2012 SERTP

Welcome

SERTP 2012 – 3rd Quarter Meeting

"2nd RPSG Meeting"

Southeastern Regional
TRANSMISSION PLANNING

2012 SERTP

- 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.

2012 SERTP

Purposes & Goals of the Meeting

- Order 1000 Regional Update
- Preliminary Economic Planning Results
- FRCC Coordination Update
- SERC Regional Model Development & Reliability Assessment Update
- SIRPP Update
- Next Meeting Activities

FERC Order 1000 Regional Update

Southeastern Regional TRANSMISSION PLANNING

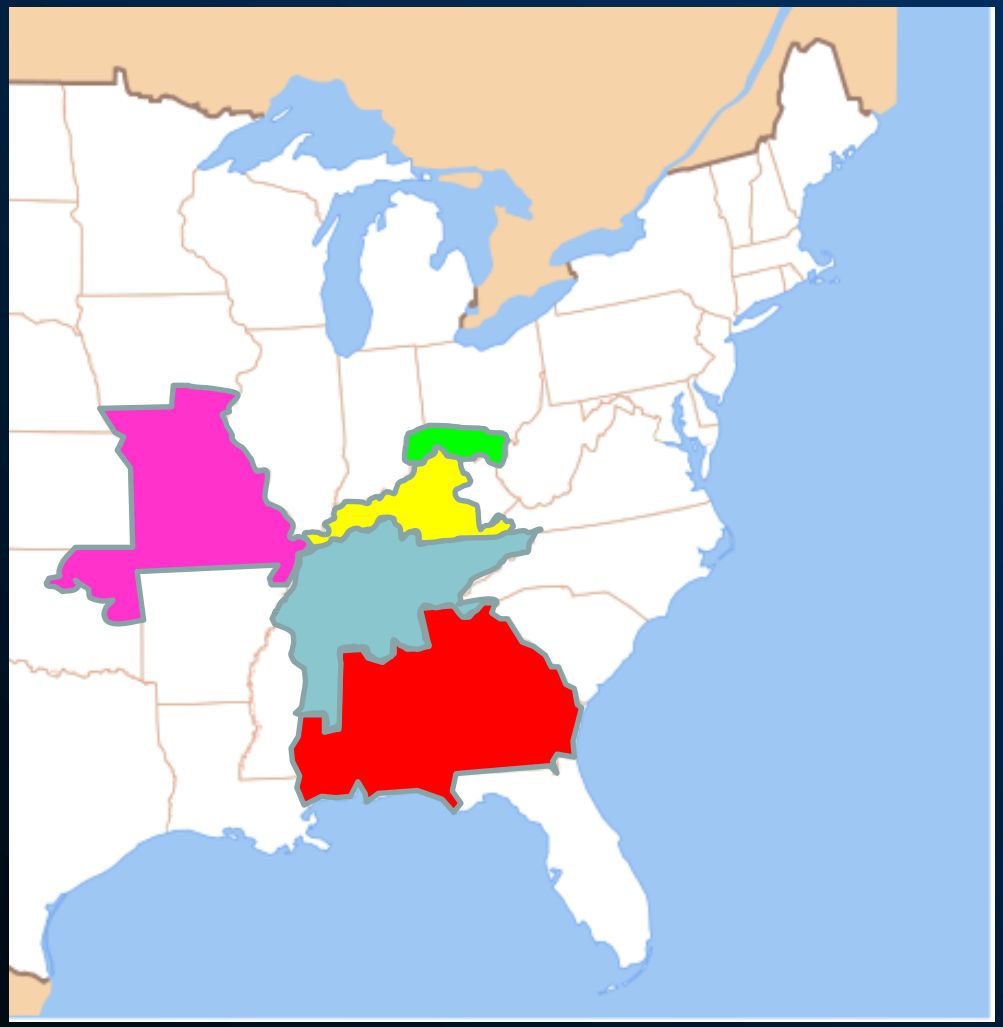
Order 1000

Order 1000 – Regional Update

- TVA, AECI, LGE & KU and OVEC expressed interest in joining the SERTP
- Southern, LGE & KU, and OVEC are FERC jurisdictional entities
  - Filed for extension of time beyond regional compliance due date of October 11, 2012
    - Requested on August 17th, 2012
    - 120 day extension (February 8th, 2013)
    - FERC approved on September 6th, 2012

Southeastern Regional
TRANSMISSION PLANNING

Order 1000



- **Current SERTP**
  - Southern
  - GTC
  - MEAG
  - Dalton
  - PowerSouth
  - SMEPA
- **TVA**
- **AECI**
- **LG&E / KU**
- **OVEC**

Order 1000

Order 1000 – Regional Update (cont.)

- The expanded SERTP would become one of the largest regions in the Eastern Interconnection
  - ≈ 66,000 miles of transmission lines
  - Portions of 12 states
  - ≈ 96,000 MW total peak demand
- An interim meeting will be held on October 17th, 2012 to discuss the latest Order 1000 regional proposal
  - Proposals associated with the Order 1000 requirements will continue to be made available to stakeholders prior to all SERTP meetings
  - Stakeholders can submit questions or comments at anytime throughout the process
  - www.southeasternrtp.com/contactus.asp

2012 SERTP

Questions?

Southeastern Regional TRANSMISSION PLANNING

2012 SERTP

Economic Planning Studies

PowerSouth Energy Cooperative

Dalton Utilities

GeorgiaTransmission

MEAG POWER

South Mississippi Electric Power Association

Southern Company — Energy to Serve Your World℠

Southeastern Regional TRANSMISSION PLANNING

2012 SERTP

Five Economic Planning Studies

- TVA Border to Southern
  - 500 MW (2017)
- PJM West to Southern Balancing Authority
  - 3500 MW (2017)
- Southern Balancing Authority to TVA Border
  - 1000 MW (2013)
- SCPSA Border to EES Border
  - 500 MW (2013)
- SCPSA Border to GTC
  - 200 MW (2013)

2012 SERTP

Power Flow Cases Utilized

- Study years: 2013, 2017
- Load Flow Cases:
  - 2012 Series Version 2A
    - Summer Peak
    - Shoulder

2012 SERTP

Economic Planning Studies

- Preliminary Report Components:
  - Thermal Analysis
    - Contingency Analysis to identify constrained elements/contingency pairs
  - Interface Transfer Capability Impacts
  - Potential Solutions
    - Transmission Enhancements and Cost Estimates

Southeastern Regional TRANSMISSION PLANNING

2012 SERTP

- 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 (2013, 2017).

- 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.

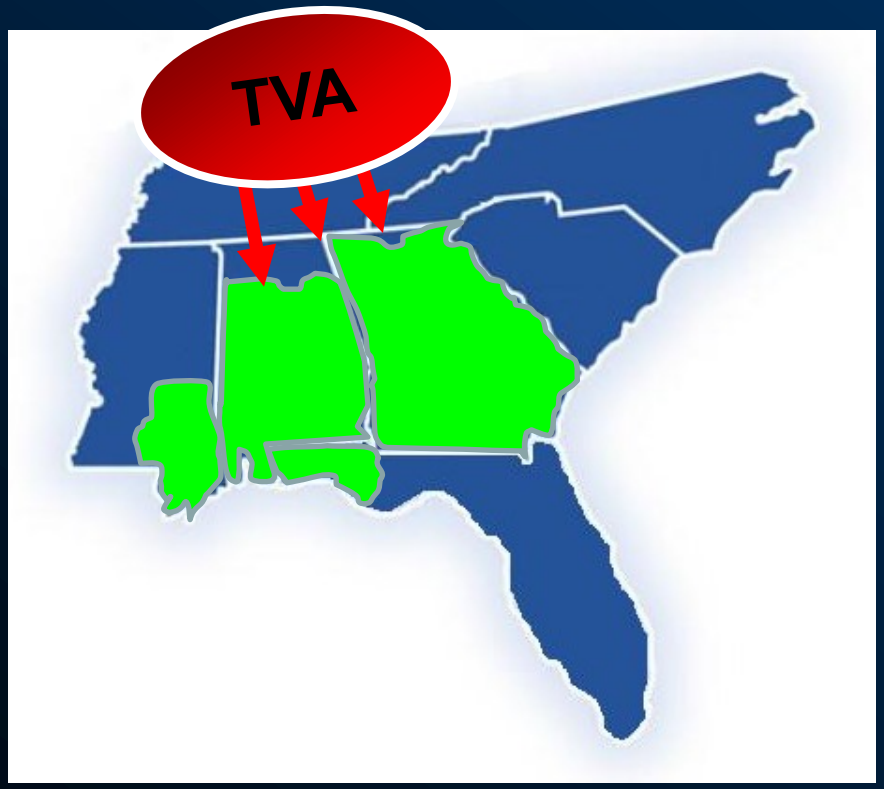
TVA Border to SBA

500 MW

Southeastern Regional TRANSMISSION PLANNING

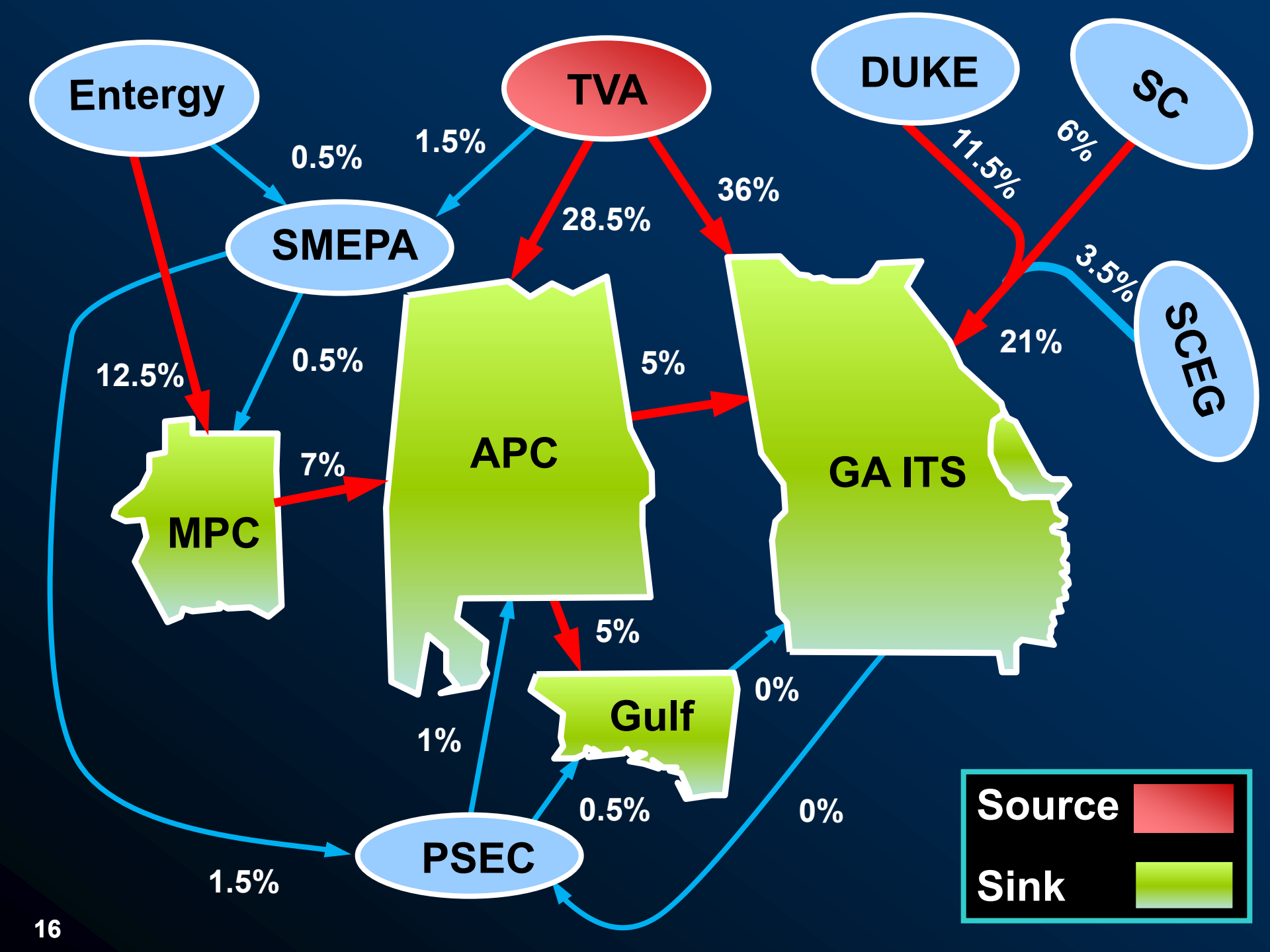
TVA Border to Southern 500 MW

- Transfer Type: Load to Generation (2017)
- Source: Uniform load reduction in TVA
- Sink: Southern Generation



