SERTP – 2014 3rd Quarter Meeting

2nd RPSG Meeting

September 30th, 2014

APC Headquarters

Birmingham, AL

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.**

Purposes & Goals of Meeting

- Preliminary Economic Study Results
- Regional Modeling Update
- Order No.1000 Update
- Next Meeting Activities
- EIPC Update

SERTP Preliminary

Economic Planning Studies

Preliminary Economic Planning Studies

Study 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 is 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
- **Scoping Meeting held in May**

Five Economic Planning Studies

- **Santee Cooper Border to FRCC Border**
  - 300 MW (2017 Summer Peak and Shoulder)
- **FRCC Border to Santee Cooper Border**
  - 300 MW (2017 Summer Peak and Shoulder)
- **TVA Border to Southern**
  - 500 MW (2019 Summer Peak and Shoulder)
- **TVA Border to Southern**
  - 1500 MW (2019 Summer Peak and Shoulder)
- **TVA Border to Duke Energy Border**
  - 1000 MW (2019 Summer Peak and Shoulder)

Power Flow Cases Utilized

- **Study Years:**
  - 2017 and 2019
- **Load Flow Cases:**
  - 2014 Series Version 2A
  - Summer Peak and Shoulder

Preliminary Report Components

- **Thermal Analysis**
  - Contingency analysis to identify constrained elements/contingency pairs
- **Interface Transfer Capability Analysis**
- **Potential Solutions**
  - Transmission enhancements and cost estimates

Process Information

- **The following information depicts recommended 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 (2017 and 2019).**

- **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.**

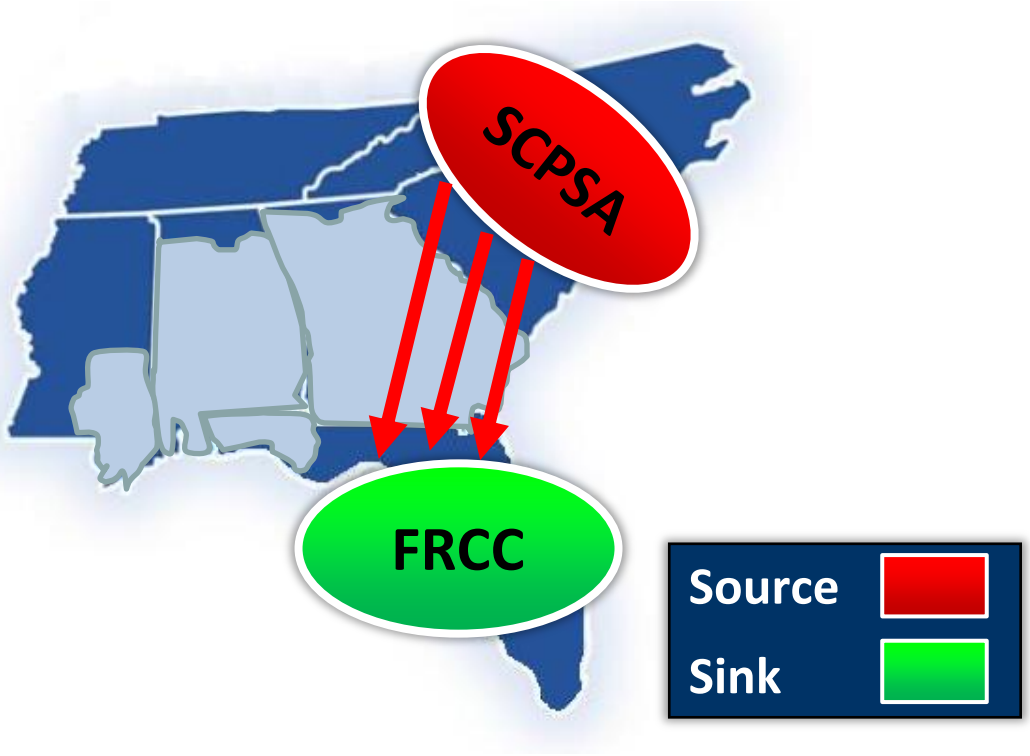
Economic Planning Studies

Santee Cooper Border to FRCC Border 300 MW

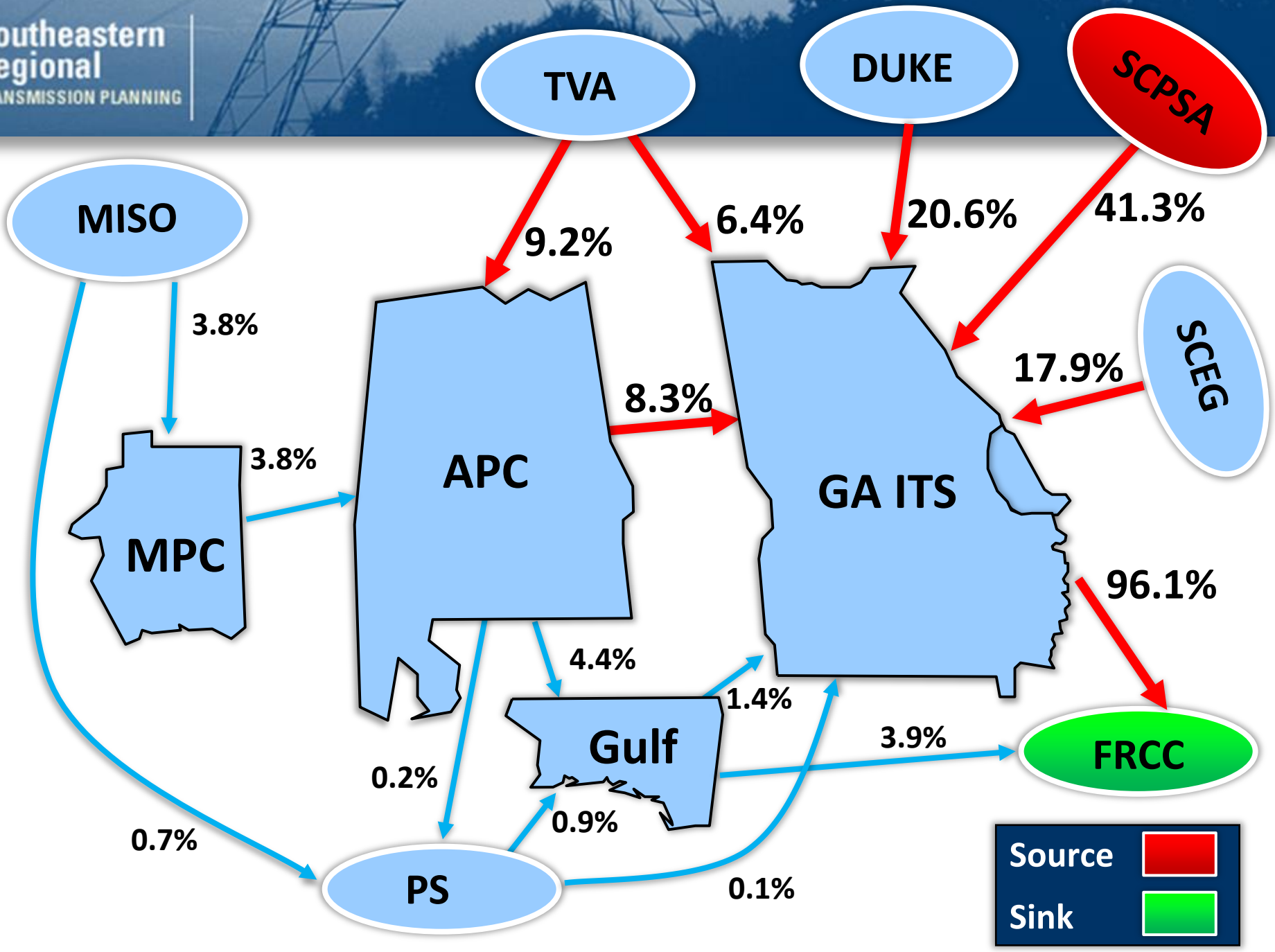
Santee Cooper to FRCC – 300 MW

Study Assumptions

- **Transfer Type:** Load to Load (2017 Summer Peak and Shoulder)
- **Source:** Uniform load scale within Santee Cooper
- **Sink:** Uniform load scale within FRCC



Southeastern Regional
TRANSMISSION PLANNING



Santee Cooper to FRCC – 300 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - None

Total Cost (2014$) = $0

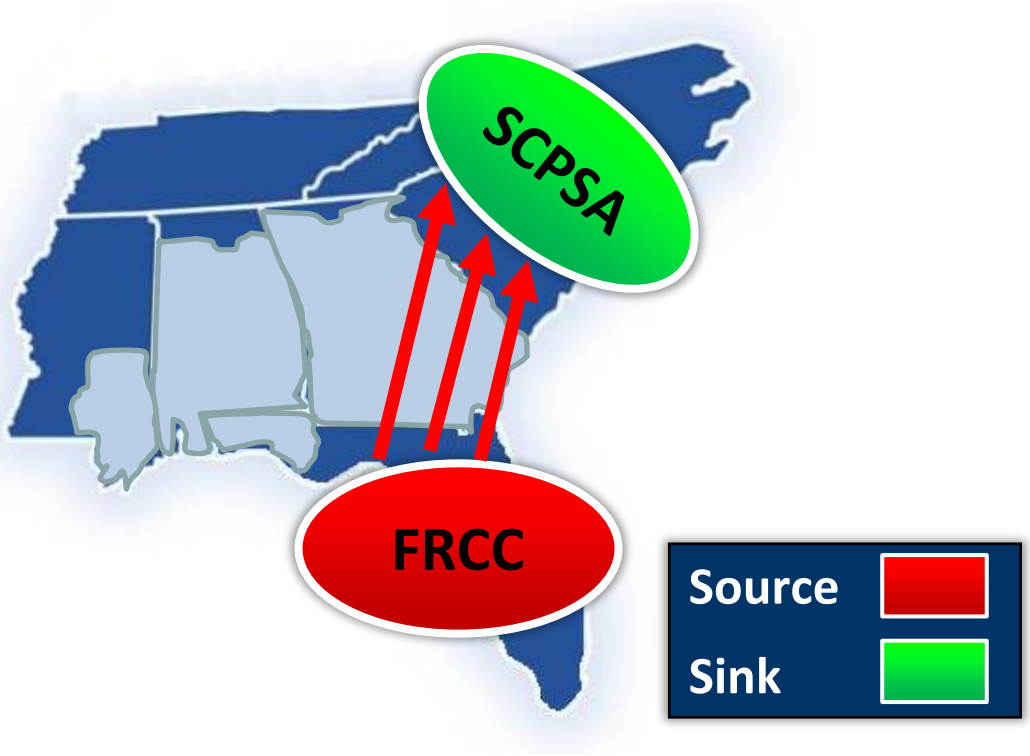
Economic Planning Studies

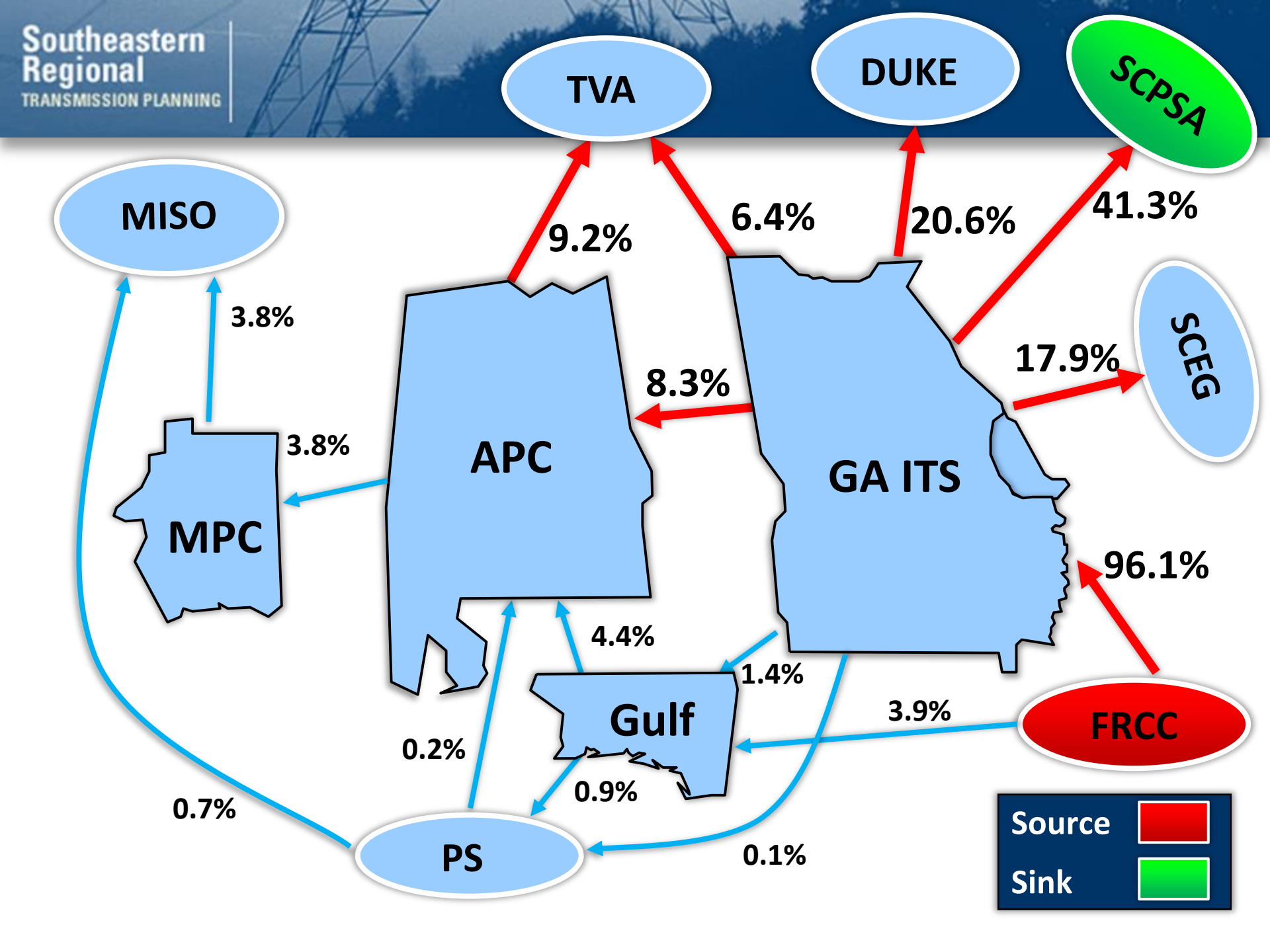
FRCC Border to Santee Cooper Border 300 MW

