SERTP – 3rd Quarter Meeting

2nd RPSG Meeting

September 21st, 2023

Web Conference

Process Information

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

Purposes & Goals of Meeting

- **Economic Planning Studies**
  - Preliminary Results
  - Stakeholder Input/Discussion
- **Miscellaneous Updates**
- **Next Meeting Activities**

SERTP Preliminary

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 Process

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

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

Economic Planning Studies

- **MISO 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)

Power Flow Cases Utilized

- **Load Flow Cases:**
  - 2023 Series Version 1 SERTP Regional Models
    - 2028 Summer Peak
    - 2028 Winter Peak
    - 2033 Summer Peak

Preliminary 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)

Process Information

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

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

Economic Planning Studies

Economic Planning Studies – Preliminary Results

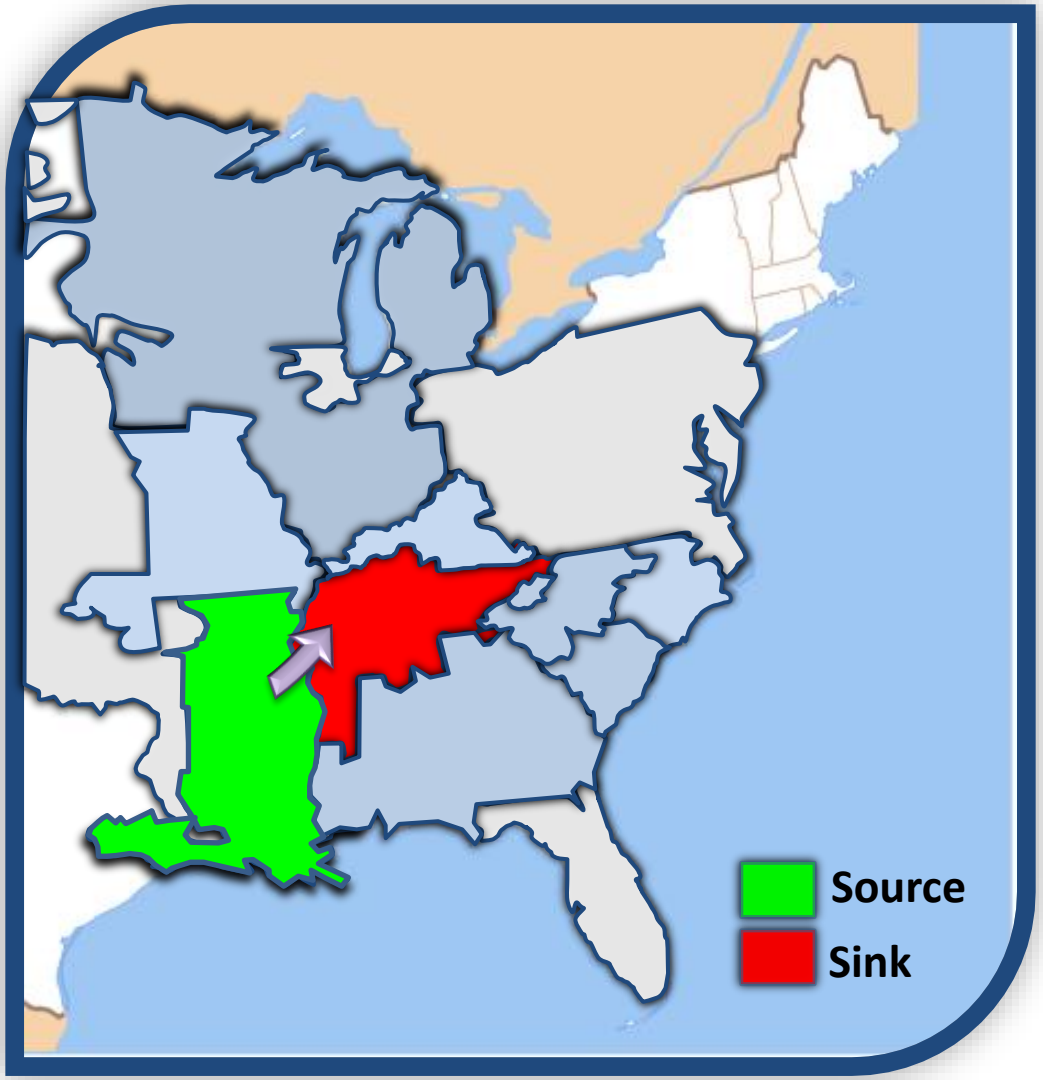
MISO to TVA – 2900 MW

Southeastern Regional TRANSMISSION PLANNING

MISO to TVA – 2900 MW

Study Assumptions

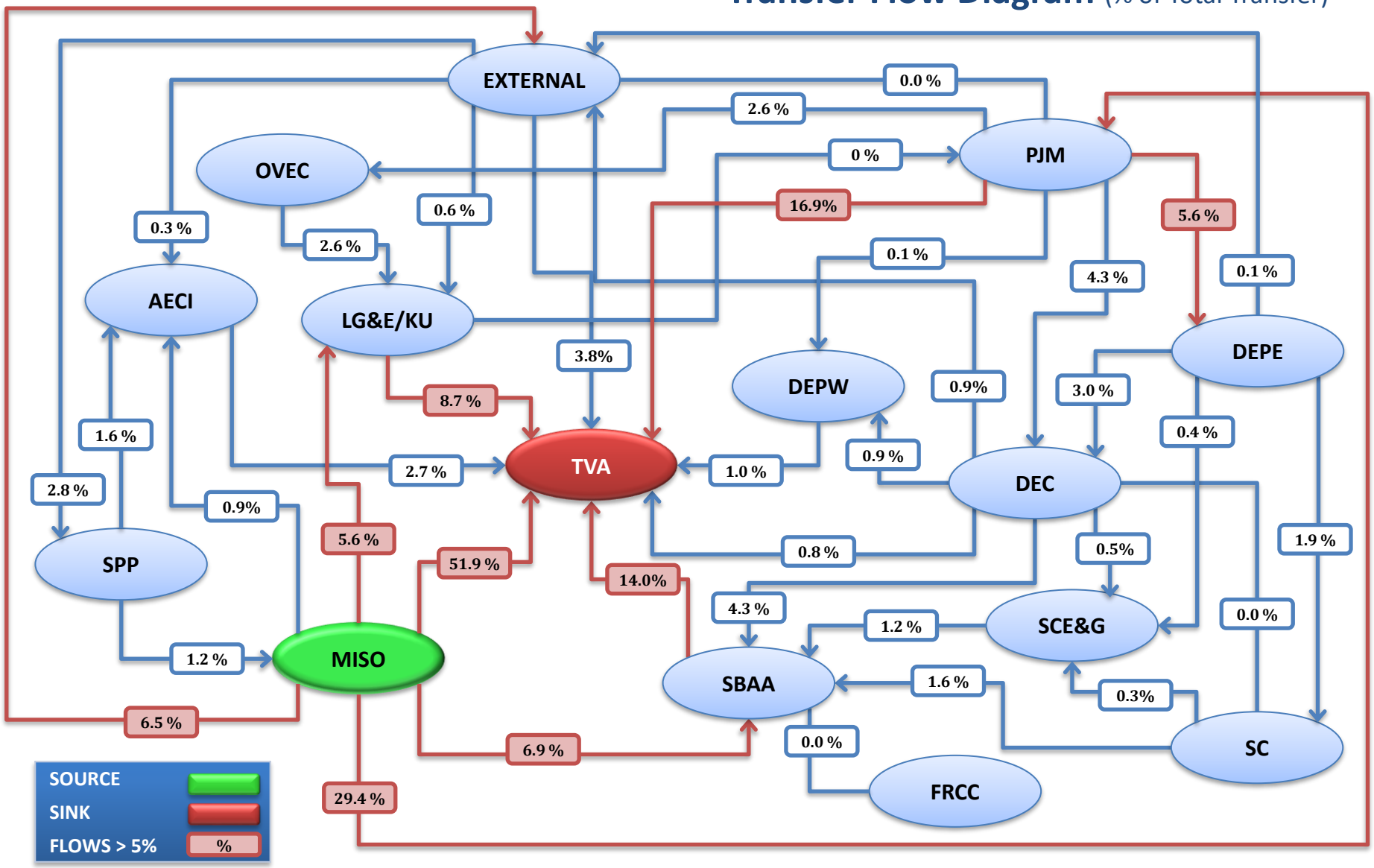
- **Source:** Generation within MISO South
- **Sink:** Generation within TVA
- **Transfer Type:** Generation to Generation
- **Year:** 2028
- **Load Level:** Winter Peak



Southeastern Regional TRANSMISSION PLANNING

MISO – TVA 2900 MW

Transfer Flow Diagram (% of Total Transfer)



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

Transmission System Impacts – *SERTP*

Table 3: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$21.5 Million
SERTP TOTAL ($2023)	**$21.5 Million**

MISO to TVA – 2900 MW

Significant Constraints Identified – *TVA*

Table 1: 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

Potential Enhancements Identified – *TVA*

Table 2: 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.

Potential Enhancements Identified – *TVA*

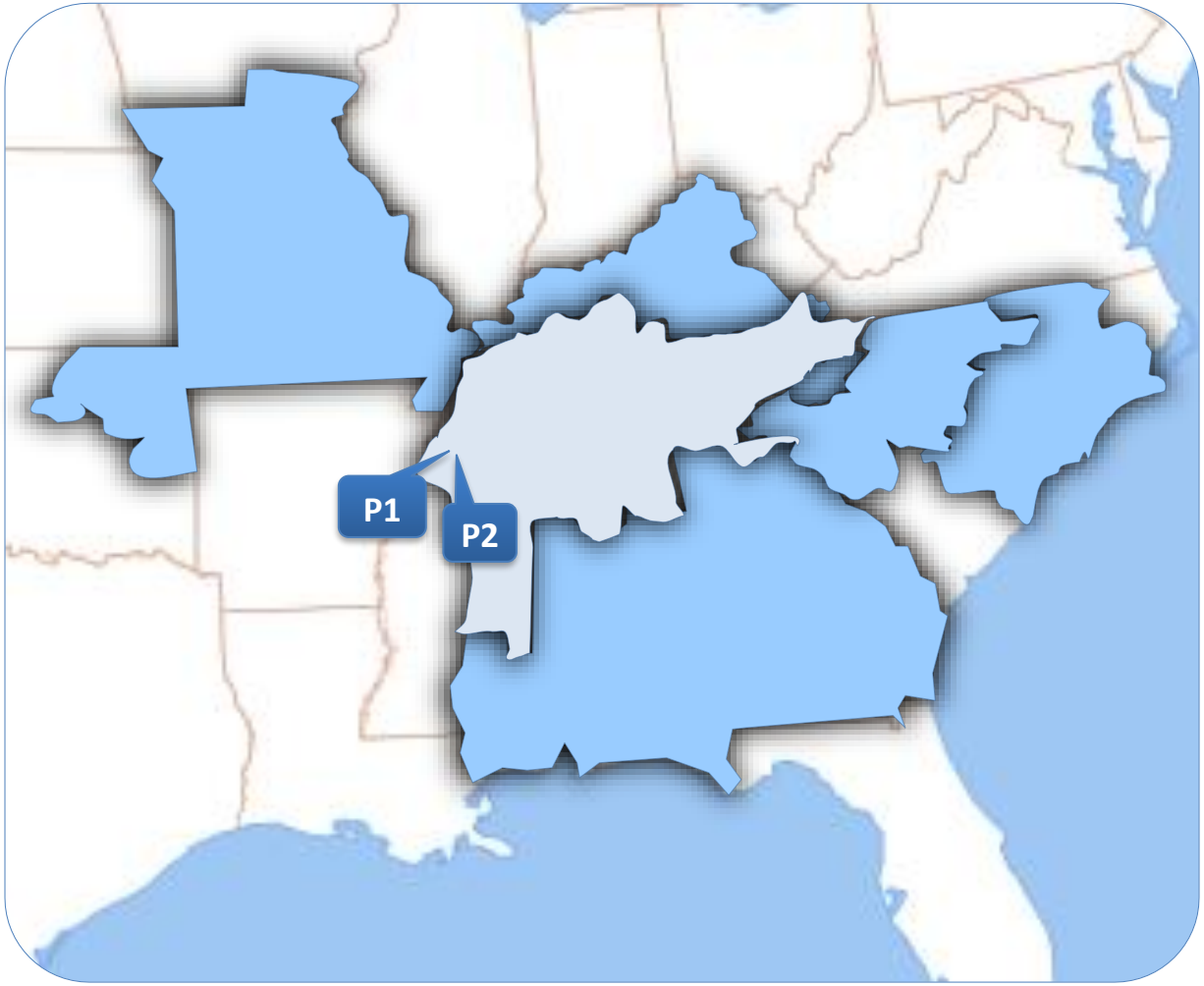
Table 2: Potential Enhancements - TVA

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.

MISO to TVA – 2900 MW

Potential Enhancement Locations – *TVA*

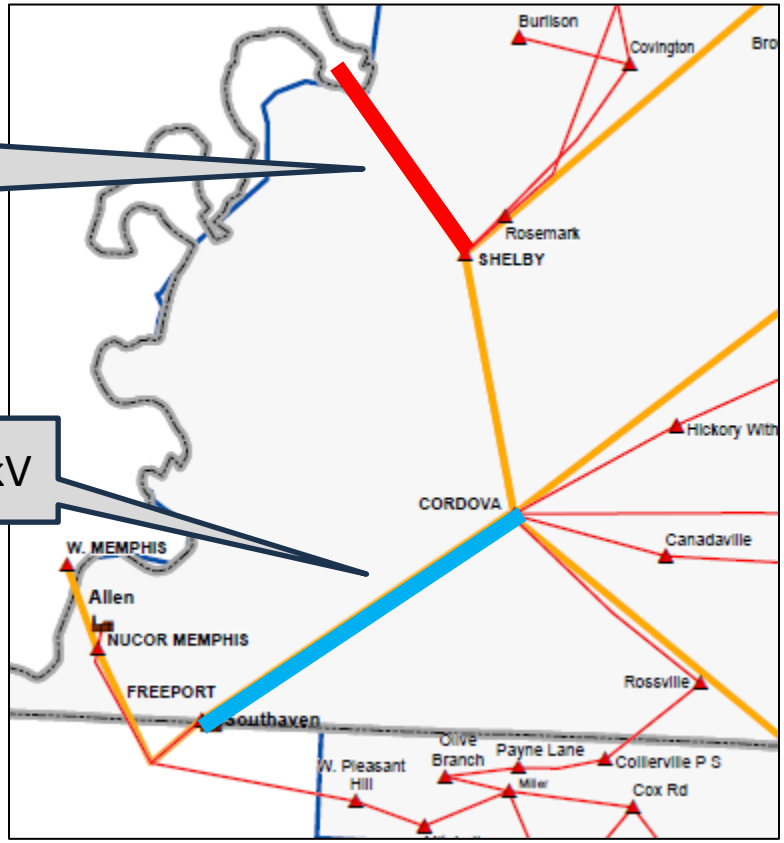


MISO to TVA – 2900 MW

Significant Constraint (P1) – *TVA*

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

Freeport-Cordova 500 kV



MISO to TVA – 2900 MW

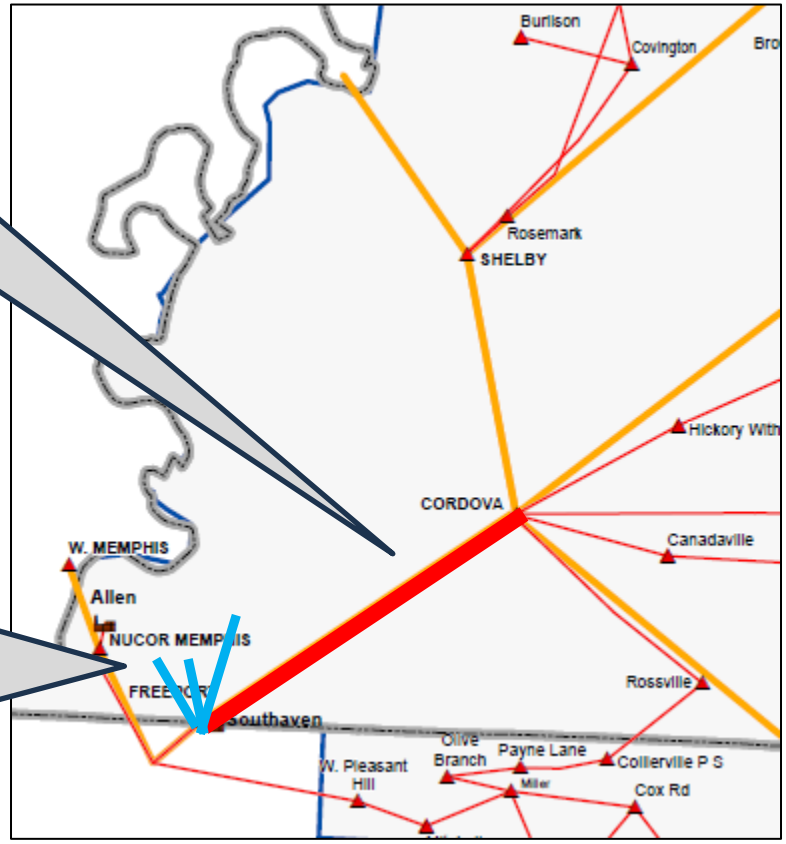
Significant Constraint (P1) – *TVA*

Outage of Freeport-Cordova 500 kV

Freeport-Oakville 161 kV

Freeport-Shelby Drive 161 kV

Freeport-Southeast Gate 161 kV



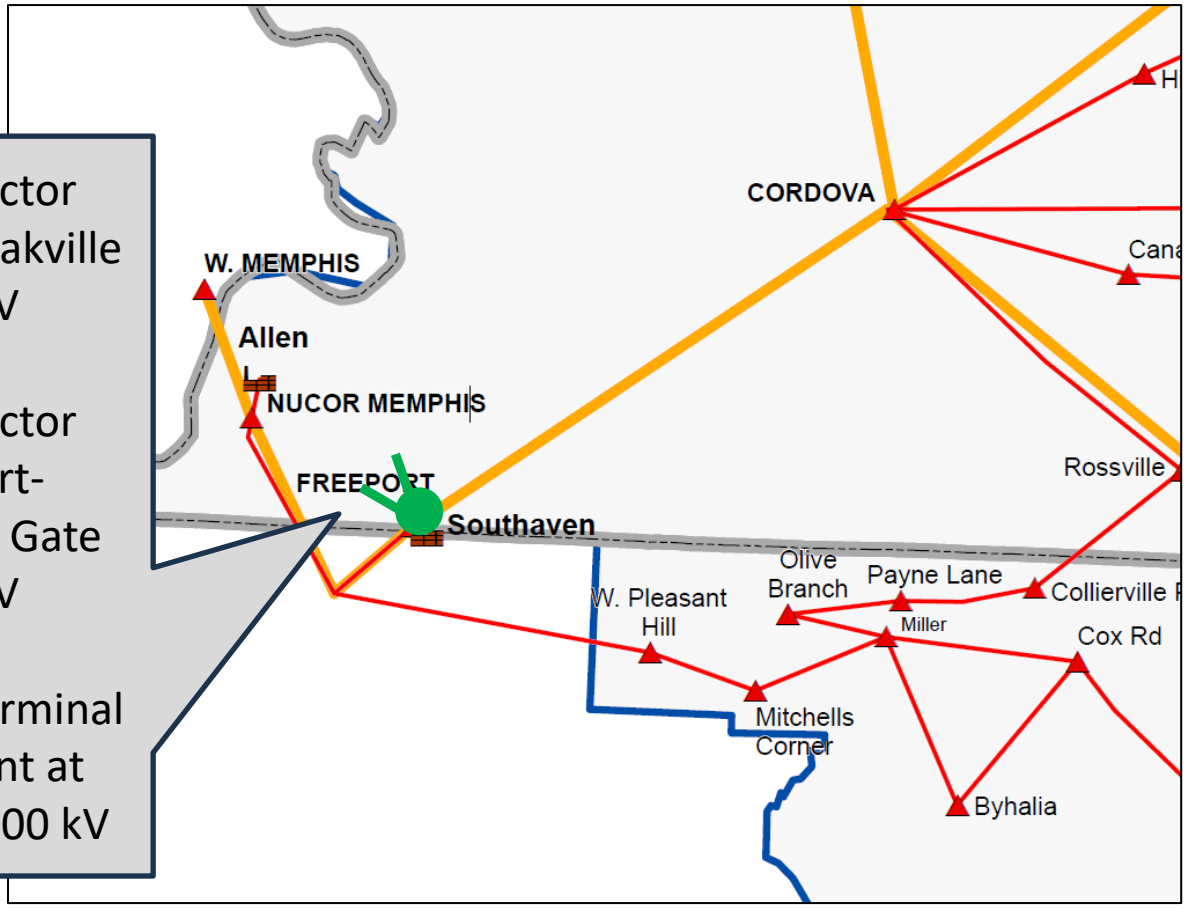
MISO to TVA – 2900 MW

Potential Enhancement (P1) – *TVA*

Reconductor Freeport-Oakville 161 kV

Reconductor Freeport-Southeast Gate 161 kV

Upgrade terminal equipment at Freeport 500 kV



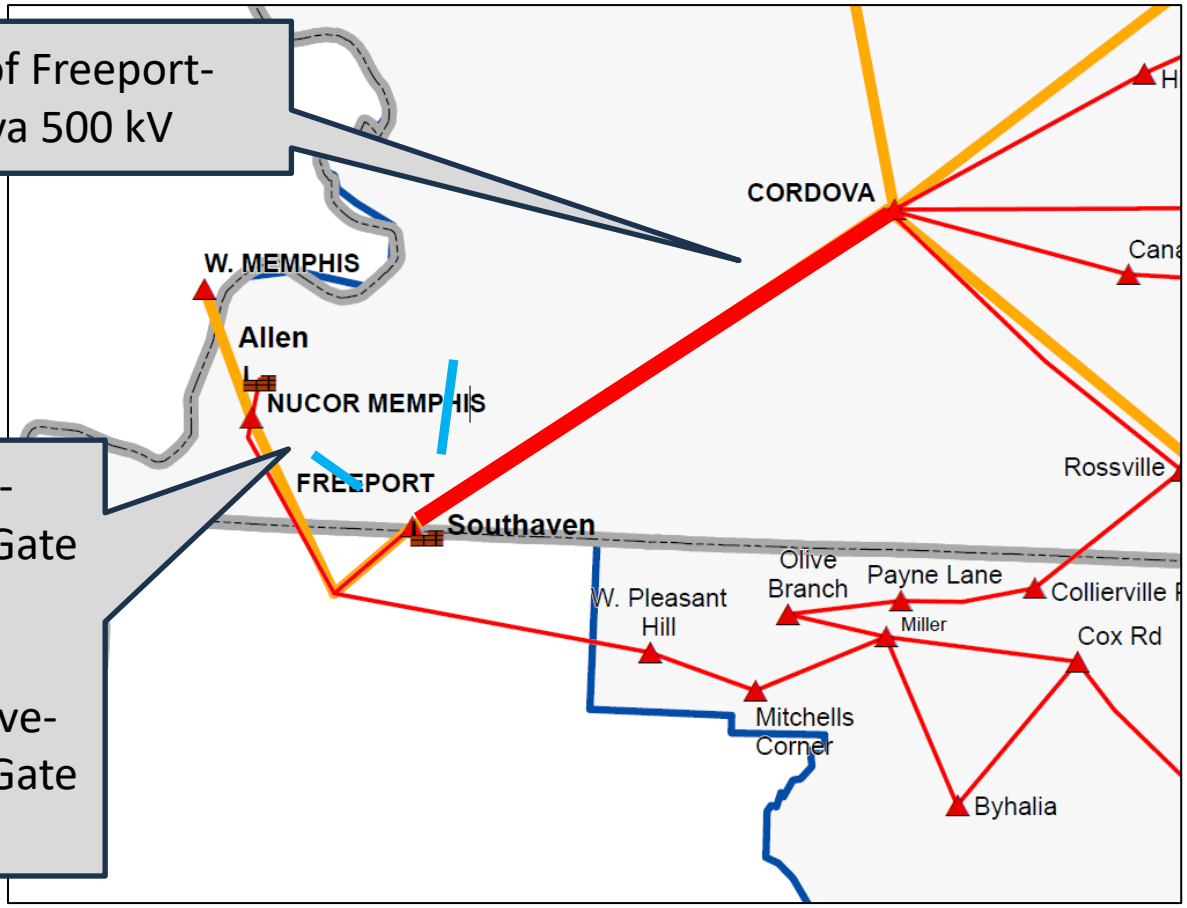
MISO to TVA – 2900 MW

Significant Constraint (P2) – *TVA*

Outage of Freeport-Cordova 500 kV

Oakville-Southeast Gate 161 kV

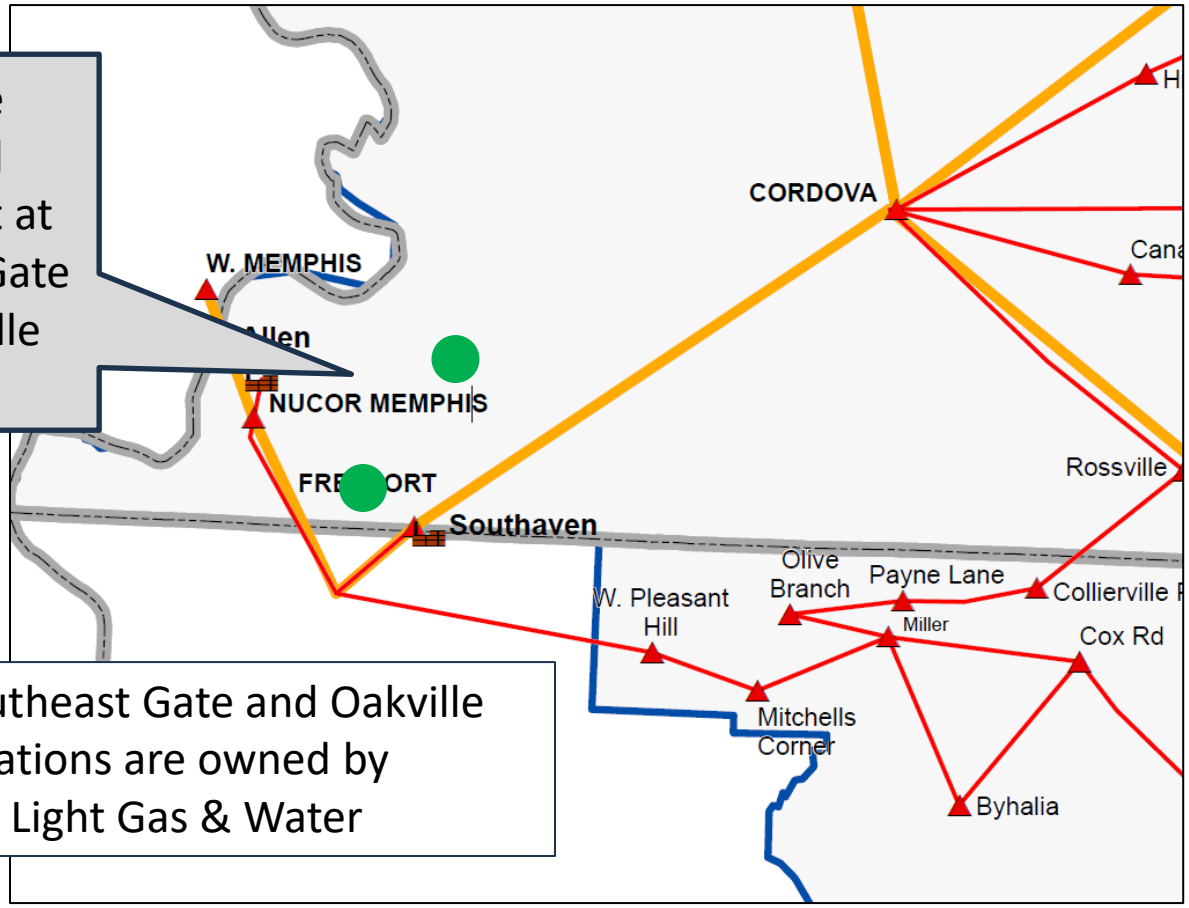
Shelby Drive-Southeast Gate 161 kV



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

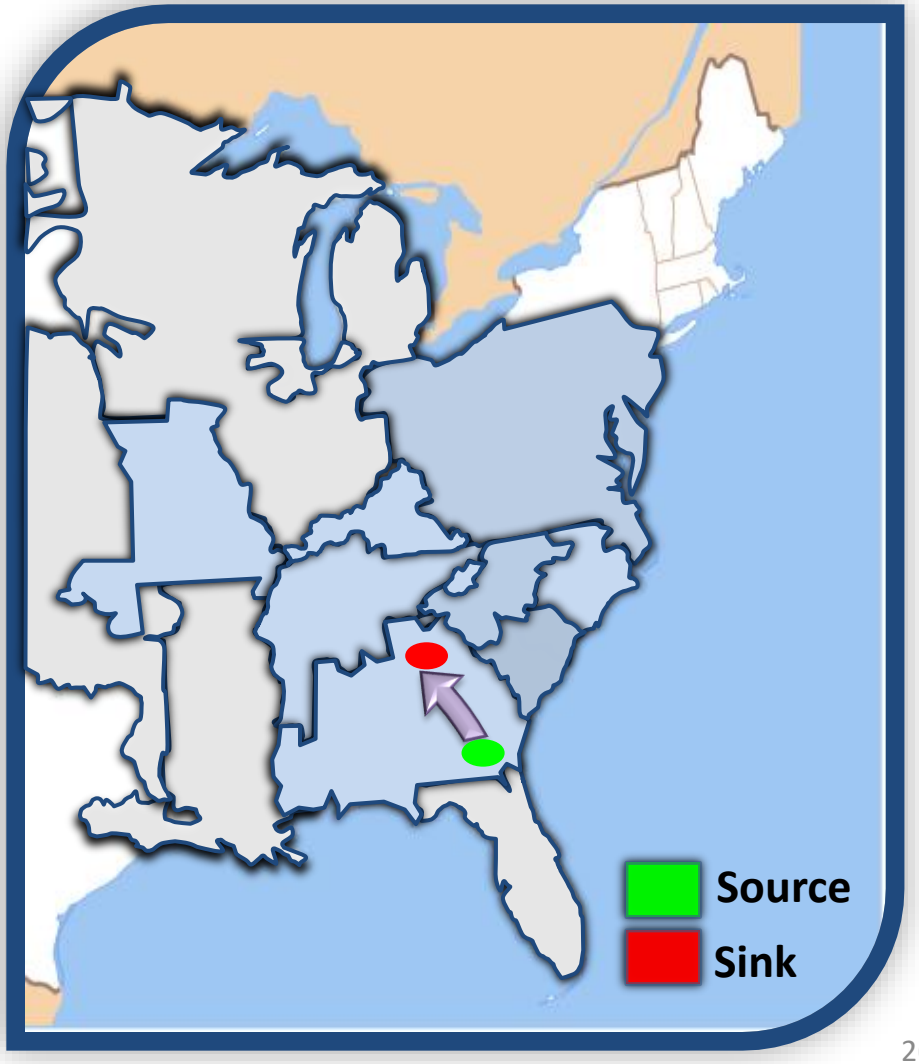
Economic Planning Studies – Preliminary Results