Source

Sink


Entergy
TVA
DUKE
SC
SMEPA
SCEG
APC
GA ITS
MPC
Gulf
PSEC
0.5%
1.5%
11.5%
6%
36%
28.5%
3.5%
12.5%
0.5%
21%
5%
7%
5%
0%
1%
0.5%
0%
1.5%
Source
Sink

Southeastern Regional TRANSMISSION PLANNING

TVA Border to Southern 500 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - One (1) 230 / 115 kV Transformer

Total Cost (2012$) = $6,200,000

Southeastern Regional
TRANSMISSION PLANNING

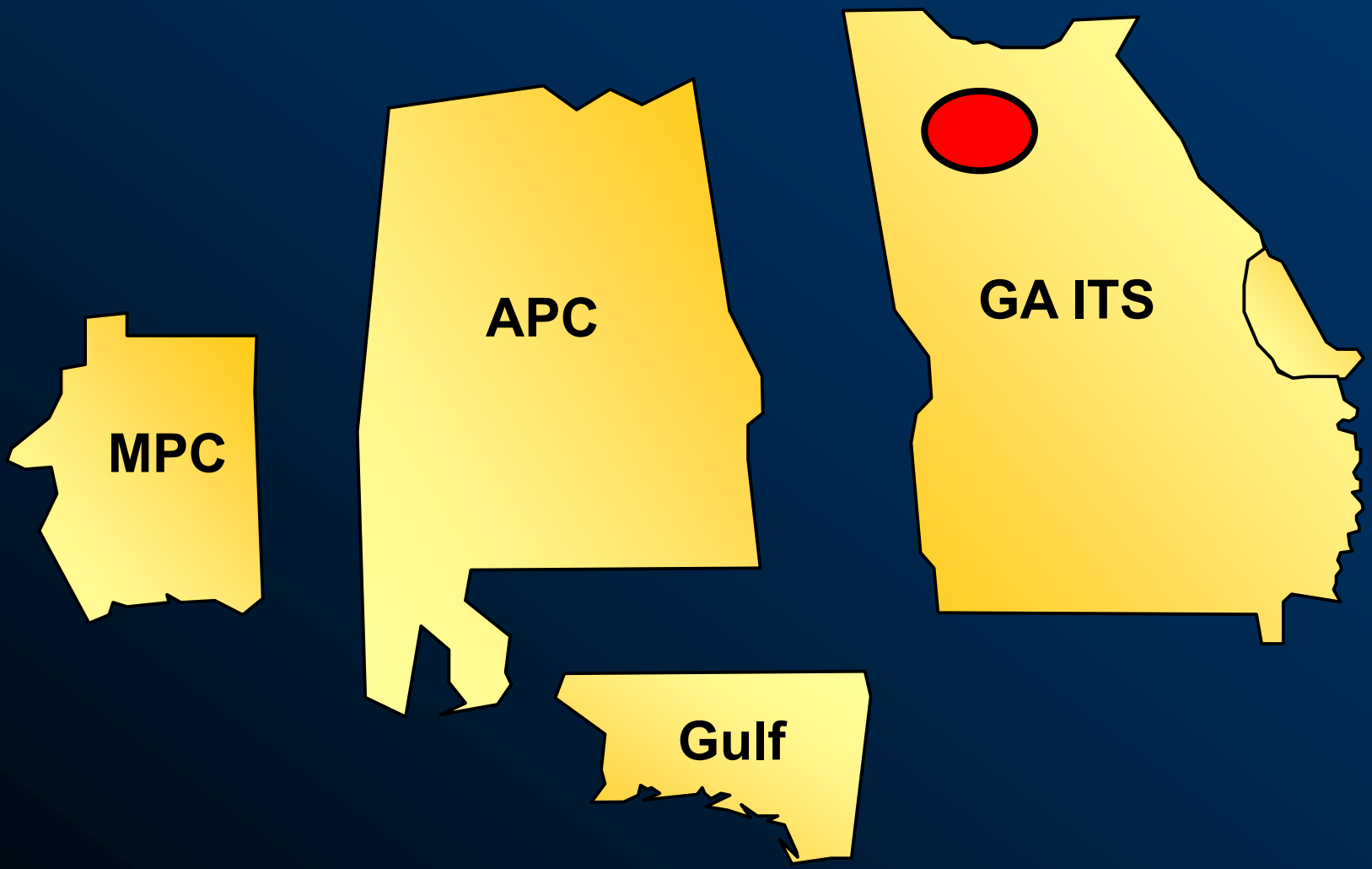
TVA Border to Southern 500 MW

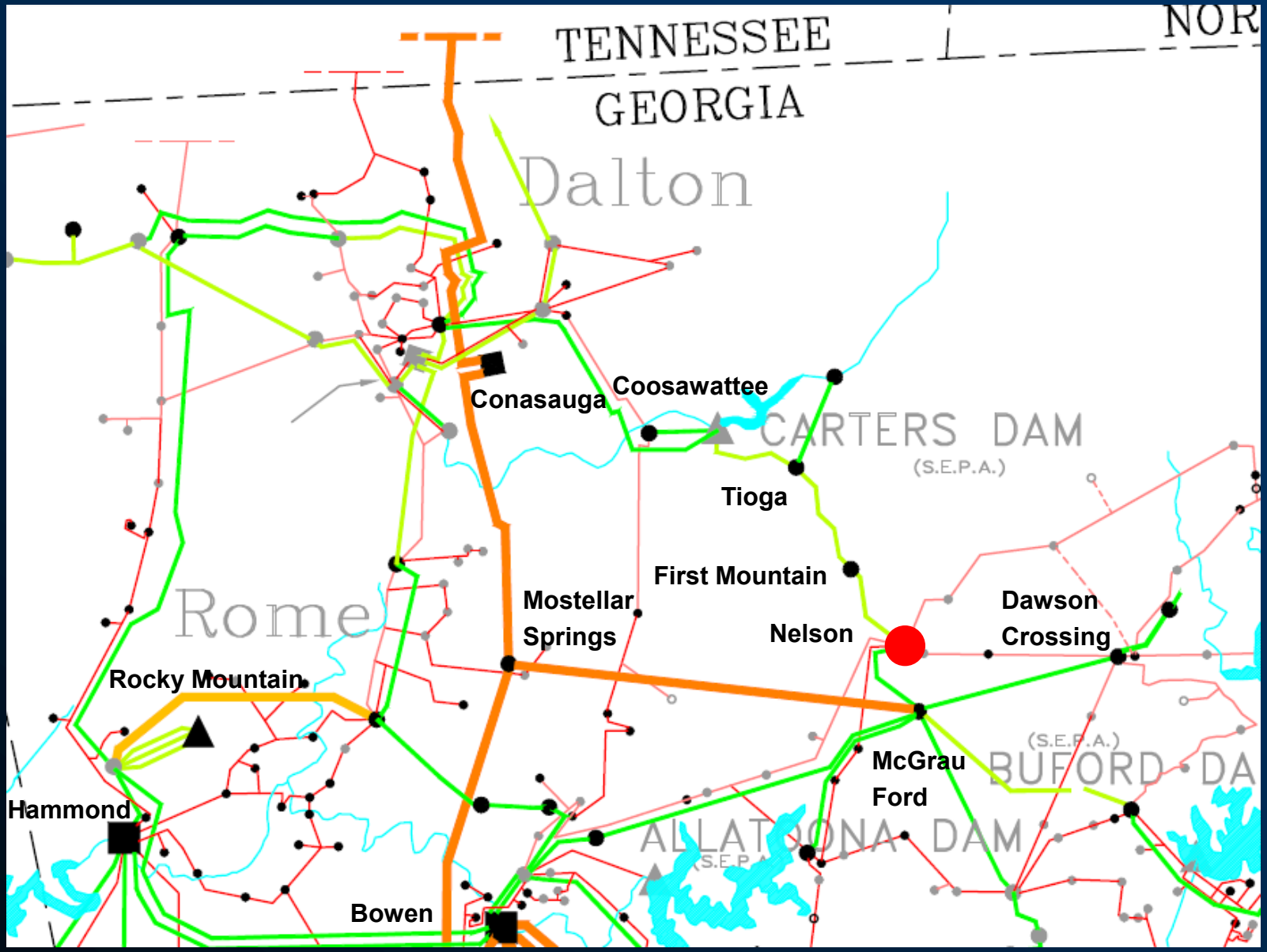
Significant Constraints – PASS 0

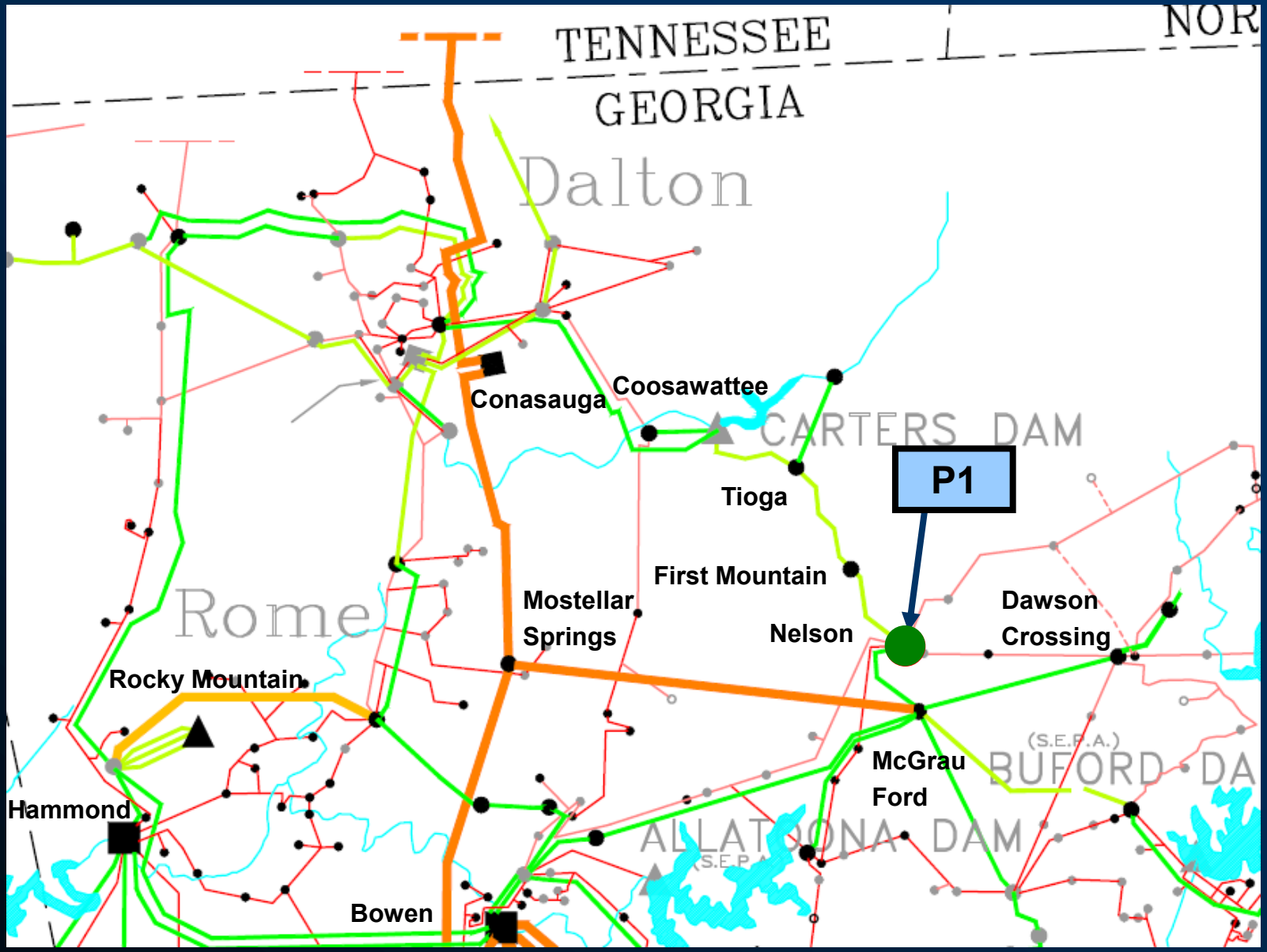
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Nelson 230 / 115 kV TL	176	99.5	100.5

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




TENNESSEE
GEORGIA
Dalton
Conasauga
Coosawattee
CARTERS DAM
(S.E.P.A.)
Tioga
First Mountain
Rome
Mostellar
Springs
Nelson
Dawson
Crossing
Rocky Mountain
McGrau
Ford
(S.E.P.A.)
Hammond
Bowen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CARTERS DAM
P1
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First Mountain
Mostellar
Springs
Nelson
Dawson
Crossing
Rome
Rocky Mountain
McGrau
Ford