FRCC to Santee Cooper – 300 MW

Study Assumptions

- **Transfer Type:** Load to Load (2017 Summer Peak and Shoulder)
- **Source:** Uniform load scale within FRCC
- **Sink:** Uniform load scale within Santee Cooper




Southeastern Regional
TRANSMISSION PLANNING
TVA
DUKE
SCPSA
MISO
9.2%
6.4%
20.6%
41.3%
3.8%
17.9%
SCEG
8.3%
3.8%
APC
GA ITS
MPC
96.1%
4.4%
1.4%
Gulf
3.9%
FRCC
0.2%
0.9%
0.7%
PS
0.1%
Source
Sink

FRCC to Santee Cooper – 300 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - None

Total Cost (2014$) = $0

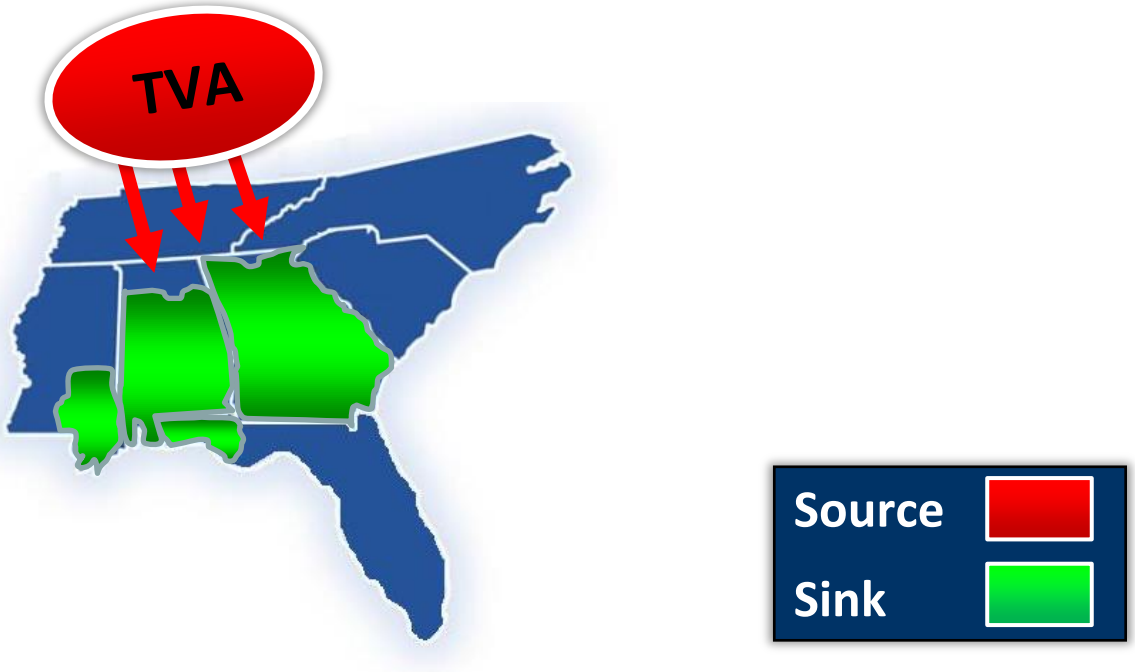
Economic Planning Studies

TVA Border to Southern 500 MW

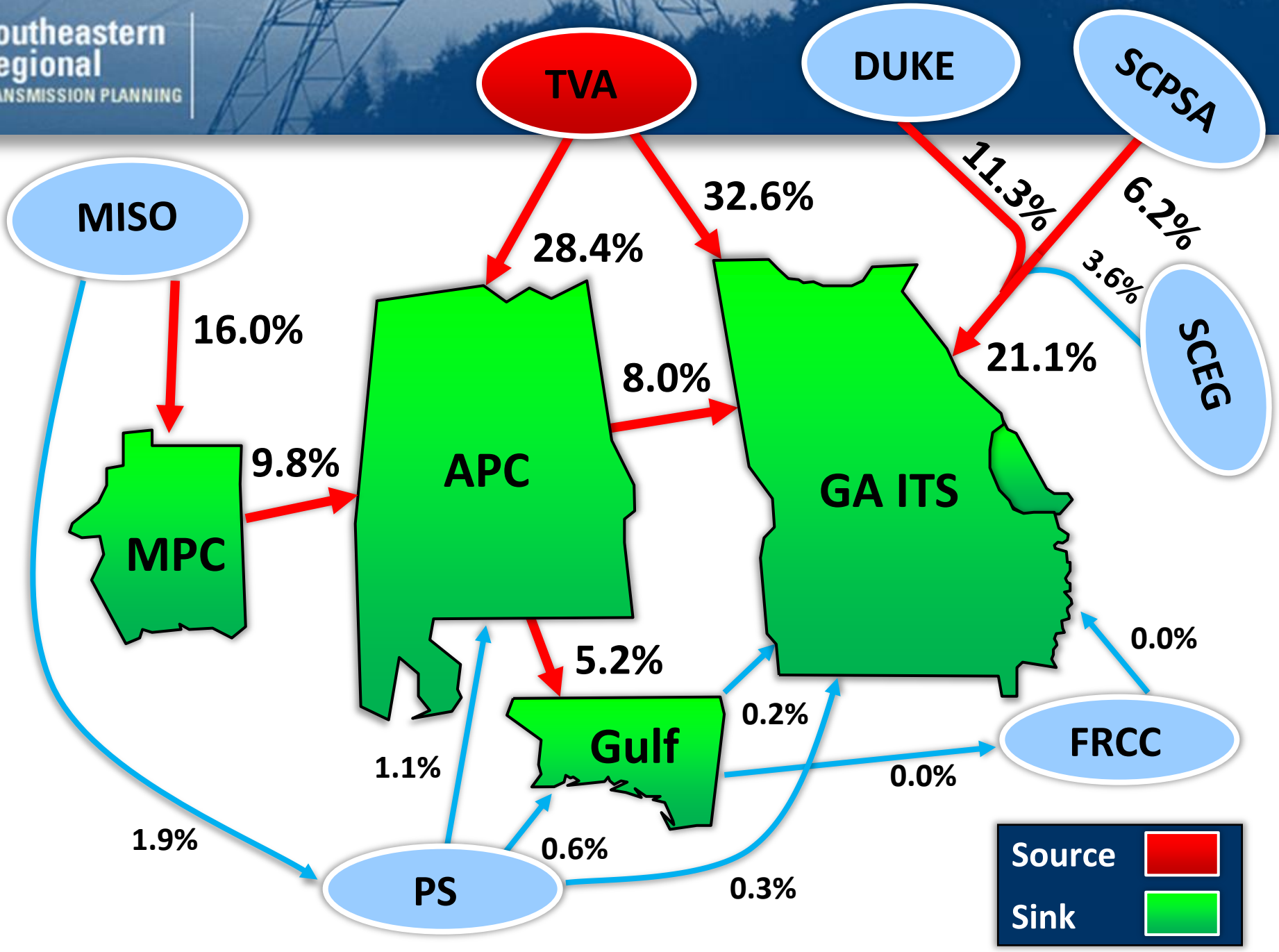
TVA to Southern – 500 MW

Study Assumptions

- **Transfer Type:** Generation to Generation (2019 Summer Peak and Shoulder)
- **Source:** A new generator interconnection to the existing Shelby 500 kV substation (TVA)
- **Sink:** Southern Generation



Southeastern Regional
TRANSMISSION PLANNING



TVA to Southern – 500 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - Two (2) 230 kV T.L.
  - One (1) 161 kV T.L.

Total Cost (2014$) = $135,700,000

TVA to Southern – 500 MW

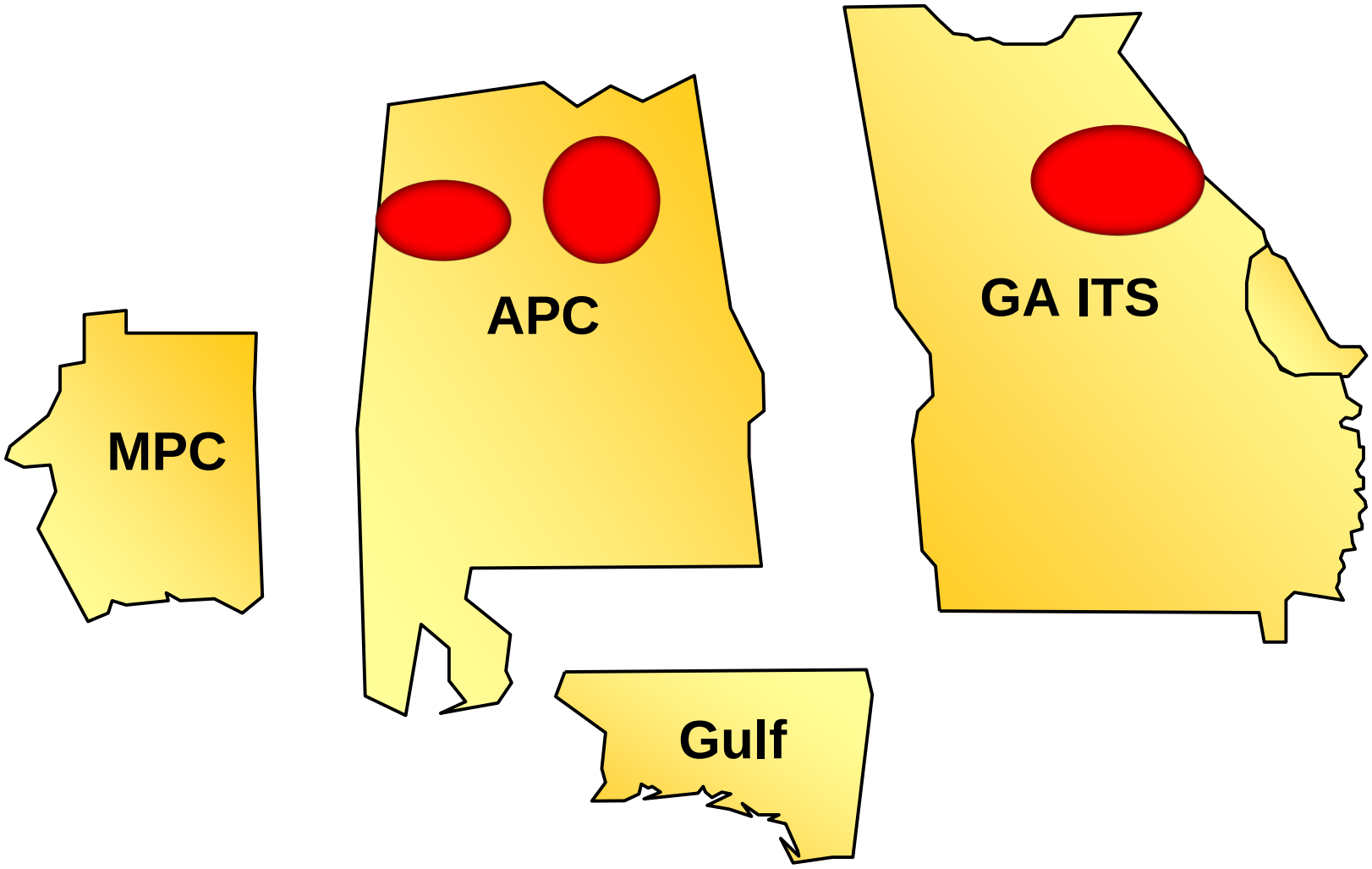
Significant Constraints

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Fayette – Gorgas 161 kV T.L.	193	103.9[(1)]	117.8
Lexington – Russell 230 kV T.L.	596	98.5	102.8
Clay – Leeds 230 kV T.L.	602	97.4	100.6

[(1)] A current operating procedure is sufficient to alleviate this identified constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this transmission facility such that the operating procedure becomes insufficient.

