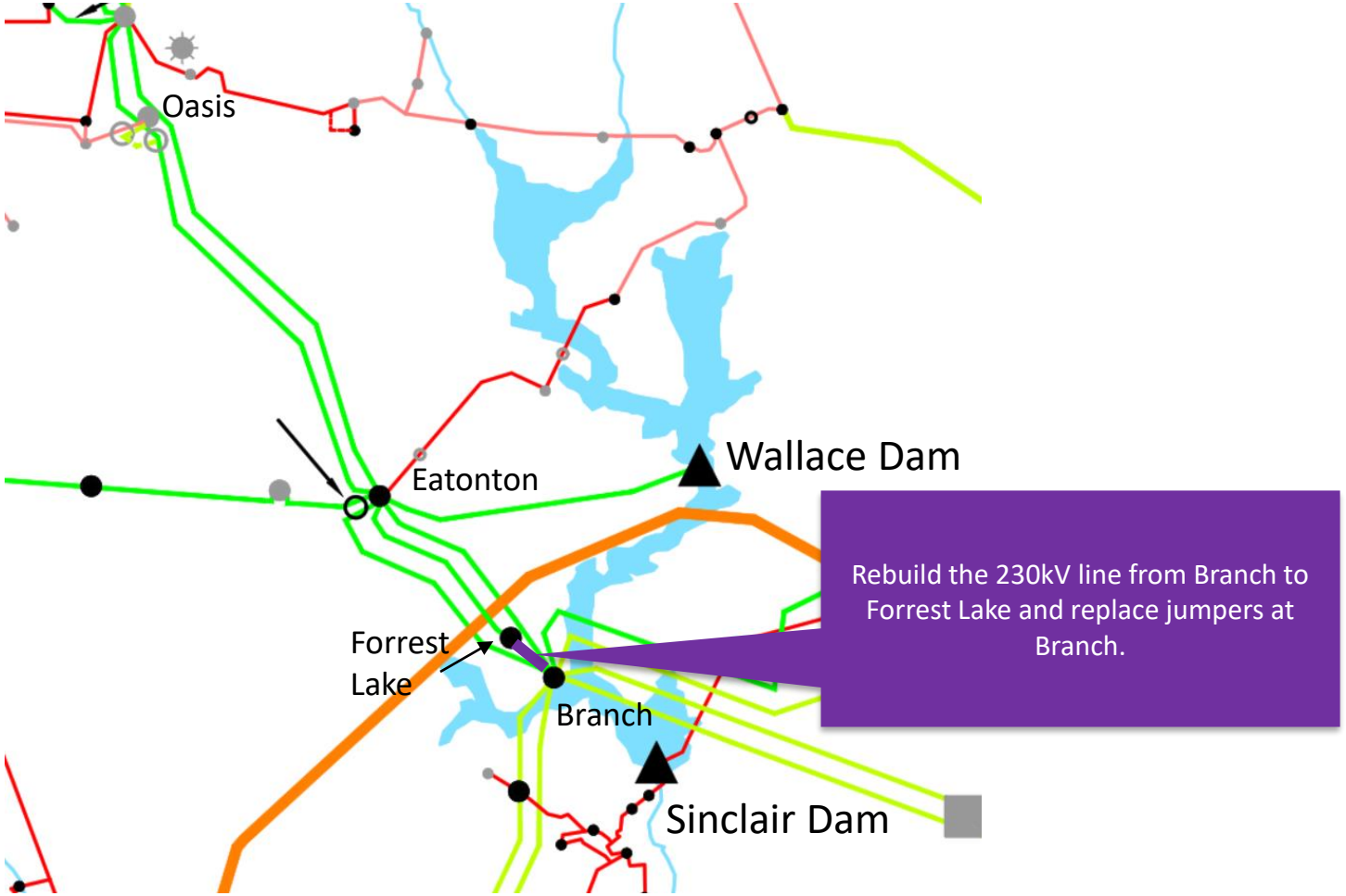
Significant Constraint (P3) – *SBAA*



Southeastern Regional
TRANSMISSION PLANNING

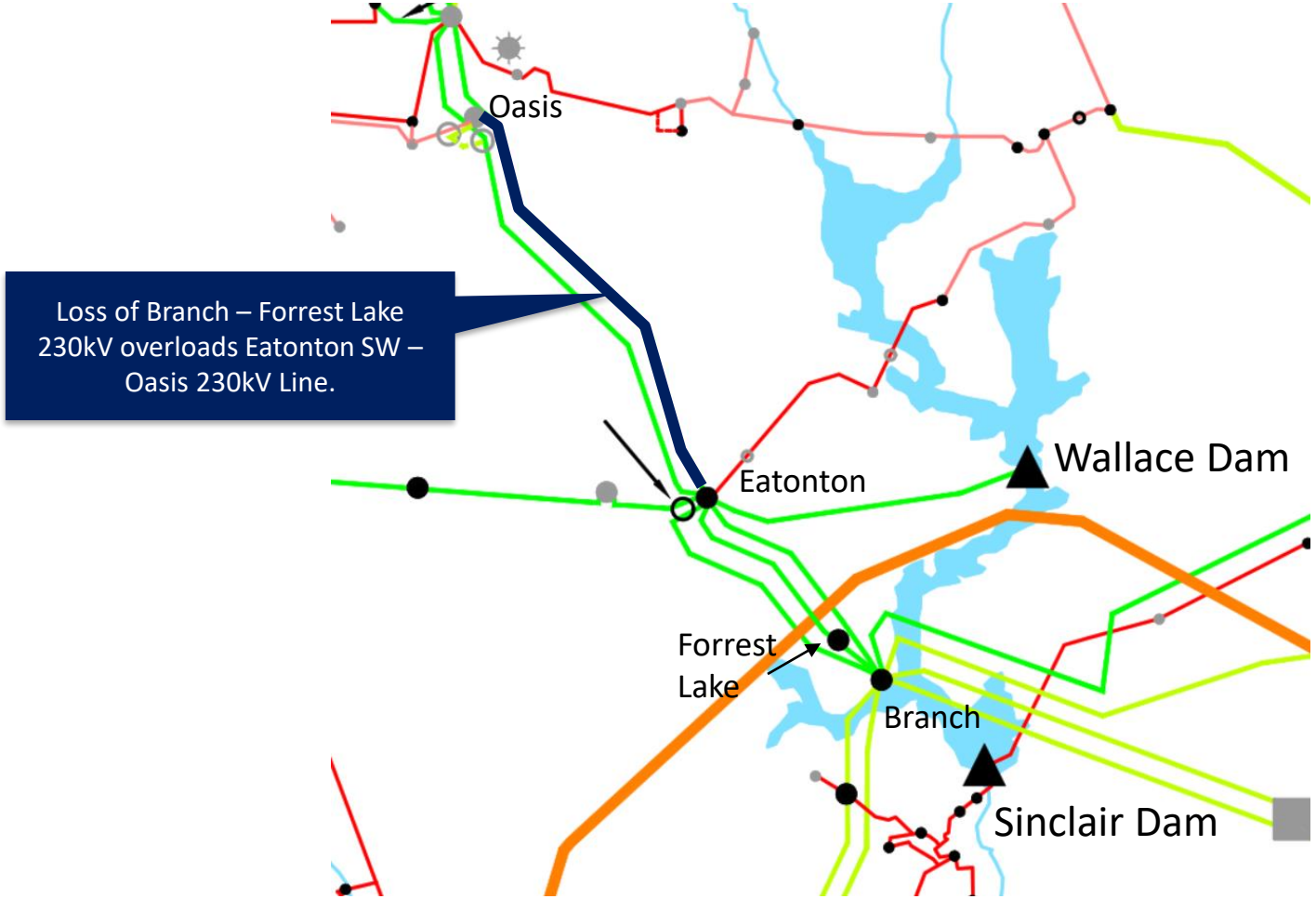
South Georgia – North Georgia 1600 MW

Potential Enhancement (P3) – *SBAA*



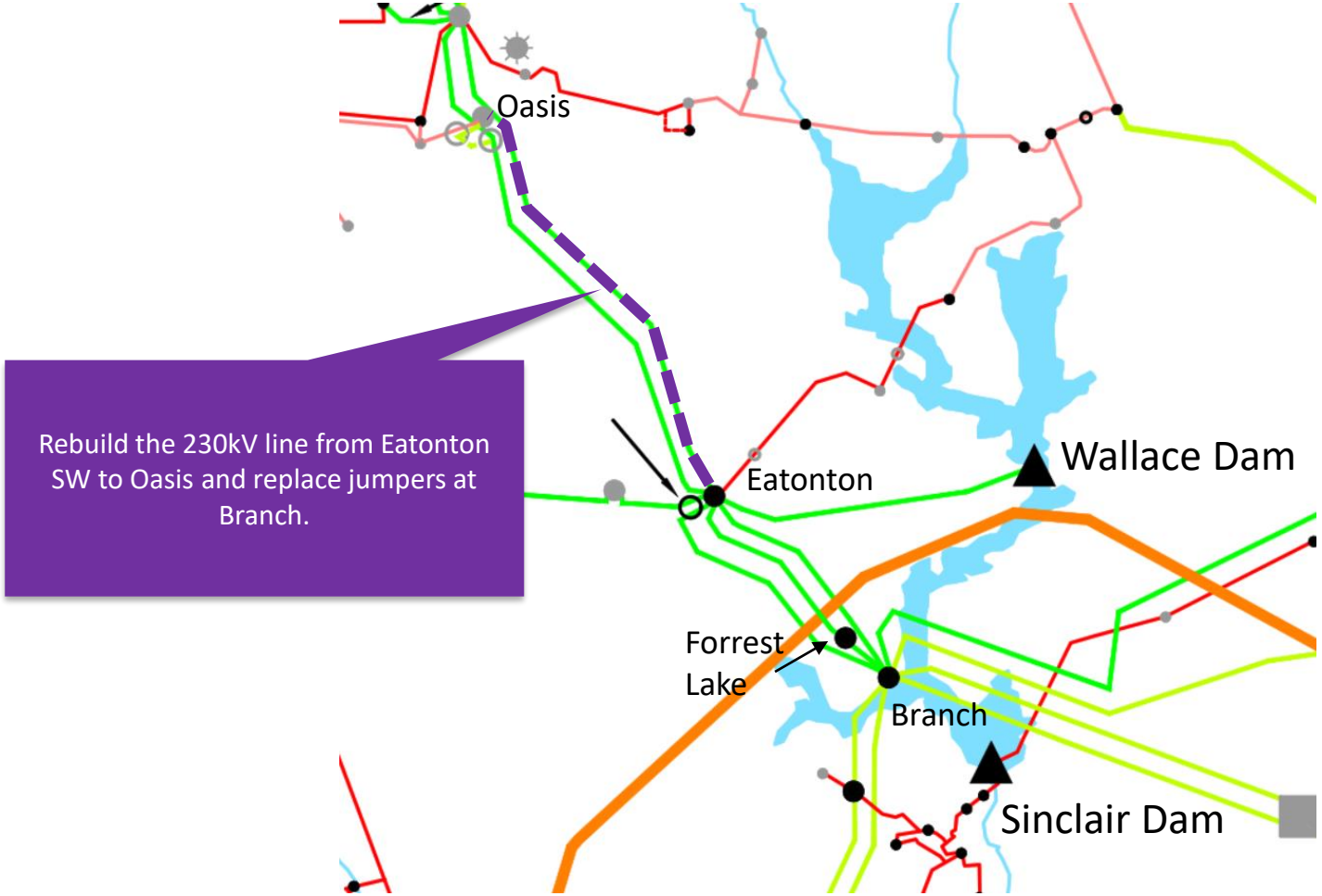
South Georgia – North Georgia 1600 MW

Significant Constraint (P4) – *SBAA*



South Georgia – North Georgia 1600 MW

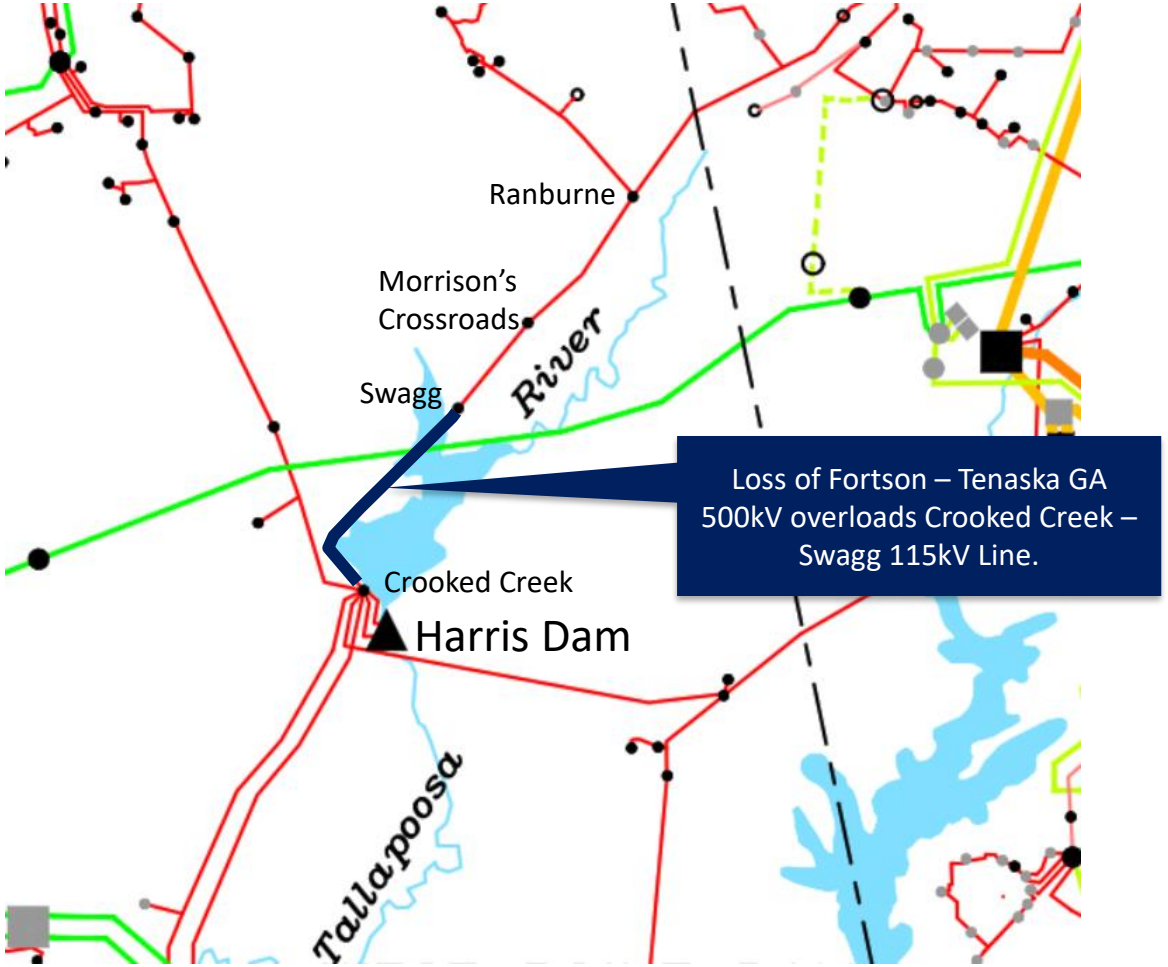
Significant Constraint (P4) – *SBAA*



Southeastern Regional TRANSMISSION PLANNING

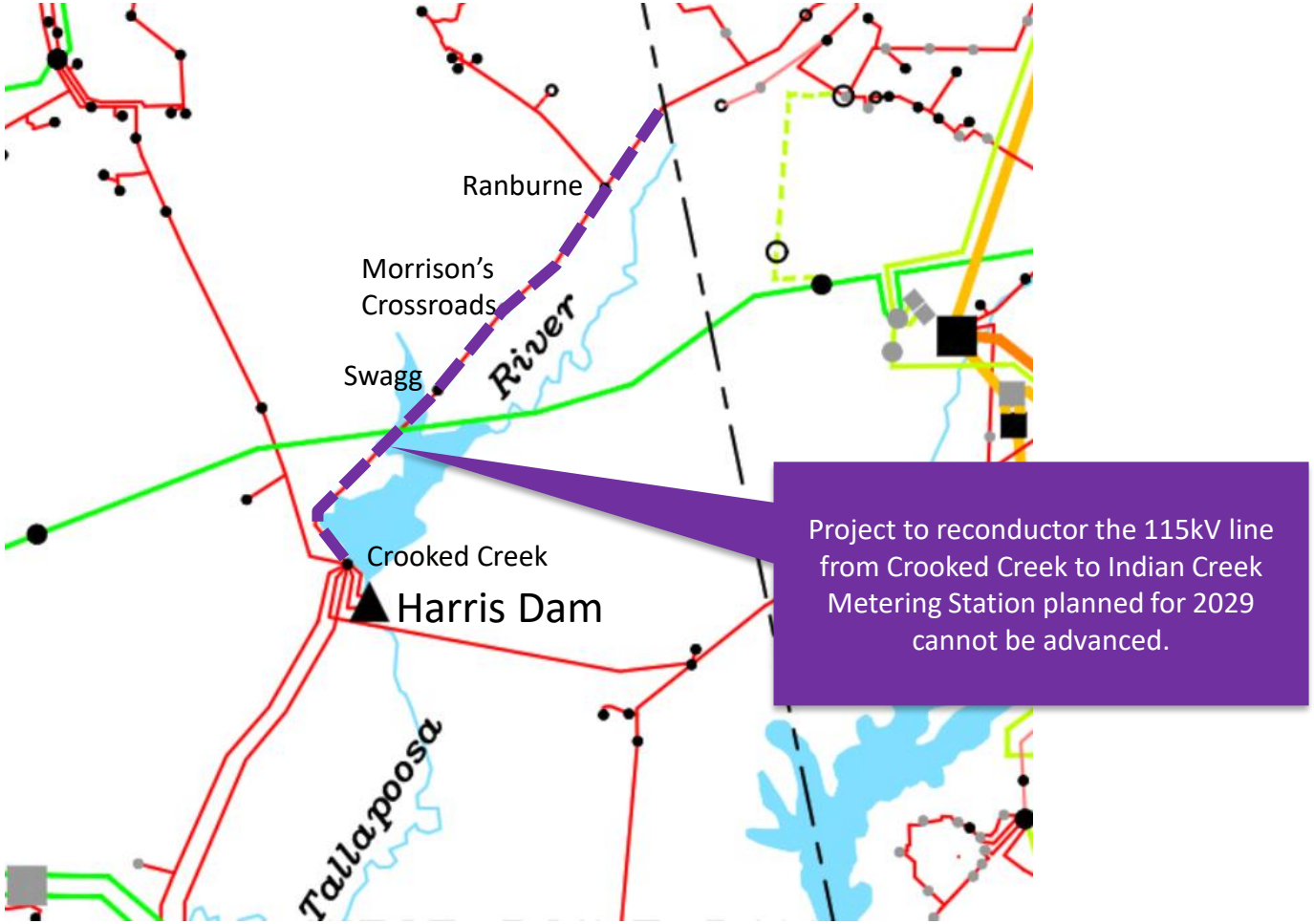
South Georgia – North Georgia 1600 MW

Significant Constraint (P5) – *SBAA*



South Georgia – North Georgia 1600 MW

Potential Enhancement (P5) – *SBAA*



South Georgia – North Georgia 1600 MW

Significant Constraints Identified – *TVA*

Significant Constraints - TVA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Charleston-Hiwassee River 161 kV	289.5	108.7	118.6
P1	Hiwassee River-East Cleveland 161 kV	289.5	99.6	109.6
P2	Chickamauga-Hawthorne 161 kV	226.7	103.2	108.4

South Georgia – North Georgia 1600 MW

Potential Enhancements Identified – *TVA*

Potential Enhancements - TVA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	Upgrade terminal equipment at Charleston and East Cleveland 161 kV substations.	**$775,000**
P2	Upgrade terminal equipment at Chickamauga Hydro Plant.	**$150,000**
TVA TOTAL ($2023)		**$925,000**(1)

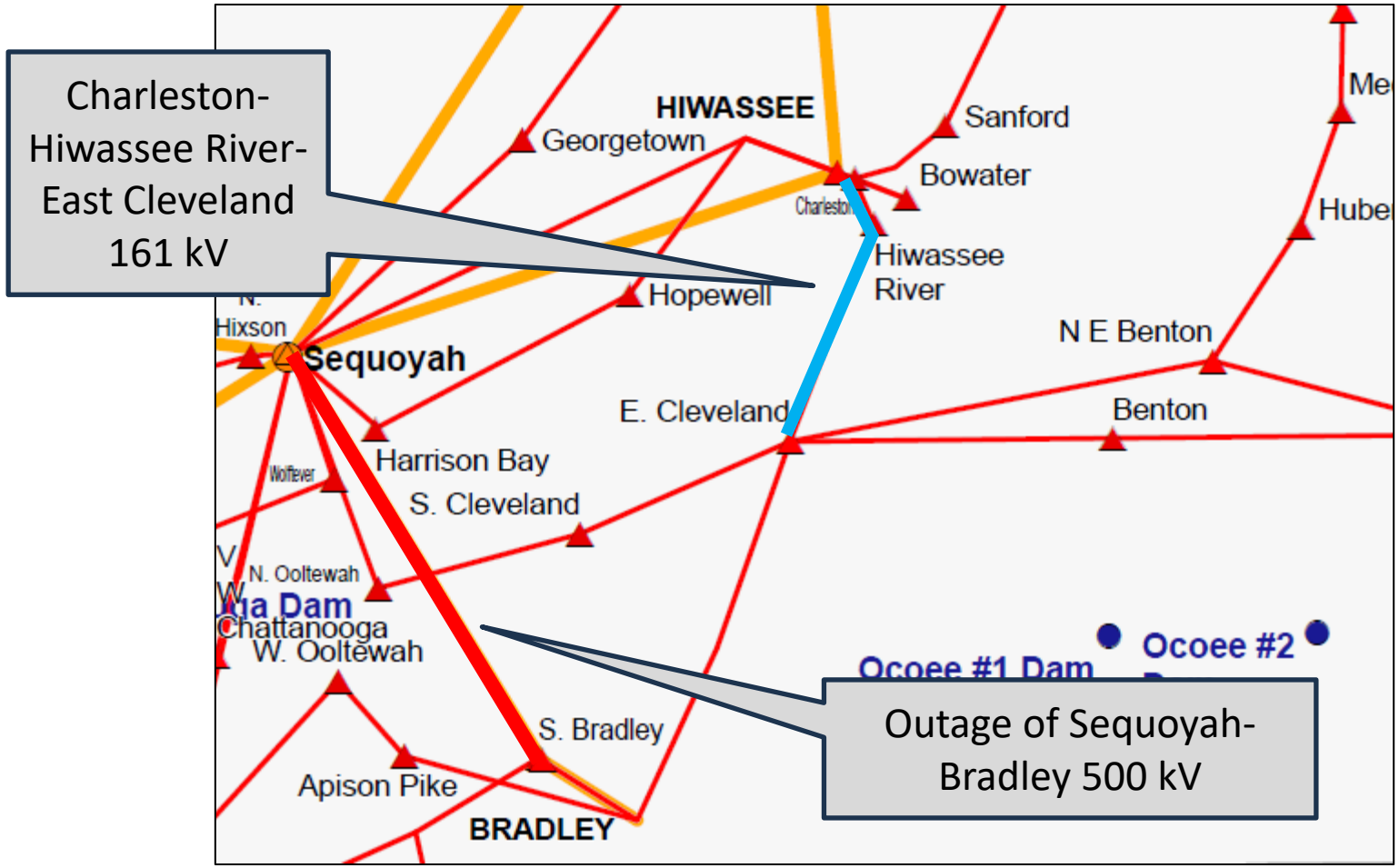
(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

South Georgia – North Georgia 1600 MW

Potential Enhancement Locations – *TVA*

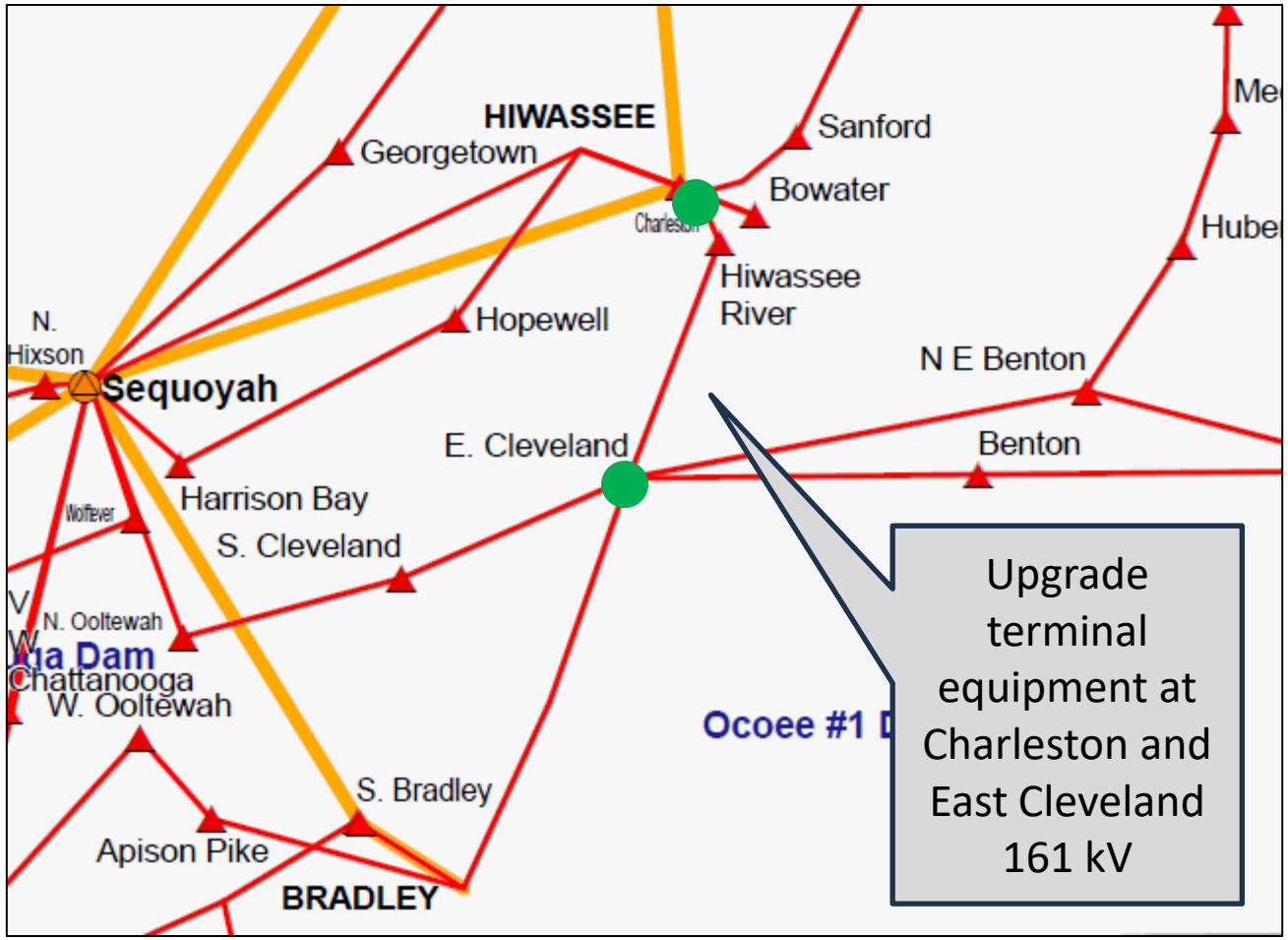
South Georgia – North Georgia 1600 MW

Significant Constraint (P1) – *TVA*



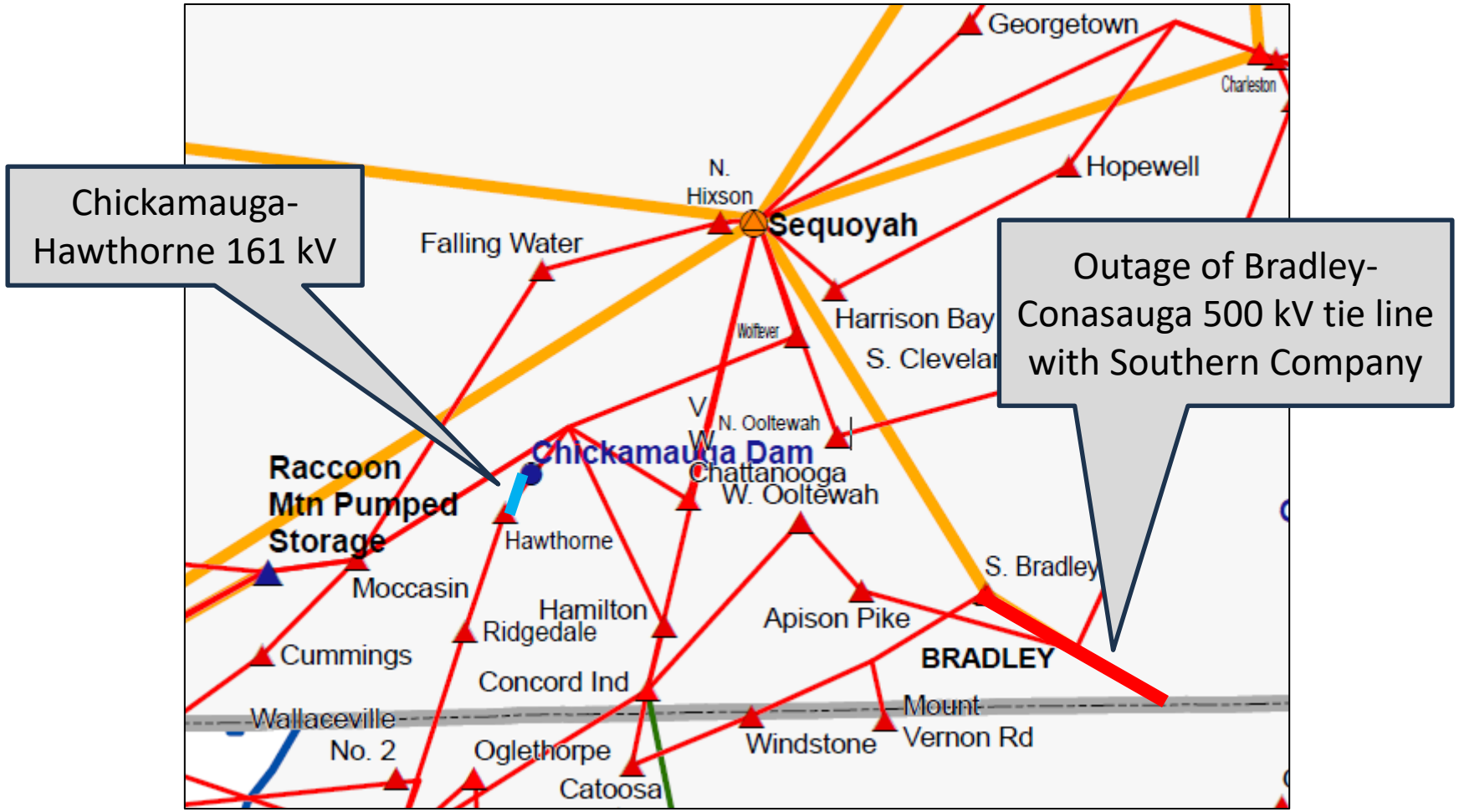
South Georgia – North Georgia 1600 MW

Potential Enhancement (P1) – *TVA*



South Georgia – North Georgia 1600 MW

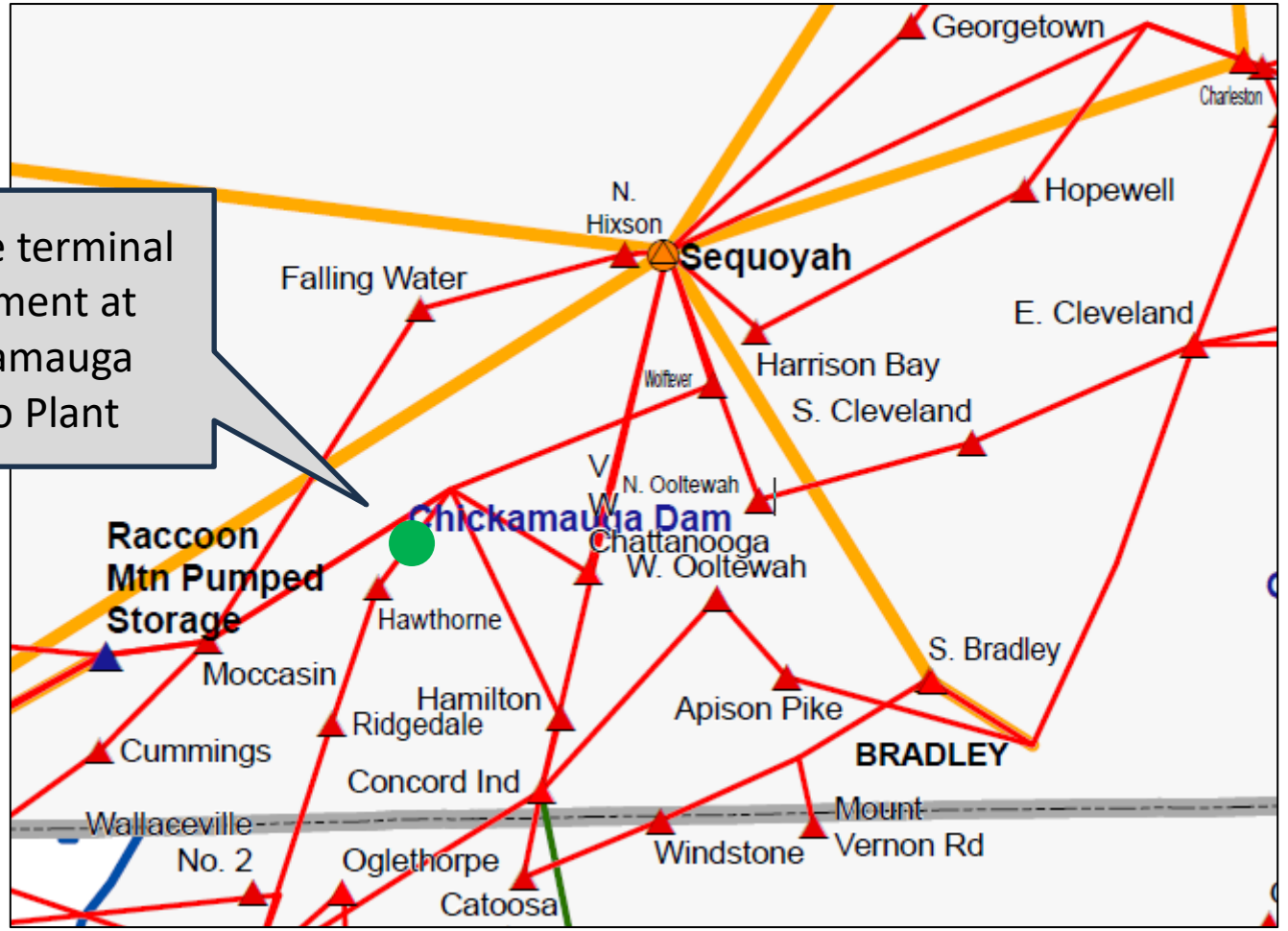
Significant Constraint (P2) – *TVA*



South Georgia – North Georgia 1600 MW

Potential Enhancement (P2) – *TVA*

Upgrade terminal equipment at Chickamauga Hydro Plant



Economic Planning Studies

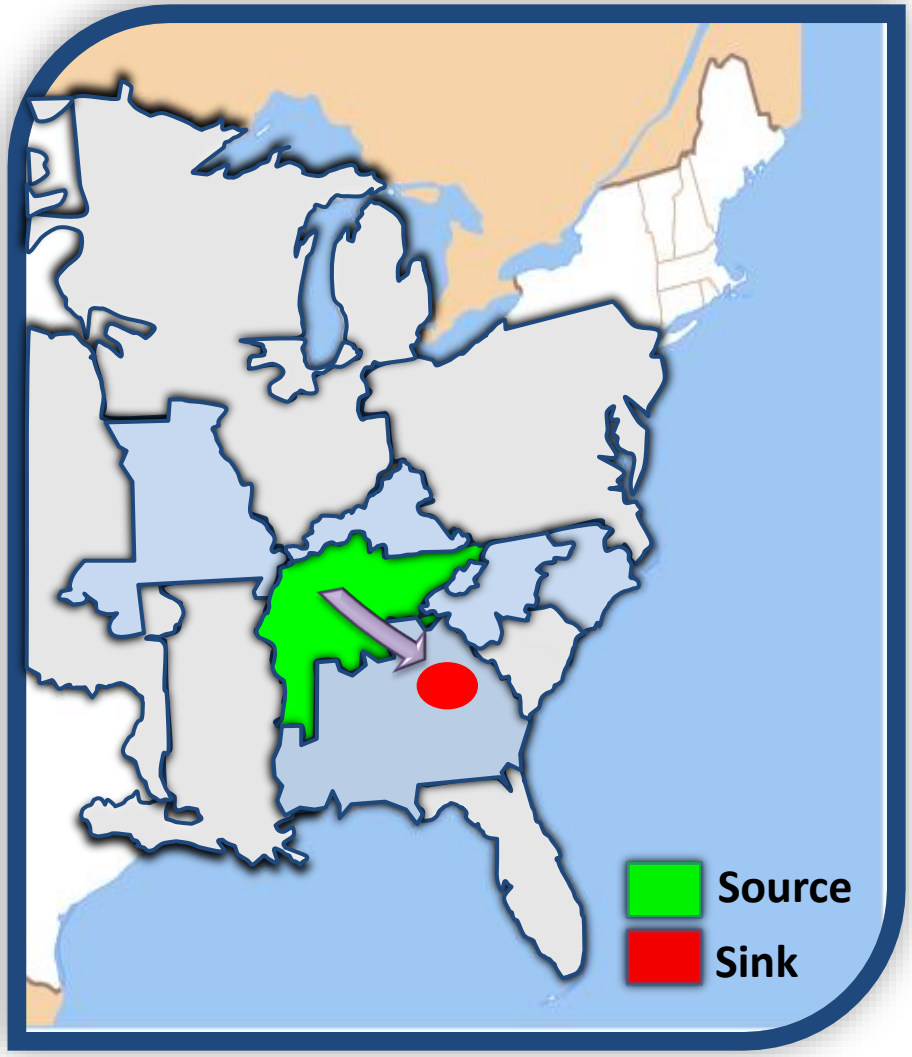
TVA to North Georgia – 1600MW

Southeastern Regional TRANSMISSION PLANNING

TVA – North Georgia 1600 MW

Study Assumptions

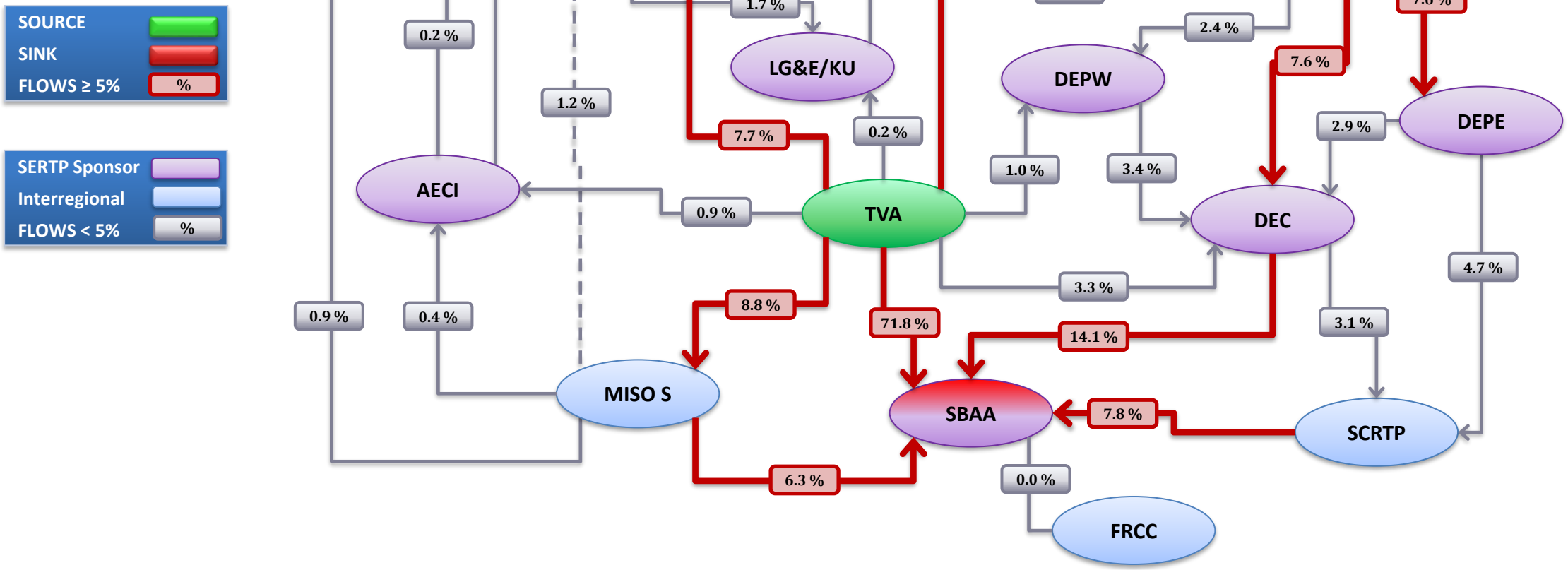
- **Source:** Generation Scale within TVA
- **Sink:** Generation within North Georgia
- **Transfer Type:** Generation to Generation
- **Year:** 2028
- **Load Level:** Summer Peak



Southeastern Regional
TRANSMISSION PLANNING

TVA – North Georgia 1600 MW

Transfer Flow Diagram (% of Total Transfer)



TVA – North Georgia 1600 MW

Transmission System Impacts – *SERTP*

- **Transmission System Impacts Identified:**
  - SBAA
  - TVA

- **Potential Transmission Enhancements Identified:**
  - SBAA
  - TVA

SERTP Total ($2023) = $56.52 Million

TVA – North Georgia 1600 MW

Potential Transmission Enhancements – *SERTP*

Potential Transmission Enhancements - 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)	$33.72 Million
Tennessee Valley Authority (TVA)	$22.8 Million
SERTP TOTAL ($2023)	**$56.52 Million**

TVA – North Georgia 1600 MW

Significant Constraints Identified – *SBAA*

Significant Constraints – SBAA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Fairburn 1 – Union City B2 230kV Line	602	89.0	101.8
P2	Fairburn 1 – Line Creek 230kV Line	596	90.6	103.5
NA*	Line Creek – Union City B1 230kV Line	602	89.9	102.8
P3	East Dalton – Oostanaula 115kV Line	180	95.0	110.2
P4	Crooked Creek – Swagg 115kV Line	140	73.5	104.3
P4	Morrison's Crossroads - Swagg 115kV Line	140	71.0	101.7
P5	Mount Vernon Mills – City of Tuskegee Tap 115kV Line	138	75.5	105.6
P5	Mount Vernon Mills – Thurlow B2 115kV Line	138	80.0	110.0

*Project not in version 1 models, but is in the 2023 Expansion Plan

TVA – North Georgia 1600 MW

Potential Enhancements Identified – *SBAA*

Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	**Fairburn 1 – Union City B2 230kV Line** • SOCO: Rebuild the line with bundled 200C 1351 ACSS Martin conductor. Replace the 2000A line trap at Union City with 4000A line trap. Replace switches at Union City with 4000A switches. Replace switch at Fairburn #1 with 4000A switch.	**$8.75 Million**
P2	**Fairburn 1 – Line Creek 230kV Line** • SOCO: Rebuild the line with bundled 200C 1351 ACSS Martin conductor. Replace a switch at Fairburn #1 with 4000A switch. Replace the 1590 AAC jumper at Fairburn #1 with 3-1590 AAC jumper.	**$10.65 Million**

TVA – North Georgia 1600 MW

Potential Enhancements Identified – *SBAA*

Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P3	**Dalton - East Dalton and East Dalton - Oostanaula** • Dalton: Rebuild Dalton – East Dalton 115kV line and the portion from Dalton substation frame to East Dalton of the East Dalton – Oostanaula 115kV line on common structures with 100°C 1351ACSR.	**$13.12 Million**
P4	**Crooked Creek – Indian Creek Metering Station** • SOCO: Project to reconductor the line from 397 30/7 ACSR 100°C to 795 26/7 ACSR 100°C from Crooked Creek TS to Indian Creek Metering Station planned for 2029 cannot be advanced.	**--**
P5	**Notasulga – Thurlow Dam 115kV Line** • SOCO: Advance the project to upgrade the line from 397 ACSR at 100°C from Thurlow Dam to Notasulga to 397 ACSR at 125°C.	**$1.2 Million**
SBAA TOTAL ($2023)		**$33.72 Million**(1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

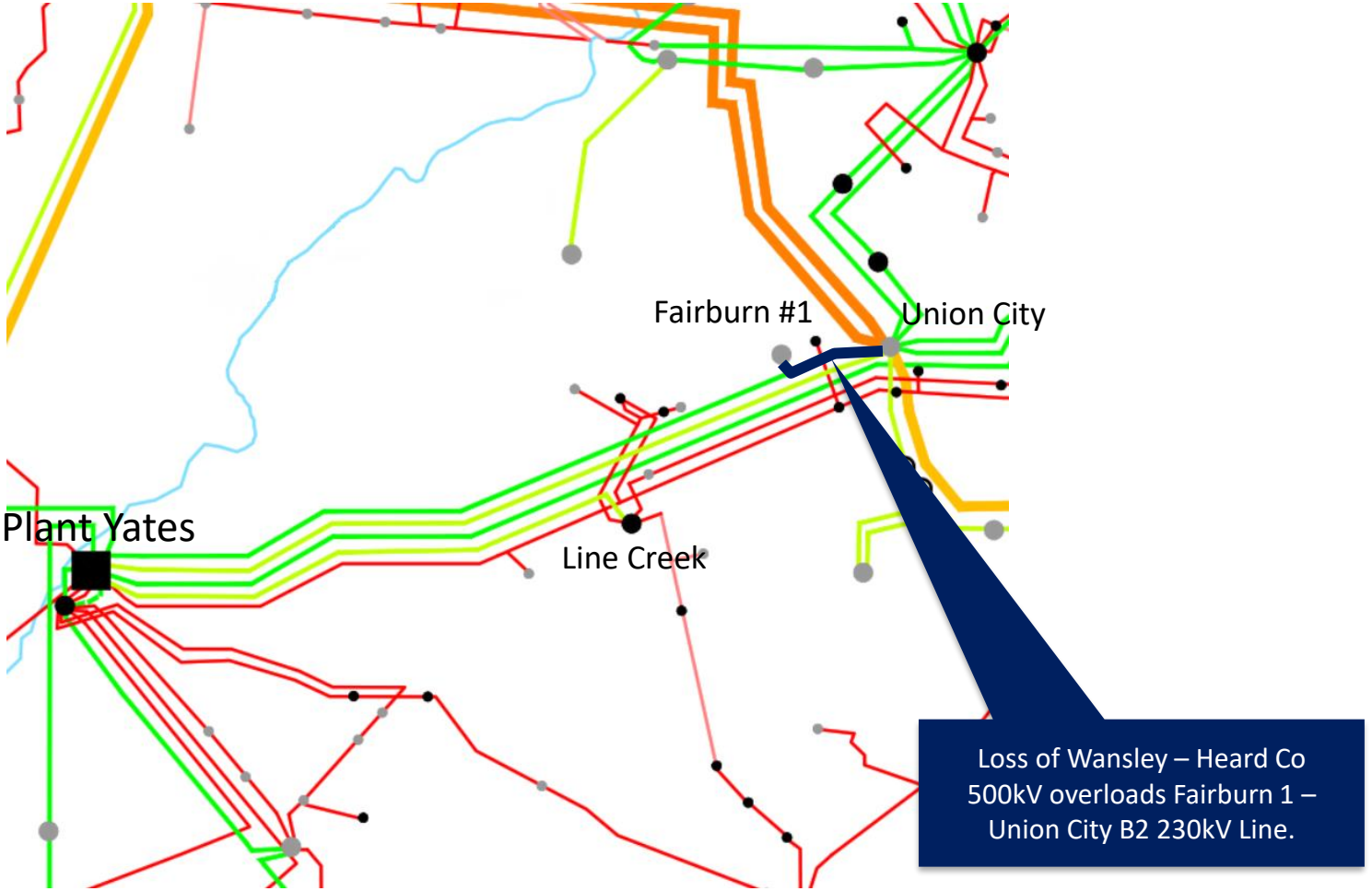
Southeastern Regional
TRANSMISSION PLANNING