(S.E.P.A.)
BUFORD DA
Hammond
ALLATOONA DAM
Bowen

Southeastern Regional
TRANSMISSION PLANNING

TVA Border to Southern 500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	Nelson Substation	$6,200,000

SBA Total Cost (2012$) = $6,200,000

Questions on the TVA Border to Southern Transfer?

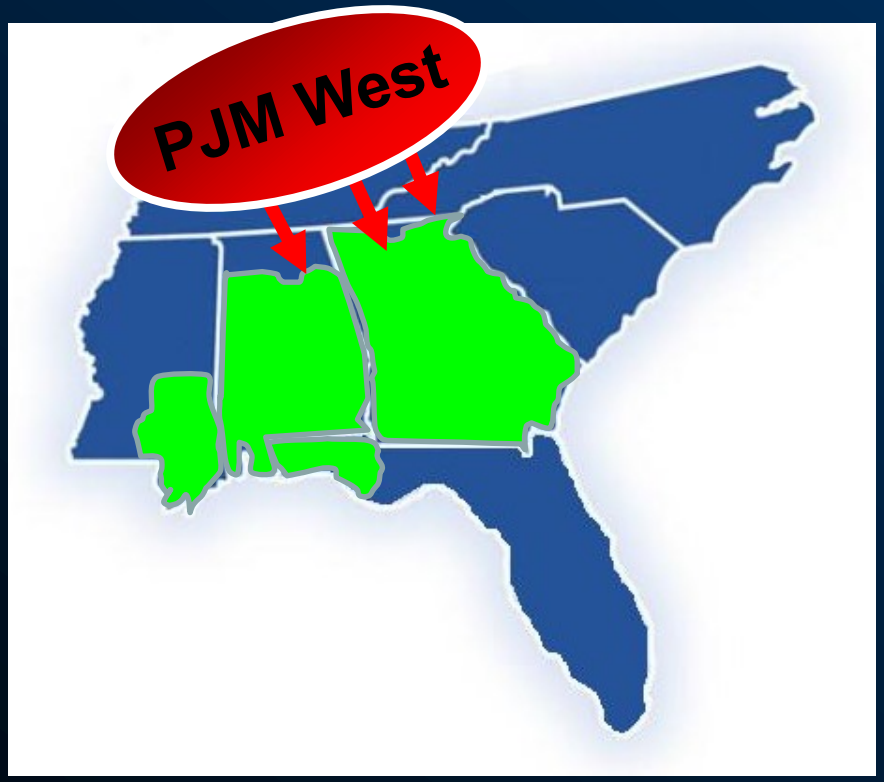
PJM West
to
SBA

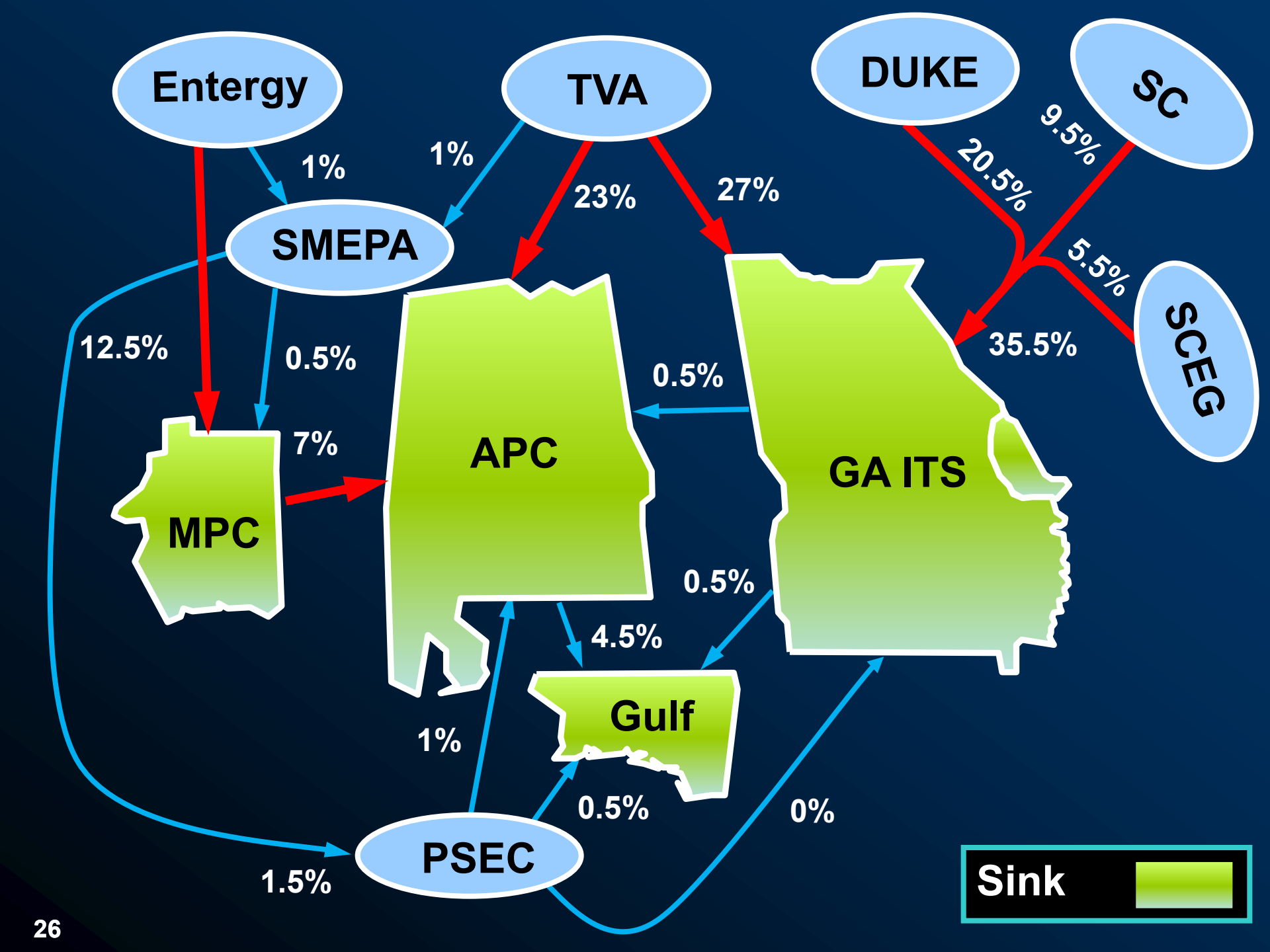
3500 MW

Southeastern Regional
TRANSMISSION PLANNING

PJM West to SBA
3500 MW

- Transfer Type: Generation to Generation (2017)
- Source: New generator interconnecting to the Sullivan 765 kV substation in AEP
- Sink: Generation within the SBA




Entergy
TVA
DUKE
SC
SMEPA
SCEG
APC
GA ITS
MPC
Gulf
PSEC
1%
1%
23%
27%
20.5%
9.5%
5.5%
35.5%
12.5%
0.5%
0.5%
7%
0.5%
4.5%
1%
0.5%
0%
1.5%
Sink

Southeastern Regional TRANSMISSION PLANNING

PJM West to SBA 3500 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - Three (3) 500 kV T.L.s
  - Three (3) 500 / 230 kV Transformers
  - Twenty three (23) 230 kV T.L.s
  - Two (2) 230 / 115 kV transformers
  - Two (2) 161 kV T.L.s
  - Two (2) 161 / 115 kV transformers
  - Twenty nine (29) 115 kV T.L.s