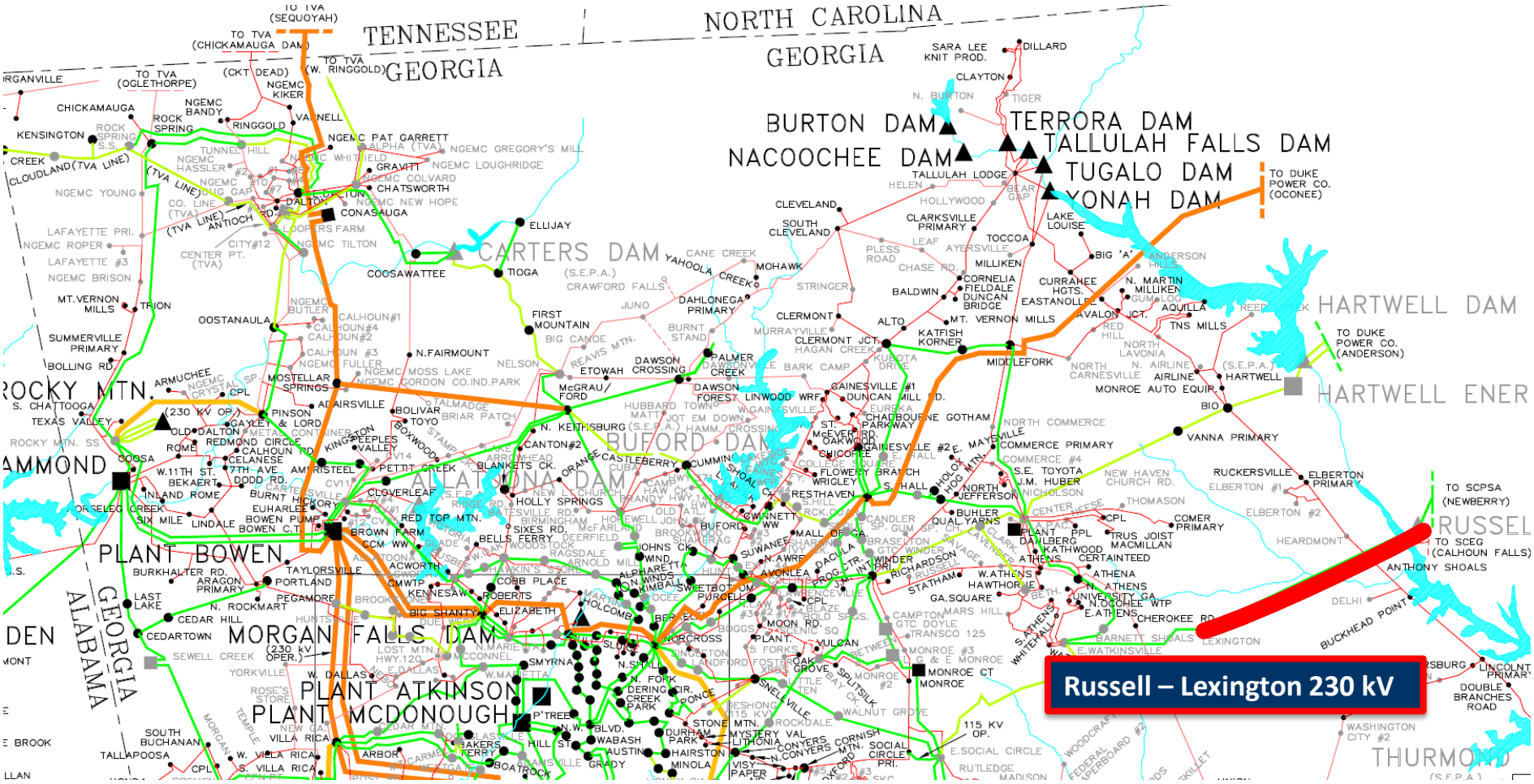
TVA to Southern – 500 MW

Significant Constraints



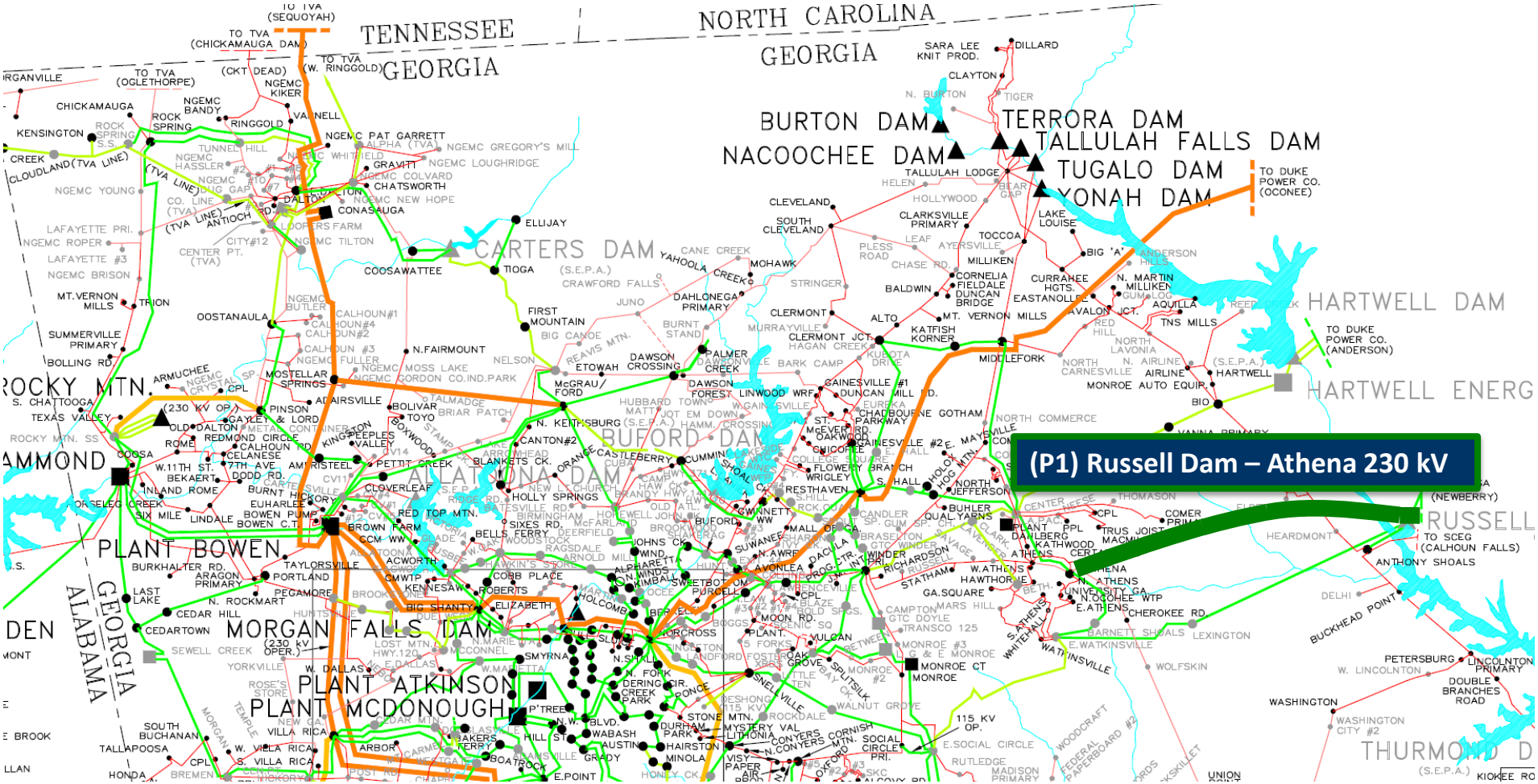
TVA to Southern – 500 MW

Significant Constraints



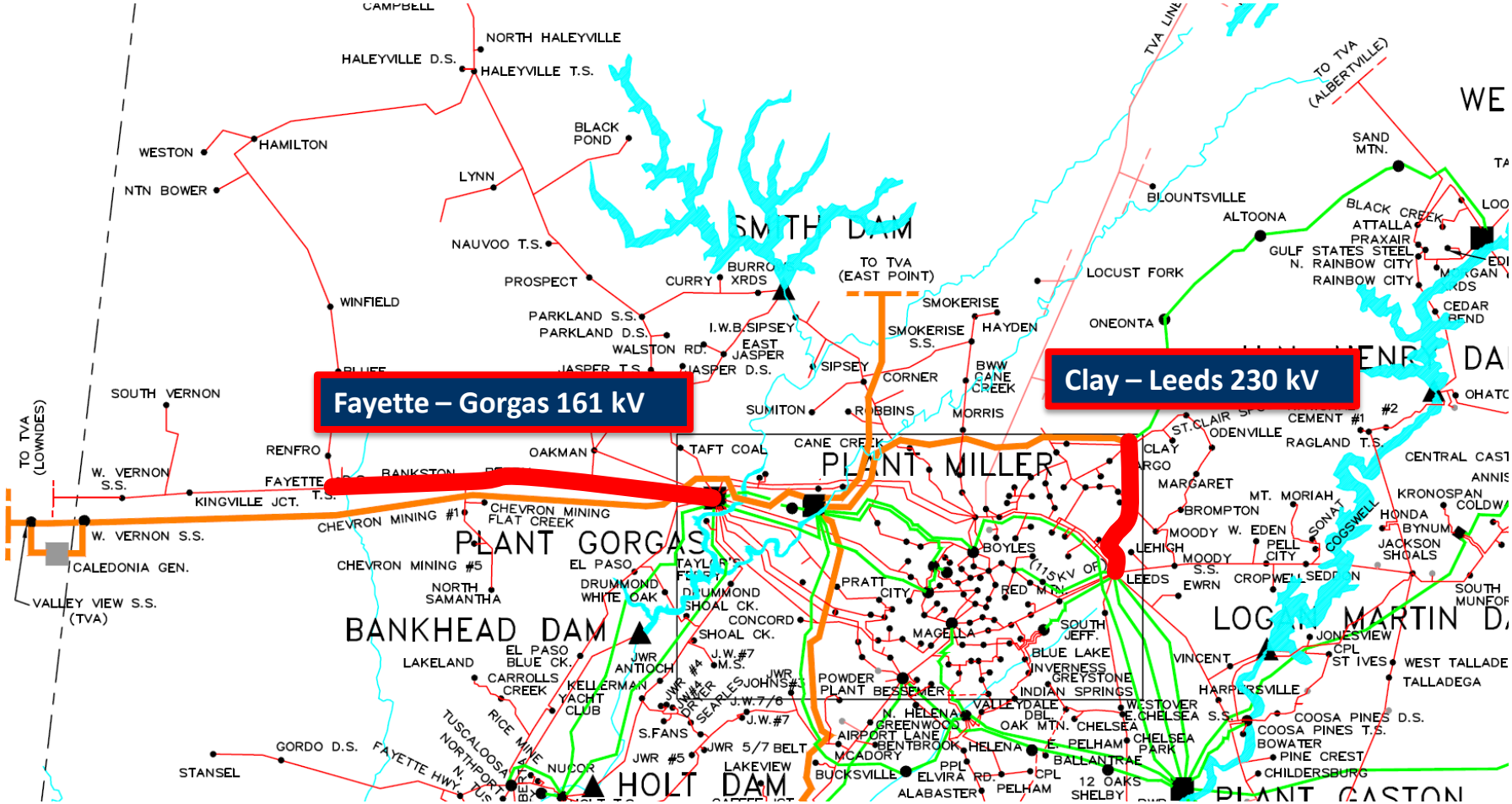
TVA to Southern – 500 MW

Proposed Enhancement



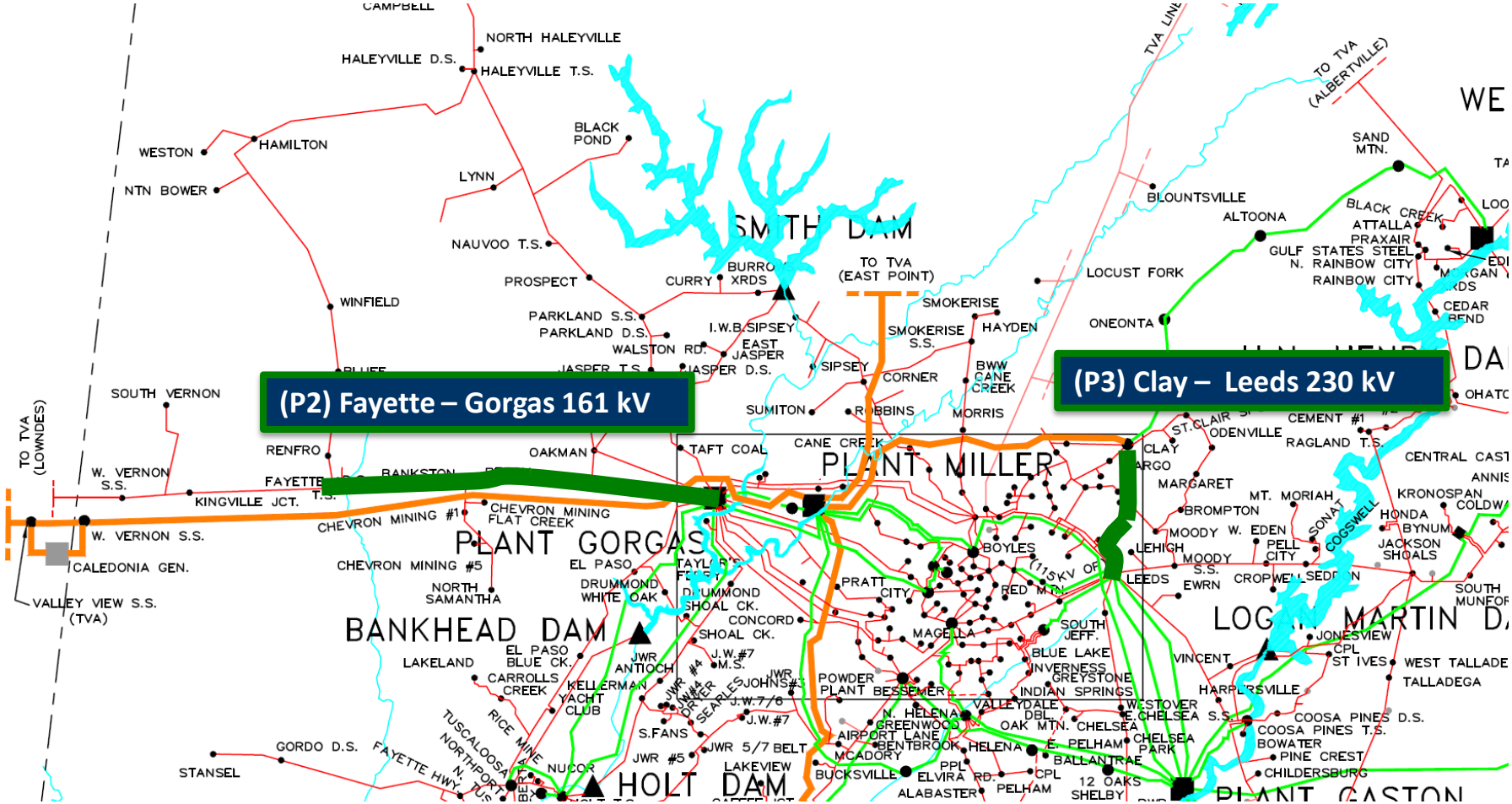
TVA to Southern – 500 MW

Significant Constraints



TVA to Southern – 500 MW

Proposed Enhancements



TVA to Southern – 500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	**Russell Dam – Athena 230 kV T.L.** - 53 miles of new 230 kV Line - Bundled (2) 1351 ACSR at 100°C	**$82,000,000**
P2	**Fayette – Gorgas 161 kV T.L.** - Rebuild 38.8 miles with 1351 ACSR at 100°C	**$31,500,000**
P3	**Clay TS – Leeds TS 230 kV T.L.** - Reconductor 17.3 miles with bundled (2) 1351 ACSR at 100°C	**$22,200,000**