TVA – North Georgia 1600 MW

Potential Enhancement Locations – *SBAA*

TVA – North Georgia 1600 MW

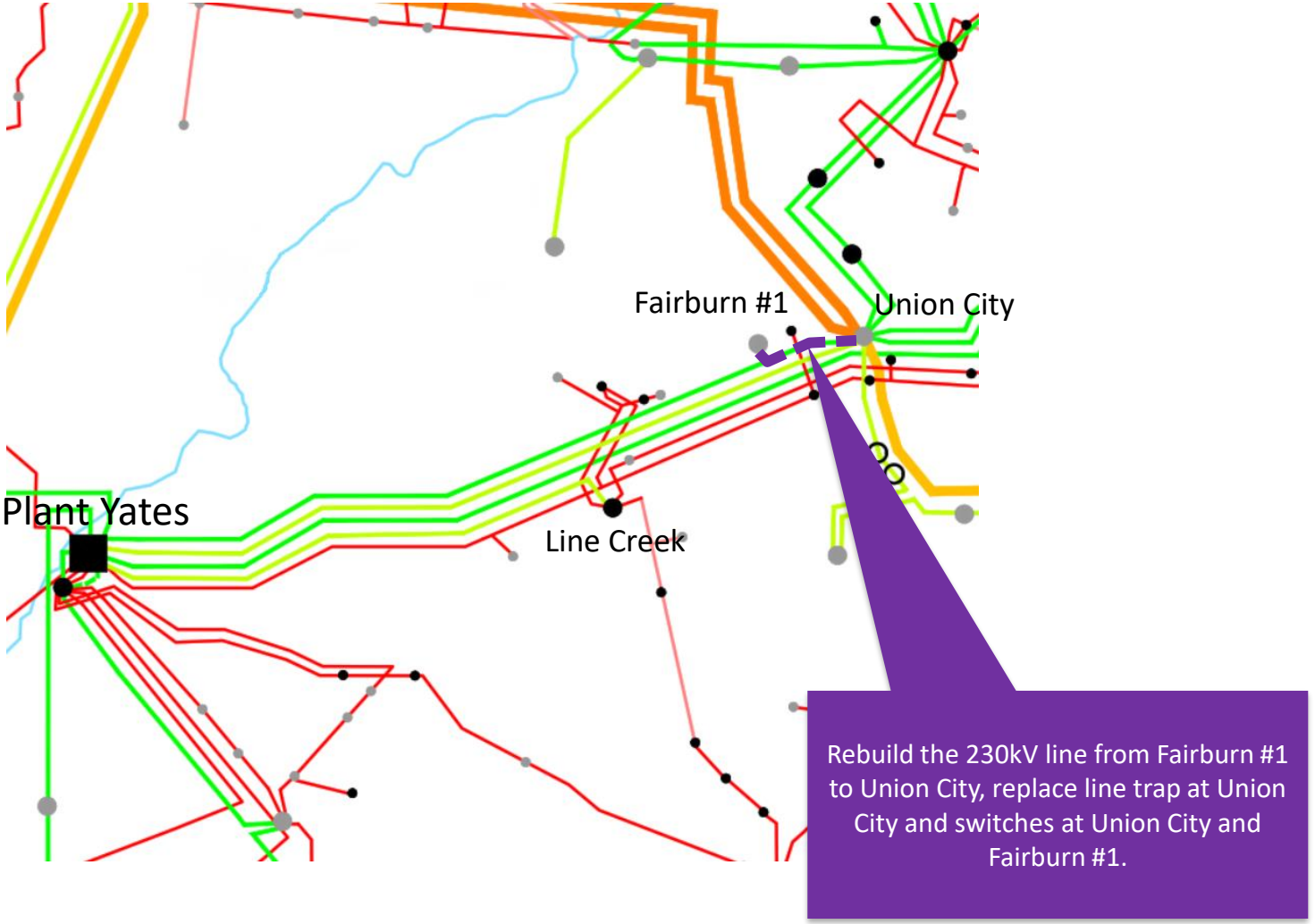
Significant Constraint (P1) – *SBAA*



Southeastern Regional TRANSMISSION PLANNING

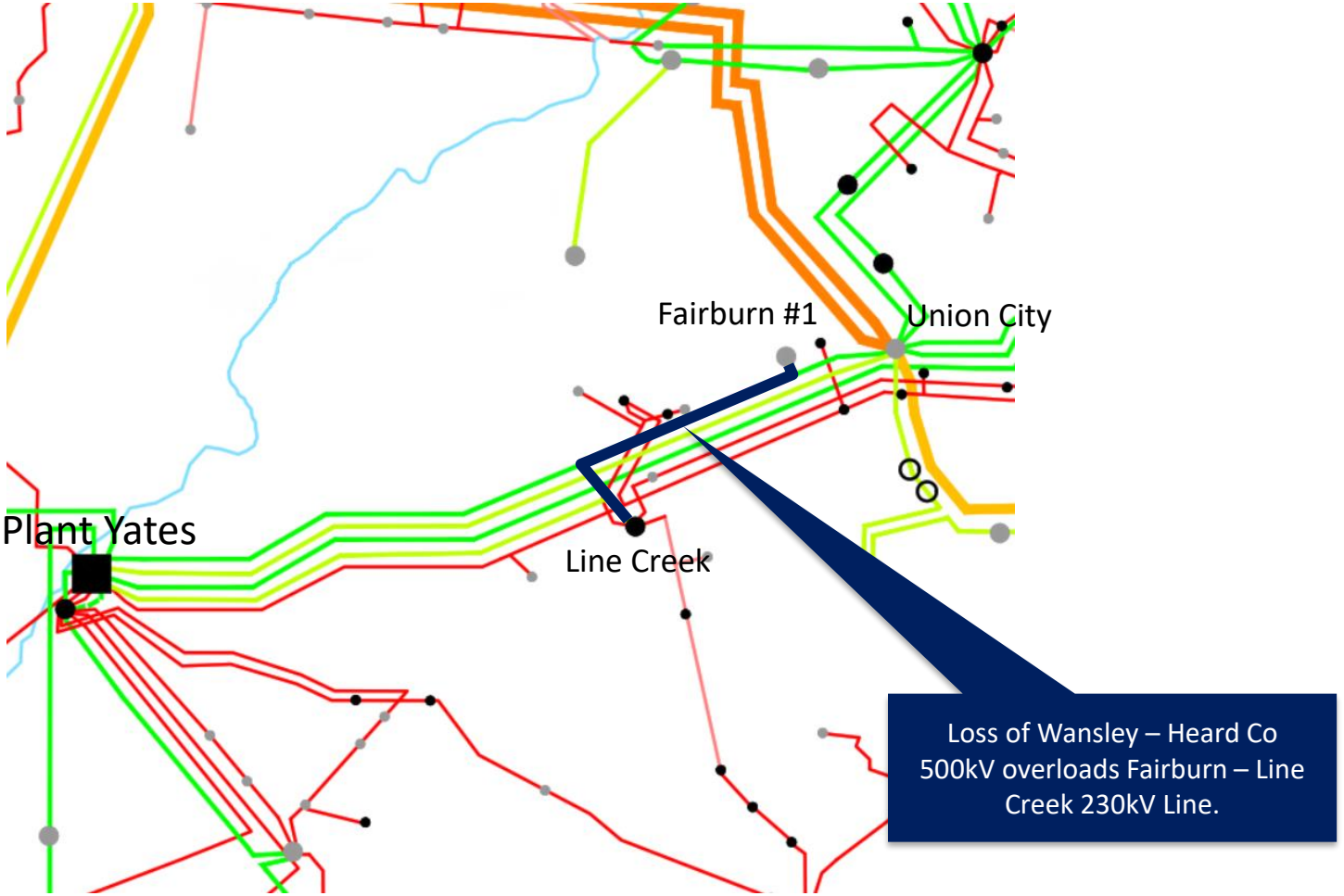
TVA – North Georgia 1600 MW

Potential Enhancement (P1) – *SBAA*



TVA – North Georgia 1600 MW

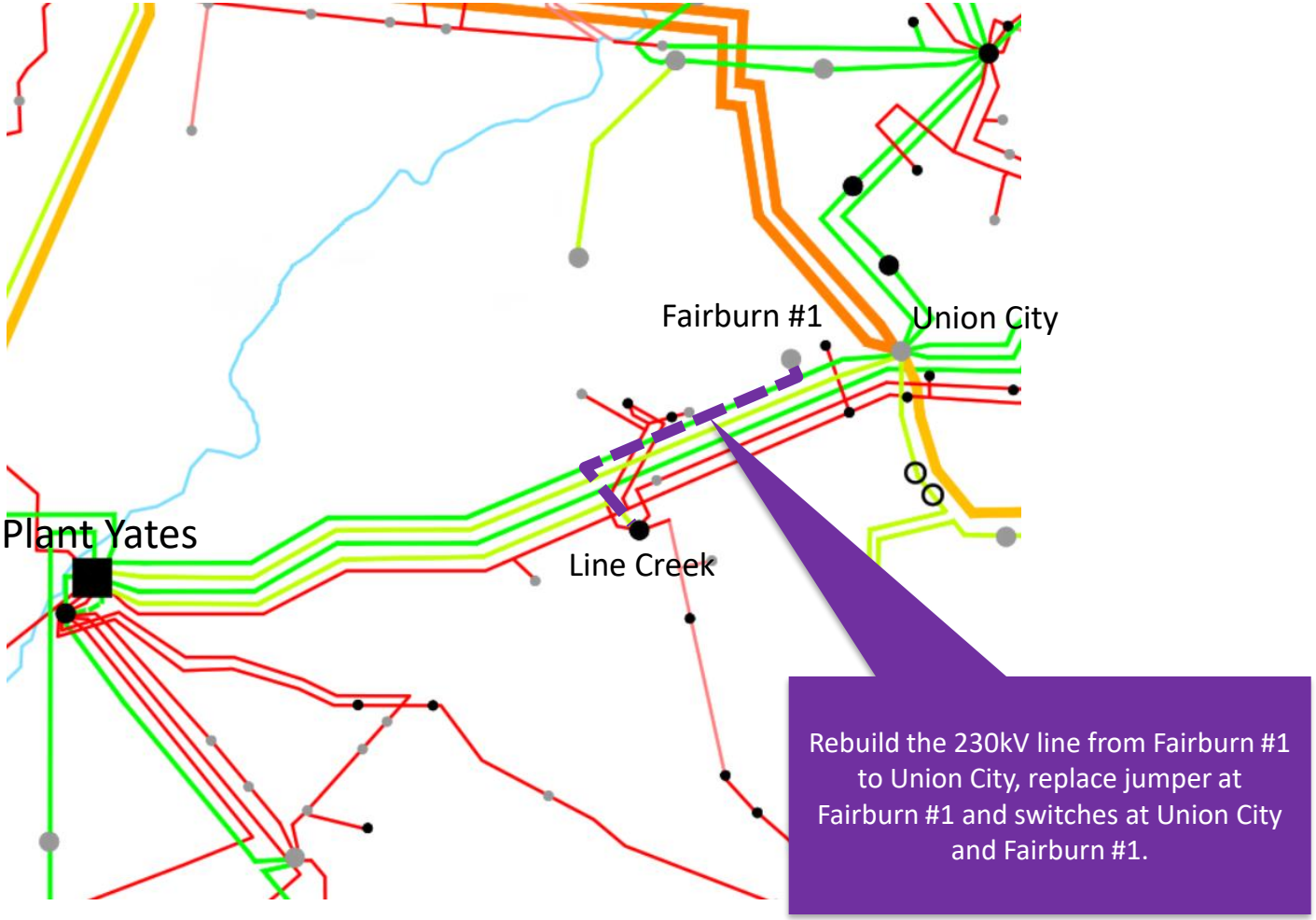
Significant Constraint (P2) – *SBAA*



Southeastern Regional TRANSMISSION PLANNING

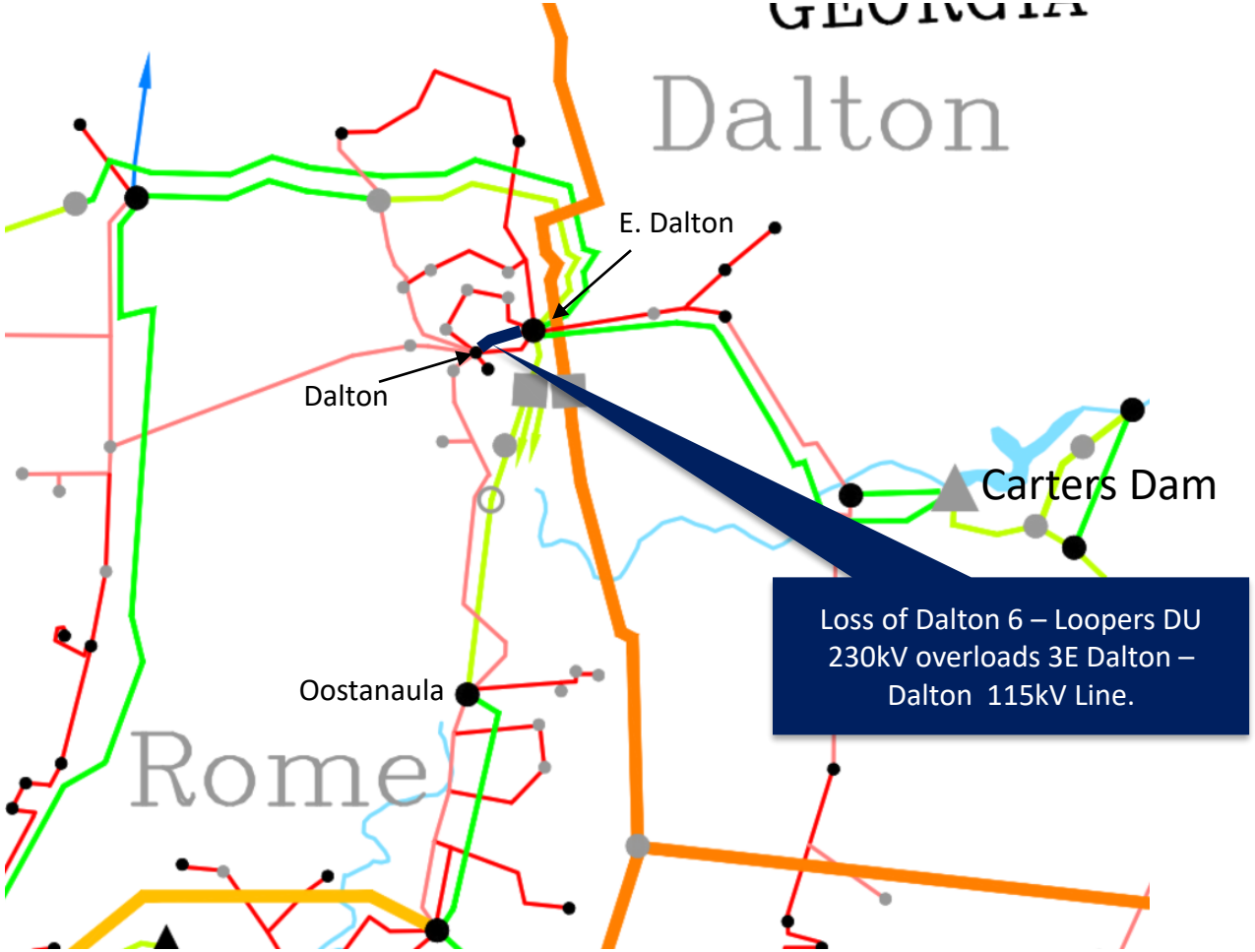
TVA – North Georgia 1600 MW

Potential Enhancement (P2) – *SBAA*



TVA – North Georgia 1600 MW

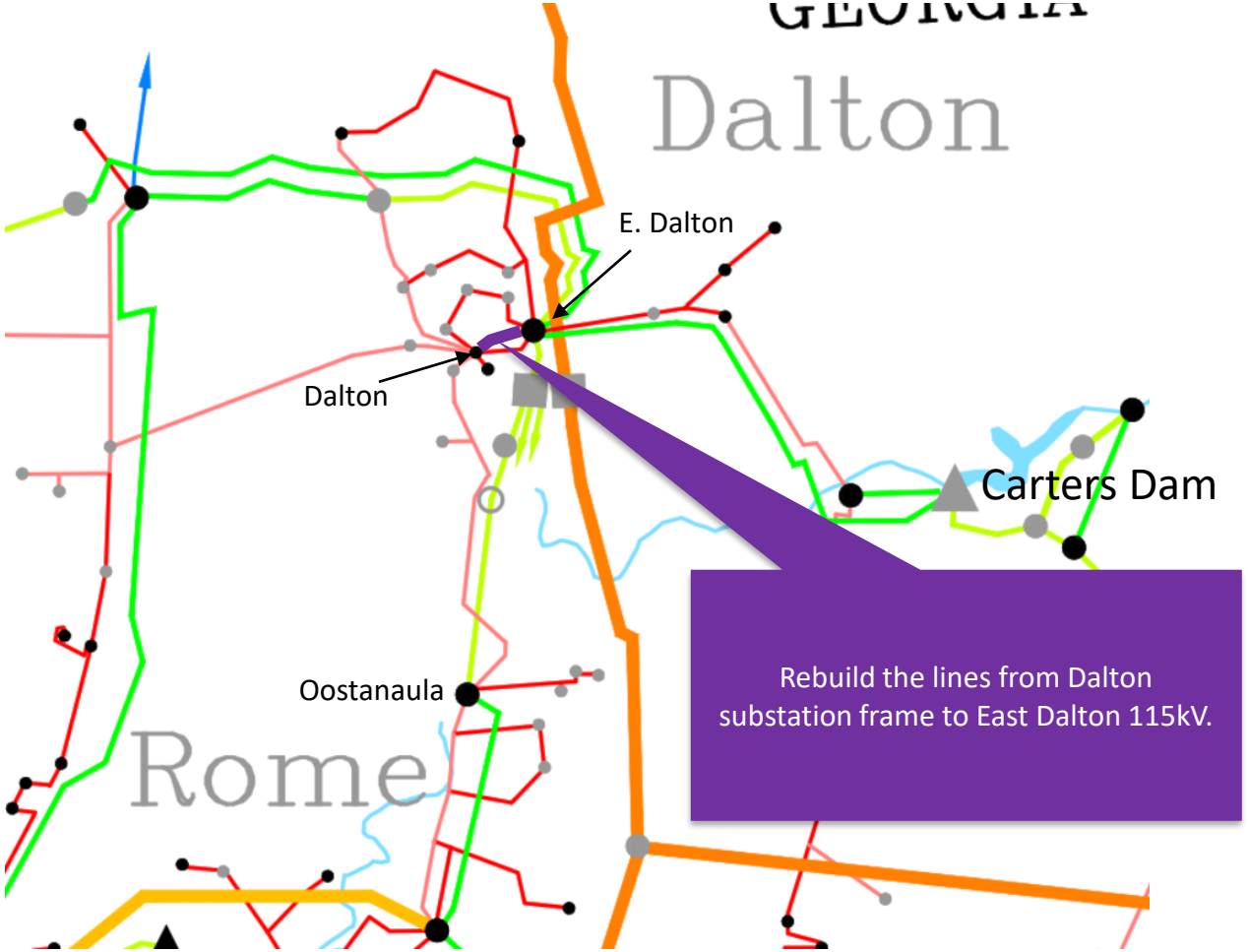
Significant Constraint (P3) – *SBAA*



Southeastern Regional TRANSMISSION PLANNING

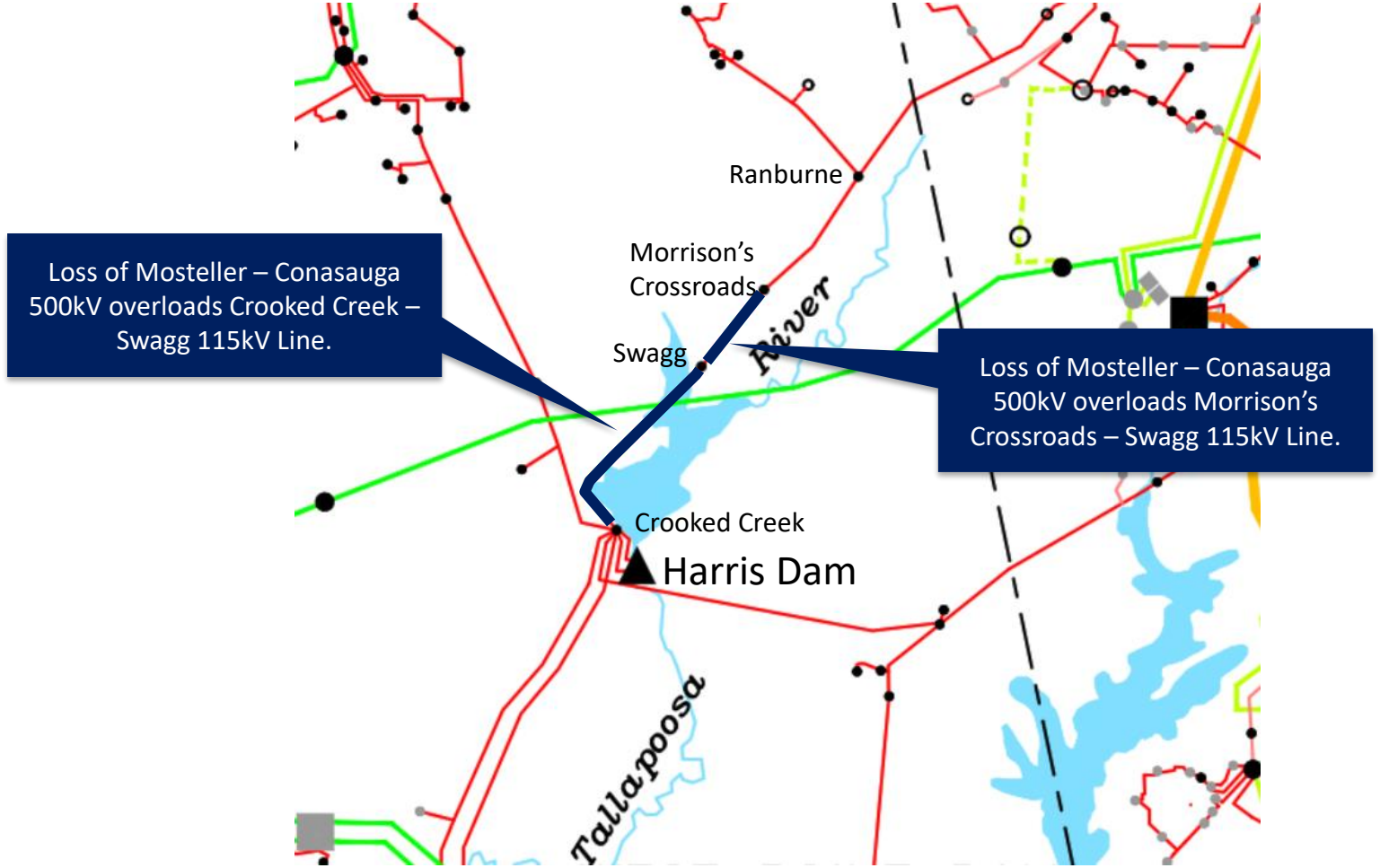
TVA – North Georgia 1600 MW

Potential Enhancement (P3) – *SBAA*



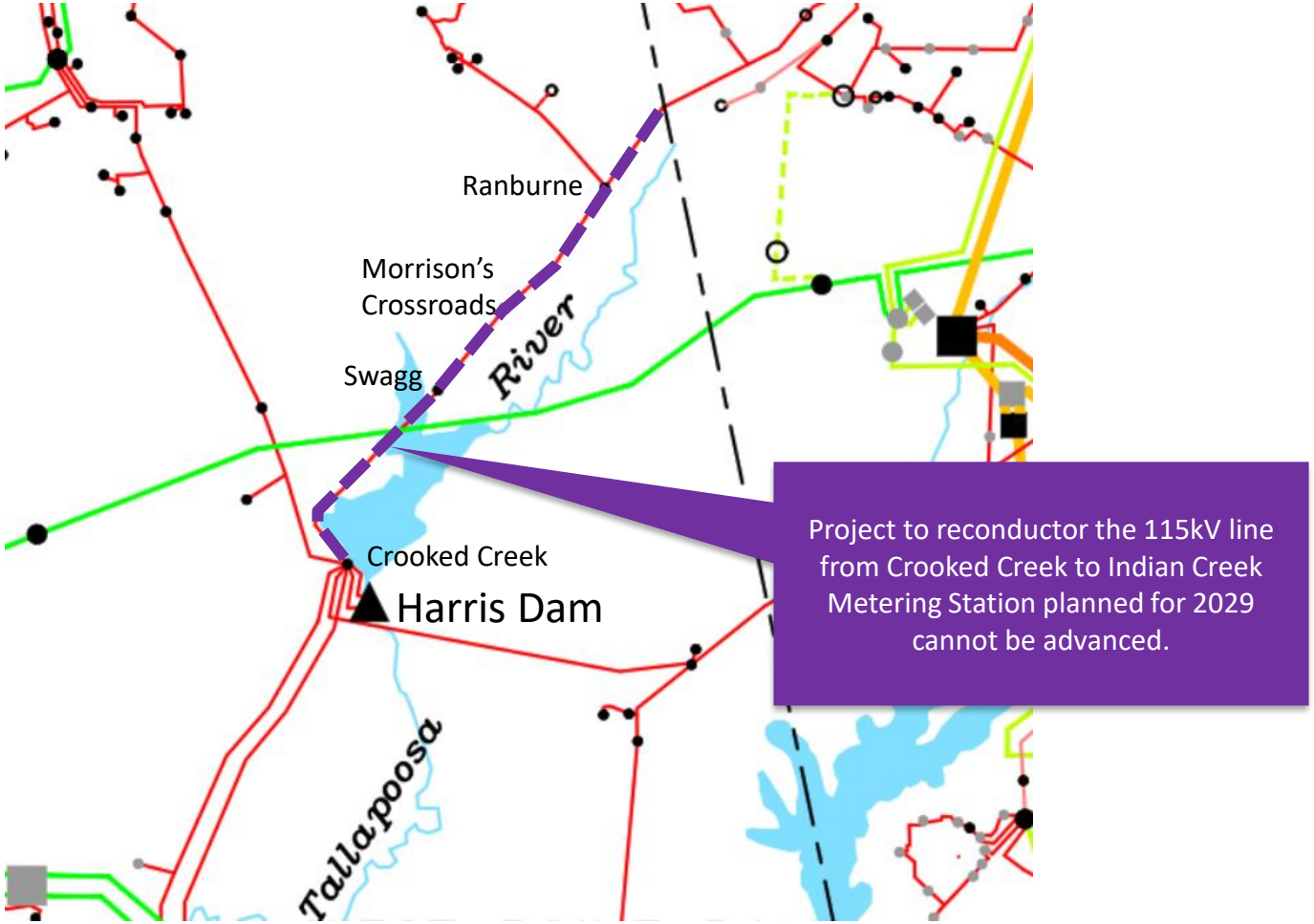
TVA – North Georgia 1600 MW

Significant Constraint (P4) – *SBAA*



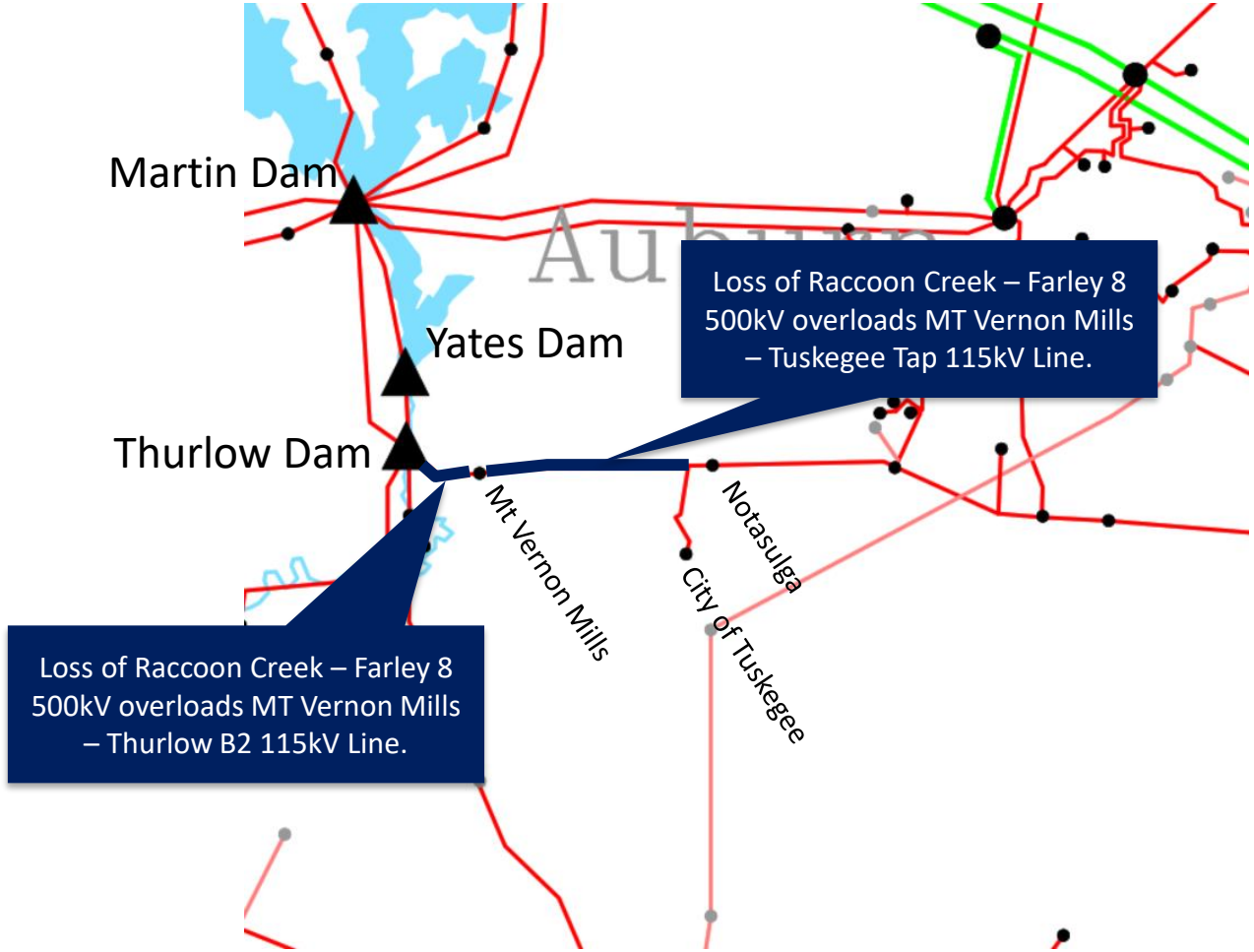
TVA – North Georgia 1600 MW

Potential Enhancement (P4) – *SBAA*



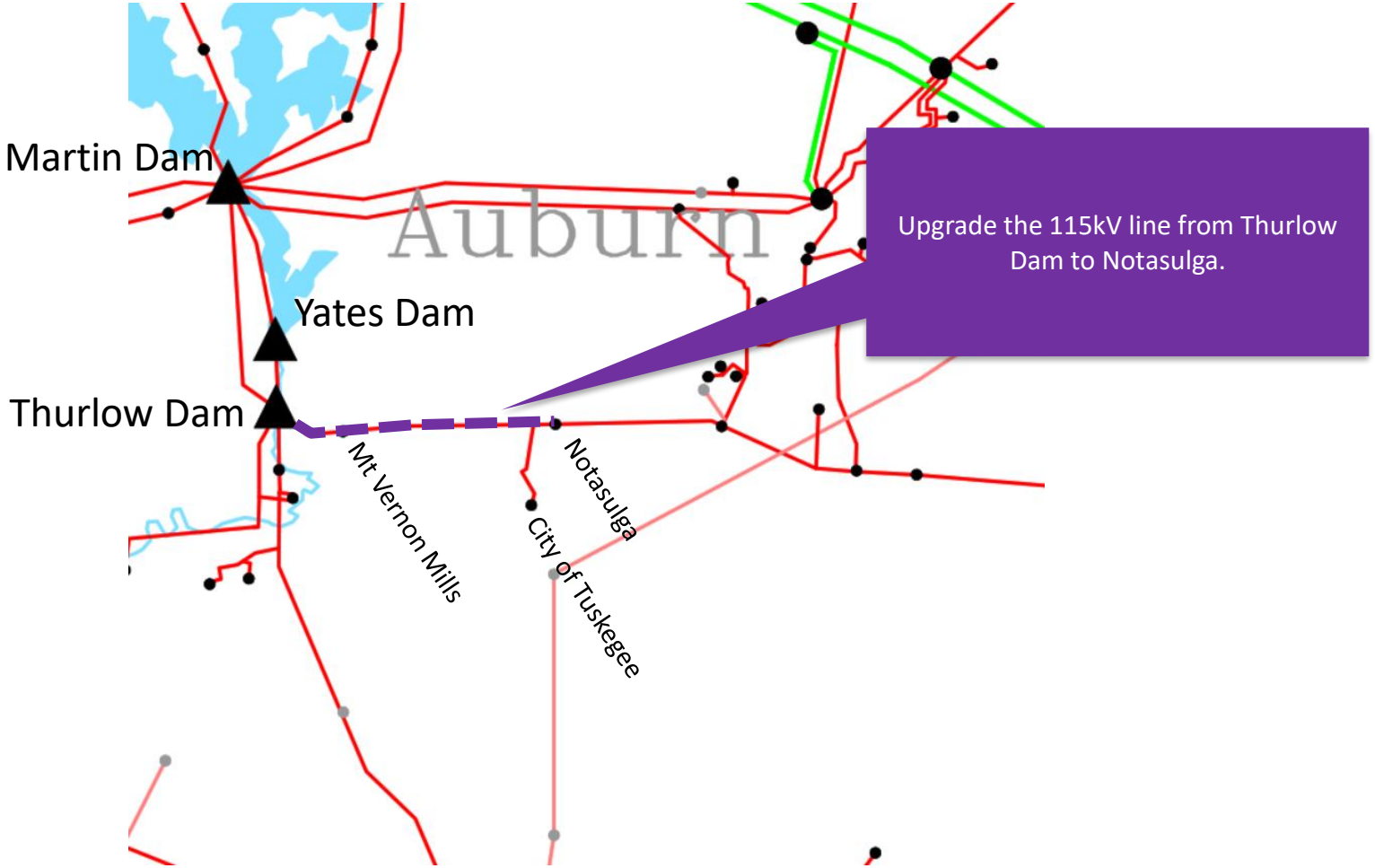
TVA – North Georgia 1600 MW

Significant Constraint (P5) – *SBAA*



TVA – North Georgia 1600 MW

Significant Constraint (P5) – *SBAA*



TVA – North Georgia 1600 MW

Significant Constraints Identified – *TVA*

Significant Constraints - TVA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Charleston-Hiwassee River 161 kV	289.5	108.7	136.6
P1	Hiwassee River-East Cleveland 161 kV	289.5	99.6	127.6
P2	Sequoyah-Concord 161 kV	350.0	89.7	111.7
P3	Oglethorpe 161/230 kV	289.5	88.2	110.0
P4	East Cleveland-Sugar Grove Tap 161 kV	289.5	62.5	109.6
P5	Chickamauga-Hamilton 161 kV	391.2	82.0	103.7
N/A*	Bowling Green-East Bowling Green 161 kV	279.4	94.8	101.3

*Project not in version 1 models, but is in the 2023 Expansion Plan

TVA – North Georgia 1600 MW

Potential Enhancements Identified – *TVA*

Potential Enhancements - TVA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	Upgrade terminal equipment at Charleston and East Cleveland 161 kV substations.	**$775,000**
P2	Uprate the Sequoyah-Concord 161 kV TL (approximately 18.5 miles) to operate at 100C.	**$8.5 Million**
P3	Replace Oglethorpe GA 230/161 kV transformer.	**$9.5 Million**
P4	Upgrade terminal equipment at East Cleveland 161 kV substation.	**$250,000**
P5	Uprate the Chickamauga-Hamilton 161 kV TL (approximately 7.68 miles) to operate at 180C.	**$3.75 Million**
TVA TOTAL ($2023)		**$22.8 Million**(1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

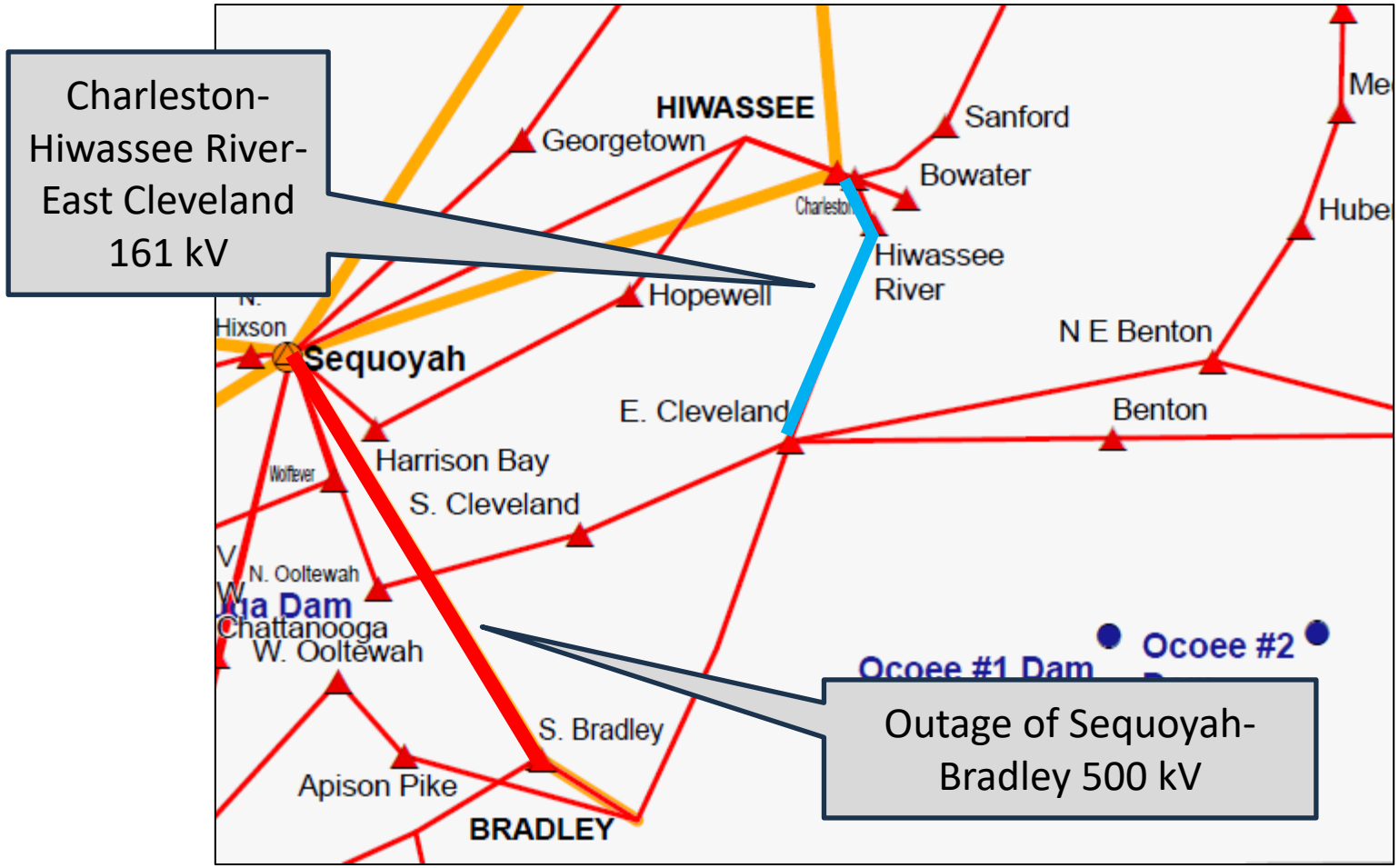
Southeastern Regional
TRANSMISSION PLANNING