Total Cost (2012$) = $327,650,000

Southeastern Regional
TRANSMISSION PLANNING

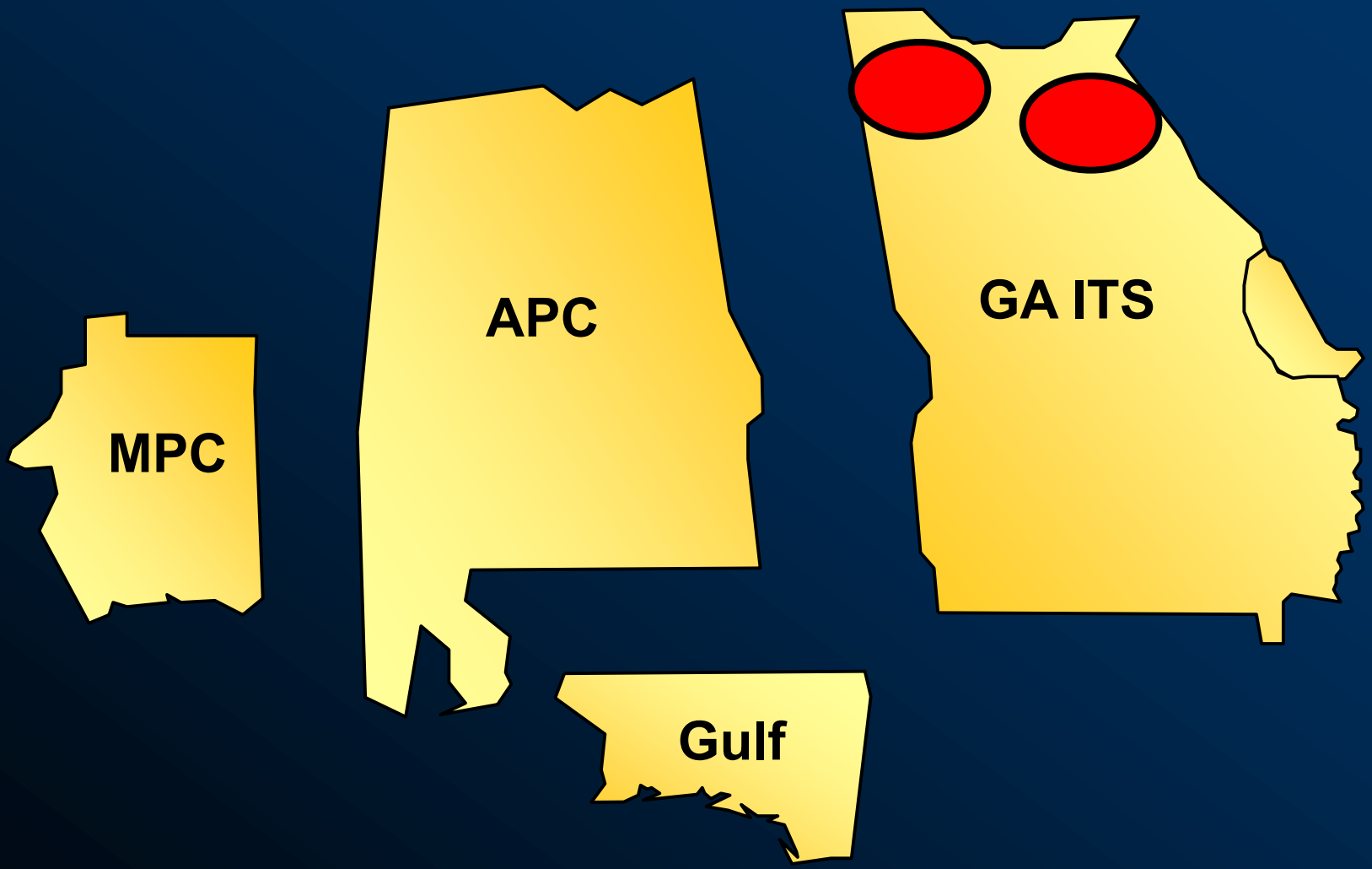
PJM West to SBA
3500 MW

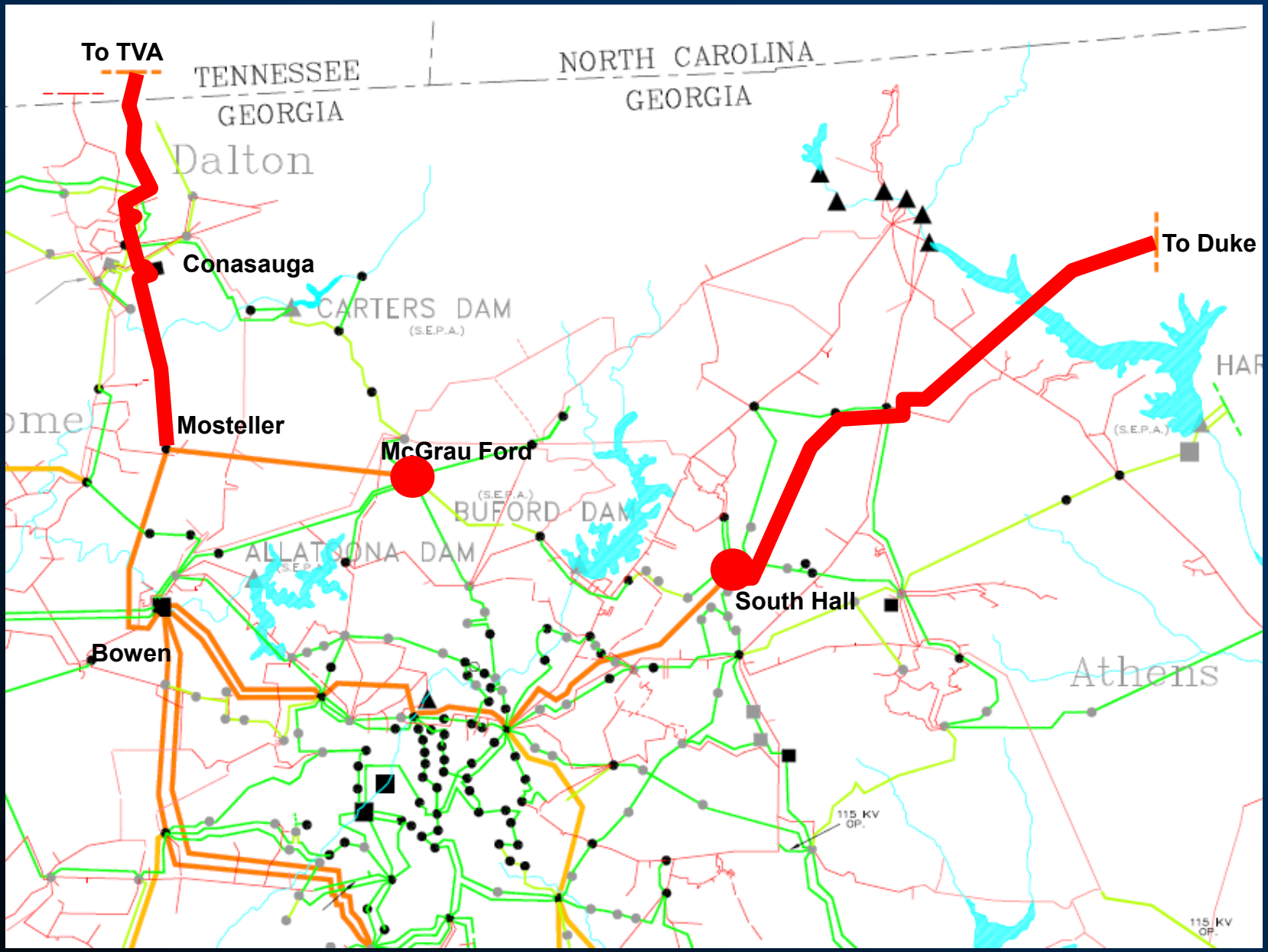
Significant Constraints – PASS 0

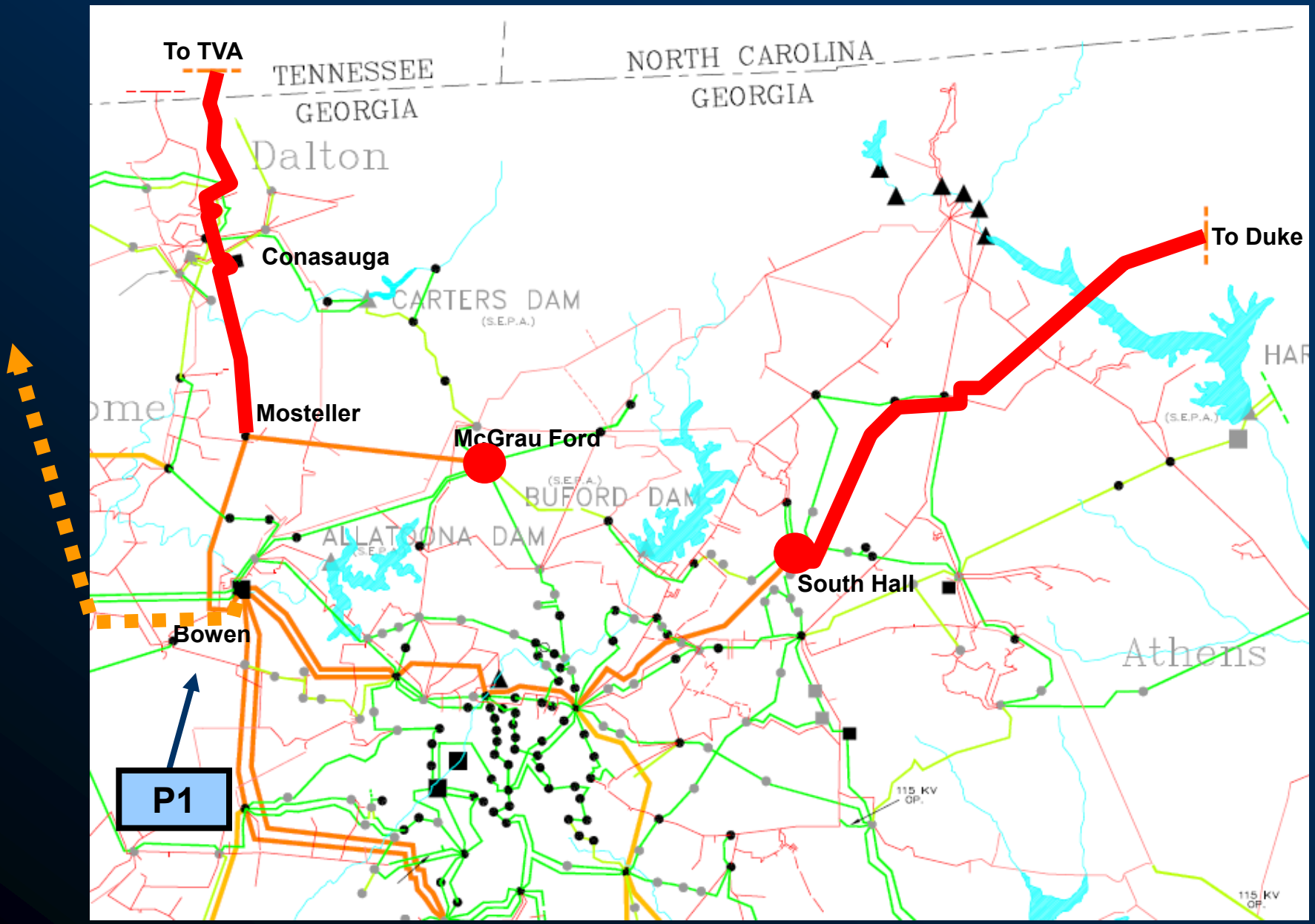
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Conasauga – Bradley 500 kV TL	2783	79.8	118.0
Mosteller – Conasauga 500 kV TL	3429	76.3	107.3
South Hall – Oconee 500 kV TL	3063	71.6	103.7
McGrau Ford 500 / 230 kV	2016	85.1	110.3
South Hall 500 / 230 kV	2016	75.9	103.6

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




To TVA
TENNESSEE
GEORGIA
NORTH CAROLINA
GEORGIA
Dalton
Conasauga
CARTERS DAM
(S.E.P.A.)
To Duke
Mosteller
McGrau Ford
(S.E.P.A.)
BUFORD DAM
ALLATOONA DAM
South Hall
Bowen
Athens
115 KV
OP.
115 KV
OP.