Total Cost (2014$) = $135,700,000

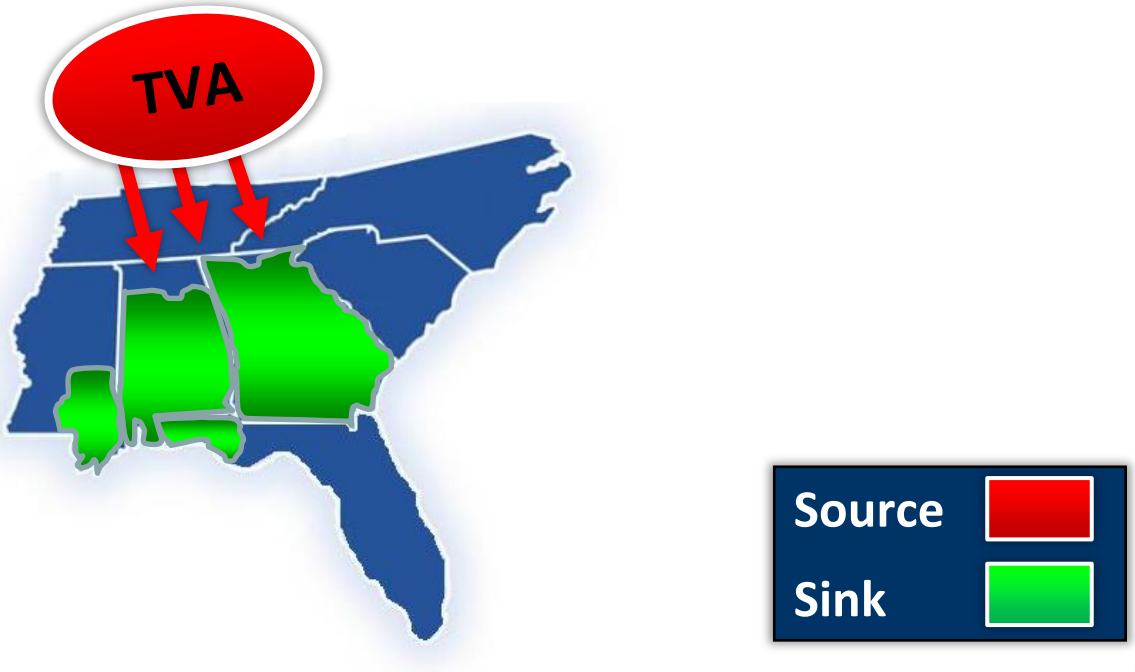
Economic Planning Studies

TVA Border to Southern 1500 MW

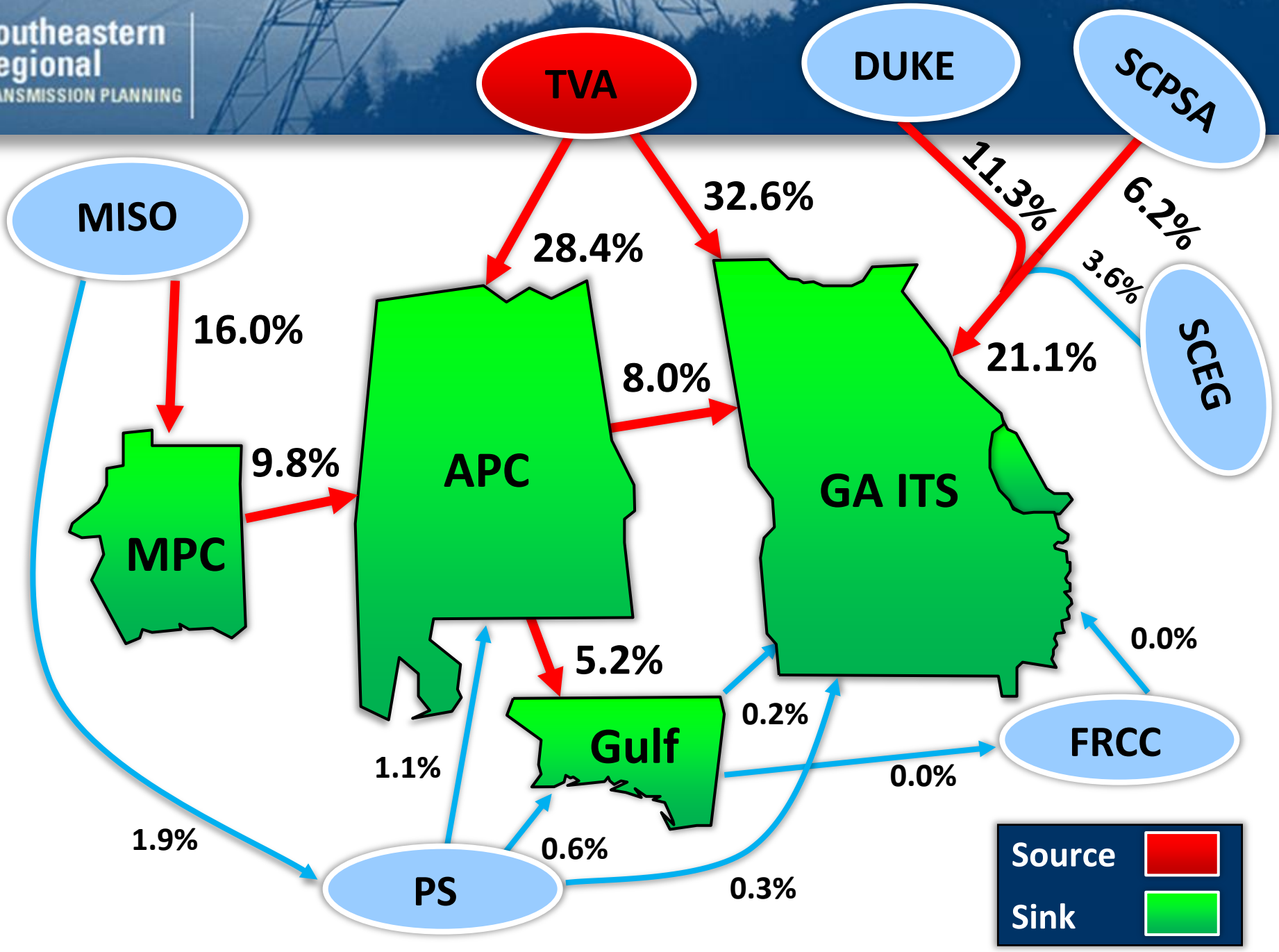
TVA to Southern – 1500 MW

Study Assumptions

- **Transfer Type:** Generation to Generation (2019 Summer Peak and Shoulder)
- **Source:** A new generator interconnection to the existing Shelby 500kV substation (TVA)
- **Sink:** Southern Generation



Southeastern Regional
TRANSMISSION PLANNING



TVA to Southern – 1500 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - One (1) 500 kV T.L.
  - Eight (8) 230 kV T.L.
  - Two (2) 161 kV T.L.
  - One (1) 115 kV T.L.
  - One (1) 500/230 kV transformer
  - One (1) 230/115 kV transformer