South Georgia to North Georgia – 1600 MW

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)

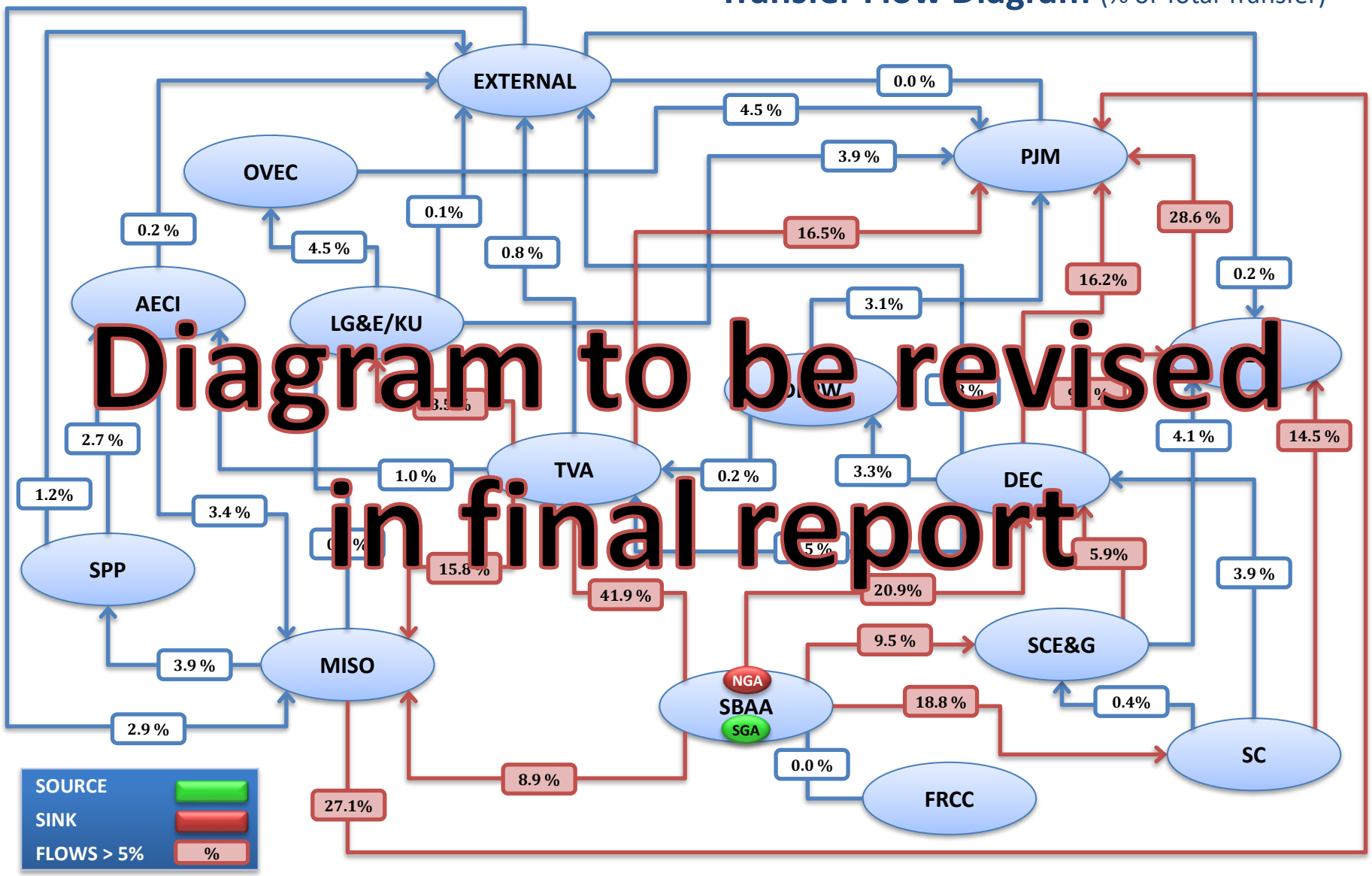


Diagram to be revised in final report

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) = $ 100.315 Million

South Georgia – North Georgia 1600 MW

Transmission System Impacts – *SERTP*

Table 6: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$99,390,000
Tennessee Valley Authority (TVA)	$925,000
SERTP TOTAL ($2023)	**$100.315 Million**

South Georgia – North Georgia 1600 MW

Significant Constraints Identified – *SBAA*

Table 1: Significant Constraints – SBAA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Fairburn 1 – Union City B2 230kV Line	602	89.8	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	Jumpers at Eatonton on the 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 current version of models, but is in the 2023 Expansion Plan

Potential Enhancements Identified – *SBAA*

Table 2: Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	**Fairburn 1 – Union City B2 230kV Line** • 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** • 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	**Jumpers at Eatonton on the Branch – Oasis 230kV Line** • Rebuild the line with 160C 1351 ACSS conductor. Replace the 2-750 AAC jumper at Eatonton Primary with 2-1590 AAC.	**$3.69 Million**

(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.

Potential Enhancements Identified – *SBAA*

Table 2: Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P4	**Eatonton Primary – Oasis 230kV Line** • 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** • Advance the 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.	**$4.4 Million**
SBAA TOTAL ($2023)		**$ 99.39 Million**(1)

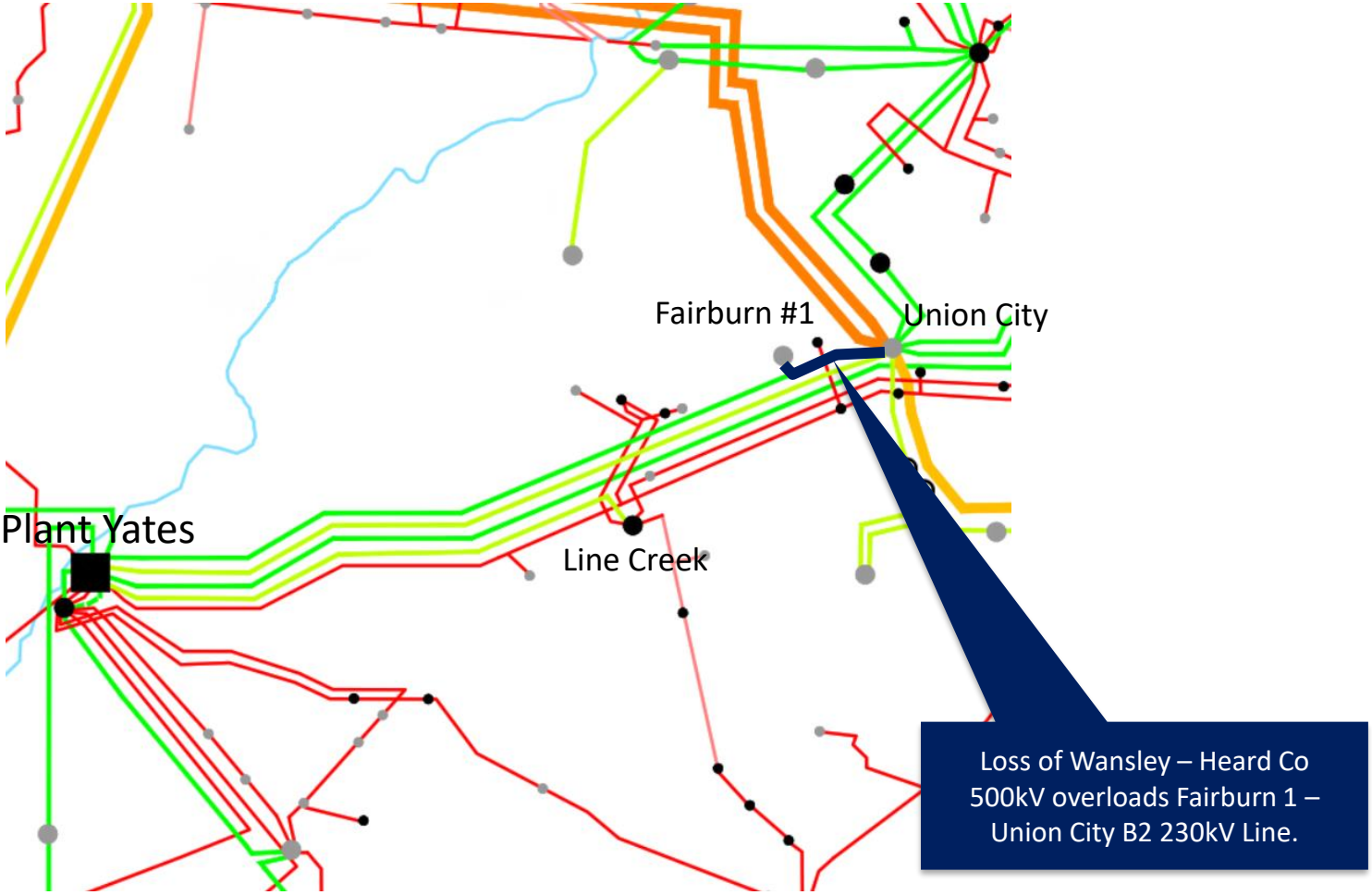
(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer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