To TVA
TENNESSEE
GEORGIA
NORTH CAROLINA
GEORGIA
Dalton
Conasauga
CARTERS DAM
(S.E.P.A.)
To Duke
Mosteller
McGrau Ford
BUFORD DAM
(S.E.P.A.)
ALLATOONA DAM
South Hall
Athens
Bowen
P1
115 KV
OP.
115 KV
OP.

Southeastern Regional TRANSMISSION PLANNING

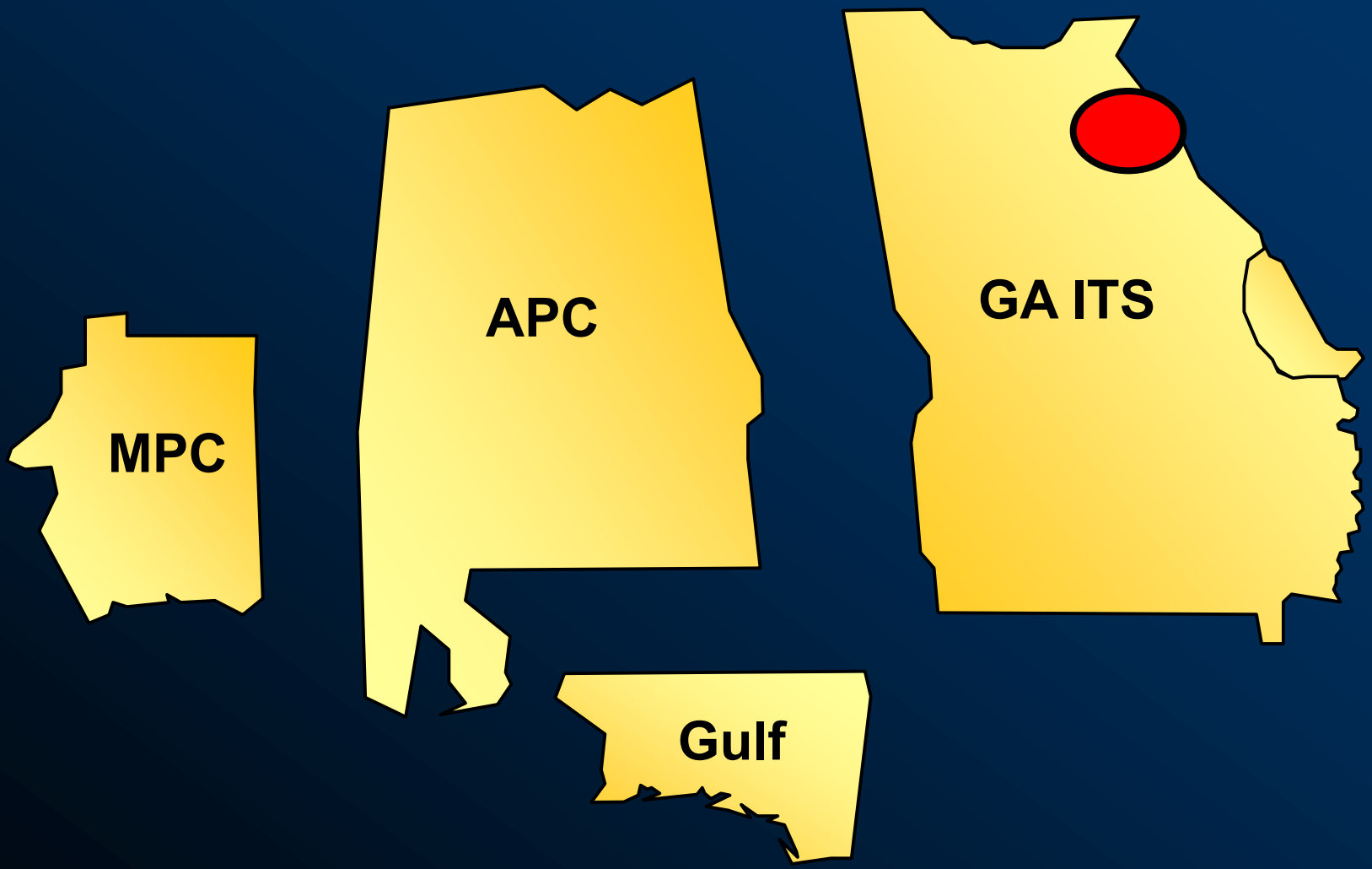
PJM West to SBA 3500 MW

Significant Constraints – PASS 1

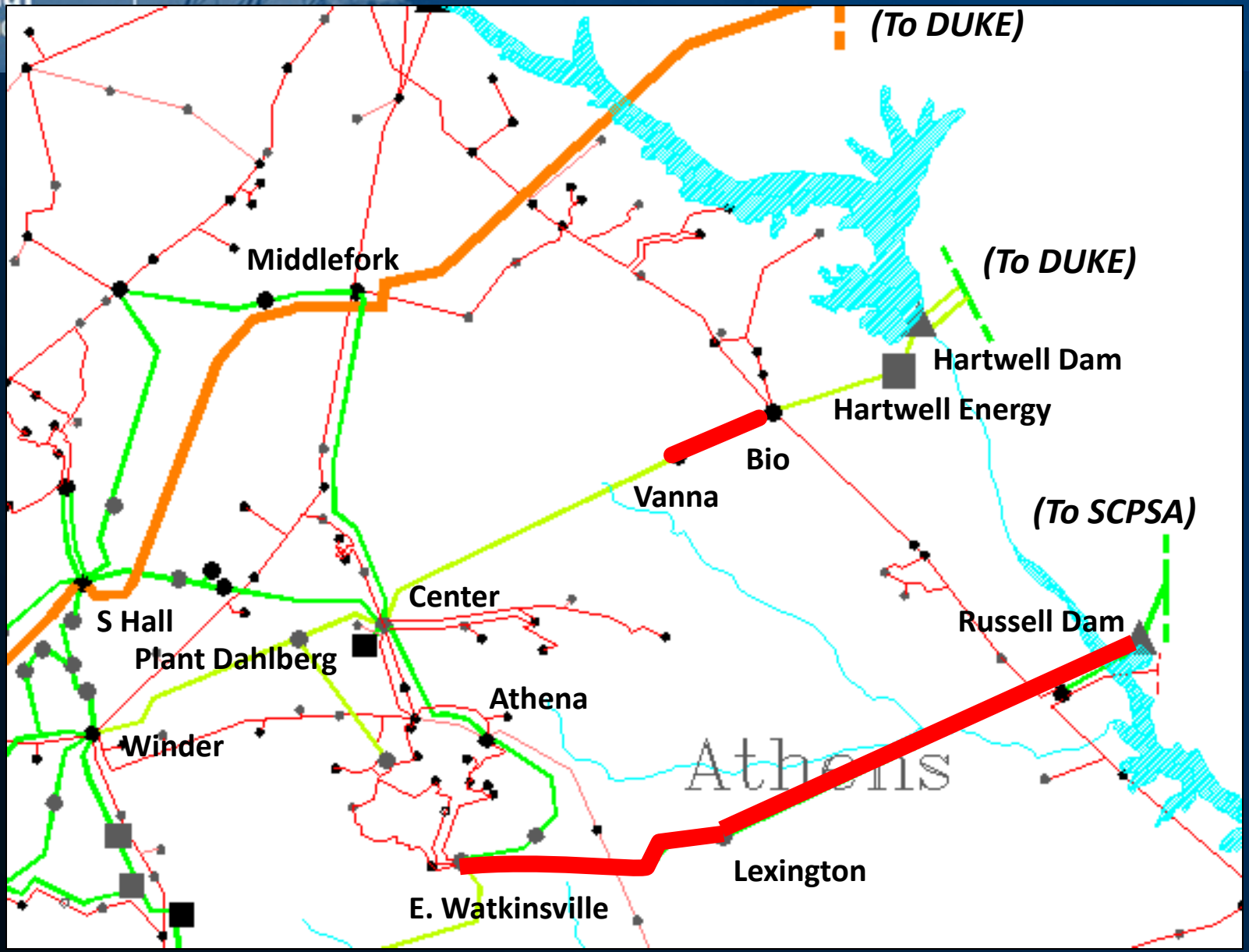
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Lexington – East Watkinsville 230 kV TL	602	88.4	108.1
Bio – Vanna 230 kV TL	433	91.2	109.4
Russell – Lexington 230 kV TL	596	92.6	112.6

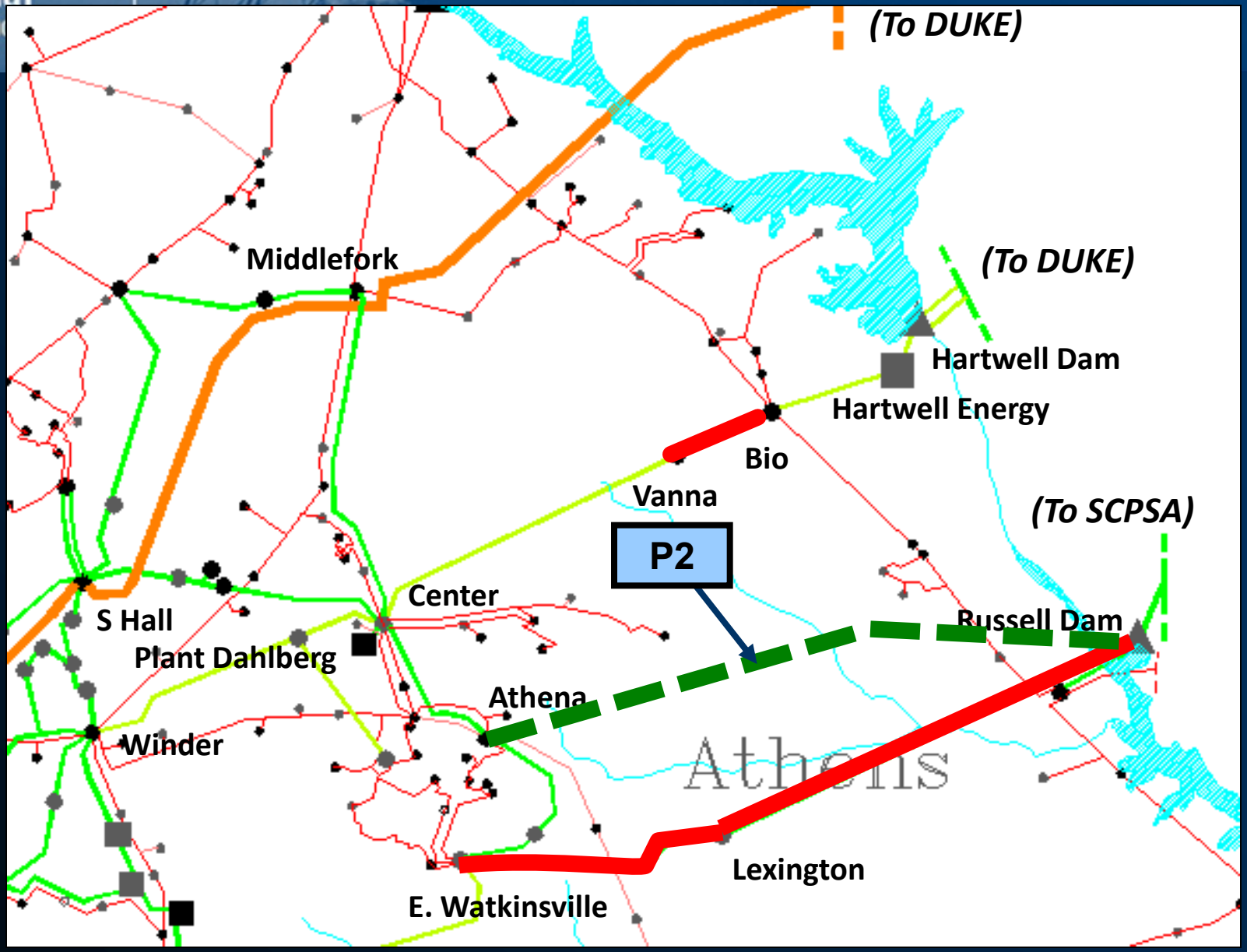
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional TRANSMISSI