Total Cost (2014$) = $277,200,000

TVA to Southern – 1500 MW

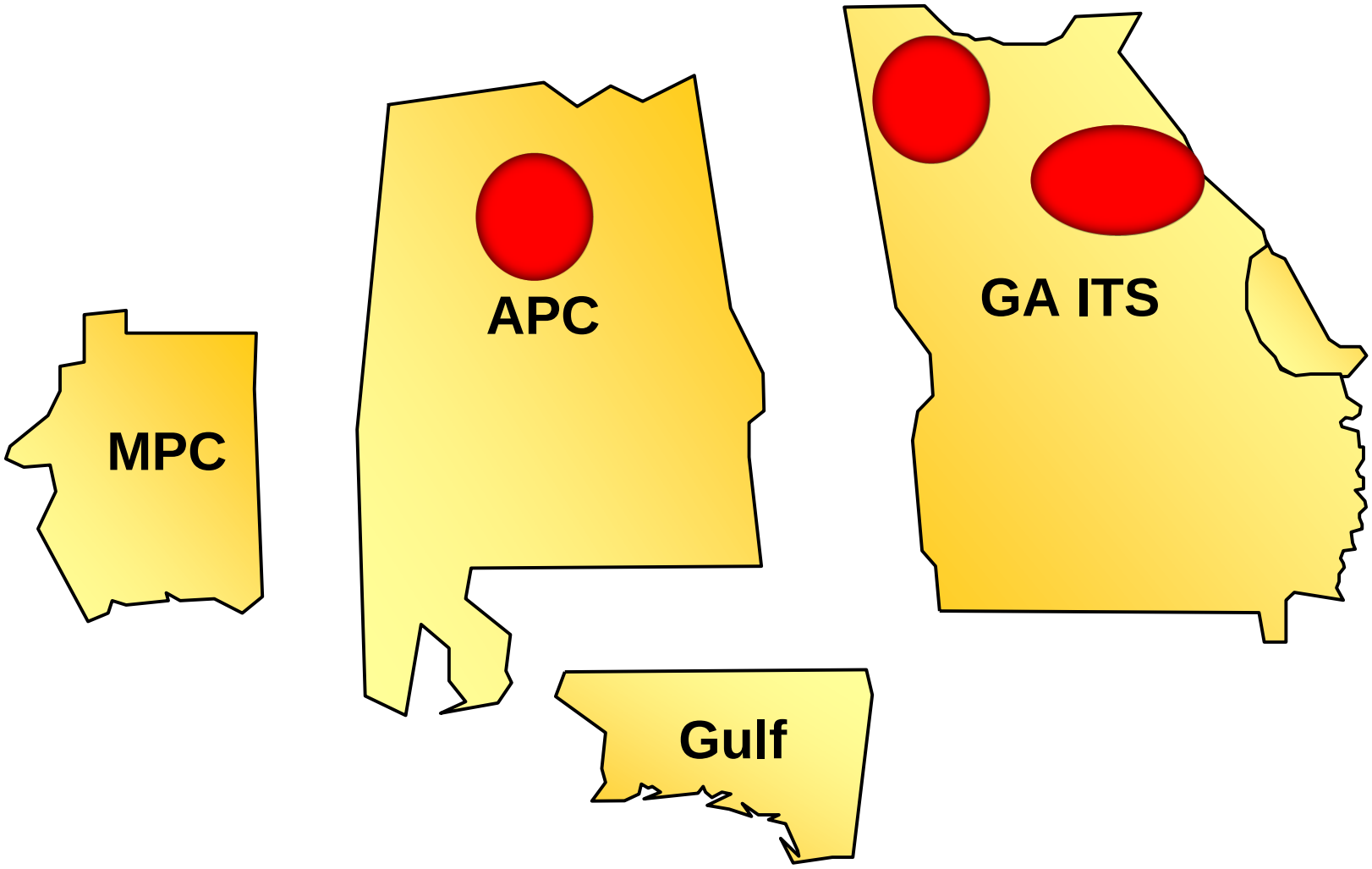
Significant Constraints – Pass 0

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Oostanaula – East Dalton 230 kV T.L.	664	93.8	109.1
Lexington – Russell 230 kV T.L.	596	98.5	106.8
South Hall – Candler 230 kV T.L.	509	95.9	104.3
Conasauga – Bradley 500 kV T.L.(1)	2598	90.2	104.1
Bio – Vanna 230 kV T.L.	433	99.6	103.4
Lexington – East Watkinsville 230 kV T.L.	602	94.7	102.6
Miller 500/230 kV Transformer	1613	90.7	102.0
East Watkinsville 230/115 kV Transformer	332	90.4	100.3
Vanna – New Haven 230 kV T.L.	433	84.2	100.2

(1) The limiting element of this tie-line constraint is located within TVA.

TVA to Southern – 1500 MW

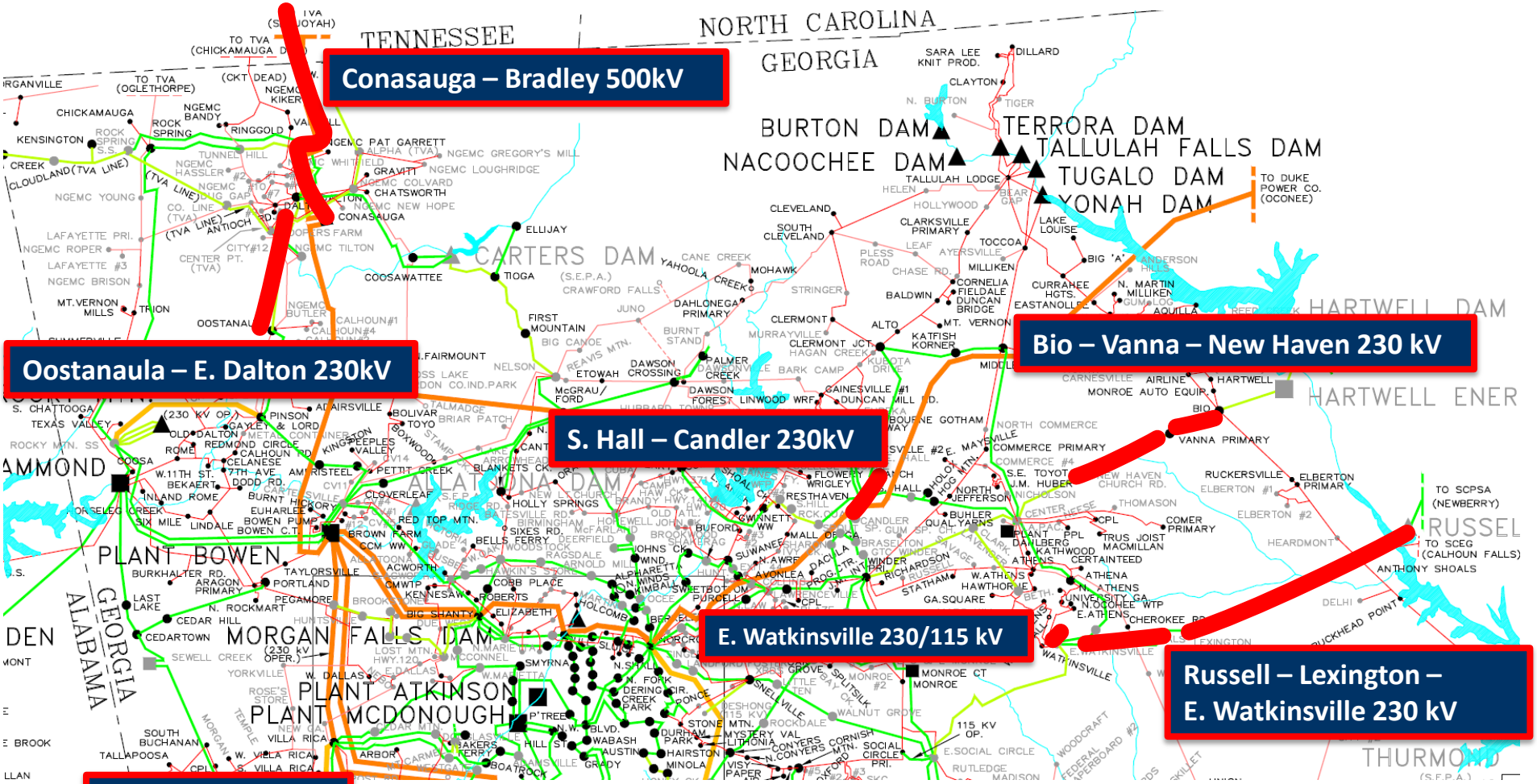
Significant Constraints – Pass 0



Southeastern Regional TRANSMISSION PLANNING

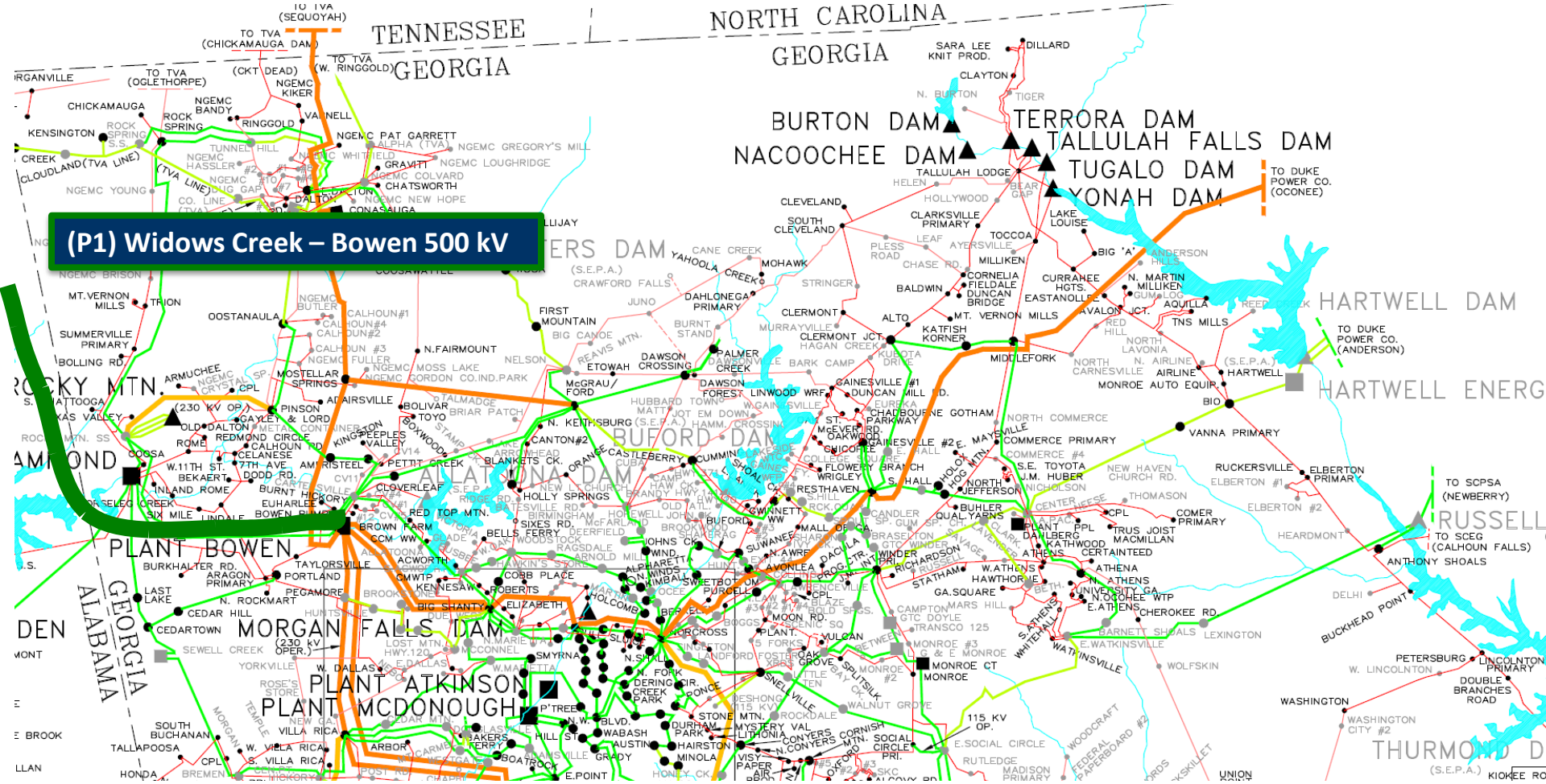
TVA to Southern – 1500 MW

Significant Constraints – Pass 0



TVA to Southern – 1500 MW

Proposed Enhancements – Pass 1



TVA to Southern – 1500 MW

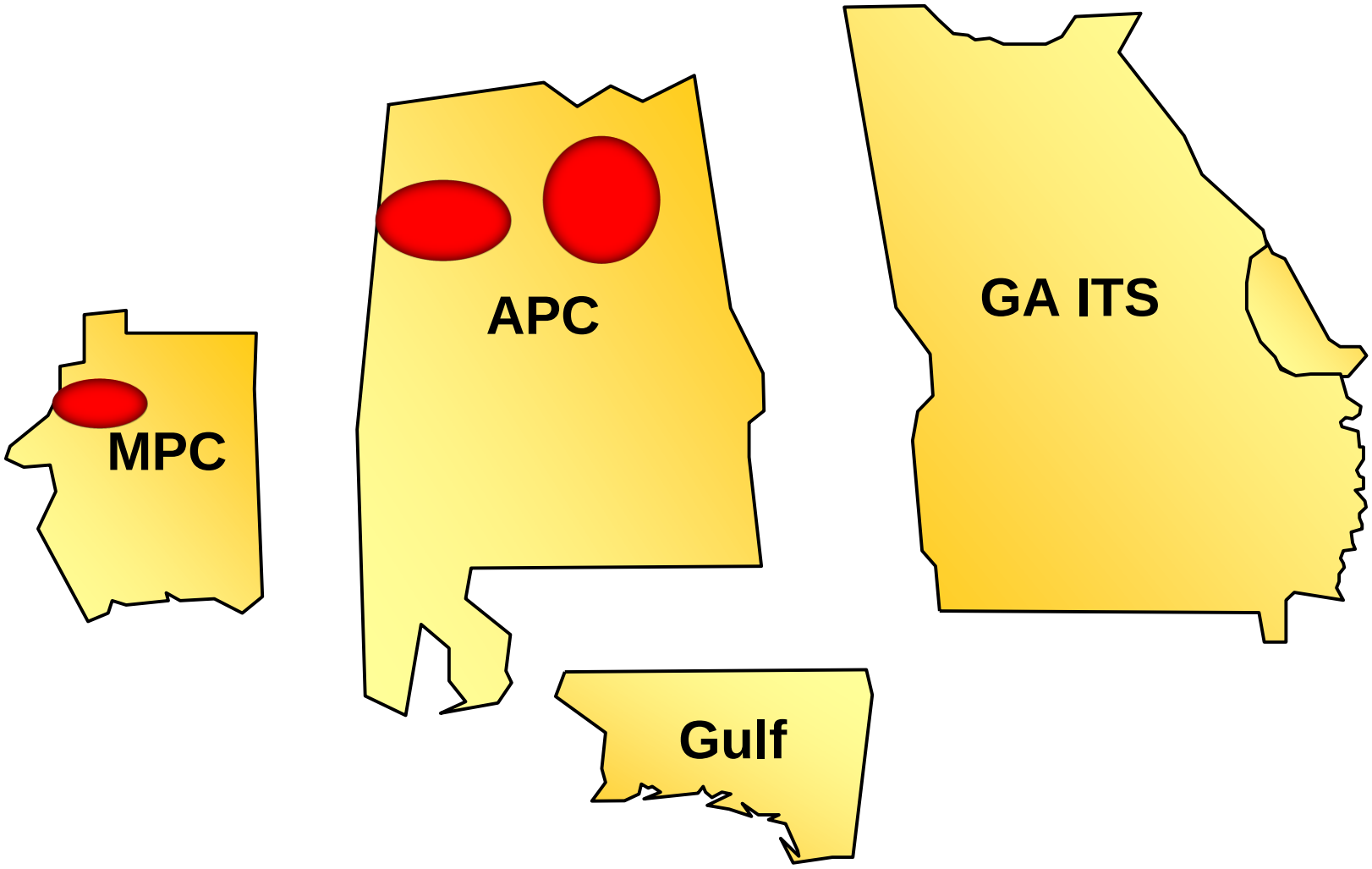
Significant Constraints – Pass 1

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Fayette – Gorgas 161 kV T.L.	193	103.9(1)	129.5
Attalla – Albertville 161 kV T.L.	193	94.0	107.5
Collins – Magee 115 kV T.L.	100	88.9	105.7
Miller – Boyles 230 kV T.L.	602	97.8	103.9
Clay – Leeds 230 kV T.L.	602	97.4	103.0

(1) A current operating procedure is sufficient to alleviate this identified constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this transmission facility such that the operating procedure becomes insufficient.