TVA – North Georgia 1600 MW

Potential Enhancement Locations – *TVA*

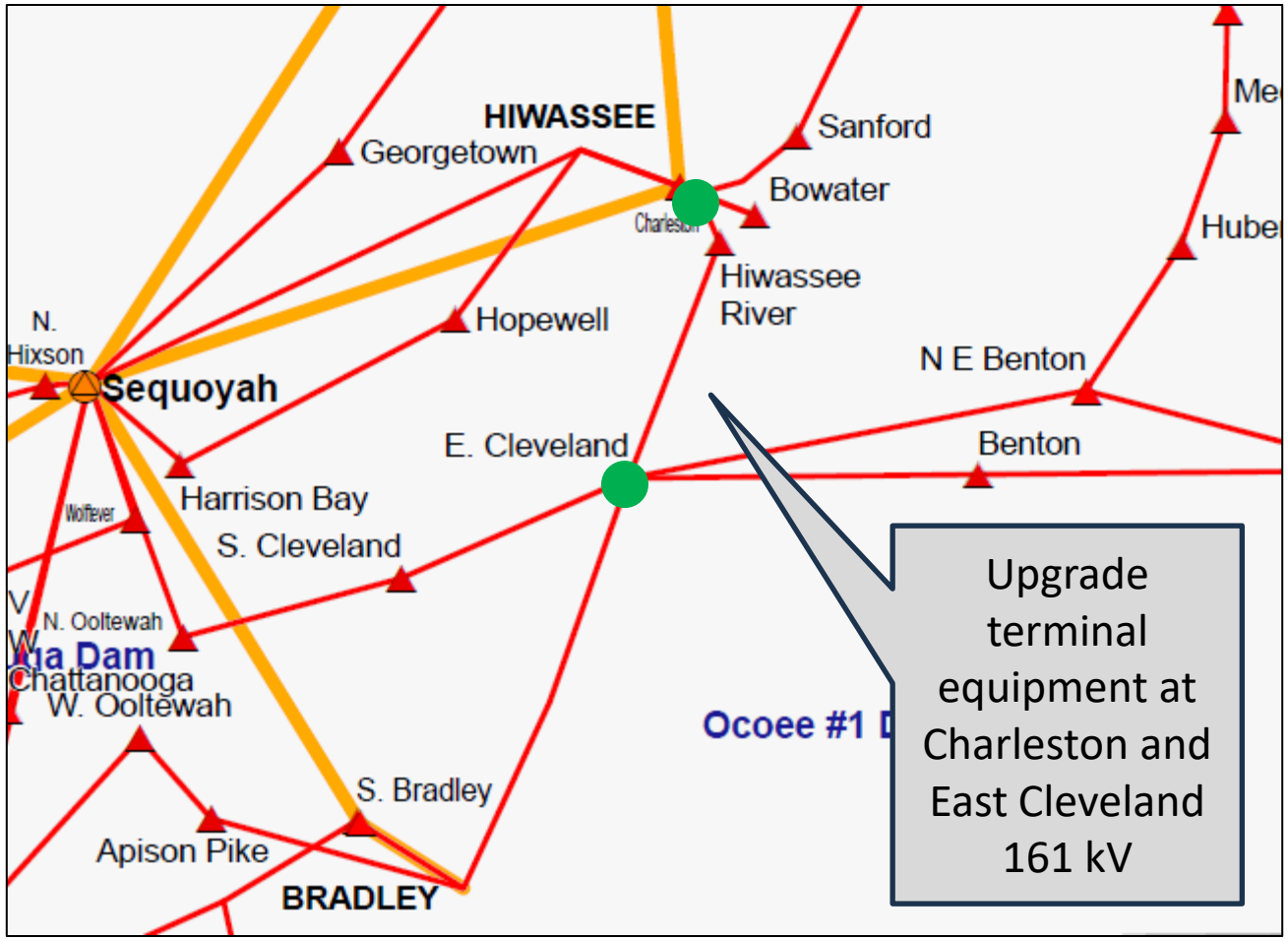
TVA – North Georgia 1600 MW

Significant Constraint (P1) – *TVA*



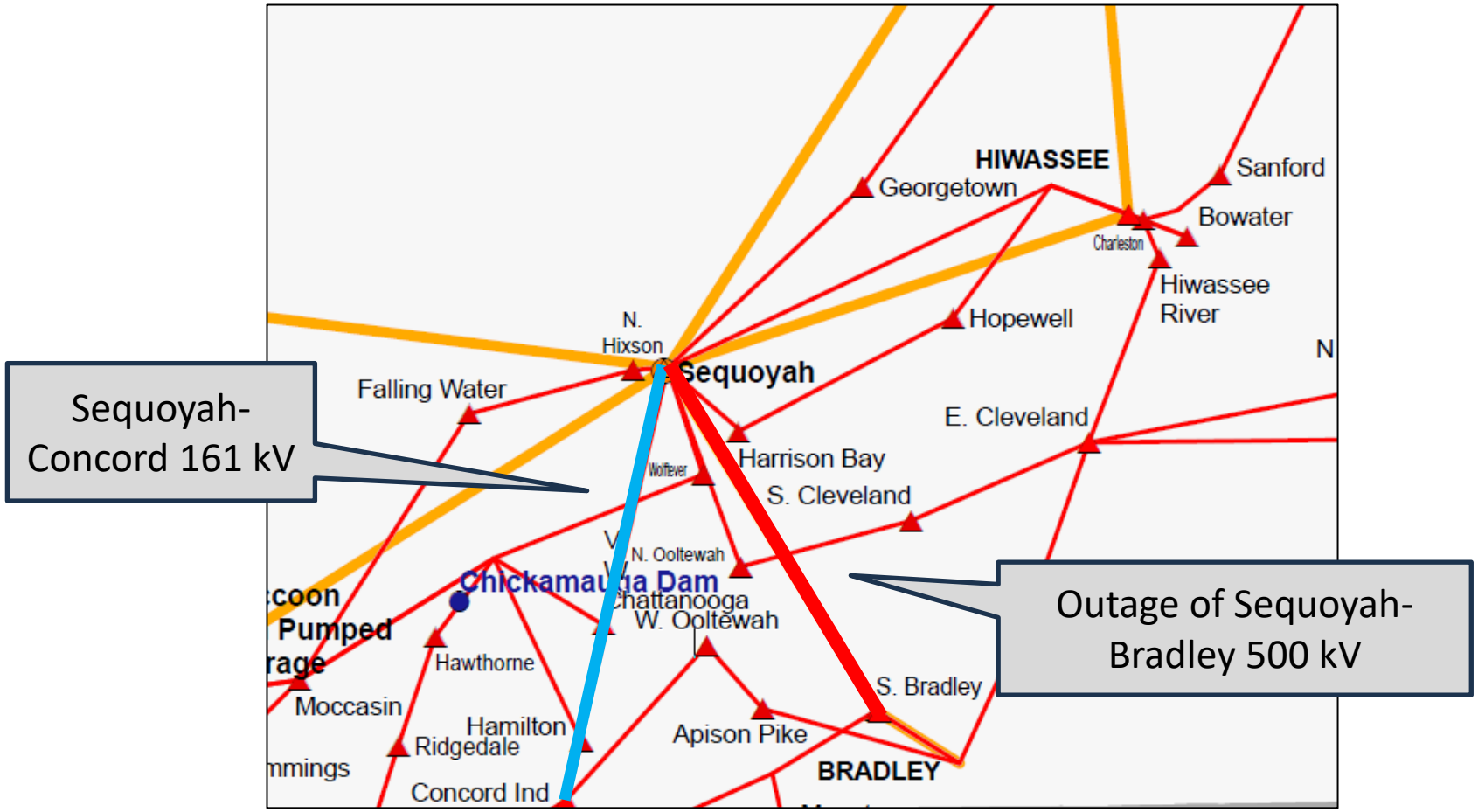
TVA – North Georgia 1600 MW

Potential Enhancement (P1) – *TVA*



TVA – North Georgia 1600 MW

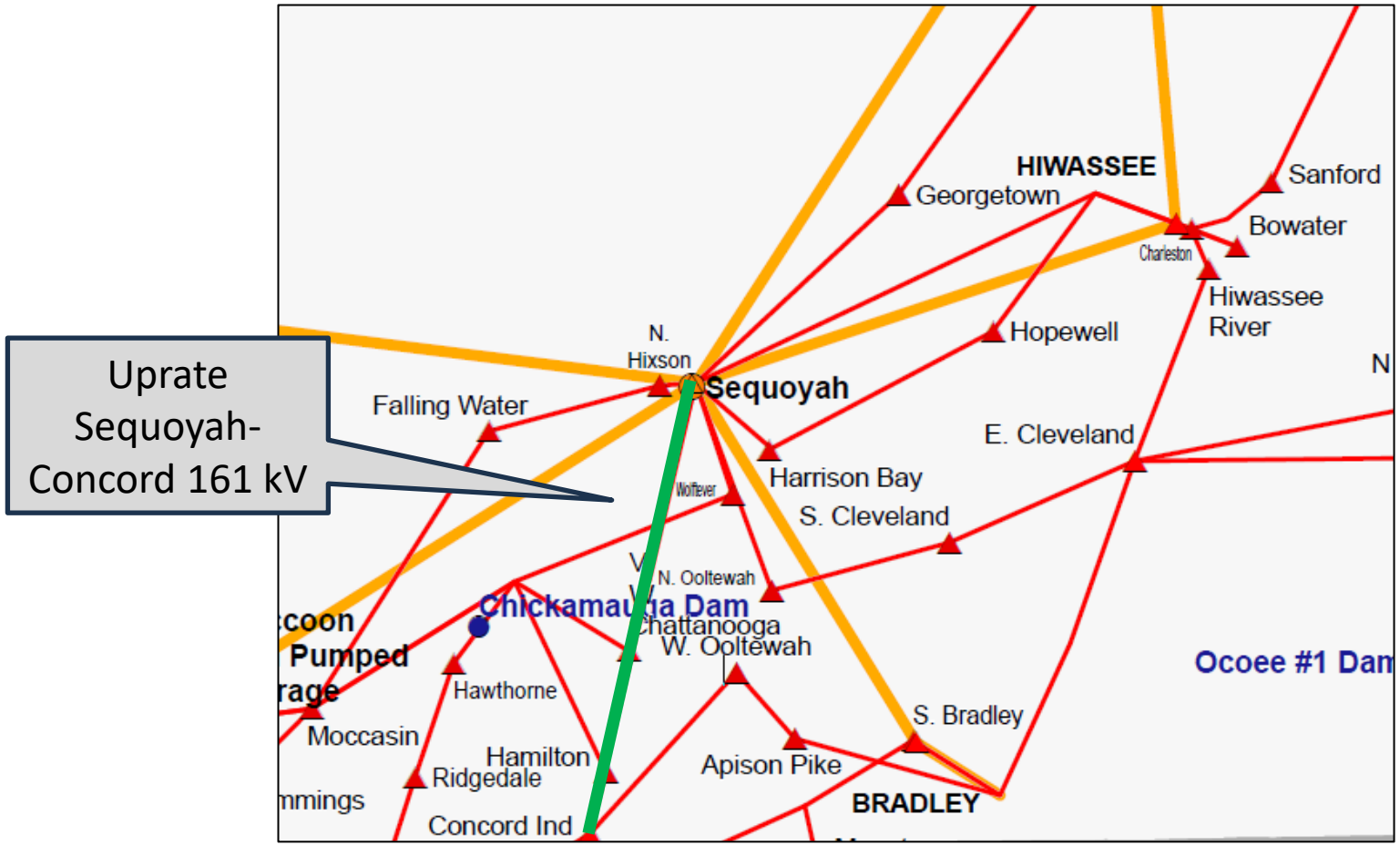
Significant Constraint (P2) – *TVA*



Southeastern Regional TRANSMISSION PLANNING

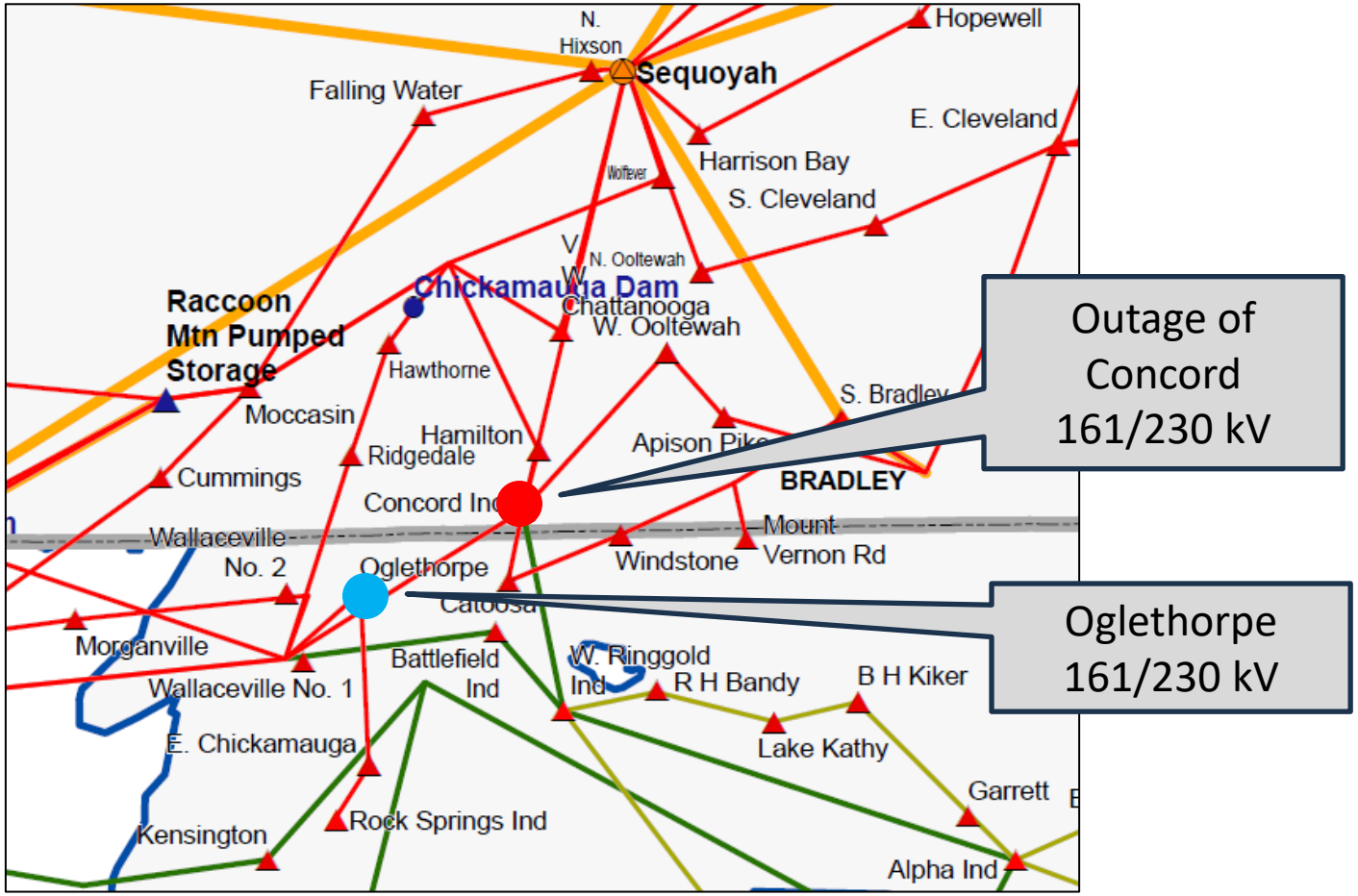
TVA – North Georgia 1600 MW

Potential Enhancement (P2) – *TVA*



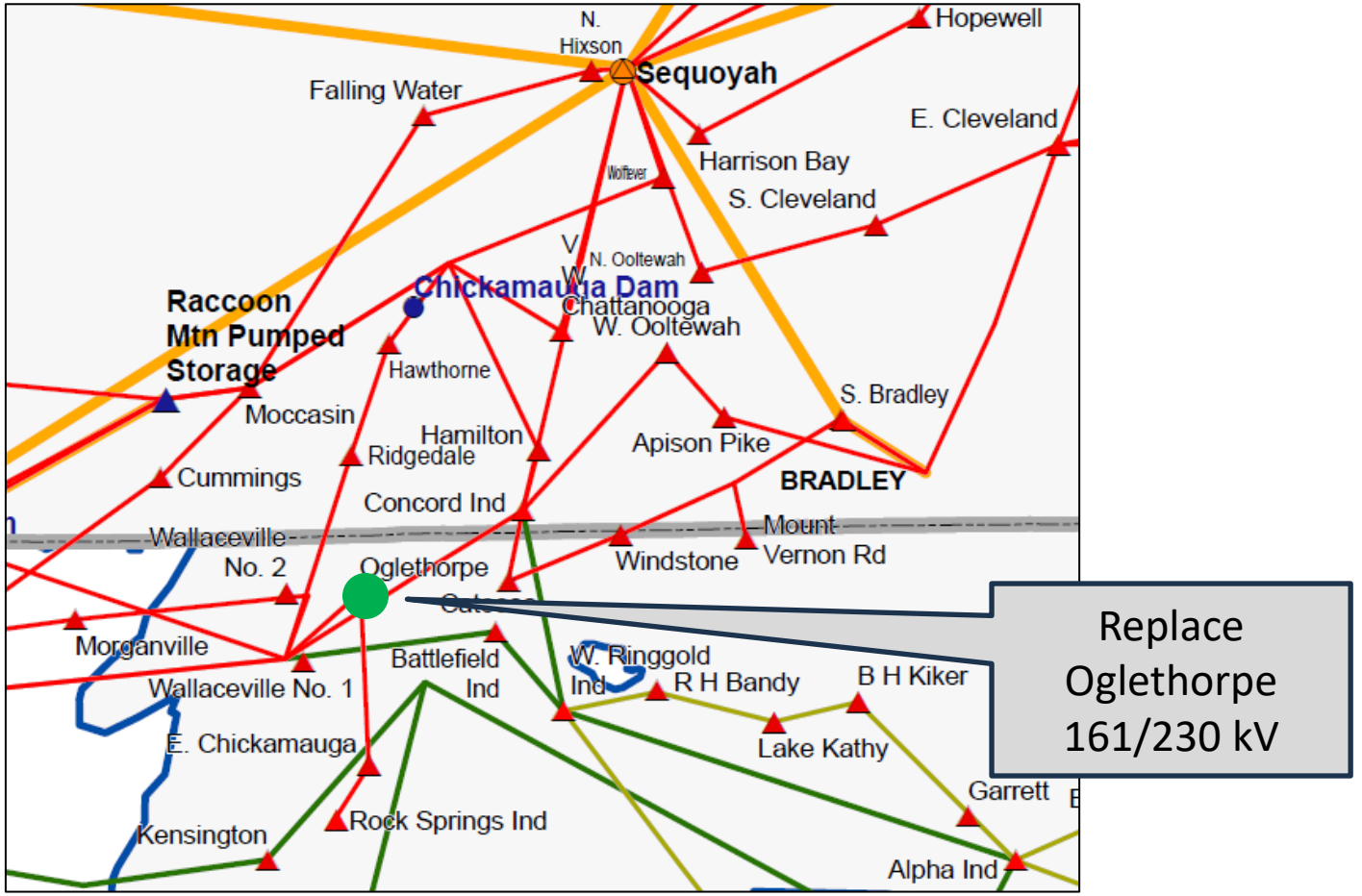
TVA – North Georgia 1600 MW

Significant Constraint (P3) – *TVA*



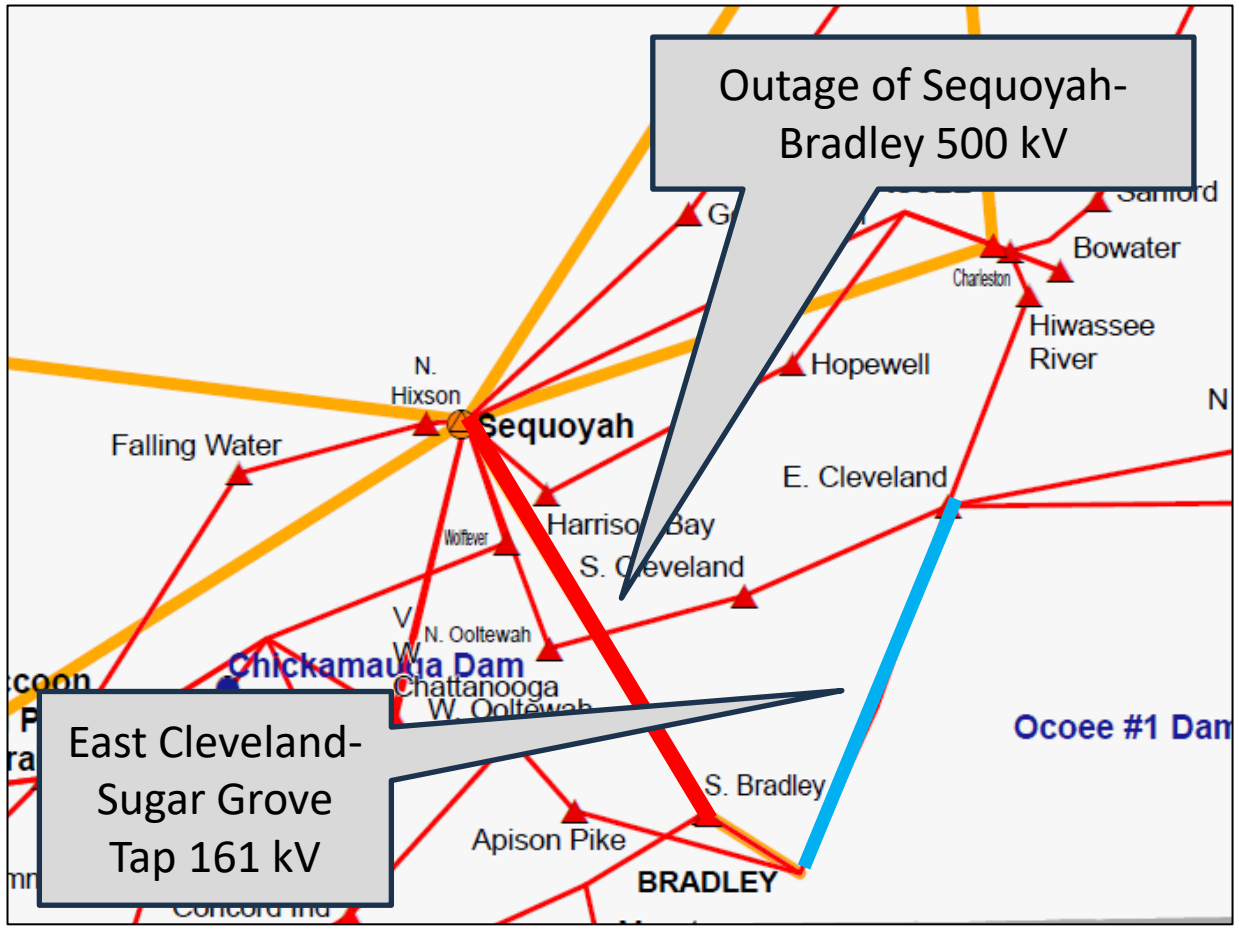
TVA – North Georgia 1600 MW

Potential Enhancement (P3) – *TVA*



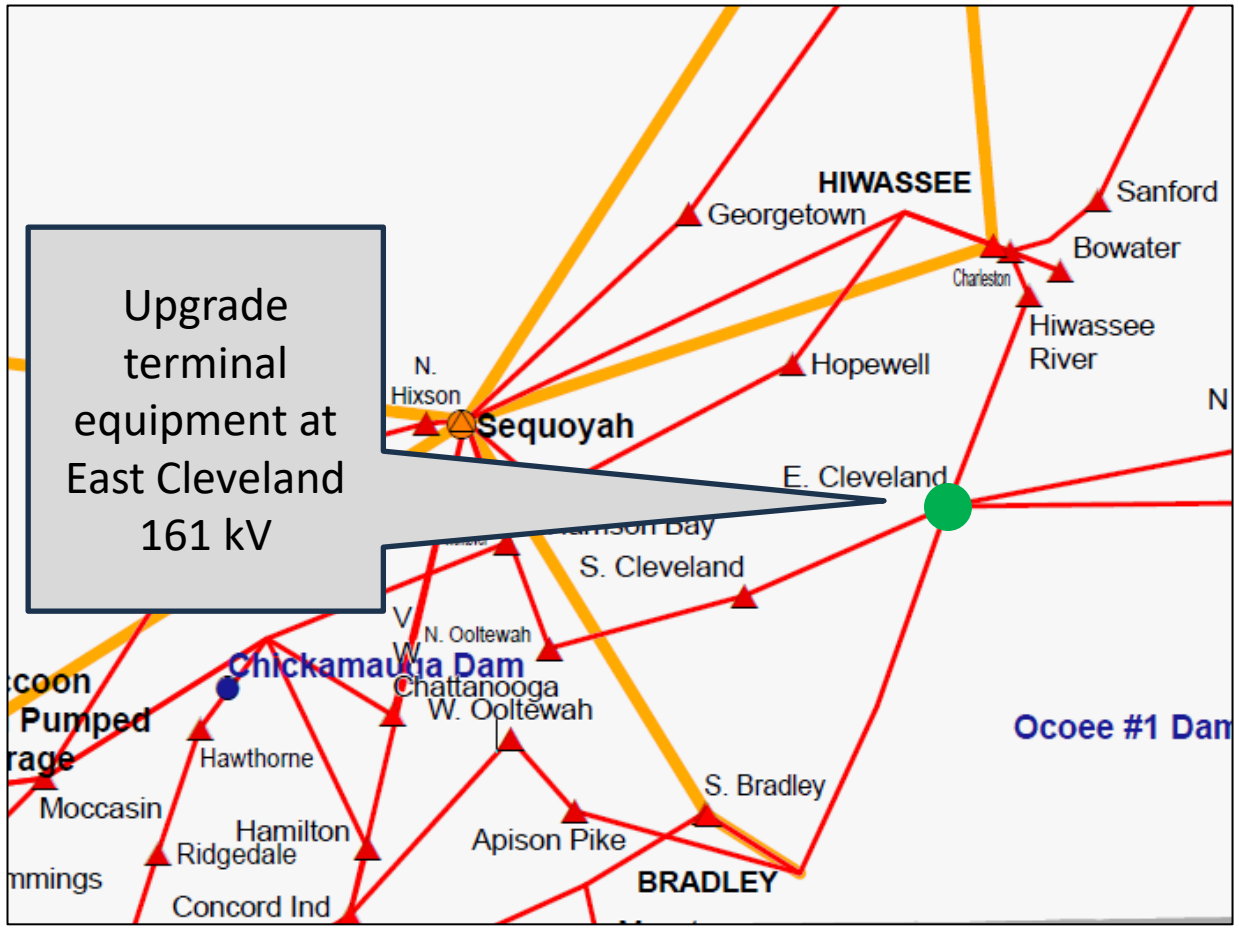
TVA – North Georgia 1600 MW

Significant Constraint (P4) – *TVA*



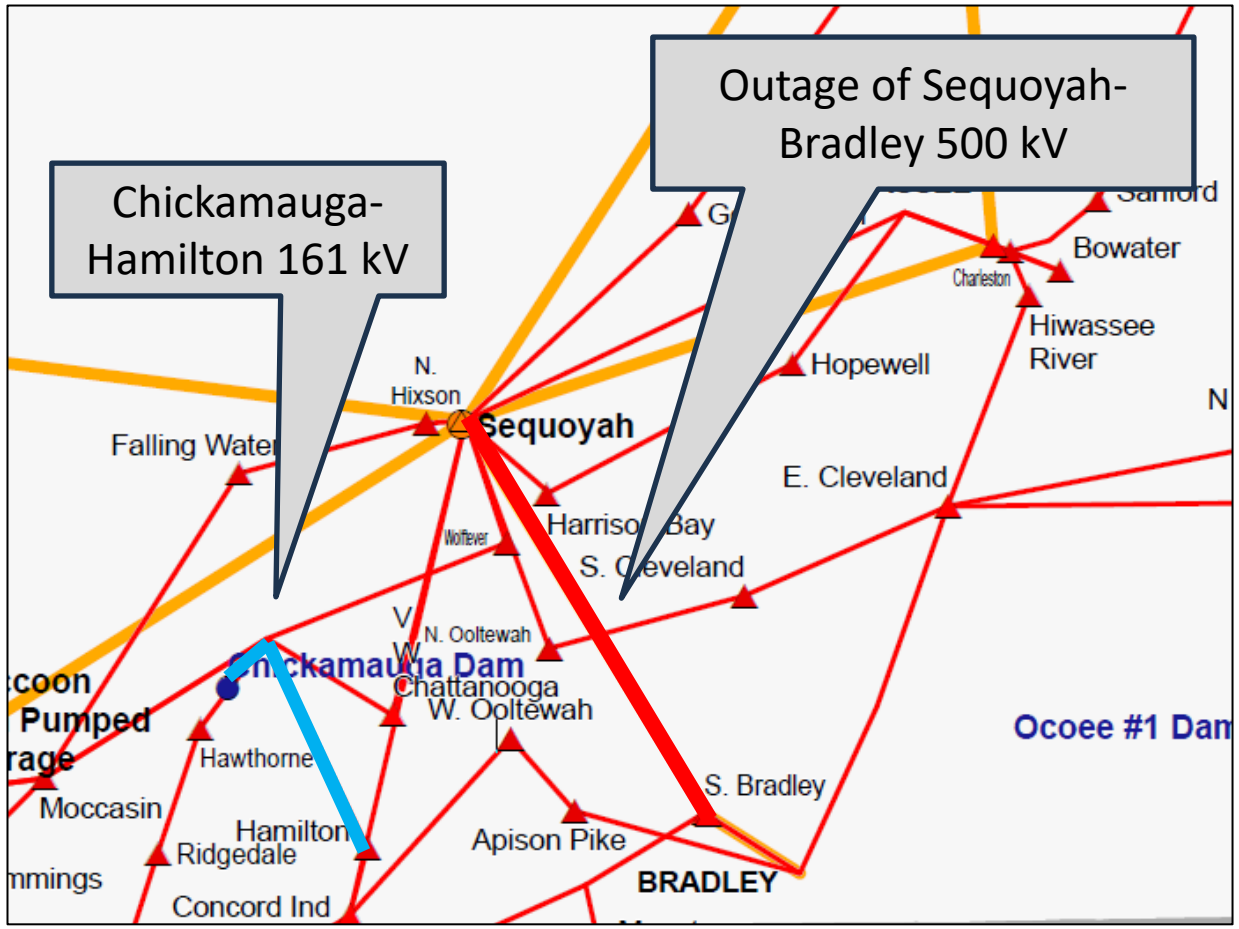
TVA – North Georgia 1600 MW

Potential Enhancement (P4) – *TVA*



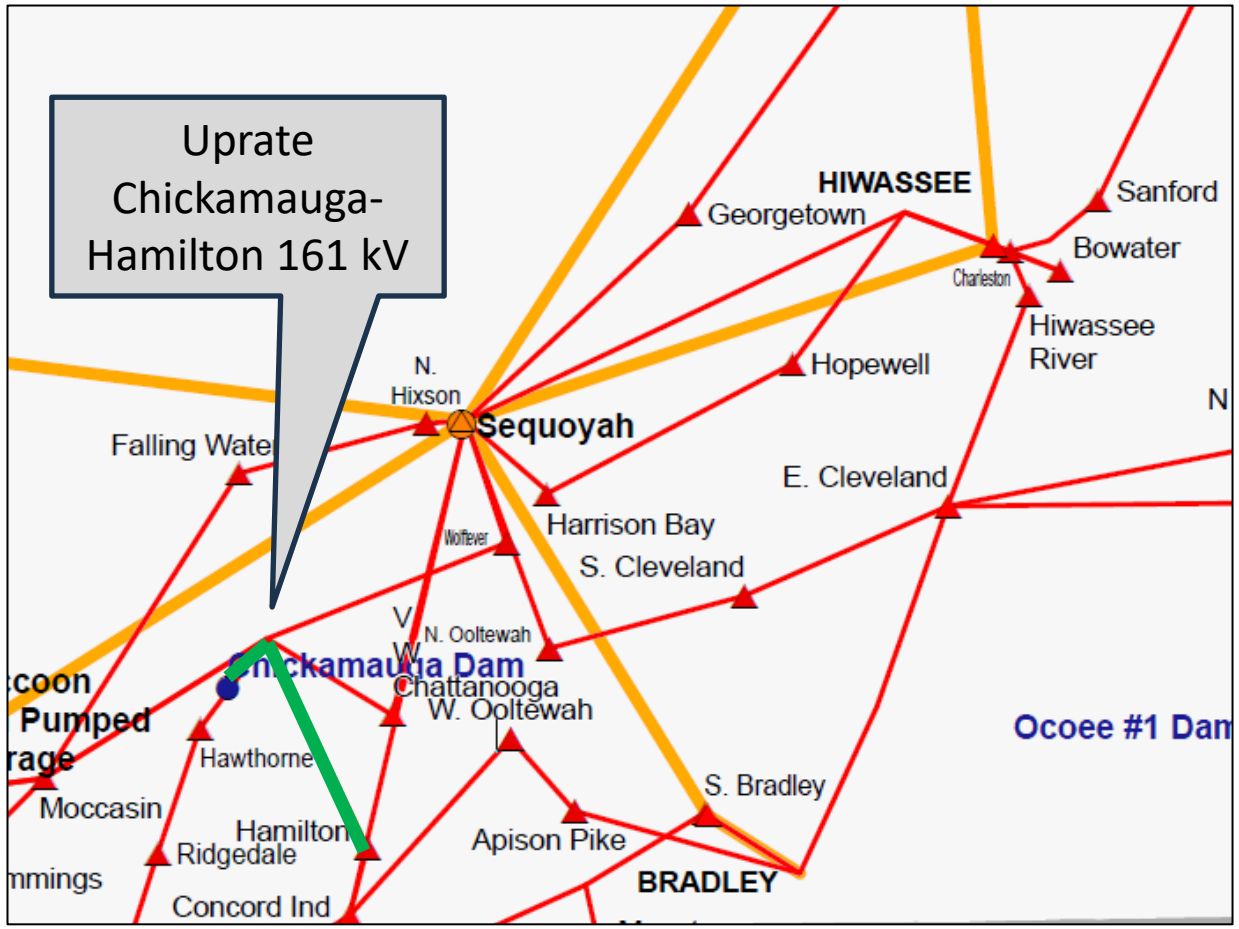
TVA – North Georgia 1600 MW

Significant Constraint (P5) – *TVA*



TVA – North Georgia 1600 MW

Potential Enhancement (P5) – *TVA*



Economic Planning Studies

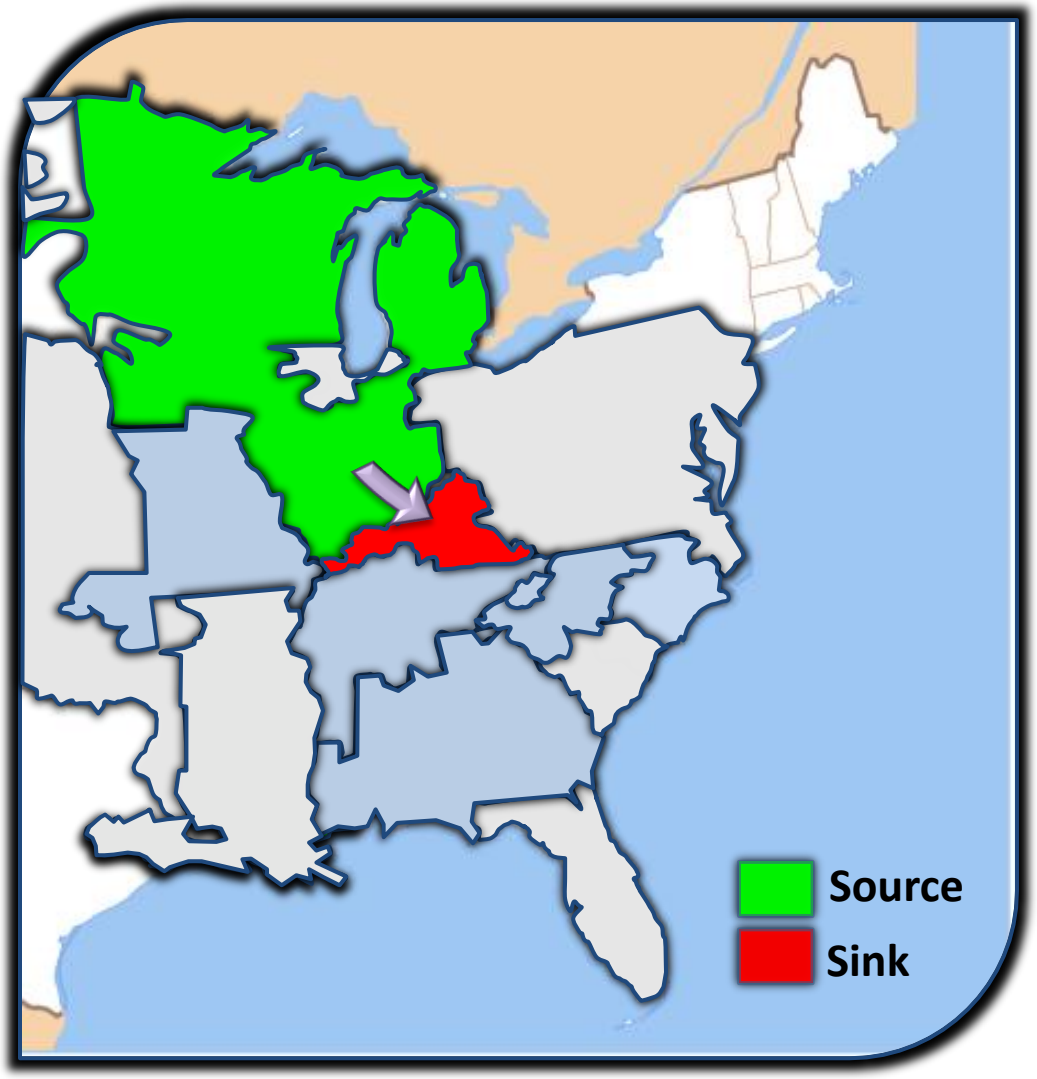
MISO to LGE/KU– 1242MW

Southeastern Regional TRANSMISSION PLANNING

MISO to LGE/KU – 1242 MW

Study Assumptions

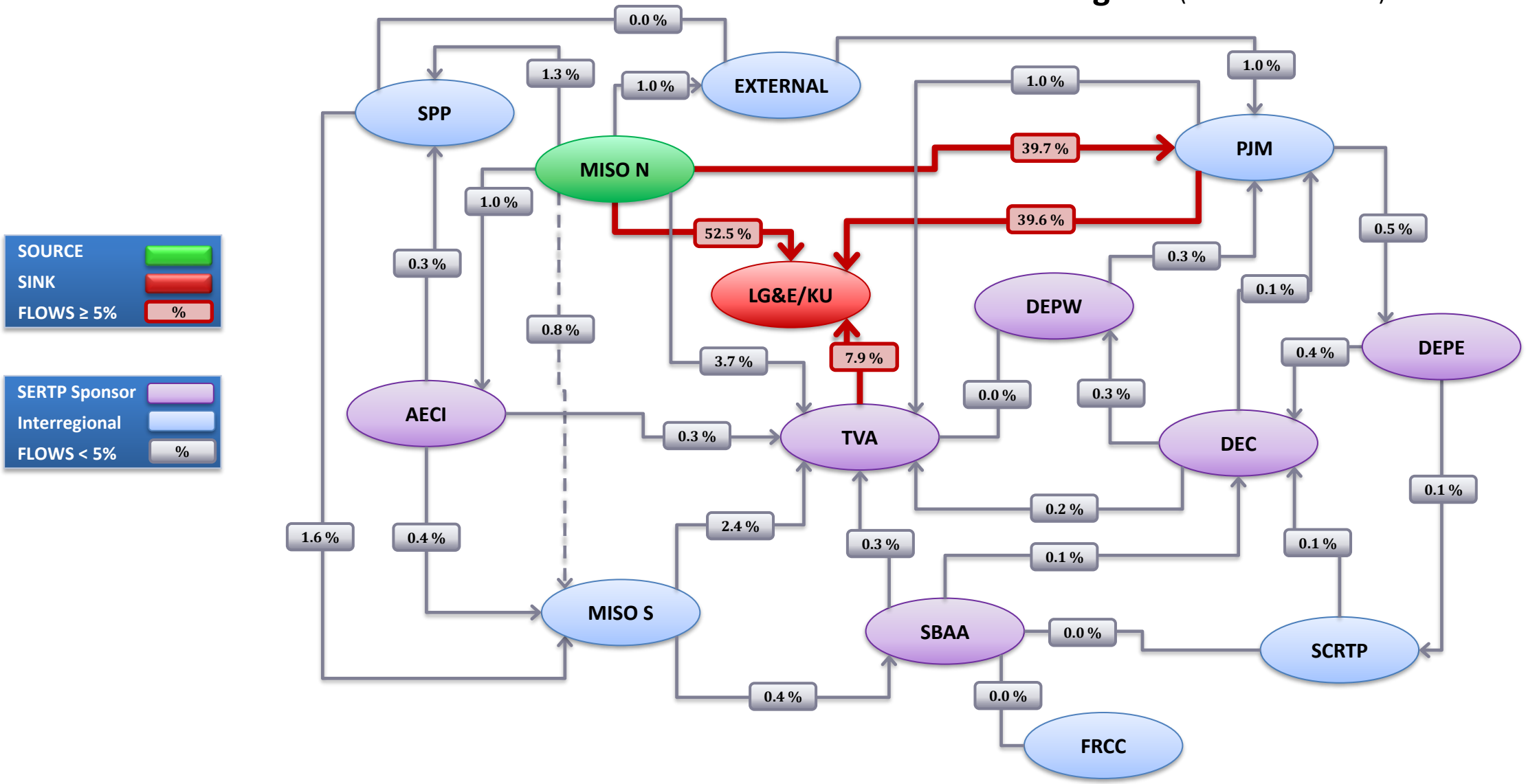
- **Source:** Generation Scale within MISO North
- **Sink:** Uniform Generation with LGE/KU
- **Transfer Type:** Generation to Generation
- **Year:** 2028
- **Load Level:** Summer Peak



Southeastern Regional
TRANSMISSION PLANNING

MISO North to LGE/KU – 1242 MW

Transfer Flow Diagram (% of Total Transfer)



Southeastern Regional TRANSMISSION PLANNING

MISO to LGE/KU – 1242 MW

Transmission System Impacts – *SERTP*

- **Transmission System Impacts Identified:**
  - LG&E/KU
  - TVA

- **Potential Transmission Enhancements Identified:**
  - LG&E/KU

SERTP Total ($2023) = $83.5 Million

MISO to LGE/KU – 1242 MW

Potential Transmission Enhancements– *SERTP*

Potential Transmission Enhancements - 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)	$83.5 Million
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
SERTP TOTAL ($2023)	**$83.5 Million**

MISO to LGE/KU – 1242 MW

Significant Constraints Identified – *LG&E/KU*

Significant Constraints – LG&E/KU

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%) / Voltage P.U.	
			Without Request	With Request
P1	Cemetery Rd. 69kV	N/A	0.91	0.874
P2	Clifty to Carrollton 138kV line	210	71.0	109.6
P3	Brown CT to Brown Tap 1 138kV	580	97.4	100.1

MISO to LGE/KU – 1242 MW

Potential Enhancements Identified – *LG&E/KU*

Potential Enhancements – LG&E/KU

Item	Potential Enhancement	Planning Level Cost Estimate
P1	Add a capacitor bank at Elihu 69kV	**$3.1 Million**
P2	Replace 17.14 miles of 556.5 26X7 ACSR with 954 26X7 ACSR in the Carrollton to Clifty Creek 138kV line	**$80 Million**
P3	Replace 0.25 miles of 2x954 45X7 ACSR with 2x1272 45X7 ACSR in the Brown CT to Brown Tap 1 138kV line	**$437.5k**
LG&E/KU TOTAL ($2023)		**$ 83.5 Million**(1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southeastern Regional TRANSMISSION PLANNING

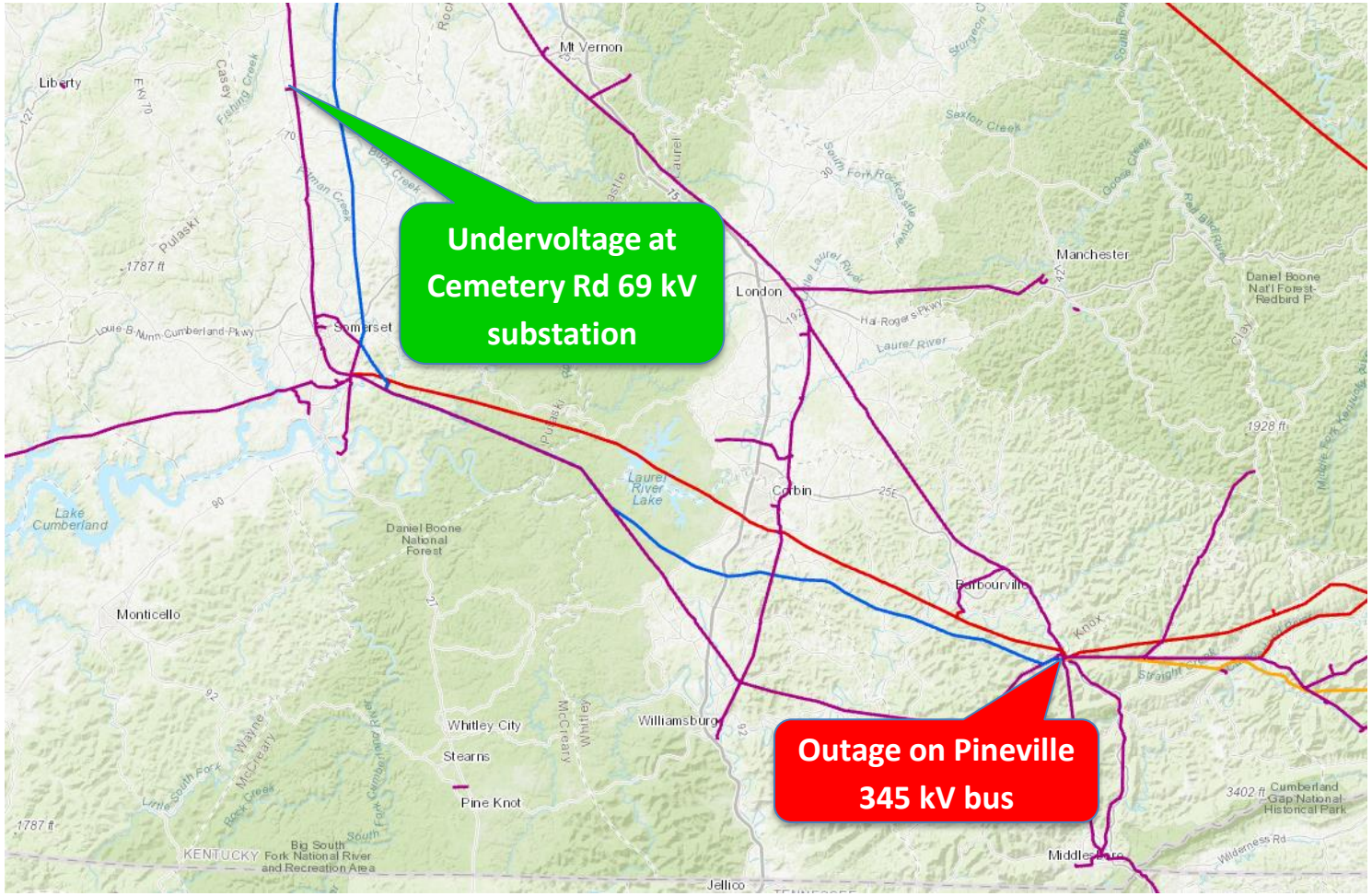
MISO to LGE/KU – 1242 MW

Potential Enhancement Locations – *LG&E/KU*

Southeastern Regional TRANSMISSION PLANNING

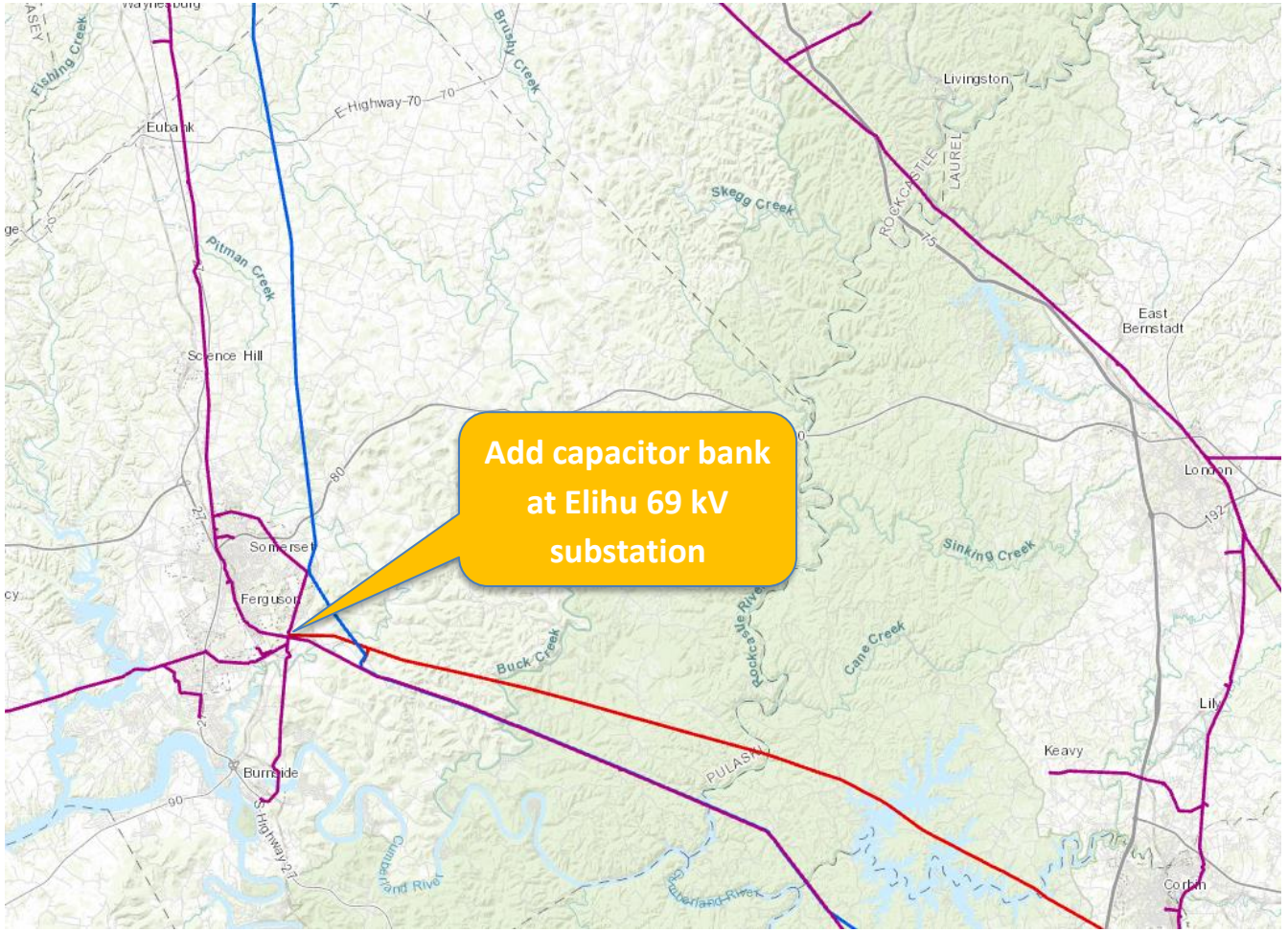
MISO to LGE/KU – 1242 MW

Significant Constraint P1 – *LG&E/KU*



MISO to LGE/KU – 1242 MW

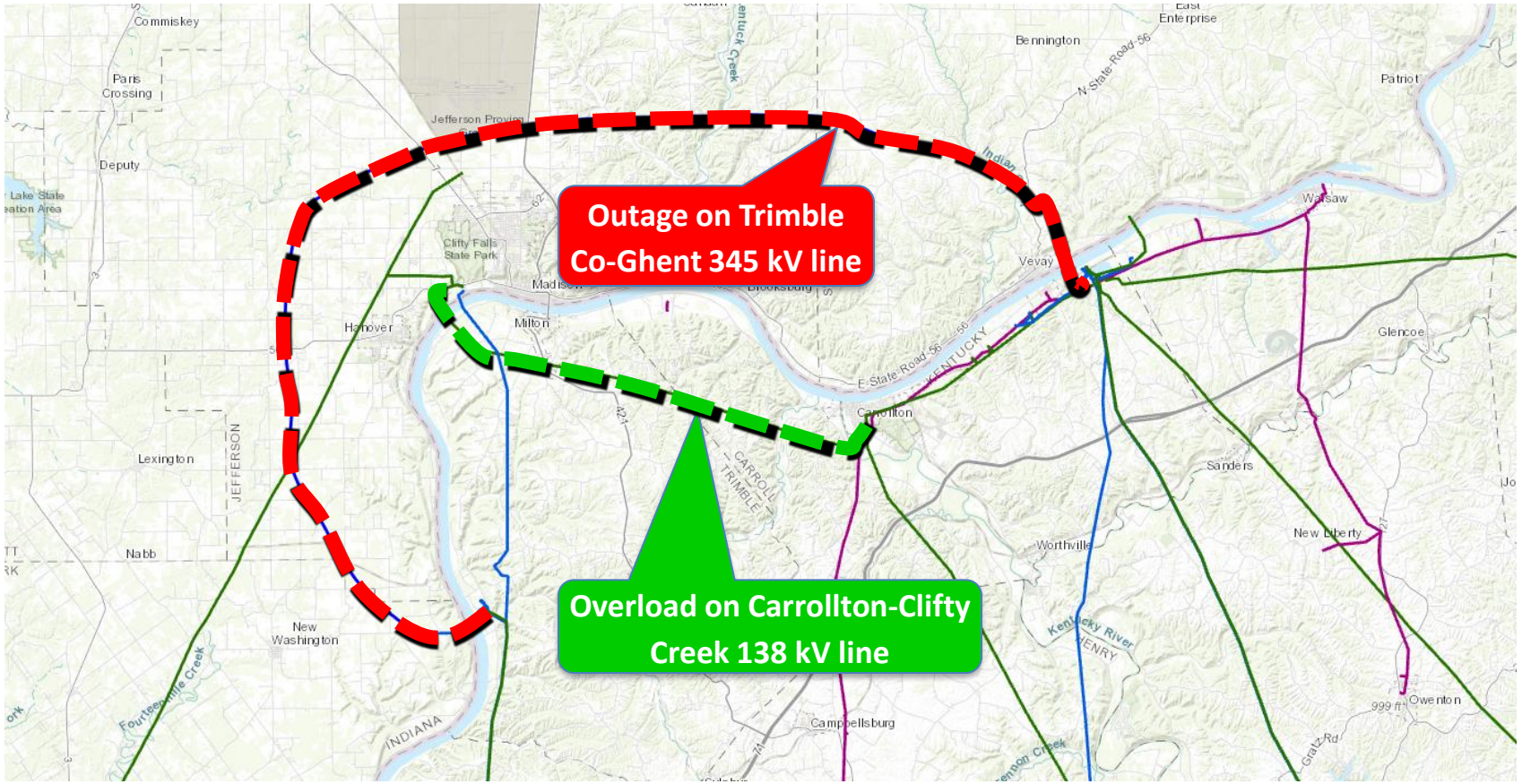
Potential Enhancement P1 – *LG&E/KU*



Southeastern Regional TRANSMISSION PLANNING

MISO to LGE/KU – 1242 MW

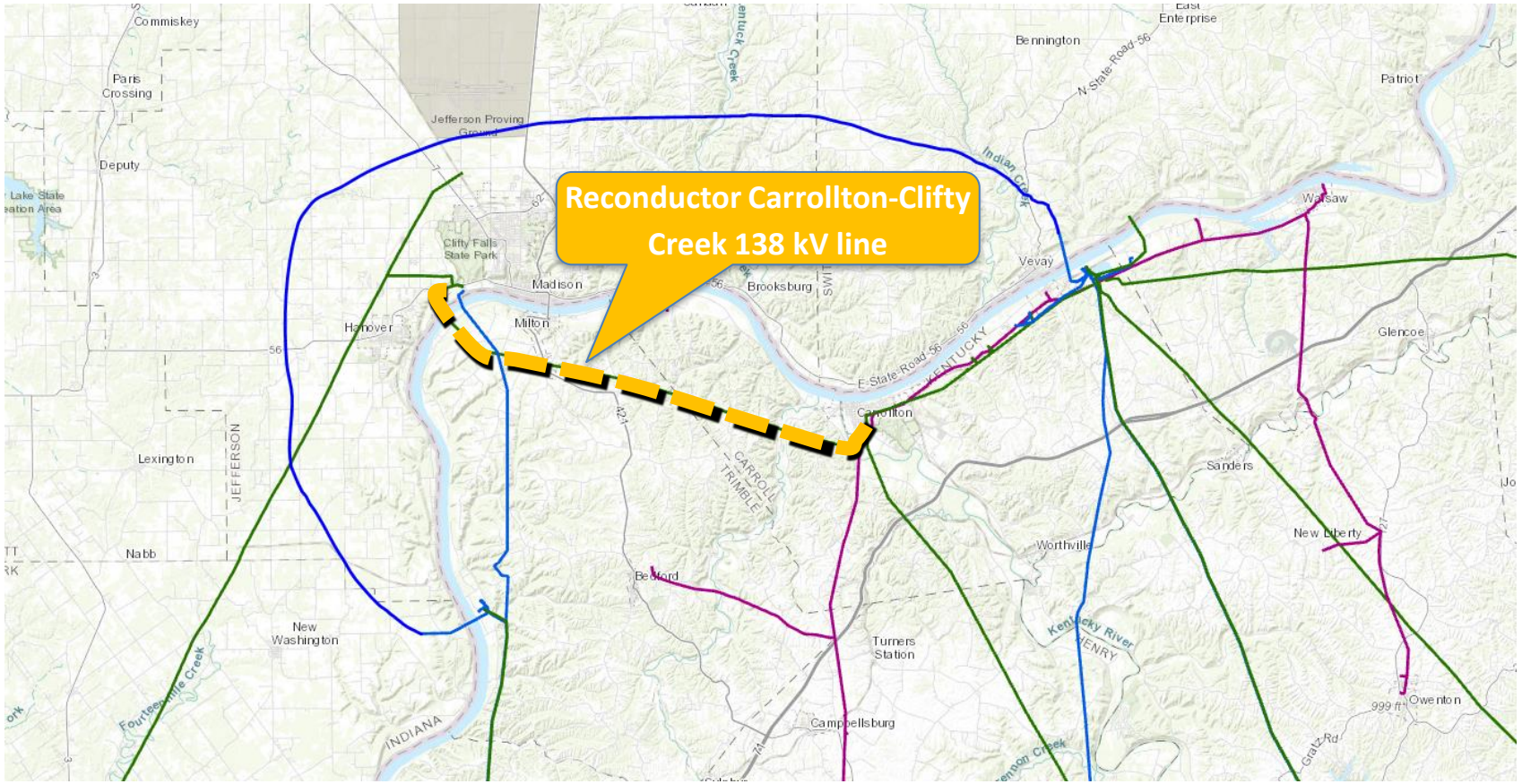
Significant Constraint P2 – *LG&E/KU*



Southeastern Regional TRANSMISSION PLANNING

MISO to LGE/KU – 1242 MW

Potential Enhancement P1 – *LG&E/KU*



Southeastern Regional TRANSMISSION PLANNING

MISO to LGE/KU – 1242 MW

Significant Constraint P3 – *LG&E/KU*

Southeastern Regional TRANSMISSION PLANNING

MISO to LGE/KU – 1242 MW

Potential Enhancement P3 – *LG&E/KU*

MISO to LGE/KU – 1242 MW

Significant Constraints Identified – *TVA*

Significant Constraints - TVA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
N/A*	Bowling Green-East Bowling Green 161 kV	279.4	104.2	109.4

*Project not in version 1 models, but is in the 2023 Expansion Plan

Economic Planning Studies

Economic Planning Studies

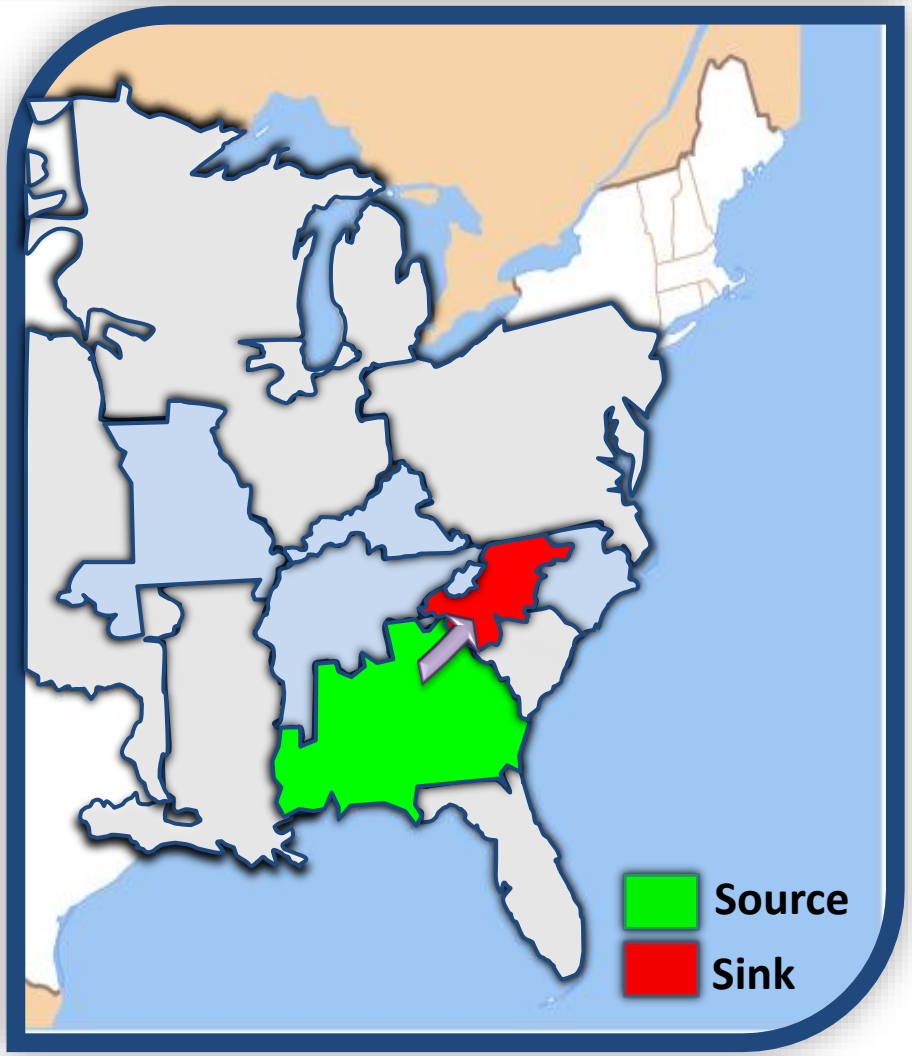
SOCO to DEC – 500MW

Southeastern Regional TRANSMISSION PLANNING

SOCO – DEC 500 MW

Study Assumptions

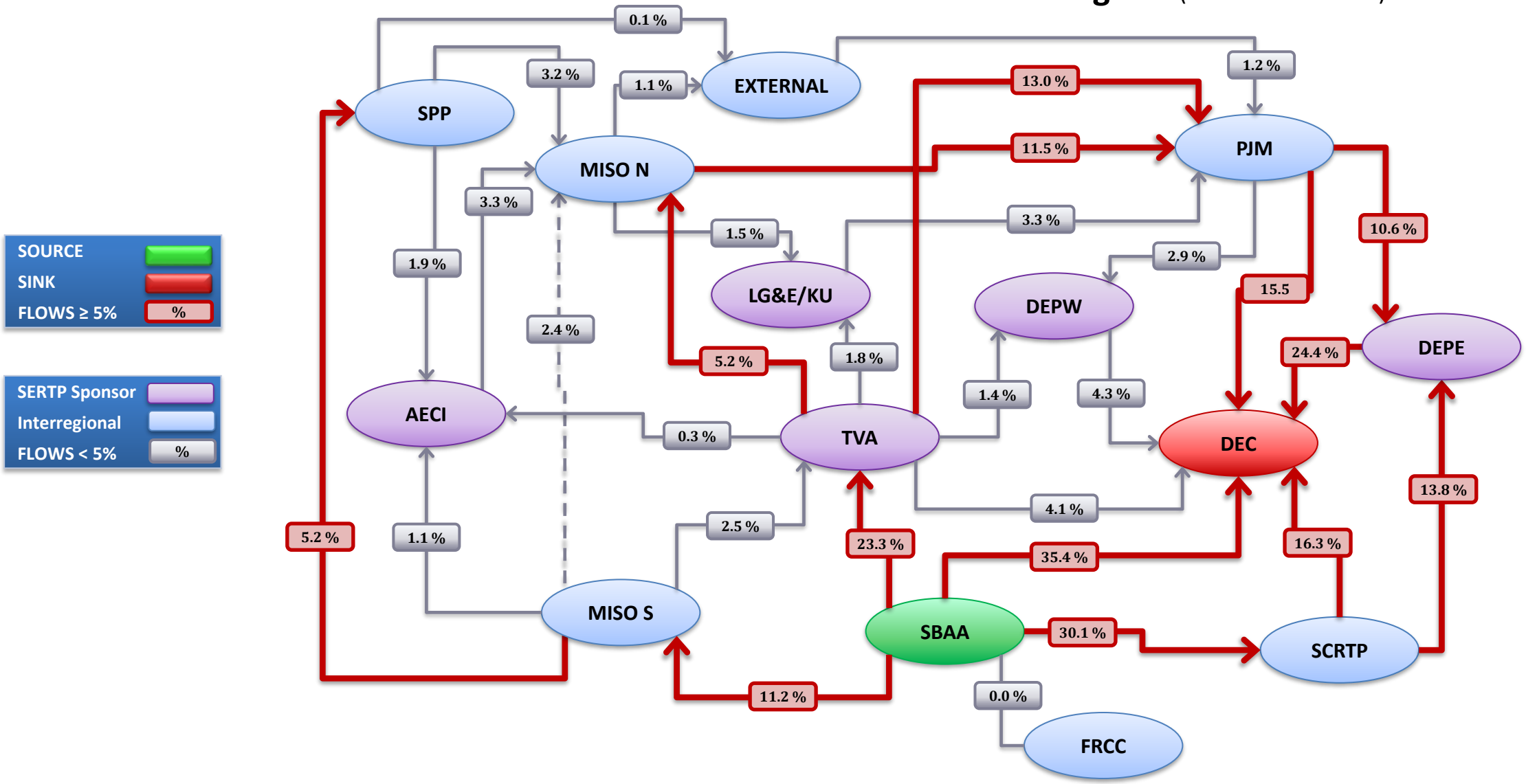
- **Source:** Generation Scale within SOCO
- **Sink:** Uniform Generation with DEC
- **Transfer Type:** Generation to Generation
- **Year:** 2033
- **Load Level:** Summer Peak



Southeastern Regional
TRANSMISSION PLANNING

SOCO – DEC 500 MW

Transfer Flow Diagram (% of Total Transfer)



SOCO – DEC 500 MW

Transmission System Impacts – *SERTP*

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

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

SERTP Total ($2023) = $0

SOCO – DEC 500 MW

Potential Transmission Enhancements – *SERTP*

Potential Transmission Enhancements - 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 ($2023)	**$0**

SERTP

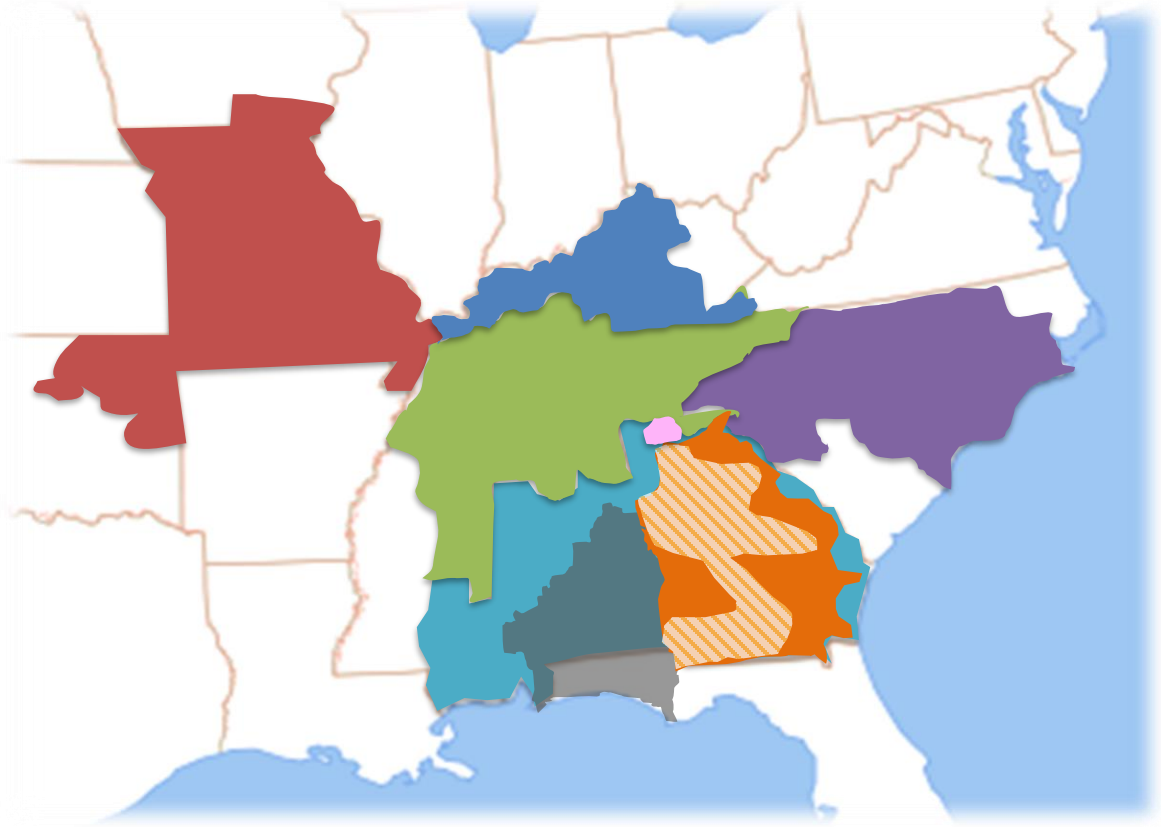
Regional Modeling Assumptions

SERTP

Regional Transmission Plan

2023 SERTP

Southeastern Regional Transmission Planning (SERTP)



SERTP

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

2023 SERTP

Southeastern Regional Transmission Planning (SERTP)

10 YEAR TRANSMISSION EXPANSION PLANS :

AECI

Duke Carolinas

Duke Progress

LG&E/KU

PowerSouth

SBAA

TVA

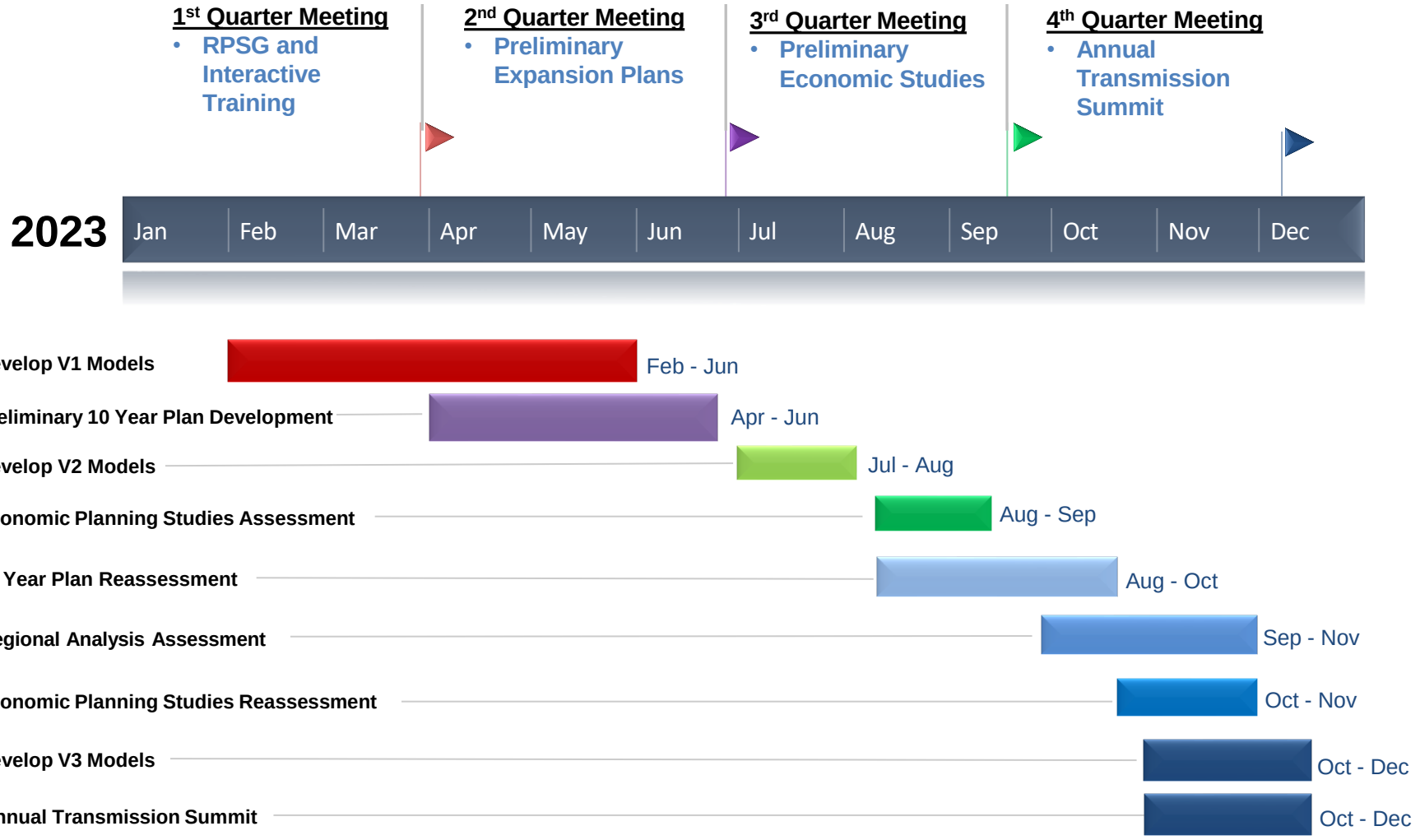
SERTP

Regional Transmission Expansion Plan Process

Southeastern Regional TRANSMISSION PLANNING

2023 SERTP

10 Year SERTP Regional Transmission Expansion Plan Process

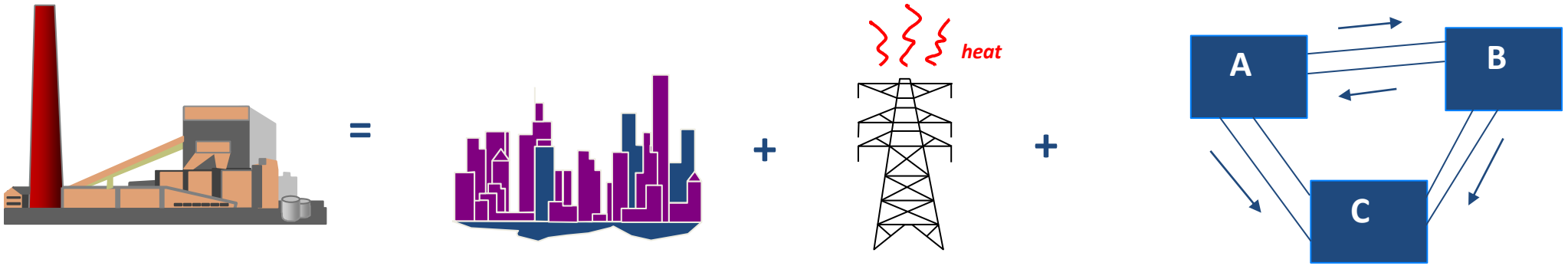


SERTP

Regional Model Assumptions

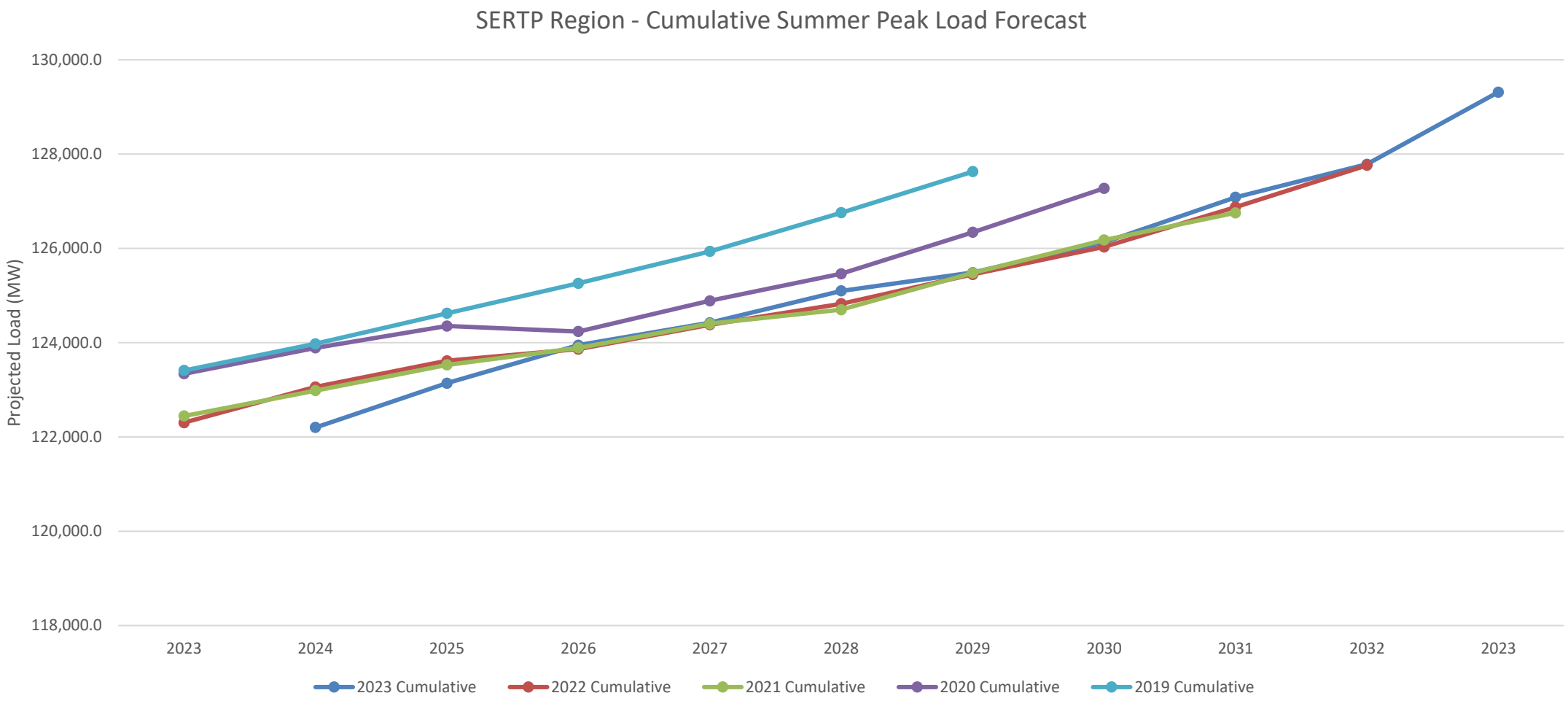
Regional Model Assumptions

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



Regional Transmission Expansion Plan

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

SERTP

Regional Transmission Expansion Plans

AECI Balancing Authority Area

AECI Balancing Authority Area

2023 Generation Assumptions

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

AECI Balancing Authority Area

AECI Balancing Authority Area

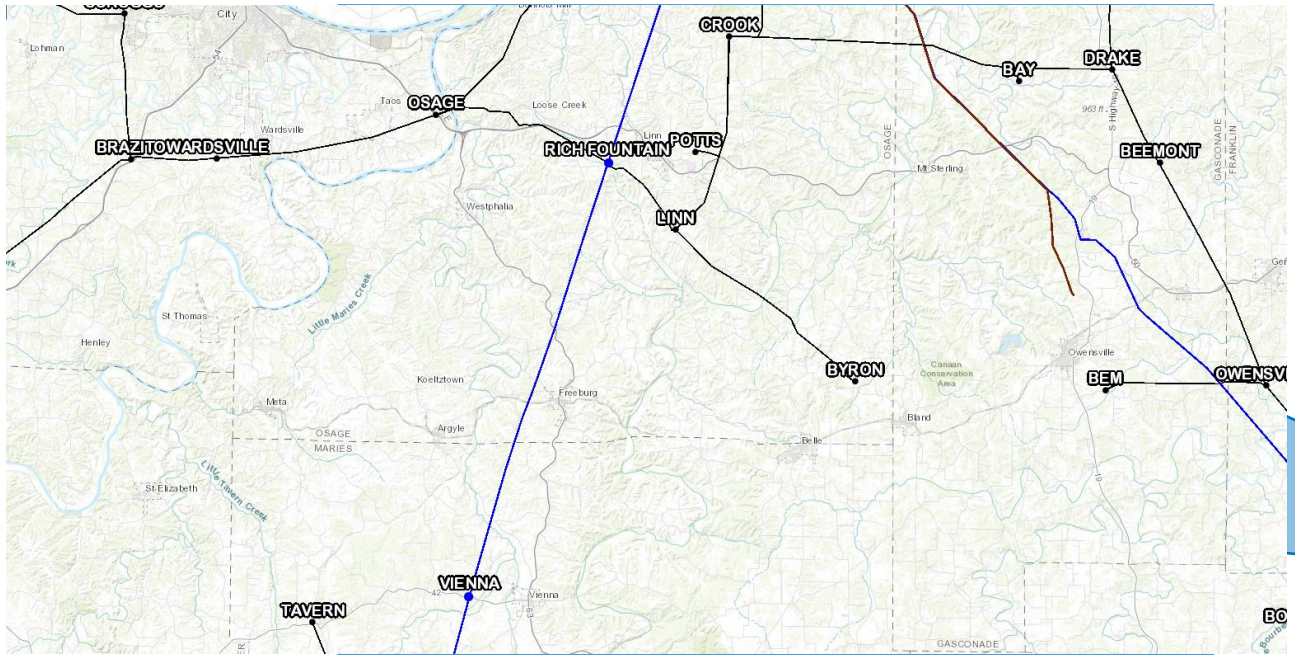
Regional Transmission Expansion Plan

AECI Balancing Authority Area

AECI – 1

- **2023**

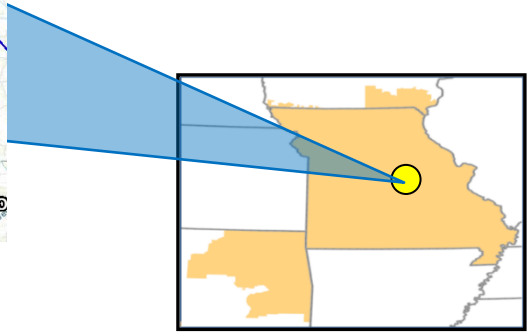
Rich Fountain – Vienna 161 KV TRANSMISSION LINE



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

SUPPORTING STATEMENT:

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

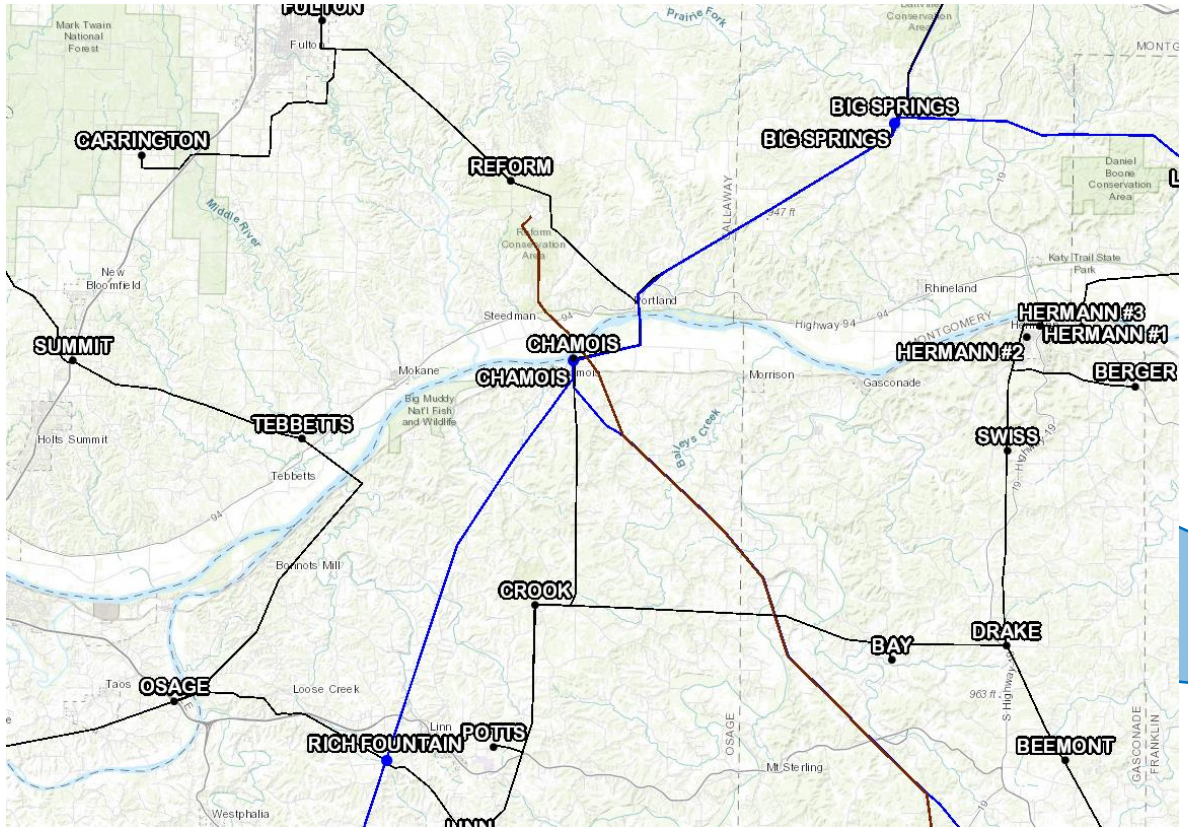


AECI Balancing Authority Area

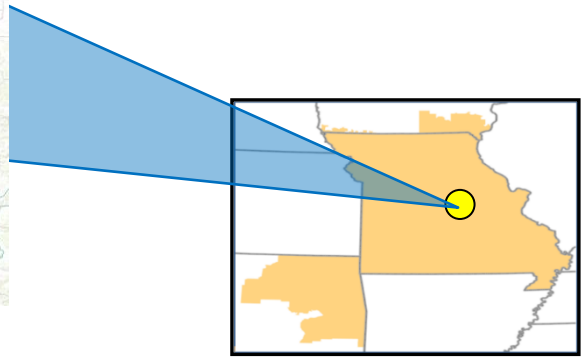
AECI – 2

- **2023**

Rich Fountain – Chamois 161 KV TRANSMISSION LINE



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

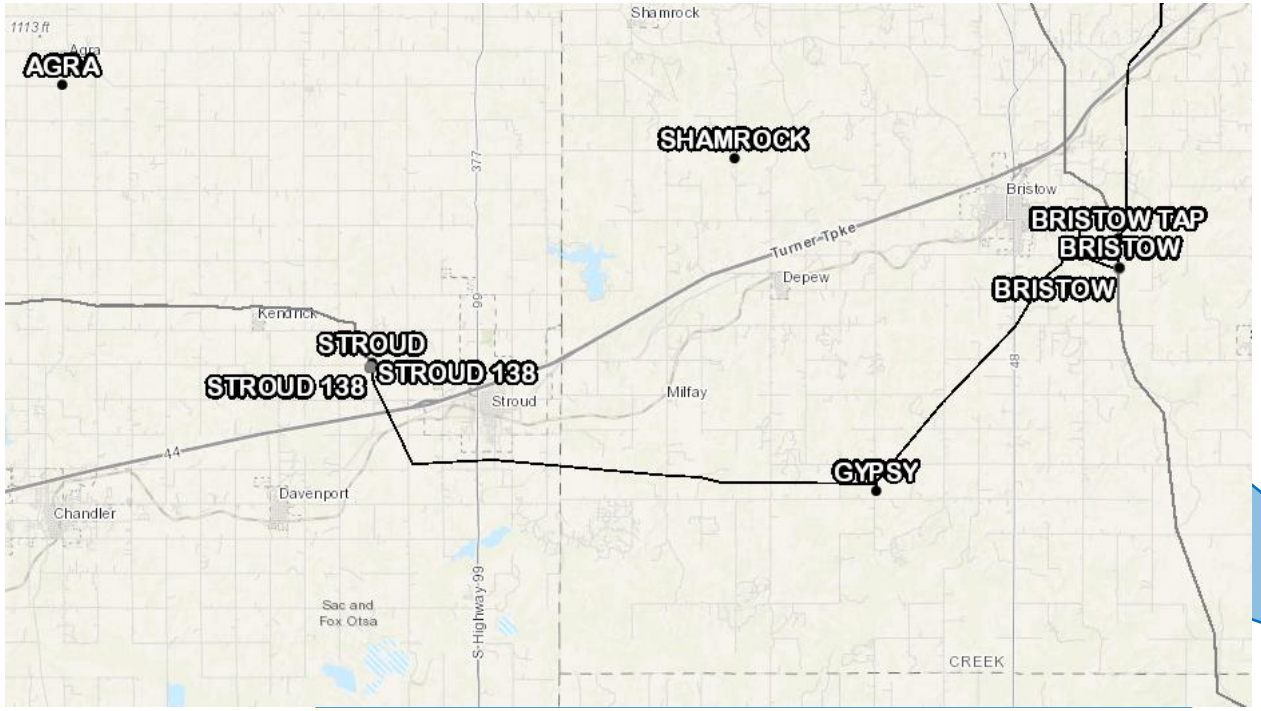


AECI Balancing Authority Area

AECI – 3

- **2025**

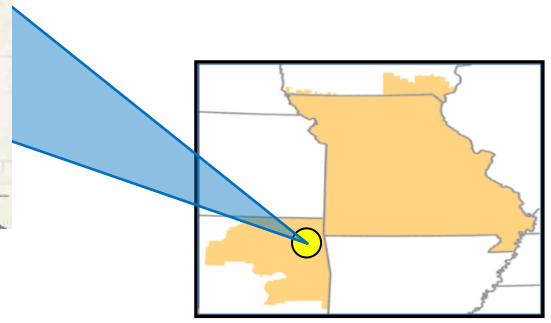
Stroud – Gypsy - Bristow 138 KV TRANSMISSION LINE



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

SUPPORTING STATEMENT:

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



AECI Balancing Authority Area

AECI Balancing Authority Area

Preliminary 2024 Generation Assumptions

* AECI has no known generation changes throughout the ten-year planning horizon for the 2024 SERTP Process.