(To DUKE)
Middlefork
(To DUKE)
Hartwell Dam
Hartwell Energy
Bio
Vanna
(To SCPSA)
P2
Center
S Hall
Plant Dahlberg
Russell Dam
Athena
Winder
Athens
Lexington
E. Watkinsville

Southeastern Regional TRANSMISSION PLANNING

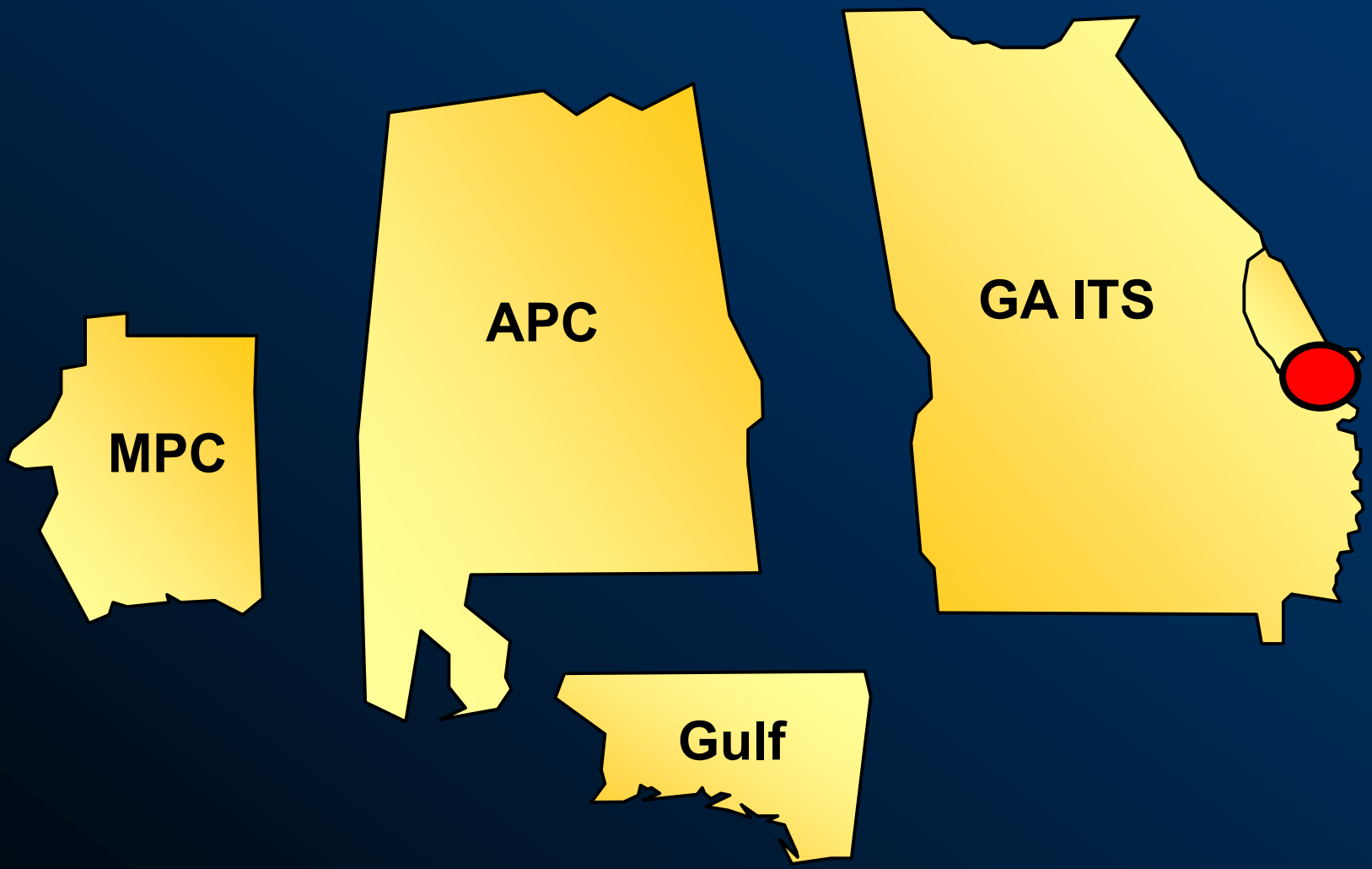
PJM West to SBA 3500 MW

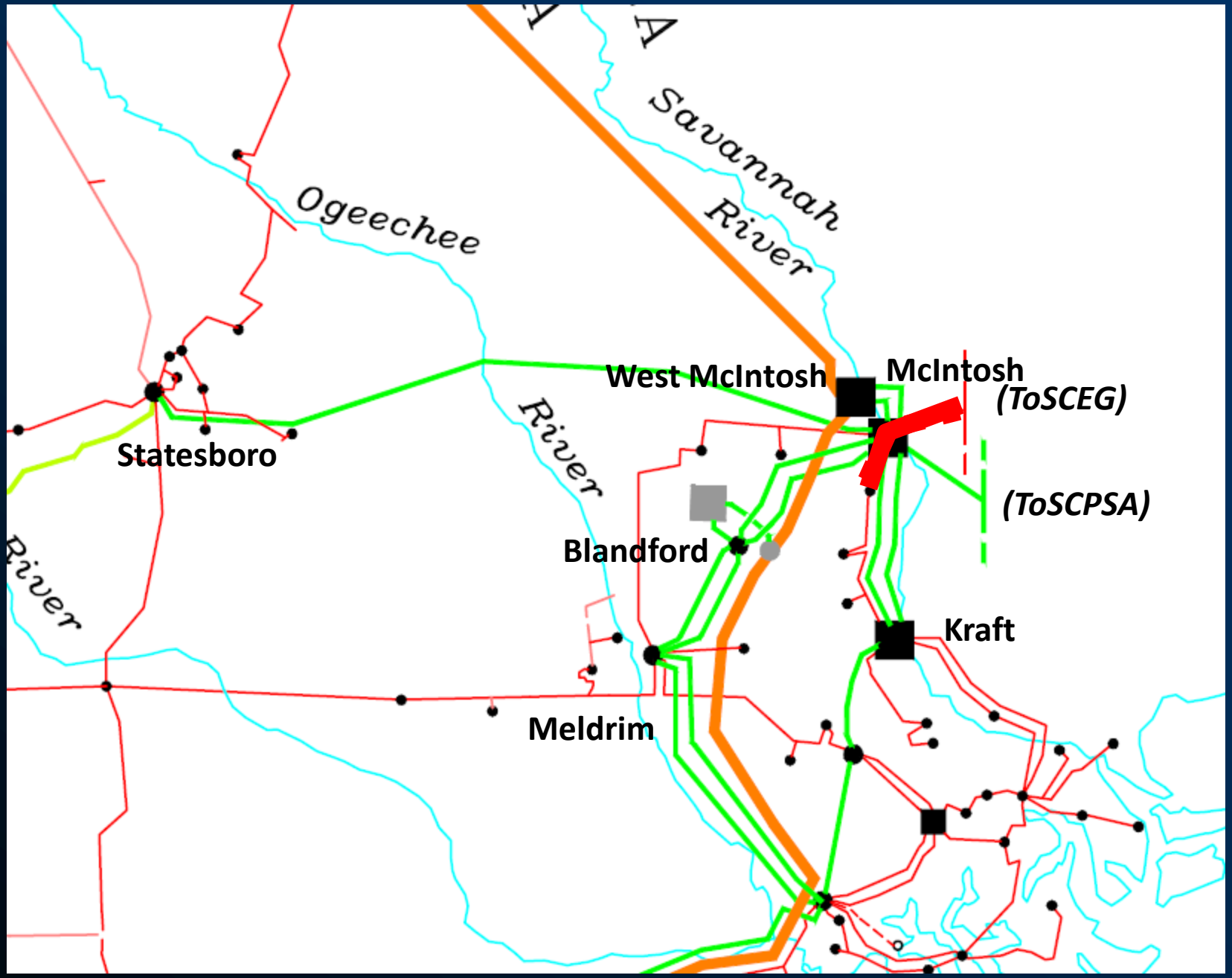
Significant Constraints – PASS 2

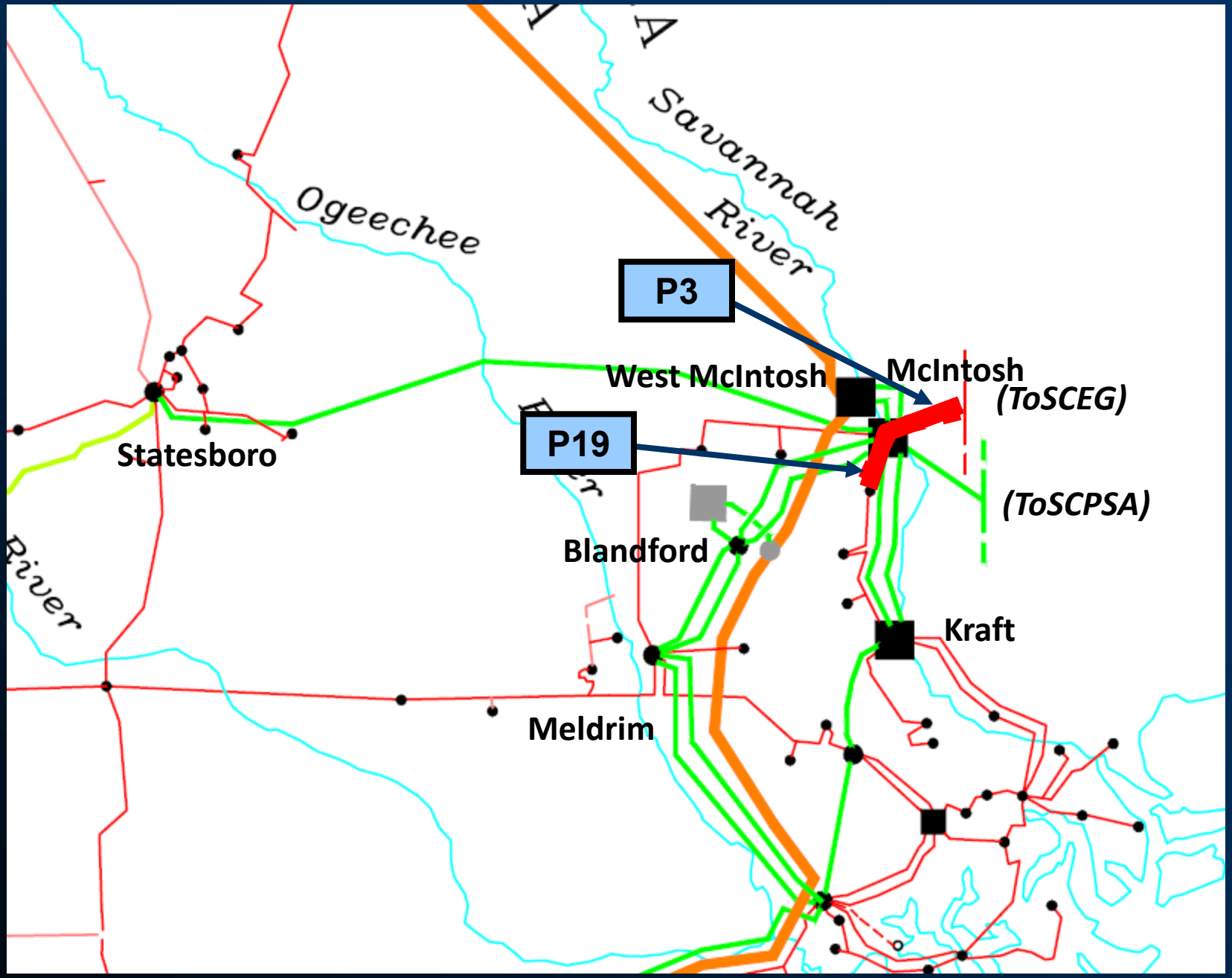
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
McIntosh – Jasper 115 kV TL	254	97.4	128.2
McIntosh – GP Rincon 115 kV TL	181	94.6	101.4