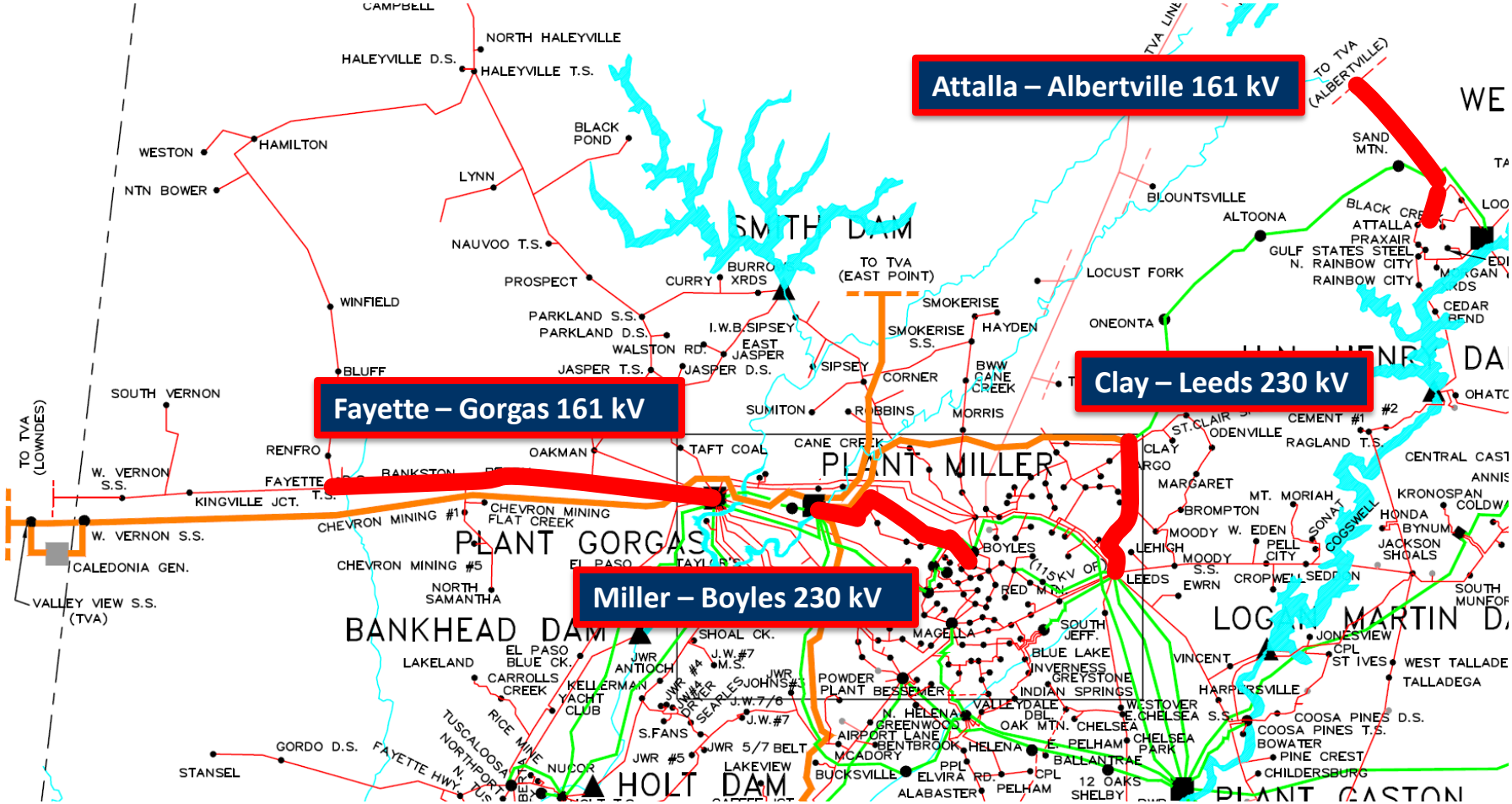
TVA to Southern – 1500 MW

Significant Constraints – Pass 1



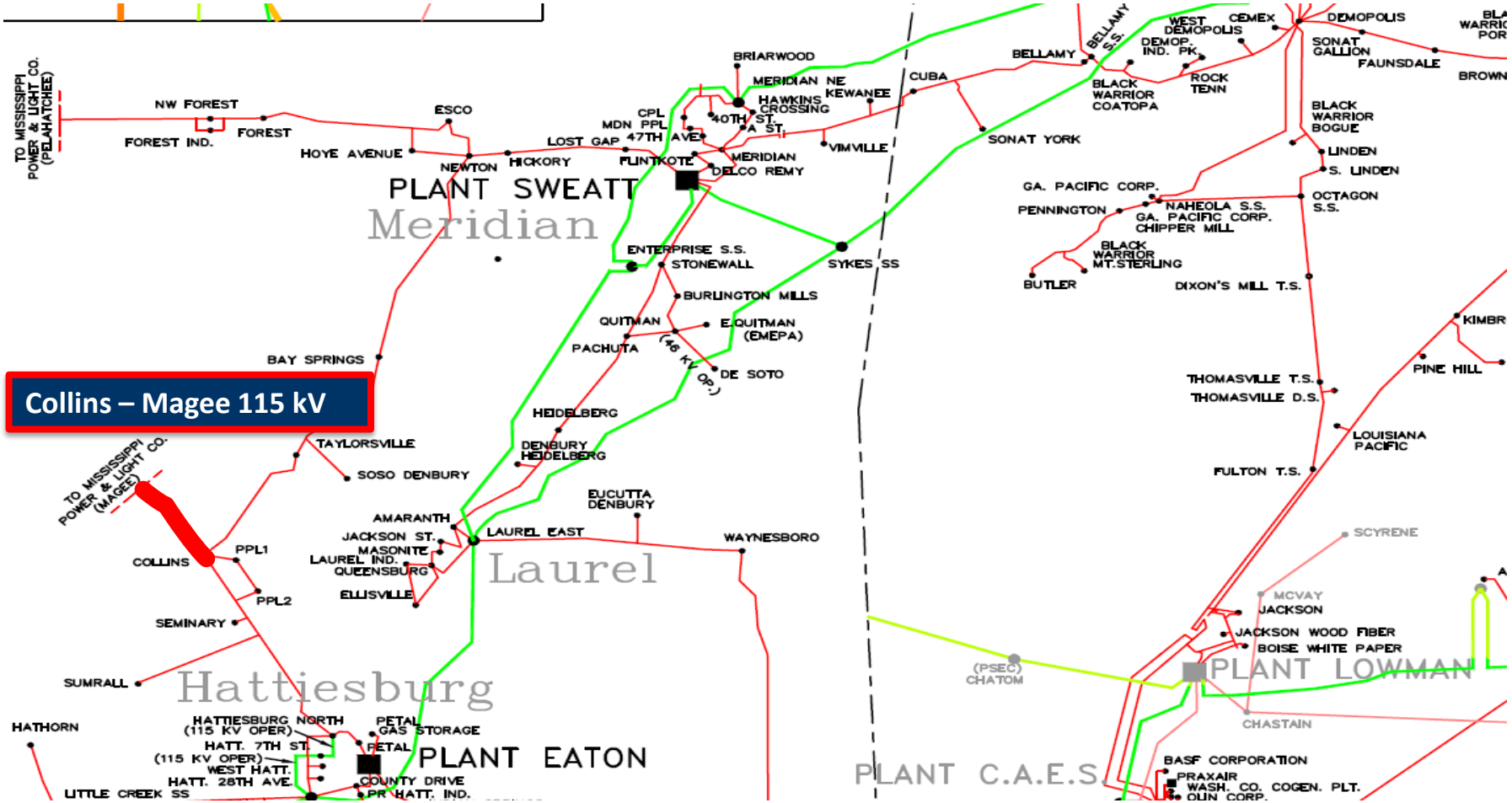
TVA to Southern – 1500 MW

Significant Constraints – Pass 1



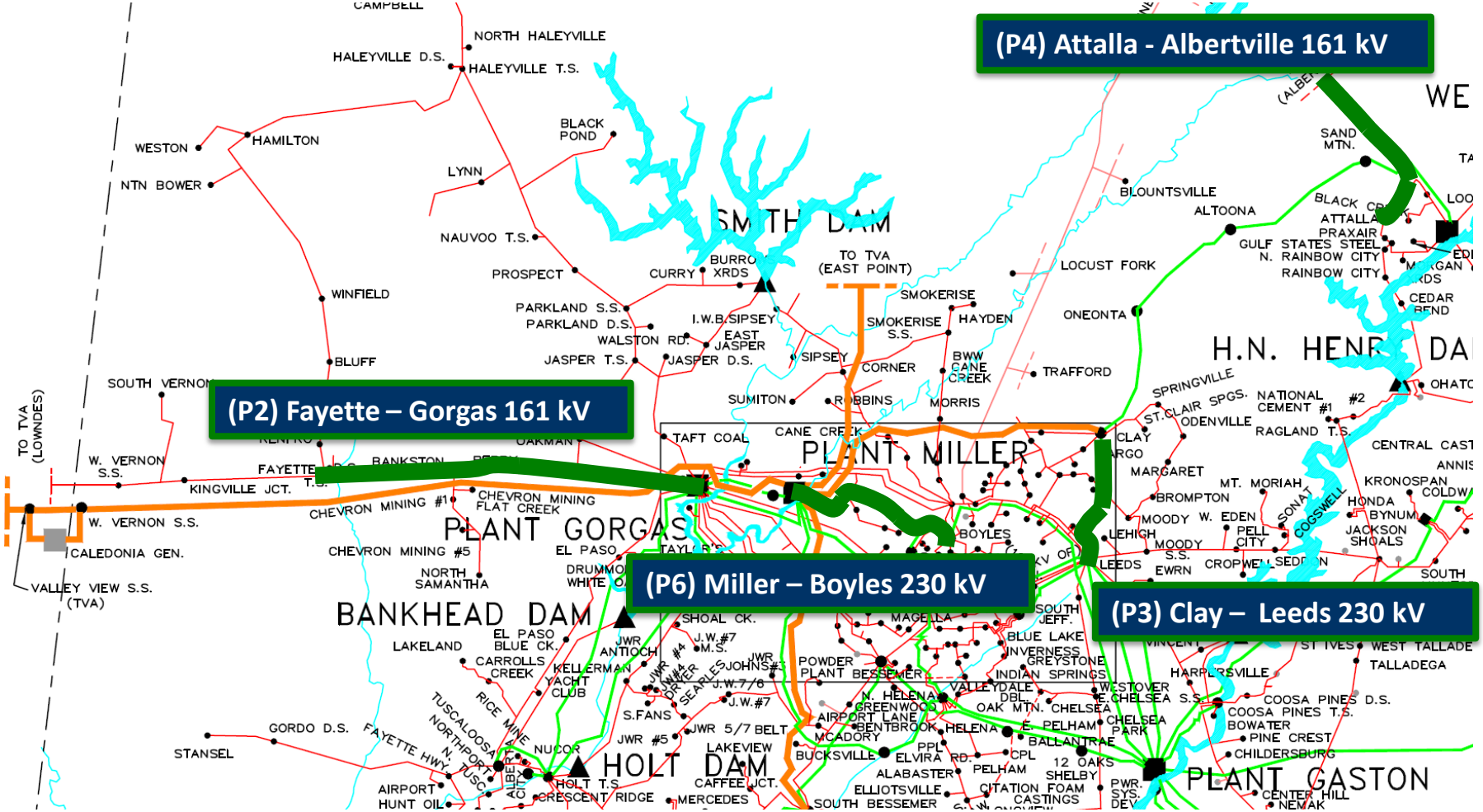
TVA to Southern – 1500 MW

Significant Constraints – Pass 1



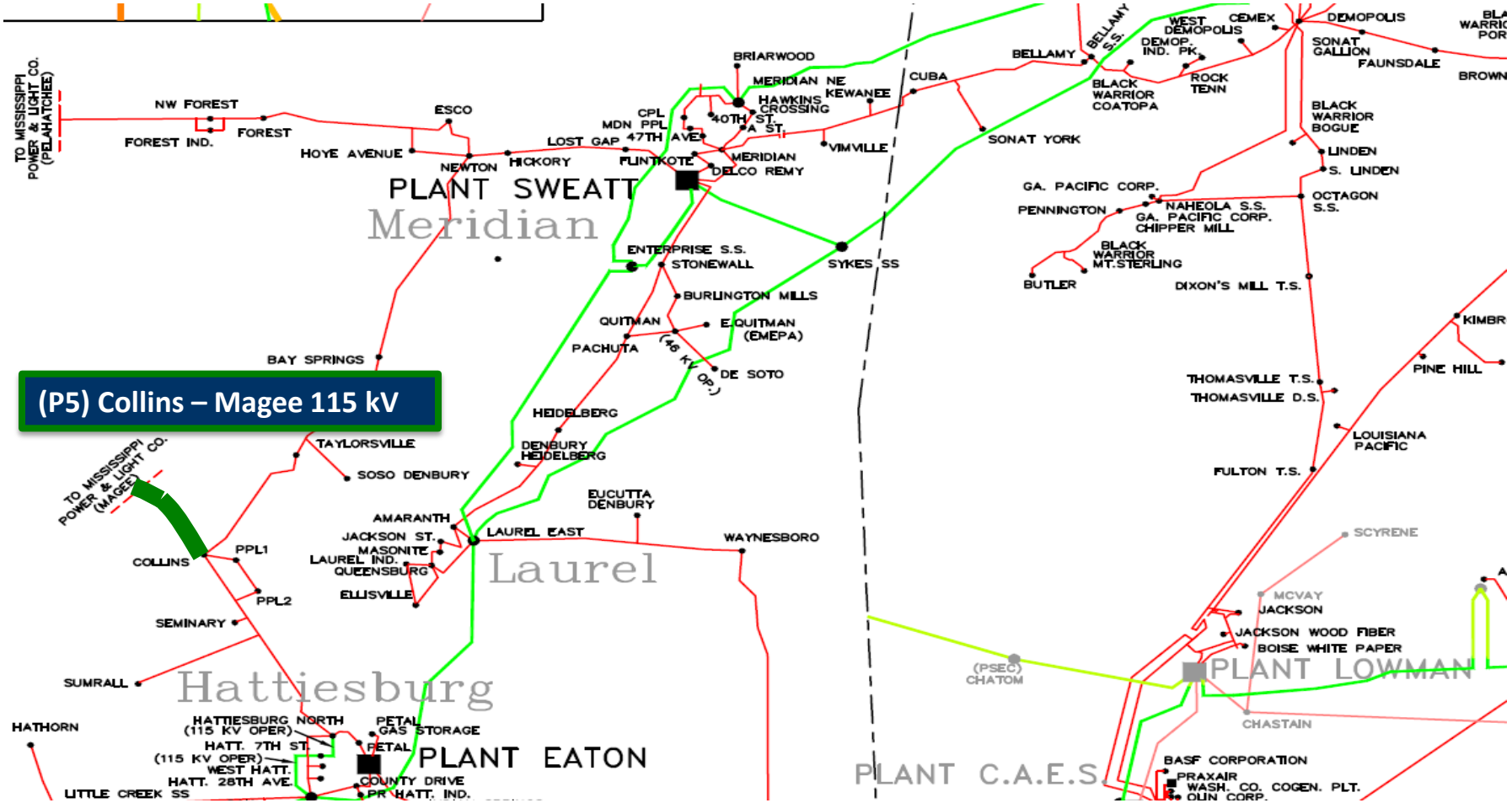
TVA to Southern – 1500 MW

Proposed Enhancements – Pass 2



TVA to Southern – 1500 MW

Proposed Enhancements – Pass 2



TVA to Southern – 1500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	**Widows Creek (TVA) – Bowen 500 kV T.L.** - 60 miles of new 500 kV Line (Southern's portion) - Bundled (3) 1113 ACSR at 100°C	**$185,000,000**
P2	**Fayette – Gorgas 161 kV T.L.** - Rebuild 38.8 miles with 1351 ACSR at 100°C	**$31,500,000**
P3	**Clay TS – Leeds TS 230 kV T.L.** - Reconductor 17.3 miles with bundled (2) 1351 ACSR at 100°C	**$22,200,000**
P4	**Attalla – Albertville 161 kV Line** - Reconductor 19.6 miles with 1351 ACSR at 100°C	**$19,500,000**