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS Balancing Authority Area

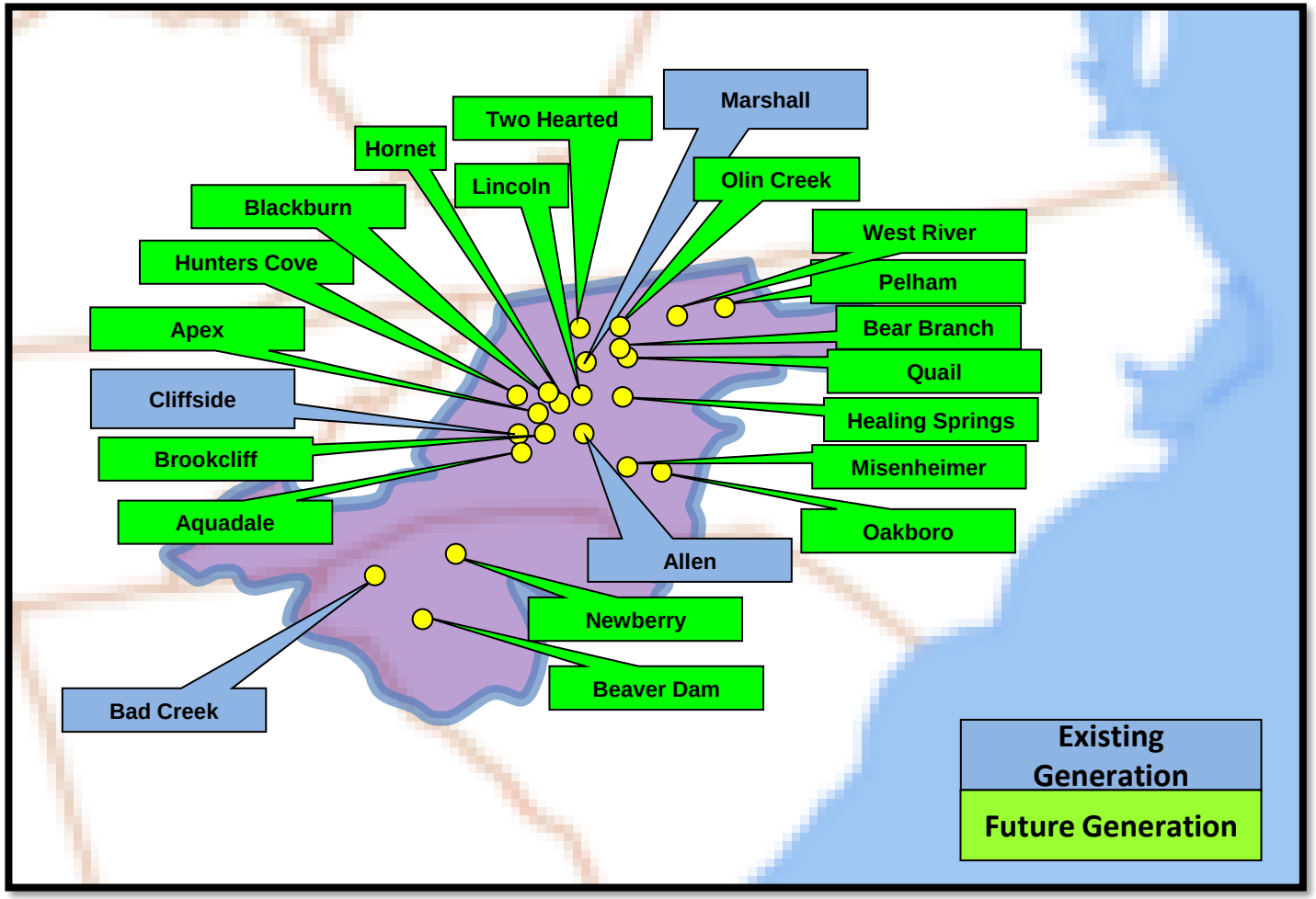
2023 Generation Assumptions

Southeastern Regional TRANSMISSION PLANNING

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS – Generation Assumptions

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



DEC Balancing Authority Area

DEC – Generation Assumptions

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

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Allen 1	COAL	158	0	--	--	--	--	--	--	--	--
Allen 5	COAL	253	0	--	--	--	--	--	--	--	--
Cliffside 5	COAL	574	574	0	--	--	--	--	--	--	--
Marshall 1	COAL	388	388	388	388	388	0	--	--	--	--
Marshall 2	COAL	392	392	392	392	392	0	--	--	--	--
Lincoln 17	GAS	402	402	402	402	402	402	402	402	402	402
Bad Creek 4	Pumped Storage	420	420	420	420	420	420	420	420	420	420
Cliffside 5 Proxy[1]	Proxy Generation	--	--	574	574	574	574	574	574	574	574
Marshall 1Proxy[1]	Proxy Generation	--	--	--	--	--	388	388	388	388	388
Marshall 2 Proxy[1]	Proxy Generation	--	--	--	--	--	392	392	392	392	392

1. Generators left in model in expectation of replacement generation through the Generation Replacement Request process.

DEC Balancing Authority Area

DEC – Generation Assumptions Continued

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

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

Southeastern Regional TRANSMISSION PLANNING

DEC Balancing Authority Area

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

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

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

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS Balancing Authority Area

Regional Transmission Expansion Plan

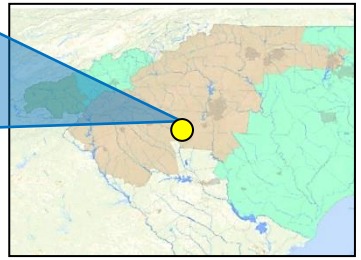
DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 1

- **2024**

Wateree Switching Station – Great Falls Switching Station 100 kV Line

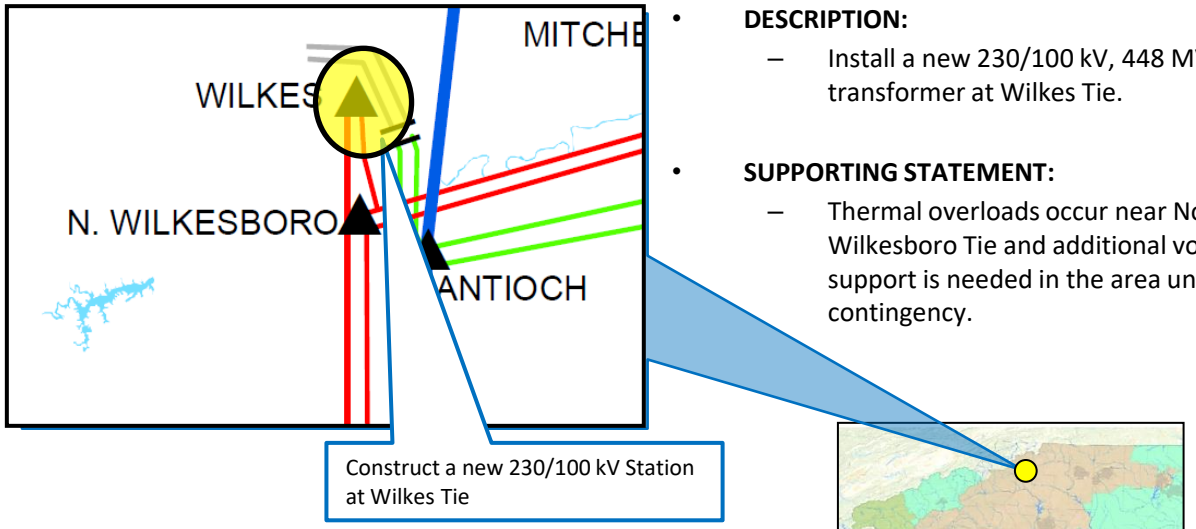
- **DESCRIPTION:**
  - 6-Wire the double circuit Wateree Line
- **SUPPORTING STATEMENT:**
  - Wateree Switching Station – Great Falls Switching Station 100 kV Line can overload under contingency. Project done in conjunction with DEP's Wateree Transformer replacement project



DUKE ENERGY CAROLINAS - 2

- **2025**

WILKES TIE 230 KV SUBSTATION



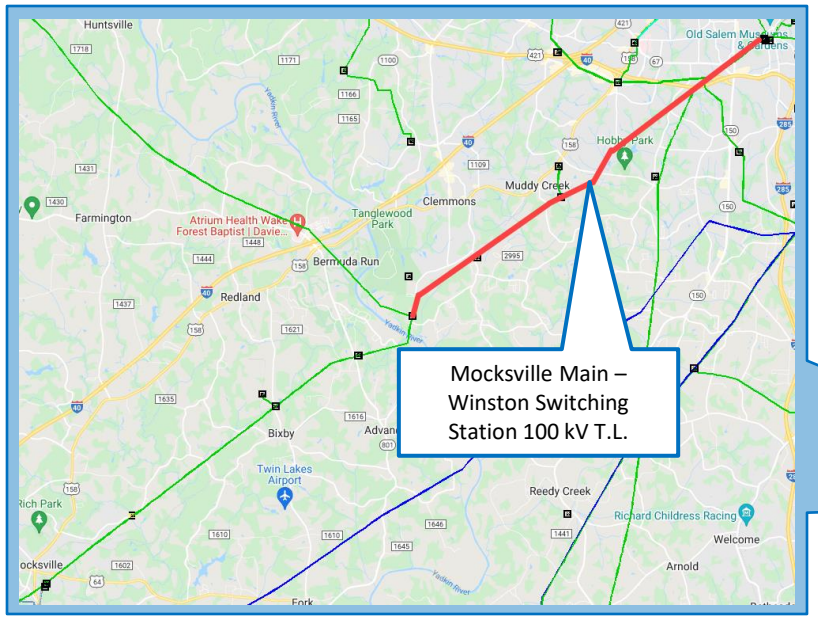
- **DESCRIPTION:**
  - Install a new 230/100 kV, 448 MVA transformer at Wilkes Tie.
- **SUPPORTING STATEMENT:**
  - Thermal overloads occur near North Wilkesboro Tie and additional voltage support is needed in the area under contingency.

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 3

- **2025**

MOCKSVILLE MAIN – WINSTON SWITCHING STATION 100 KV TRANSMISSION LINE

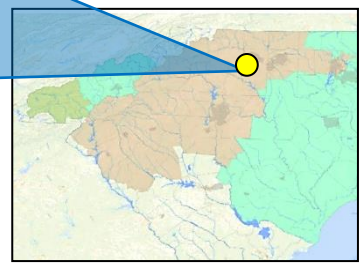


DESCRIPTION:

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

SUPPORTING STATEMENT:

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

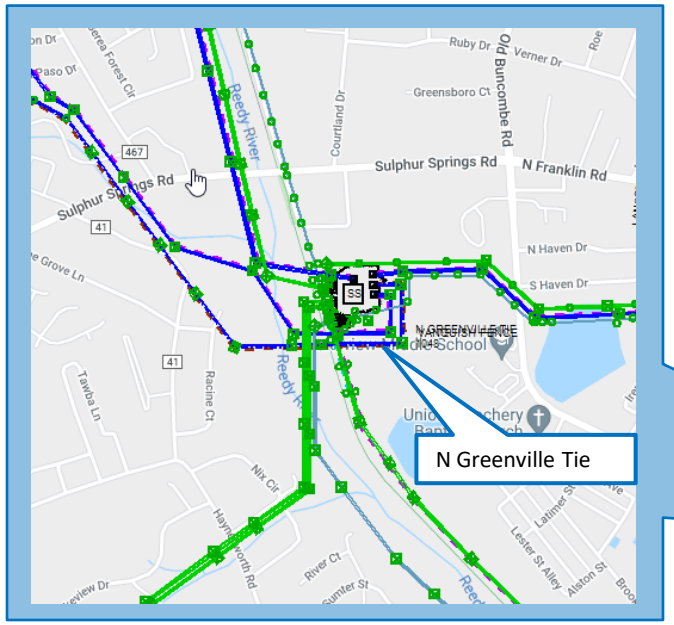


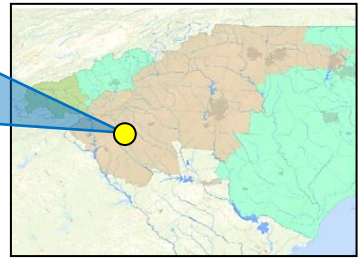
DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 4

- **2025**

NORTH GREENVILLE TIE 230 KV SUBSTATION





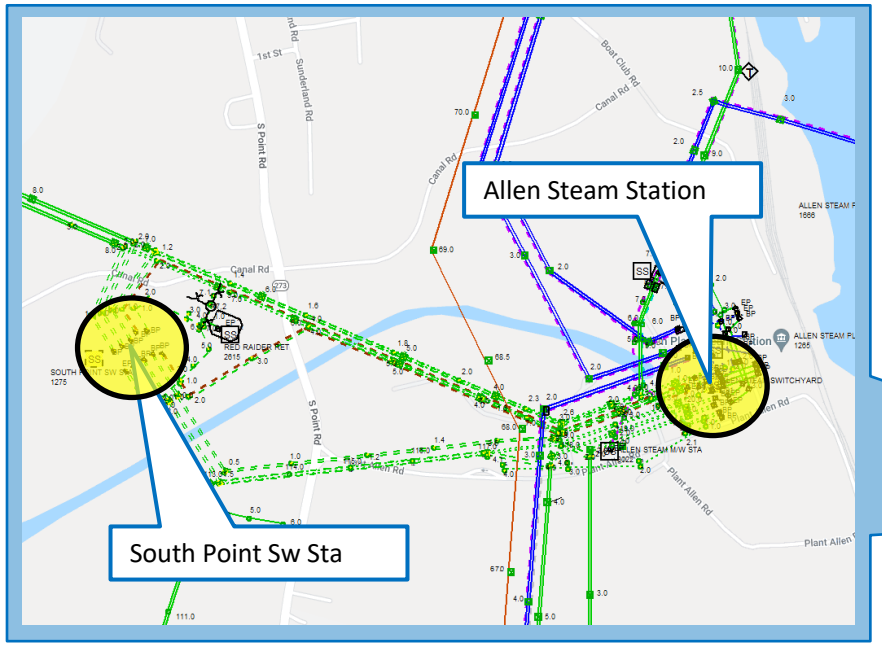
- **DESCRIPTION:**
  - Replace Bank 1 with a new 230/100/44 kV, 448 MVA transformer at N Greenville Tie.
- **SUPPORTING STATEMENT:**
  - North Greenville Bank 1 can overload under contingency

DEC Balancing Authority Area

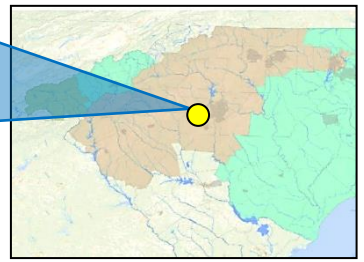
DUKE ENERGY CAROLINAS - 5

- **2025**

ALLEN STEAM STATION AUTOBANK REPLACEMENT / SOUTHPOINT SWITCHING STATION



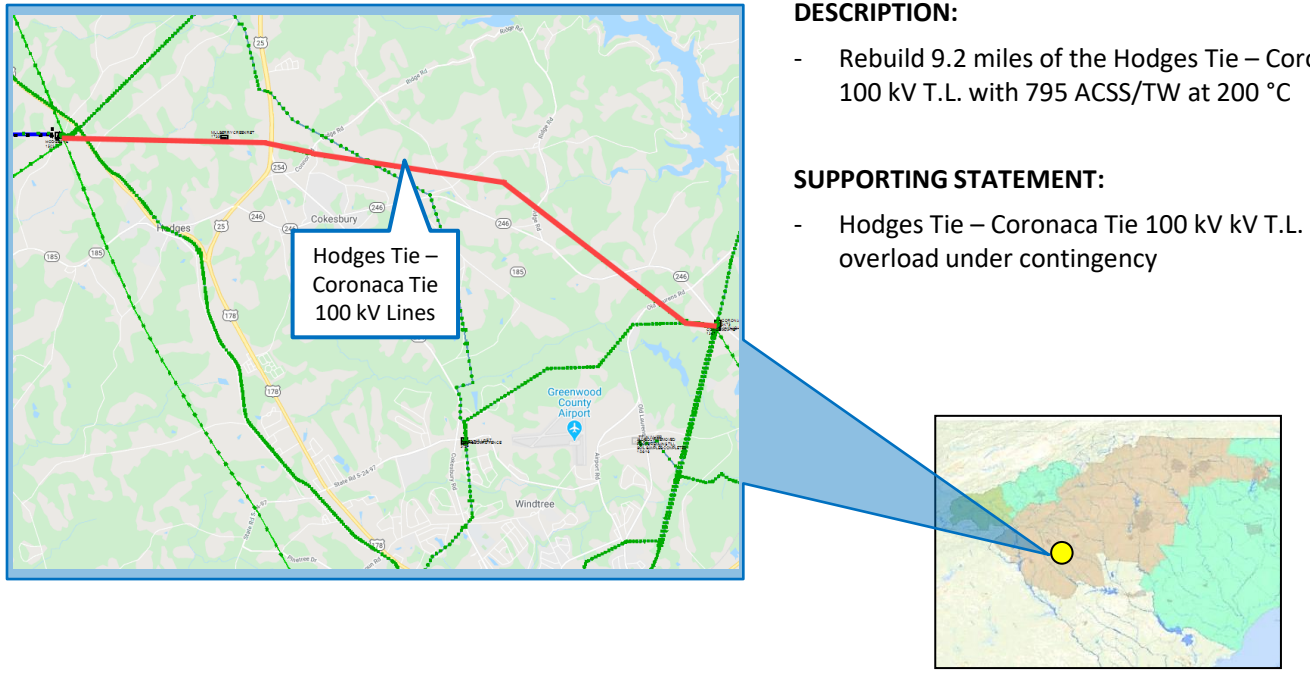
- **DESCRIPTION:**
  - Replace both 230/100/44 kV autobanks at Allen Steam and construct new Southpoint Switching Station
- **SUPPORTING STATEMENT:**
  - Allen Steam Autobanks can overload under contingency



DUKE ENERGY CAROLINAS - 6

- **2025**

HODGES TIE – CORONACA TIE 100 KV TRANSMISSION LINE



DESCRIPTION:

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

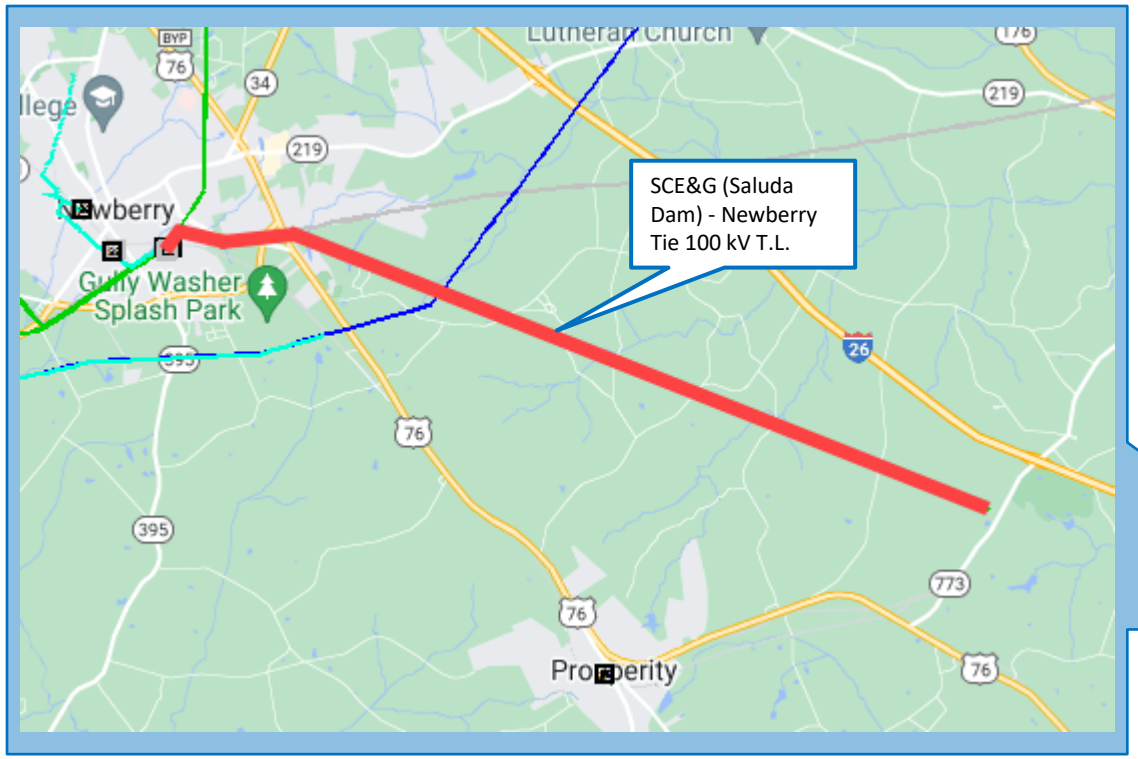
SUPPORTING STATEMENT:

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

DUKE ENERGY CAROLINAS - 7

• **2025**

SCE&G (SALUDA DAM) – BUSH RIVER TIE 100 KV TRANSMISSION LINES

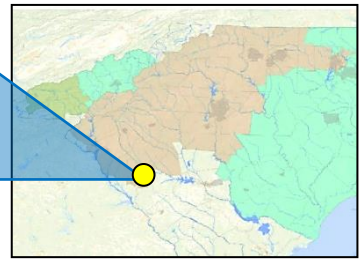


DESCRIPTION:

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

SUPPORTING STATEMENT:

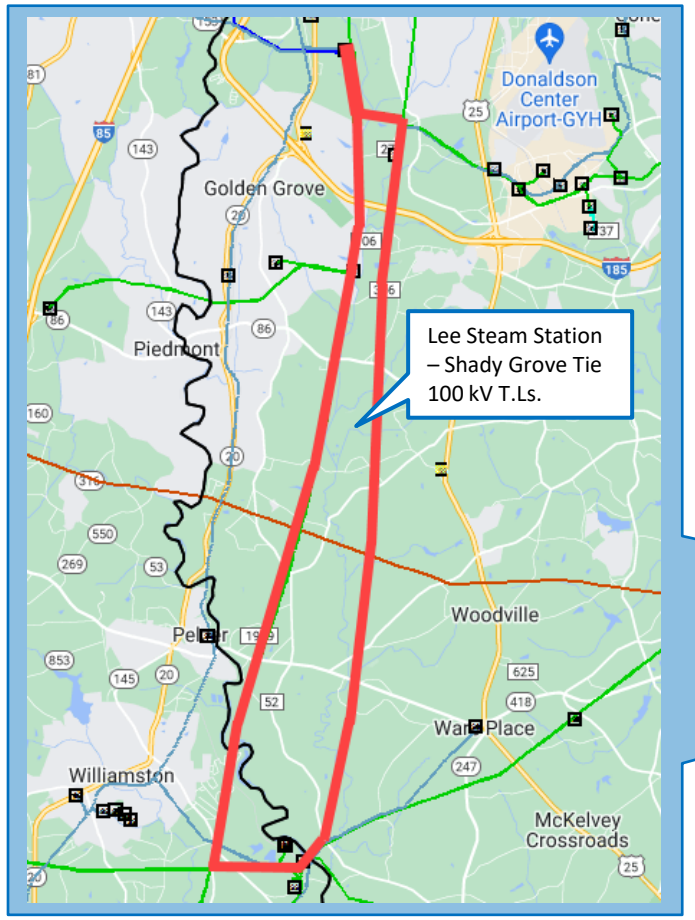
- Support future solar generation in the area and address potential contingency loading conditions on the SCE&G (Saluda Dam) – Bush River Tie 100 kV



DUKE ENERGY CAROLINAS - 8

- **2025/2026**

LEE STEAM STATION - SHADY GROVE TIE 100 KV TRANSMISSION LINES



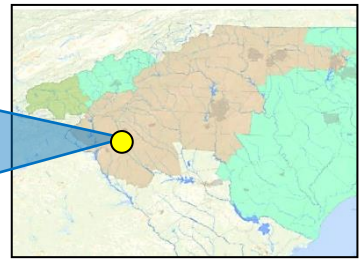
DESCRIPTION:

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

SUPPORTING STATEMENT:

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

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

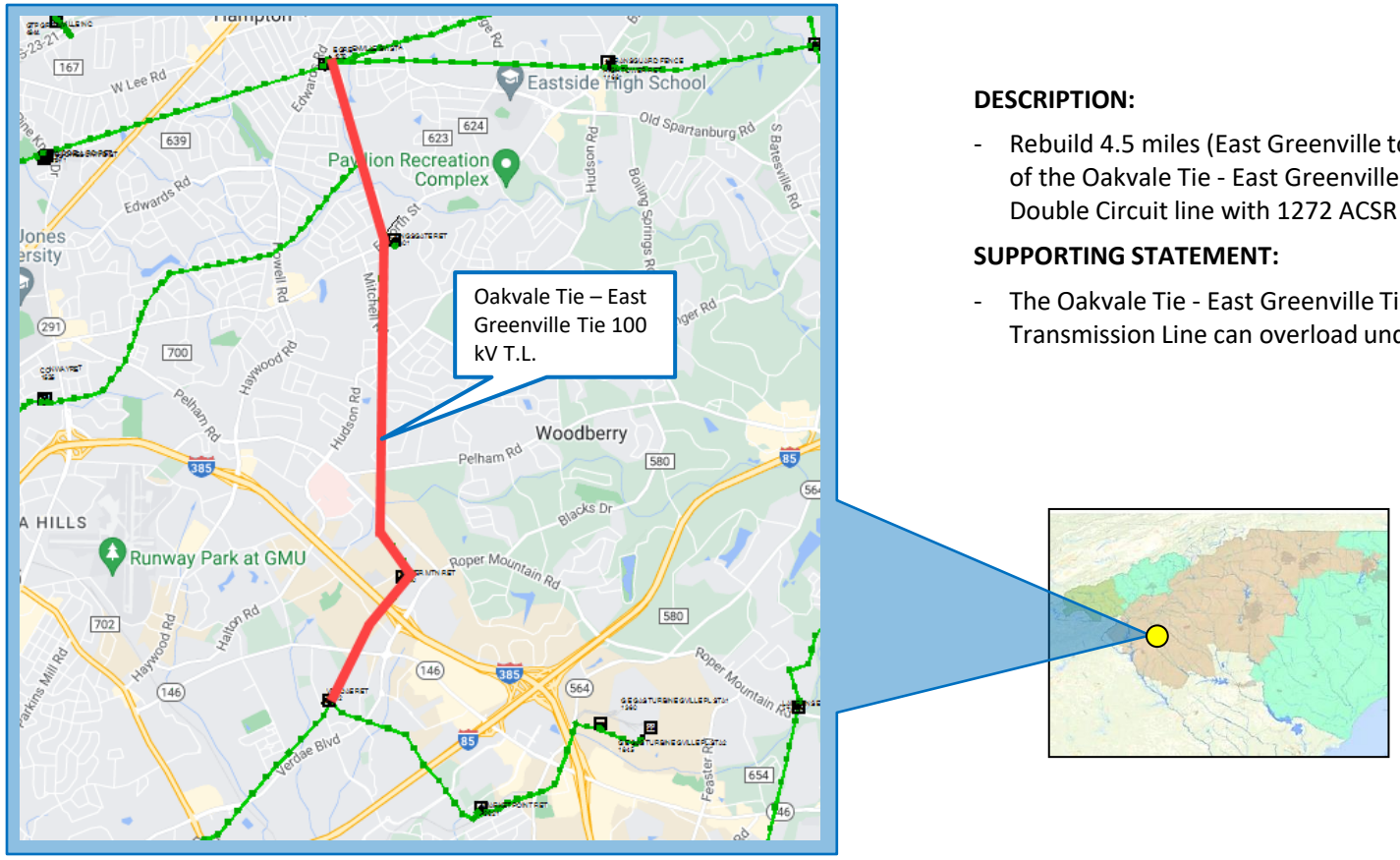


DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 9

- **2026**

OAKVALE TIE – EAST GREENVILLE TIE 100 KV TRANSMISSION LINE



DESCRIPTION:

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

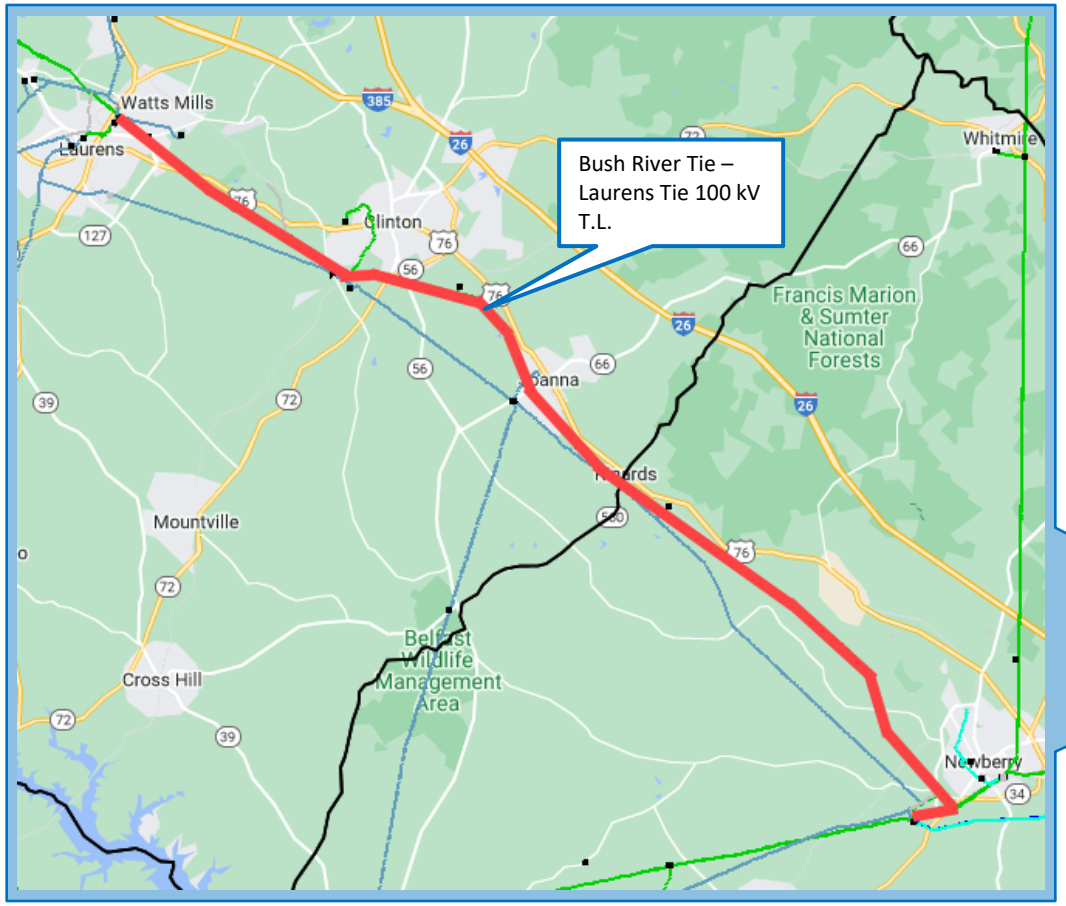
SUPPORTING STATEMENT:

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

DUKE ENERGY CAROLINAS - 10

- **2026**

BUSH RIVER TIE – LAURENS TIE 100 KV TRANSMISSION LINE

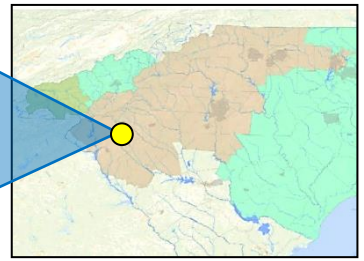


DESCRIPTION:

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

SUPPORTING STATEMENT:

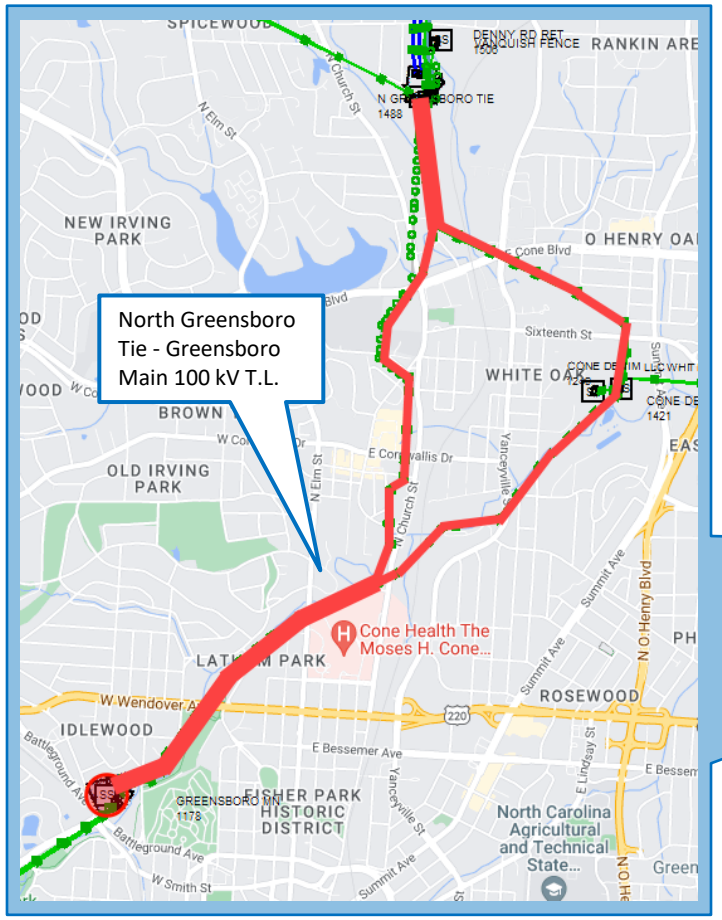
- Support future solar generation in the area and address potential contingency loading conditions on the Bush River Tie - Laurens Tie 100 kV Transmission Line



DUKE ENERGY CAROLINAS - 11

- **2026**

NORTH GREENSBORO TIE - GREENSBORO MAIN 100 KV TRANSMISSION LINES

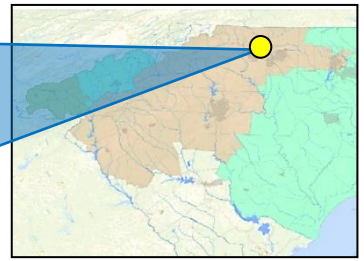


DESCRIPTION:

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

SUPPORTING STATEMENT:

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



DEC Balancing Authority Area

DUKE ENERGY CAROLINAS - 12

- **2026**

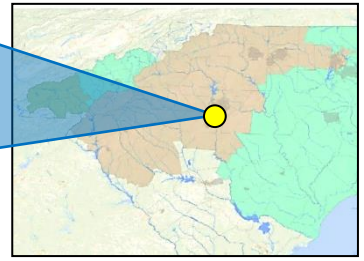
WYLIE SWITCHING STATION – WOODLAWN TIE 100 KV TRANSMISSION LINE

DESCRIPTION:

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

SUPPORTING STATEMENT:

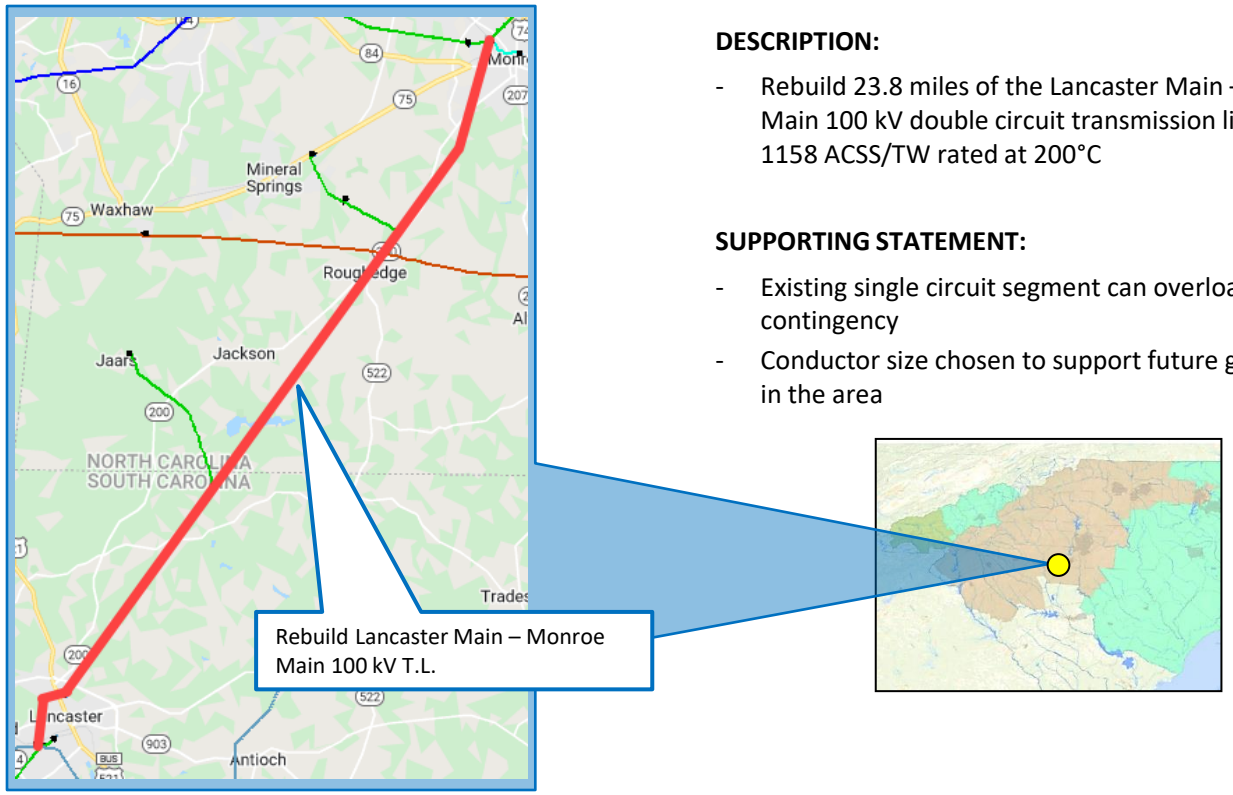
- Wylie Switching Station - Woodlawn Tie 100 kV T. L. can overload under contingency.



DUKE ENERGY CAROLINAS - 13

- **2027**

LANCASTER MAIN – MONROE MAIN 100 kV TRANSMISSION LINE



DESCRIPTION:

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

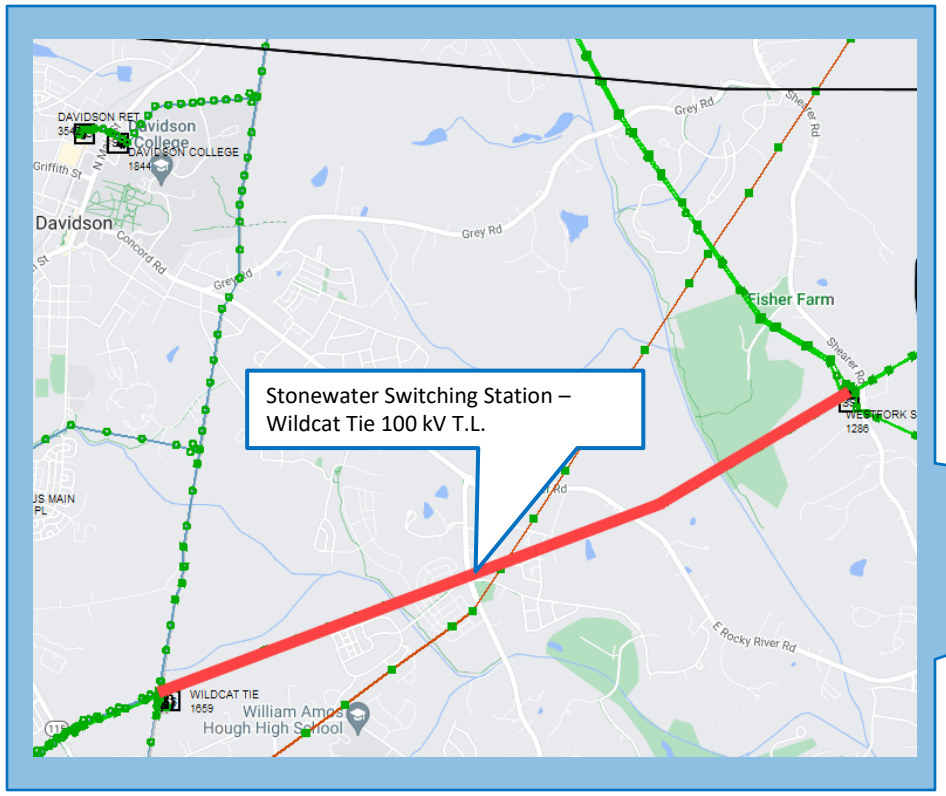
SUPPORTING STATEMENT:

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

DUKE ENERGY CAROLINAS - 14

- **2029**

STONEWATER TIE - WESTFORK SWITCHING STATION 100 KV TRANSMISSION LINES

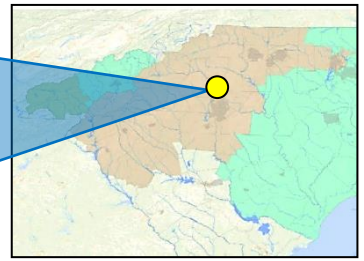


DESCRIPTION:

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

SUPPORTING STATEMENT:

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



DUKE ENERGY CAROLINAS - 15

- **2029**

NEWPORT TIE – MORNING STAR TIE 230 KV TRANSMISSION LINE

DESCRIPTION:

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

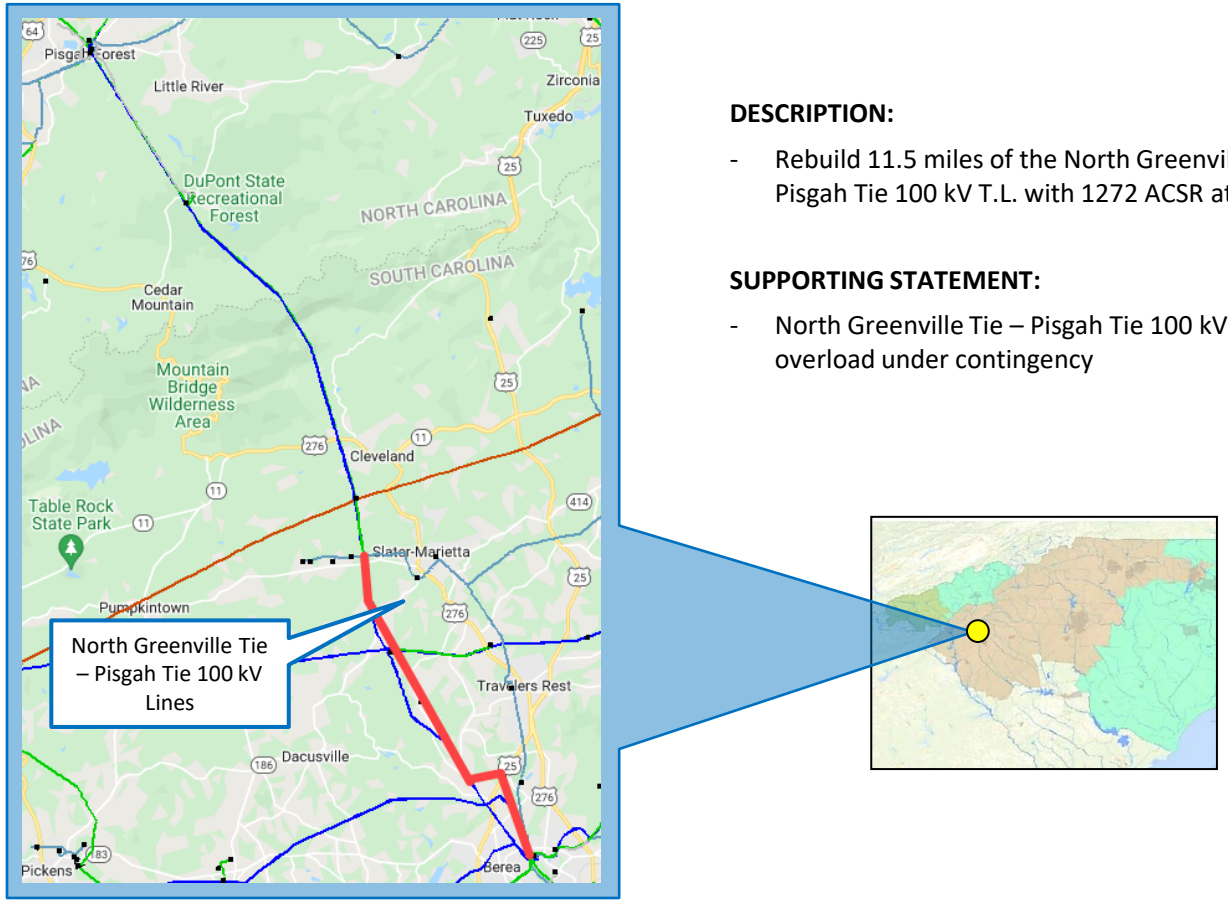
SUPPORTING STATEMENT:

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

DUKE ENERGY CAROLINAS - 16

- **2030**

NORTH GREENVILLE TIE - PISGAH TIE 100 KV TRANSMISSION LINE



DESCRIPTION:

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

SUPPORTING STATEMENT:

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

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS Balancing Authority Area

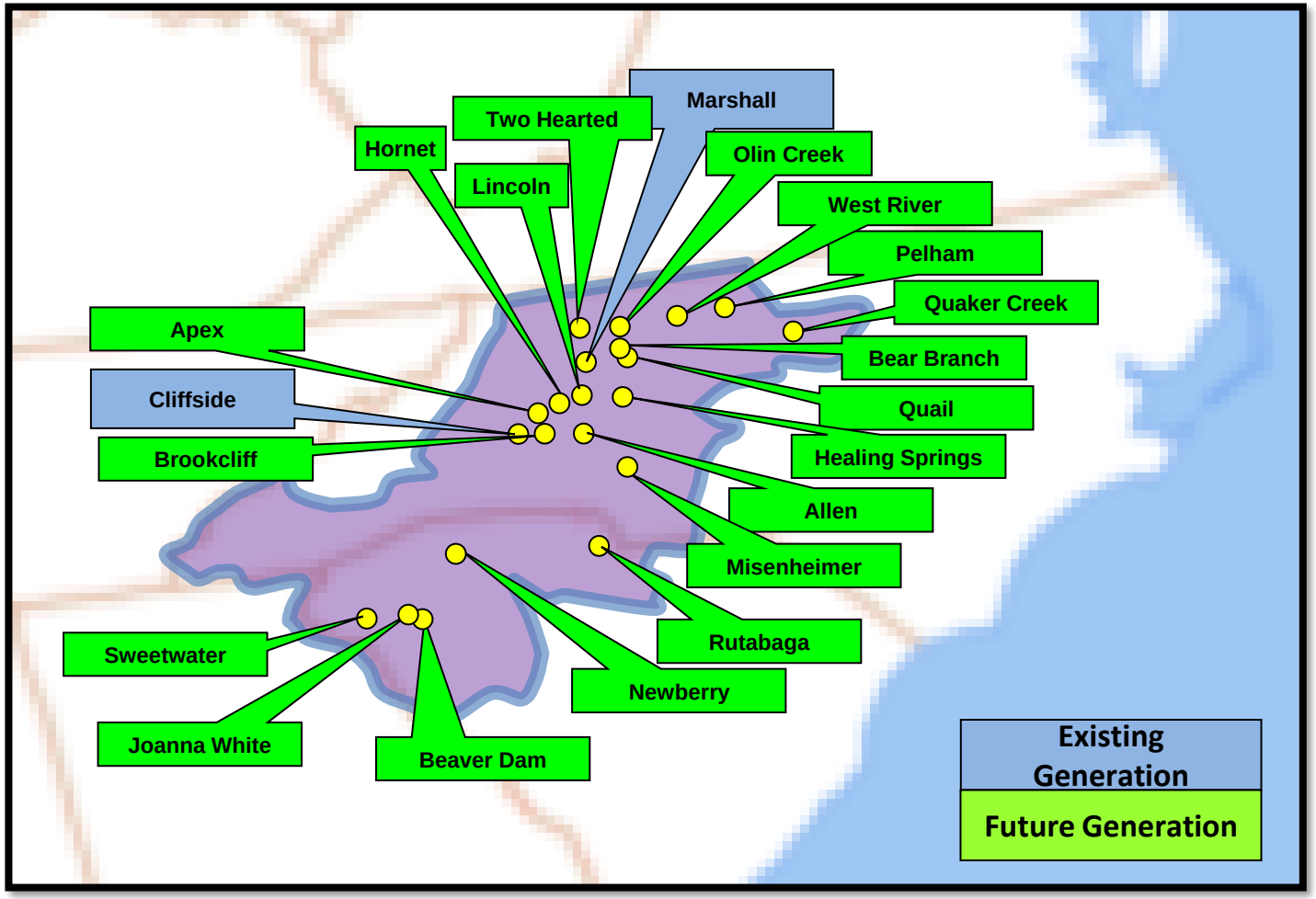
Preliminary 2024 Generation Assumptions

Southeastern Regional TRANSMISSION PLANNING

DEC Balancing Authority Area

DUKE ENERGY CAROLINAS – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2024 SERTP Process.



DEC Balancing Authority Area

DEC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Cliffside 5	COAL	574	0	--	--	--	--	--	--	--	--
Marshall 1	COAL	388	388	388	388	0	--	--	--	--	--
Marshall 2	COAL	392	392	392	392	0	--	--	--	--	--
Lincoln 17	GAS	402	402	402	402	402	402	402	402	402	402
Cliffside 5 Proxy[1]	Proxy Generation	--	574	574	574	574	574	574	574	574	574
Marshall 1 Proxy[1]	Proxy Generation	--	--	--	--	388	388	388	388	388	388
Marshall 2 Proxy[1]	Proxy Generation	--	--	--	--	392	392	392	392	392	392
Apex	Solar	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
Misenheimer	Solar	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4	74.4
Olin Creek	Solar	35	35	35	35	35	35	35	35	35	35
Pelham	Solar	32	32	32	32	32	32	32	32	32	32
Two Hearted	Solar	22	22	22	22	22	22	22	22	22	22

1. Generators left in model in expectation of replacement generation through the Generation Replacement Request process.

DEC Balancing Authority Area

DEC – Generation Assumptions Continued

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Brookcliff	Solar	50	50	50	50	50	50	50	50	50	50
Newberry	Solar	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5
Quail	Solar	30	30	30	30	30	30	30	30	30	30
West River	Solar		40	40	40	40	40	40	40	40	40
Bear Branch	Solar	--	35	35	35	35	35	35	35	35	35
Healing Springs	Solar	--	55	55	55	55	55	55	55	55	55
Hornet	Solar	--	75	75	75	75	75	75	75	75	75
Quaker Creek Farm	Solar	--	--	35	35	35	35	35	35	35	35
Beaverdam	Solar	--	--	42	42	42	42	42	42	42	42
Joanna White	Solar	--	--	--	37.5	37.5	37.5	37.5	37.5	37.5	37.5
Sweetwater	Solar	--	--	--	34	34	34	34	34	34	34
Rutabaga	Solar	--	--	--	--	69.75	69.75	69.75	69.75	69.75	69.75
Allen	Storage	--	--	50	50	50	50	50	50	50	50

Southeastern Regional TRANSMISSION PLANNING

DEC Balancing Authority Area

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

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments for the SERTP 2024 Planning Process. The years shown represent Summer Peak conditions.

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

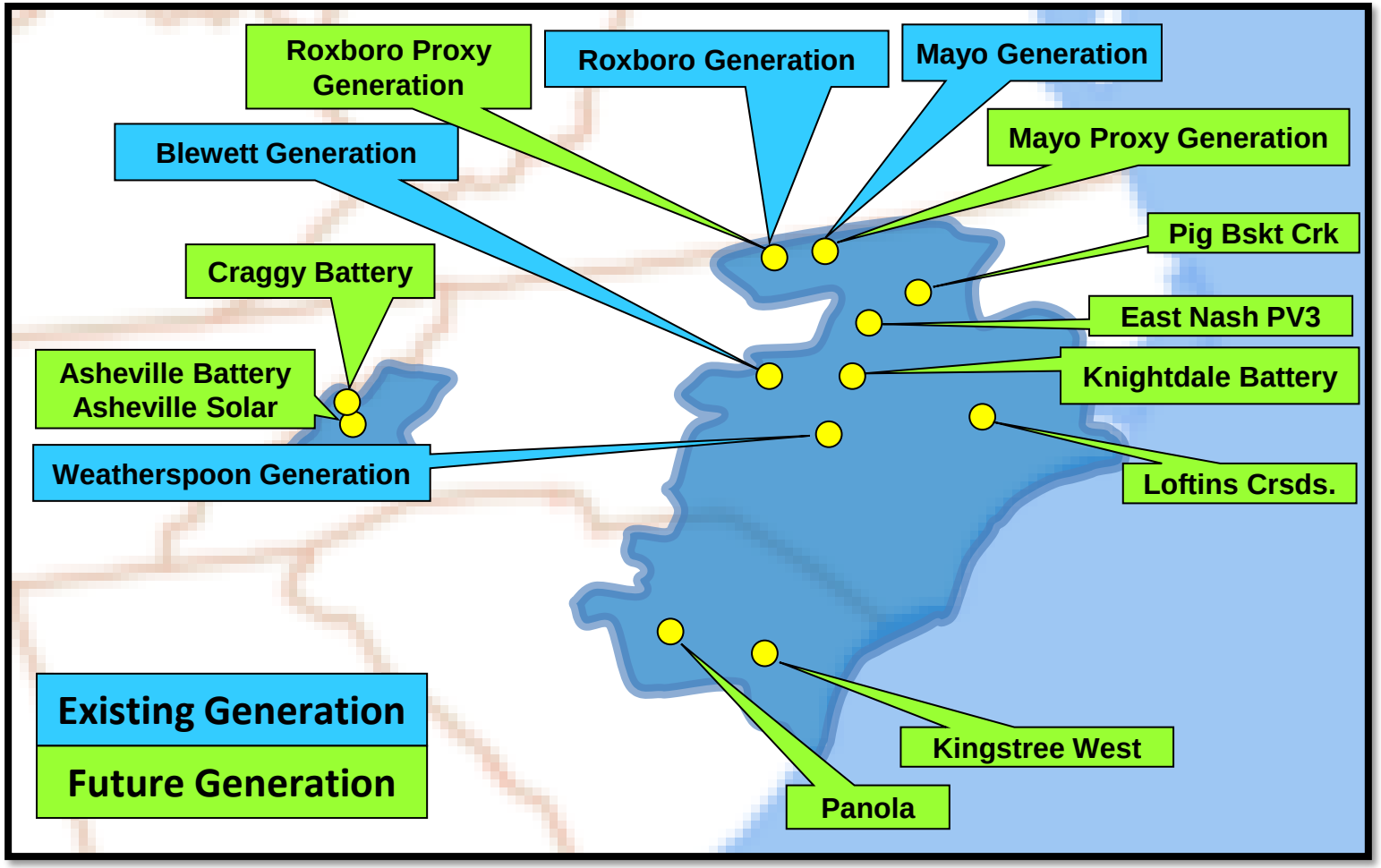
DUKE ENERGY PROGRESS EAST/WEST

Balancing Authority Areas

2023 Generation Assumptions

DUKE ENERGY PROGRESS – Generation Assumptions

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



DUKE ENERGY PROGRESS – Generation Assumptions

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

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

DUKE ENERGY PROGRESS – Generation Assumptions (Cont.)

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

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

DUKE ENERGY PROGRESS – Generation Assumptions (Cont.)

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

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
ASHEVILLE SOLAR	PV	--	--	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
PANOLA	PV	--	67	67	67	67	67	67	67	67	67
EAST NASH PV3	PV	--	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4
LOFTINS XROADS PV	PV	--	75	75	75	75	75	75	75	75	75
PIG BSKT CRK PV	PV	--	80	80	80	80	80	80	80	80	80
KNIGHTDALE BATTERY	BATTERY	--	100	100	100	100	100	100	100	100	100
KINGSTREE WEST	PV	--	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9
CRAGGY BATTERY	BATTERY	--	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
ASHEVILLE BATTERY	BATTERY	--	--	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25

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

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

SITE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
HAMLET #1 AND #2	110	110	110	110	110	110	110	110	110	110
HAMLET #6	55	55	55	55	55	55	55	55	55	55
HAMLET #3	0	4	6	9	9	11	13	14	0	0

DUKE ENERGY PROGRESS EAST

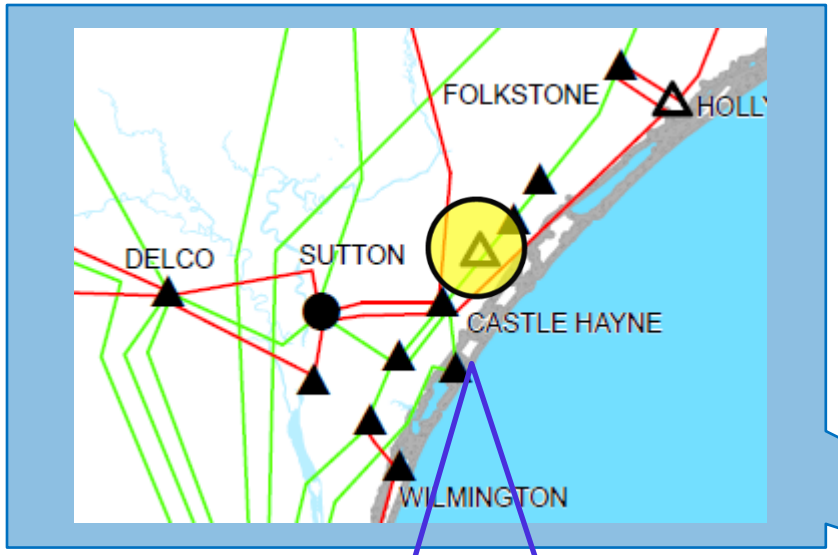
Balancing Authority Area

Regional Transmission Expansion Plan

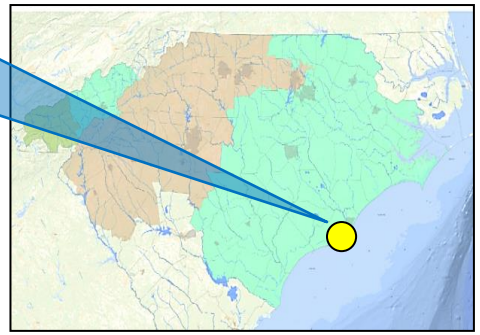
DUKE ENERGY PROGRESS EAST – 1

- **2023**

Castle Hayne-Folkstone 230 kV Line, Construct Porters Neck 230 kV Tap Line



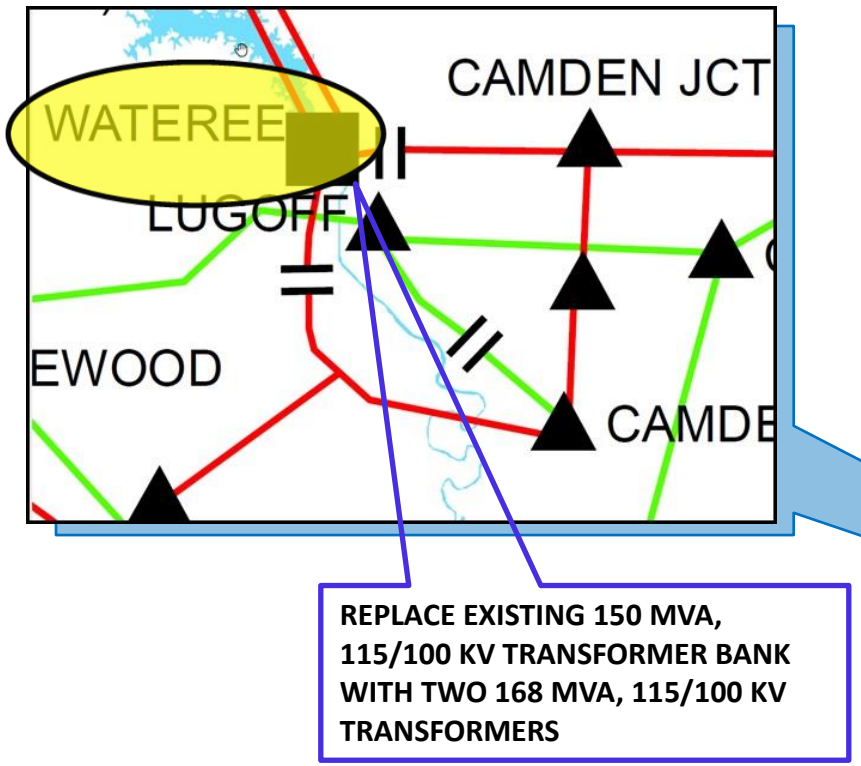
- **DESCRIPTION:**
  - Construct 4.5-mile Porters Neck 230 kV tap line on the Castle Hayne-Folkstone 230 kV line using 3-795 MCM or equivalent.
- **SUPPORTING STATEMENT:**
  - The tap line is required to serve the new Porters Neck 230 kV T-D Substation.



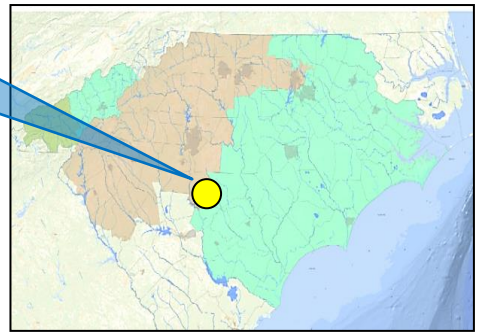
DUKE ENERGY PROGRESS EAST – 2

- **2023**

WATEREE HYDRO PLANT – REPLACE 115/100 KV TRANSFORMERS



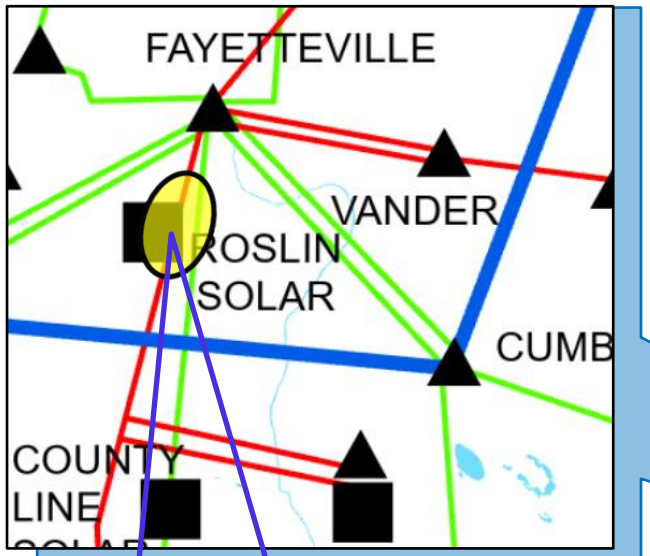
- **DESCRIPTION:**
  - Replace existing 150 MVA, 115/100 kV transformer bank with two 168 MVA, 115/100 kV transformers. Project to be done in conjunction with Duke Energy Carolinas' Wateree Line 6-wire project.
- **SUPPORTING STATEMENT:**
  - The existing Wateree transformer bank overloads under contingency.