South Georgia – North Georgia 1600 MW

*Potential Enhancement Locations – *SBAA*

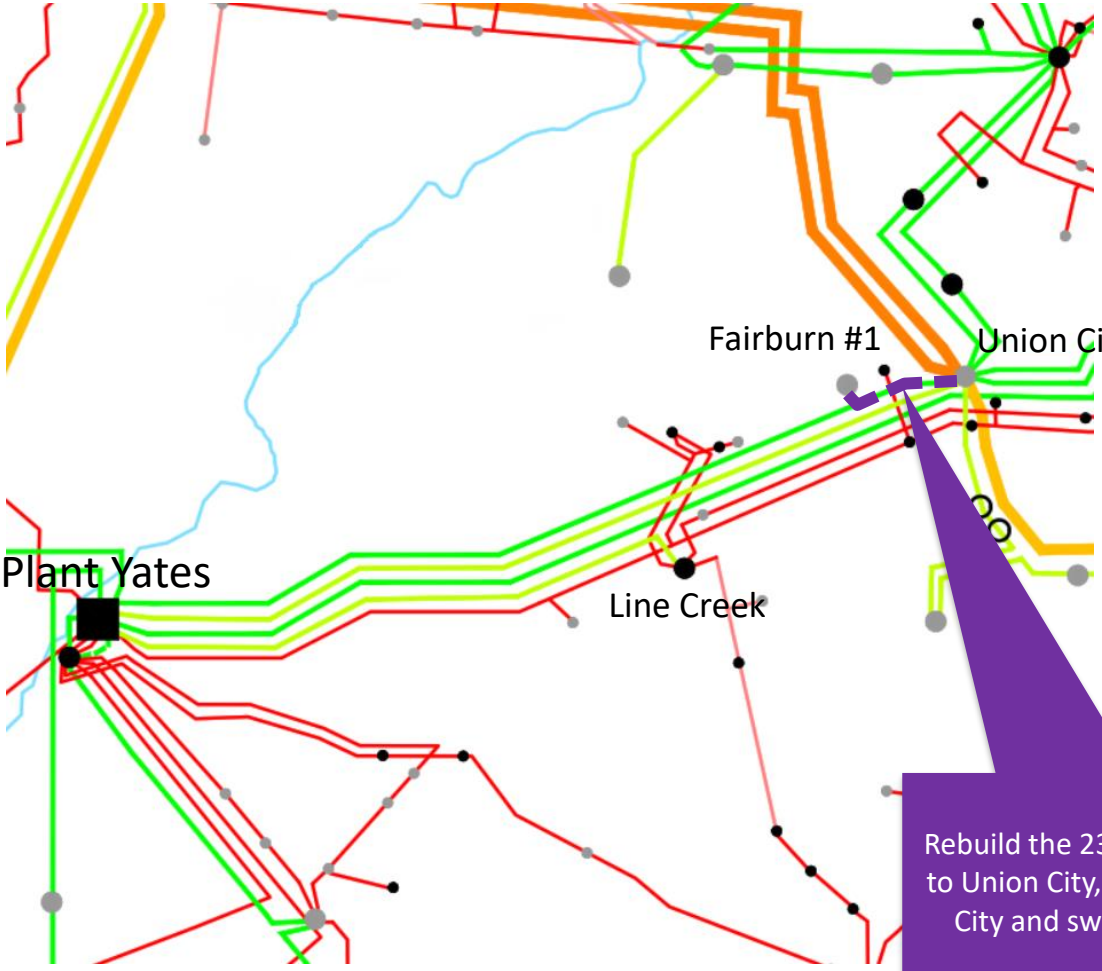
South Georgia – North Georgia 1600 MW

Significant Constraint (P1) – *SBAA*



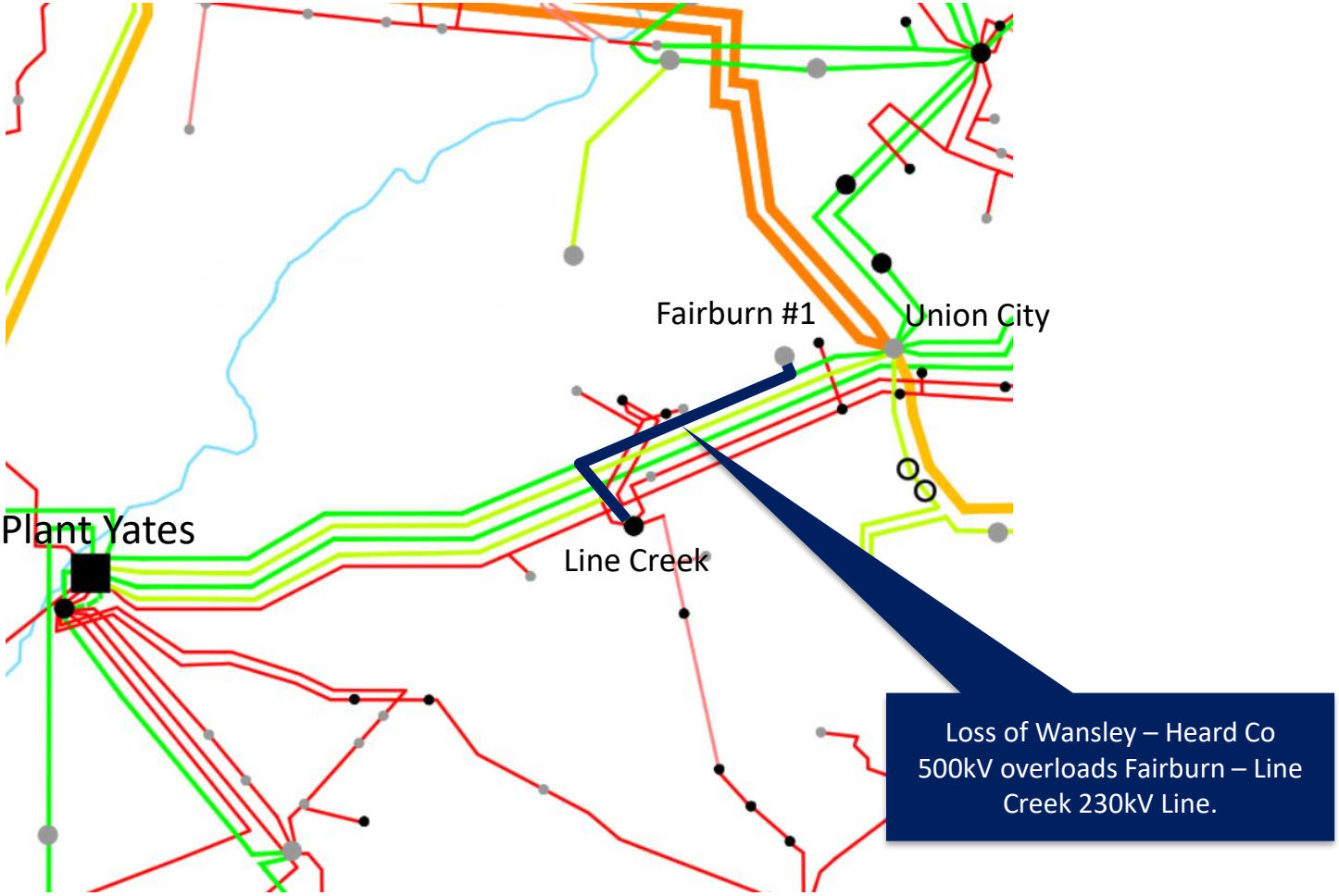
South Georgia – North Georgia 1600 MW

Potential Enhancement (P1) – *SBAA*



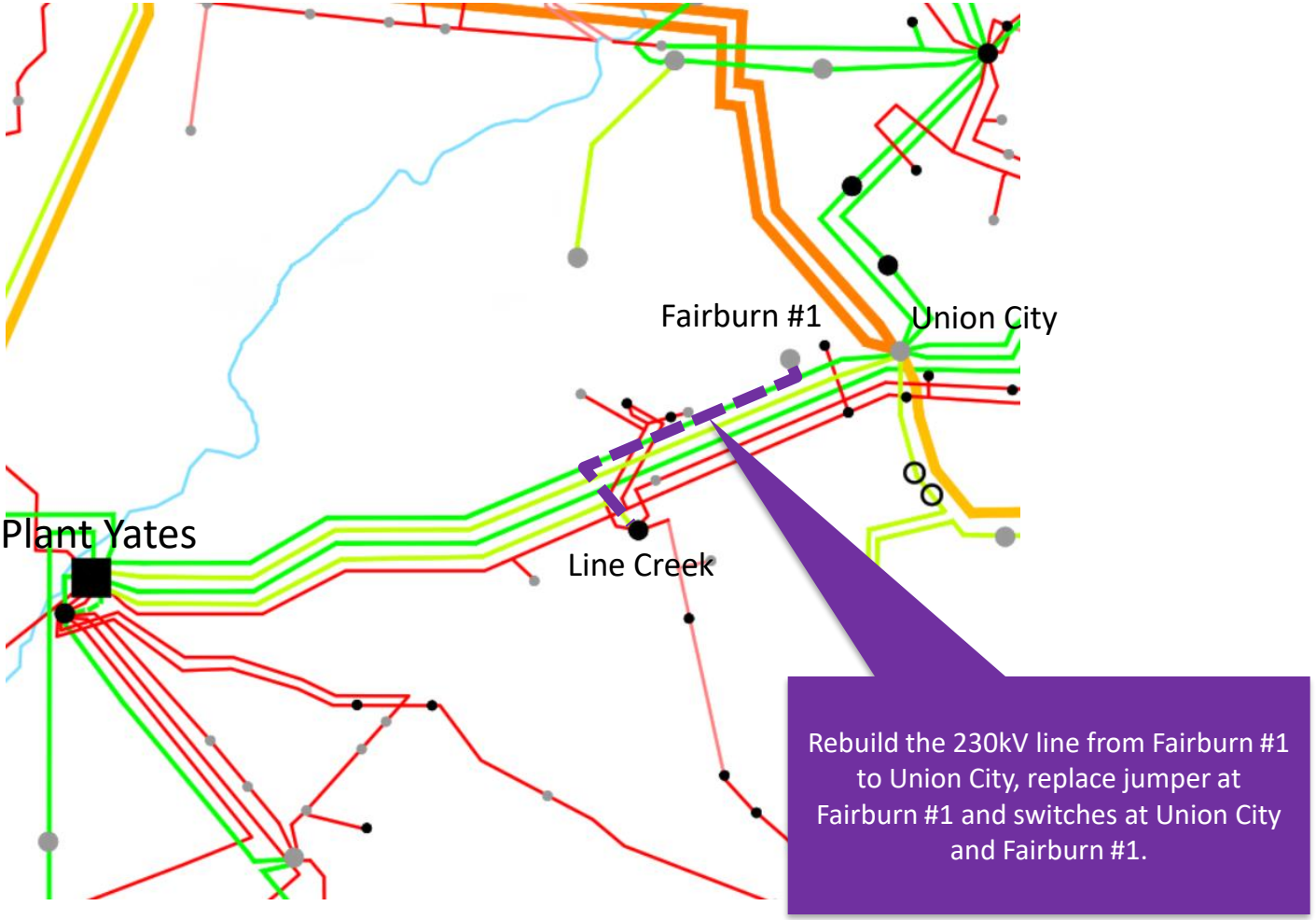
South Georgia – North Georgia 1600 MW

Significant Constraint (P2) – *SBAA*



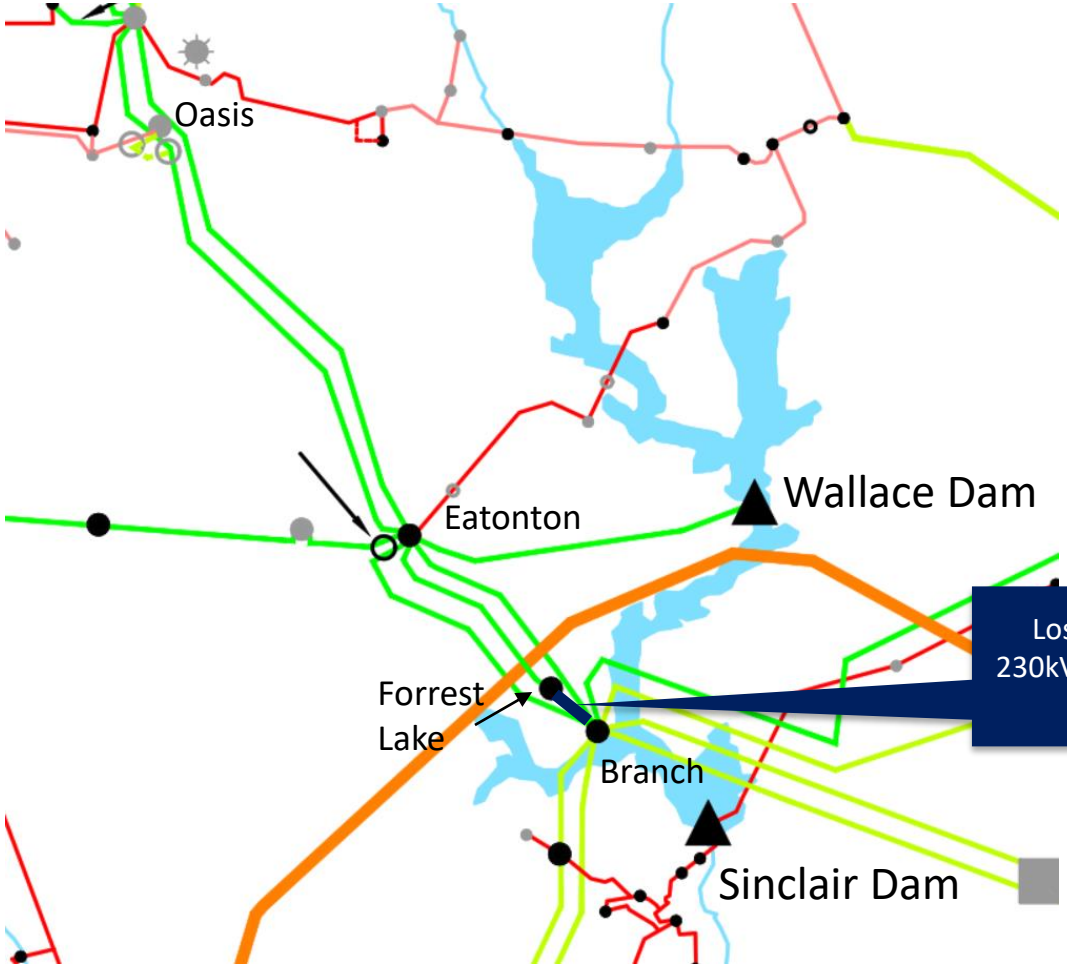
South Georgia – North Georgia 1600 MW

Potential Enhancement (P2) – *SBAA*



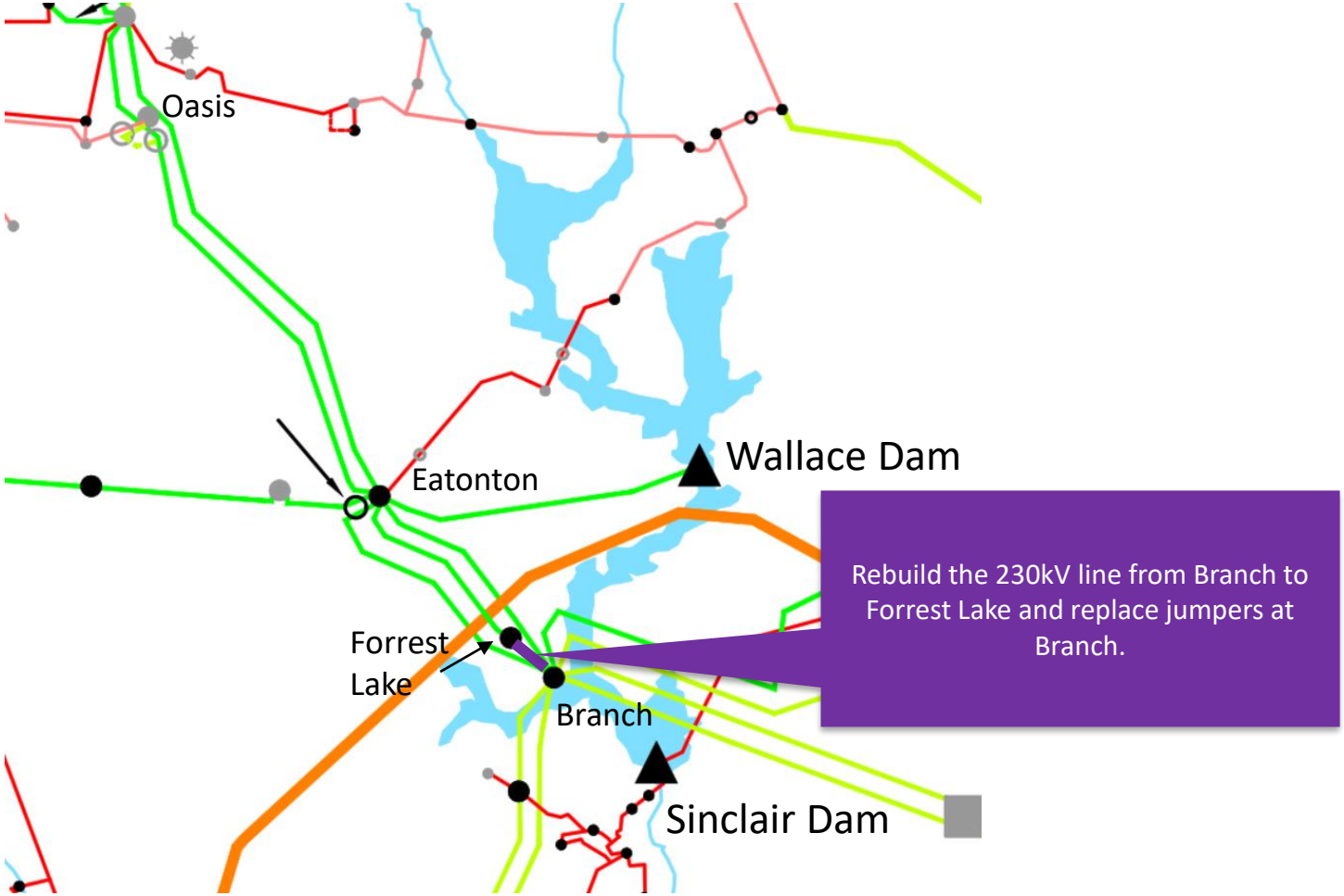
South Georgia – North Georgia 1600 MW

Significant Constraint (P3) – *SBAA*



South Georgia – North Georgia 1600 MW

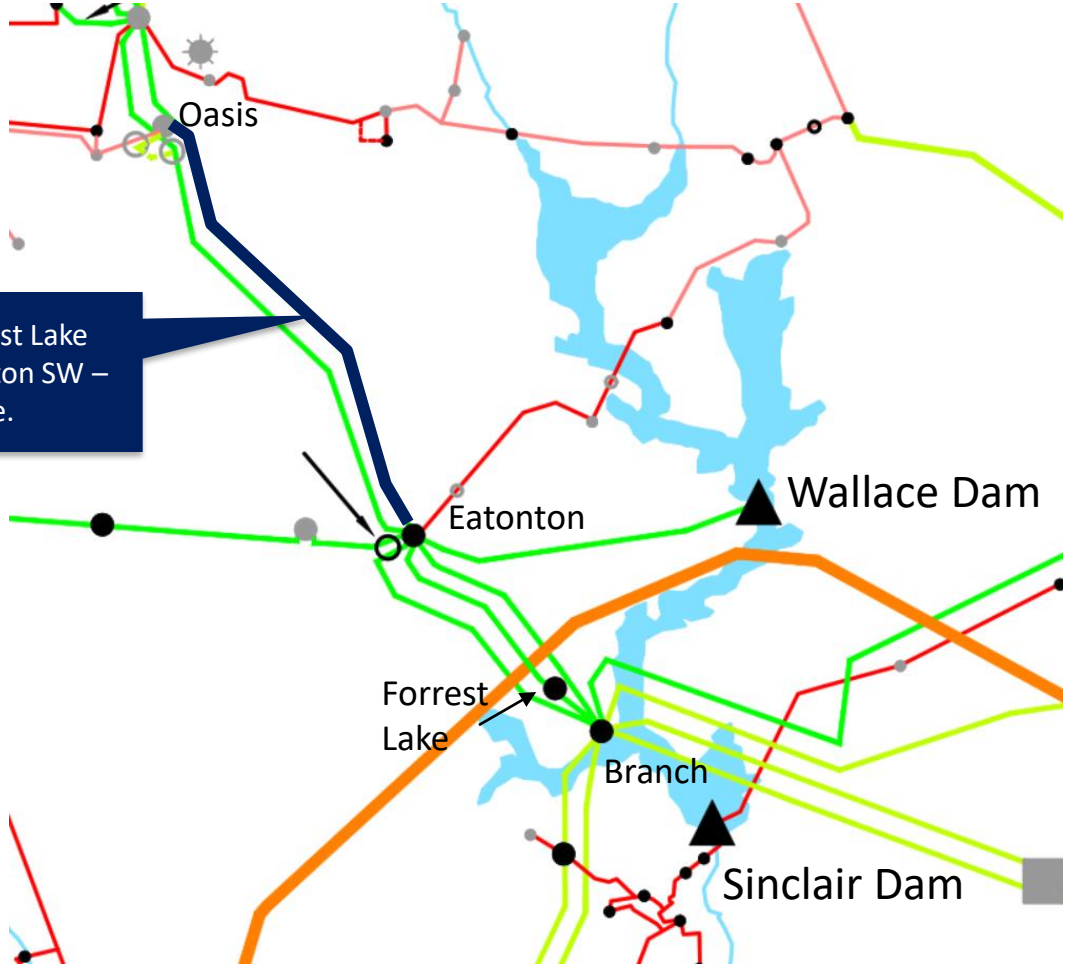
Potential Enhancement (P3) – *SBAA*



South Georgia – North Georgia 1600 MW

Significant Constraint (P4) – *SBAA*

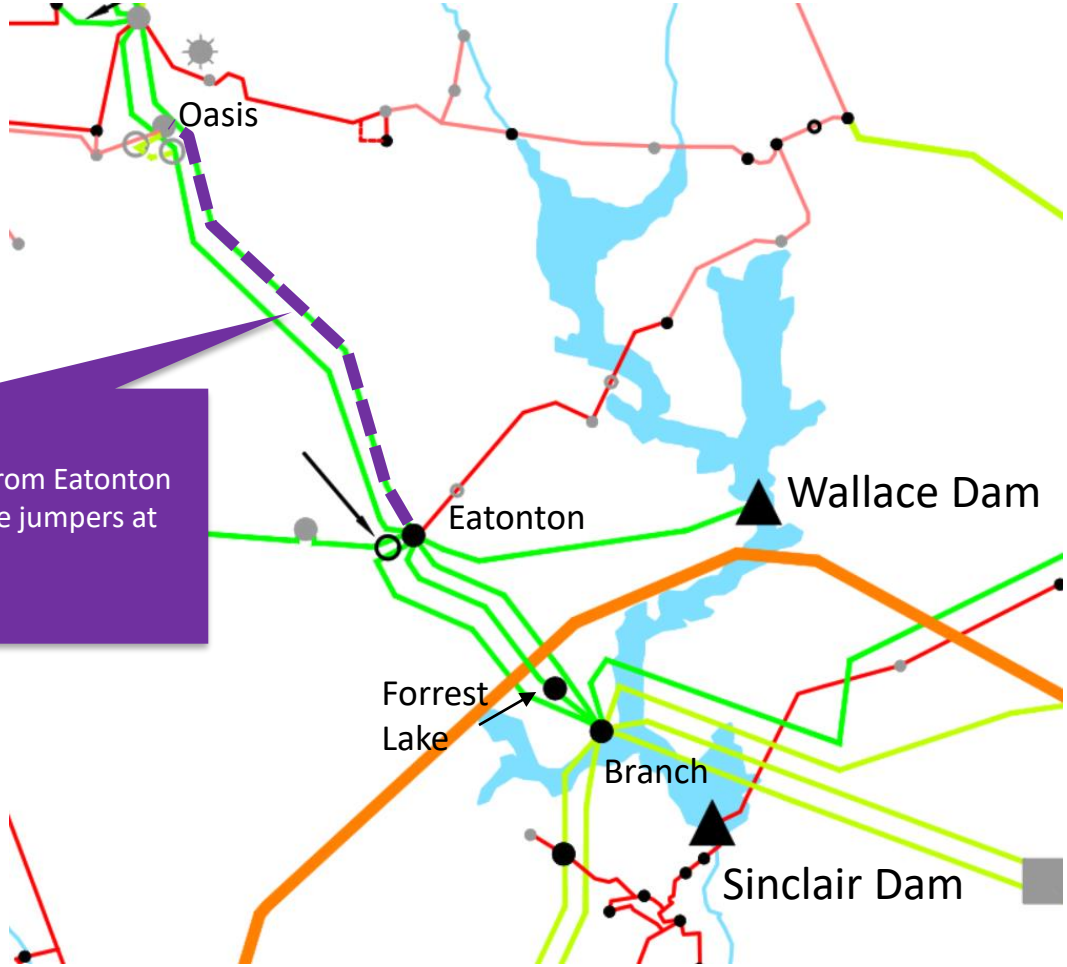
Loss of Branch – Forrest Lake 230kV overloads Eatonton SW – Oasis 230kV Line.



South Georgia – North Georgia 1600 MW

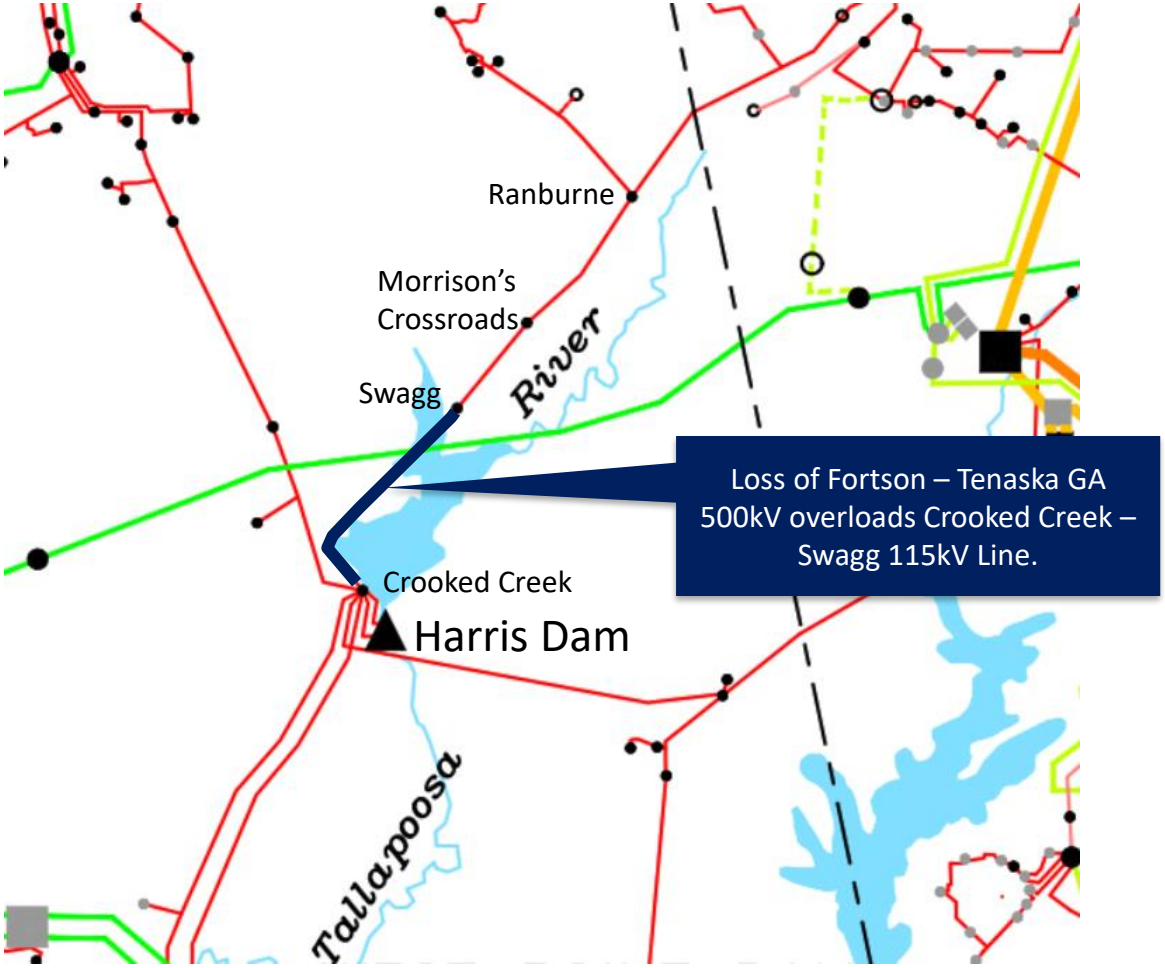
Significant Constraint (P4) – *SBAA*

Rebuild the 230kV line from Eatonton SW to Oasis and replace jumpers at Branch.



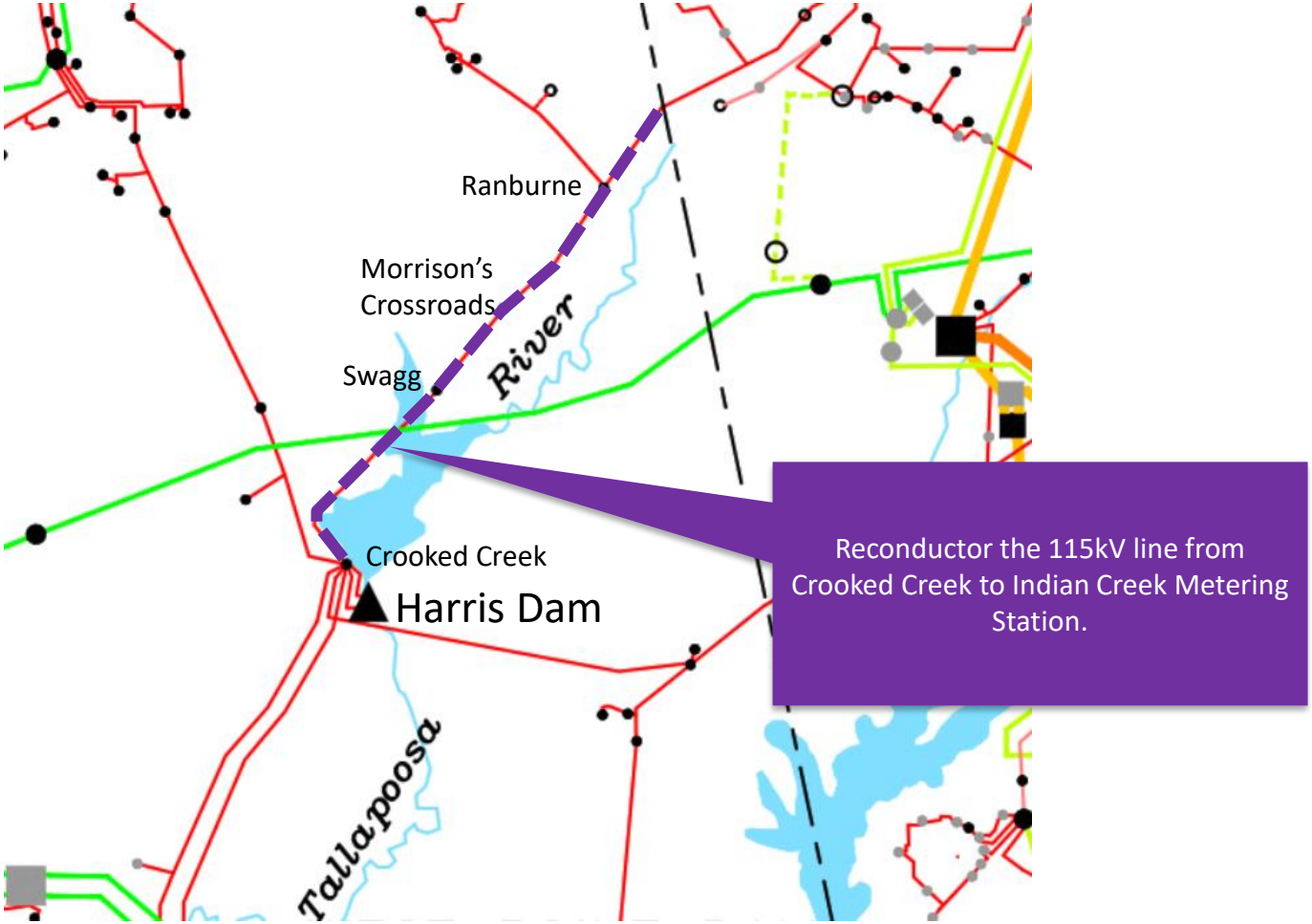
South Georgia – North Georgia 1600 MW

Significant Constraint (P5) – *SBAA*



South Georgia – North Georgia 1600 MW

Potential Enhancement (P5) – *SBAA*



South Georgia – North Georgia 1600 MW

Significant Constraints Identified – *TVA*

Table 1: 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

Potential Enhancements Identified – *TVA*

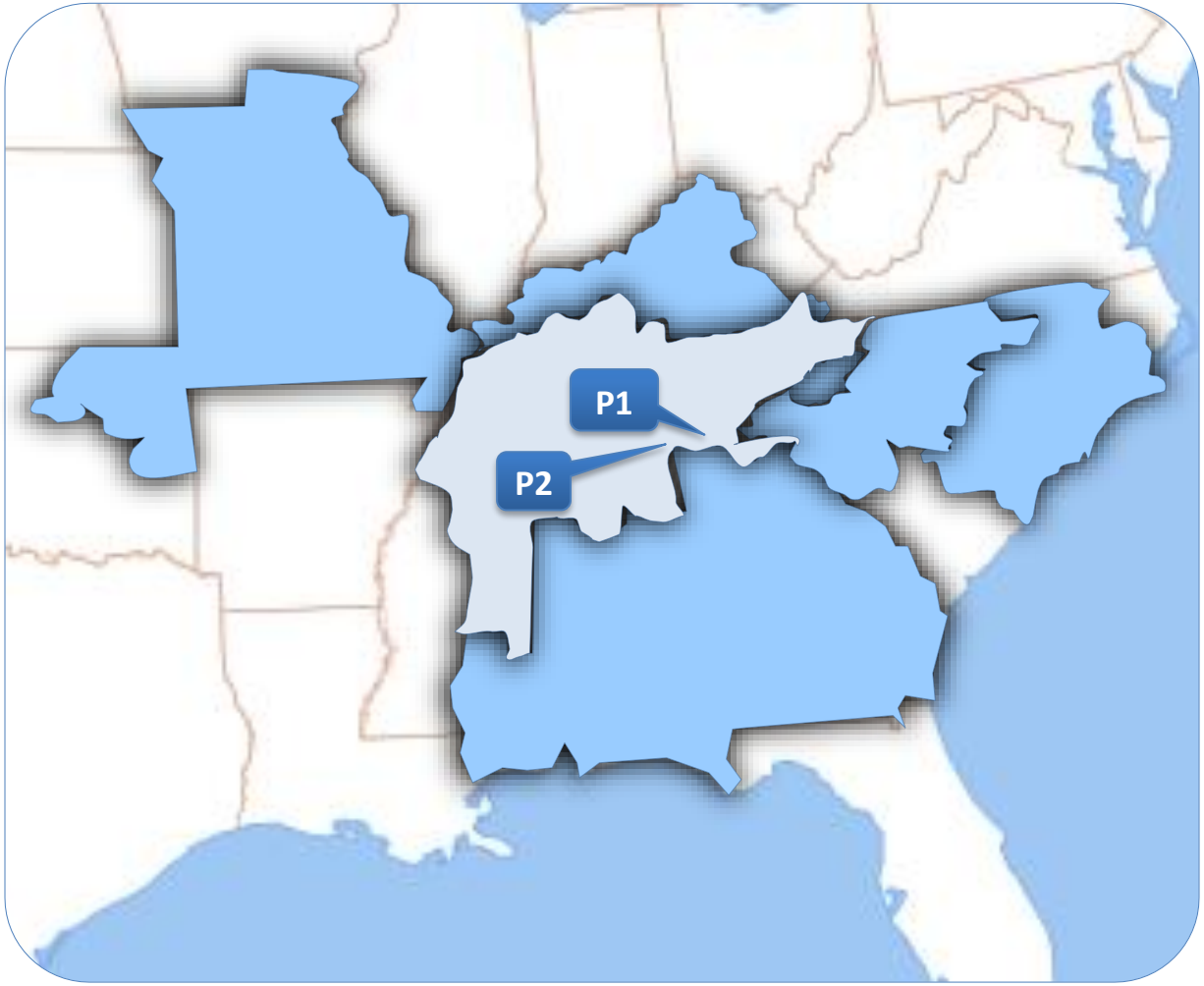
Table 2: Potential Enhancements - TVA

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.