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




Savannah River
Ogeechee River
River
River
Statesboro
West McIntosh
McIntosh
(ToSCEG)
(ToSCPSA)
Blandford
Kraft
Meldrim


Savannah River
Ogeechee
P3
West McIntosh
McIntosh
(ToSCEG)
P19
Statesboro
(ToSCPSA)
Blandford
Kraft
Meldrim

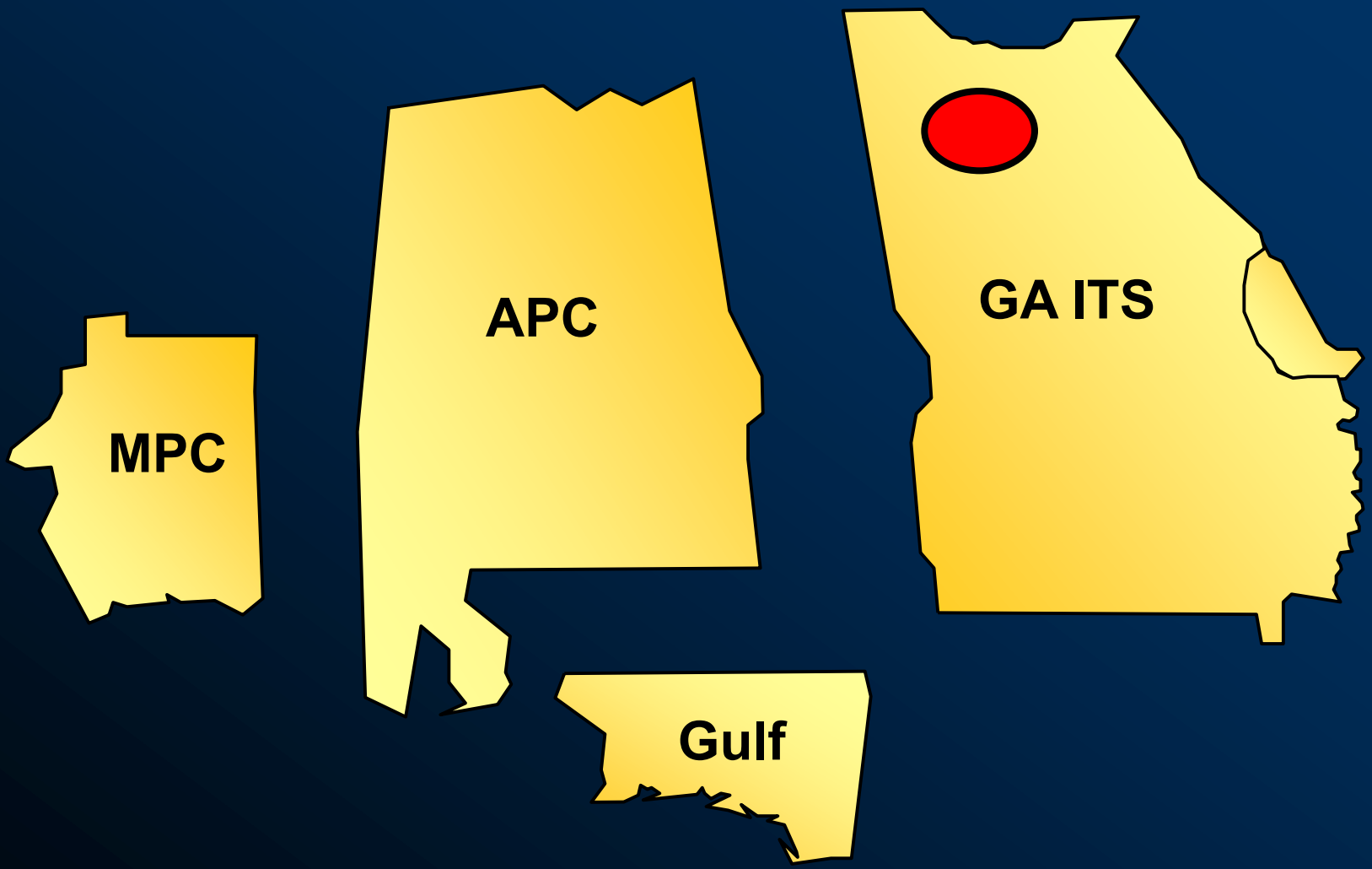
PJM West to SBA
3500 MW

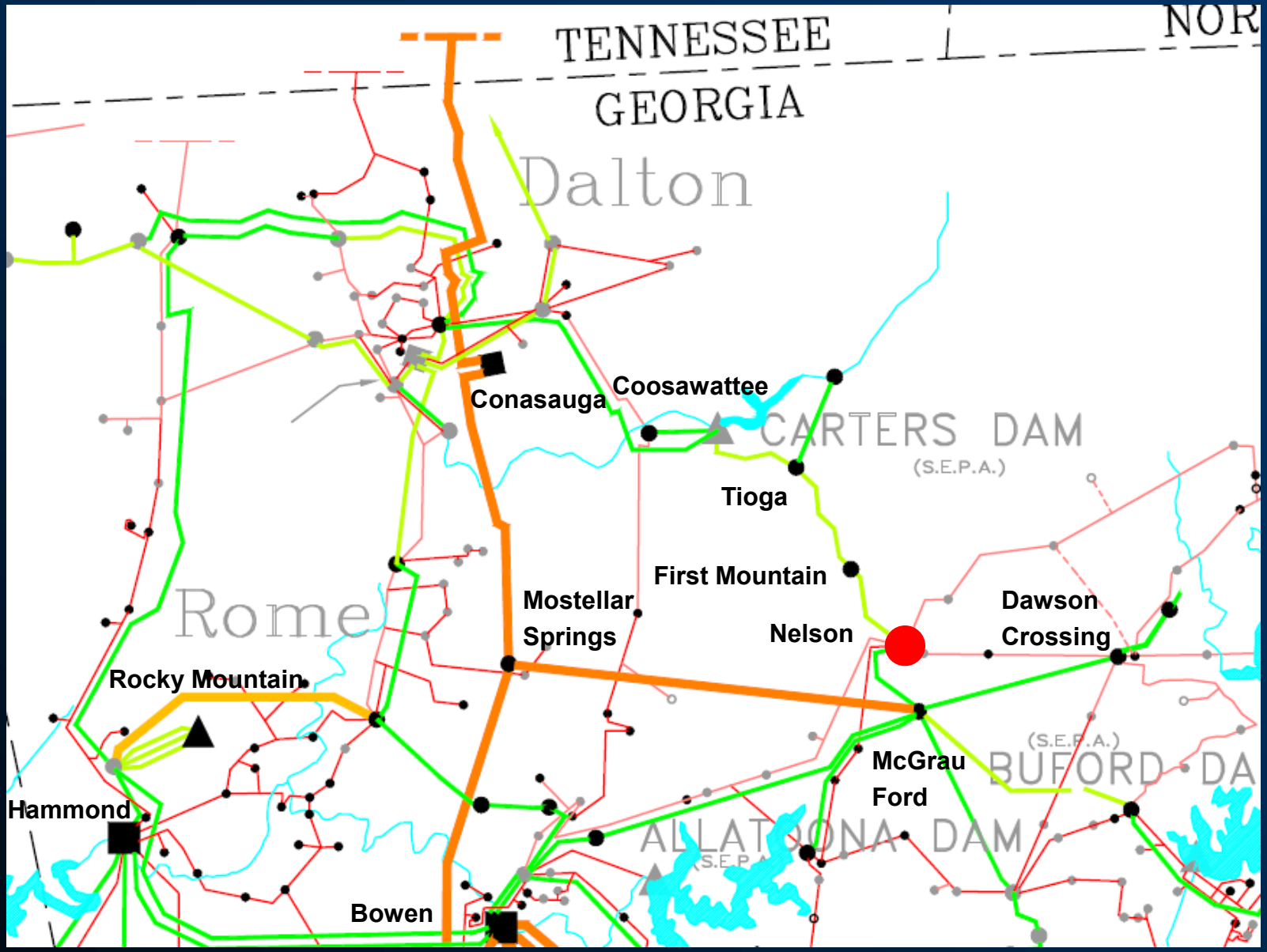
Significant Constraints – PASS 2 (cont.)