DUKE ENERGY PROGRESS EAST – 3

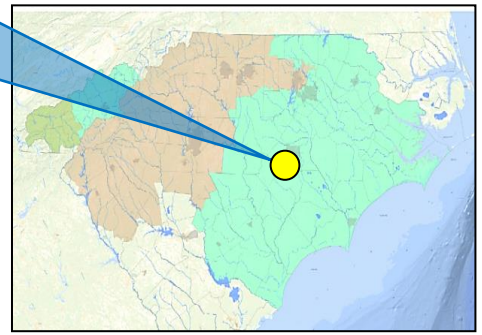
- **2024**

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



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

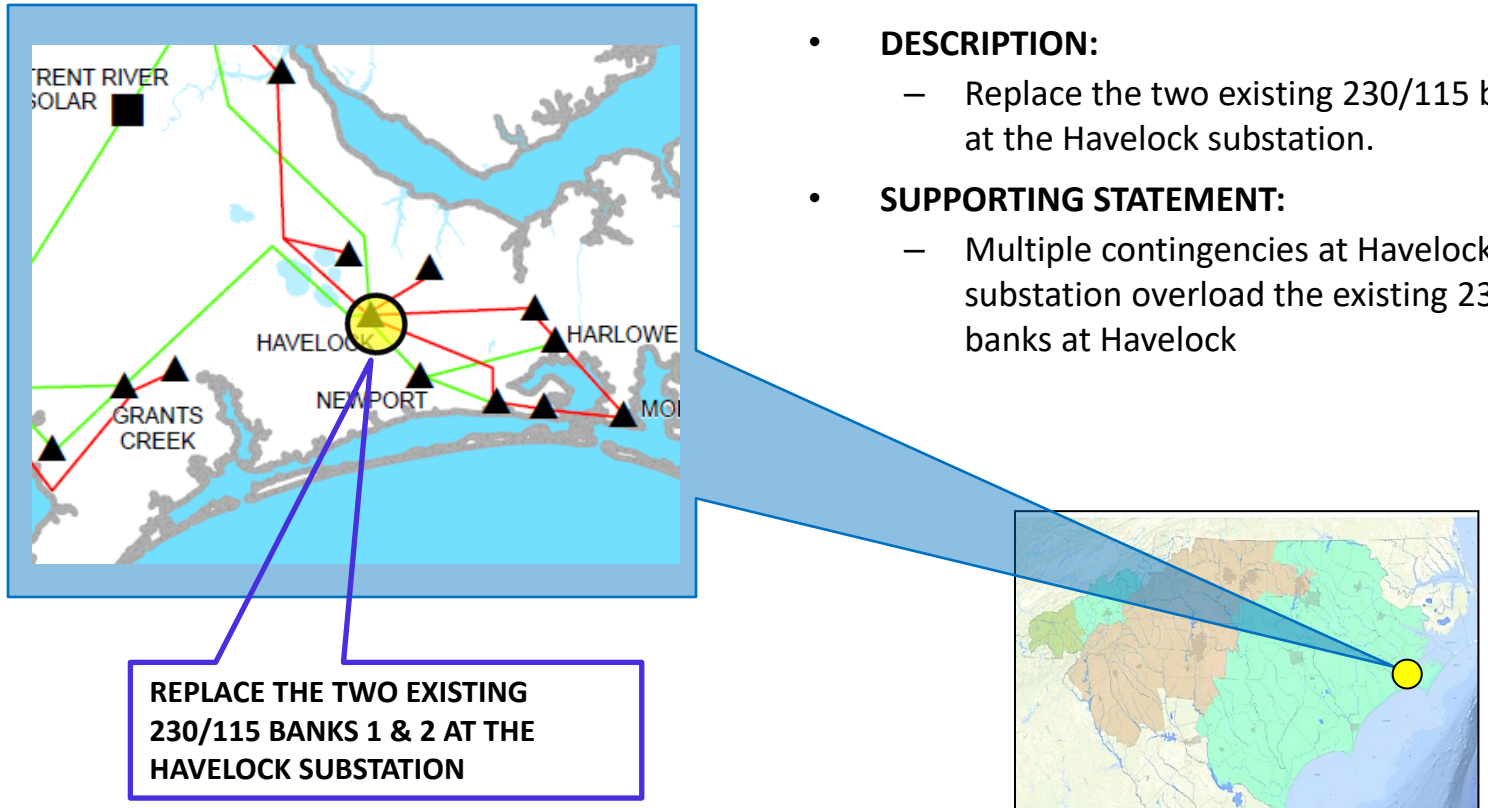
- **DESCRIPTION:**
  - Reconductor approximately 3.2 miles Hope Mills Church Street – Roslin Solar section of the Fayetteville – Fayetteville Dupont SS 115kV Line with 3-1590 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - Outage of the Weatherspoon-Fayetteville 230kV line causes overload of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



DUKE ENERGY PROGRESS EAST – 4

- **2024**

HAVELOCK 230, REPLACE 230/115KV BANKS 1 & 2 WITH 336 MVA BANKS

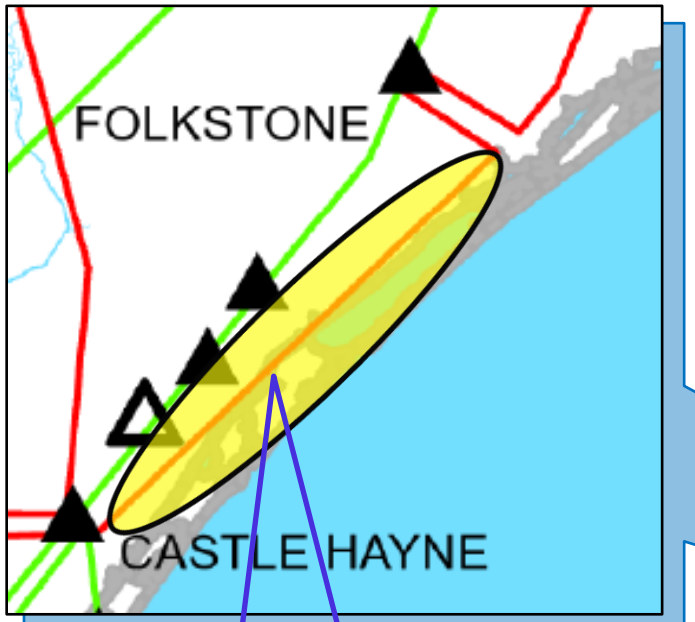


- **DESCRIPTION:**
  - Replace the two existing 230/115 banks 1 & 2 at the Havelock substation.
- **SUPPORTING STATEMENT:**
  - Multiple contingencies at Havelock 230 kV substation overload the existing 230/115 banks at Havelock

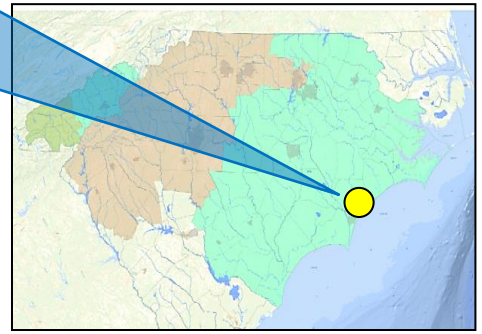
DUKE ENERGY PROGRESS EAST – 5

- **2025**

CASTLE HAYNE - FOLKSTONE 115 KV TRANSMISSION LINE – RECONDUCTOR



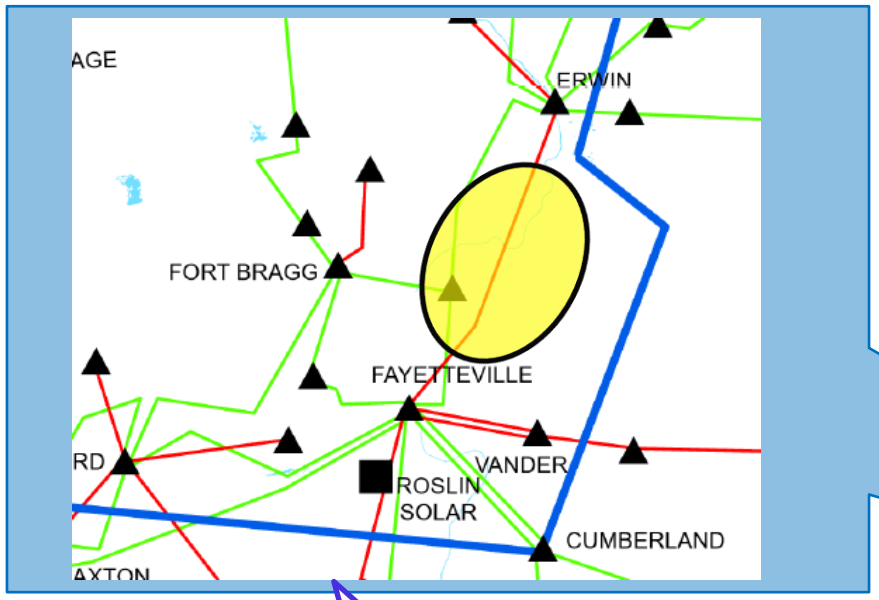
- **DESCRIPTION:**
  - Reconductor approximately 25.91 miles of line with 3-1272 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - The Castle Hayne – Folkstone 115 kV transmission line overloads under contingency.



DUKE ENERGY PROGRESS EAST – 6

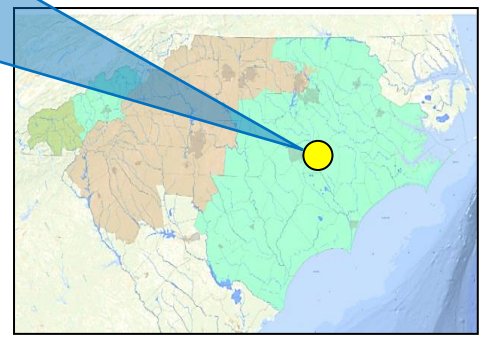
- **2025**

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



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

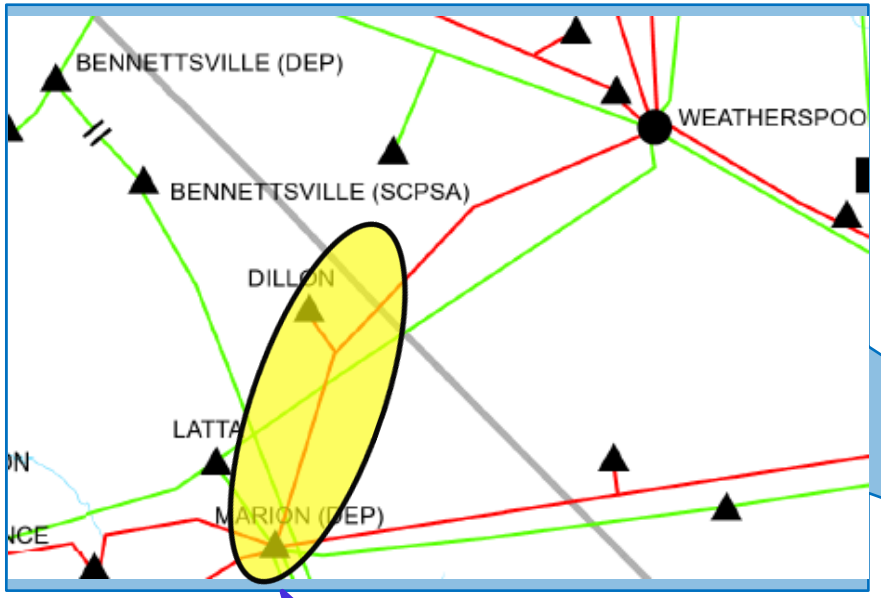
- **DESCRIPTION:**
  - Reconductor two sections, 8.72 miles, of the Erwin - Fayetteville 115 kV Line
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



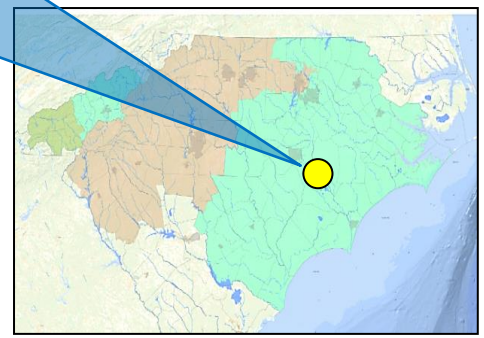
DUKE ENERGY PROGRESS EAST – 7

- **2025**

WEATHERSPOON - MARION 115 KV LINE (RED ZONE)



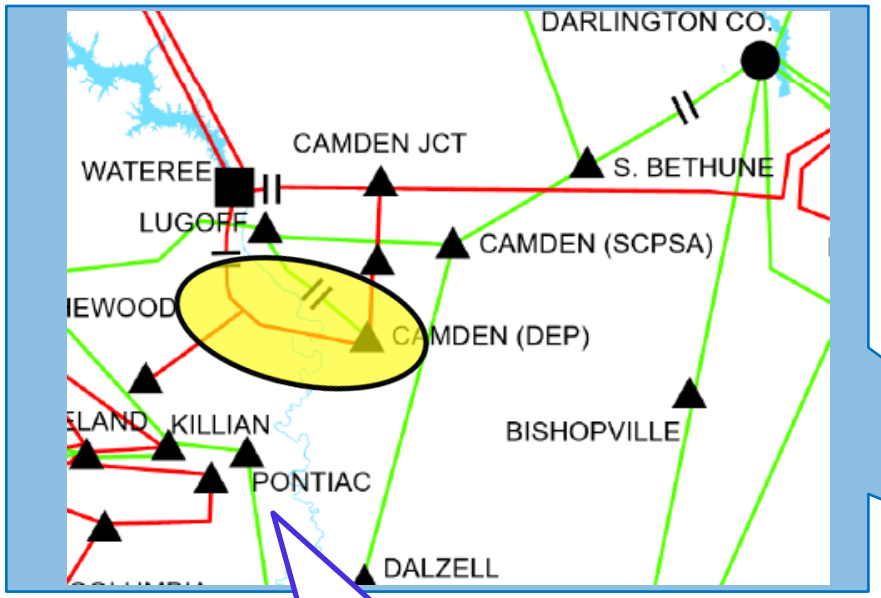
- **DESCRIPTION:**
  - Weatherspoon-Marion 115 kV - raise 6.45 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



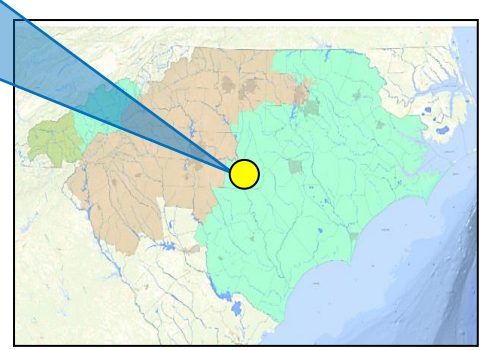
DUKE ENERGY PROGRESS EAST – 8

- **2026**

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



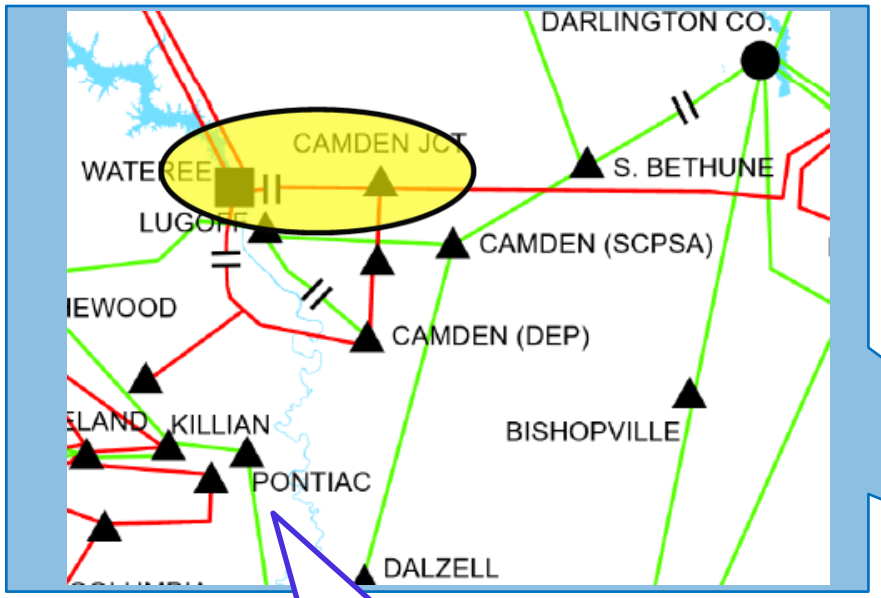
- **DESCRIPTION:**
  - Rebuild 0.7 miles of the Camden - Camden DuPont 115 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



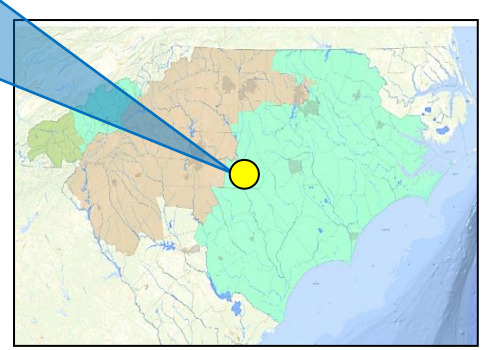
DUKE ENERGY PROGRESS EAST – 9

- **2026**

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



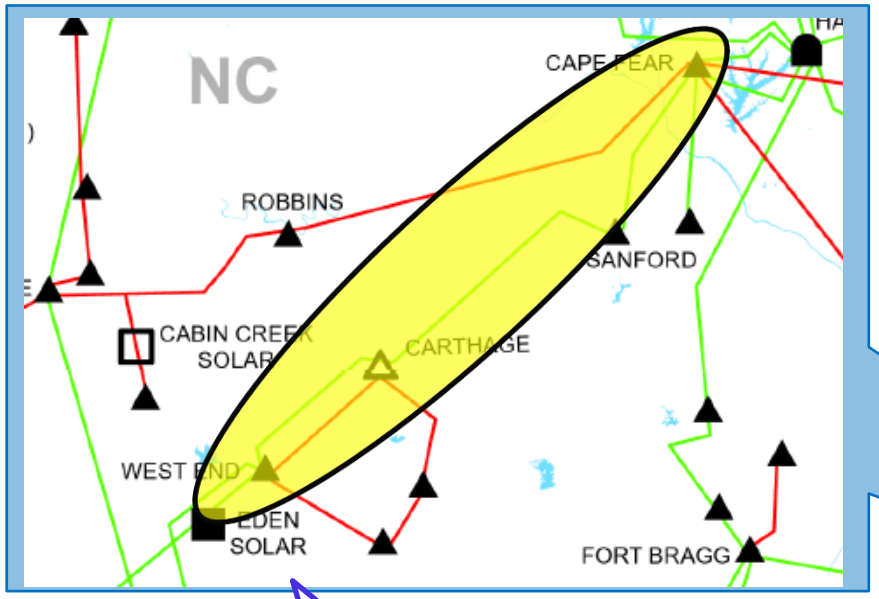
- **DESCRIPTION:**
  - Camden Junction-DPC Wateree 115 kV line - reconductor 4.24 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



DUKE ENERGY PROGRESS EAST – 10

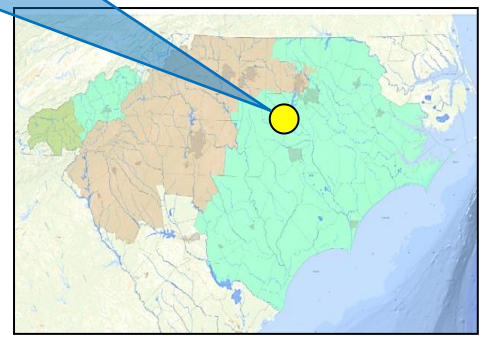
- **2026**

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



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

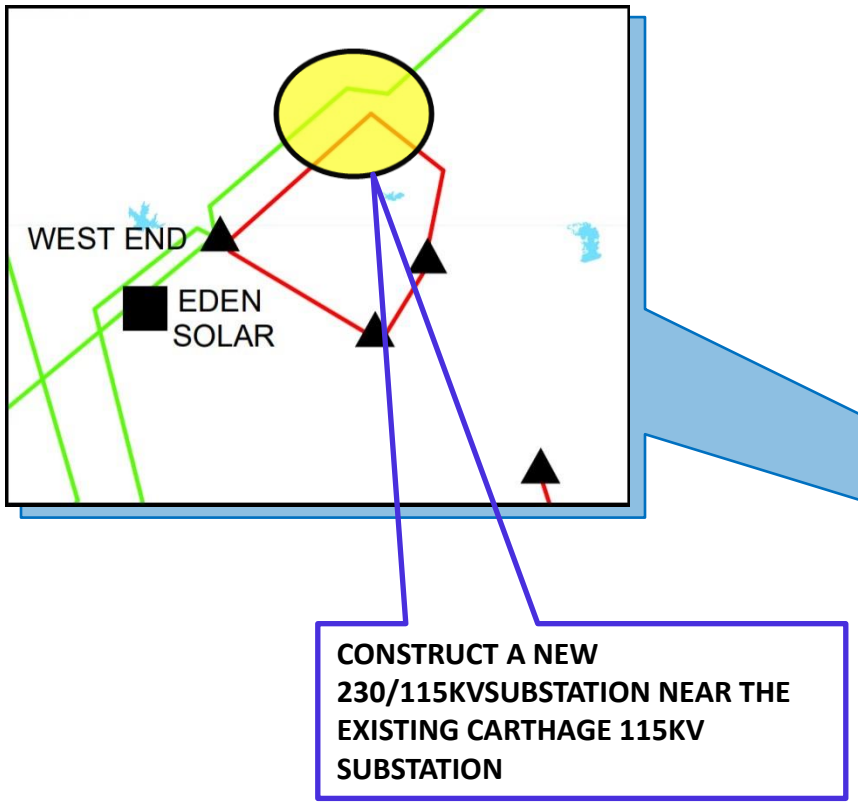
- **DESCRIPTION:**
  - Reconductor 26 miles and raise 4.5 miles of the Cape Fear Plant - West End 230 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



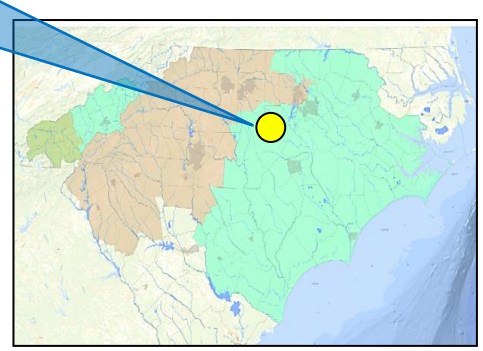
DUKE ENERGY PROGRESS EAST – 11

- **2026**

CARTHAGE 230/115 KV SUBSTATION – CONSTRUCT



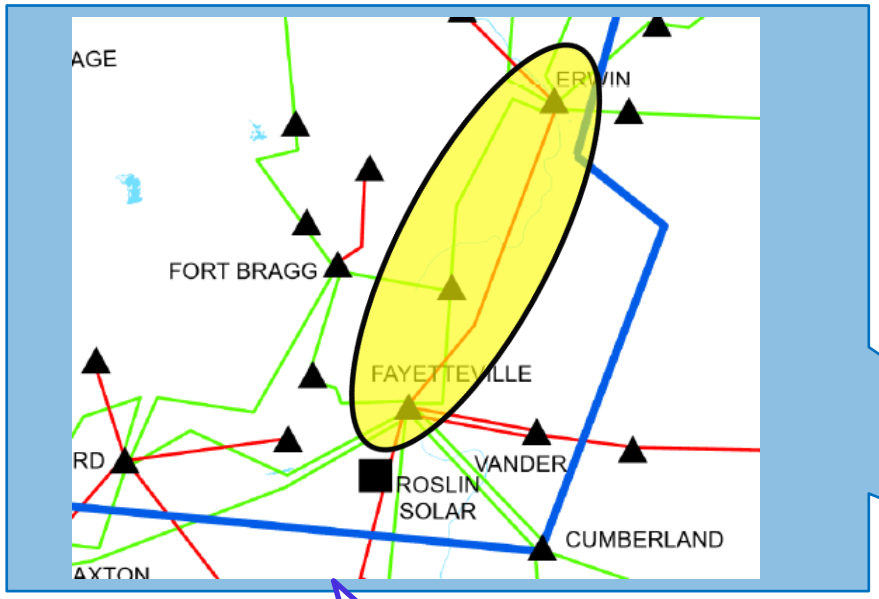
- **DESCRIPTION:**
  - Construct a new 230/115kV substation near the existing Carthage 115kV substation. Loop in the existing Cape Fear – West End 230kV line and West End – Southern Pines 115kV feeder.
- **SUPPORTING STATEMENT:**
  - Outage of one West End transformer overloads the other and voltage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



DUKE ENERGY PROGRESS EAST – 12

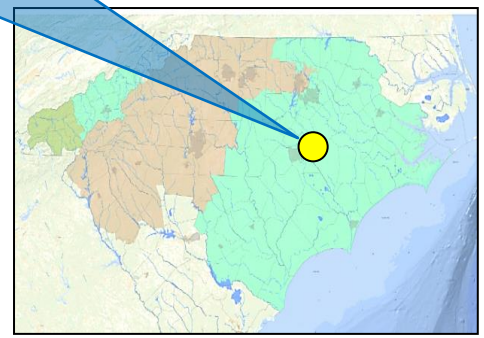
- **2026**

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



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

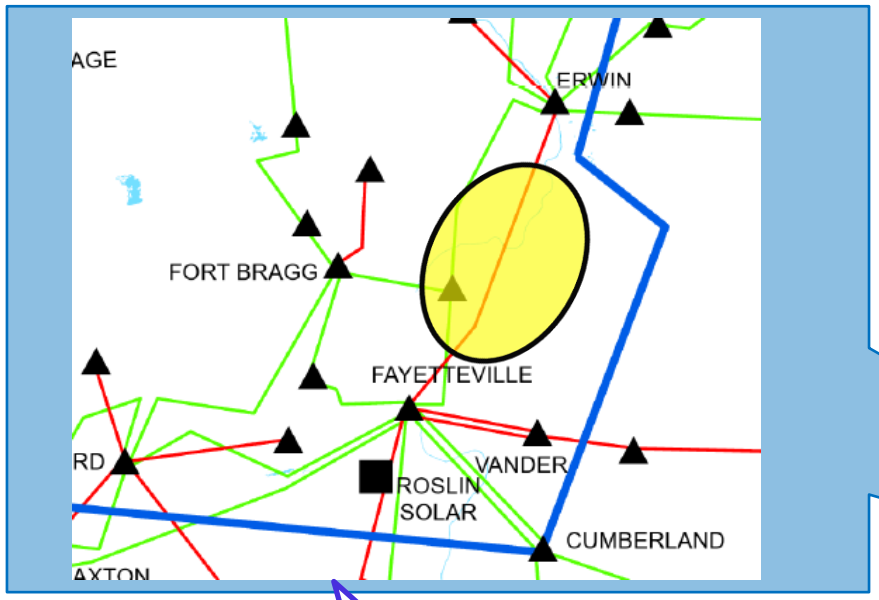
- **DESCRIPTION:**
  - Reconductor 23 miles of the Erwin - Fayetteville East 230 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



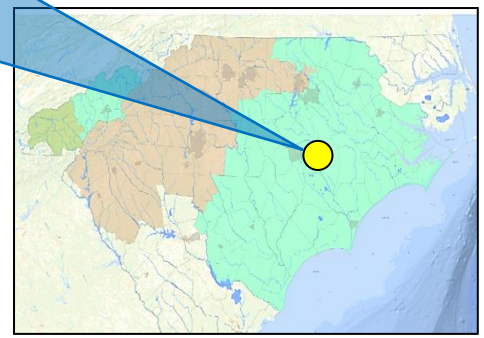
DUKE ENERGY PROGRESS EAST – 13

- **2025**

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



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

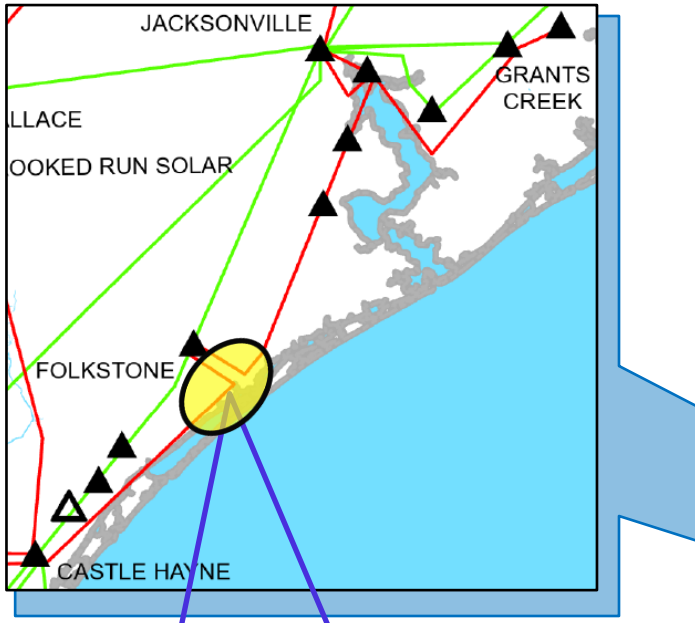


- **DESCRIPTION:**
  - Reconductor one sections, 4.9 miles, of the Erwin - Fayetteville 115 kV Line.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.

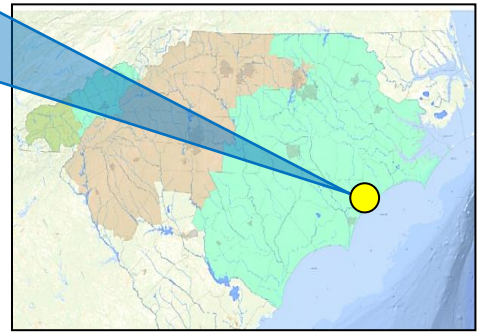
DUKE ENERGY PROGRESS EAST – 14

- **2026**

HOLLY RIDGE NORTH 115 KV SWITCHING STATION – CONSTRUCT SUBSTATION



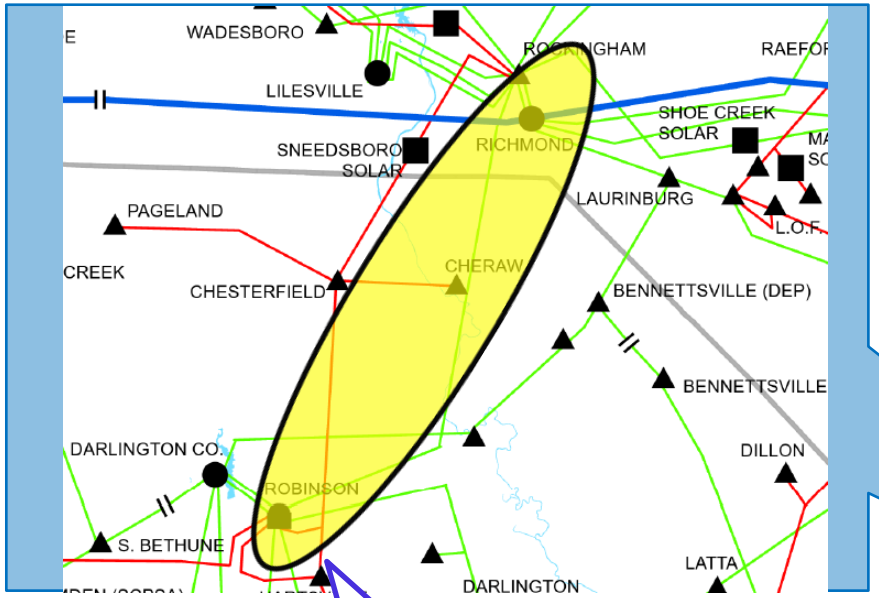
- **DESCRIPTION:**
  - Construct a new 115kV Switching Station northeast of Holly Ridge, NC where the Castle Hayne-Folkstone 115kV and Folkstone-Jacksonville City 115kV lines come together.
  - Construct a new 115kV feeder from the new switching station to JOEMC Folkstone POD.
- **SUPPORTING STATEMENT:**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



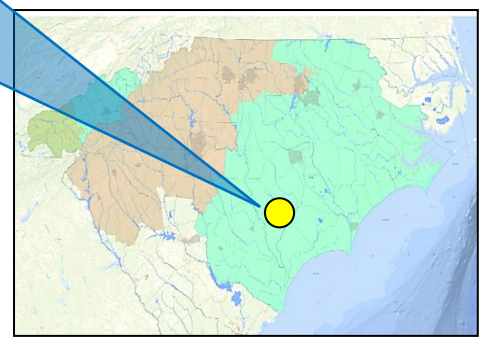
DUKE ENERGY PROGRESS EAST – 15

- **2027**

ROBINSON - ROCKINGHAM 230 KV LINE (RED ZONE)



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

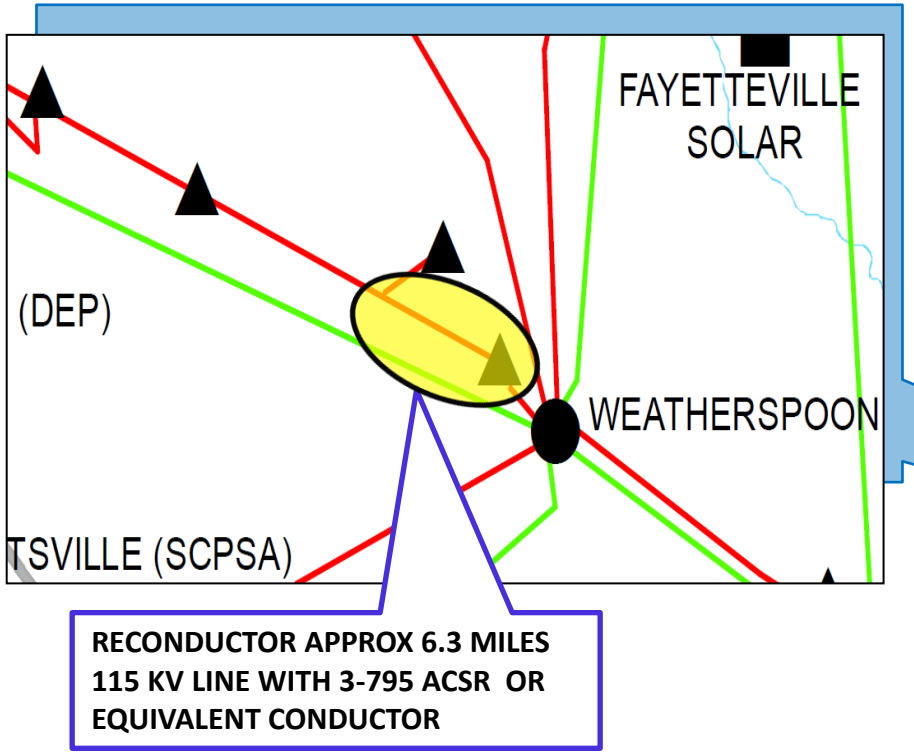


- **DESCRIPTION:**
  - Robinson Plant-Rockingham 230 line - reconductor 41 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.

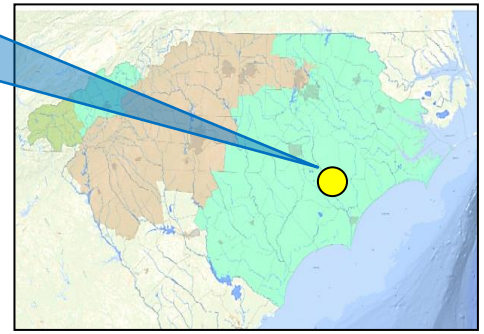
DUKE ENERGY PROGRESS EAST – 16

- **2026**

Weatherspoon - LOF 115kV line, Reconductor Weatherspoon-LREMC West Lumberton section



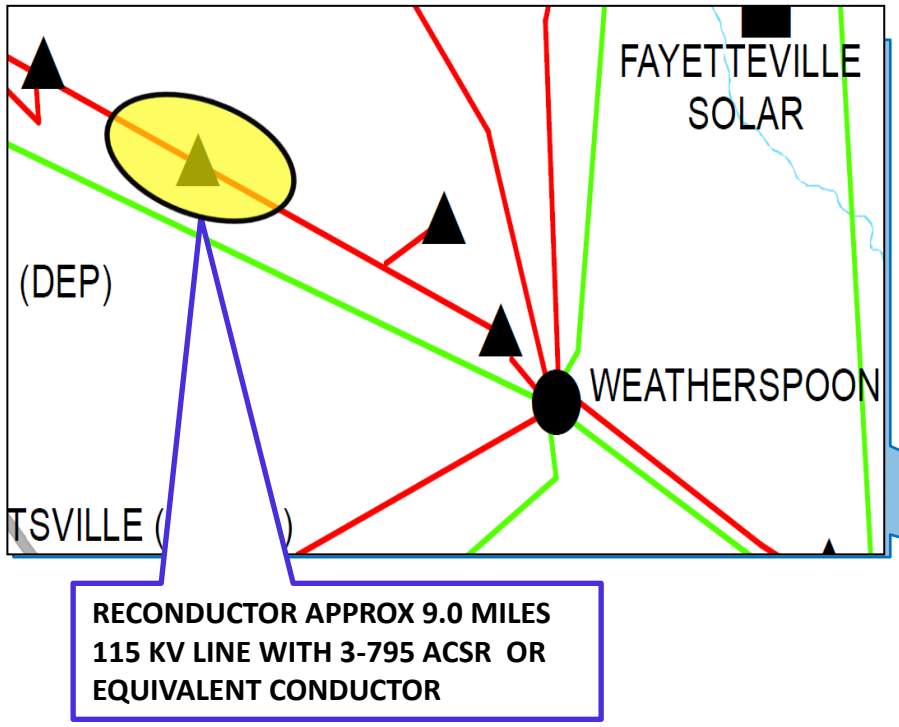
- **DESCRIPTION:**
  - Reconductor Weatherspoon-LREMC West Lumberton section of Weatherspoon -LOF 115 kV line.
- **SUPPORTING STATEMENT:**
  - The Weatherspoon-LREMC West Lumberton section of the Weatherspoon-LOF 115 kV line overloads for various contingencies.



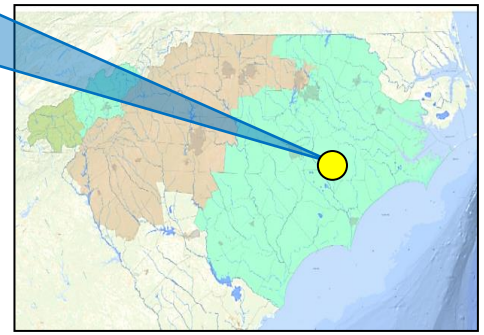
DUKE ENERGY PROGRESS EAST – 17

- **2026**

WEATHERSPOON – LOF 115 KV T.L.



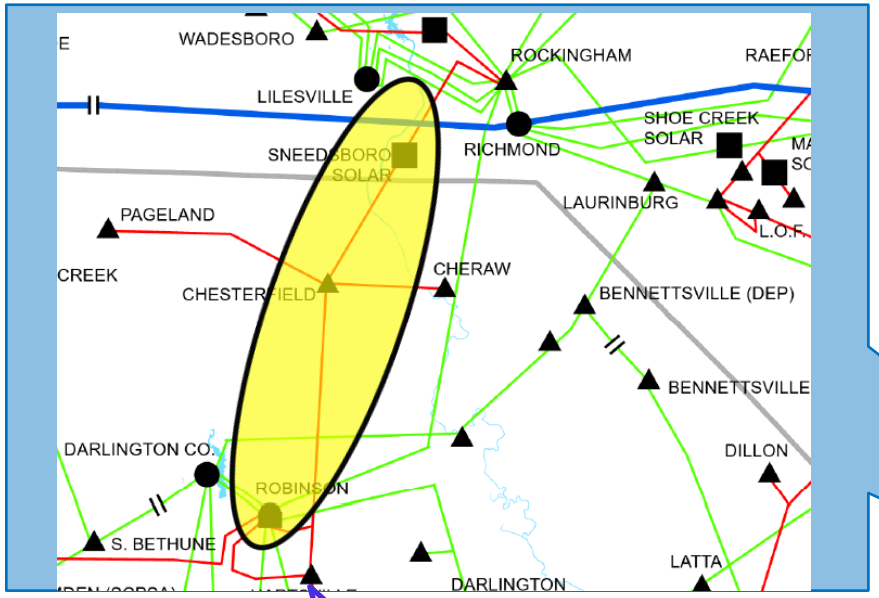
- **DESCRIPTION:**
  - Reconductor approximately 9.0 miles from Maxton to Pembroke 115 kV substation with 3-795 MCM ACSR or equivalent. Replace existing 600A switch with 1200A switch.
- **SUPPORTING STATEMENT:**
  - The Maxton-Pembroke section of the Weatherspoon-LOF 115 kV transmission line overloads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



DUKE ENERGY PROGRESS EAST – 18

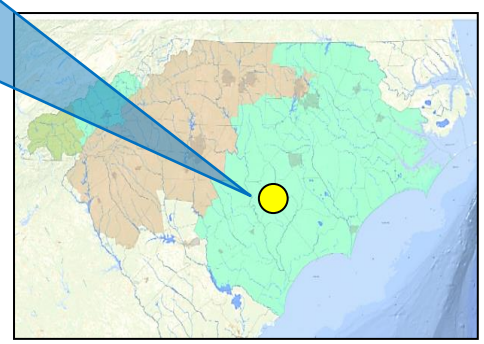
- **2027**

ROBINSON PLANT - ROCKINGHAM 115 KV LINE (RED ZONE)



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

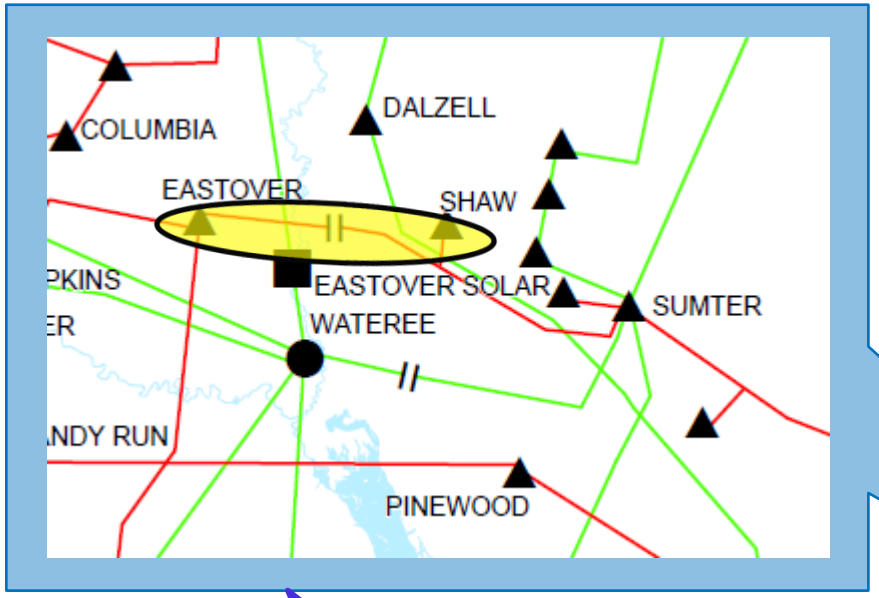
- **DESCRIPTION:**
  - Robinson Plant-Rockingham 115 kV line - reconductor 17.08 miles.
- **SUPPORTING STATEMENT:**
  - This upgrade has been approved by NCUC as part of the Carolinas Carbon Plan.



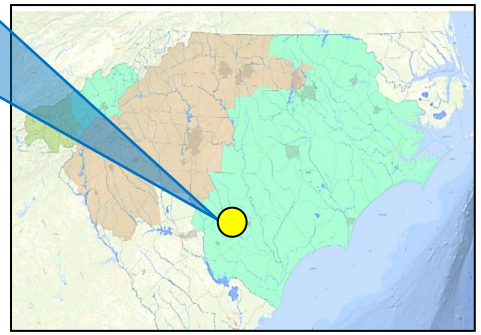
DUKE ENERGY PROGRESS EAST – 19

- **2027**

Sumter - SCE&G Eastover 115kV line, Reconductor Kings Hwy - Shaw Field - Eastover



- **DESCRIPTION:**
  - Reconductor Sumter Kings Hwy - Shaw Field Tap and Shaw Field Tap - DESC Eastover sections of Sumter-Eastover 115 kV line to 1272 ACSR and raise Sumter Gold Kist Tap - Str #427 to 212 F.
- **SUPPORTING STATEMENT:**
  - Multiple contingencies cause the Shaw Field Tap-Eastover section of the Sumter-Eastover 115 kV line to overload.

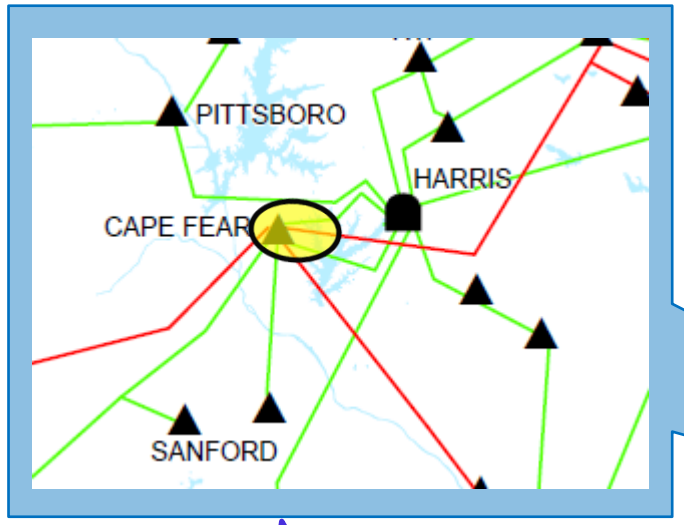


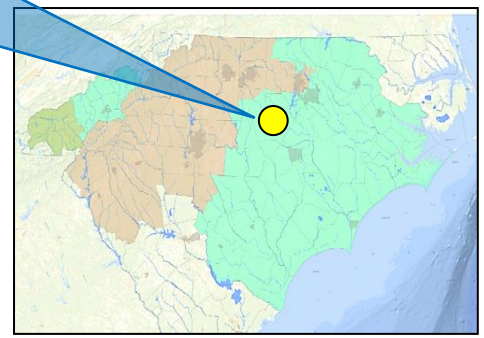
RECONDUCTOR 7.49 MILES OF 115 KV T.L. WITH 1272 ACSR, INCLUDING 1.01 MILES WITHIN SCE&G

DUKE ENERGY PROGRESS EAST – 20

- **2028**

Cape Fear-Method 115 kV, Raise Cape Fear-Moncure Section





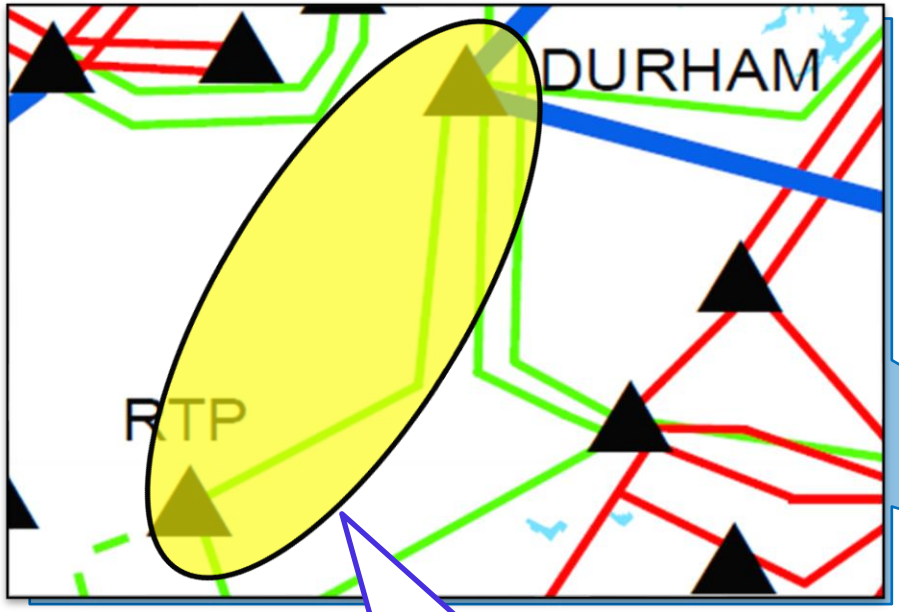
RAISE 0.68 MILES FROM CAPE FEAR – MONCURE OF THE CAPE FEAR METHOD 115 KV LINE

- **DESCRIPTION:**
  - Raise Cape Fear-Moncure section, 0.68 miles of the Cape Fear-Method 115 kV line.
- **SUPPORTING STATEMENT:**
  - Failure of Harris 230 kV bus protection overloads the Cape Fear-Moncure section of the Cape Fear-Method 115 kV line.

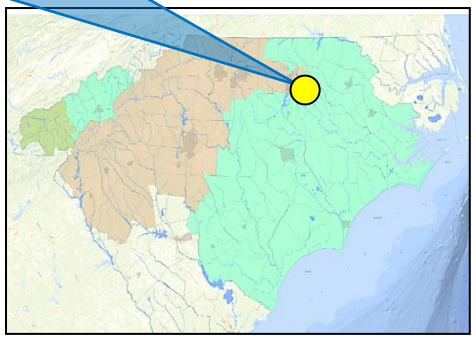
DUKE ENERGY PROGRESS EAST – 21

- **TBD**

DURHAM – RTP 230 KV T.L.



- **DESCRIPTION:**
  - Reconductor approximately 4.6 miles of the Durham – RTP 230 kV transmission line, from Durham to Brier Creek, with bundled 6-1590 ACSR rated for 1195 MVA.
- **SUPPORTING STATEMENT:**
  - The Durham – RTP 230 kV transmission line overloads under contingency.



DUKE ENERGY PROGRESS WEST

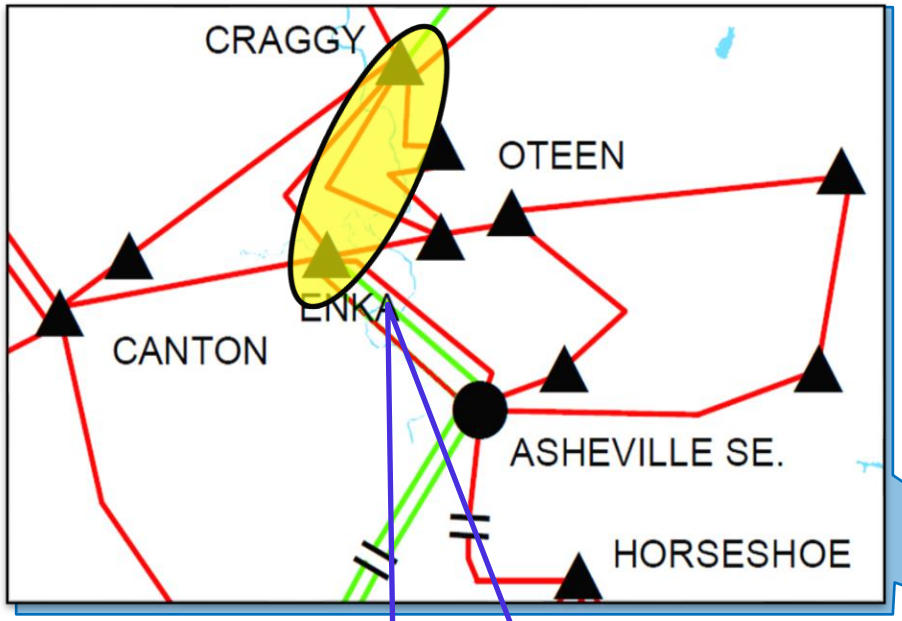
Balancing Authority Area

Regional Transmission Expansion Plan

DUKE ENERGY PROGRESS WEST – 1

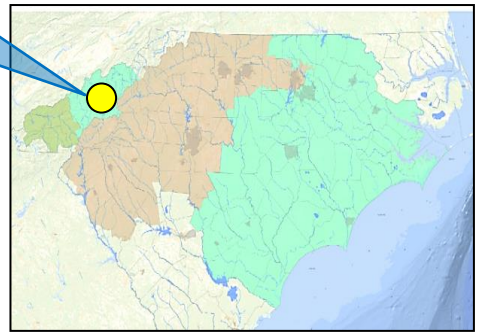
- **2024**

CRAGGY - ENKA 230 KV TRANSMISSION LINE – CONSTRUCT



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

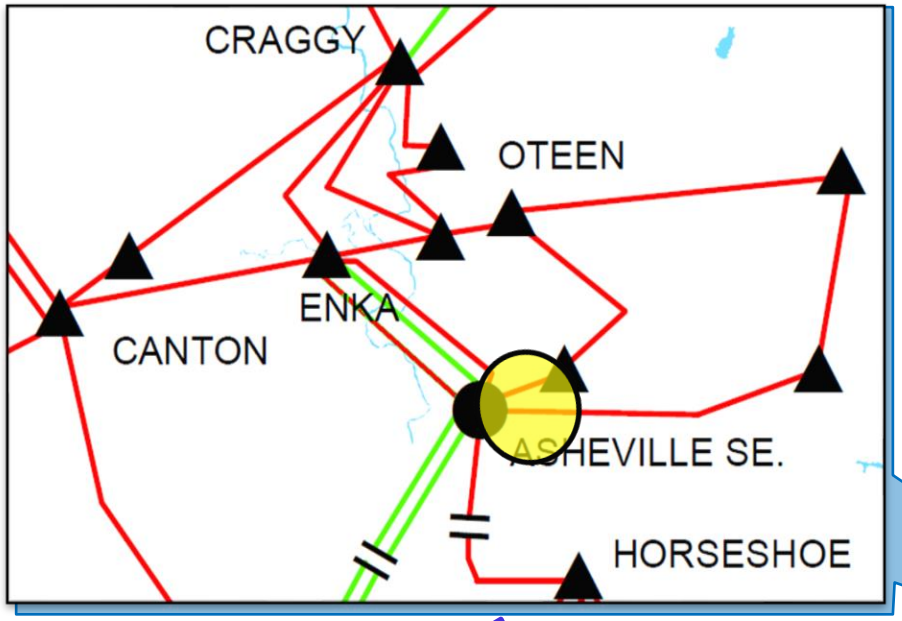
- **DESCRIPTION:**
  - Construct approximately 10.0 miles of new 230 kV transmission line from the Craggy 230 kV substation to the Enka 230 kV substation with 3-1590 MCM ACSR or equivalent.
- **SUPPORTING STATEMENT:**
  - The Enka-West Asheville, Craggy-Enka, Asheville-Oteen West, Oteen-West Asheville,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



DUKE ENERGY PROGRESS WEST – 2

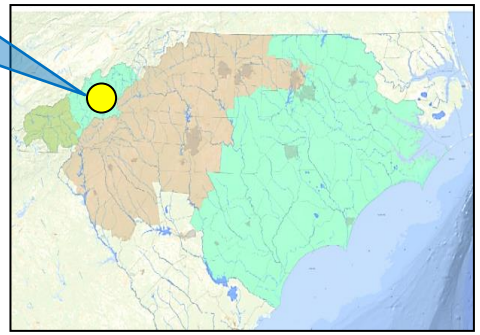
- **2026**

ASHEVILLE PLANT – OTEEN WEST 115 KV TRANSMISSION LINE, ARDEN TAP



Construct 2 miles of new tap line to connect the Asheville Plant-Oteen 115kV West line to Arden 115 kV Substation

- **DESCRIPTION:**
  - Construct 2 miles of new tap line to connect the Asheville Plant-Oteen 115kV West line to Arden 115 kV Substation. Existing right-of-way is to be utilized.
- **SUPPORTING STATEMENT:**
  - The Enka-West Asheville, Craggy-Enka, Asheville-Oteen West, Oteen-West Asheville, and Craggy-Vanderbilt 115 kV lines and Enka 230/115kV transformer overload under various contingencies.



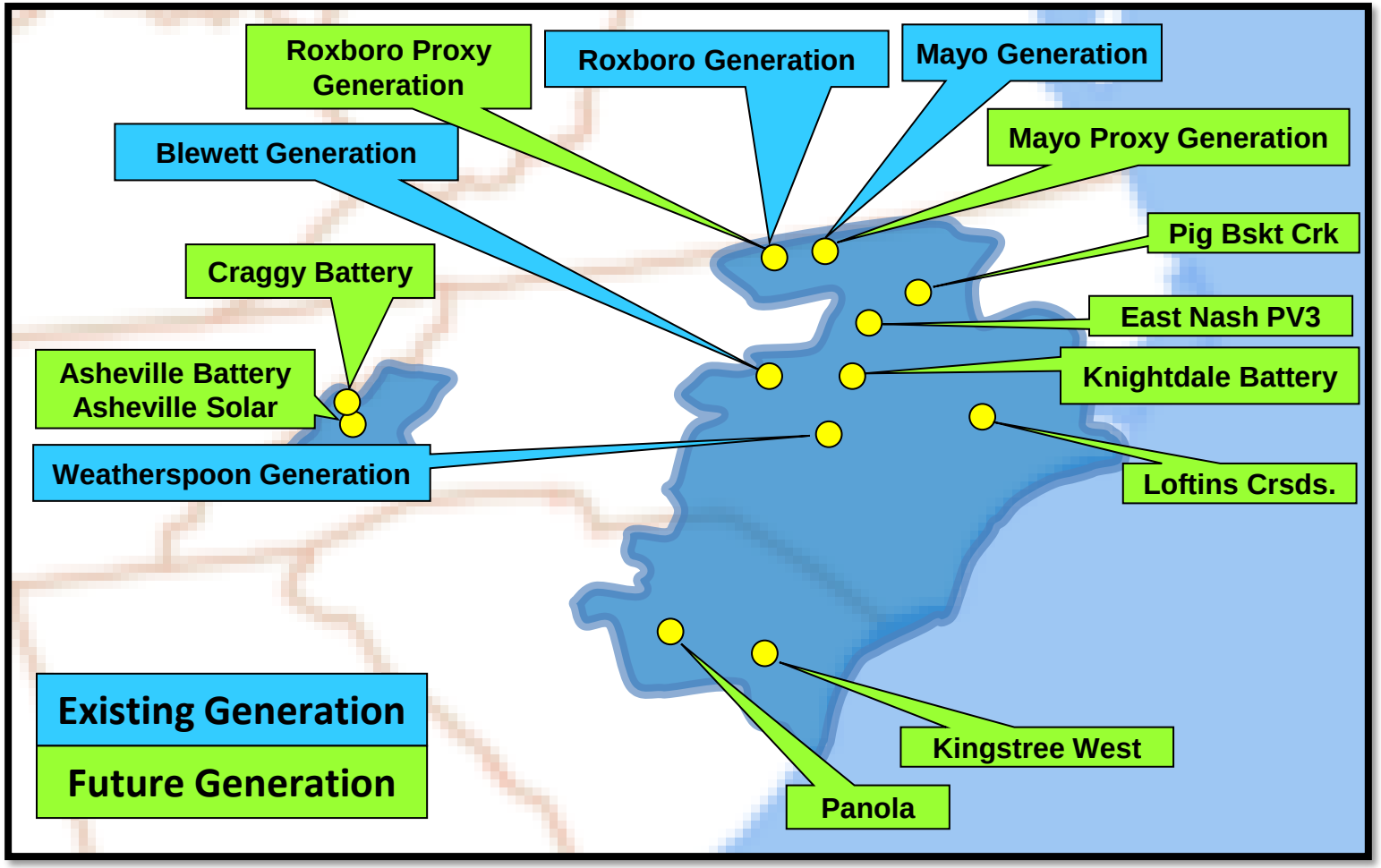
DUKE ENERGY PROGRESS EAST/WEST

Balancing Authority Areas

Preliminary 2024 Generation Assumptions

DUKE ENERGY PROGRESS – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2024 SERTP Process.