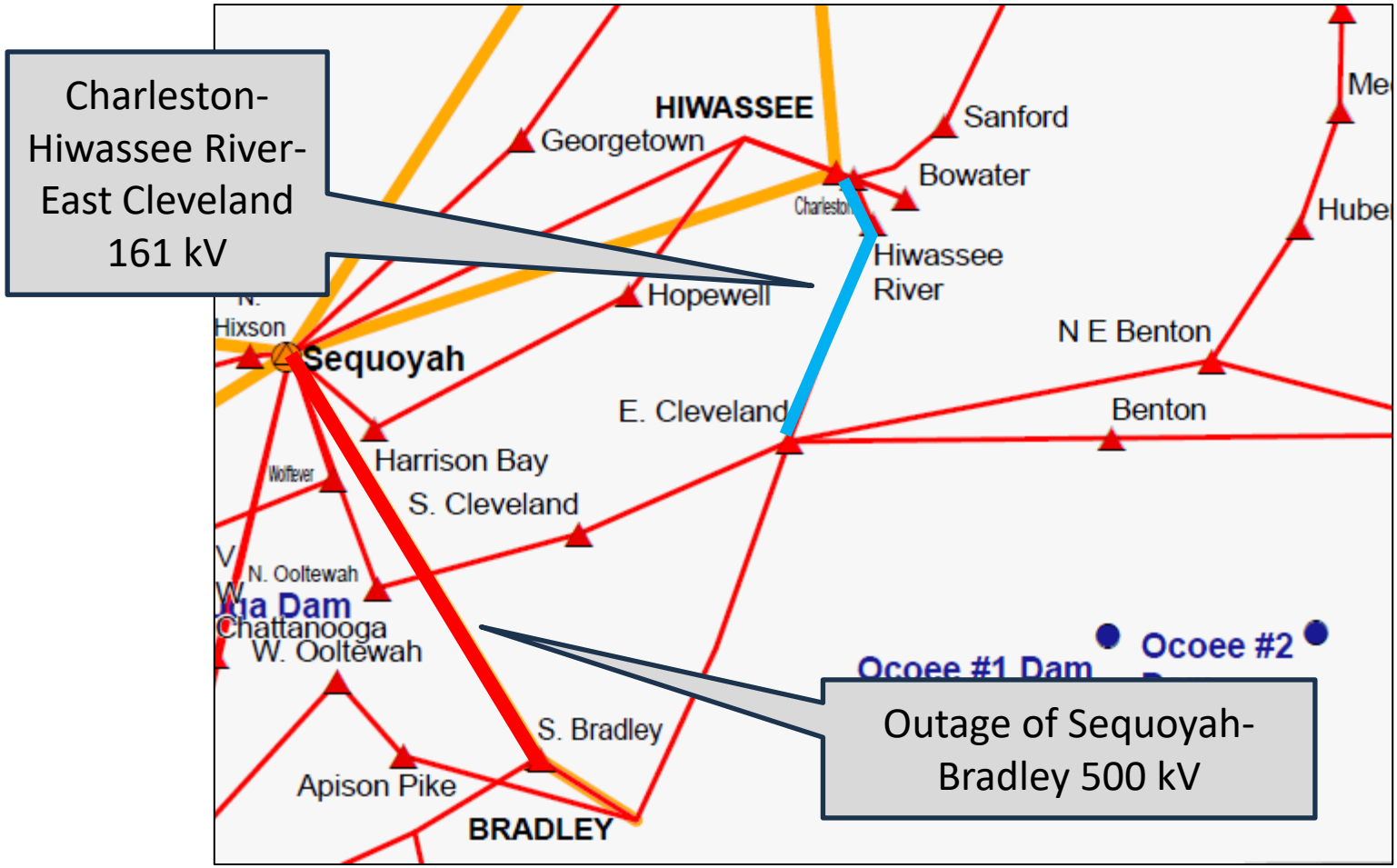
South Georgia – North Georgia 1600 MW

Potential Enhancement Locations – *TVA*



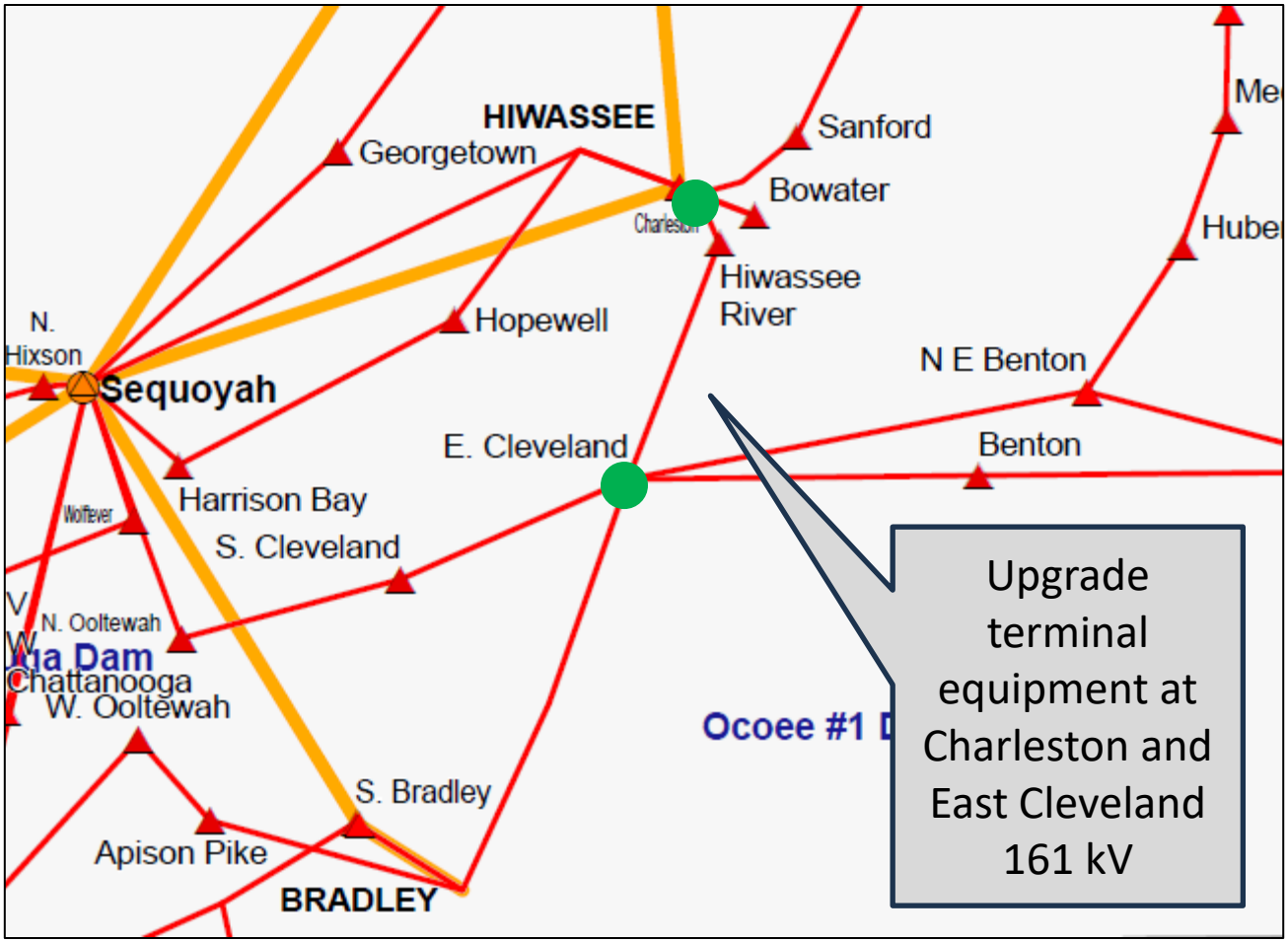
South Georgia – North Georgia 1600 MW

Significant Constraint (P1) – *TVA*



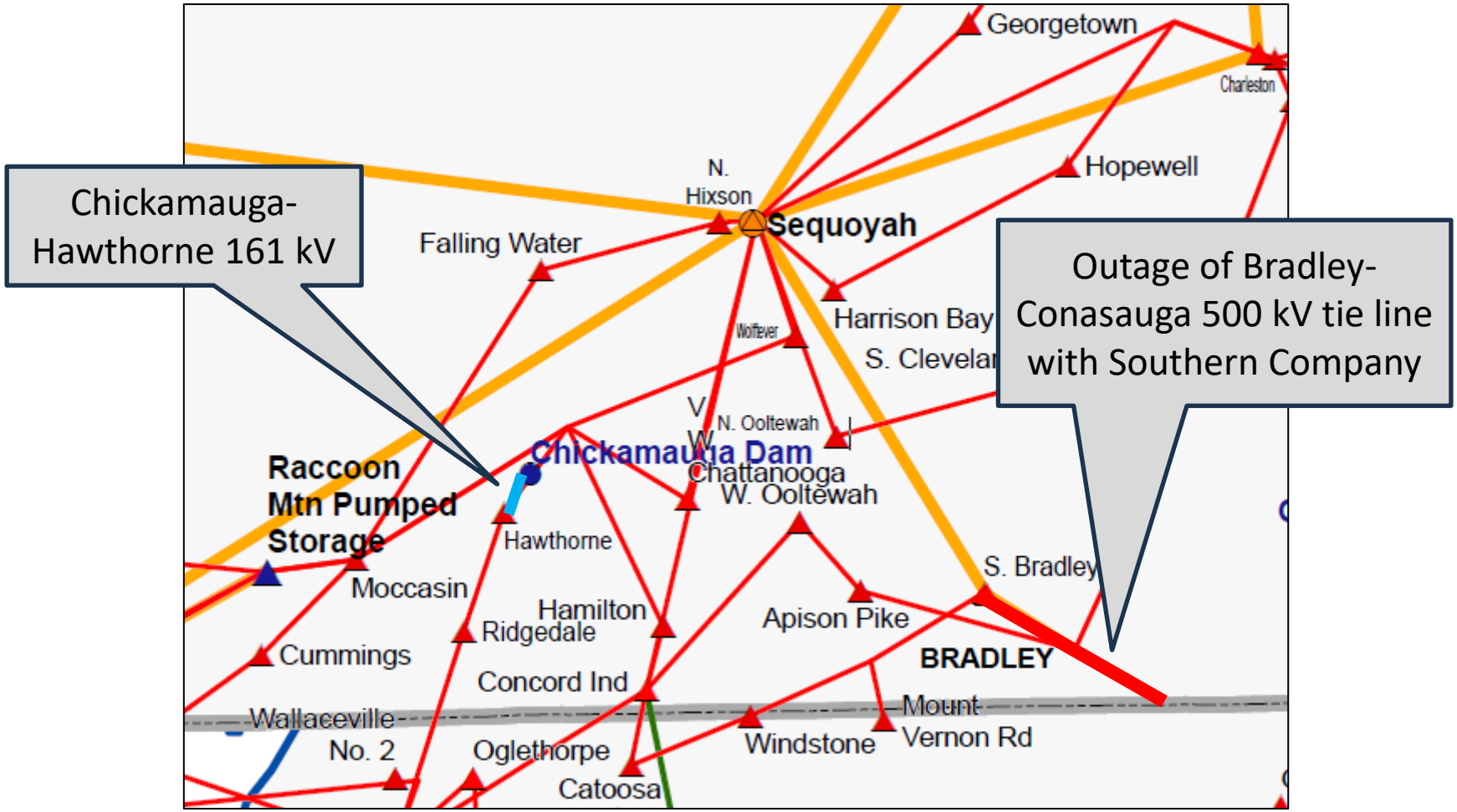
South Georgia – North Georgia 1600 MW

Potential Enhancement (P1) – *TVA*



South Georgia – North Georgia 1600 MW

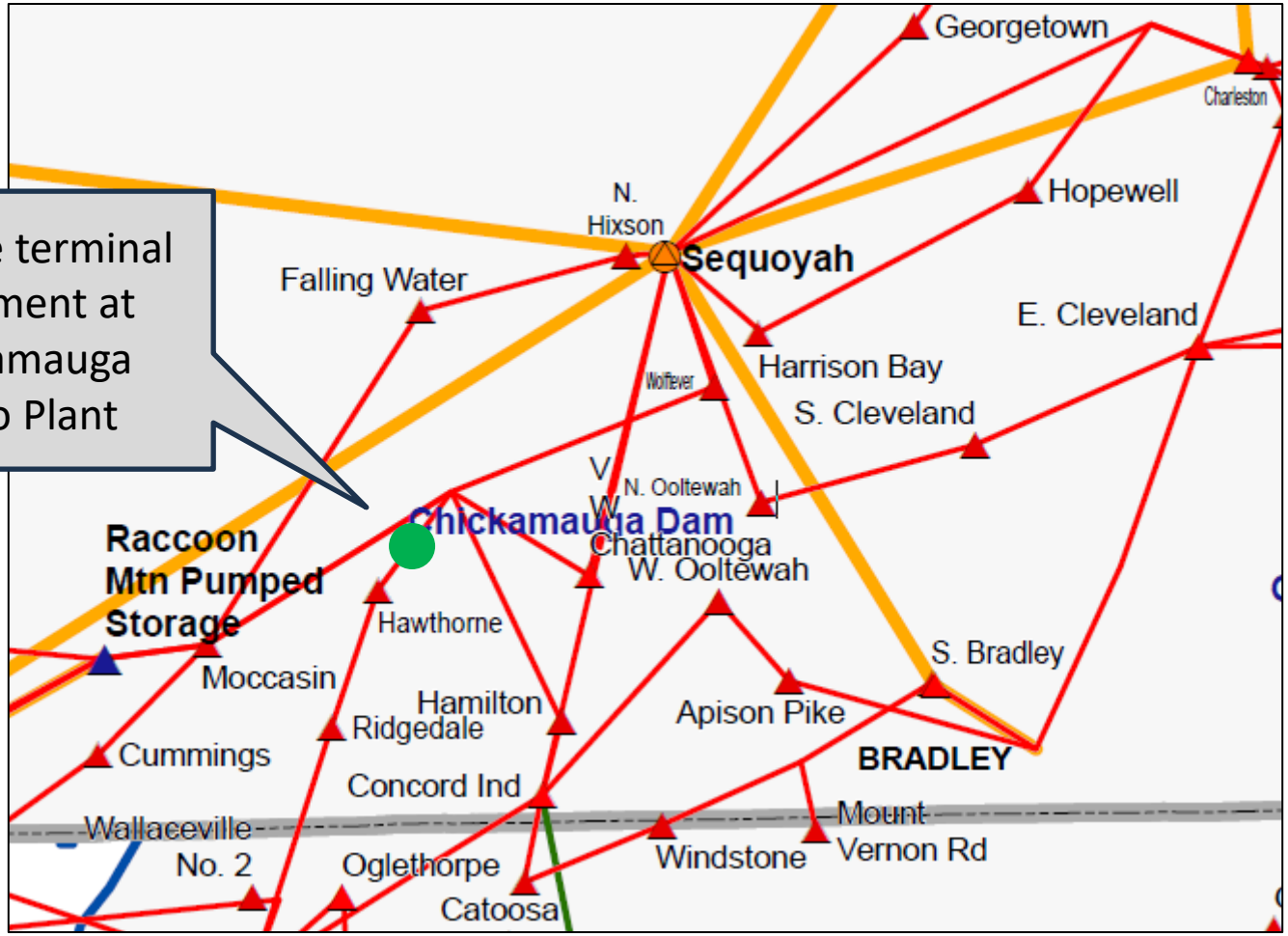
Significant Constraint (P2) – *TVA*



South Georgia – North Georgia 1600 MW

Potential Enhancement (P2) – *TVA*

Upgrade terminal equipment at Chickamauga Hydro Plant



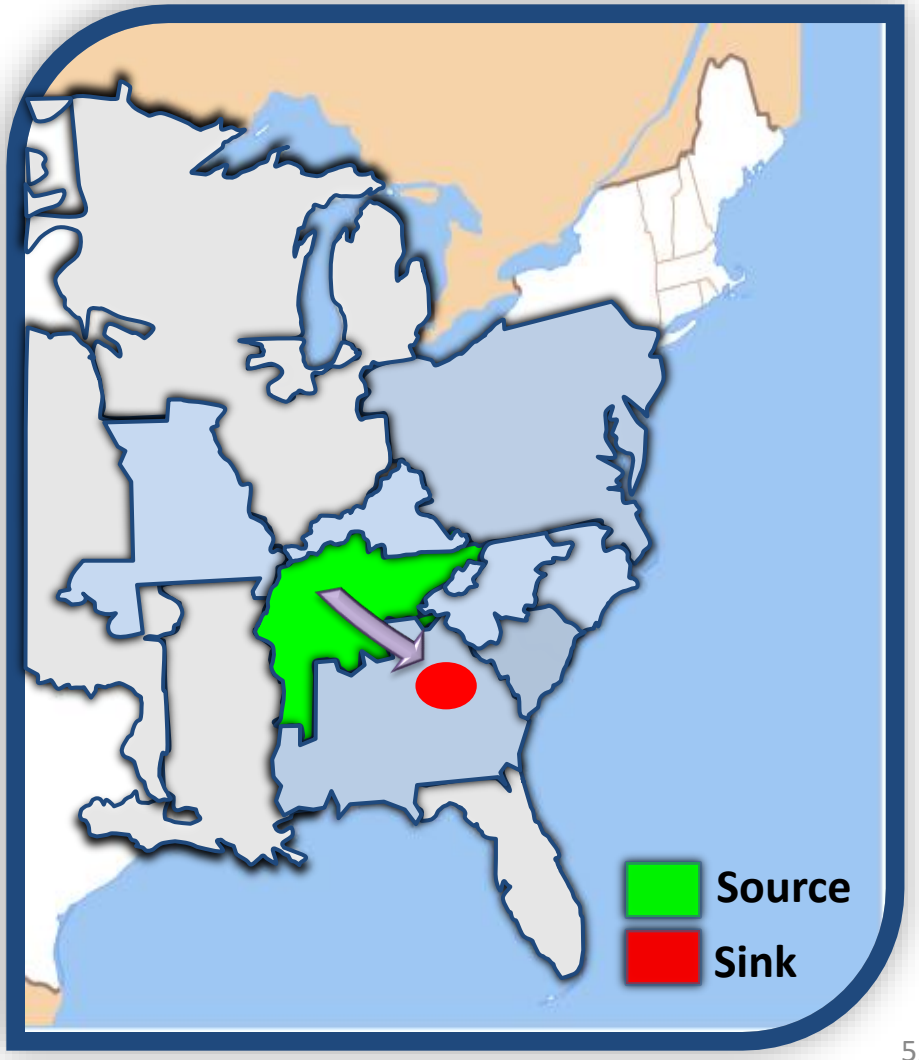
Economic Planning Studies – Preliminary Results

TVA to North Georgia – 1600MW

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)

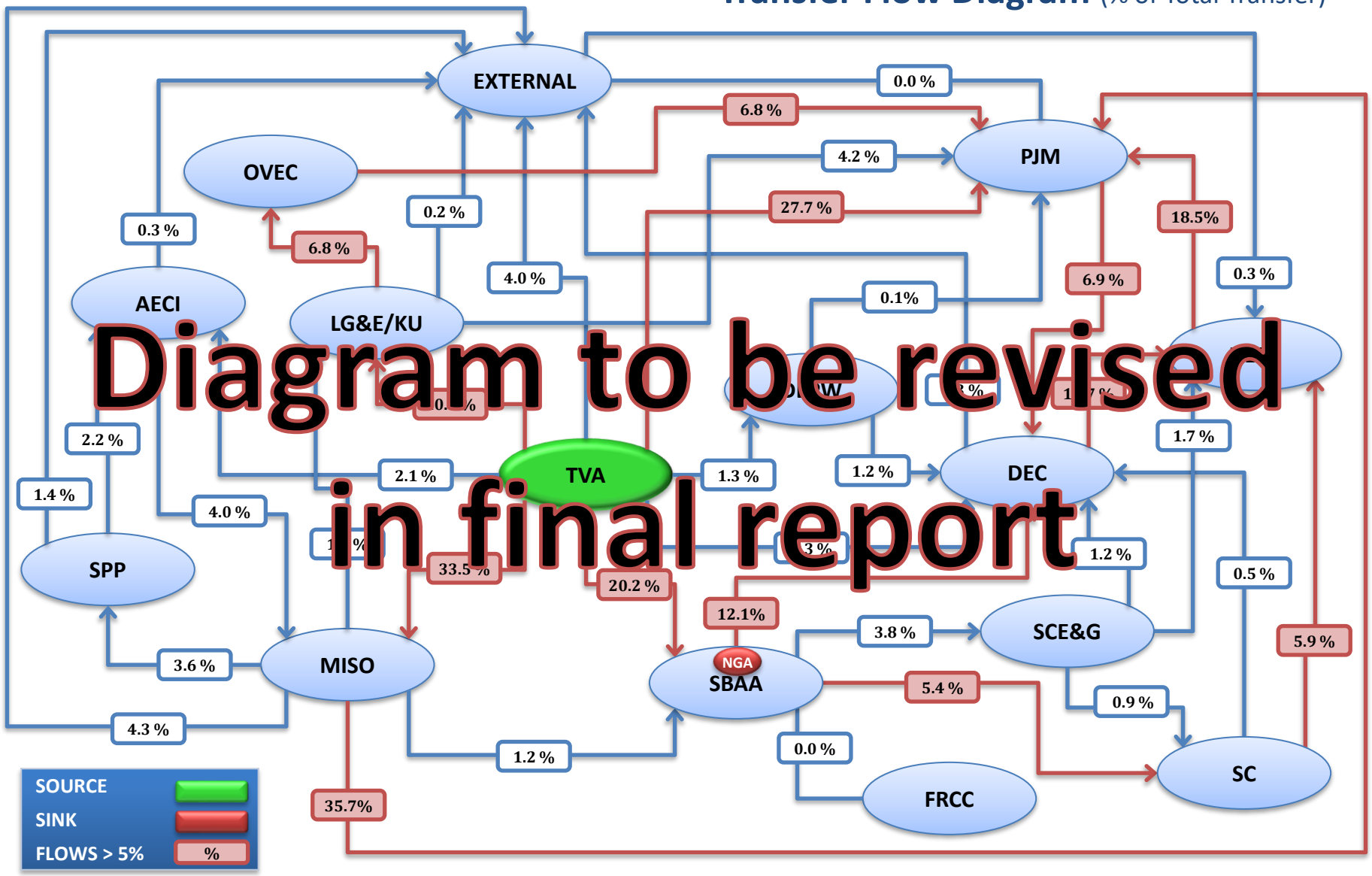


Diagram to be revised in final report

TVA – North Georgia 1600 MW

Transmission System Impacts – *SERTP*

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

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

SERTP Total ($2023) = $65.32 Million

TVA – North Georgia 1600 MW

Transmission System Impacts – *SERTP*

Table 6: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$38.12 Million
Tennessee Valley Authority (TVA)	$27.2 Million
SERTP TOTAL ($2023)	**$65.32 Million**

TVA – North Georgia 1600 MW

Significant Constraints Identified – *SBAA*

Table 1: 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 current version of models, but is in the 2023 Expansion Plan

TVA – North Georgia 1600 MW

Potential Enhancements Identified – *SBAA*

Table 2: Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	**Fairburn 1 – Union City B2 230kV Line** • 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** • 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**

(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.

TVA – North Georgia 1600 MW

Potential Enhancements Identified – *SBAA*

Table 2: Potential Enhancements – SBAA

Item	Potential Enhancement	Planning Level Cost Estimate
P3	**Dalton - East Dalton and East Dalton - Oostanaula** • 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** • Advance the 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	**$4.4 Million**
P5	**Notasulga – Thurlow Dam 115kV Line** • 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)		**$38.12 Million**(1)

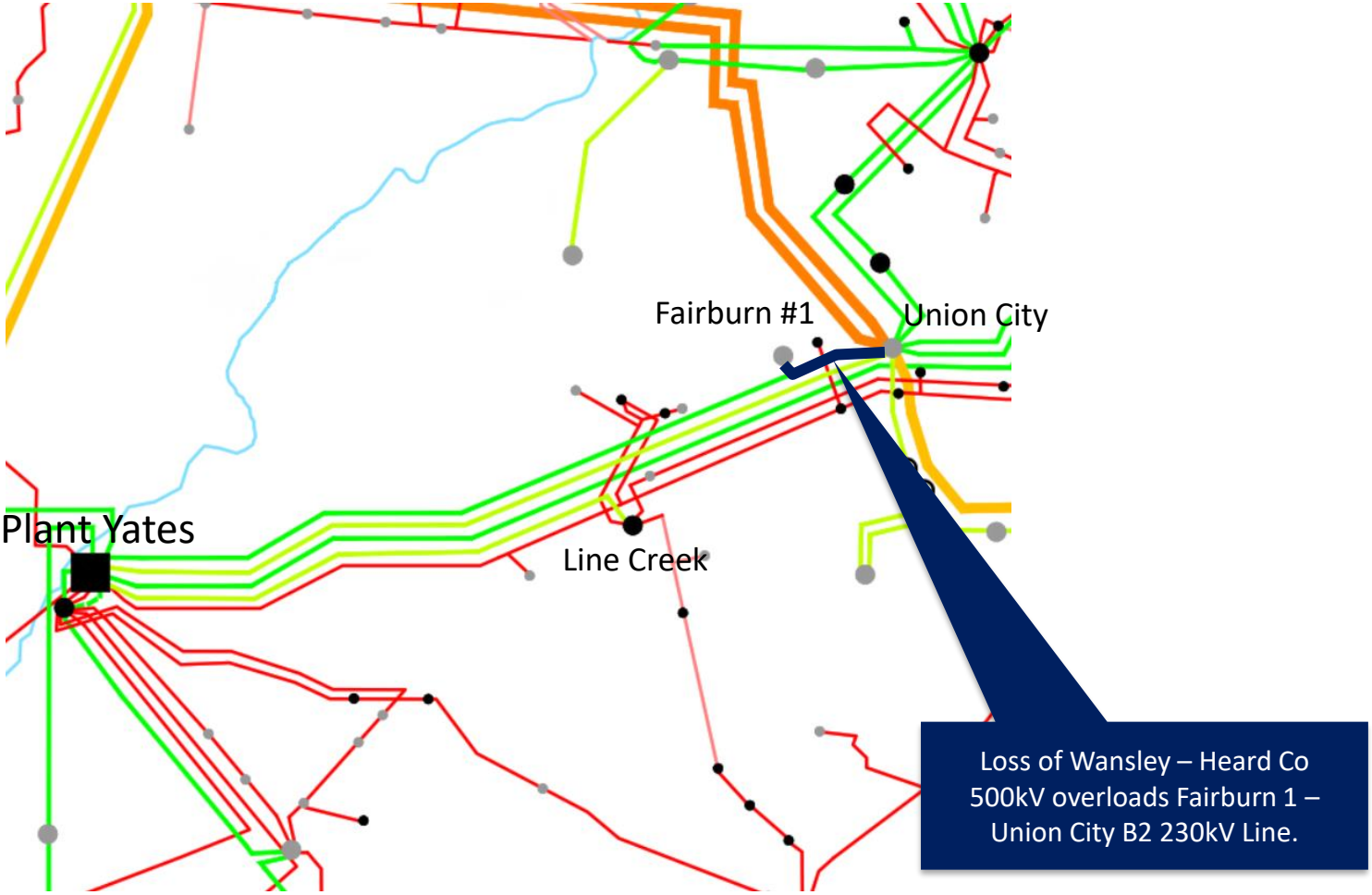
(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer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