TVA to Southern – 1500 MW

Projects Identified (cont.)

Item	Proposed Enhancements	Cost ($)
P5	**Collins – Magee 115 kV T.L.** - Reconductor 8.5 miles with 795 ACSR at 100°C	$3,000,000
P6	**Miller – Boyles 230 kV T.L.** - 6.2 miles of new 230 kV line with 1351 ACSS at 200°C	$16,000,000

Total Cost (2014$) = $277,200,000

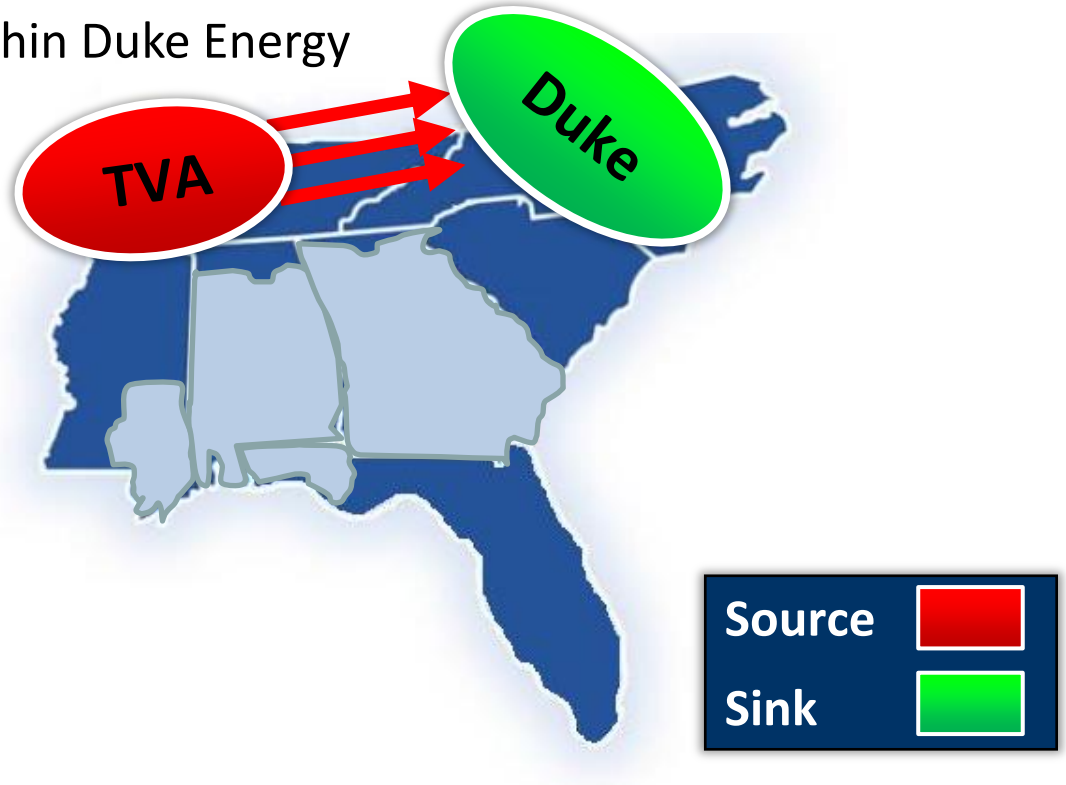
Economic Planning Studies

TVA Border to Duke Energy Border 1000 MW

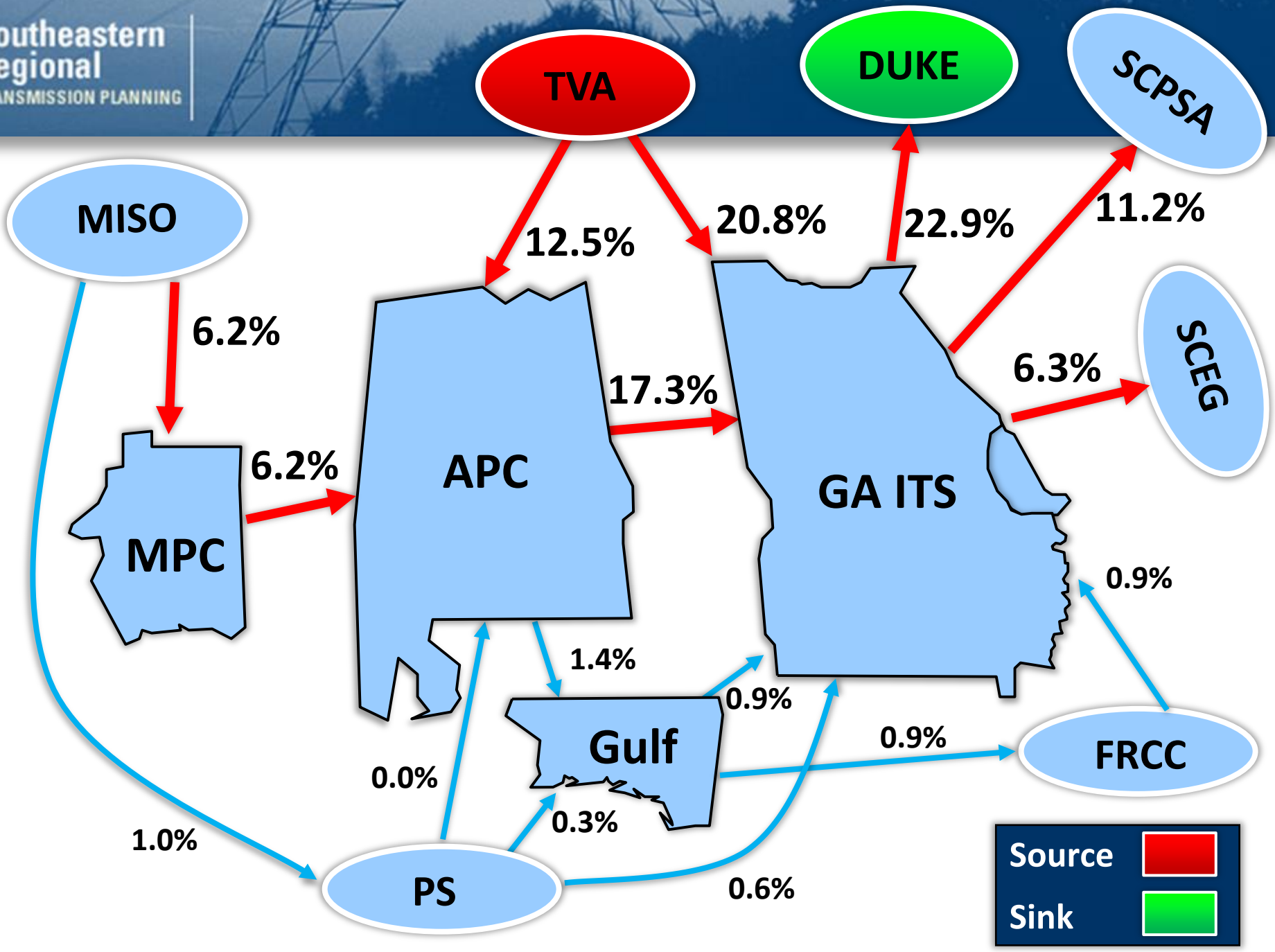
TVA to Duke Energy – 1000 MW

Study Assumptions

- **Transfer Type:** Generation to Load (2019 Summer Peak and Shoulder)
- **Source:** A new generator interconnection to the existing Shelby 500kV substation (TVA)
- **Sink:** Uniform load scale within Duke Energy



Southeastern Regional
TRANSMISSION PLANNING



TVA to Duke Energy – 1000 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - One (1) 230 kV T.L.
  - One (1) 161 kV T.L.