DUKE ENERGY PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
BLEWETT IC #1	OIL	0	--	--	--	--	--	--	--	--	--
BLEWETT IC #2	OIL	0	--	--	--	--	--	--	--	--	--
BLEWETT IC #3	OIL	0	--	--	--	--	--	--	--	--	--
BLEWETT IC #4	OIL	0	--	--	--	--	--	--	--	--	--
WEATHERSPOON IC #1	GAS/OIL	0	--	--	--	--	--	--	--	--	--
WEATHERSPOON IC #2	GAS/OIL	0	--	--	--	--	--	--	--	--	--
WEATHERSPOON IC #3	GAS/OIL	0	--	--	--	--	--	--	--	--	--
WEATHERSPOON IC #4	GAS/OIL	0	--	--	--	--	--	--	--	--	--

DUKE ENERGY PROGRESS – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
ROXBORO #1 COAL	COAL	379	379	379	379	0	--	--	--	--	--
ROXBORO #2 COAL	COAL	665	665	665	665	0	--	--	--	--	--
ROXBORO #3 COAL	COAL	691	691	691	0	--	--	--	--	--	--
ROXBORO #4 COAL	COAL	698	698	698	0	--	--	--	--	--	--
MAYO COAL	COAL	727	727	727	727	0	--	--	--	--	--
ROXBORO PROXY #1	--	--	--	--	1350	1350	1350	1350	1350	1350	1350
ROXBORO PROXY #2	--	--	--	--	--	1350	1350	1350	1350	1350	1350
MAYO PROXY	--	--	--	--	--	602	602	602	602	602	602

DUKE ENERGY PROGRESS – Generation Assumptions (Cont.)

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
ASHEVILLE SOLAR	PV	--	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
PANOLA	PV	67	67	67	67	67	67	67	67	67	67
EAST NASH PV3	PV	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4
LOFTINS XROADS PV	PV	75	75	75	75	75	75	75	75	75	75
PIG BSKT CRK PV	PV	80	80	80	80	80	80	80	80	80	80
KNIGHTDALE BATTERY	BATTERY	100	100	100	100	100	100	100	100	100	100
KINGSTREE WEST	PV	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9
CRAGGY BATTERY	BATTERY	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
ASHEVILLE BATTERY	BATTERY	--	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25

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

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

SITE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
HAMLET #1 AND #2	110	110	110	110	110	110	110	110	110	110
HAMLET #6	55	55	55	55	55	55	55	55	55	55
HAMLET #3	4	6	9	9	11	13	14	0	0	0

LG&E/KU Balancing Authority Area

2023 Generation Assumptions

LG&E/KU – Generation Assumptions

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

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

LG&E/KU Balancing Authority Area

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

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

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

LG&E/KU Balancing Authority Area

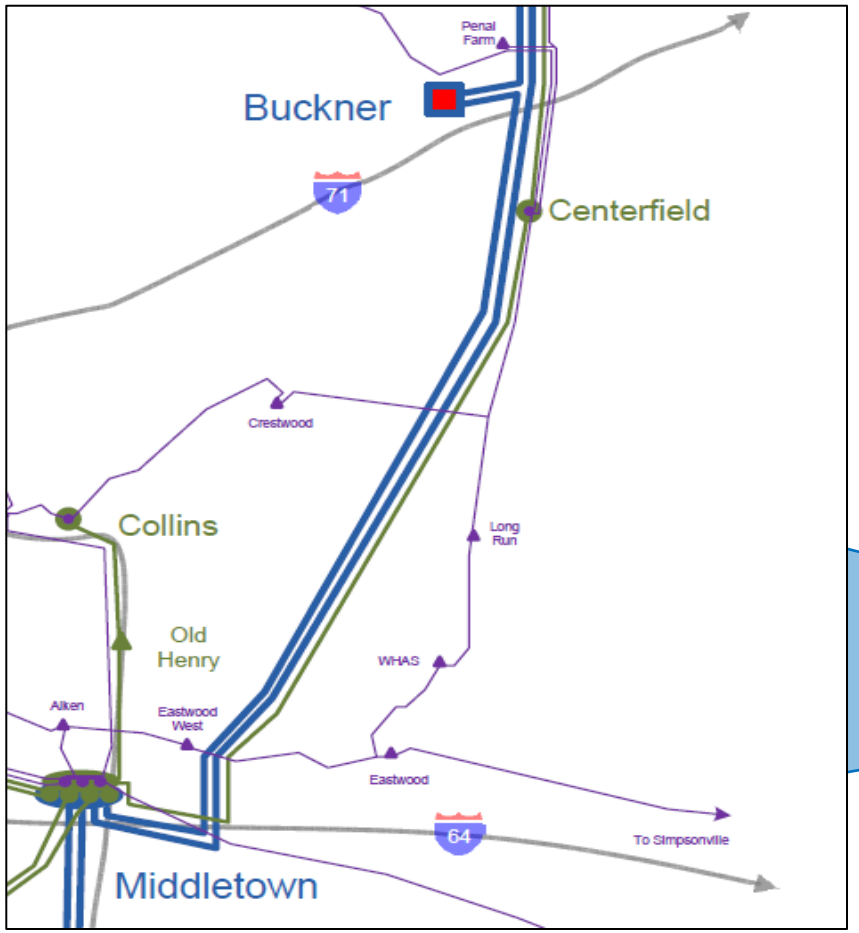
Regional Transmission Expansion Plan

LG&E/KU Balancing Authority Area

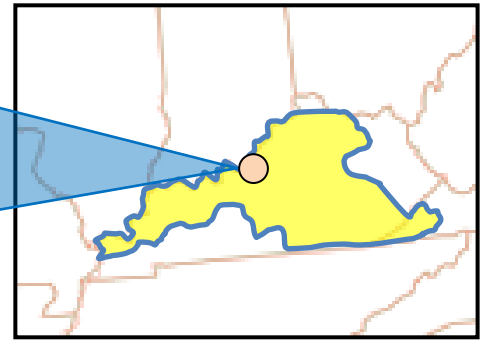
LG&E/KU - 1

- **2025**

MIDDLETOWN – BUCKNER 345 KV



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

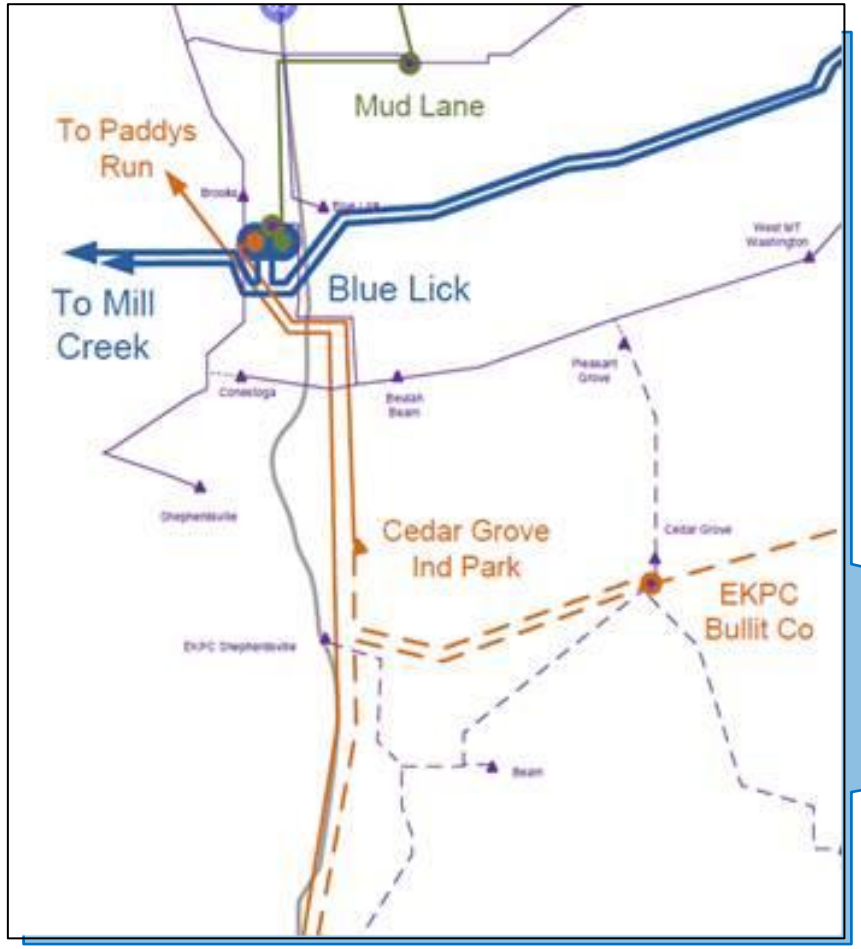


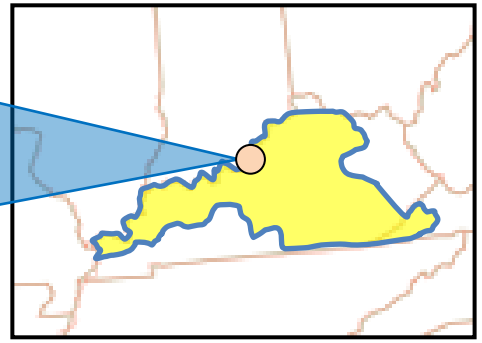
LG&E/KU Balancing Authority Area

LG&E/KU - 2

- **2025**

BLUE LICK – CEDAR GROVE 161 KV





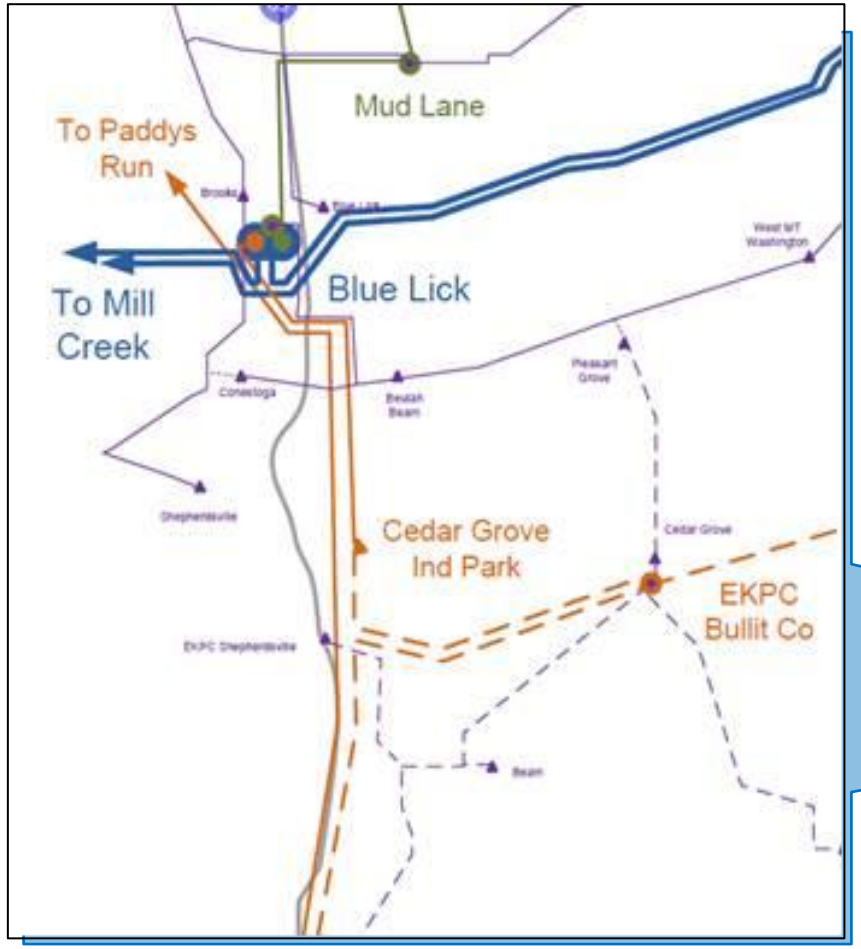
- **DESCRIPTION:**
  - Reconductor approximately 4.7 miles of the Blue Lick - Cedar Grove 161 kV transmission line with 795 ACSR or better.
- **SUPPORTING STATEMENT:**
  - The Blue Lick – Cedar Grove 161 KV transmission line overloads under contingency.

LG&E/KU Balancing Authority Area

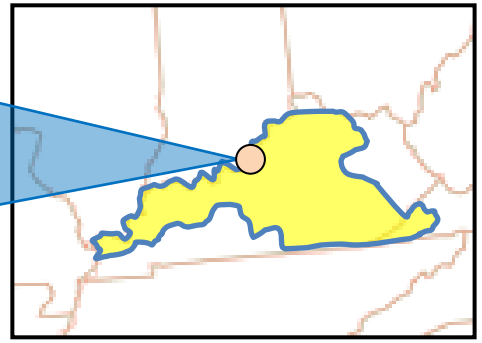
LG&E/KU - 3

- **2028**

BULLITT CO – CEDAR GROVE 161 KV



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



LG&E/KU Balancing Authority Area

Preliminary 2024 Generation Assumptions

* LG&E/KU has no generation assumptions expected to change throughout the ten-year planning horizon for the 2024 SERTP Process.

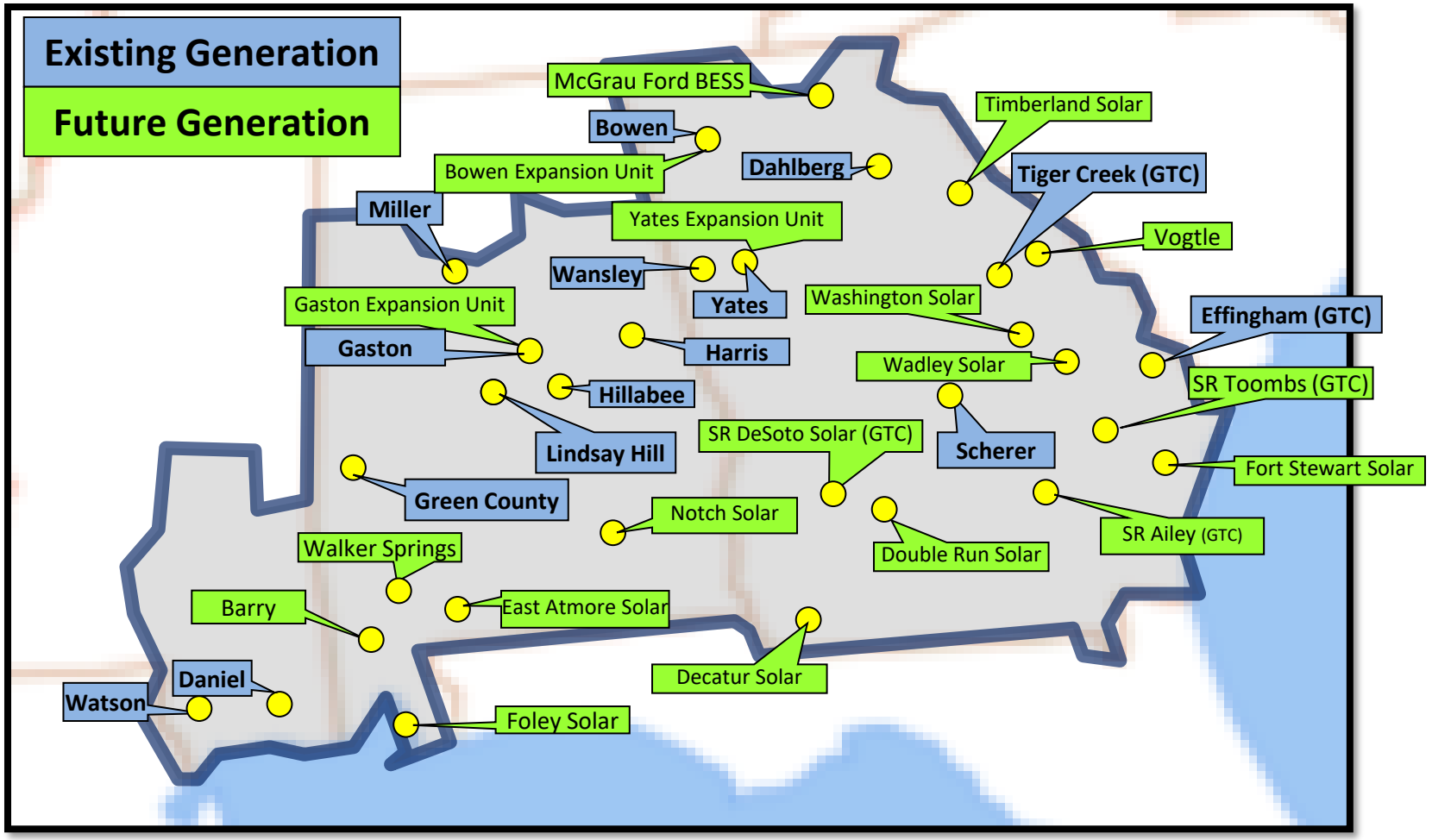
SOUTHERN Balancing Authority Area

2023 Generation Assumptions

SOUTHERN Balancing Authority Area

SOUTHERN – Generation Assumptions

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



Southern Company – Generation Assumptions

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

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

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

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

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

Southern Company – Generation Assumptions

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

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
BARRY 5*	COAL	785	0	--	--	--	--	--	--	--	--
BARRY 1	GAS	80	80	80	80	0	--	--	--	--	--
BARRY 2	GAS	80	80	80	80	0	--	--	--	--	--
GASTON 1	COAL/GAS	254	254	254	254	254	0	--	--	--	--
GASTON 2	COAL/GAS	256	256	256	256	256	0	--	--	--	--
GASTON 3	COAL/GAS	254	254	254	254	254	0	--	--	--	--
GASTON 4	COAL/GAS	256	256	256	256	256	0	--	--	--	--
GASTON 5	COAL/GAS	872	895	895	895	895	895	895	895	895	895
GASTON EXPANSION UNIT[1]	--	--	--	--	--	--	--	--	800	800	800

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

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

Southern Company – Generation Assumptions

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

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
WATSON 4	GAS	0	--	--	--	--	--	--	--	--	--
DANIEL 2	COAL	510	510	510	510	0	--	--	--	--	--
GREENE COUNTY 1	GAS	258	258	0	--	--	--	--	--	--	--
GREENE COUNTY 2	GAS	258	258	258	0	--	--	--	--	--	--
BARRY 8	Gas	653	653	653	653	685	685	685	685	685	685
VOGTLE 4	Nuclear	509	509	509	509	509	509	509	509	509	509
YATES 6-7	Gas	714	714	714	714	714	714	714	714	714	714
WANSLEY 7	Gas	--	622	622	622	622	622	622	622	622	622
DAHLBERG	Gas	371	502	502	502	758	685	685	685	685	685

Southern Company – Generation Assumptions

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

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
WADLEY SOLAR	Solar	260	260	260	260	260	260	260	260	260	260
WALKER SPRINGS I, II SOLAR	Solar	--	160	160	160	160	160	160	160	160	160
NOTCH SOLAR	Solar	--	--	160	160	160	160	160	160	160	160
EAST ATMORE SOLAR	Solar	--	80	80	80	80	80	80	80	80	80
FOLEY SOLAR	Solar	--	80	80	80	80	80	80	80	80	80
DOUBLE RUN SOLAR	Solar	220	220	220	220	220	220	220	220	220	220
DECATUR SOLAR	Solar	200	200	200	200	200	200	200	200	200	200
WASHINGTON CO	Solar	150	150	150	150	150	150	150	150	150	150
TIMBERLAND SOLAR	Solar	140	140	140	140	140	140	140	140	140	140
FORT STEWART SOLAR	Solar	43	43	43	43	43	43	43	43	43	43
MCGRAU FORD BESS	BESS	--	--	265	265	265	265	265	265	265	265

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

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

SITE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
DAHLBERG	44	44	44	44	44	44	44	44	44	44
DANIEL	100	100	100	100	100	100	100	100	100	100
HARRIS	456	106	106	106	106	106	106	106	106	106
HILLABEE	210	210	210	210	210	210	210	210	210	210
LINDSAY HILL	220	220	220	220	220	220	220	220	220	220
MILLER	400	400	500	500	500	500	500	500	500	500
SCHERER	215	215	215	215	215	0	0	0	0	0
VOGTLE	206	206	206	206	206	206	206	206	206	206

GTC – Generation Assumptions

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

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

MEAG – Generation Assumptions

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

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

DALTON – Generation Assumptions

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

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

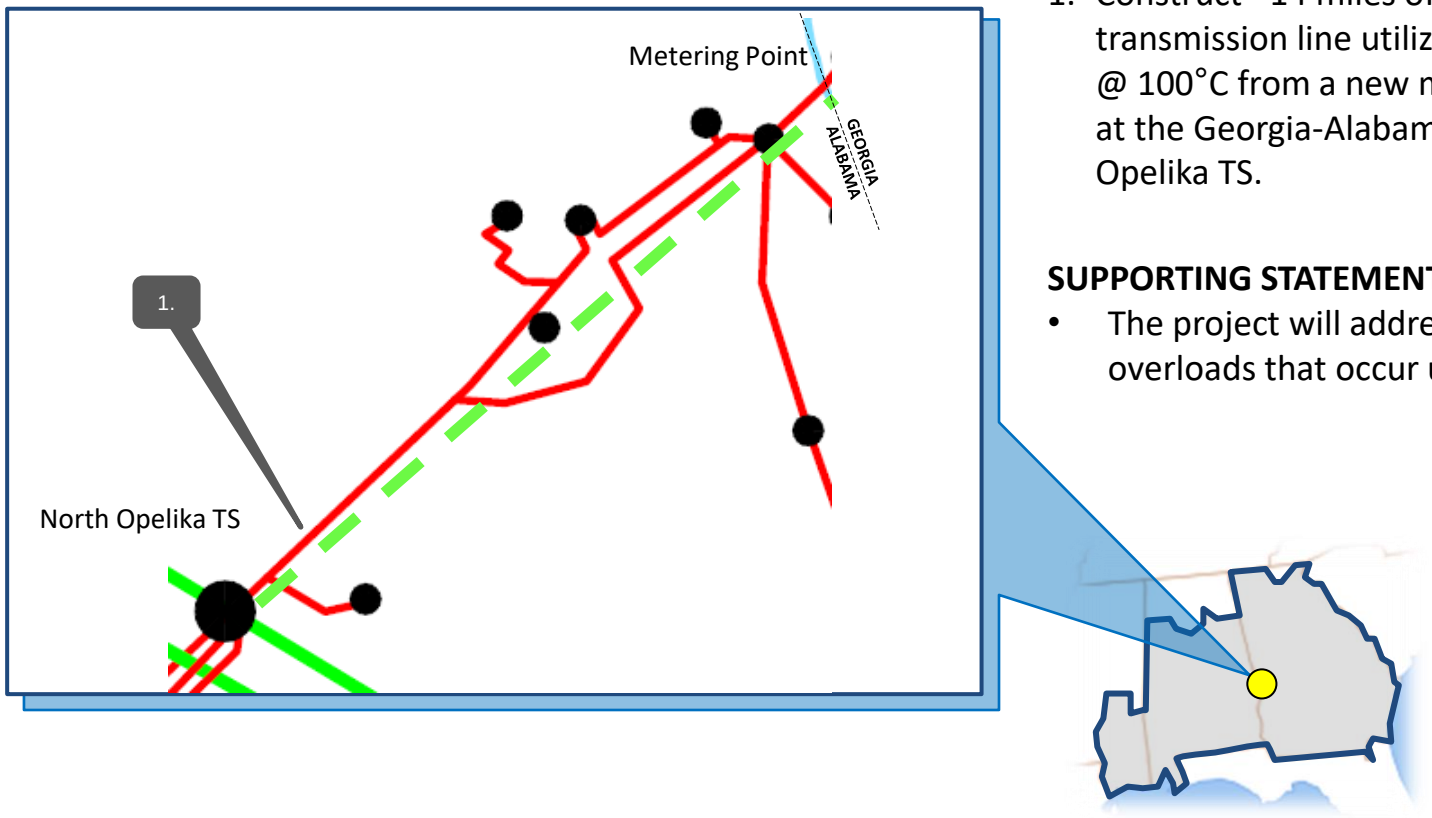
SOUTHERN (WEST) Balancing Authority Area

SERTP Regional Transmission Expansion Plan

SOUTHERN – 1W

• **2026**

LAGRANGE PRIMARY-NORTH OPELIKA NEW 230 KV TRANSMISSION LINE



PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

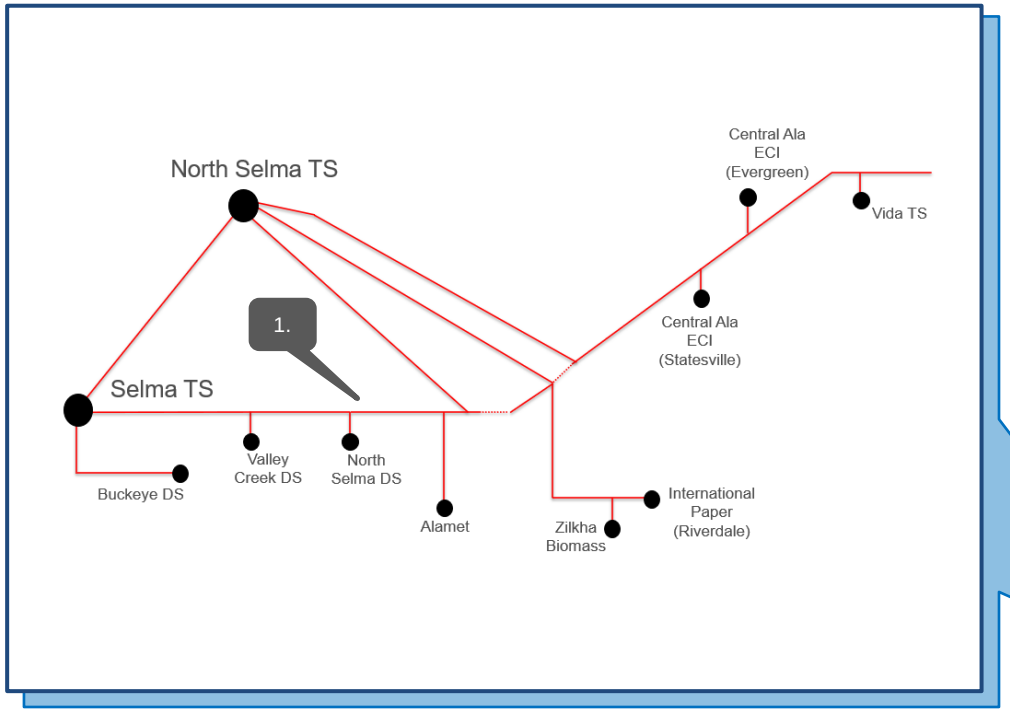
- The project will address multiple thermal overloads that occur under contingency.

SOUTHERN Balancing Authority Area

SOUTHERN – 2W

• **2027**

NORTH SELMA – SELMA #2 115 KV TRANSMISSION LINE

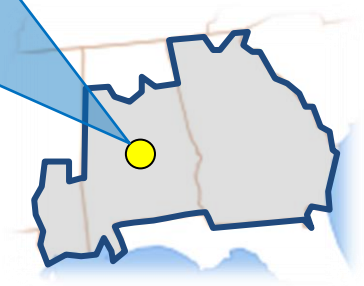


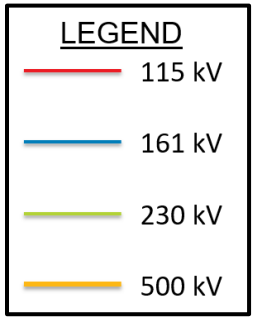
PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

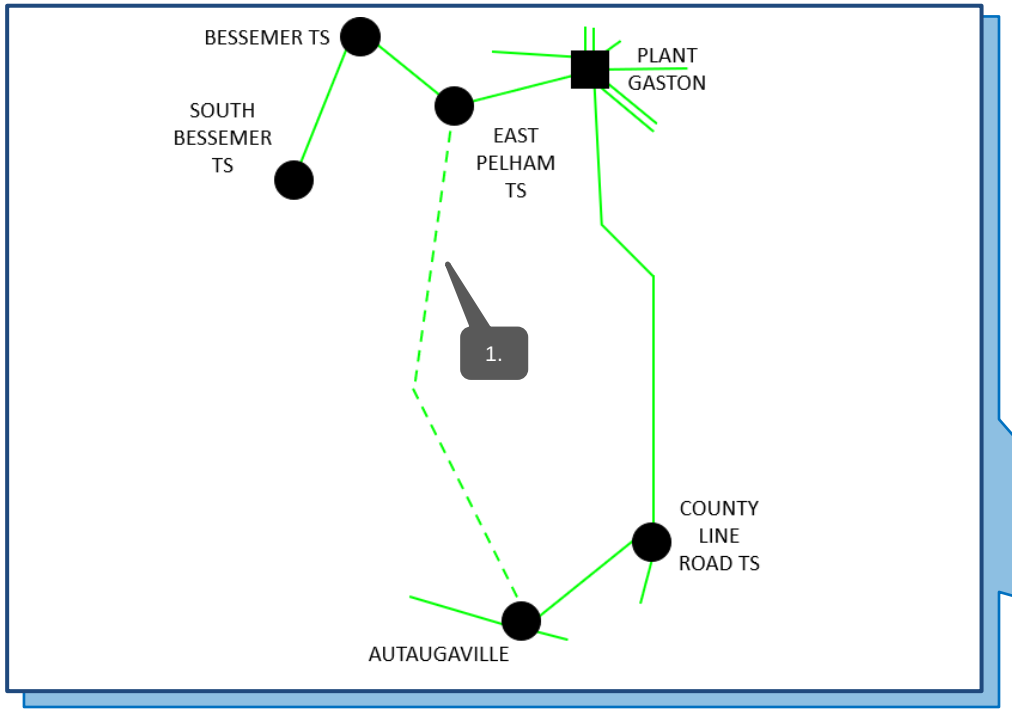




SOUTHERN – 3W

• **2027**

AUTAUGAVILLE – EAST PELHAM NEW 230 KV TRANSMISSION LINE

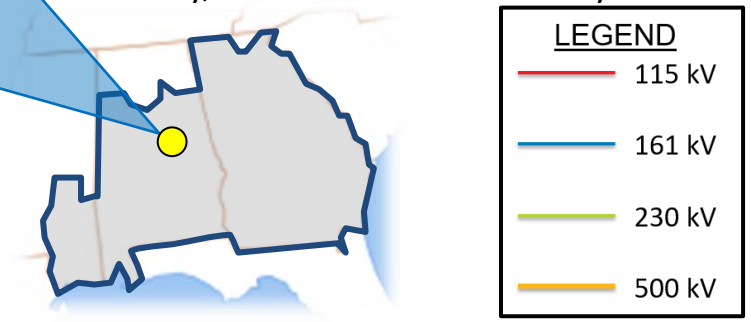


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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

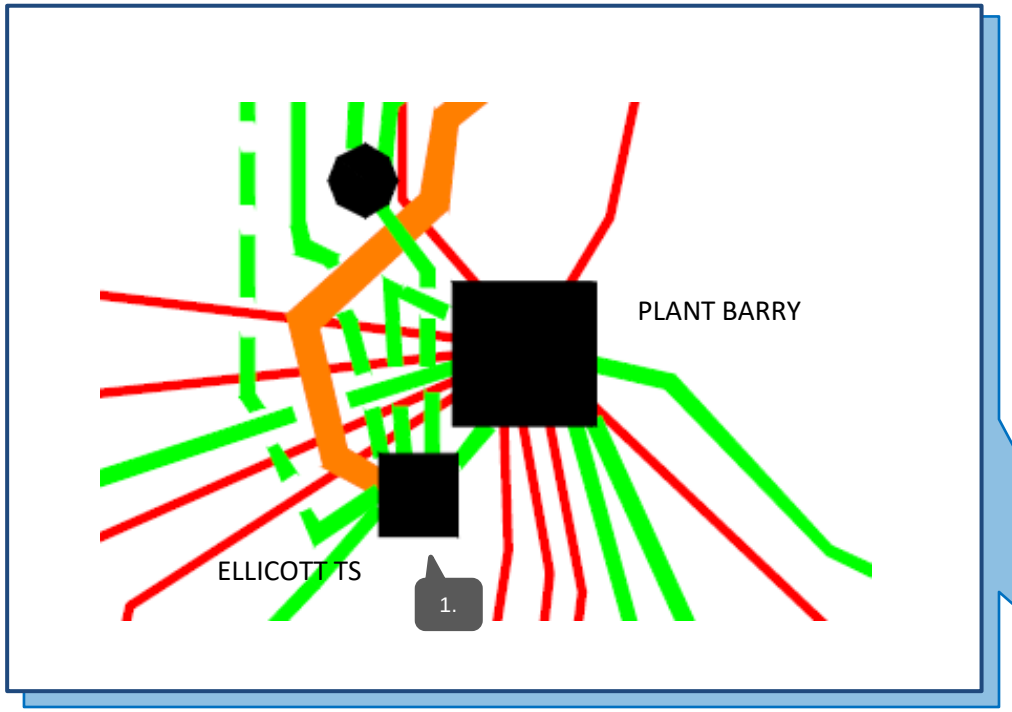


SOUTHERN Balancing Authority Area

SOUTHERN – 4W

• **2028**

ELLICOTT SUBSTATION EXPANSION PROJECT

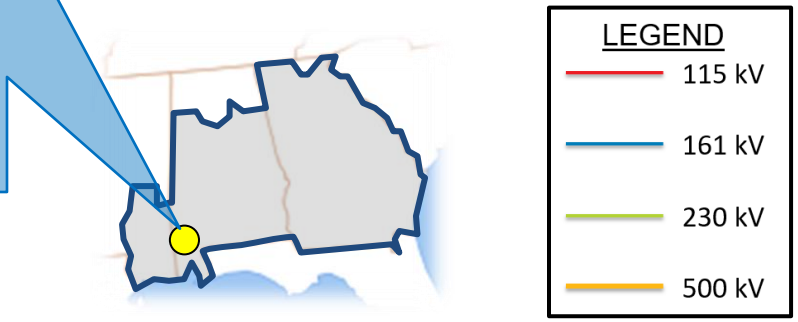


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

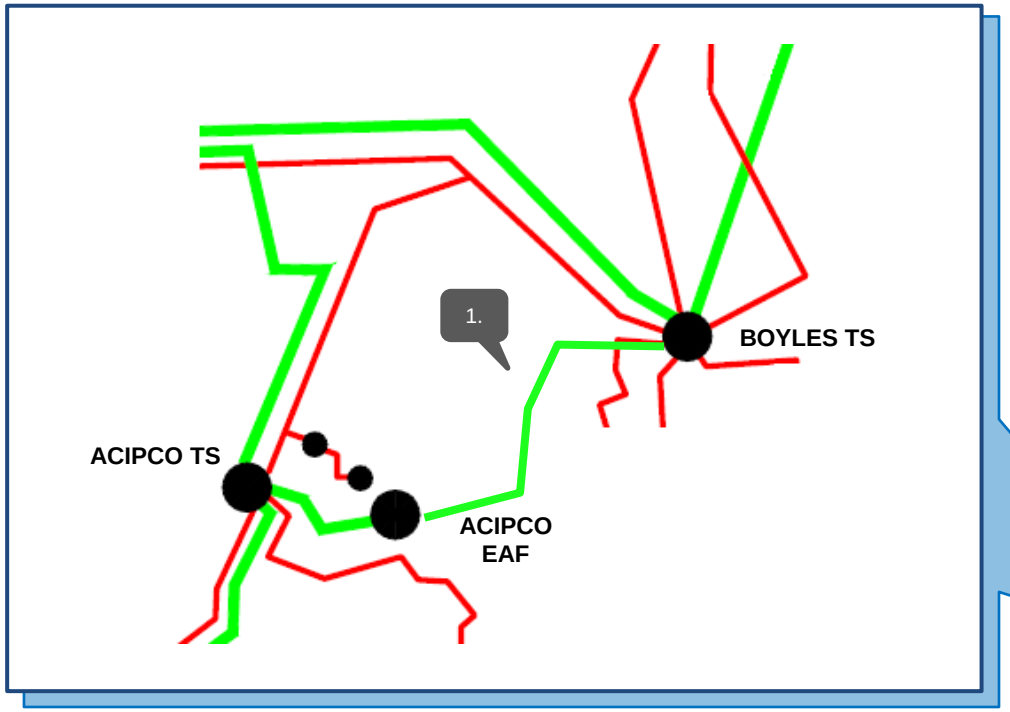
- Upgrade existing and construct new transmission facilities to provide additional operational and maintenance flexibility, which increases reliability.



SOUTHERN – 5W

• **2028**

ACIPCO EAF – BOYLES 230 KV NEW TRANSMISSION LINE

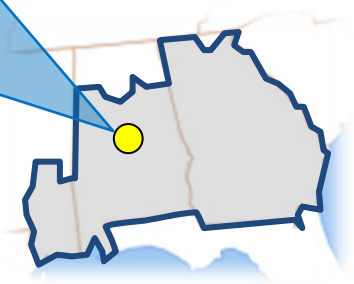


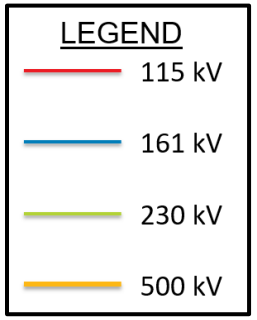
PROJECT DESCRIPTION:

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.

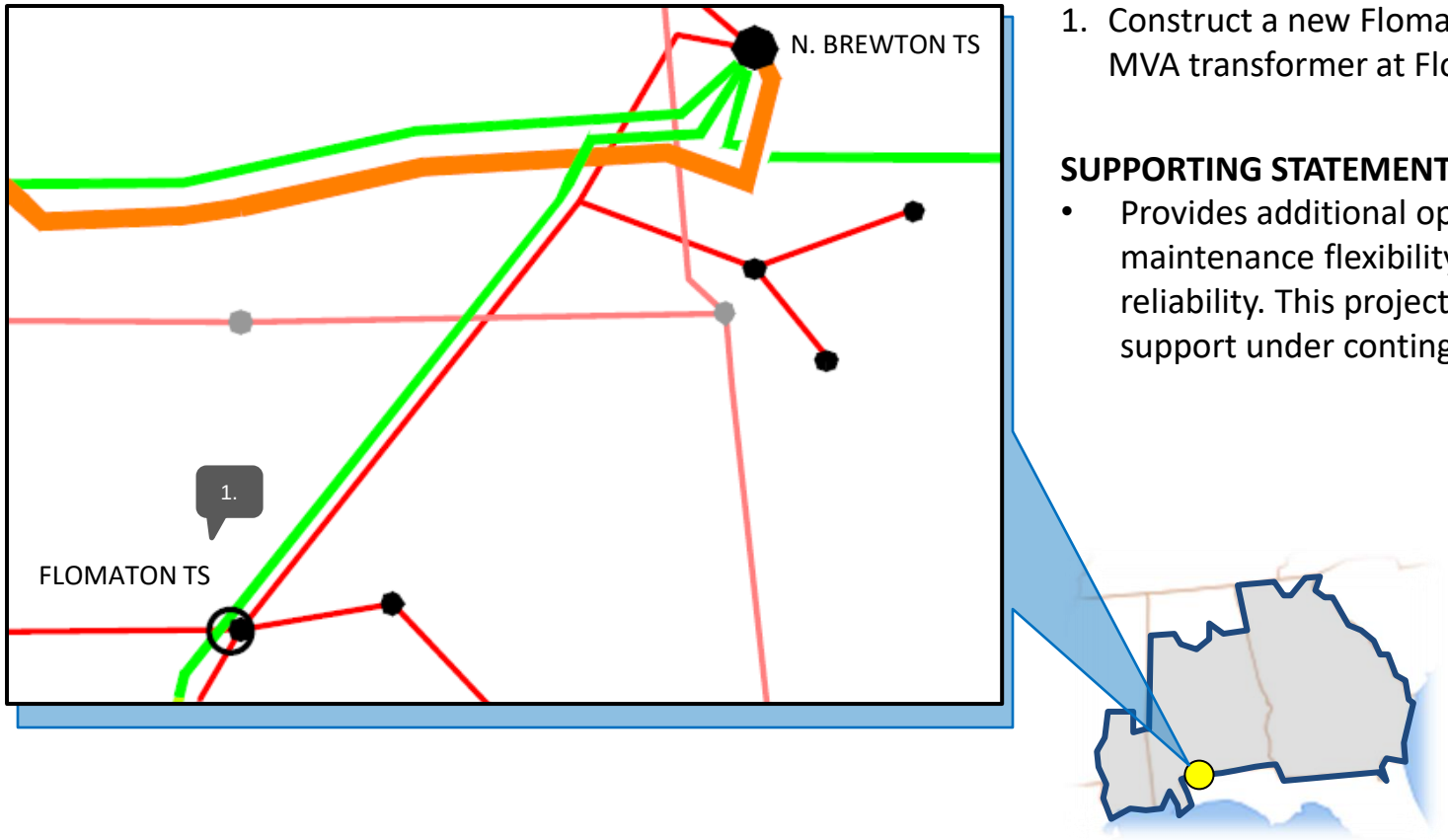




SOUTHERN – 6W

• **2029**

FLOMATON 230/115 KV SUBSTATION

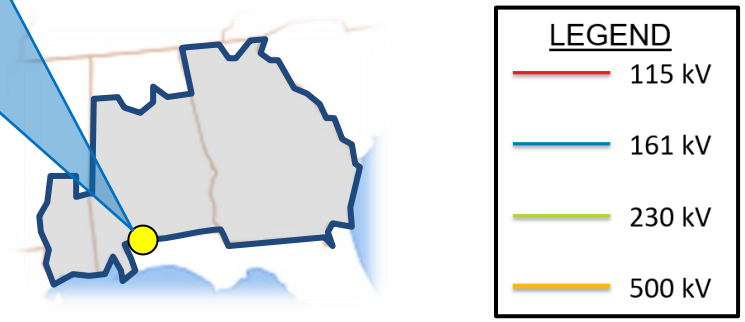


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

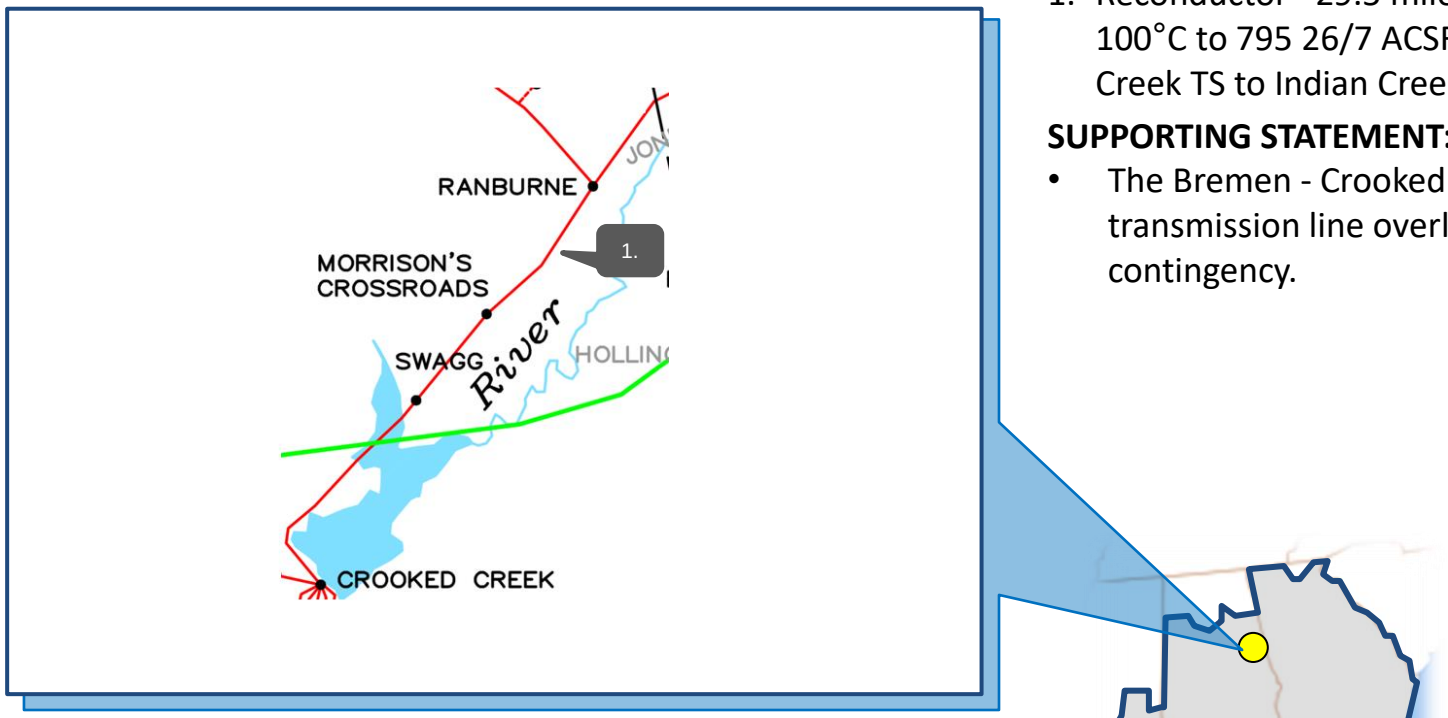
- Provides additional operational and maintenance flexibility which then increases reliability. This project also provides voltage support under contingency scenarios.



SOUTHERN – 7W

- **2029**

BREMEN – CROOKED CREEK 115 KV TRANSMISSION LINE

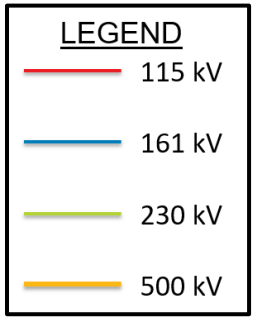


PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

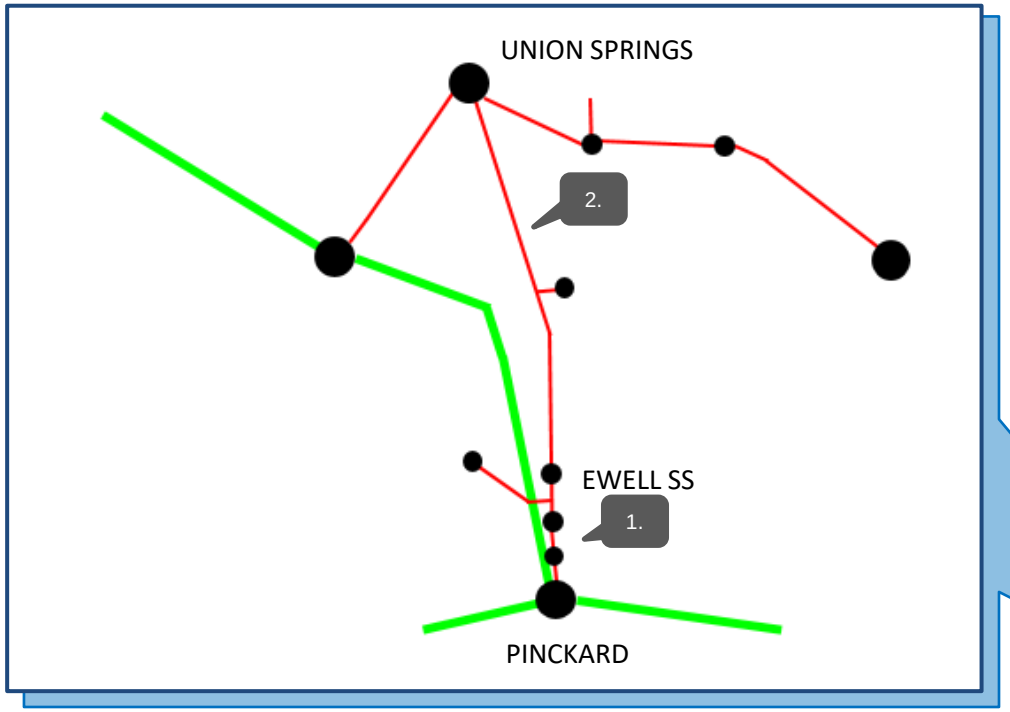
- The Bremen - Crooked Creek 115 kV transmission line overloads under contingency.



SOUTHERN – 8W

• 2030

UNION SPRINGS - PINCKARD 115 KV TRANSMISSION LINE

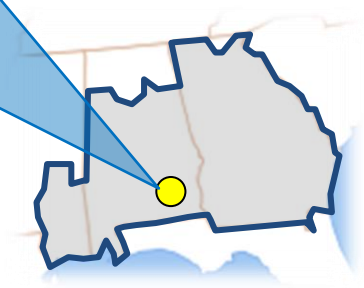


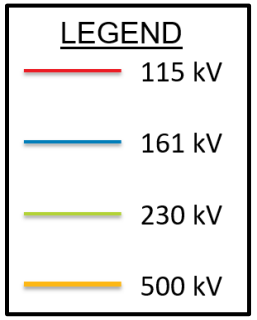
PROJECT DESCRIPTION:

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

SUPPORTING STATEMENT:

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





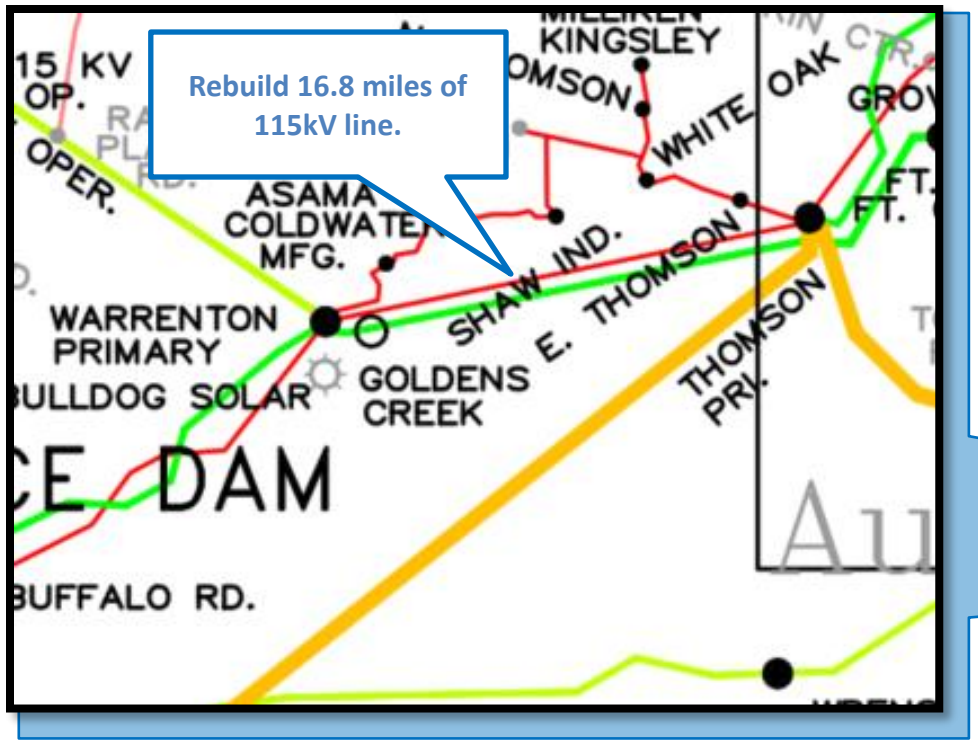
SOUTHERN (EAST) Balancing Authority Area

Regional Transmission Expansion Plan

SOUTHERN – 1E

• **2024**

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

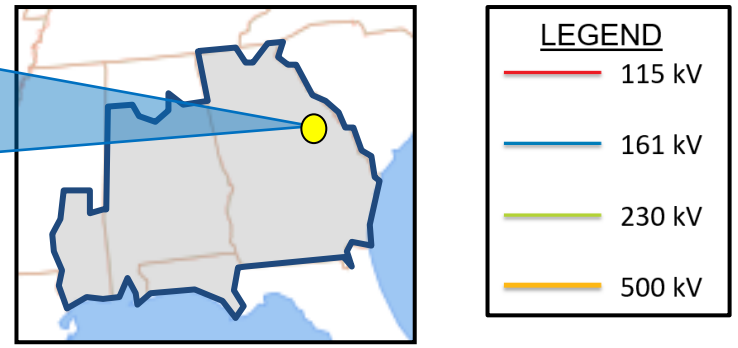


DESCRIPTION:

- Rebuild the entire Thomson Primary - Warrenton Primary (White) 115kV line (approximately 16.8 miles).

SUPPORTING STATEMENT:

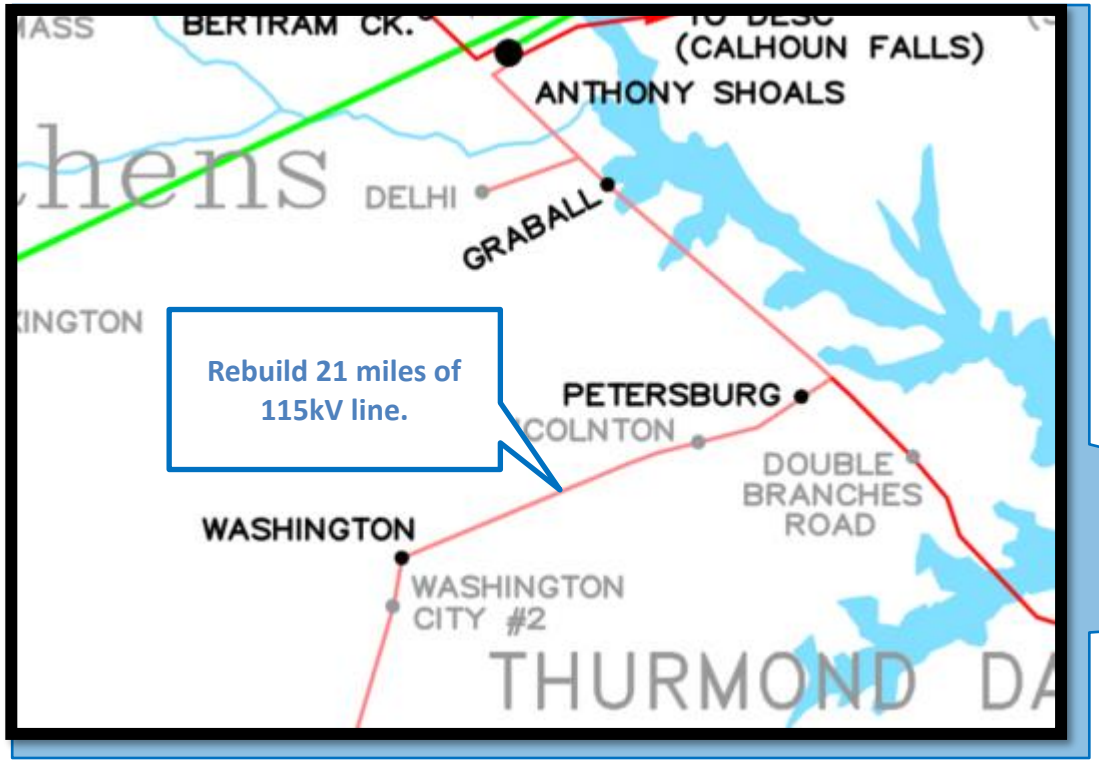
- The Thomson Primary - Warrenton Primary (White) 115kV line overloads under contingency.



SOUTHERN – 2E

• **2025**

GTC: ANTHONY SHOALS – WASHINGTON 115KV LINE REBUILD

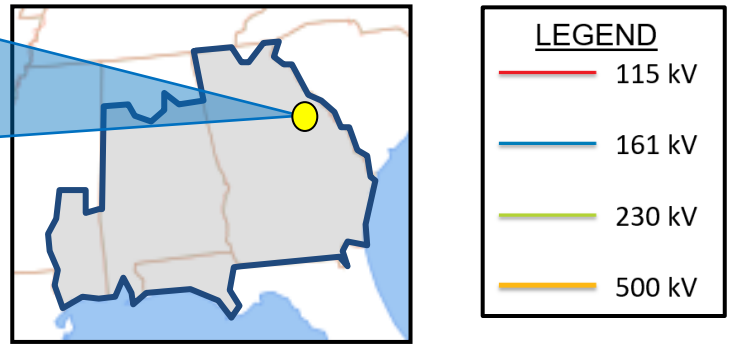


DESCRIPTION:

- Rebuild approximately 21 miles of the Anthony Shoals – Washington 115kV line.

SUPPORTING STATEMENT:

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

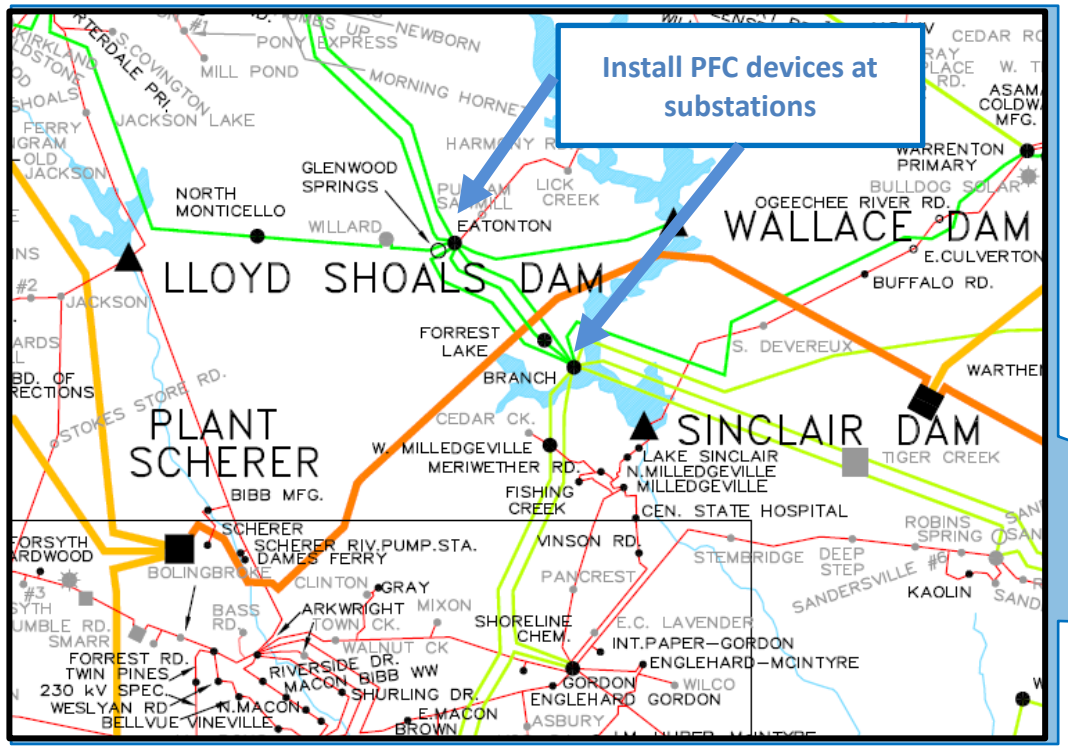


SOUTHERN Balancing Authority Area

SOUTHERN – 3E

• **2025**

POWER FLOW CONTROL DEVICES INSTALLATION

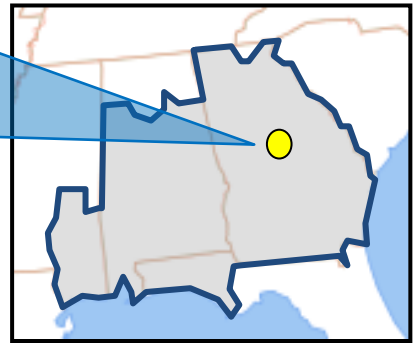


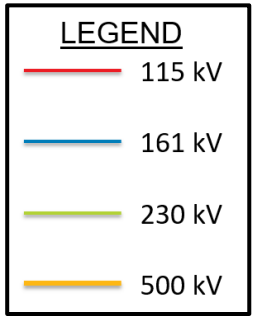
DESCRIPTION:

- Installation of power flow control devices at the Eatonton Primary and Branch substations.

SUPPORTING STATEMENT:

- This project addresses multiple thermal constraints in the area that occur under contingency.