TVA – North Georgia 1600 MW

Potential Enhancement Locations – *SBAA*

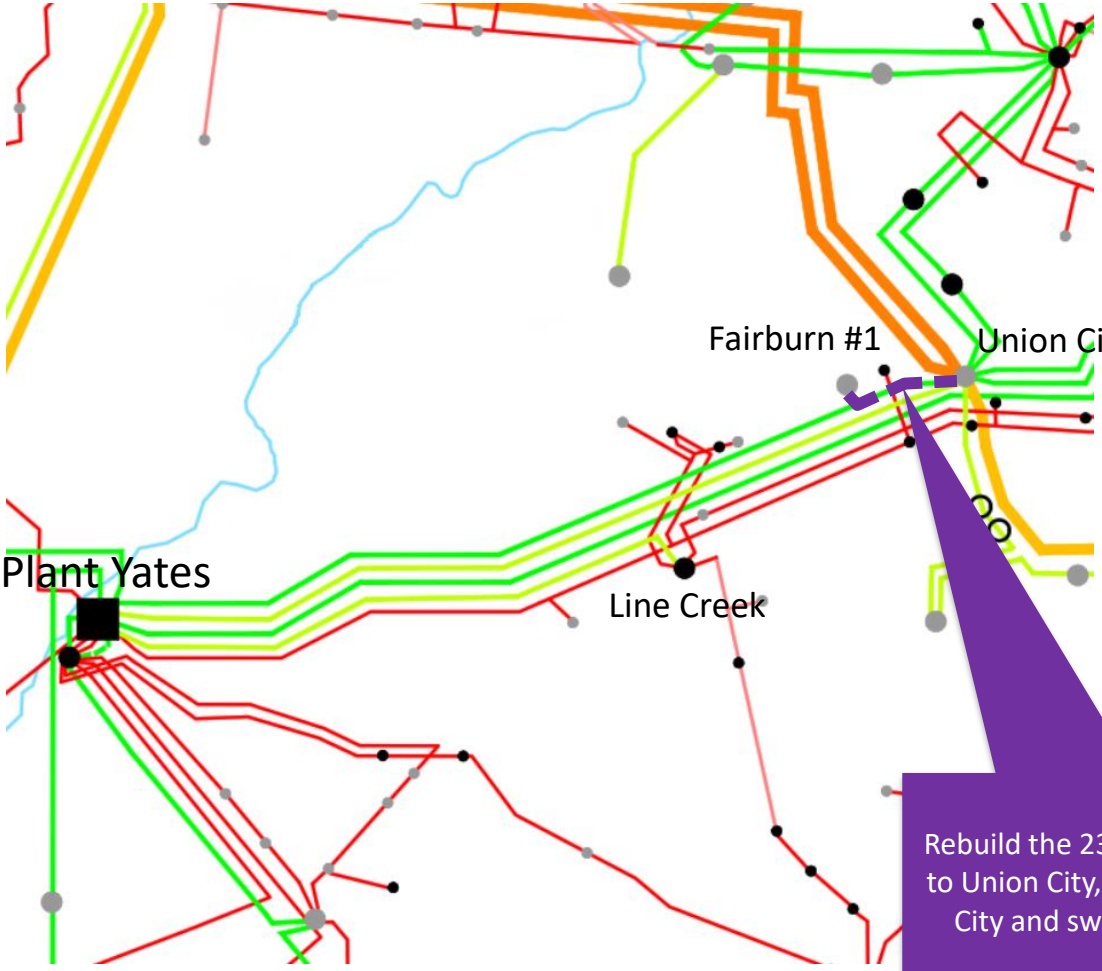
TVA – North Georgia 1600 MW

Significant Constraint (P1) – *SBAA*



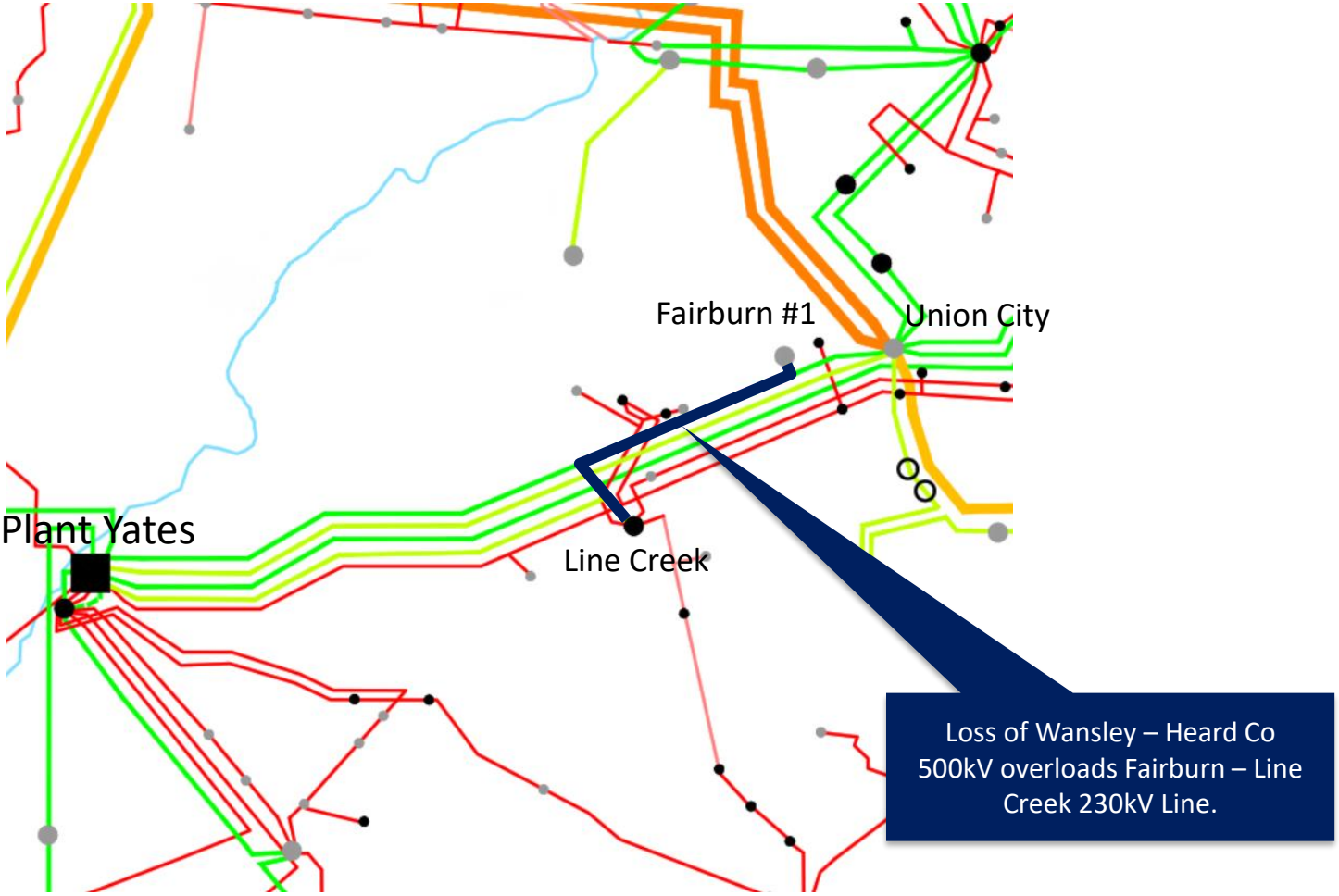
TVA – North Georgia 1600 MW

Potential Enhancement (P1) – *SBAA*



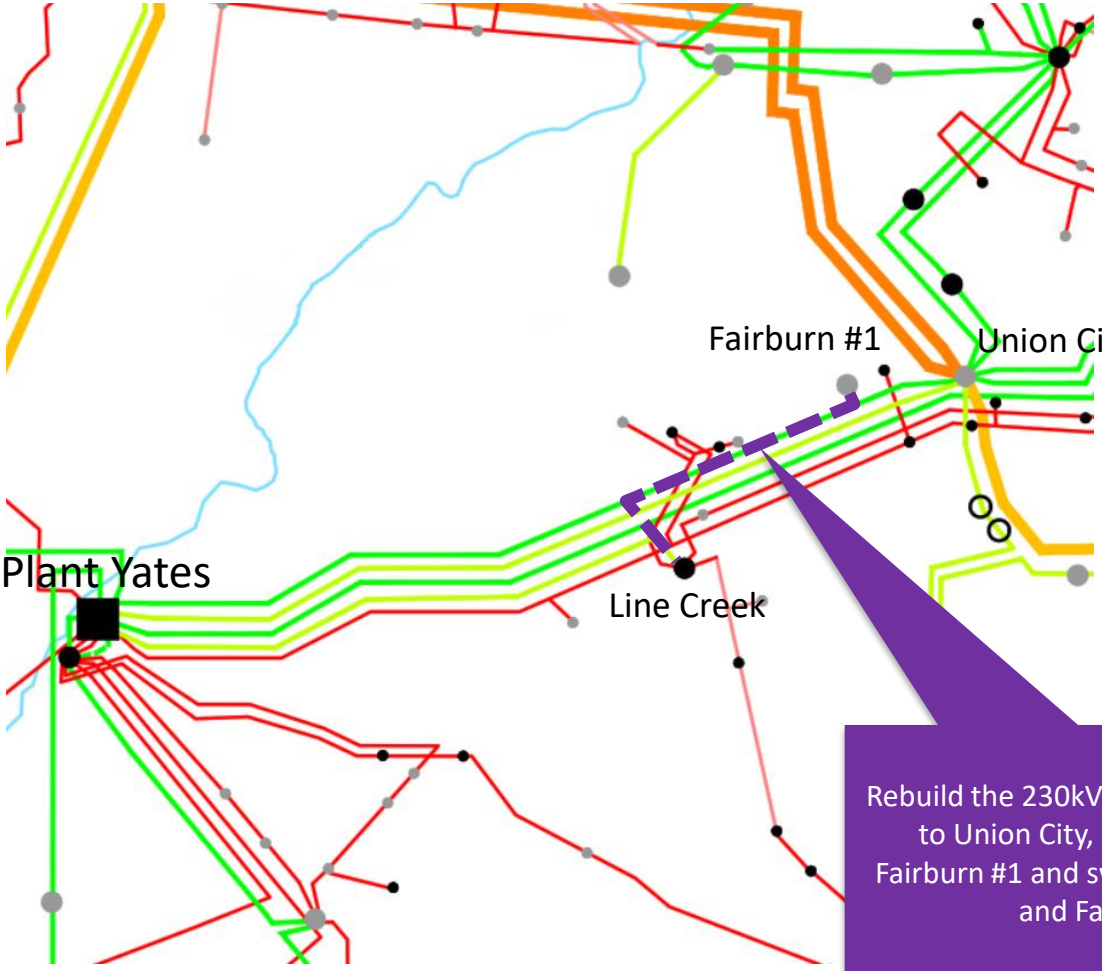
TVA – North Georgia 1600 MW

Significant Constraint (P2) – *SBAA*



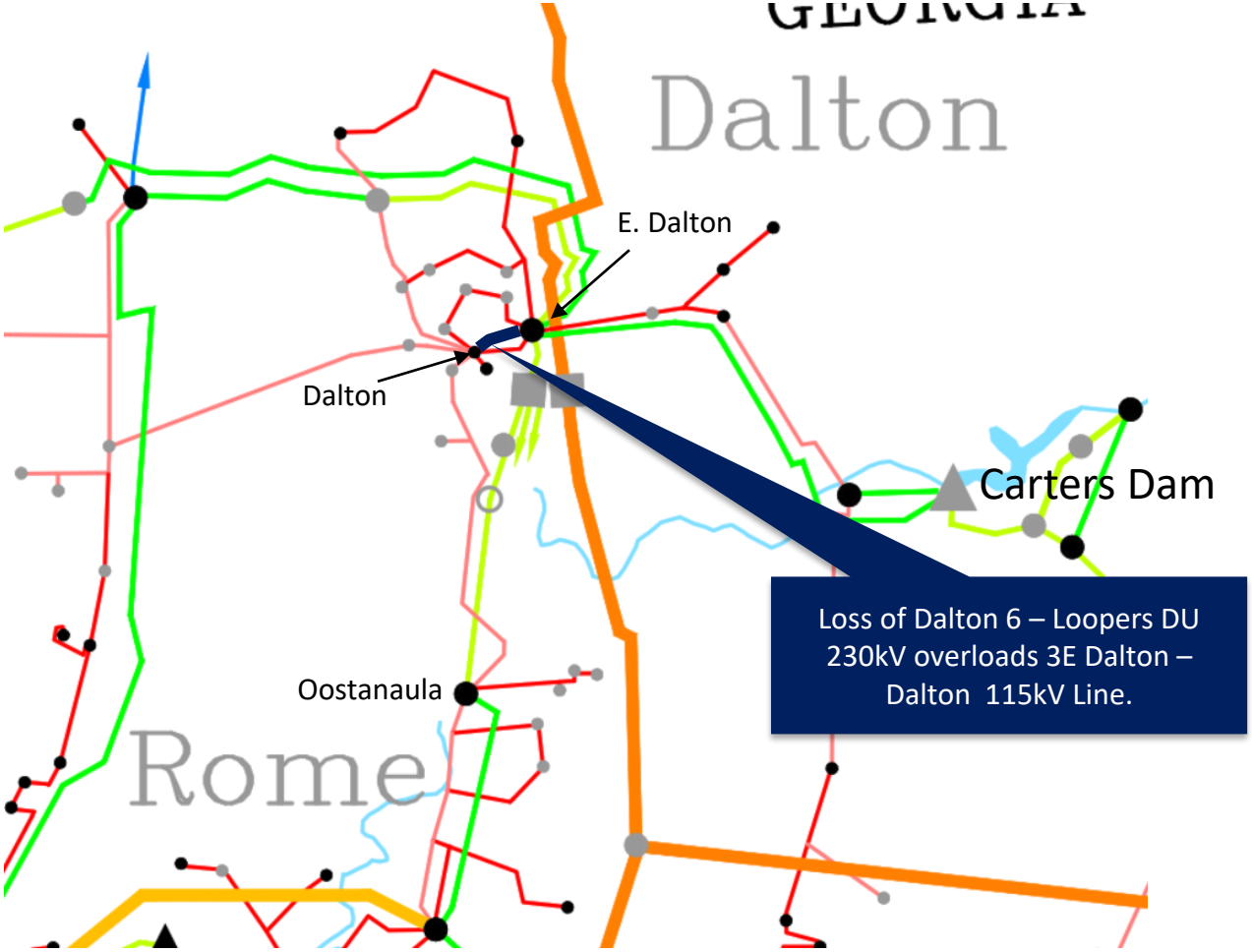
TVA – North Georgia 1600 MW

Potential Enhancement (P2) – *SBAA*



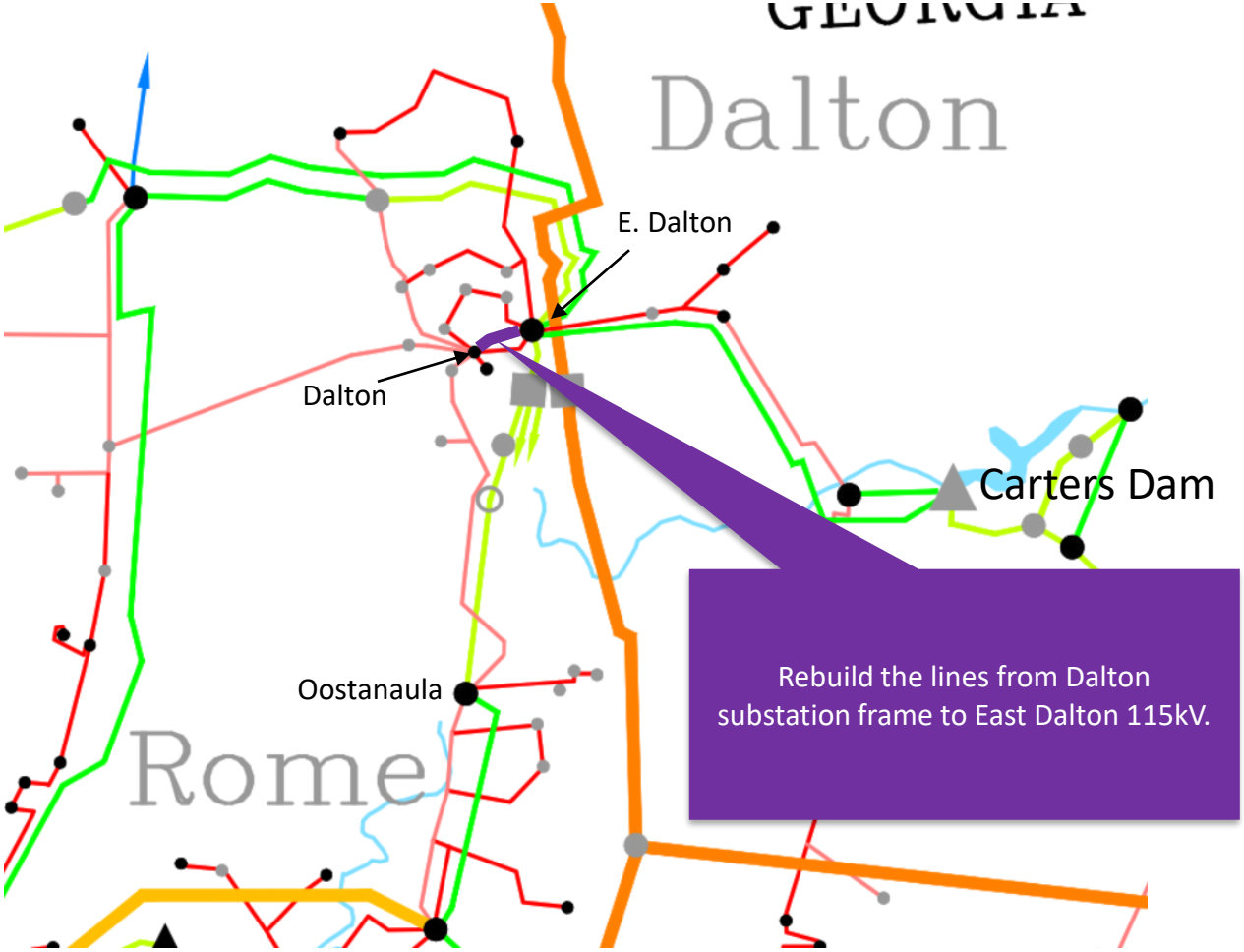
TVA – North Georgia 1600 MW

Significant Constraint (P3) – *SBAA*



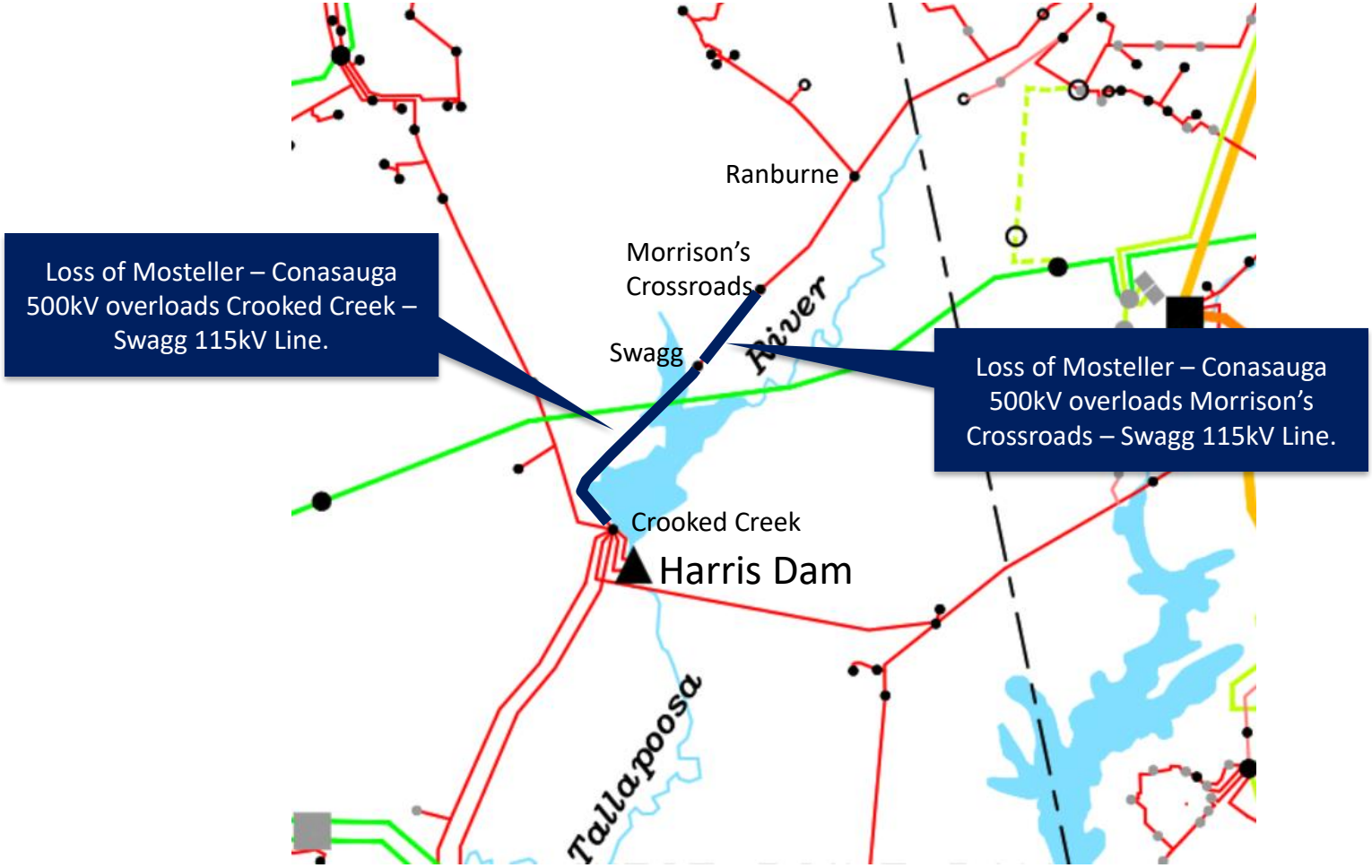
TVA – North Georgia 1600 MW

Potential Enhancement (P3) – *SBAA*



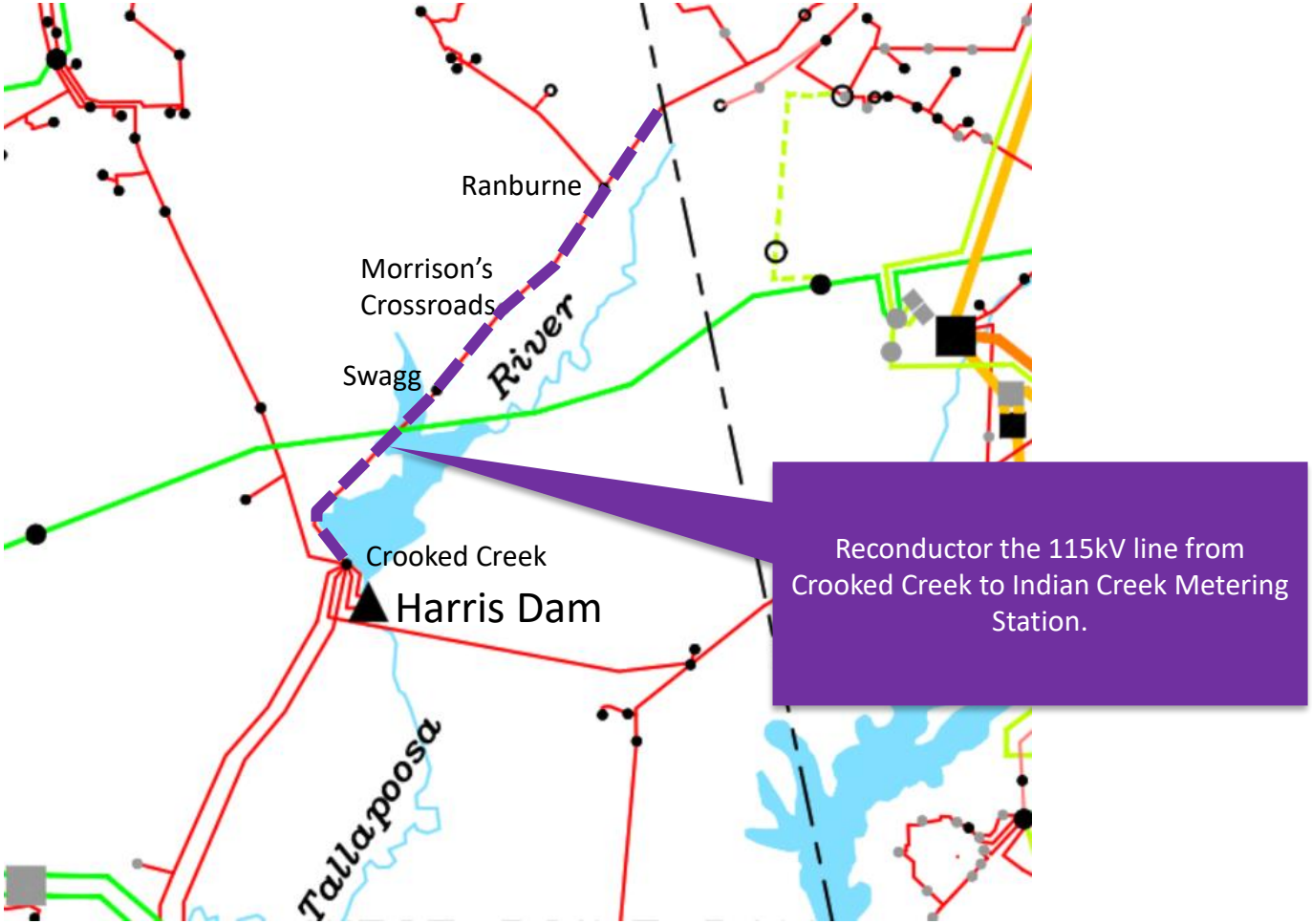
TVA – North Georgia 1600 MW

Significant Constraint (P4) – *SBAA*



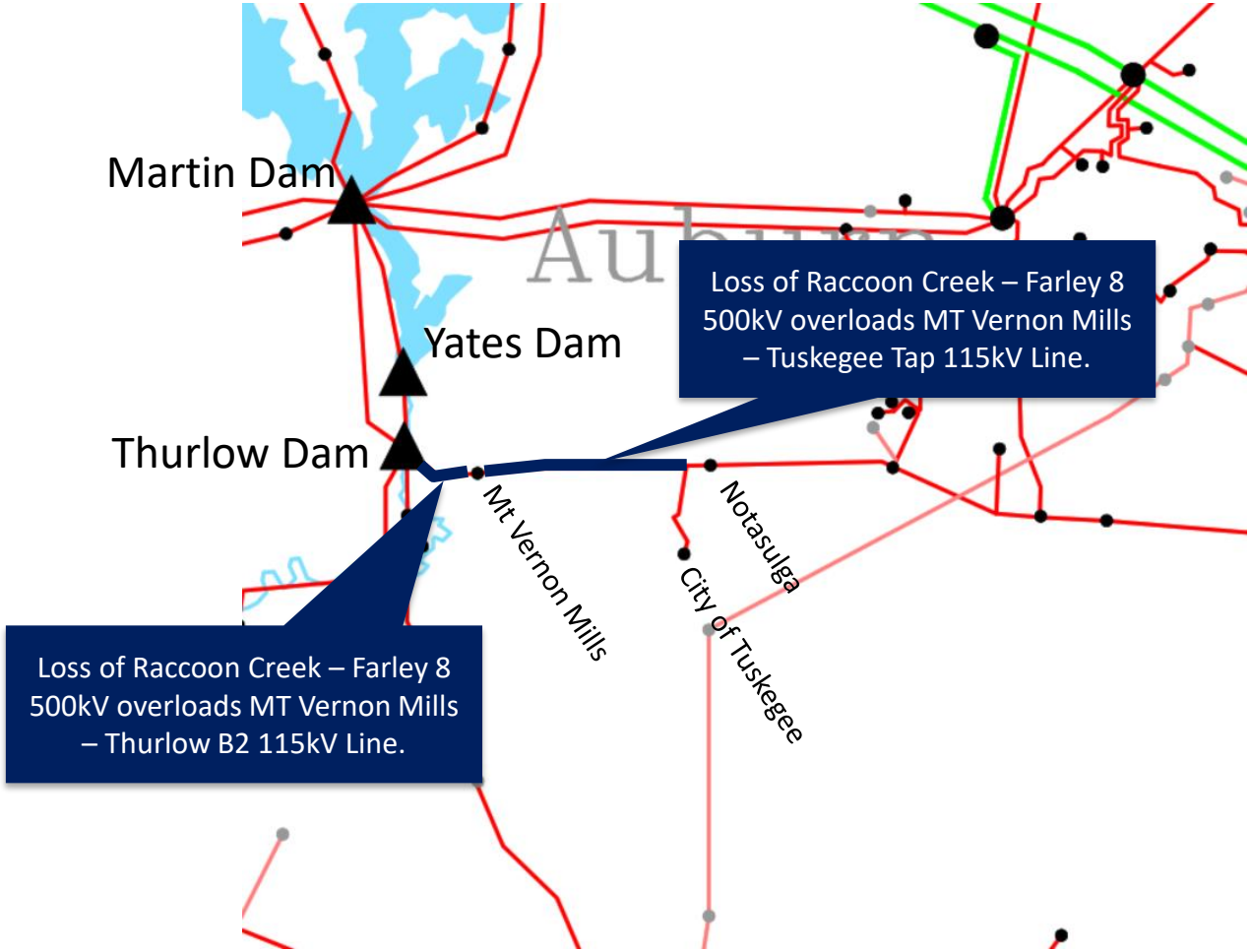
TVA – North Georgia 1600 MW

Potential Enhancement (P4) – *SBAA*



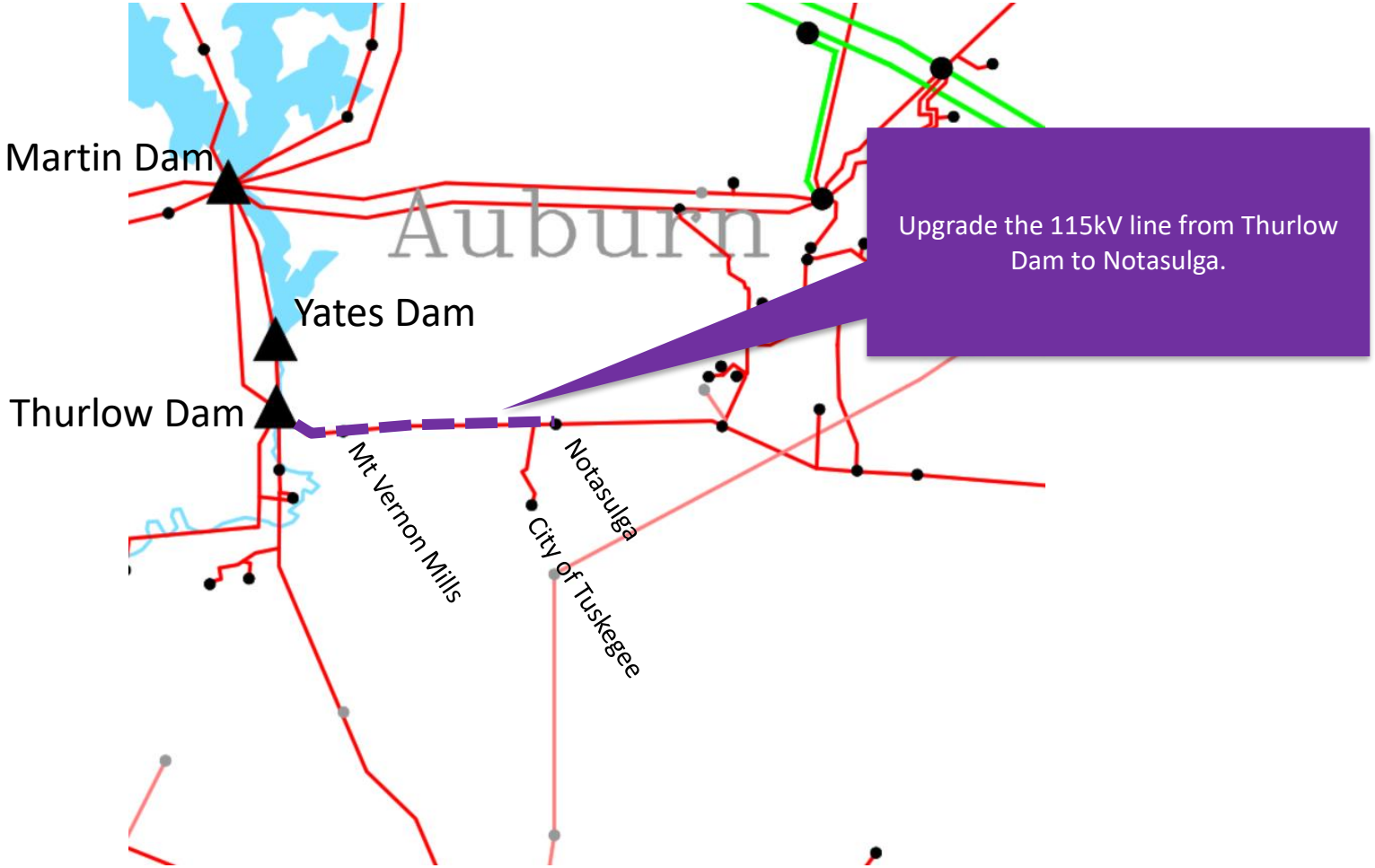
TVA – North Georgia 1600 MW

Significant Constraint (P5) – *SBAA*



TVA – North Georgia 1600 MW

Significant Constraint (P5) – *SBAA*



Significant Constraints Identified – *TVA*

Table 1: 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
P6	Bowling Green-East Bowling Green 161 kV	279.4	104.2	110.6
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

TVA – North Georgia 1600 MW

Potential Enhancements Identified – *TVA*

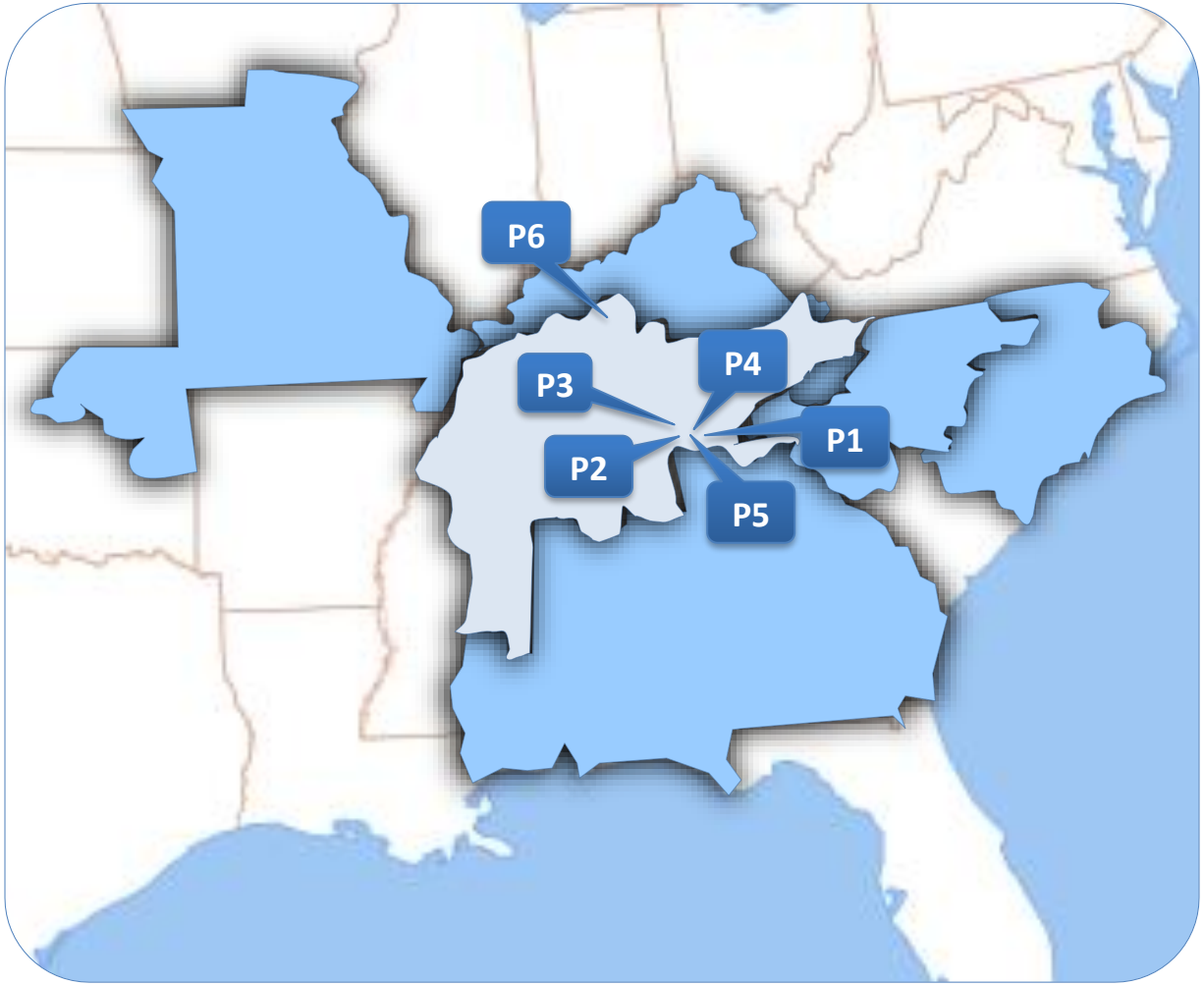
Table 2: Potential Enhancements - TVA

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**
P6	Upgrade terminal equipment at Bowling Green and East Bowling Green 161 kV switching stations.	**$4.425 Million**
TVA TOTAL ($2023)		**$27.2 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.