Total Cost (2014$) = $53,700,000

TVA to Duke Energy – 1000 MW

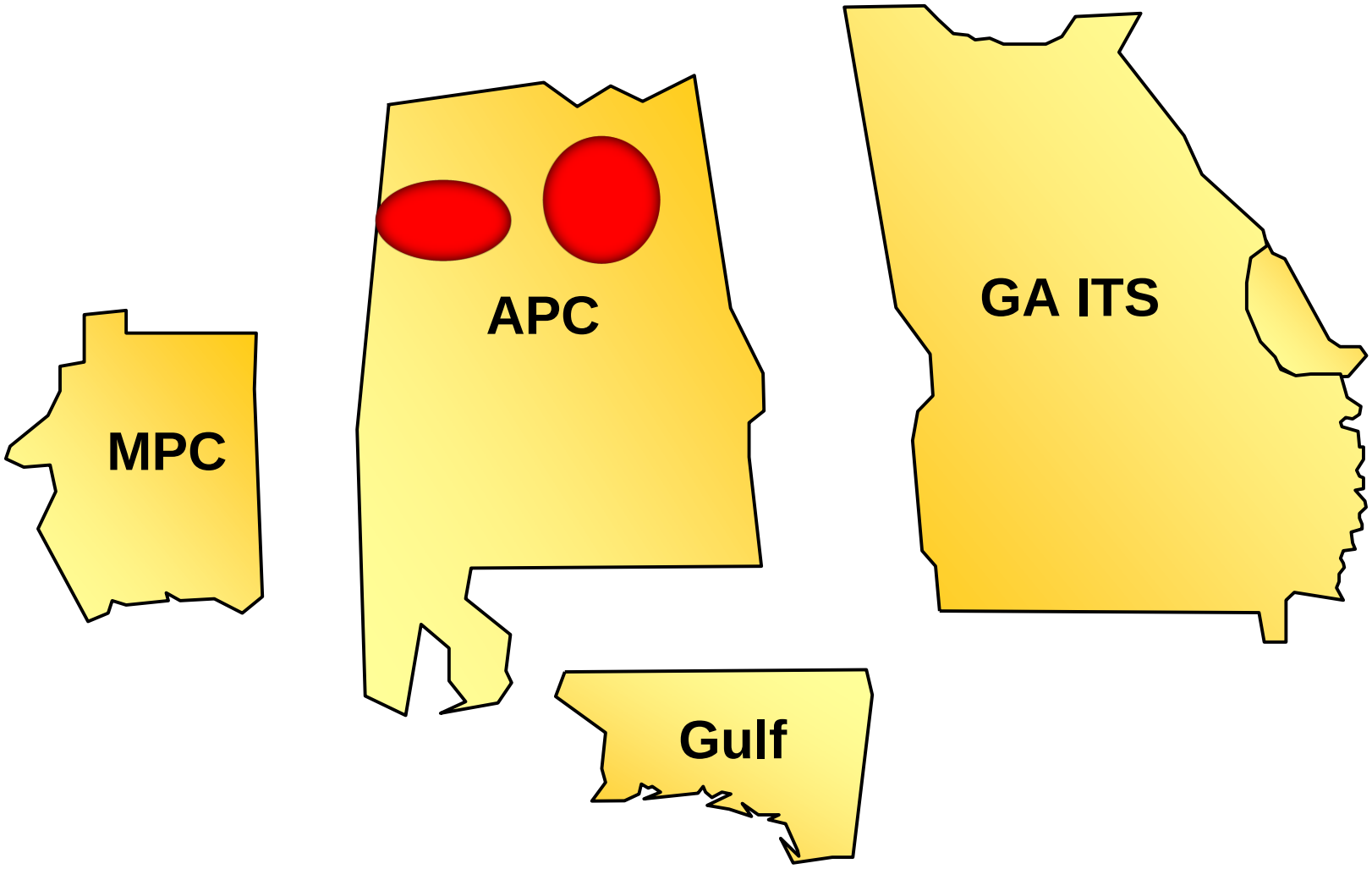
Significant Constraints

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Fayette – Gorgas 161 kV T.L.	193	103.9[(1)]	130.8
Clay – Leeds 230 kV T.L.	602	97.4	103.9

[(1)] A current operating procedure is sufficient to alleviate this identified constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this transmission facility such that the operating procedure becomes insufficient.

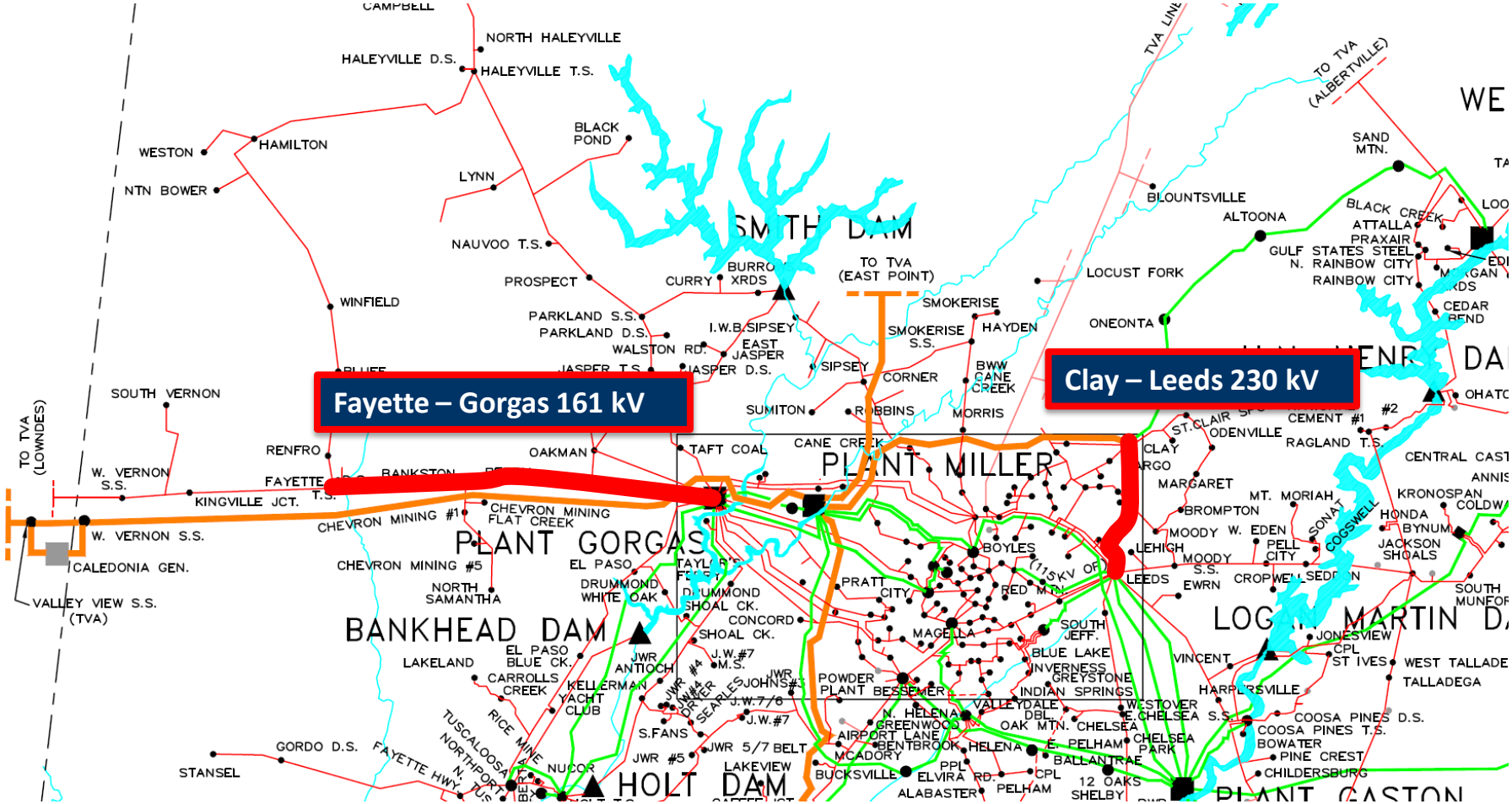
TVA to Duke Energy – 1000 MW

Significant Constraints



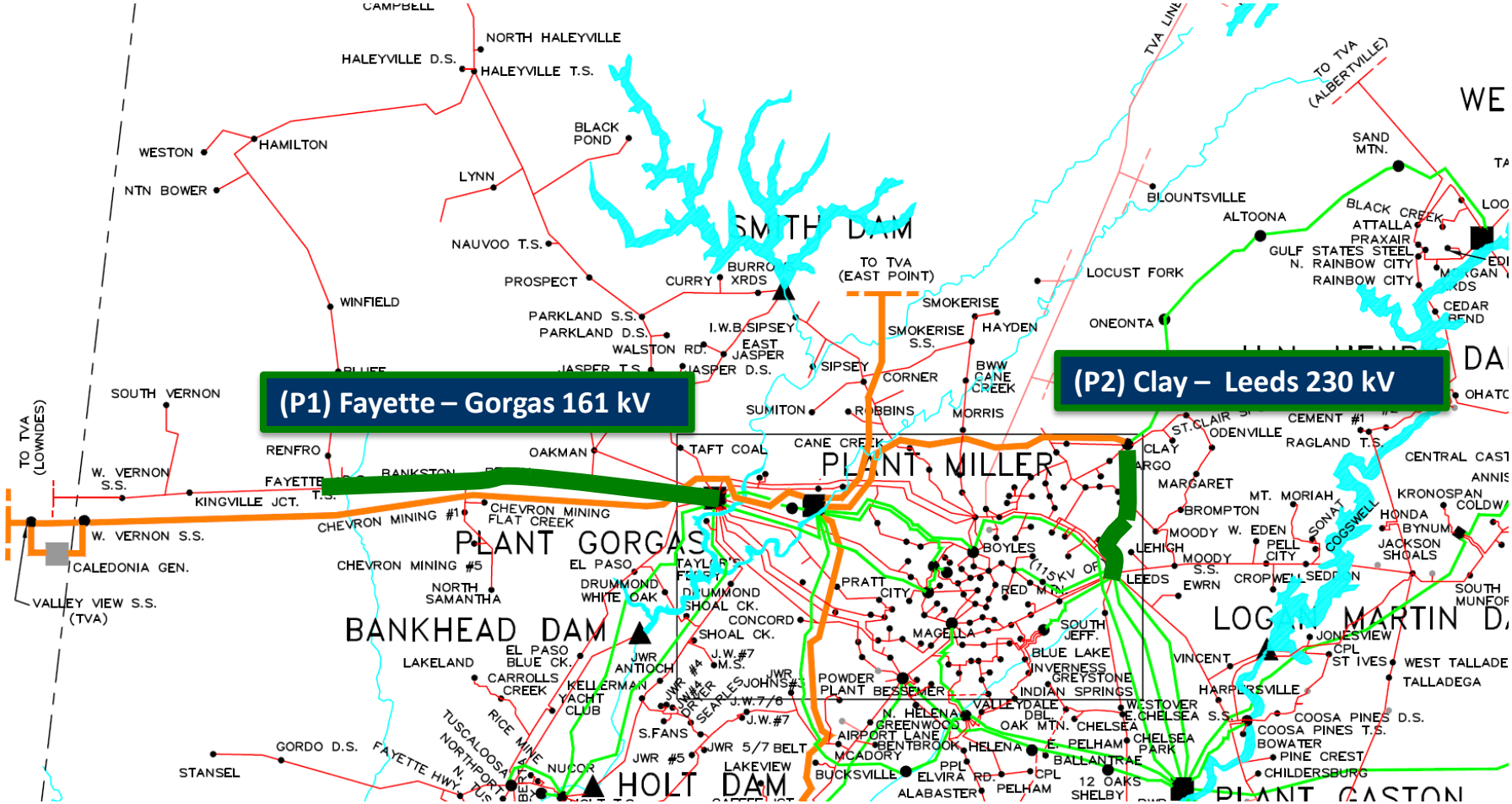
TVA to Duke Energy – 1000 MW

Significant Constraints



TVA to Duke Energy – 1000 MW

Proposed Enhancements



TVA to Duke Energy – 1000 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	**Fayette – Gorgas 161 kV T.L.** - Rebuild 38.8 miles with 1351 ACSR at 100°C	**$31,500,000**
P2	**Clay TS – Leeds TS 230 kV T.L.** - Reconductor 17.3 miles with bundled (2) 1351 ACSR at 100°C	**$22,200,000**

Total Cost (2014$) = $53,700,000

SERTP

Regional Modeling Update

Regional Modeling Update

- **Exchanged the latest transmission models for the ten year planning horizon with FRCC.**
- **FRCC models will be incorporated into subsequent base cases.**
- **SERC Regional Model Development**
  - Data Bank Update ("DBU")
    - May 20 – May 22
    - 2014 Series SERC LTSG models completed
  - Linear Transfers and AC verification performed
  - Currently compiling the results into the SERC LTSG Report

SERTP

Order No.1000 Update

Order No.1000 Update

- **Prequalified Transmission Developer Applications**
  - Deadline for application submittal was August 1st, 2014 for the 2015 planning cycle.
  - No prequalification applications were submitted.
- **Regional Planning Analysis**
  - Version 2 SERTP Regional Models available on SERTP Website.
  - SERTP Sponsors currently performing analysis on regional models including assessment to identify and evaluate potential regional transmission projects.

Next Meeting Activities

- **Annual Transmission Planning Summit**
  - **Location:** TBD
  - **Date:** December 2014
  - **Purpose:**
    - Final Economic Planning Study Results
    - Order 1000 Implementation Update
    - Regional Transmission Plan
    - Assumptions Input Session

Questions?