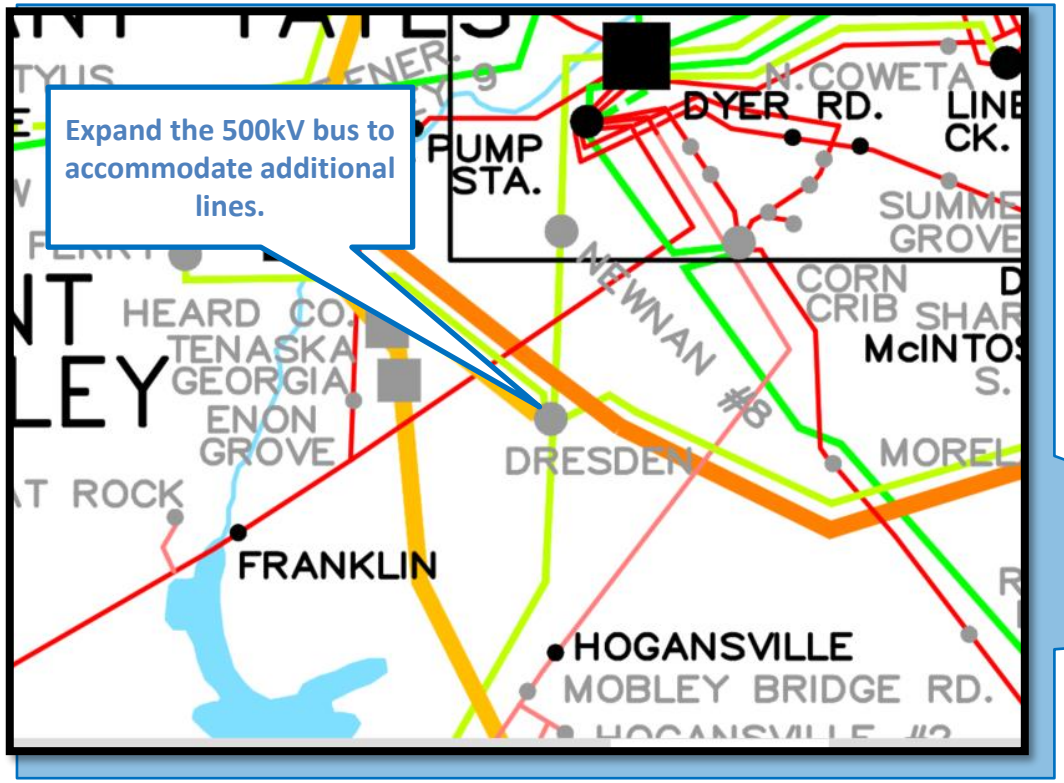




SOUTHERN – 4E

• **2026**

GTC: DRESDEN 500KV BUS EXPANSION

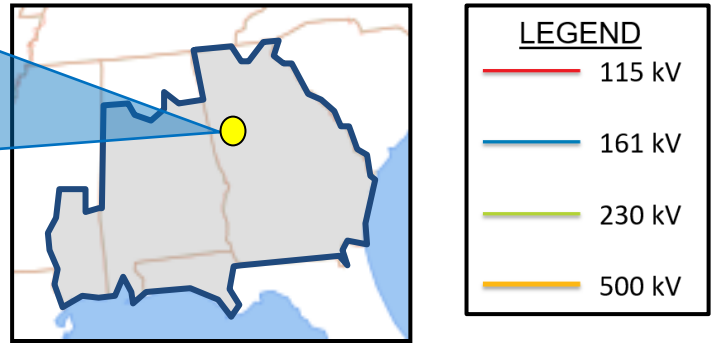


DESCRIPTION:

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

SUPPORTING STATEMENT:

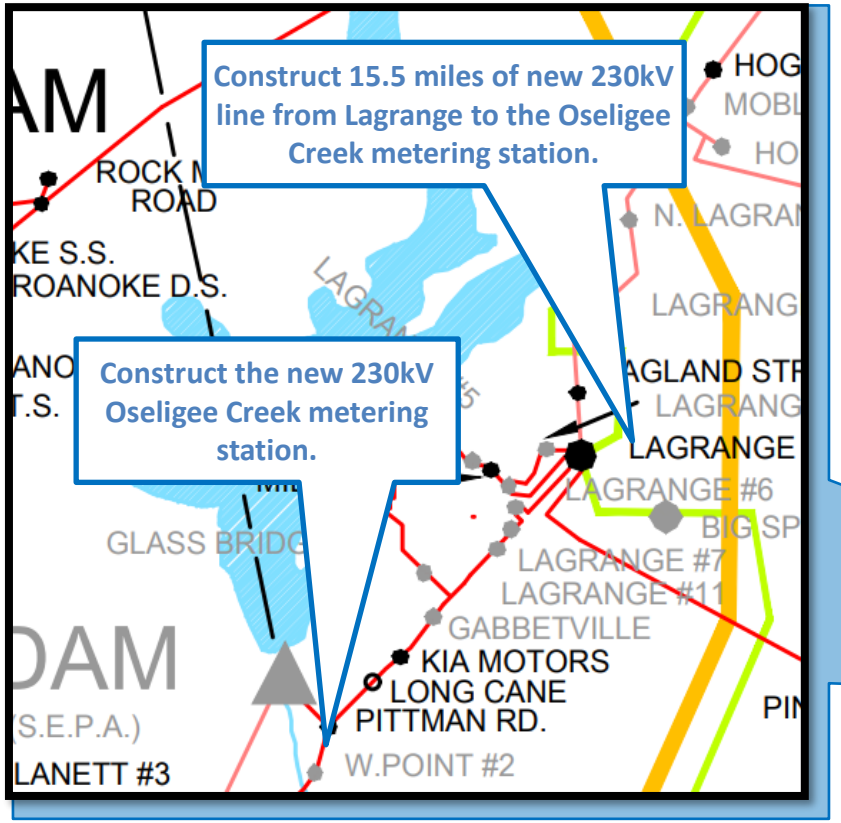
- This project will resolve multiple thermal constraints by eliminating a contingency.



SOUTHERN – 5E

• **2026**

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

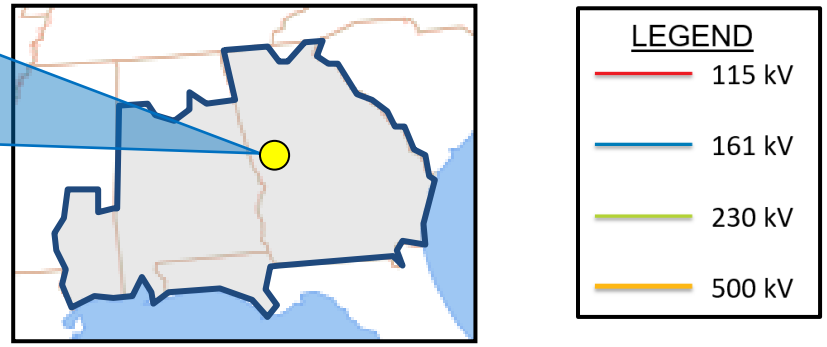


Description:

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

Supporting Statement:

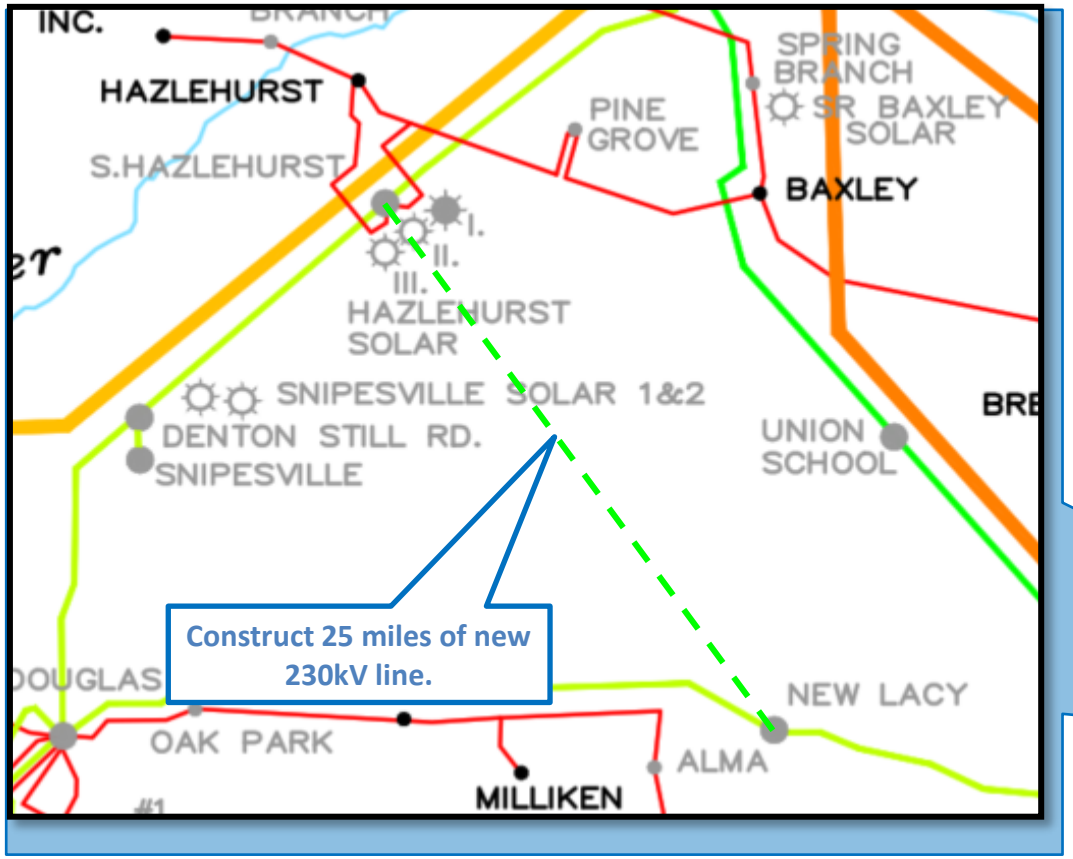
- The project will address multiple thermal overloads that occur under contingency.



SOUTHERN – 6E

• **2027**

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

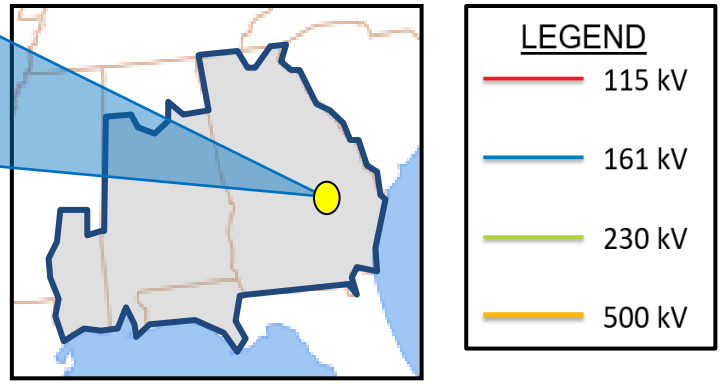


DESCRIPTION:

- Build a new 230kV line between South Hazlehurst and New Lacy (approximately 25 miles).

SUPPORTING STATEMENT:

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

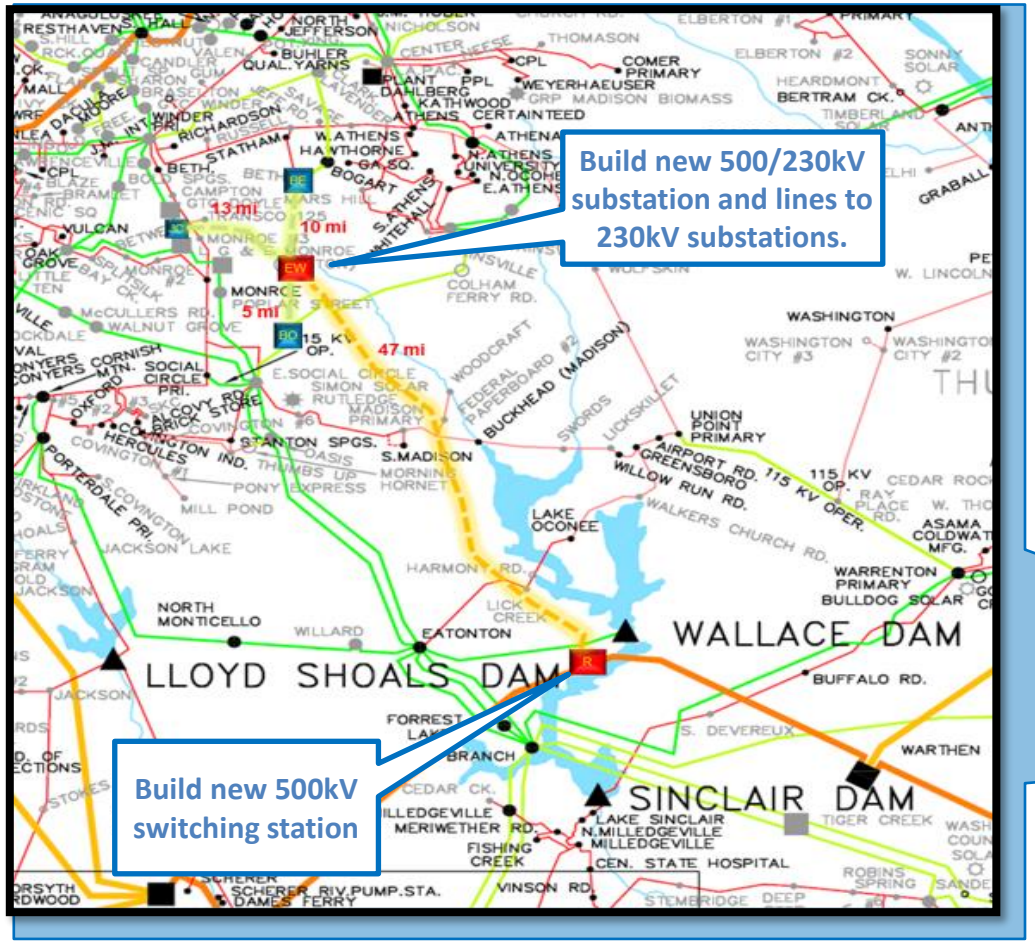


SOUTHERN Balancing Authority Area

SOUTHERN – 7E

• **2027**

GTC: EAST WALTON 500/230KV AREA PROJECT

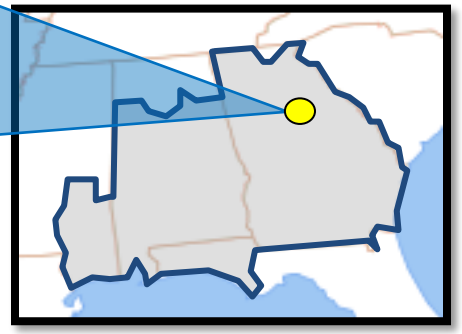


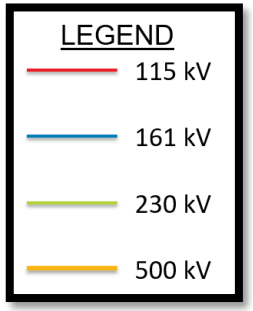
DESCRIPTION:

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

SUPPORTING STATEMENT:

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

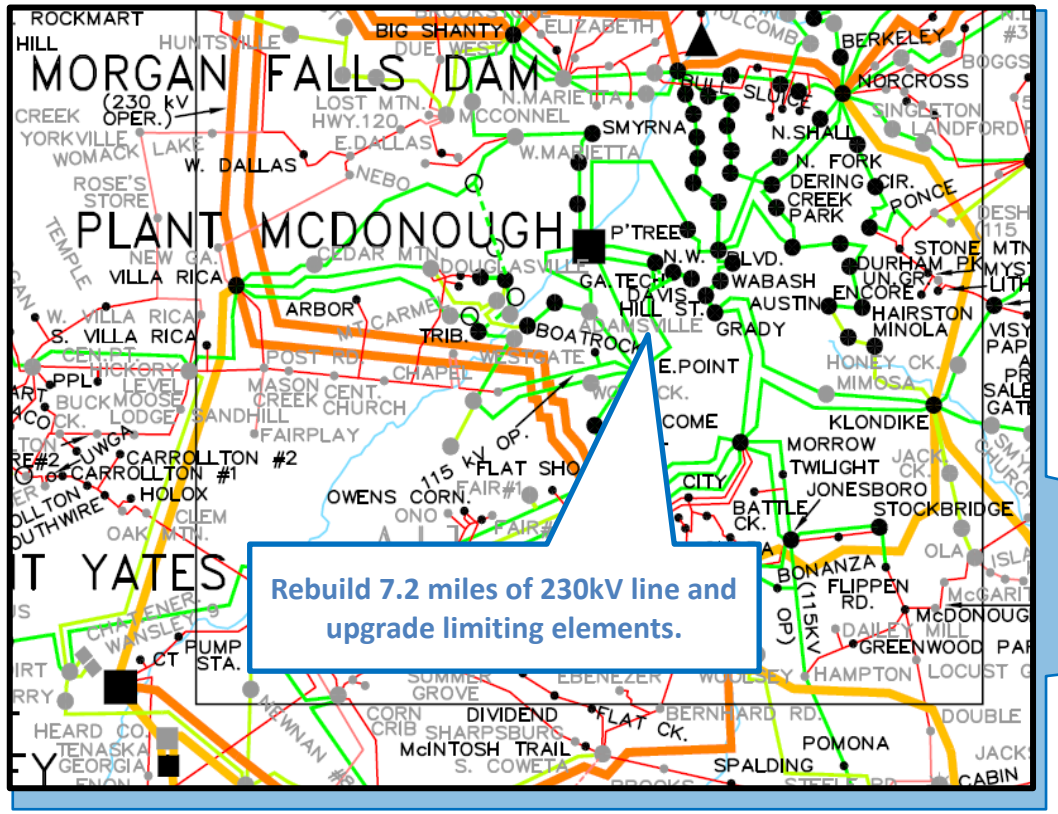




SOUTHERN – 8E

• **2027**

ADAMSVILLE – BUZZARD ROOST 230KV REBUILD AND JUMPER UPGRADE

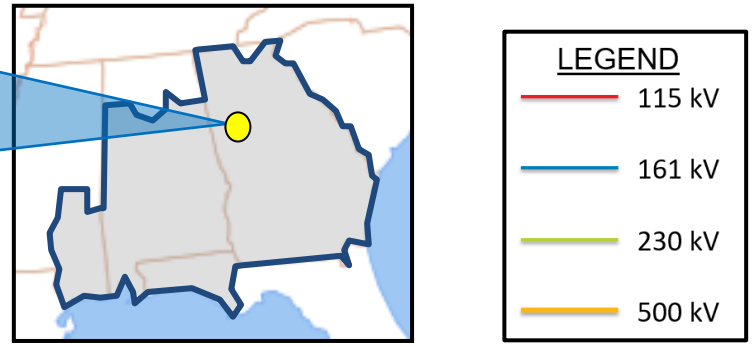


DESCRIPTION:

- Rebuild approximately 7.2 miles of the Adamsville - Buzzard Roost 230kV line. Upgrade limiting elements at substations along the line.

SUPPORTING STATEMENT:

- The Adamsville - Buzzard Roost 230kV line overloads under contingency.

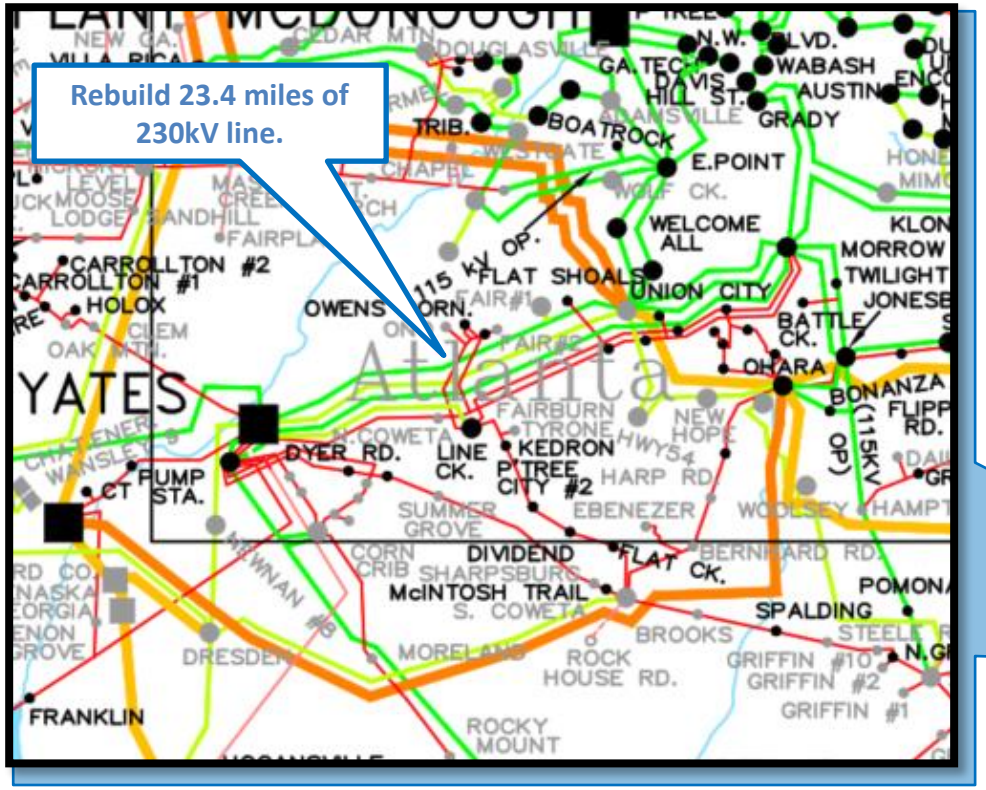


SOUTHERN Balancing Authority Area

SOUTHERN – 9E

• **2028**

UNION CITY – YATES (BLACK) 230KV LINE REBUILD

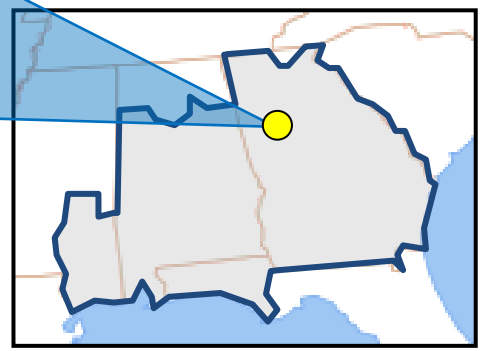


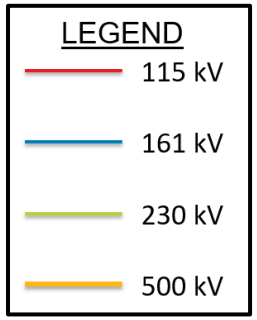
DESCRIPTION:

- Rebuild the entire Union City - Yates 230kV Black line (approximately 23.4 miles) and upgrade limiting elements at substations along the line.

SUPPORTING STATEMENT:

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

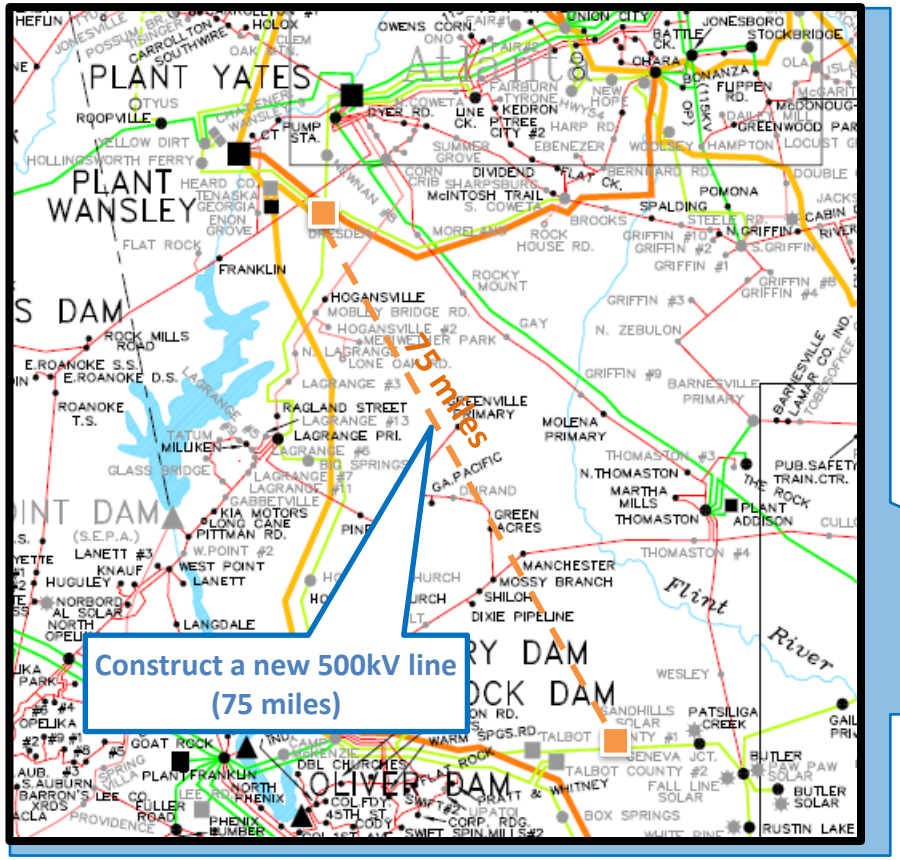




SOUTHERN – 10E

• **2029**

GTC: DRESDEN – TALBOT 500KV LINE

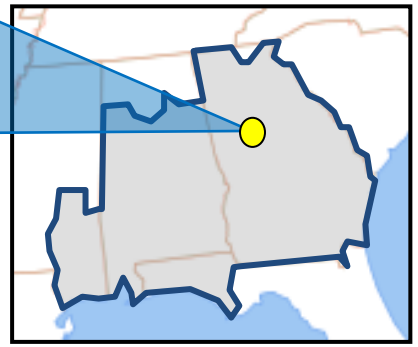


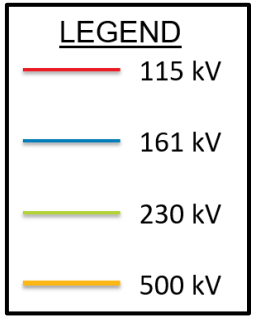
DESCRIPTION:

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

SUPPORTING STATEMENT:

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

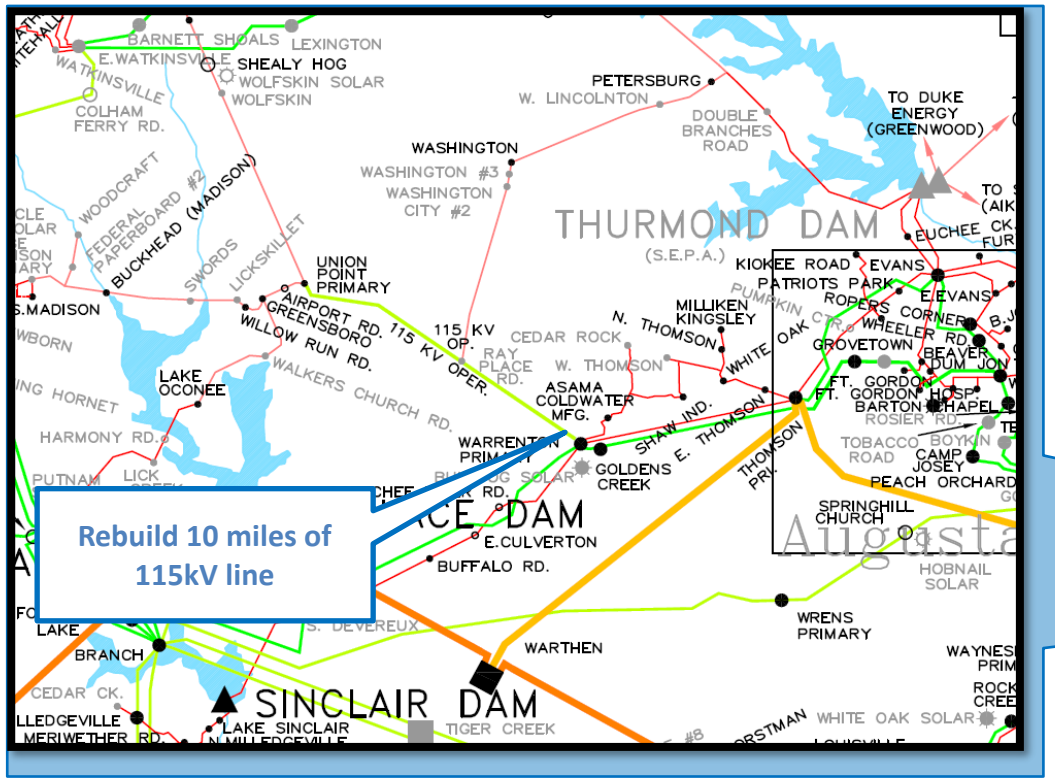




SOUTHERN – 11E

• **2030**

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

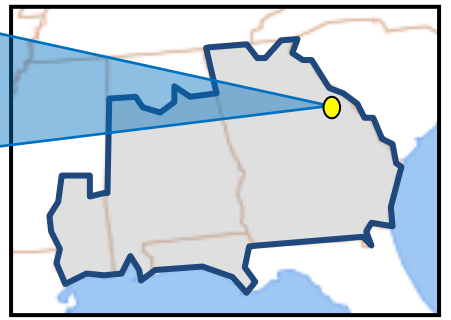


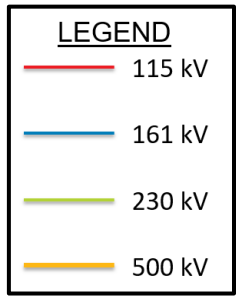
DESCRIPTION:

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

SUPPORTING STATEMENT:

- Ray Place Road - Warrenton Primary 115kV line overloads under contingency.



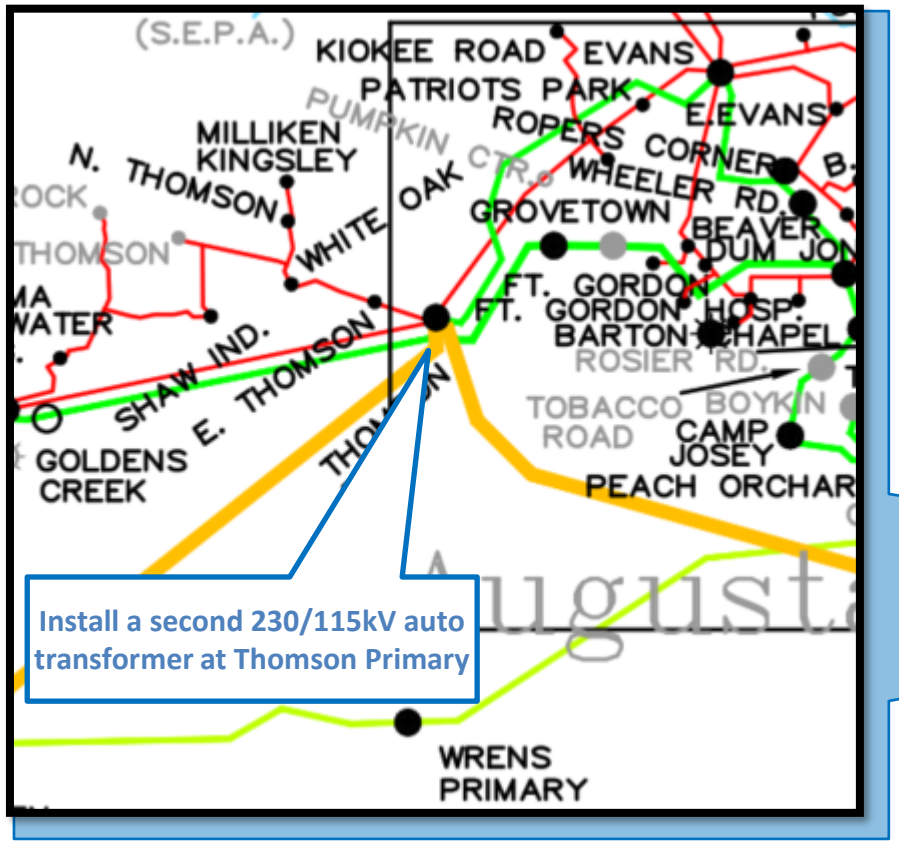


SOUTHERN Balancing Authority Area

SOUTHERN – 12E

• **2031**

THOMSON PRIMARY 230/115KV SECOND AUTO TRANSFORMER

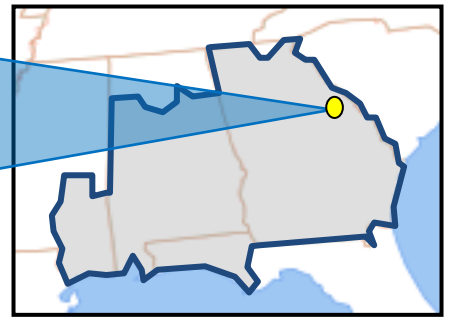


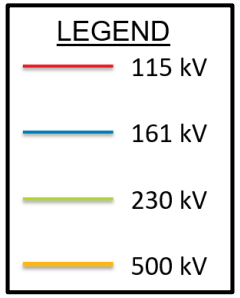
DESCRIPTION:

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

SUPPORTING STATEMENT:

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



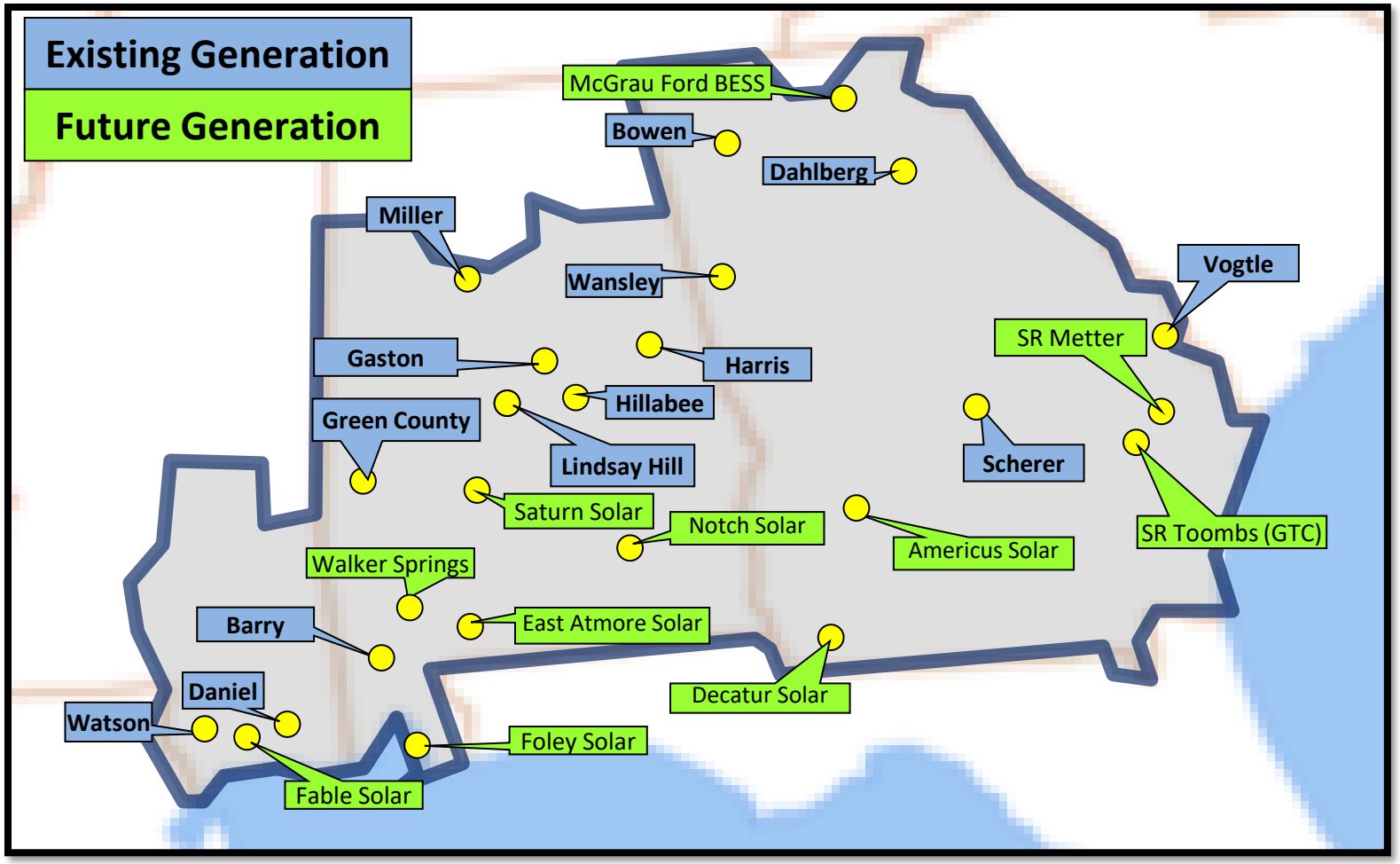


SOUTHERN Balancing Authority Area

Preliminary 2024 Generation Assumptions

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten-year planning horizon for the 2024 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 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
BOWEN 1*	COAL	728	728	728	728	0	--	--	--	--	--
BOWEN 2 *	COAL	728	728	728	728	0	--	--	--	--	--
BOWEN 3*	COAL	889	889	889	889	889	889	0	--	--	--
BOWEN 4 *	COAL	891	891	891	891	891	891	0	--	--	--
SCHERER 1[1]	COAL	74	74	74	74	0	--	--	--	--	--
SCHERER 2[1]	COAL	74	74	74	74	0	--	--	--	--	--
SCHERER 3	COAL	661	661	661	661	0	--	--	--	--	--

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

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

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten-year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
BARRY 5*	COAL	757	757	757	757	0	--	--	--	--	--
BARRY 1*	GAS	80	80	80	0	--	--	--	--	--	--
BARRY 2*	GAS	80	80	80	0	--	--	--	--	--	--
GASTON 1*	COAL/GAS	254	254	254	254	0	--	--	--	--	--
GASTON 2*	COAL/GAS	256	256	256	256	0	--	--	--	--	--
GASTON 3*	COAL/GAS	254	254	254	254	0	--	--	--	--	--
GASTON 4*	COAL/GAS	256	256	256	256	0	--	--	--	--	--
GASTON 5	COAL/GAS	832	832	920	920	920	920	920	920	920	920

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

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten-year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
WATSON 4*	GAS	272	272	272	272	0	--	--	--	--	--
DANIEL 2*	COAL	510	510	510	510	0	--	--	--	--	--
GREENE COUNTY 1*	GAS	258	258	258	258	0	--	--	--	--	--
GREENE COUNTY 2*	GAS	258	258	258	258	0	--	--	--	--	--
BARRY 8	Gas	653	653	653	685	685	685	685	685	685	685
WANSLEY 7	Gas	622	622	622	622	622	622	622	622	622	622
DAHLBERG	Gas	502	502	502	758	685	685	685	685	685	685

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

Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten-year planning horizon for the 2024 SERTP Process. The years shown represent Summer Peak conditions.

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
WALKER SPRINGS I, II SOLAR	Solar	160	160	160	160	160	160	160	160	160	160
NOTCH SOLAR	Solar	--	160	160	160	160	160	160	160	160	160
EAST ATMORE SOLAR	Solar	80	80	80	80	80	80	80	80	80	80
FOLEY SOLAR	Solar	80	80	80	80	80	80	80	80	80	80
MCGRAU FORD BESS	BESS	--	265	265	265	265	265	265	265	265	265
AMERICUS SOLAR	Solar	--	--	415	415	415	415	415	415	415	415
SATURN SOLAR 1&2	Solar	--	--	160	160	160	160	160	160	160	160
SR METTER	Solar	--	80	80	80	80	80	80	80	80	80
FABLE SOLAR	Solar	--	78	78	78	78	78	78	78	78	78

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	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
DAHLBERG	44	44	44	44	44	44	44	44	44	44
DANIEL	100	100	100	100	100	100	100	100	100	100
HARRIS	106	106	106	106	106	106	106	106	106	106
HILLABEE	210	210	210	210	210	210	210	210	210	210
LINDSAY HILL	220	220	220	220	220	220	220	220	220	220
MILLER*	1400	1500	1500	1500	1500	1500	1500	1500	1500	1500
SANDERSVILLE	0	0	0	0	292	292	292	292	292	292
SCHERER	215	215	215	215	0	0	0	0	0	0
VOGTLE	206	206	206	206	206	206	206	206	206	206

*Third-party delivery service, sourcing from a Designated Network Resource, will likely require a redirect to new source.

GTC – Generation Assumptions

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

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
SR TOOMBS	SOLAR	250	250	250	250	250	250	250	250	250	250

MEAG – Generation Assumptions

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

SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
NO KNOWN UPDATES AT THIS TIME											

DALTON – Generation Assumptions

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

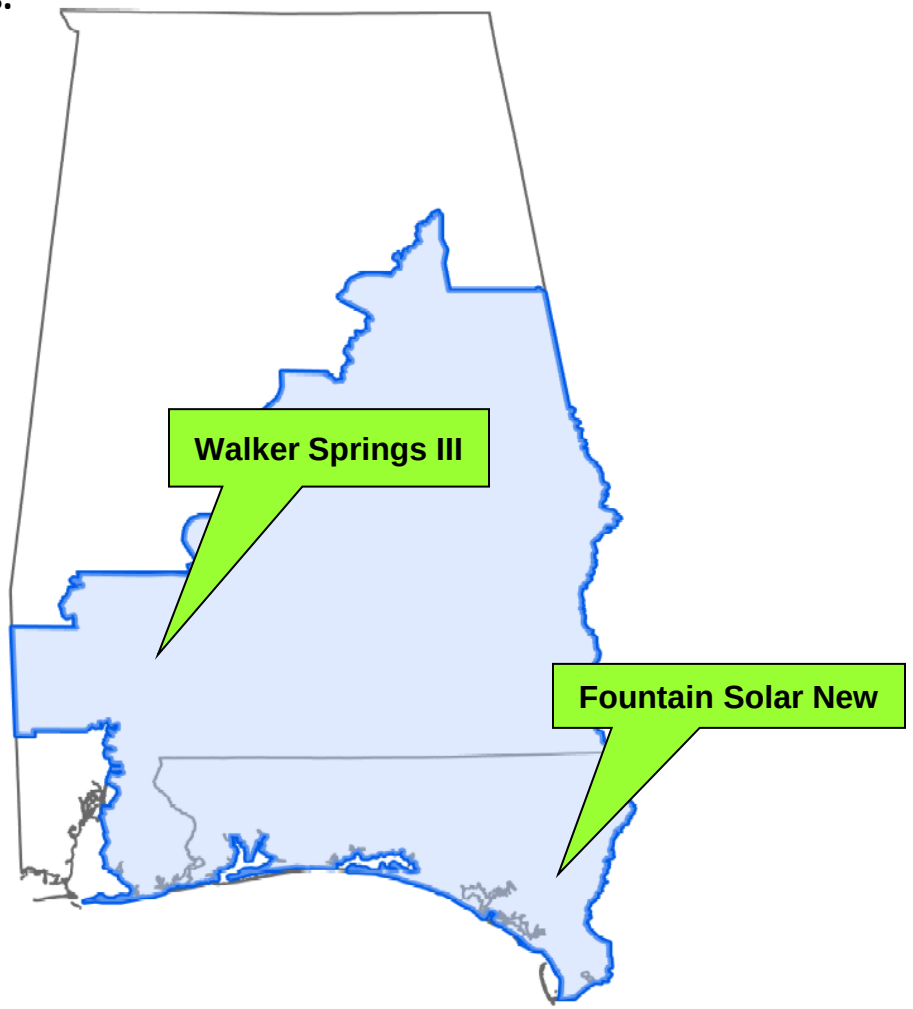
SITE	FUEL TYPE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
NO KNOWN UPDATES AT THIS TIME											

POWERSOUTH Planning Authority Area

2023 Generation Assumptions

POWERSOUTH – Generation Assumptions

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



Future Generation

POWERSOUTH – Generation Assumptions

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

SITE	FUEL TYPE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Fountain	Solar	--	75	75	75	75	75	75	75	75	75
Walker Springs III	Solar	--	--	80	80	80	80	80	80	80	80

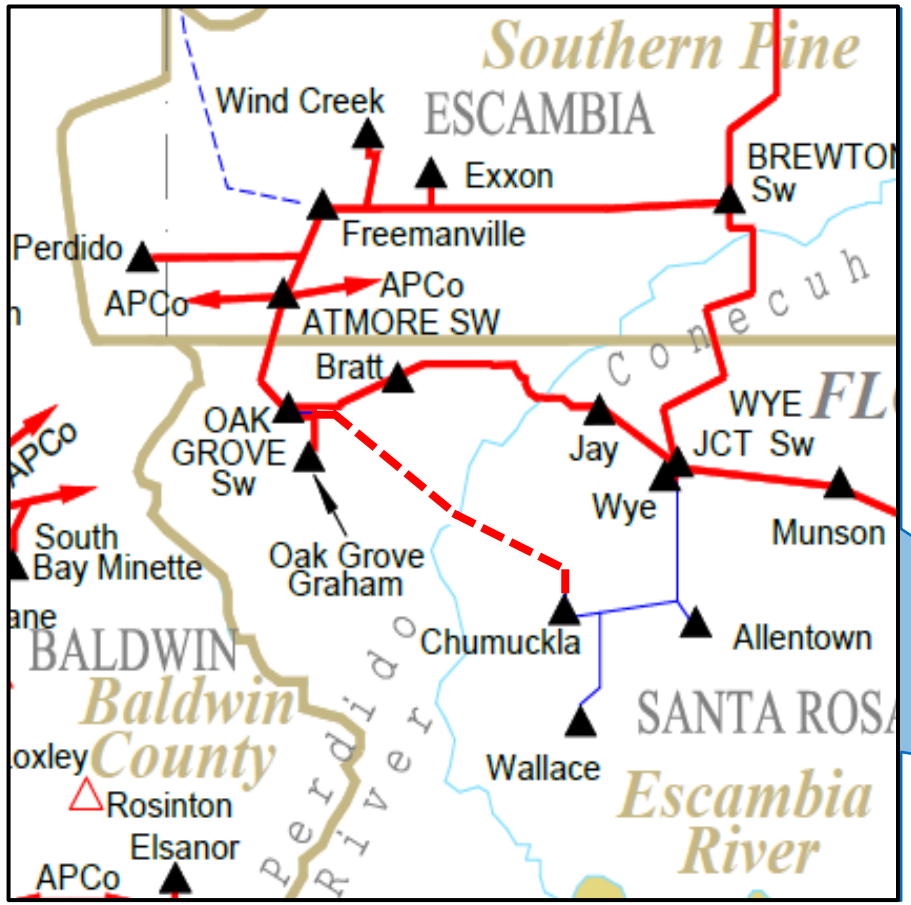
POWERSOUTH Planning Authority Area

Regional Transmission Expansion Plan

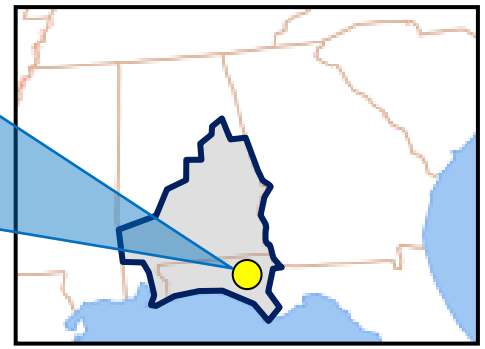
POWERSOUTH - 1

- **2024**

Oak Grove – Chumuckla 115 KV Transmission Line



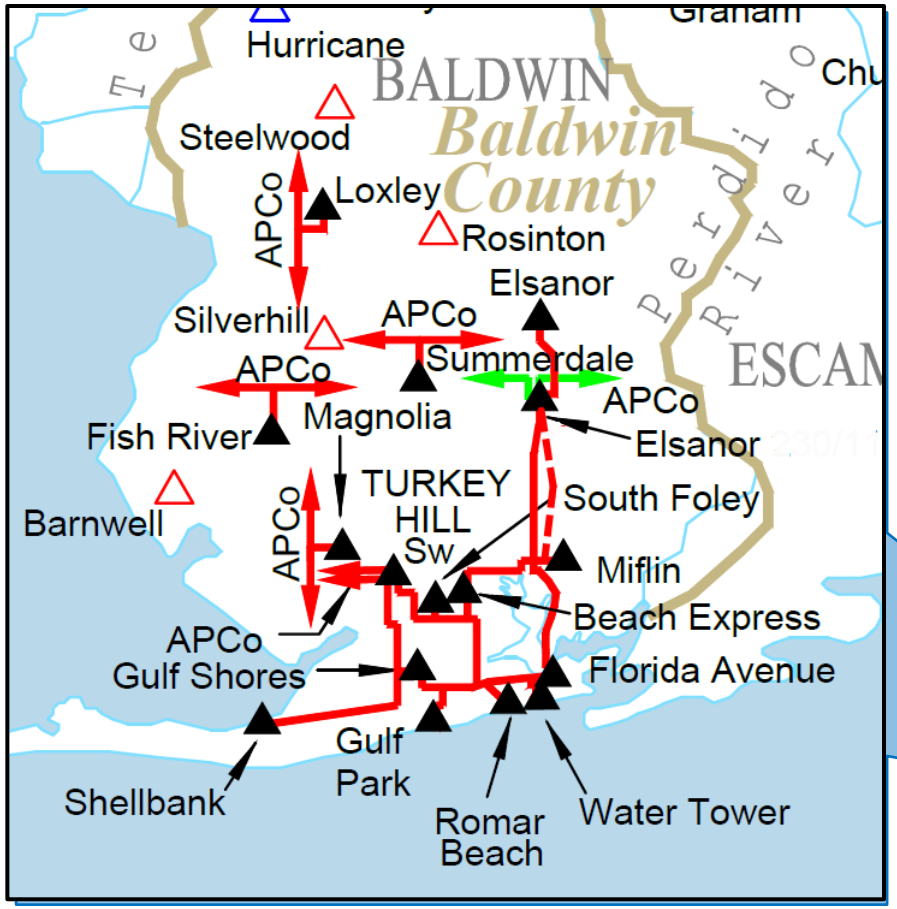
- **DESCRIPTION:**
  - Construct a Oak Grove Graham Jct.
  - Construct a new 115 kV transmission line from Oak Grove Graham Jct. to Chumuckla Substation which will replace the existing Oak Grove Sw. – Chumuckla 46kV transmission line.
- **SUPPORTING STATEMENT:**
  - Load growth in the area has exceeded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



POWERSOUTH - 2

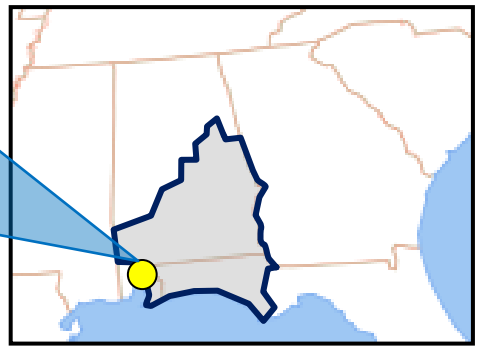
• **2025**

Elsanor – Miflin Distribution 115 KV Transmission Line



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

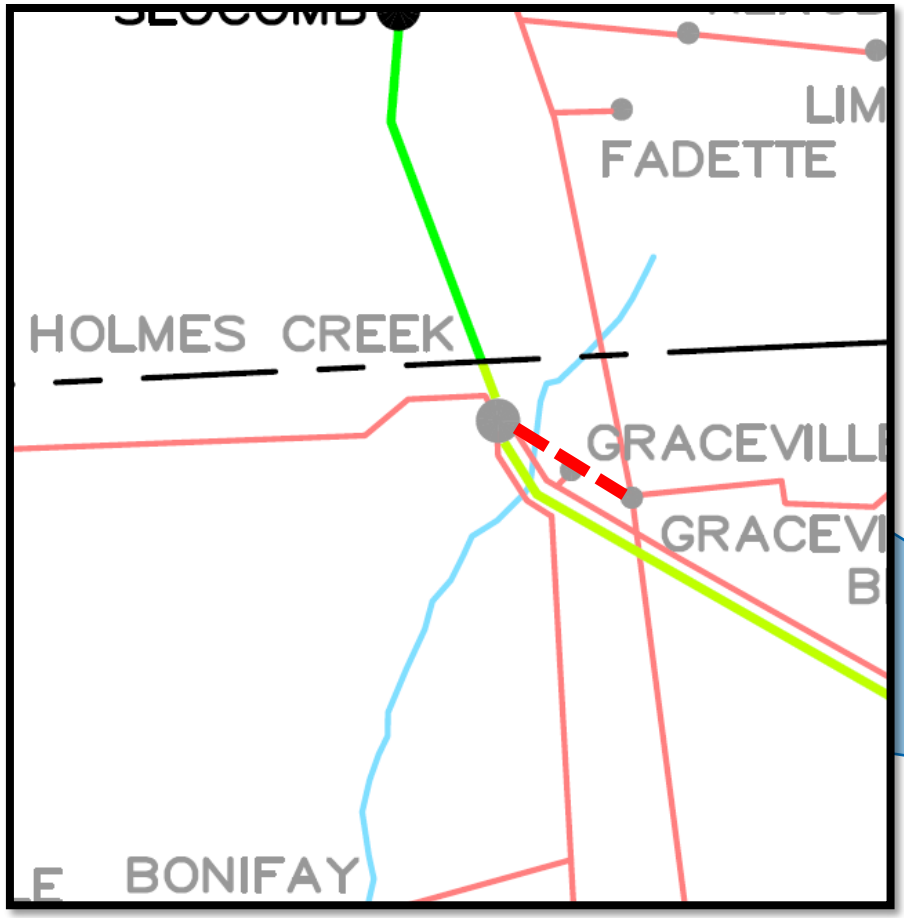
- **SUPPORTING STATEMENT:**
  - The existing Elsanor-Miflin 115kV line overloads under contingency.



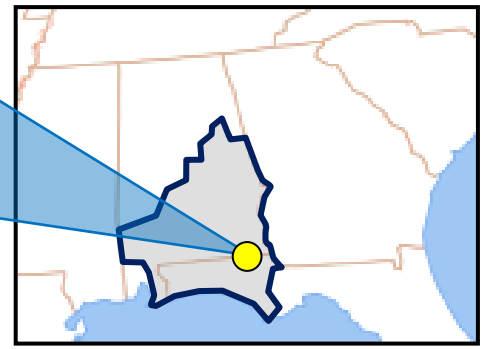
POWERSOUTH - 3

• **2025**

Graceville – Holmes Creek 115 KV Transmission Tie Line



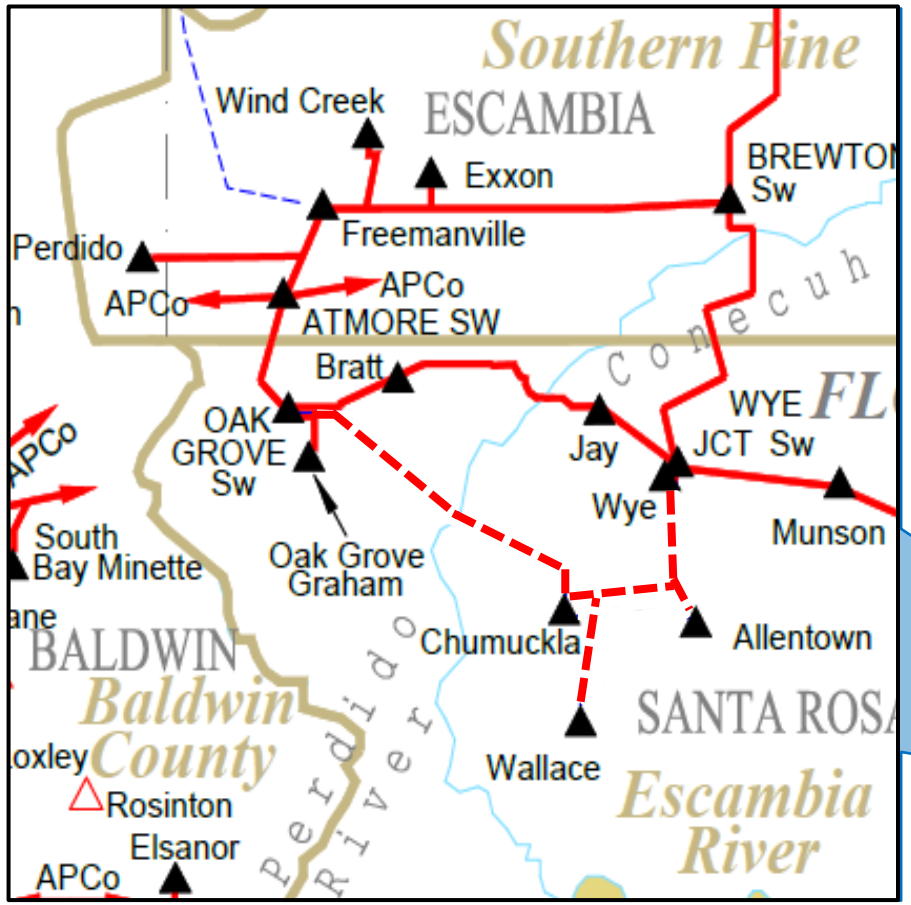
- **DESCRIPTION:**
  - Construct approximately 1.08 miles of new 115 kV transmission line from Graceville Switching Station to FPL's Homes Creek Station with 795 ACSR at 100°C.
- **SUPPORTING STATEMENT:**
  - Improves voltage support on PowerSouth system in the area



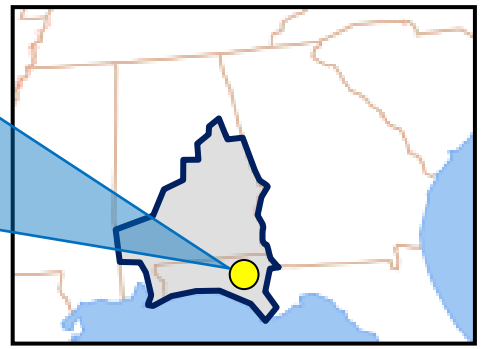
POWERSOUTH - 4

• **2025**

EREC 115 KV Conversion



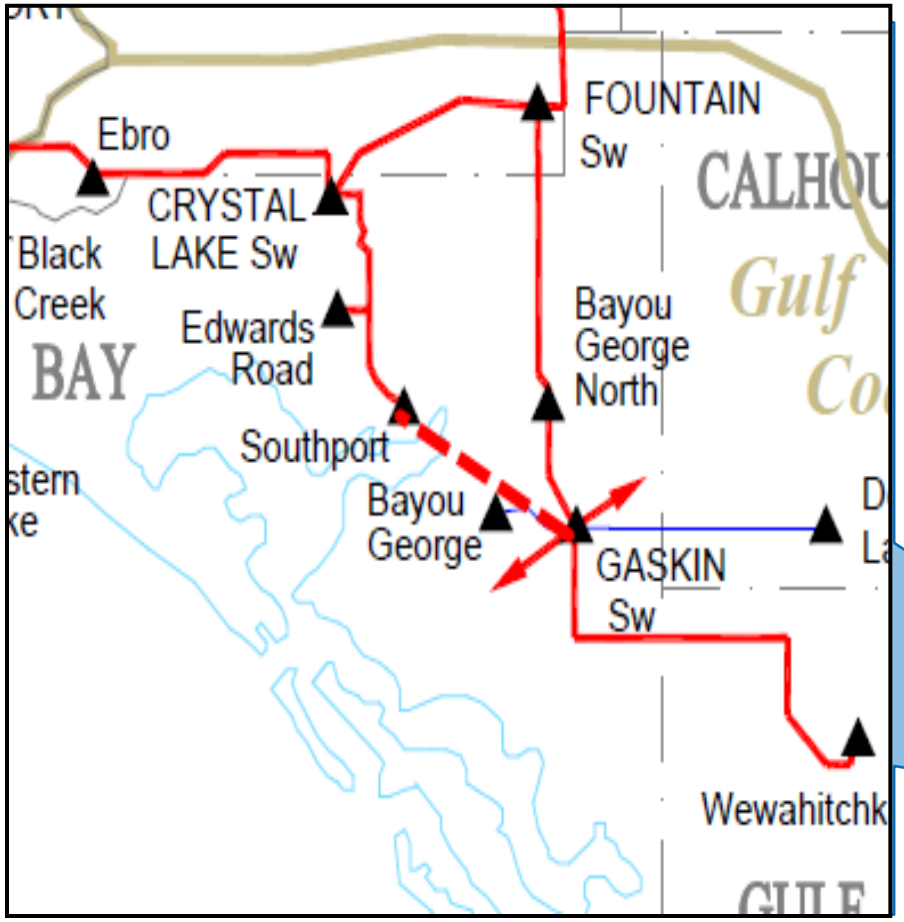
- **DESCRIPTION:**
  - Convert the remaining 21.36 miles of 46 kV transmission line and 3 distribution stations between Chumuckla and Wye to 115kV service.
- **SUPPORTING STATEMENT:**
  - Load growth in the area has exceeded the capacity of that which can be supported by the existing 46kV facilities.



POWERSOUTH - 5

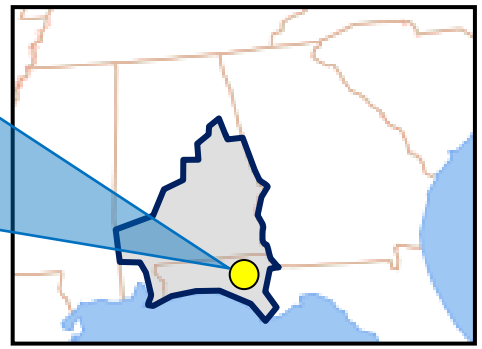
- **2028**

Gaskin – Southport 115 KV Transmission Line



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

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



POWERSOUTH Planning Authority Area

Preliminary 2024 Generation Assumptions

* PowerSouth has no known generation changes throughout the ten-year planning horizon for the 2024 SERTP Process.