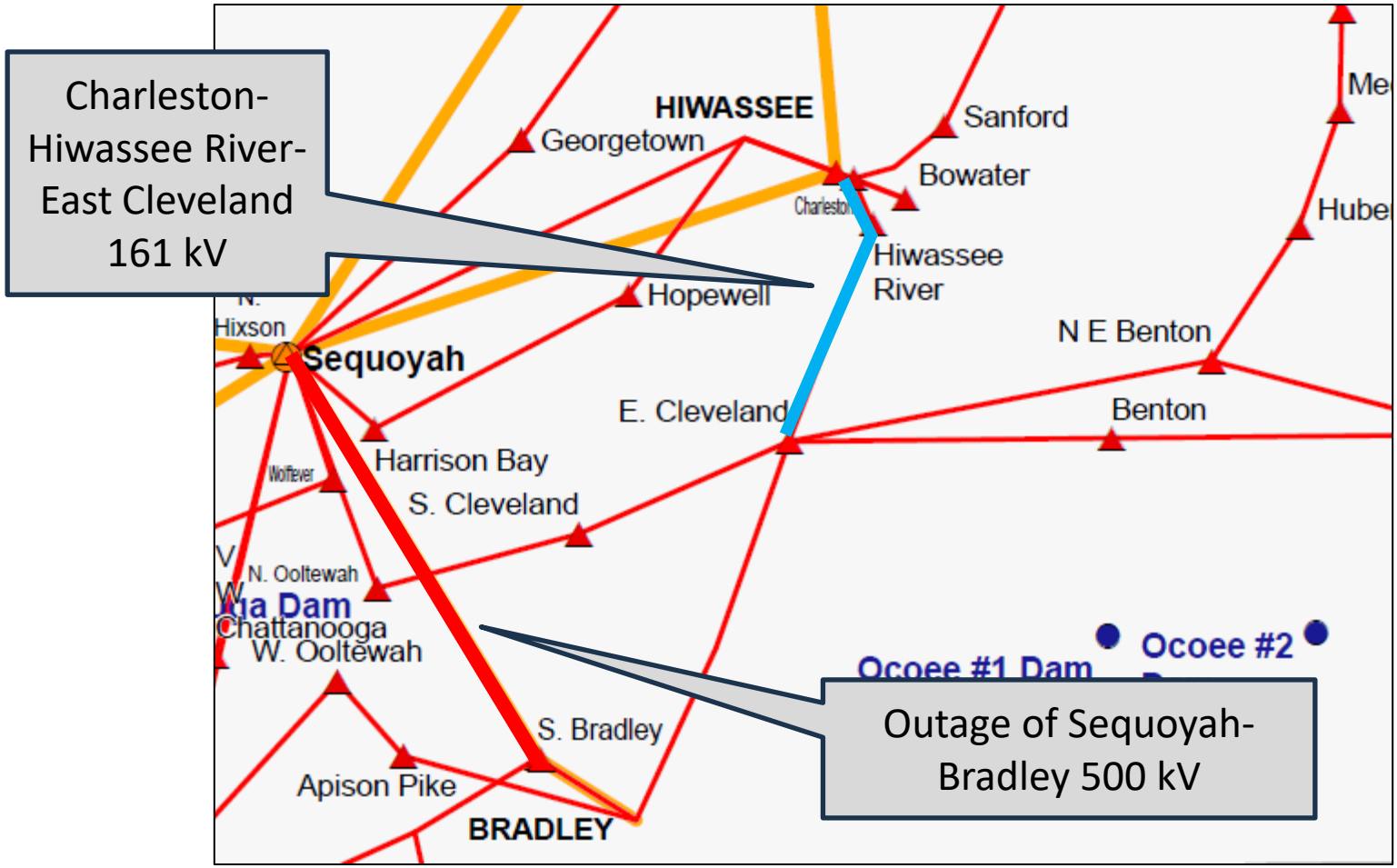
TVA – North Georgia 1600 MW

Potential Enhancement Locations – *TVA*



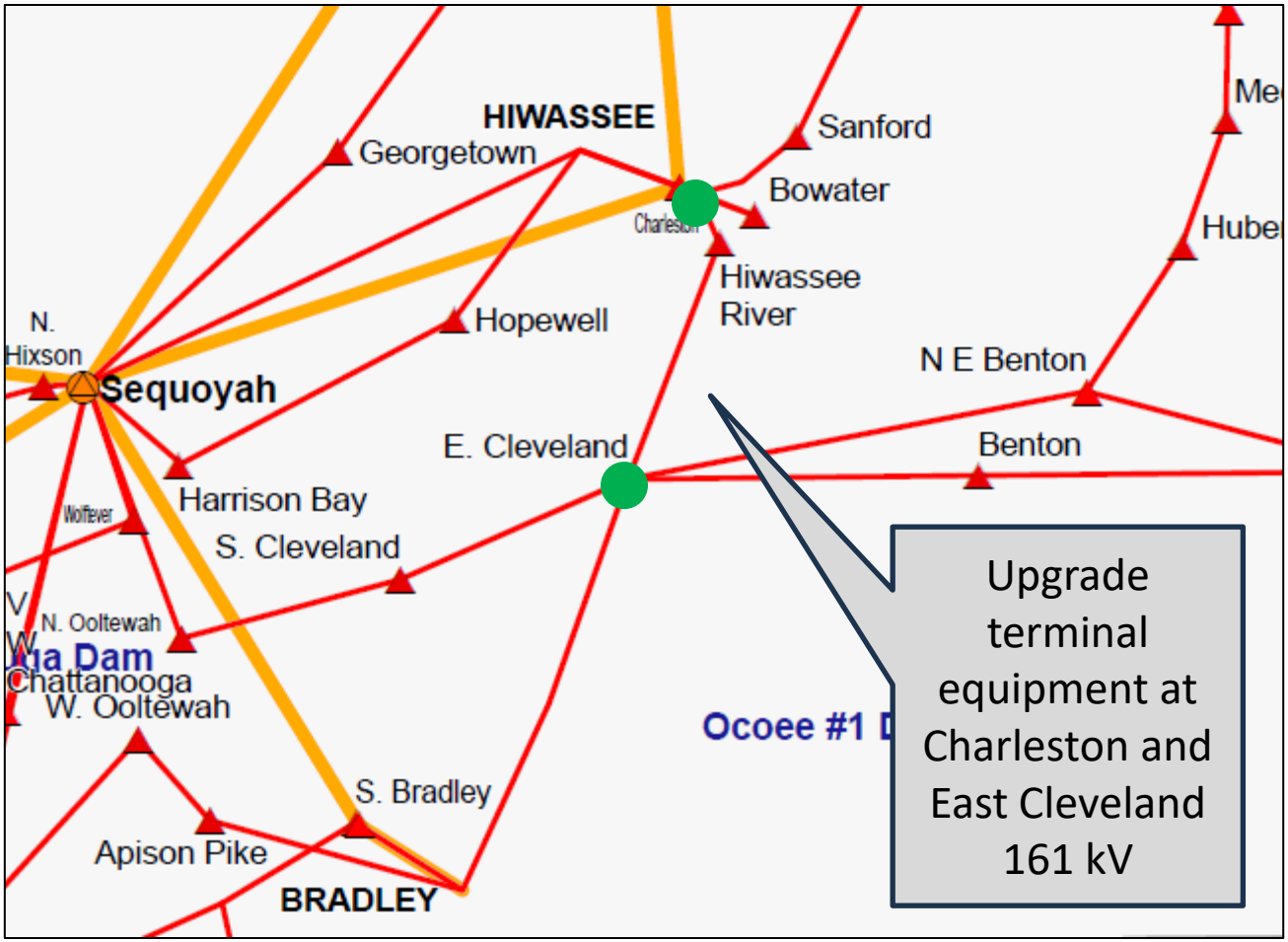
TVA – North Georgia 1600 MW

Significant Constraint (P1) – *TVA*



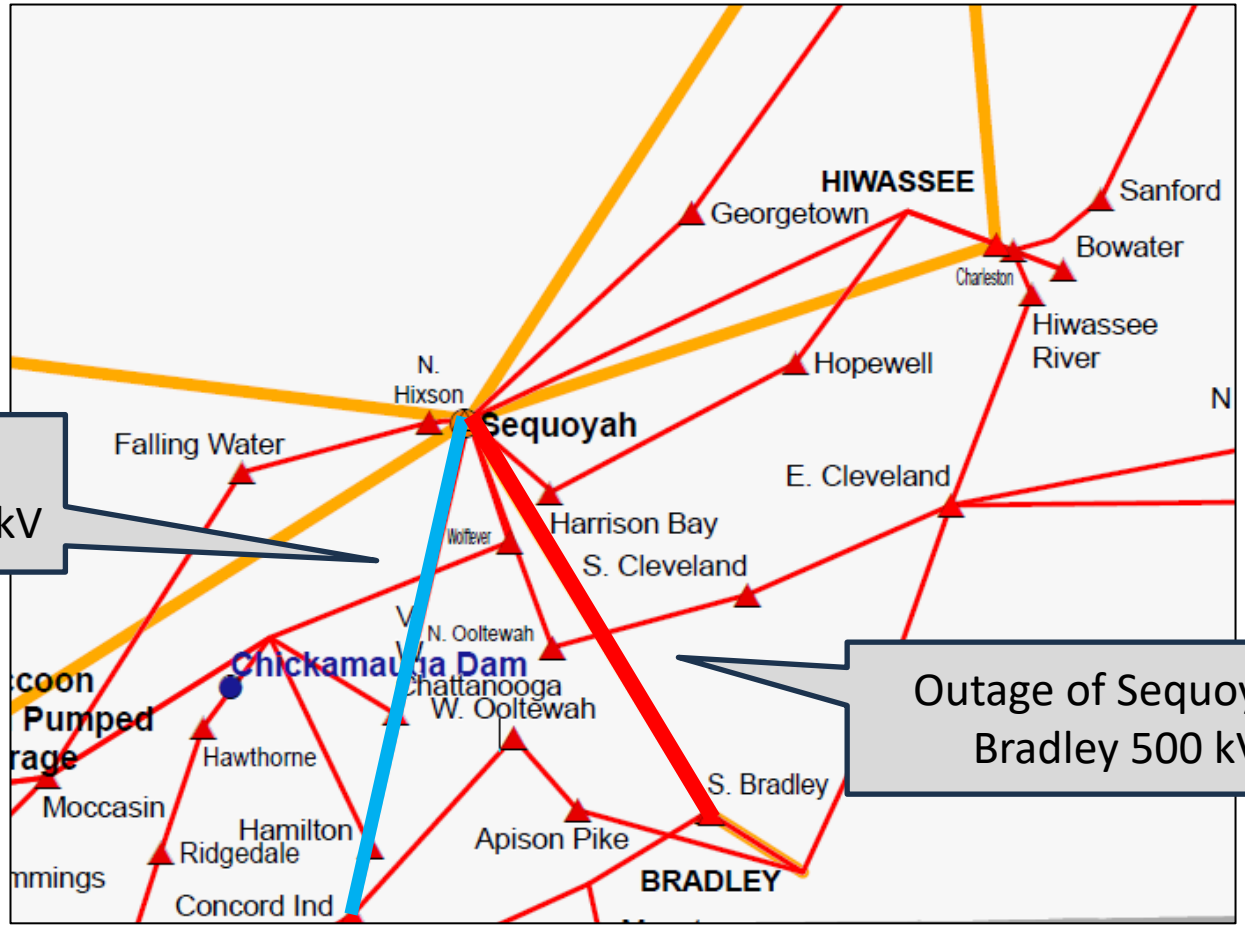
TVA – North Georgia 1600 MW

Potential Enhancement (P1) – *TVA*



TVA – North Georgia 1600 MW

Significant Constraint (P2) – *TVA*



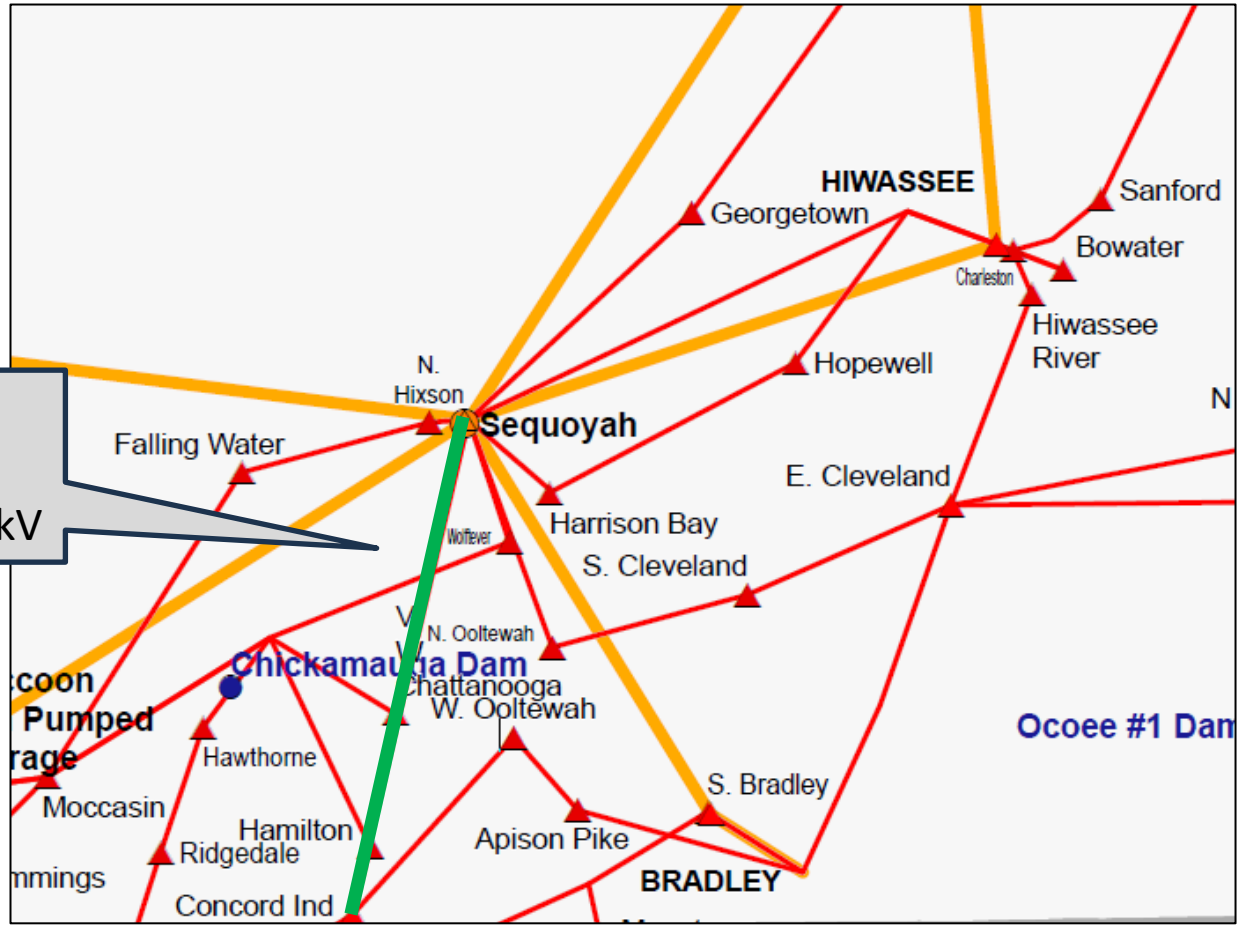
Sequoyah-Concord 161 kV

Outage of Sequoyah-Bradley 500 kV

TVA – North Georgia 1600 MW

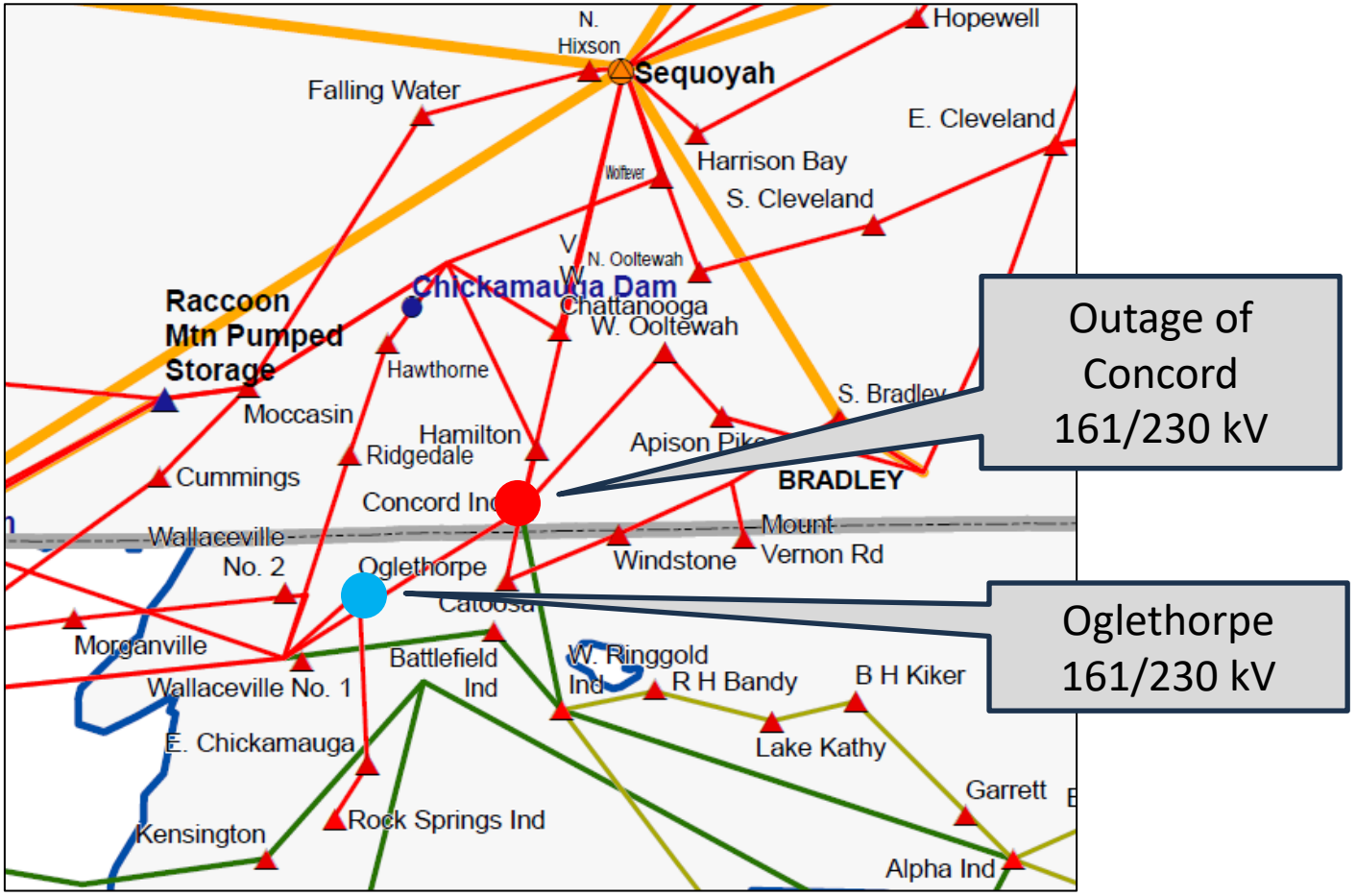
Potential Enhancement (P2) – *TVA*

Uprate Sequoyah-Concord 161 kV



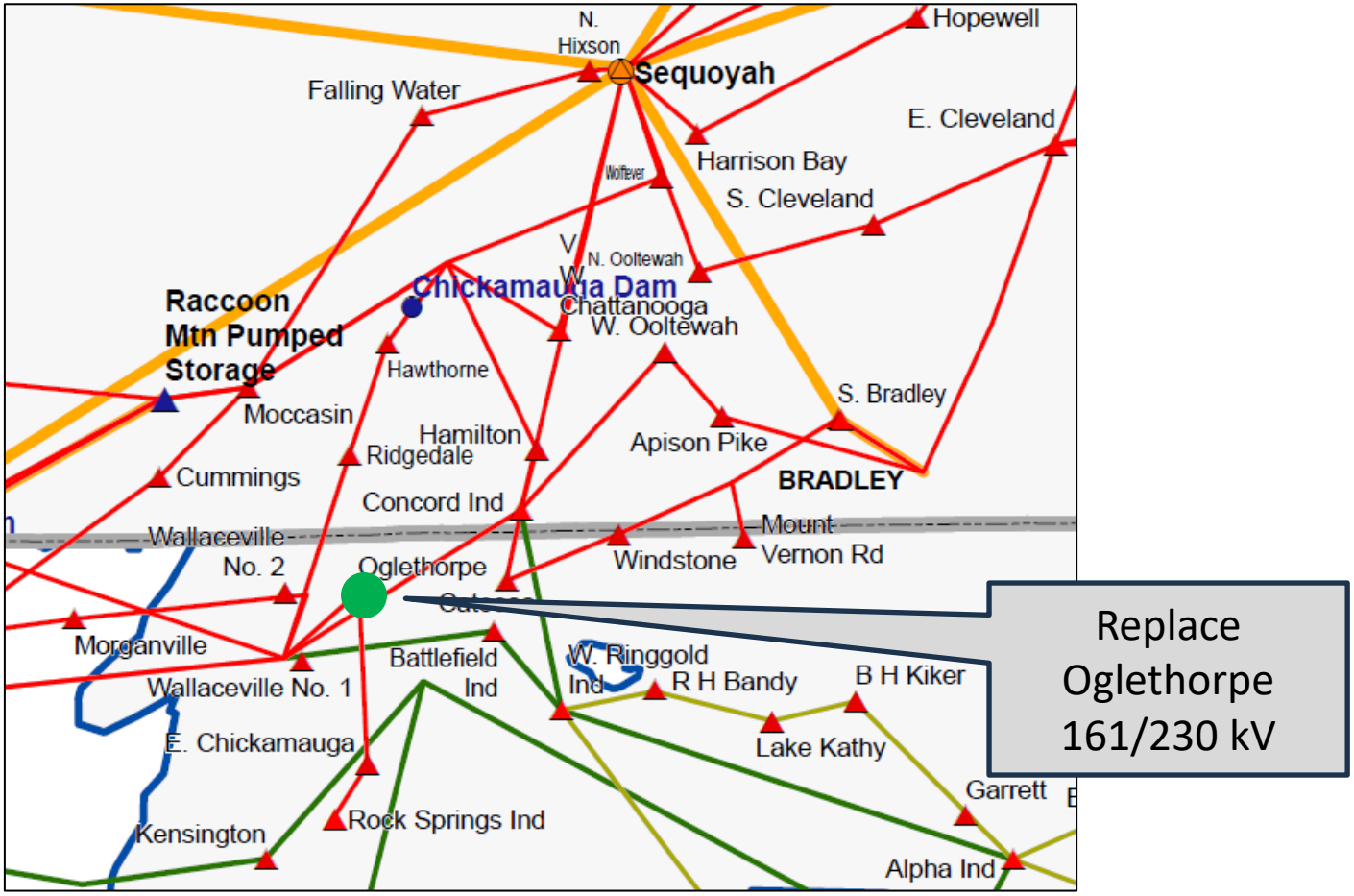
TVA – North Georgia 1600 MW

Significant Constraint (P3) – *TVA*



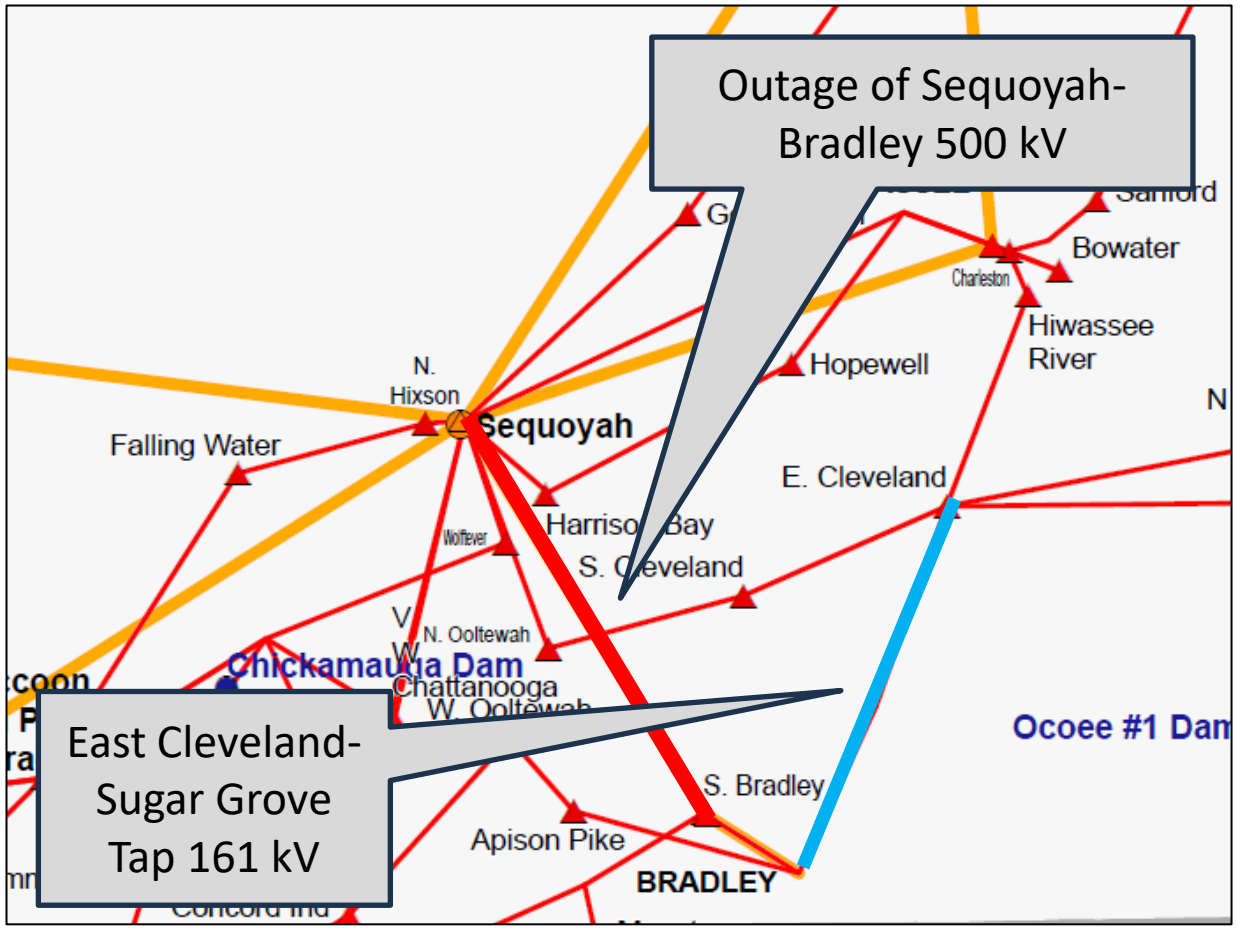
TVA – North Georgia 1600 MW

Potential Enhancement (P3) – *TVA*



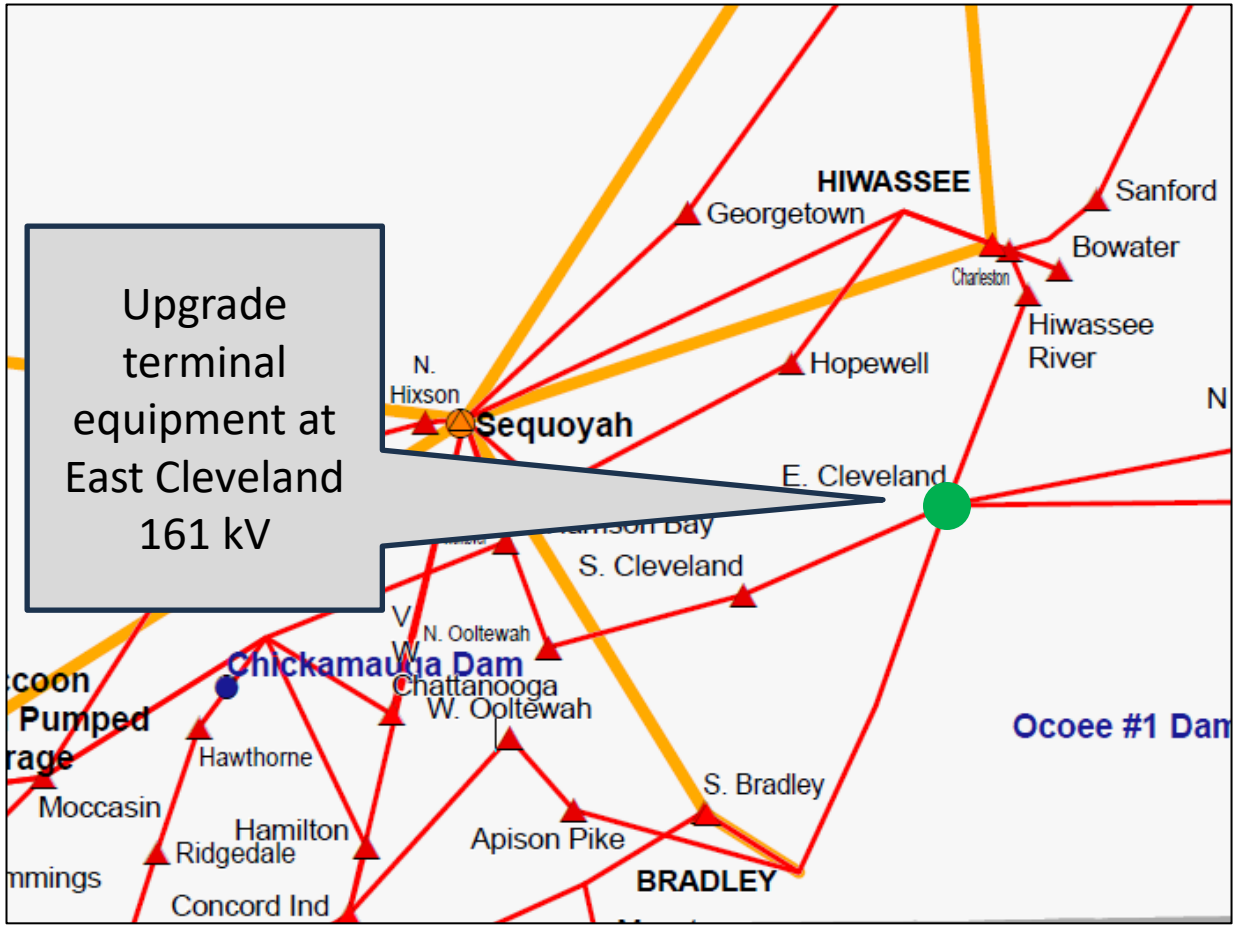
TVA – North Georgia 1600 MW

Significant Constraint (P4) – *TVA*



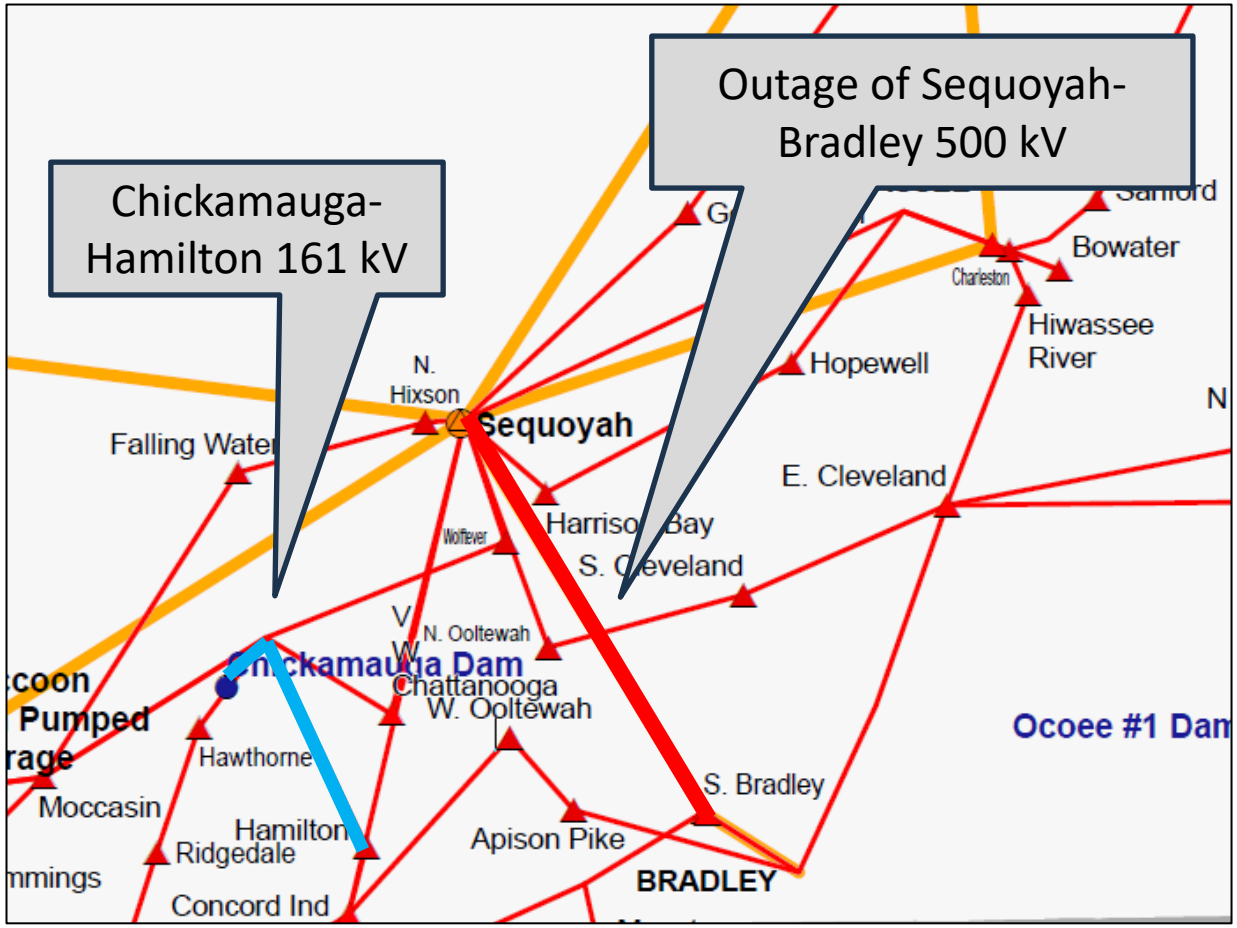
TVA – North Georgia 1600 MW

Potential Enhancement (P4) – *TVA*



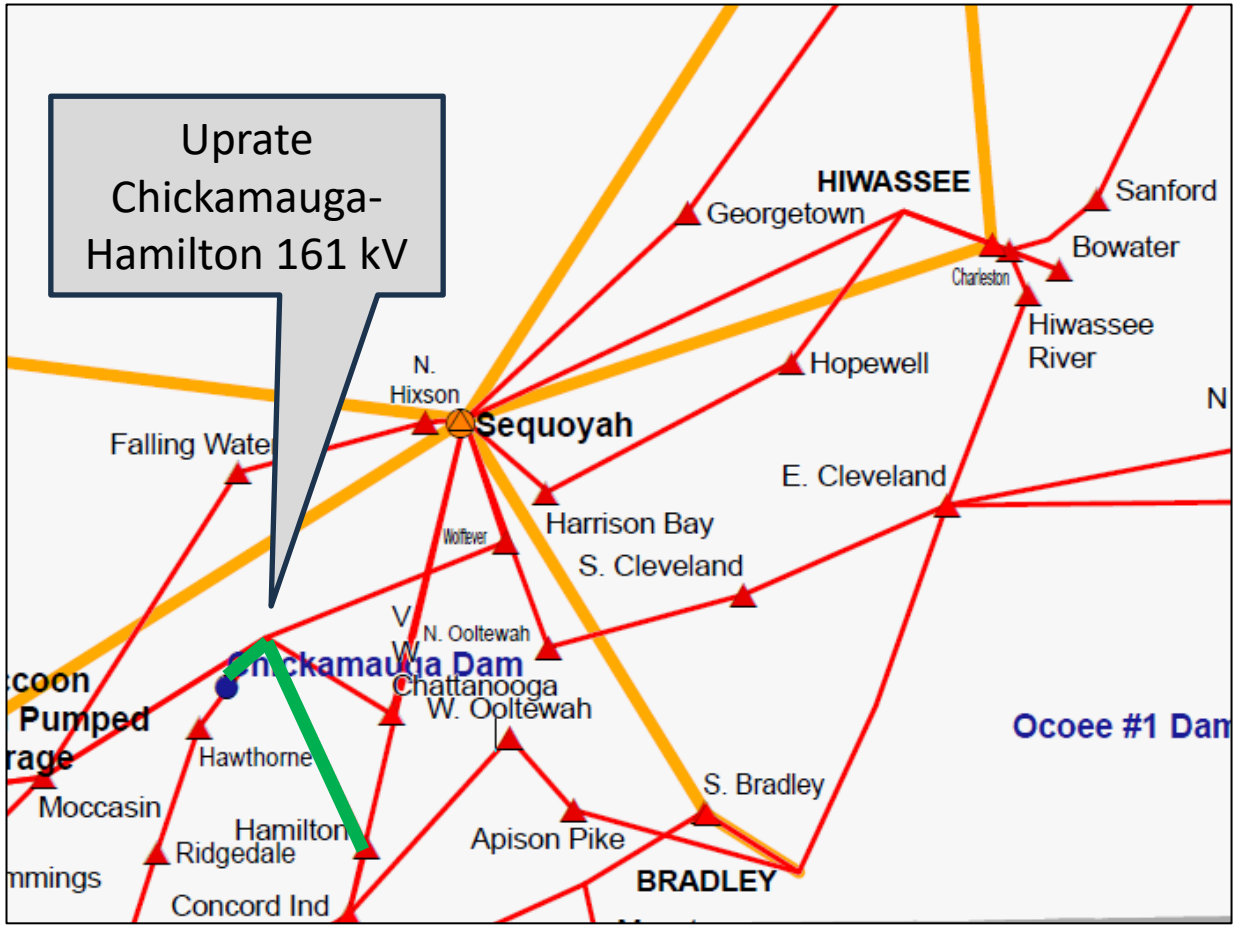
TVA – North Georgia 1600 MW

Significant Constraint (P5) – *TVA*



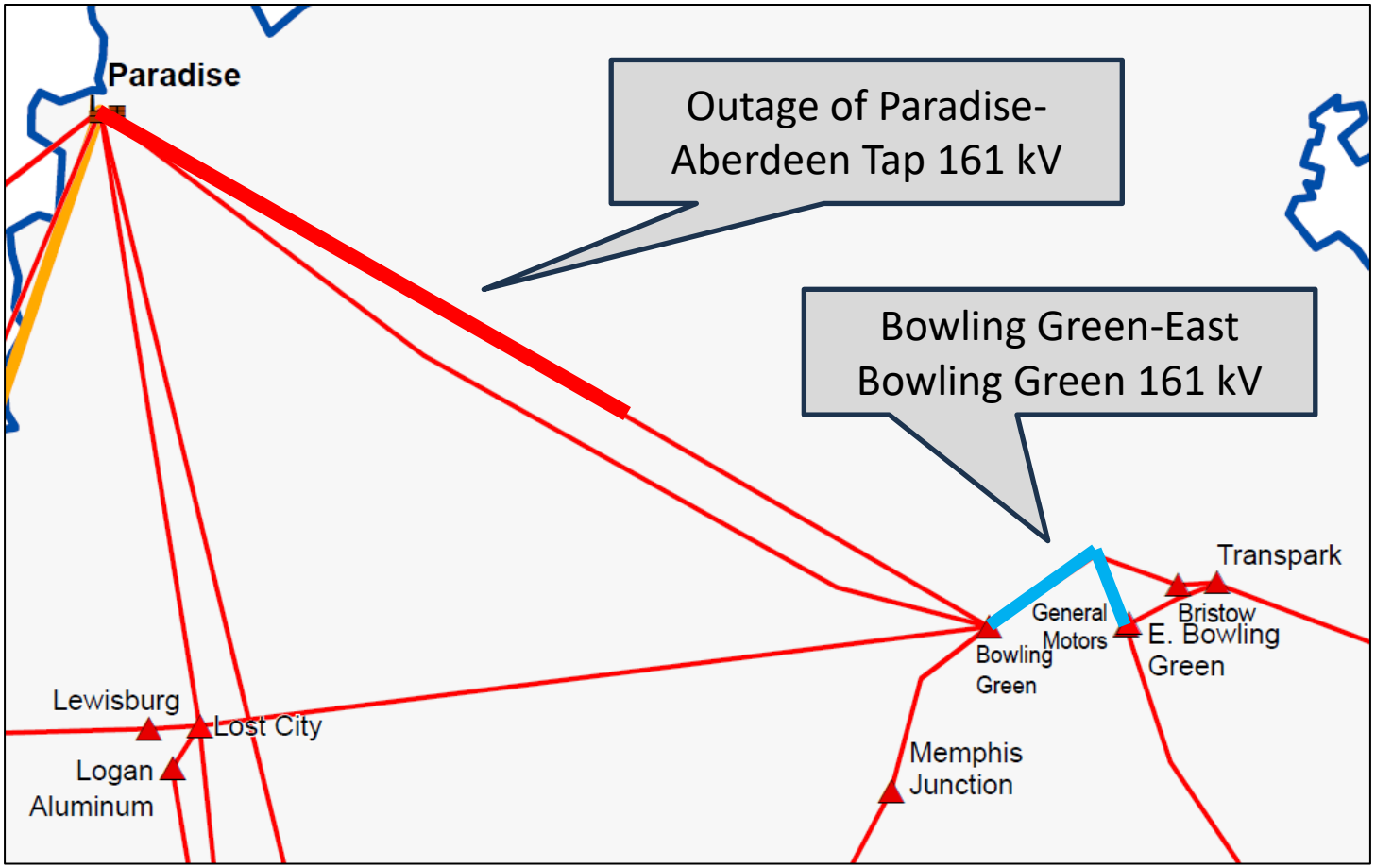
TVA – North Georgia 1600 MW

Potential Enhancement (P5) – *TVA*



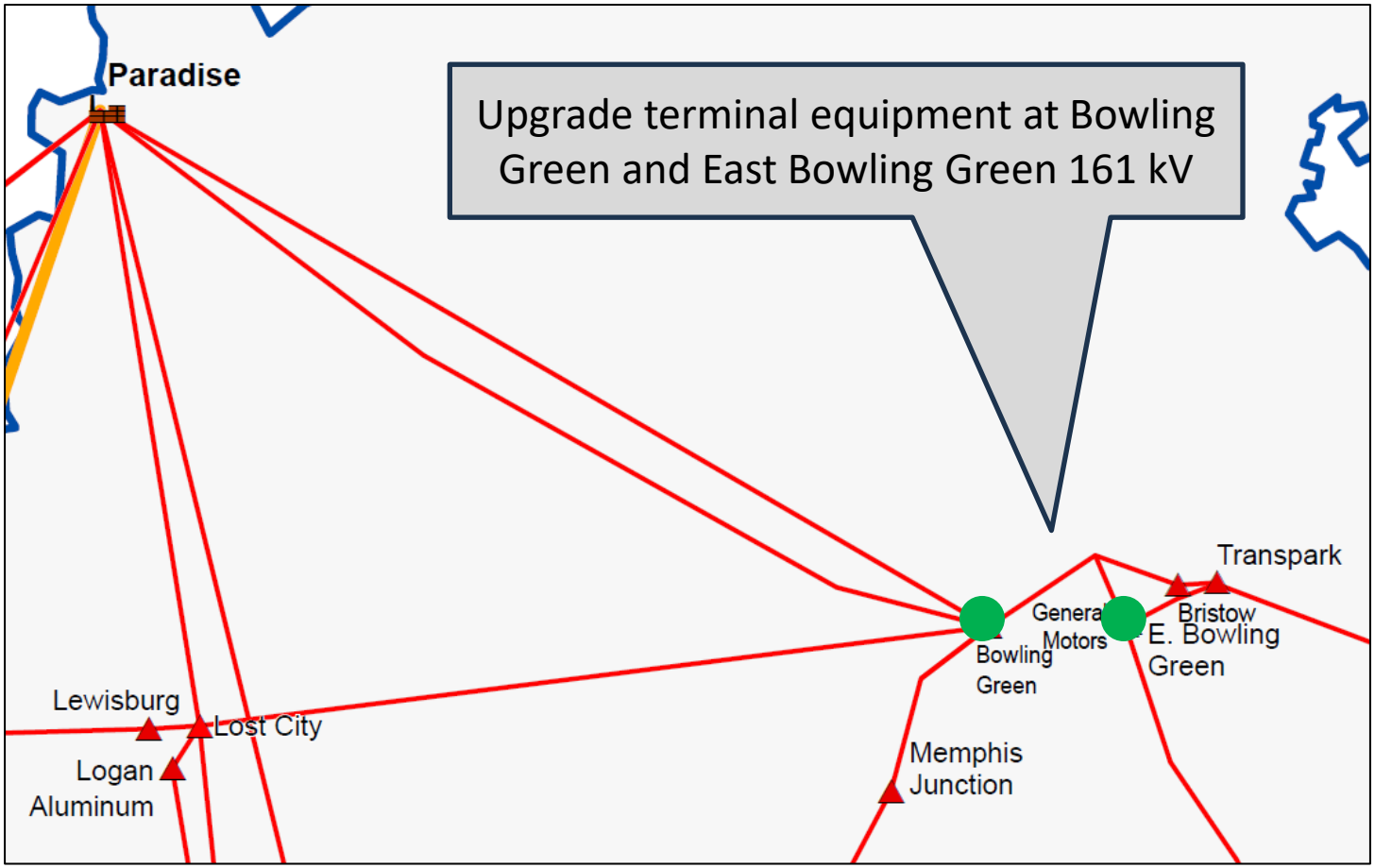
TVA – North Georgia 1600 MW

Significant Constraint (P6) – *TVA*



TVA – North Georgia 1600 MW

Potential Enhancement (P6) – *TVA*



Economic Planning Studies

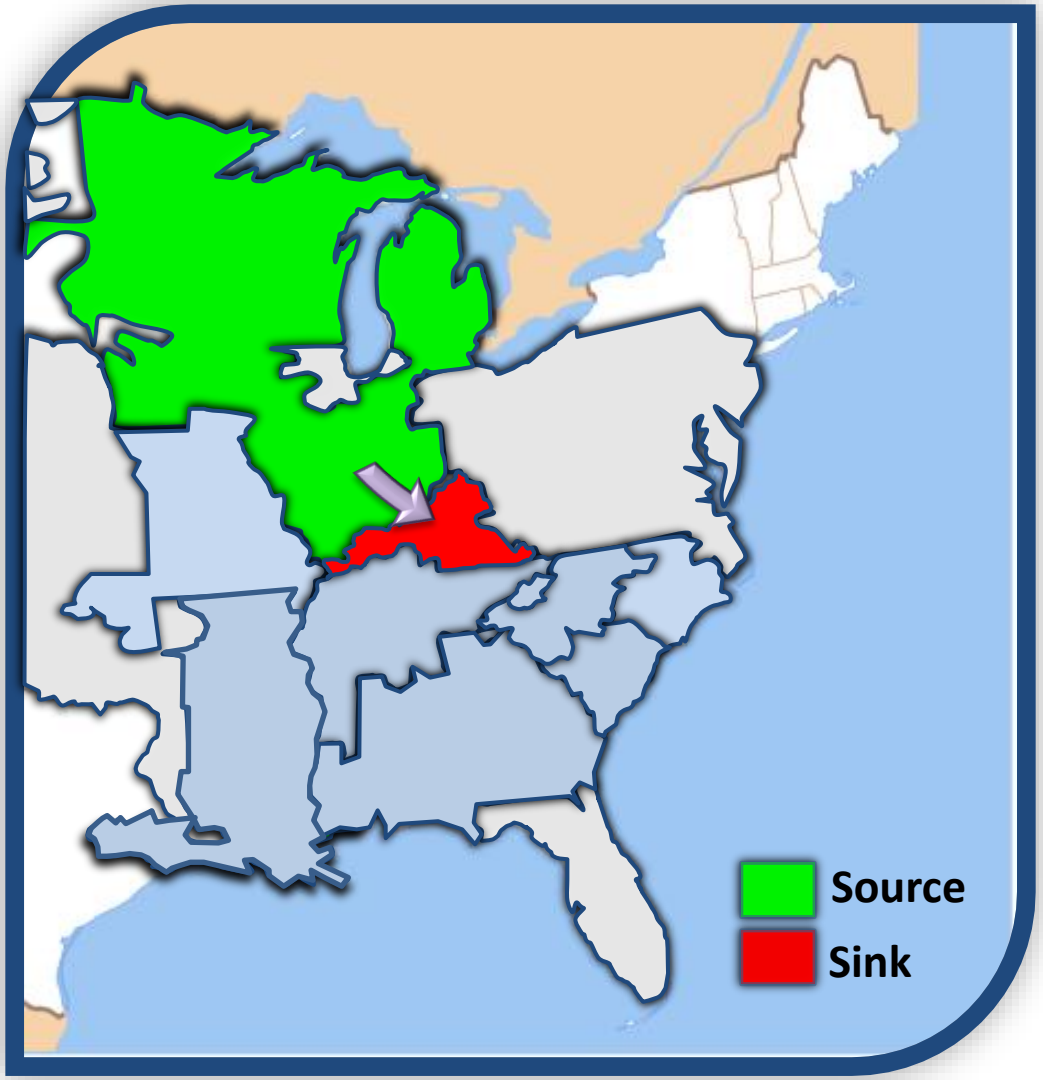
Economic Planning Studies – Preliminary Results

MISO to LGE/KU– 1242MW

MISO to LGE/KU – 1242 MW

Study Assumptions

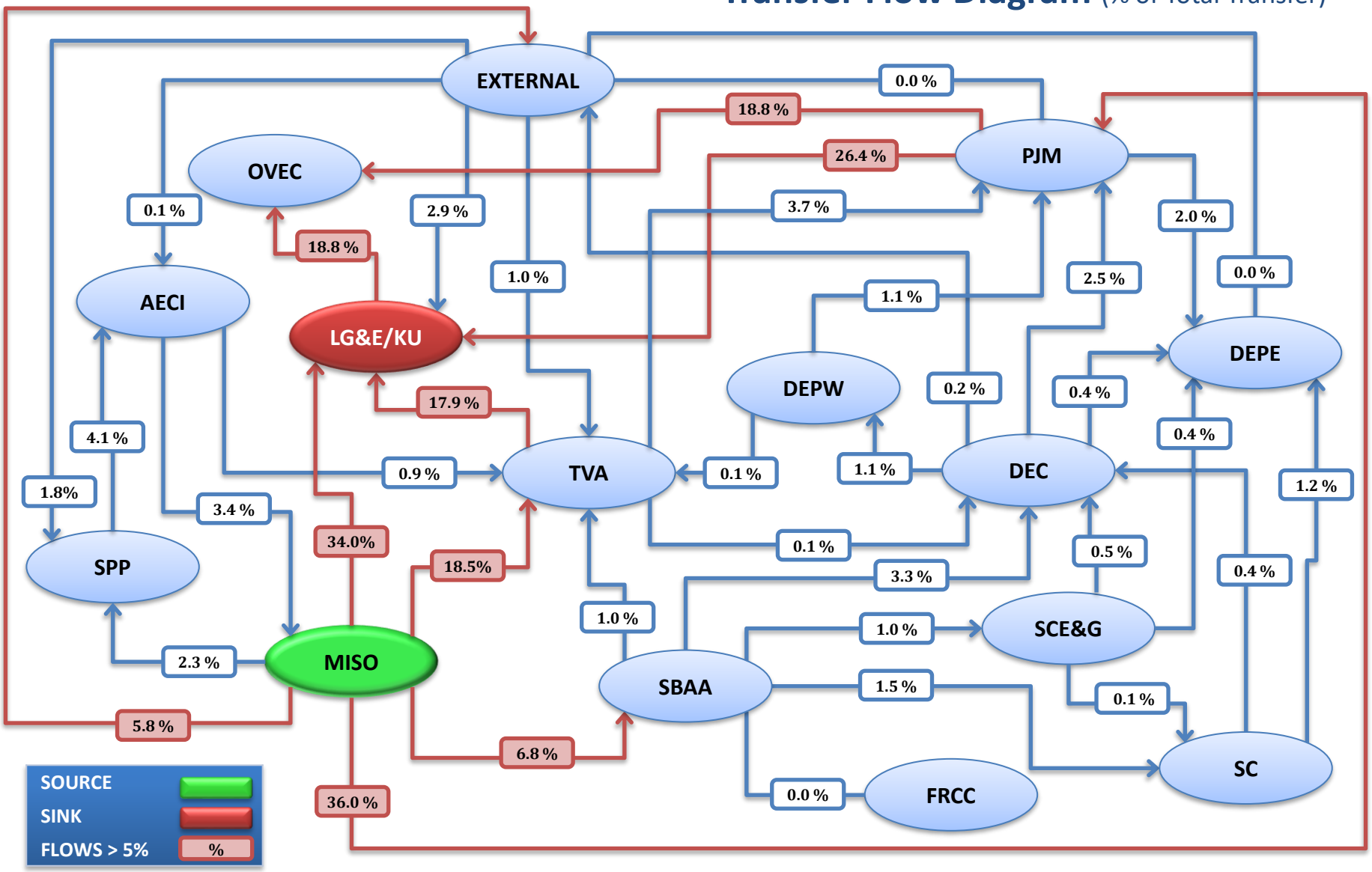
- **Source:** Generation Scale within MISO North
- **Sink:** Uniform Generation with LGE/KU
- **Transfer Type:** Generation to Generation
- **Year:** 2028
- **Load Level:** Summer Peak



Southeastern Regional TRANSMISSION PLANNING

MISO – LG&E/KU 1242 MW

Transfer Flow Diagram (% of Total Transfer)



MISO – LG&E/KU 1242 MW

Transmission System Impacts – *SERTP*

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

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

SERTP Total ($2023) = $87.9625 Million

MISO – LG&E/KU 1242 MW

Transmission System Impacts – *SERTP*

Table 6: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$83.5375 Million
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$4.425 Million
SERTP TOTAL ($2023)	**$87.9625 Million**

MISO – LGE/KU 1242 MW

Significant Constraints Identified – *LG&E/KU*

Table 1: Significant Constraints – LG&E/KU

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%) / Voltage %	
			Without Request	With Request
P1	Cemetery Rd. 69kV	NA	91	87.4
P2	Clifty to Carrolloton 138kV line	210	71.0	109.6
P3	Brown CT to Brown Tap 1 138kV	580	97.4	100.1

MISO - LGE/KU – 1242 MW

Potential Enhancements Identified – *LG&E/KU*

Table 2: 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 Carrolloton 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)

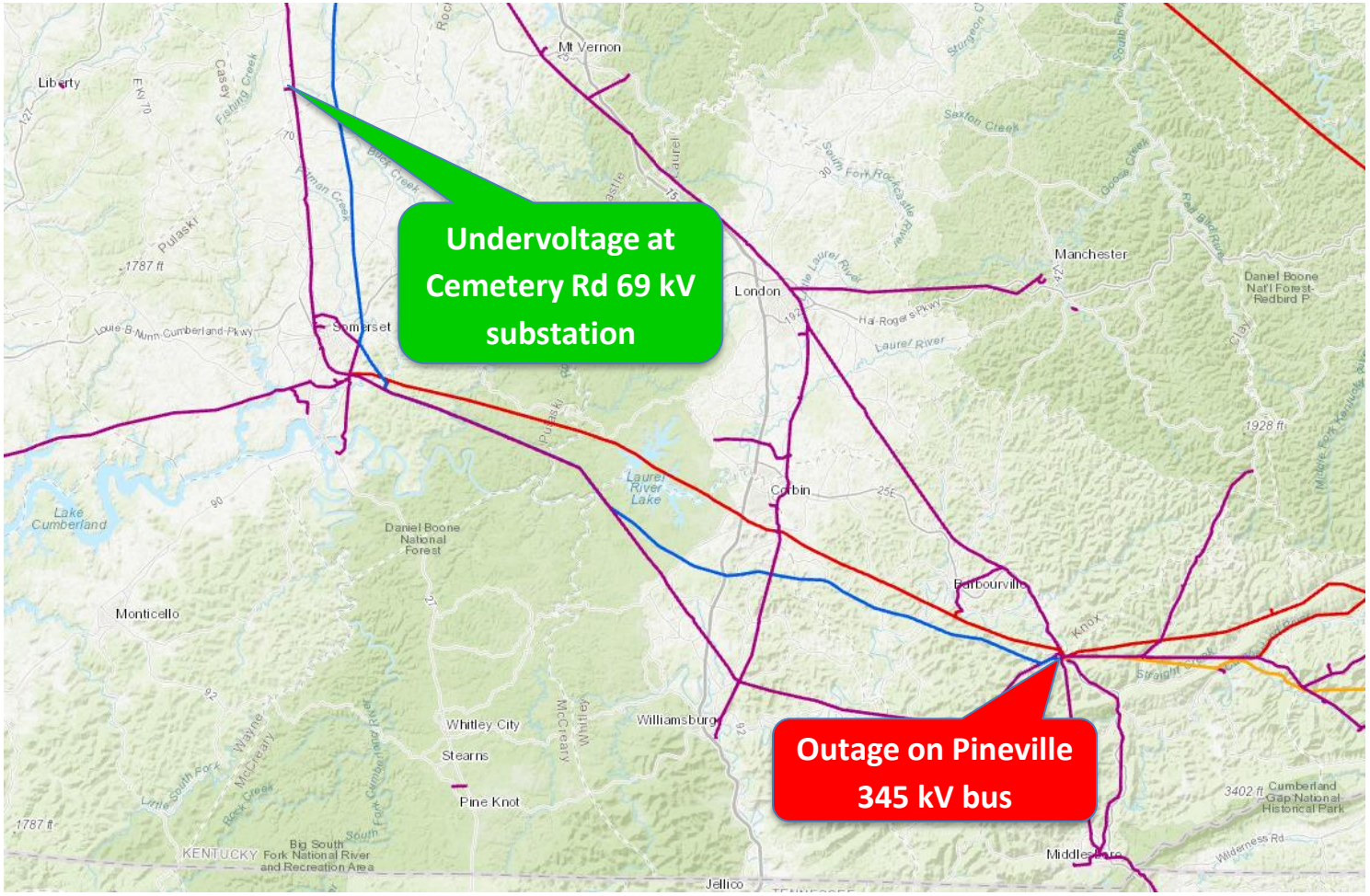
(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer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