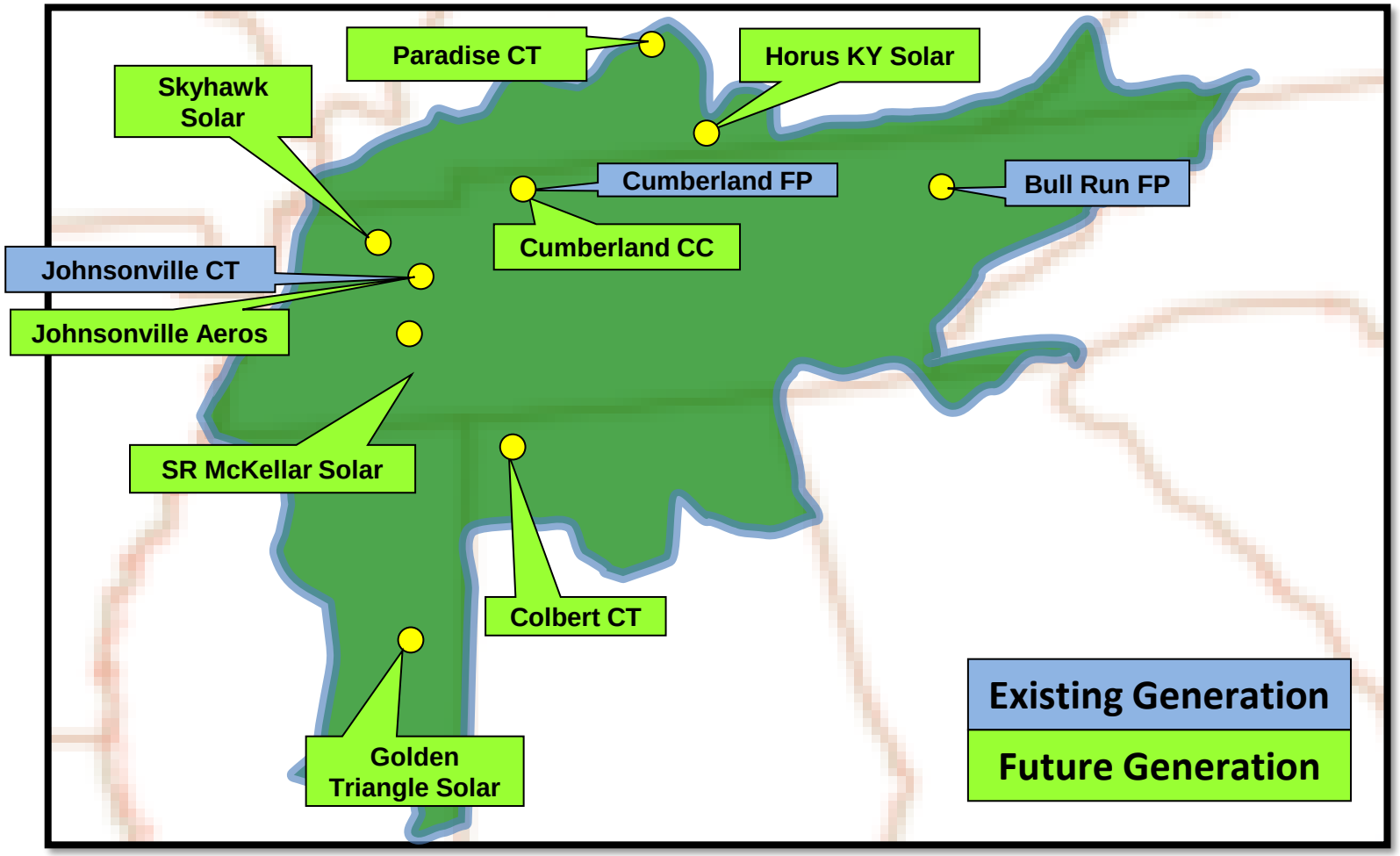
TVA Balancing Authority Area

2023 Generation Assumptions

TVA Balancing Authority Area

TVA – Generation Assumptions

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



TVA Balancing Authority Area

TVA – Generation Assumptions

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

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

TVA Balancing Authority Area

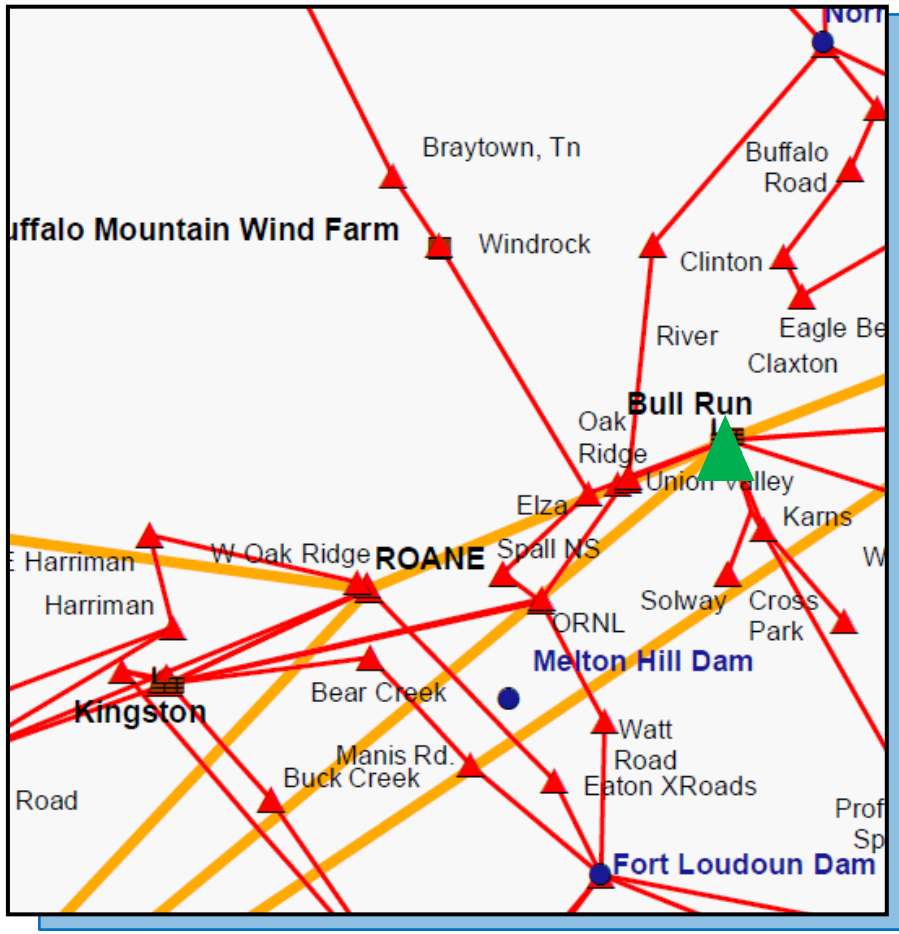
Regional Transmission Expansion Plan

TVA Balancing Authority Area

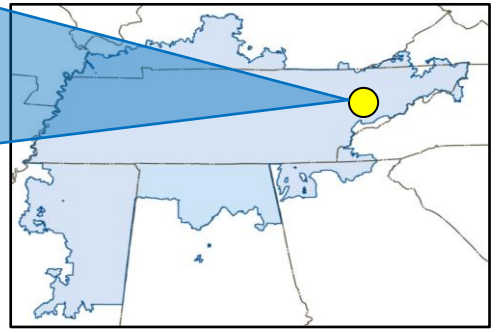
TVA – 1

- **2024**

ANDERSON 500 KV SUBSTATION



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

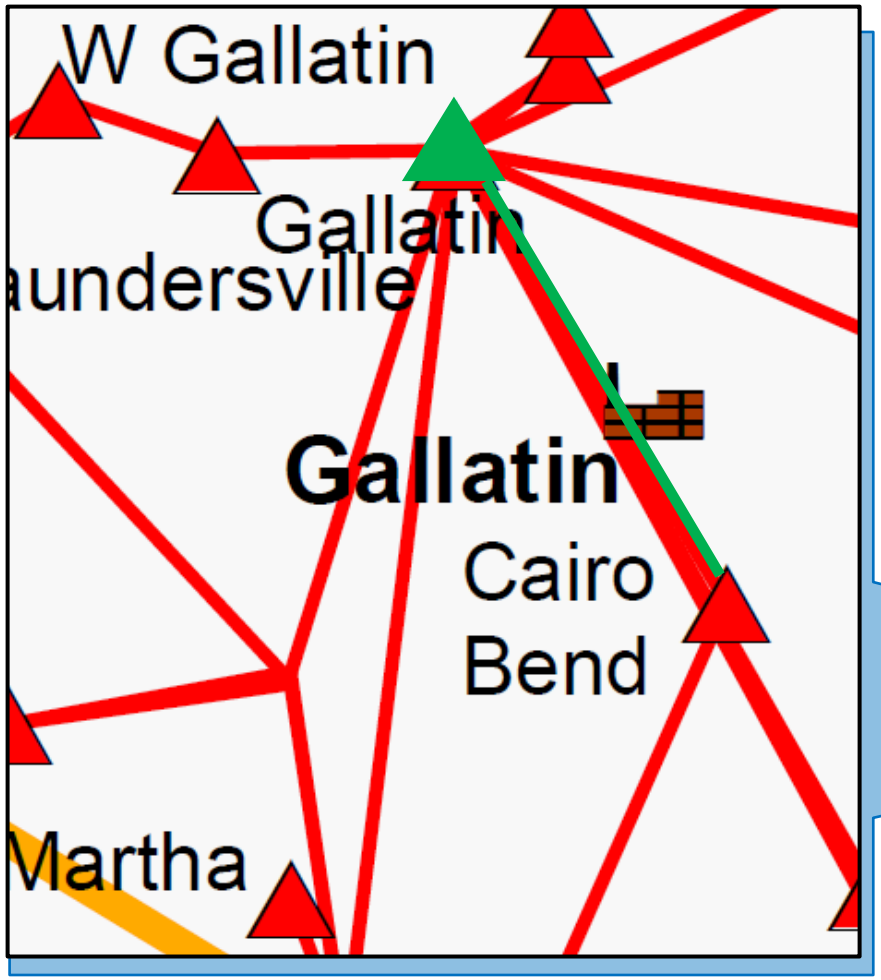


TVA Balancing Authority Area

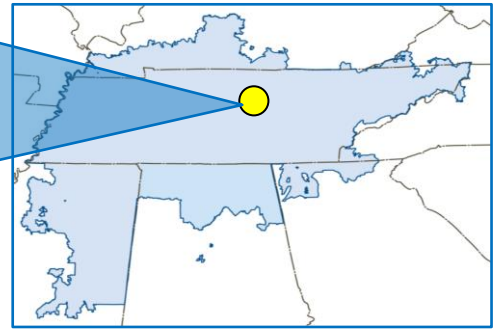
TVA – 2

- **2024**

GALLATIN - CAIRO BEND 161 KV TRANSMISSION LINE



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

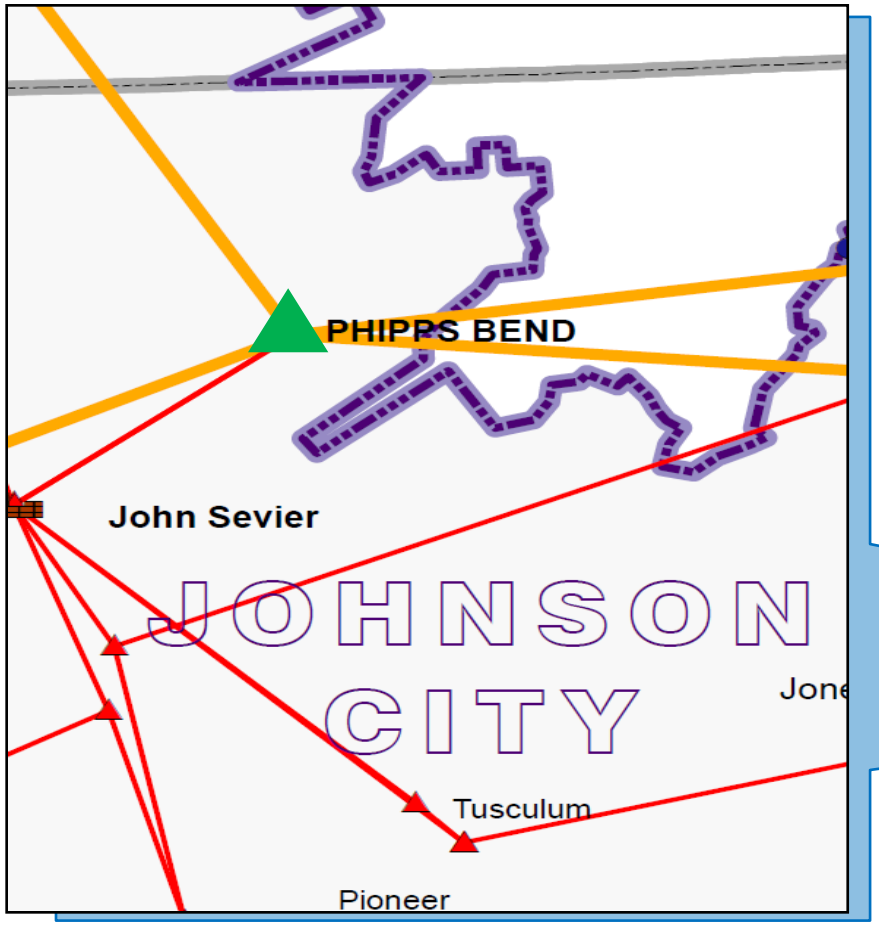


TVA Balancing Authority Area

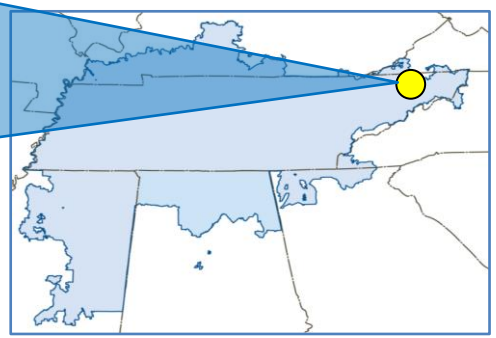
TVA – 3

• **2024**

PHIPPS BEND 500 KV SUBSTATION



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

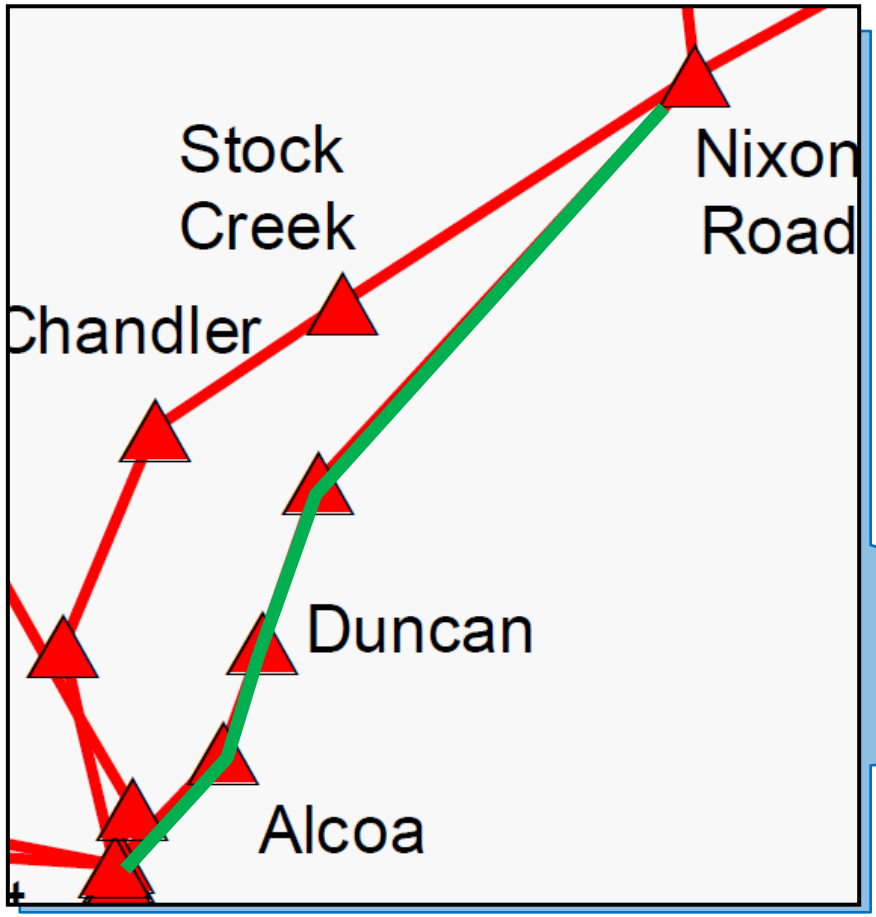


TVA Balancing Authority Area

TVA – 4

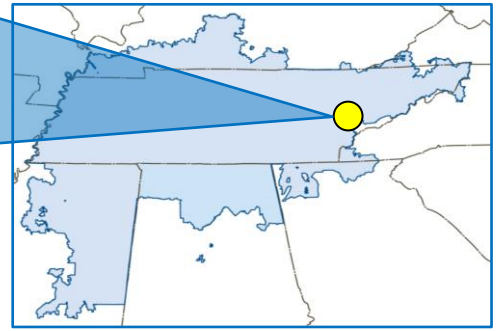
• **2025**

ALCOA SS – NIXON ROAD 161 KV TRANSMISSION LINE



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

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

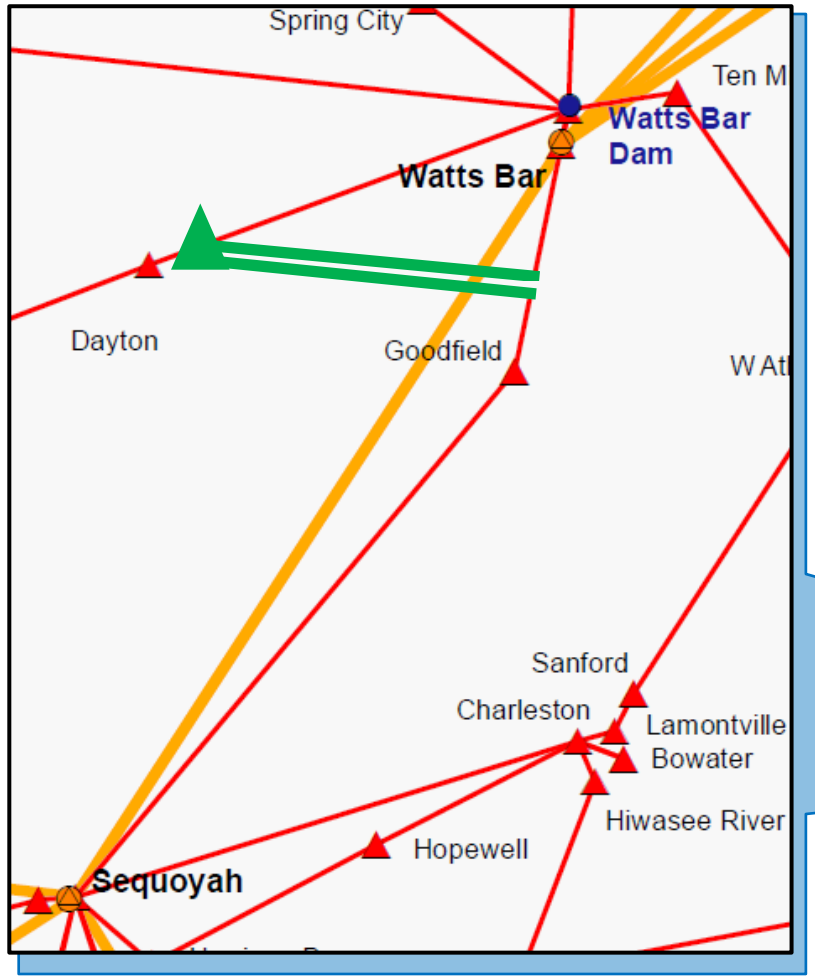


TVA Balancing Authority Area

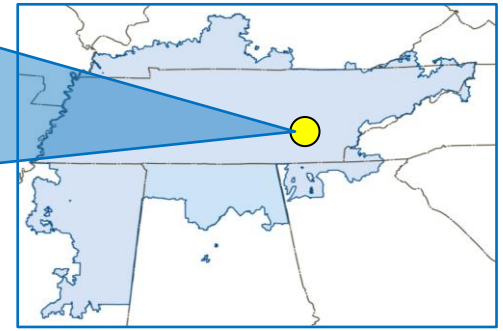
TVA – 5

• **2025**

N. DAYTON SUBSTATION



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

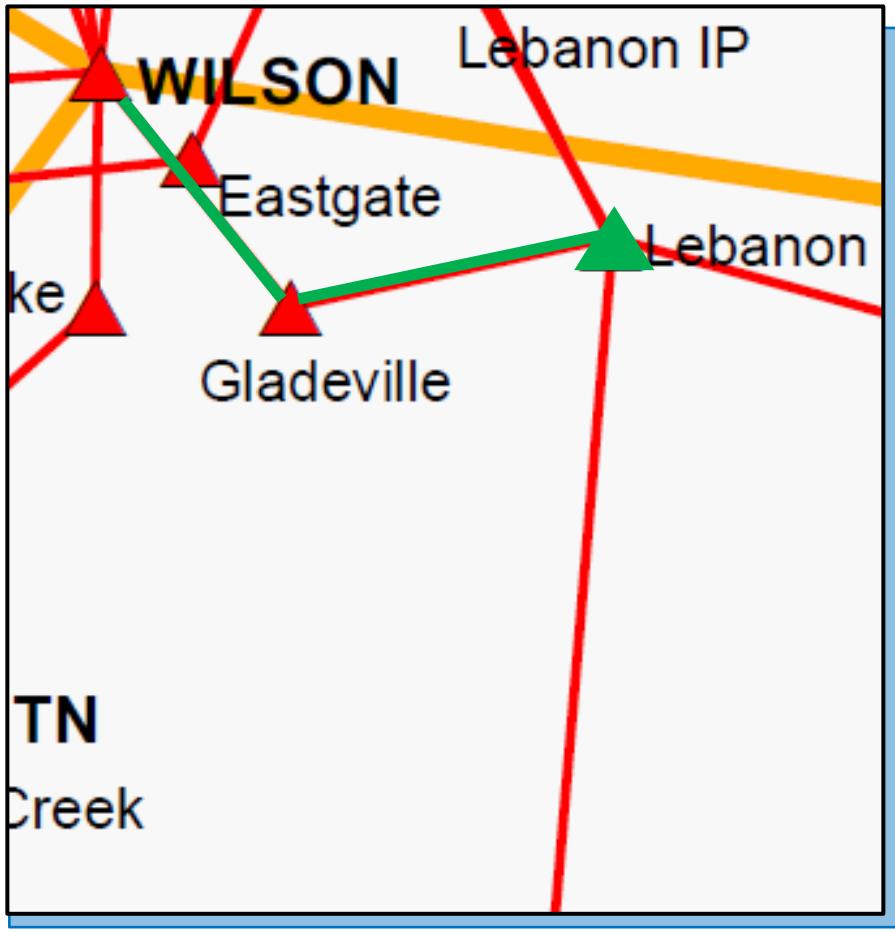


TVA Balancing Authority Area

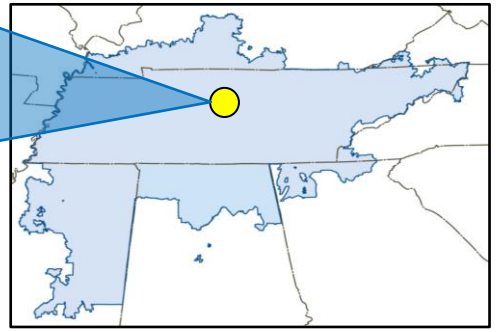
TVA – 6

- **2025**

WILSON - LEBANON 161 KV TRANSMISSION LINE



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

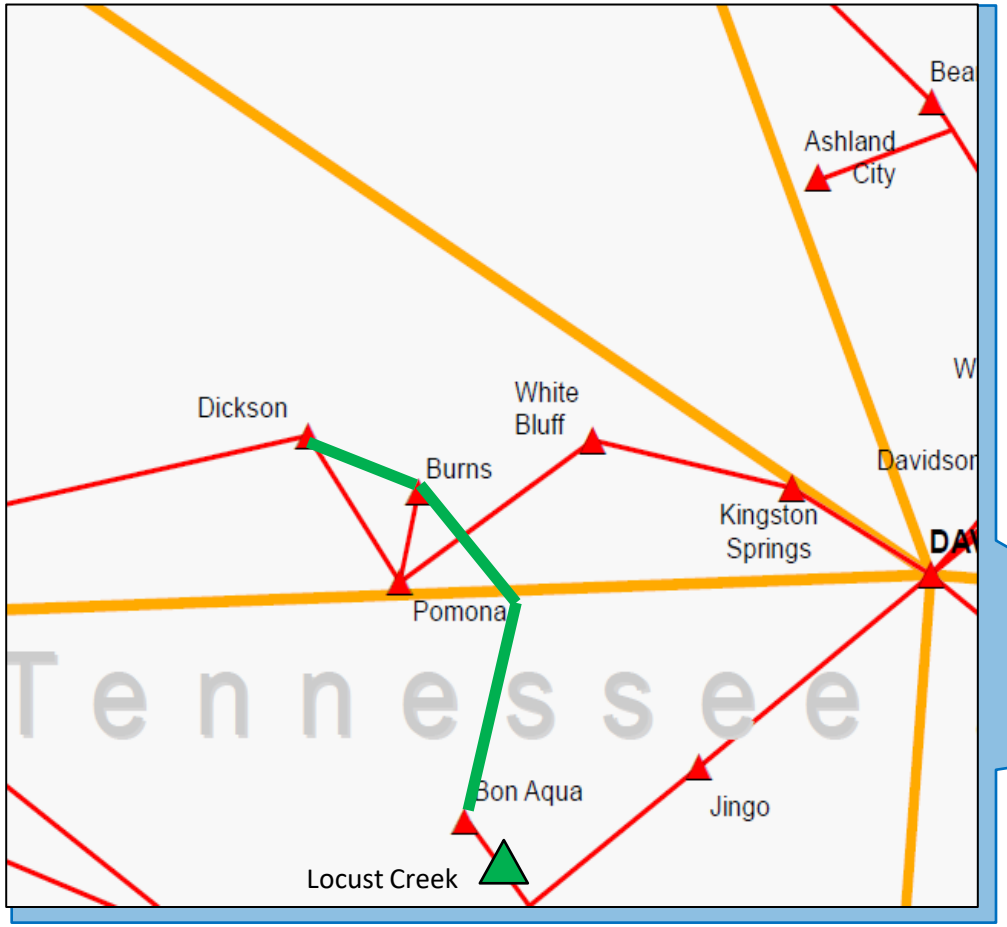


TVA Balancing Authority Area

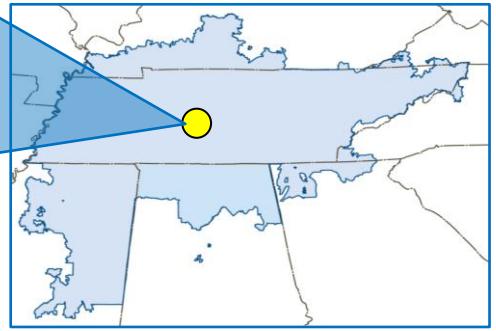
TVA – 7

• **2025**

DICKSON 161 KV AREA IMPROVEMENT



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

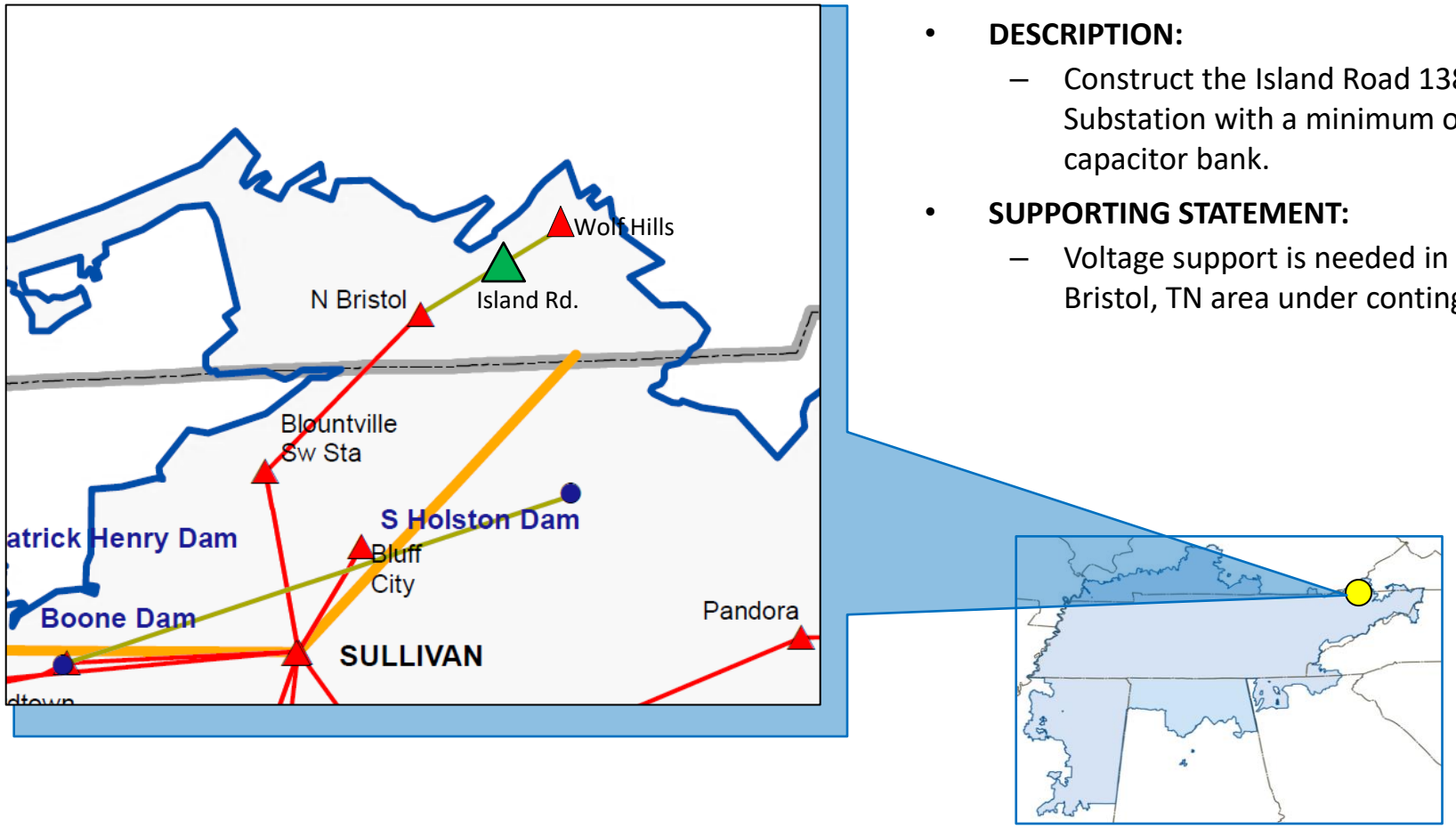


TVA Balancing Authority Area

TVA – 8

- **2026**

ISLAND RD 138KV CAPACITOR BANK



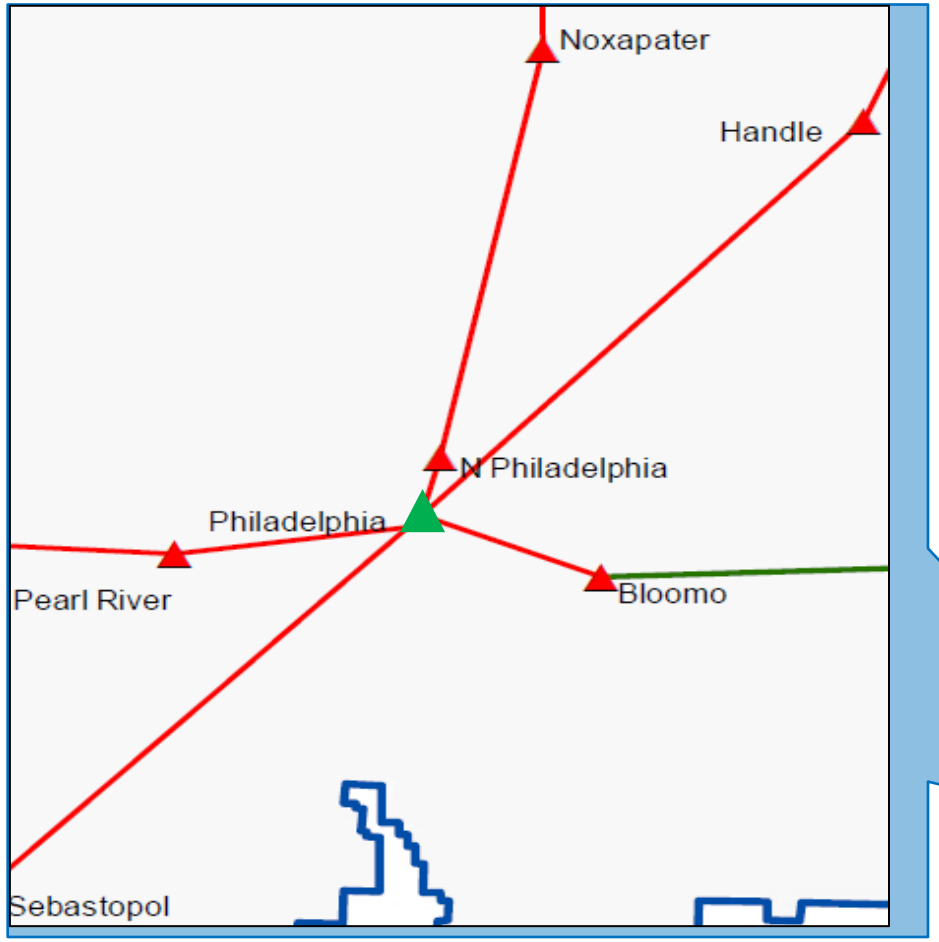
- **DESCRIPTION:**
  - Construct the Island Road 138kV Substation with a minimum of a 81MVAR capacitor bank.
- **SUPPORTING STATEMENT:**
  - Voltage support is needed in the North Bristol, TN area under contingency.

TVA Balancing Authority Area

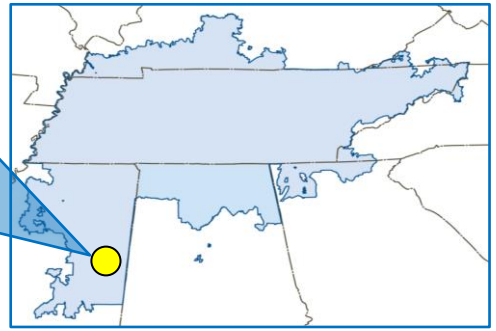
TVA – 9

• **2026**

PHILADELPHIA REACTOR



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

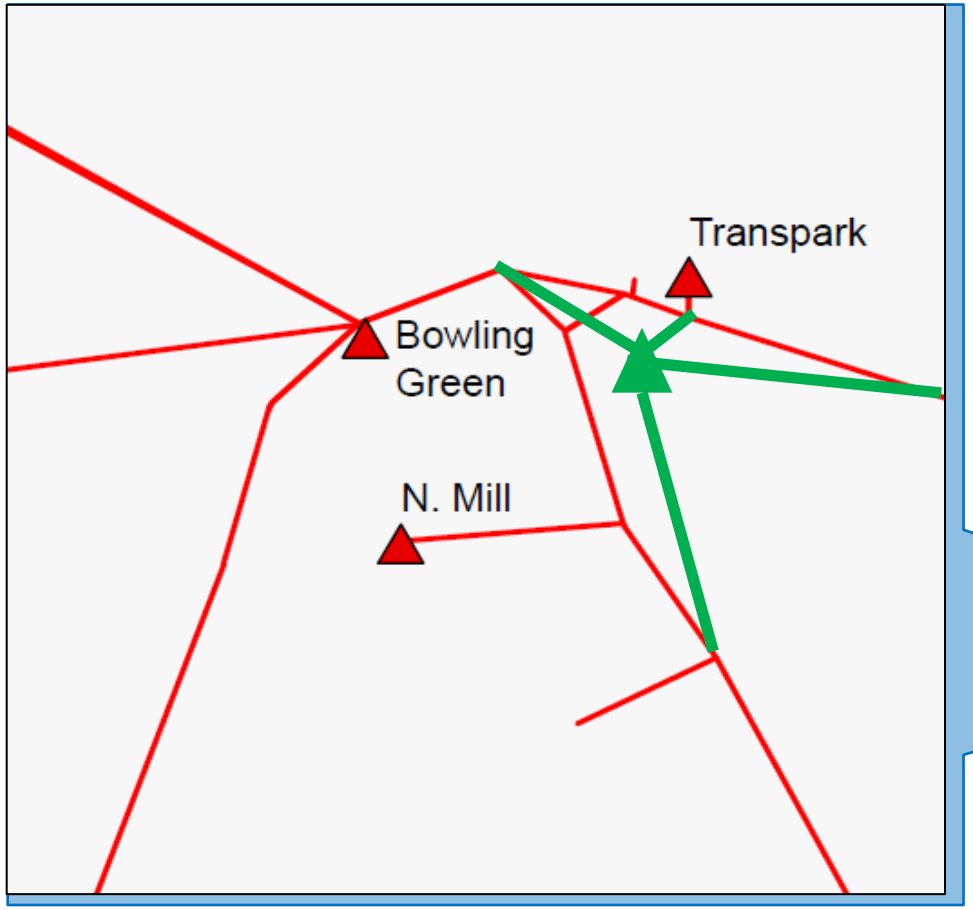


TVA Balancing Authority Area

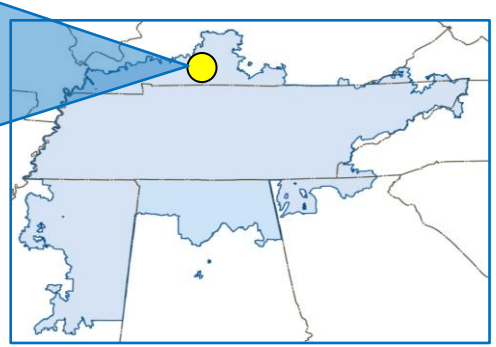
TVA – 10

• **2026**

LOVING, KY 161KV STATION



- **DESCRIPTION:**
  - Construct the Loving, KY 161kV Substation. Reconductor BG - Lost City and BG to E. BG.
- **SUPPORTING STATEMENT:**
  - Additional capacity is needed in the Bowling Green area for economic development.

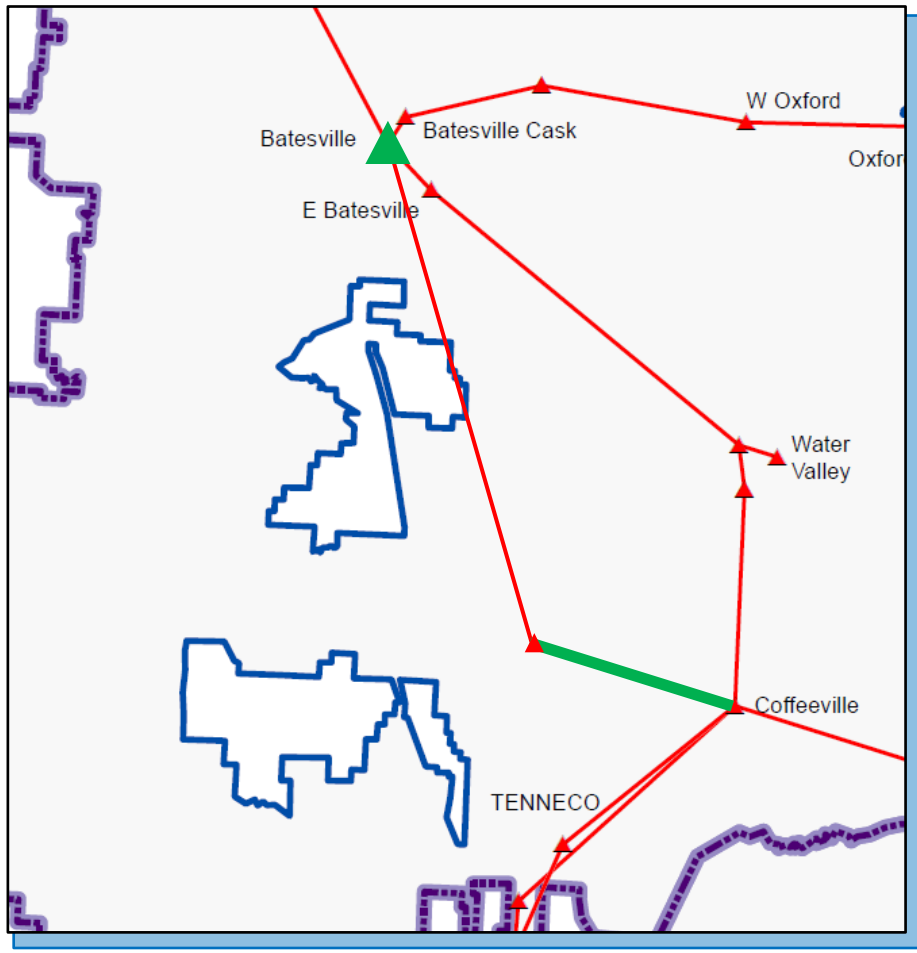


TVA Balancing Authority Area

TVA – 11

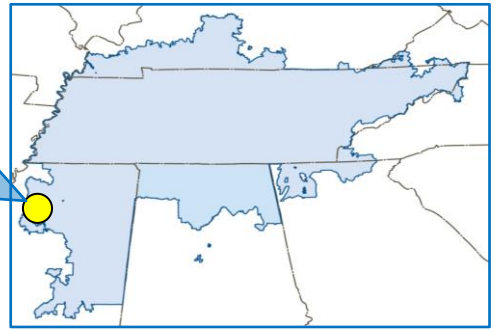
• **2026**

N. OAKLAND – COFFEEVILLE 161 KV TRANSMISSION LINE



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

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

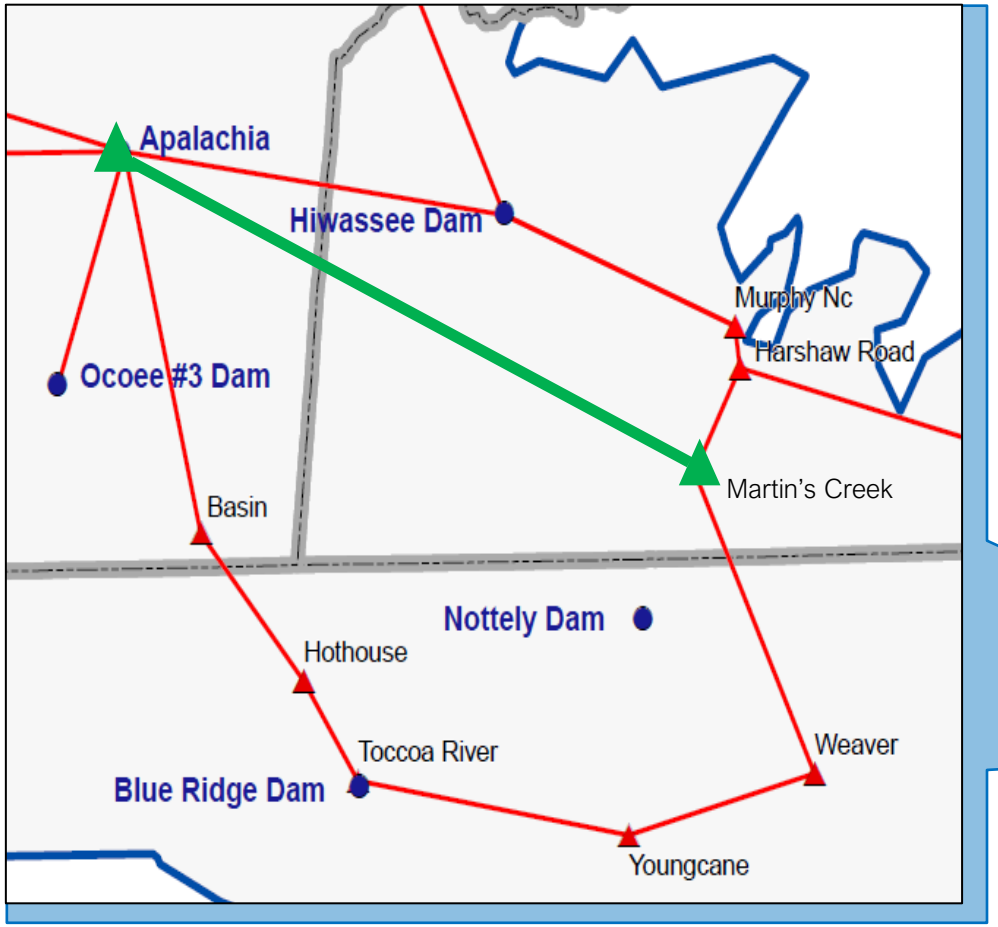


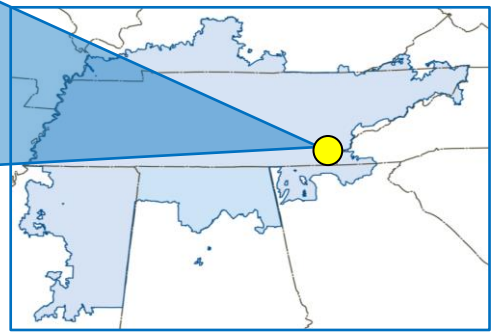
TVA Balancing Authority Area

TVA – 12

• **2027**

APALACHIA AREA IMPROVEMENT PLAN





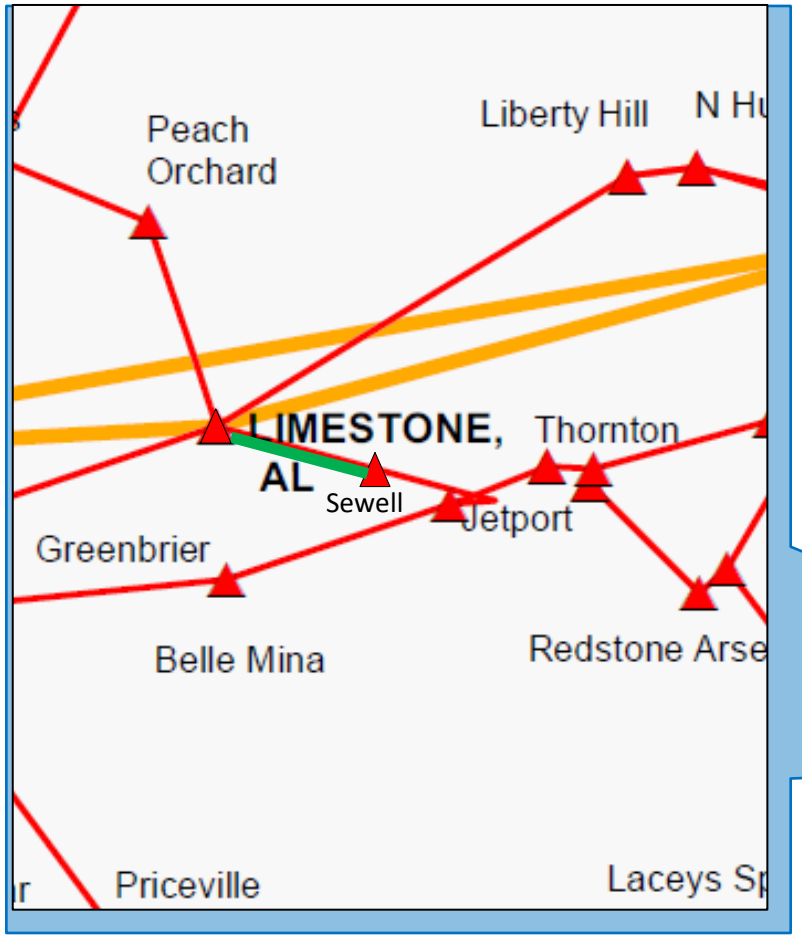
- **DESCRIPTION:**
  - Construct Martin's Creek 161 kV substation. Construct approximately 25 miles of new TL from Apalachia 161 kV substation to Ranger 161 kV switching station.
- **SUPPORTING STATEMENT:**
  - The Apalachia - Basin 161 kV transmission line overloads under contingency.

TVA Balancing Authority Area

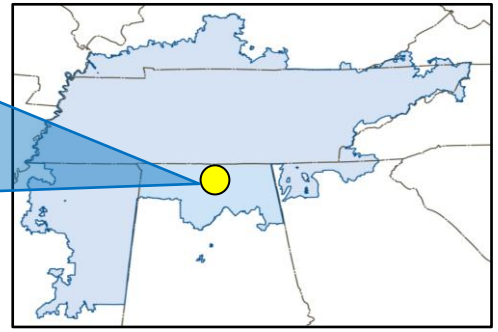
TVA – 13

- **2027**

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.

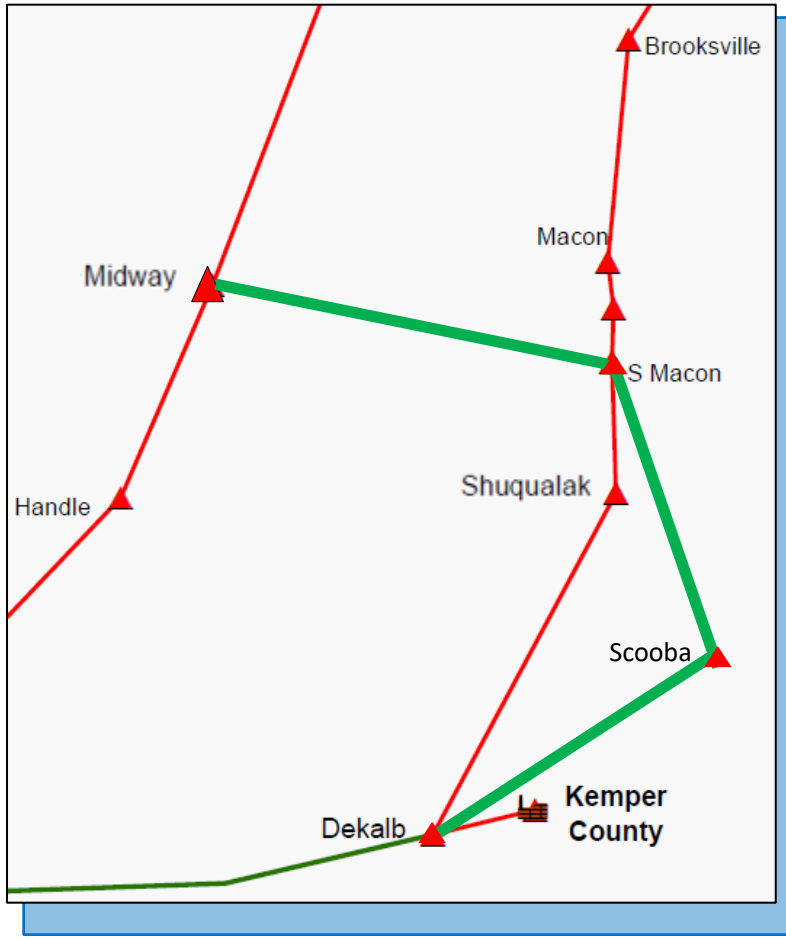


TVA Balancing Authority Area

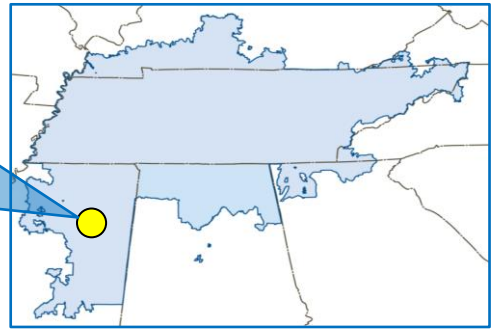
TVA – 14

• **2027**

MIDWAY - S MACON - DEKALB 161 KV TRANSMISSION LINE



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

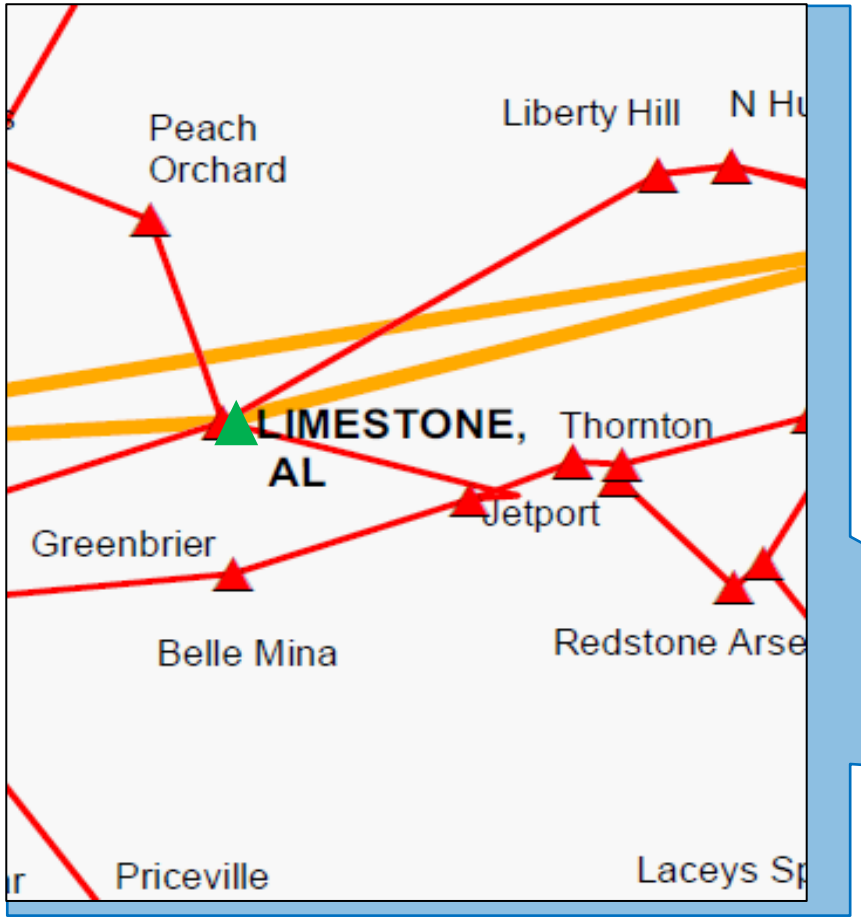


TVA Balancing Authority Area

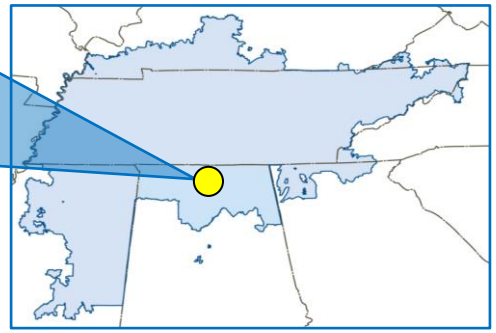
TVA – 15

- **2028**

LIMESTONE 500KV DOUBLE BREAKER AND LOOP



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

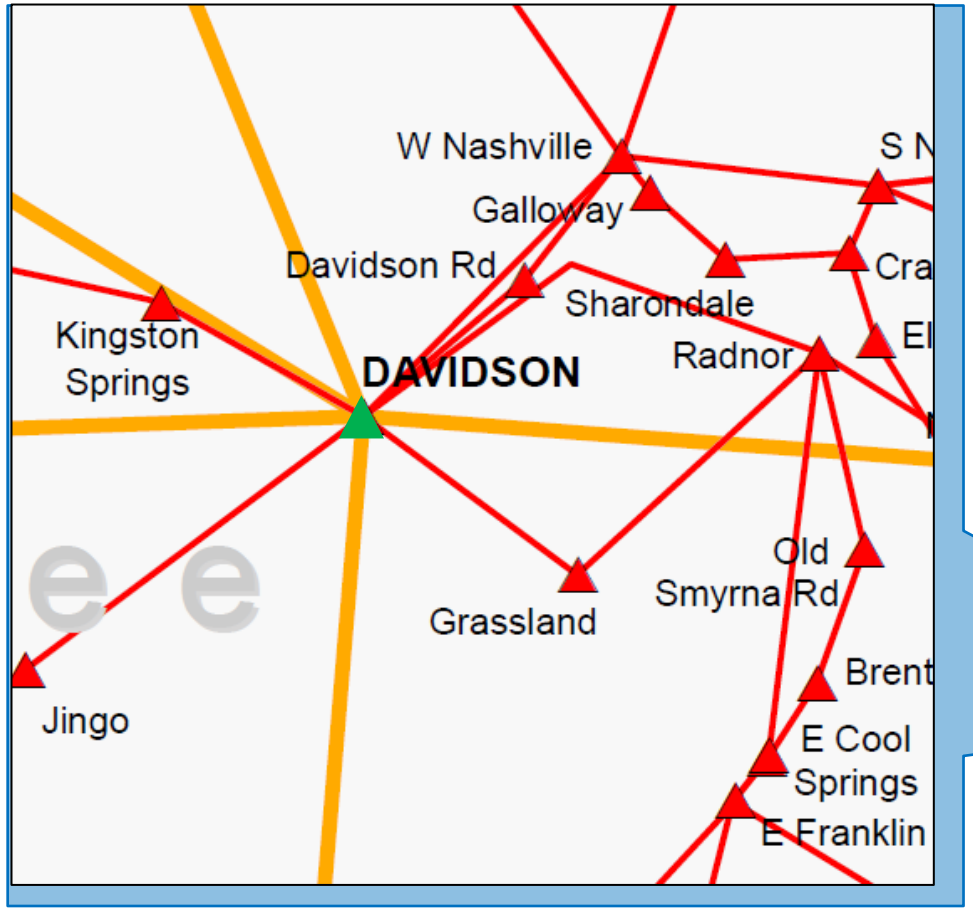


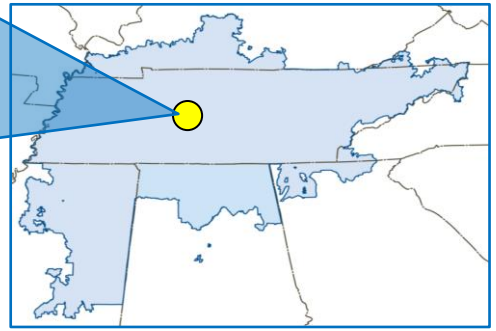
TVA Balancing Authority Area

TVA – 16

• **2028**

DAVIDSON 500 KV SWITCH HOUSE





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

TVA Balancing Authority Area

Preliminary 2024 Generation Assumptions

* TVA has no known generation changes throughout the ten-year planning horizon for the 2024 SERTP Process.

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	2025
2		2028
3		2033
4	Shoulder	2028
5	Winter	2028
6		2033

Southeastern Regional TRANSMISSION PLANNING

2023 Regional Transmission Analyses

Regional Transmission Analyses Overview

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

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

SERTP

Miscellaneous Updates

Regional Planning Updates

- Version 3 SERTP Regional Models available on the Secure Area of the SERTP Website

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

- FRCC Coordination
  - SBAA members (Southern Company, PowerSouth, GTC, and MEAG) met with members of the FRCC on November 9th to review results for the annual Transfer Capability Study. There are no interregional projects recommended at this time

Upcoming 2024 SERTP Process

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

  March 2024

  – 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 2024

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

Upcoming 2024 SERTP Process

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

  September 2024

  – 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 2024

  – Final Results of the Economic Studies
  – Regional Transmission Plan
  – Regional Analyses
  – Stakeholder Input on the 2025 Transmission Model Input Assumptions

Stakeholder Reminders

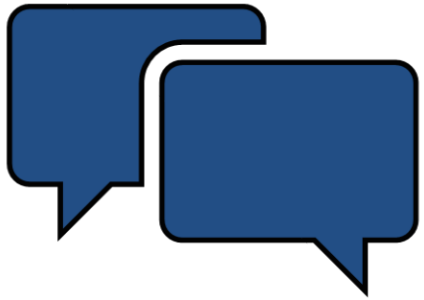
- Stakeholders may begin suggesting Economic Studies for the 2024 planning cycle. The RPSG formed at the 2024 SERTP 1st Quarter Meeting will select up to five economic planning studies. The Economic Study Request Form can be found on the SERTP website.

- Stakeholders may submit possible transmission needs driven by Public Policy Requirements. These PPR requests are due 60 days after the Q4 meeting (2/5/2024). The PPR Form can be found on the SERTP website.

- Any pre-qualified Transmission Developers may submit RCAP Proposals no later than 60 days after the Q4 meeting (2/5/2024).

- SERTP Secure Area site will be updated soon.

2023 SERTP



Questions?

www.southeasternrtp.com