MISO – LG&E/KU 1242 MW

Potential Enhancement Locations – *LG&E/KU*

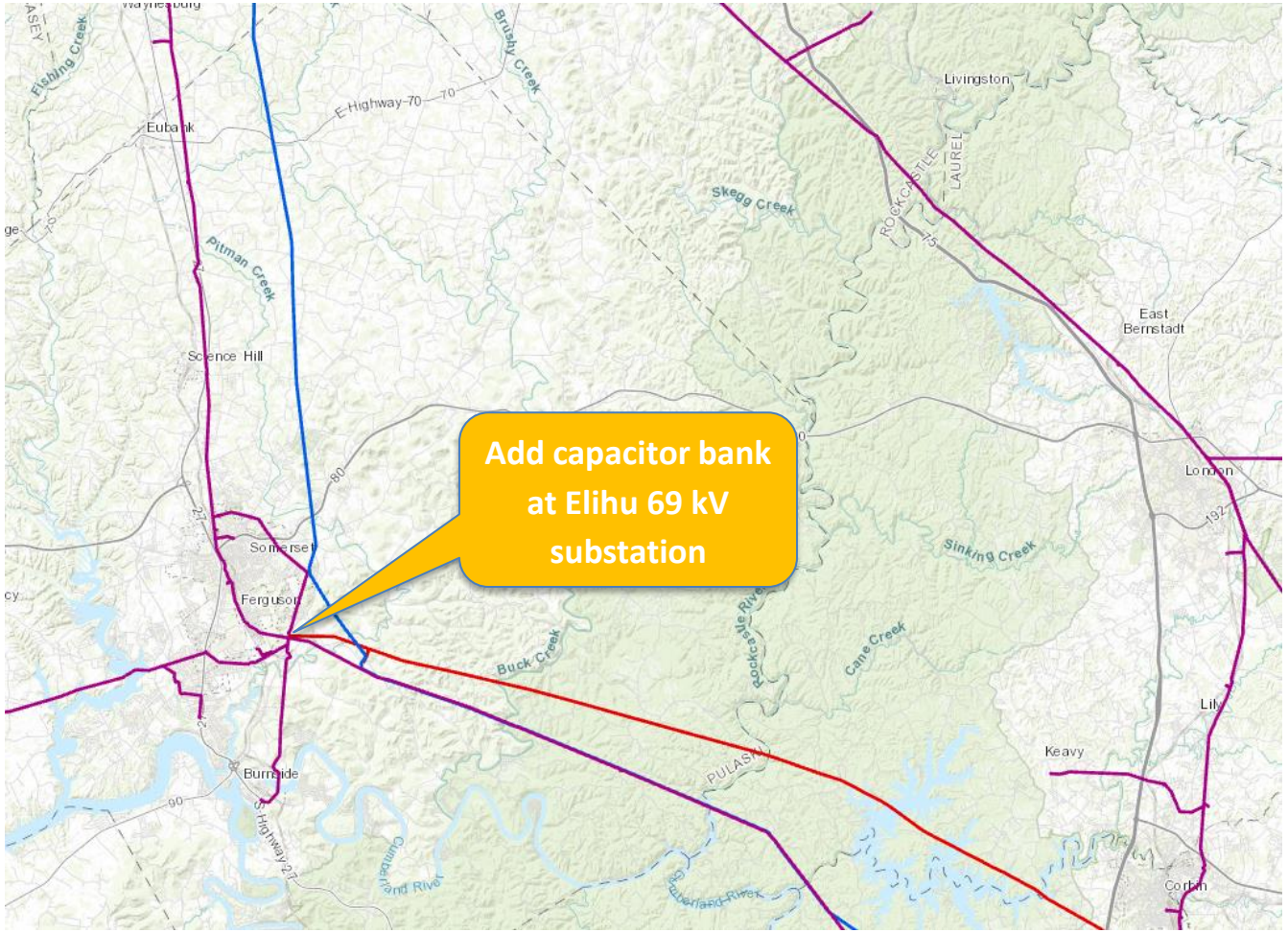
MISO – LG&E/KU 1242 MW

Significant Constraint P1 – *LG&E/KU*



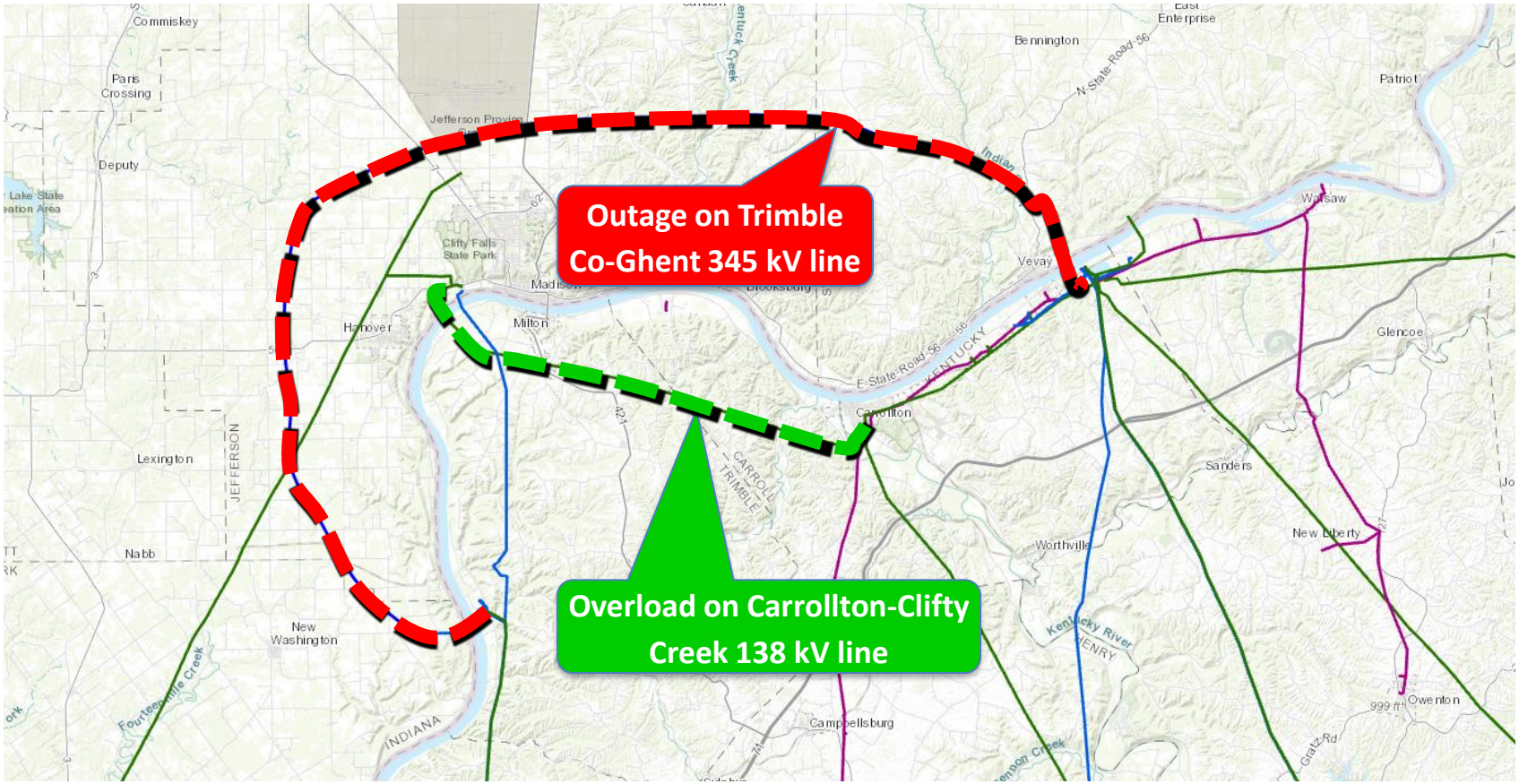
MISO – LG&E/KU 1242 MW

Potential Enhancement P1 – *LG&E/KU*



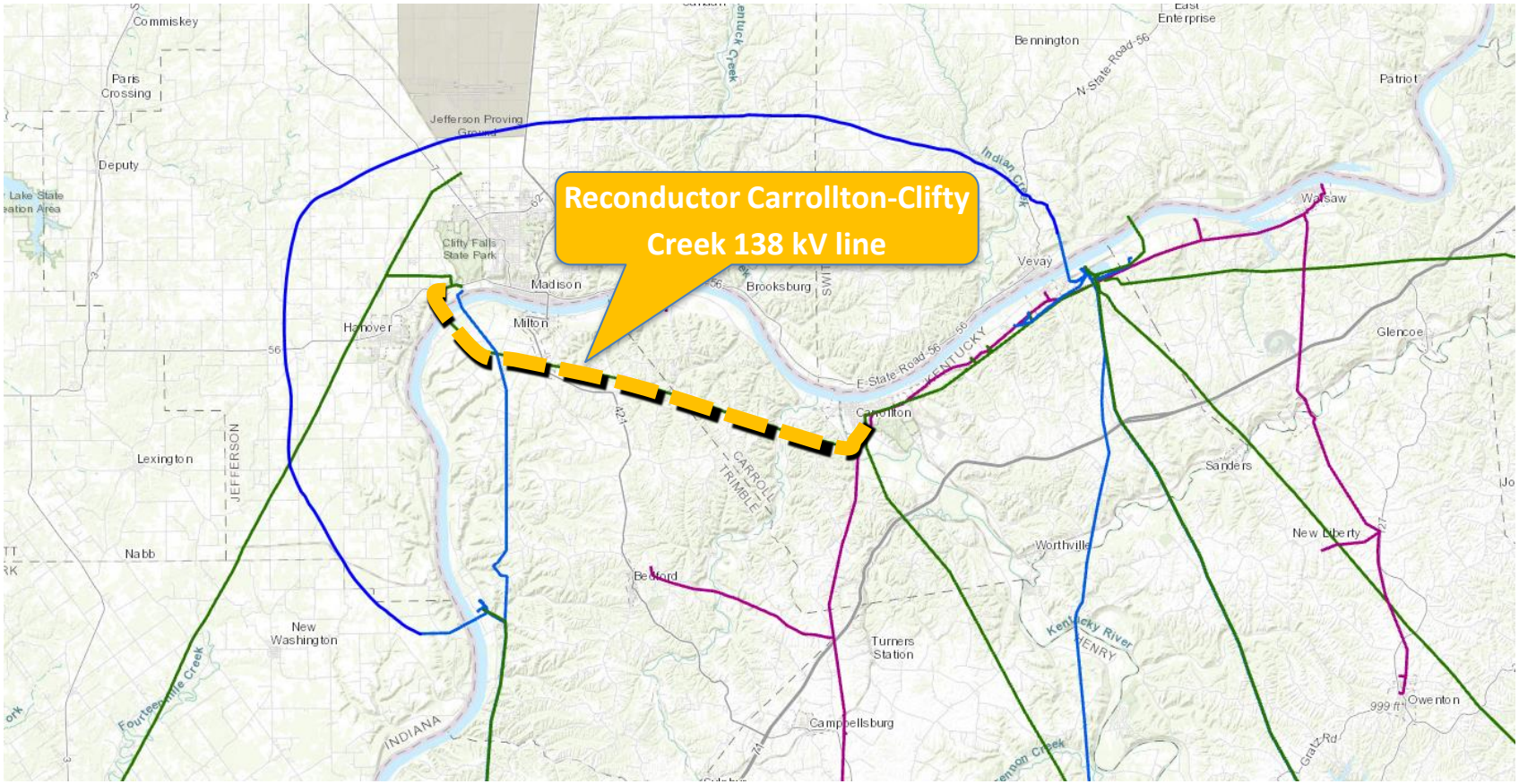
MISO – LG&E/KU 1242 MW

Significant Constraint P2 – *LG&E/KU*



MISO – LG&E/KU 1242 MW

Potential Enhancement P1 – *LG&E/KU*

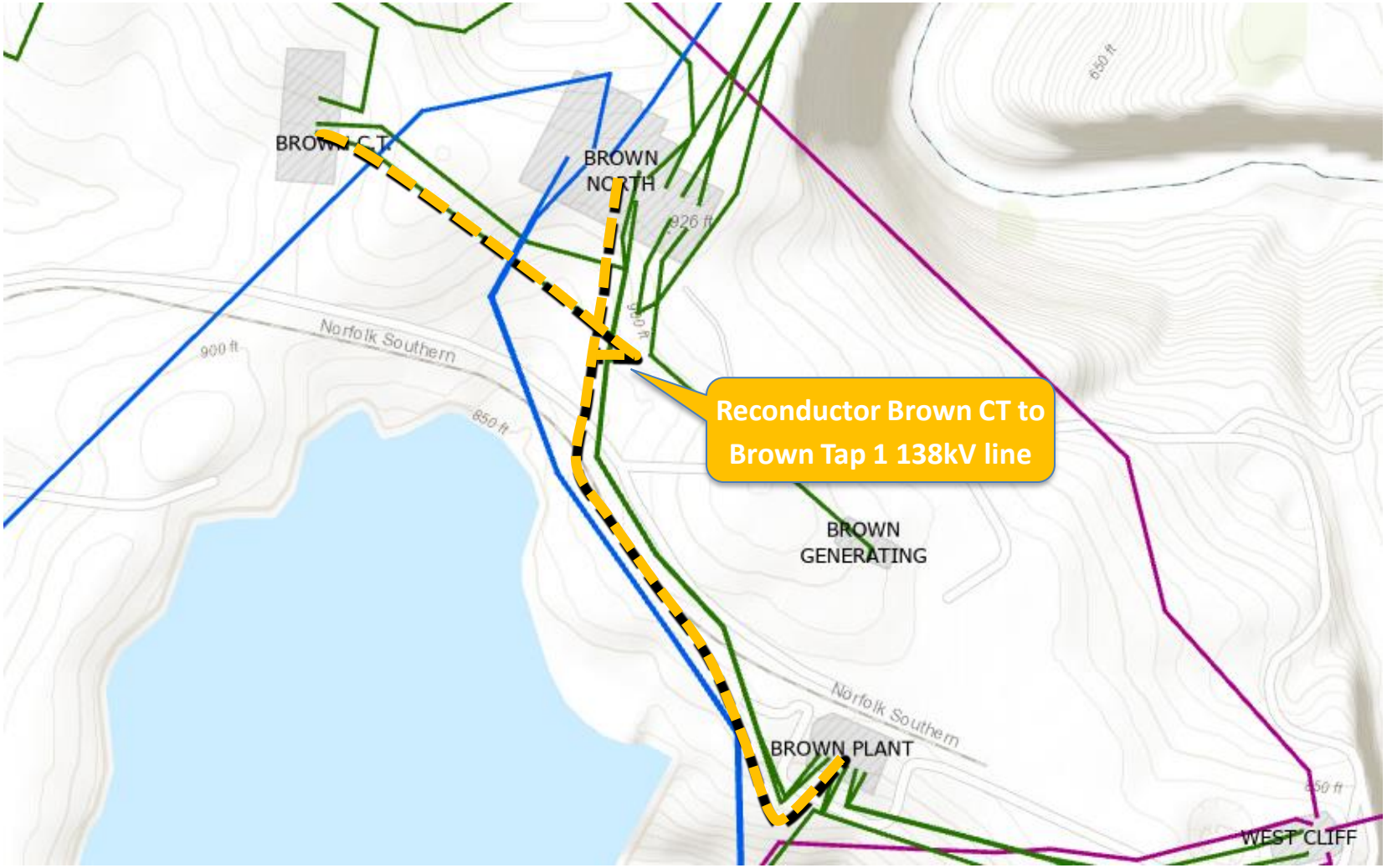


MISO – LG&E/KU 1242 MW

Significant Constraint P3 – *LG&E/KU*

MISO – LG&E/KU 1242 MW

Potential Enhancement P3 – *LG&E/KU*



MISO to LGE/KU – 1242 MW

Significant Constraints Identified – *TVA*

Table 1: Significant Constraints - TVA

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Bowling Green-East Bowling Green 161 kV	279.4	104.2	109.4

MISO to LGE/KU – 1242 MW

Potential Enhancements Identified – *TVA*

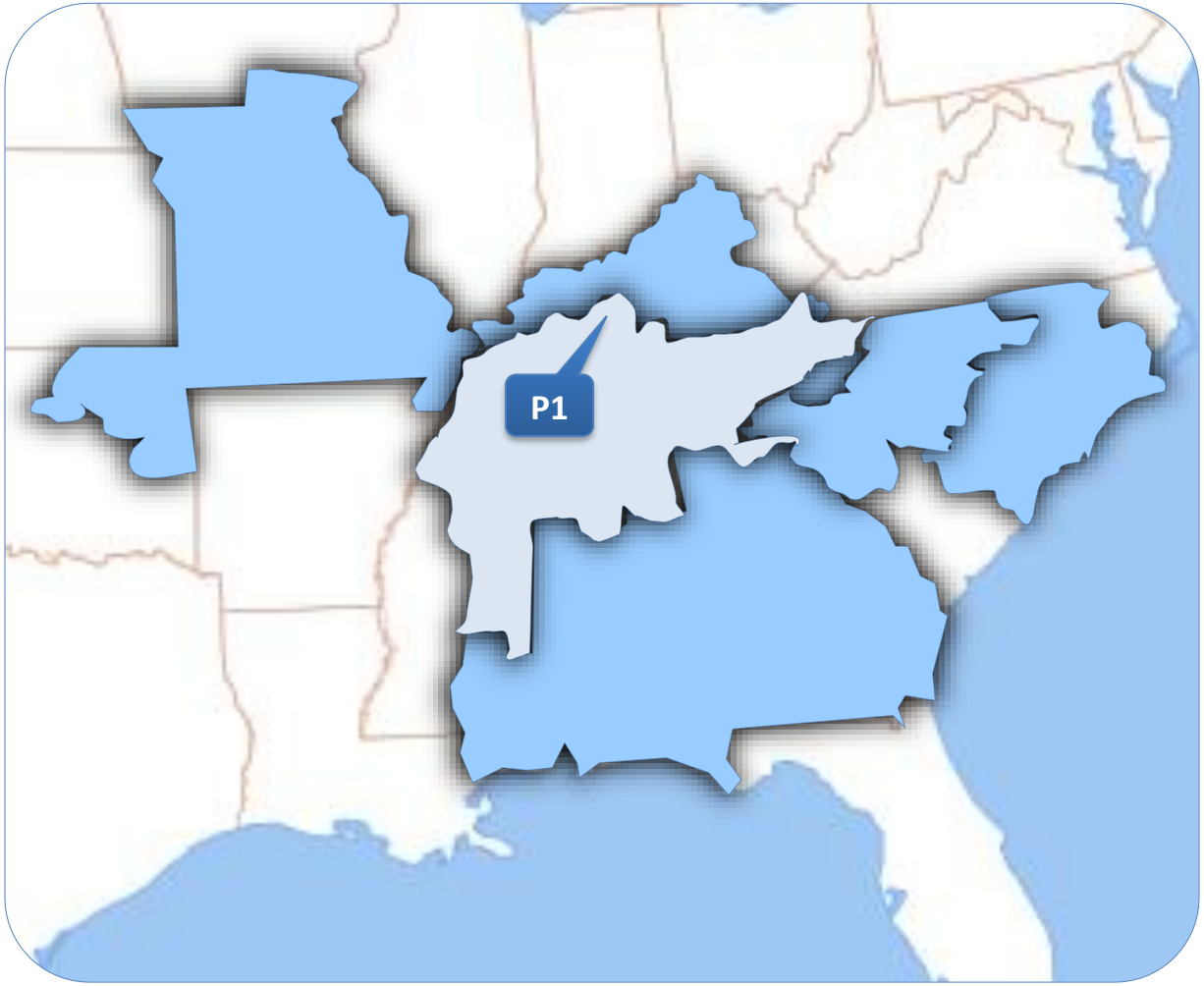
Table 2: Potential Enhancements - TVA

Item	Potential Enhancement	Planning Level Cost Estimate
P1	Upgrade terminal equipment at Bowling Green and East Bowling Green 161 kV switching stations.	**$4.425 Million**
TVA TOTAL ($2023)		**$4.425 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.

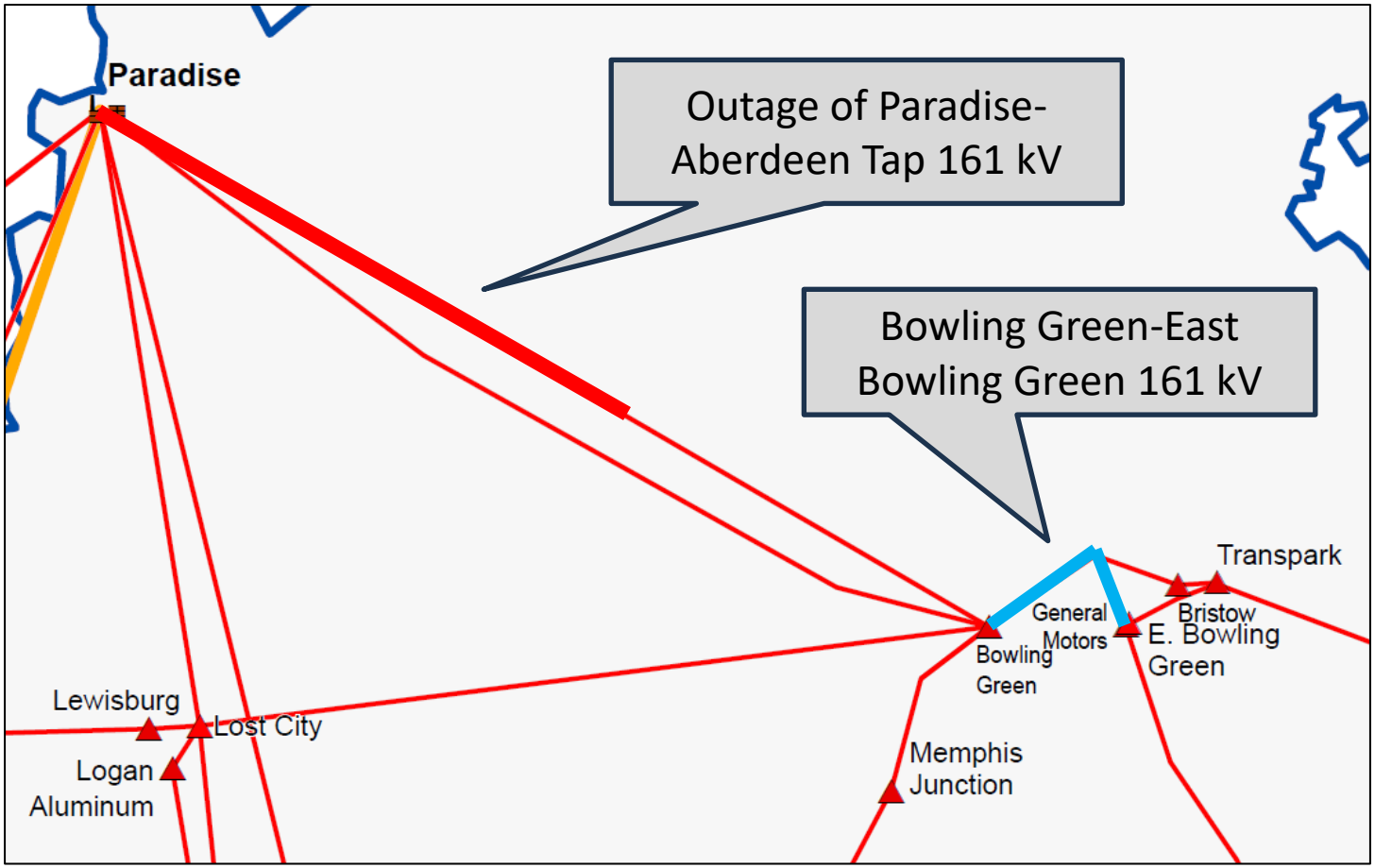
MISO to LGE/KU – 1242 MW

Potential Enhancement Locations – *TVA*



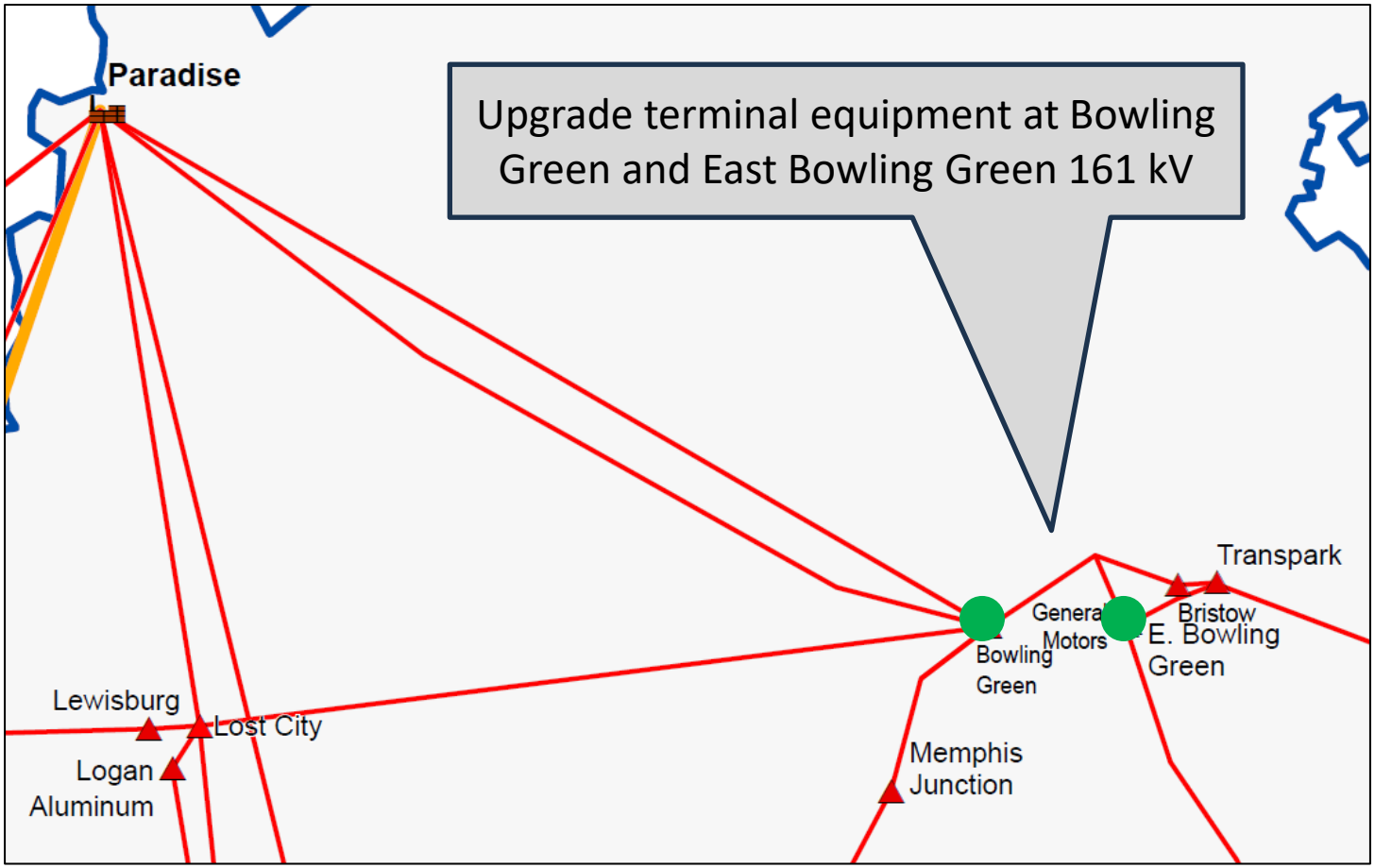
MISO to LGE/KU – 1242 MW

Significant Constraint (P1) – *TVA*



MISO to LGE/KU – 1242 MW

Potential Enhancement (P1) – *TVA*



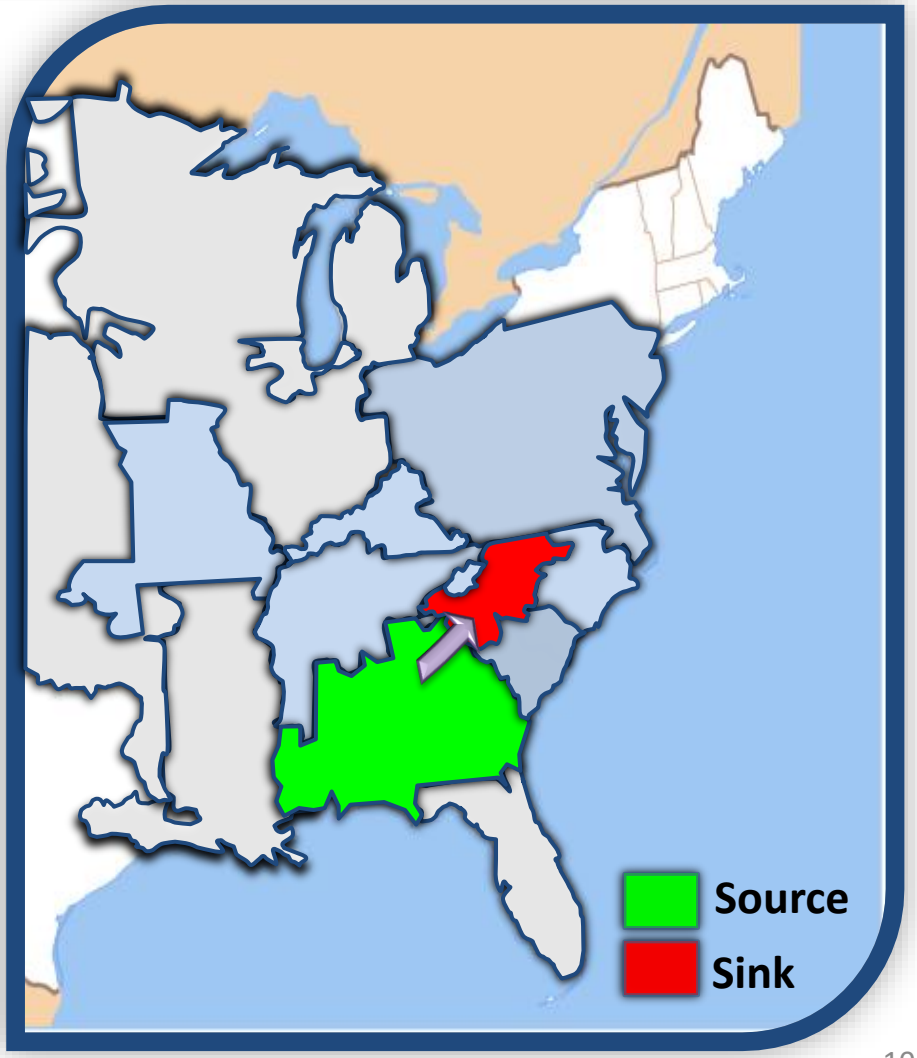
Economic Planning Studies – Preliminary Results

SOCO to DEC – 500MW

SOCO – DEC 500 MW

Study Assumptions

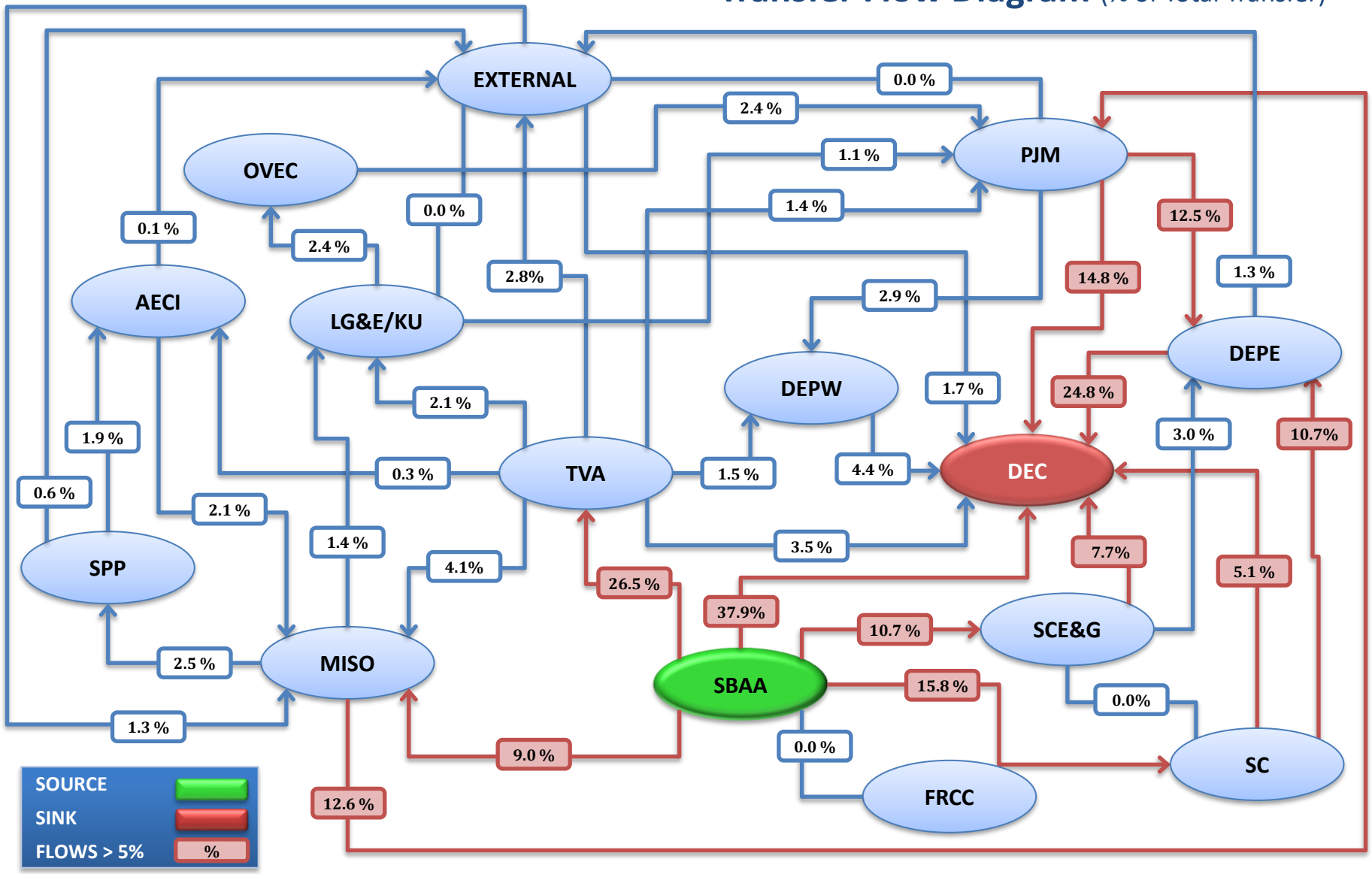
- **Source:** Generation Scale within SOCO
- **Sink:** Uniform Generation with DEC
- **Transfer Type:** Generation to Generation
- **Year:** 2033
- **Load Level:** Summer Peak



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

Transmission System Impacts – *SERTP*

Table 6: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
SERTP TOTAL ($2023)	**$0**

SERTP

Miscellaneous Updates

Regional Planning Update

- Version 2 SERTP Regional Models available on SERTP Website

- SERTP has now held interregional data exchange meetings with all neighbors:
  - SCRTP, SPP, MISO, PJM and FRCC

- SERTP Sponsors beginning analyses on regional models including assessment to identify and evaluate potential regional transmission projects

Preliminary List of Alternative Regional Transmission Projects

Alternative Regional Transmission Projects	Miles	From	To
		BAA (State)	BAA (State)
None Identified/Submitted			

SERC Regional Model Development Update

- SERC is one of the six regional electric reliability councils under the North American Electric Reliability Corporation authority (NERC).

- SERC oversees the implementation and enforcement of Reliability Standards among the bulk power system (BPS) users, owners, and operators.

SERC Regional Model Development Update

- **SERC Regional Model Development**
  - SERC Long-Term Working Group (LTWG)
    - Analyze the performance of the members' transmission systems
    - Evaluate the performance of bulk power supply facilities under both normal and contingency conditions for future years.
  - Data Bank Update (DBU)
    - The DBU is held to conduct an annual update of power flow models for the SERC Region to be used for operating and future year studies.

SERC Regional Model Development Update

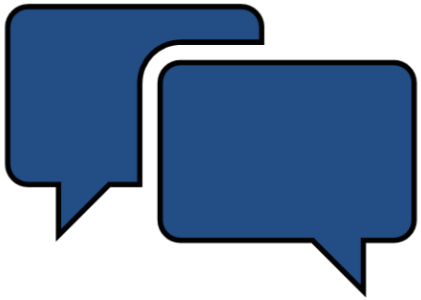
- **SERC Regional Model Development**
  - Eastern Interconnection Reliability Assessment Group (ERAG)
    - The SERC Models are incorporated into the power flow models of the interconnected regions and updated annually by ERAG
    - Responsible for developing a library of solved power flow models of the Eastern Interconnection (Multi-regional Modeling Work Group – MMWG).
    - The updated Regional MMWG Models serve as the starting point model for the SERTP Regional Power Flow Models
    - MOD-32 Compliance (Data for Power System Modeling and Analysis)

SERC Regional Model Development Update

- **SERC Regional Model Development**
  - LTWG Schedule of Events for 2023
    - Data Bank Update (DBU) was finalized in June
    - Power flow cases were finalized in June
    - Future Study Year Case: 2028 Summer Peak Load
      - Nonpublic Study and Report was completed in September
      - Planning Coordination Subcommittee
  - ERAG Schedule of Events for 2023
    - MMWG Model Update performed from August – September
    - Power flow cases expected to be finalized in October

Next Meeting Activities

- **2023 SERTP 4th Quarter Meeting** – *Annual Transmission Planning Summit & Input Assumptions Meeting*
  - **Location: Atlanta, GA**
  - **Date: December 2023**
  - **Purpose:**
    - Final Economic Planning Study Results
    - Final Regional Transmission Plan
    - Regional Analyses Results
    - 2024 Assumptions Input Session



Questions?

www.southeasternrtp.com