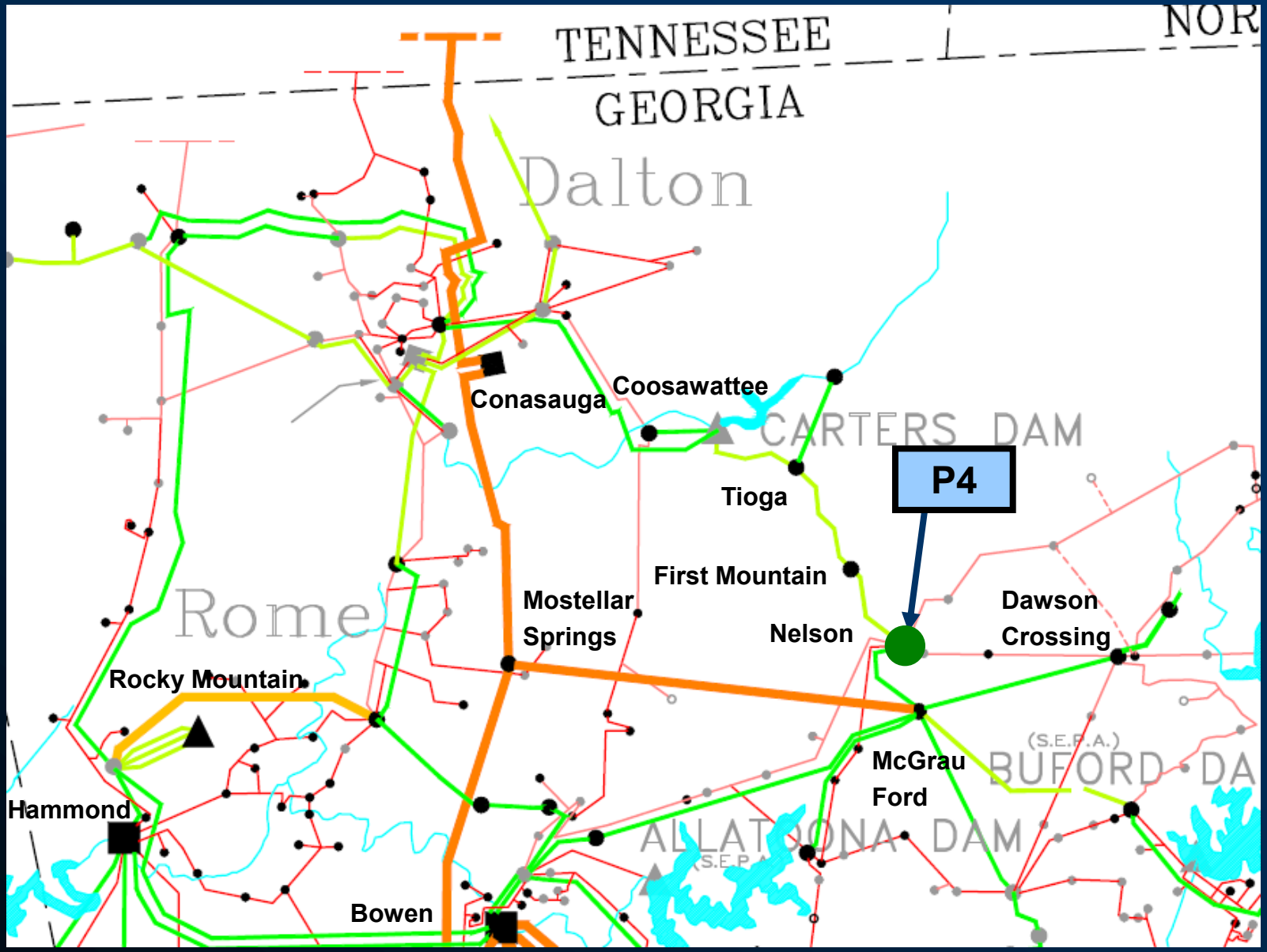
		Thermal Loading (%)	
Limiting Elements	Rating (MVA)	Without Request	With Request
Nelson 230 / 115 kV TL	176	99.5	100.7

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




TENNESSEE
GEORGIA
Dalton
Conasauga
Coosawattee
CARTERS DAM
(S.E.P.A.)
Tioga
First Mountain
Rome
Mostellar
Springs
Nelson
Dawson
Crossing
Rocky Mountain
McGrau
Ford
(S.E.P.A.)
Hammond
Bowen


TENNESSEE
GEORGIA
Dalton
Conasauga
Coosawattee
CARTERS DAM
P4
Tioga
First Mountain
Mostellar
Springs
Nelson
Dawson
Crossing
Rome
Rocky Mountain
McGrau
Ford
(S.E.P.A.)
BUFORD DA
Hammond
ALLATOONA DAM
Bowen

Southeastern Regional TRANSMISSION PLANNING

PJM West to SBA 3500 MW

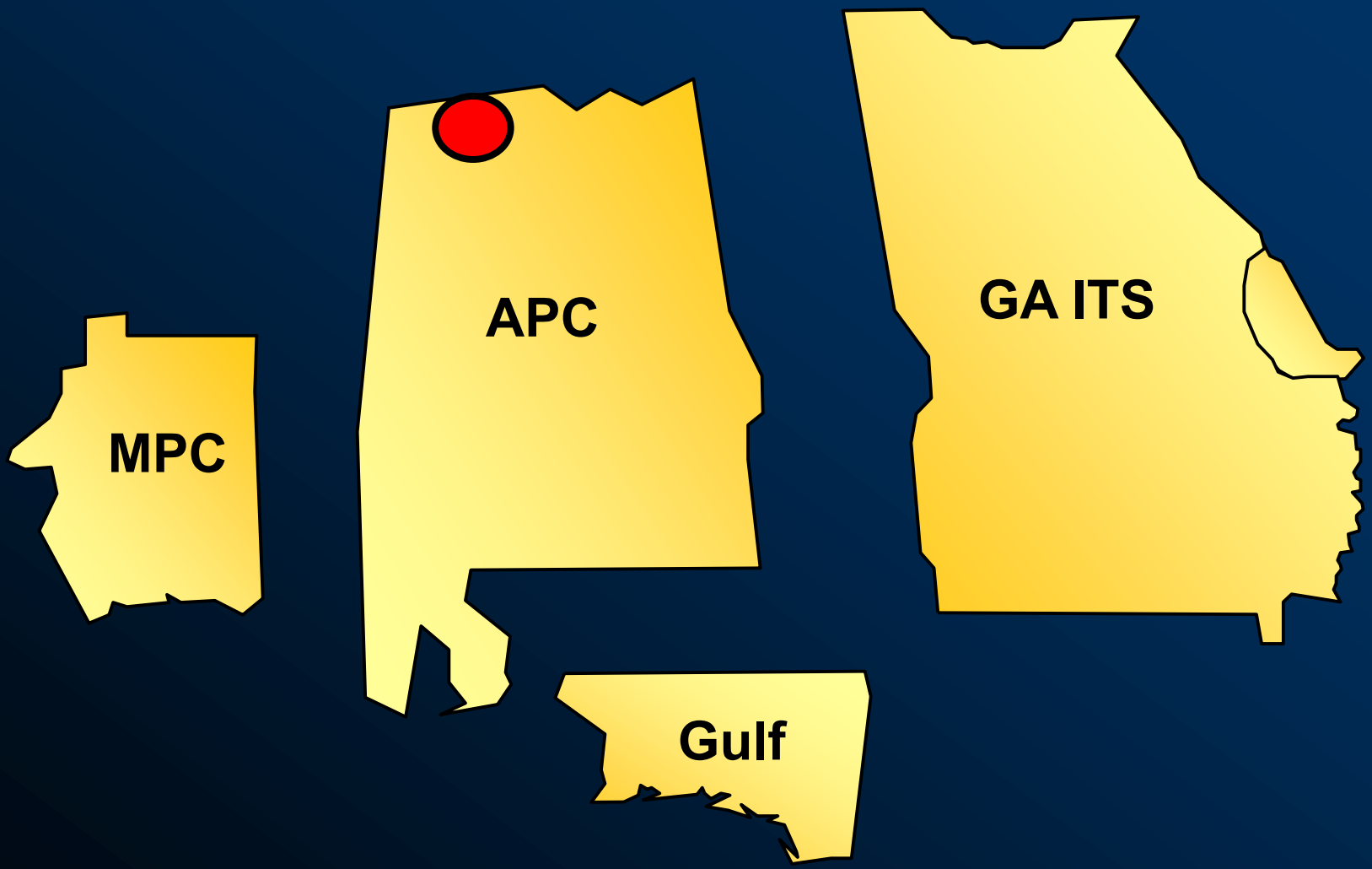
Significant Constraints – PASS 2 (cont.)

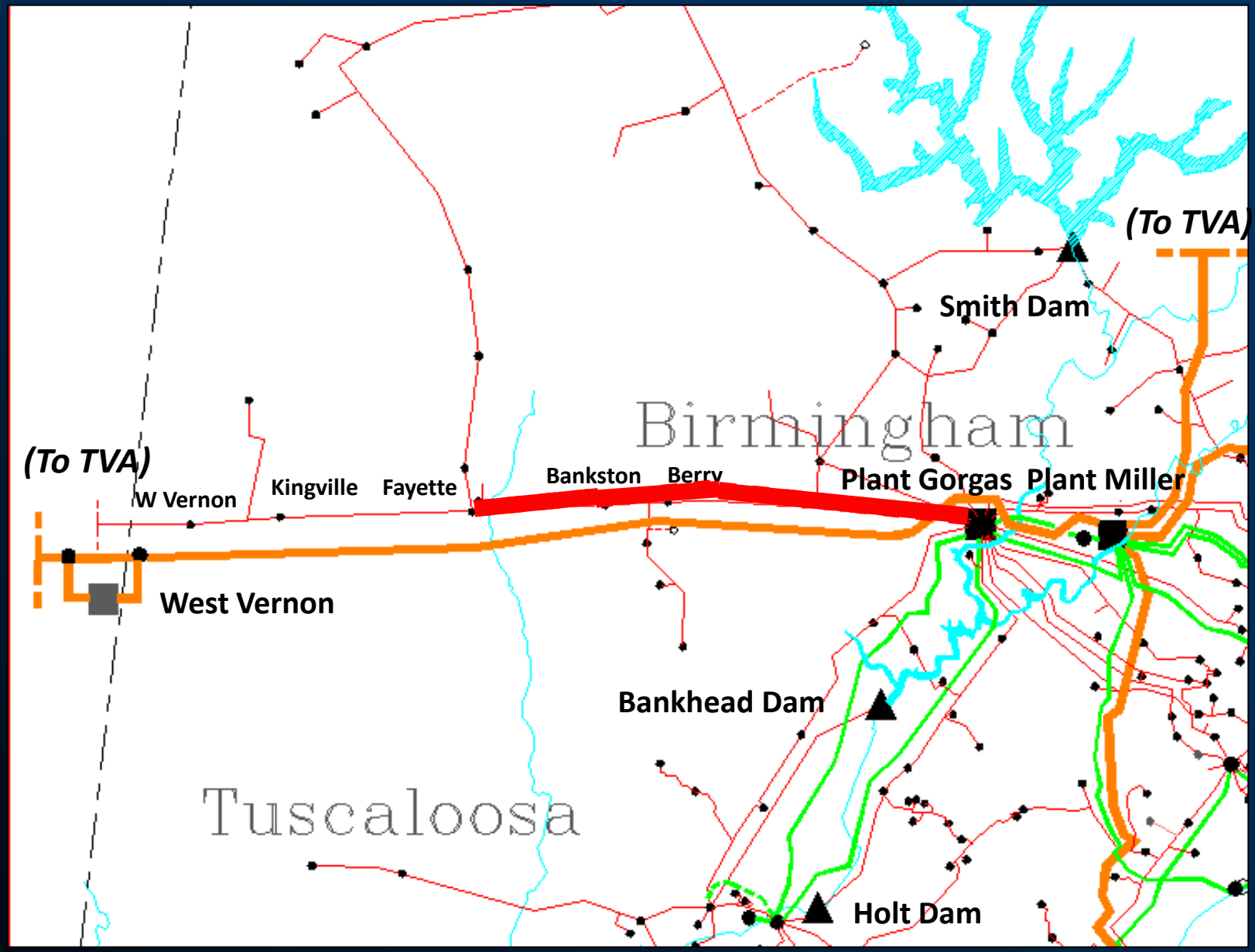
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Oakman Tap – Gorgas 161 kV TL	193	89.5	115.0
Oakman Tap – Berry 161 kV TL	193	89.9	115.5
Pitts & Midway Tap – Berry 161 kV TL	193	92.0	117.6
Pitts & Midway Tap – Bankston 161 kV TL	193	100.1(1)	125.8
Fayette CS – Bankston 161 kV TL	193	101.9(1)	127.6
Fayette TS – Fayette CS 161 kV TL	193	101.9(1)	127.6

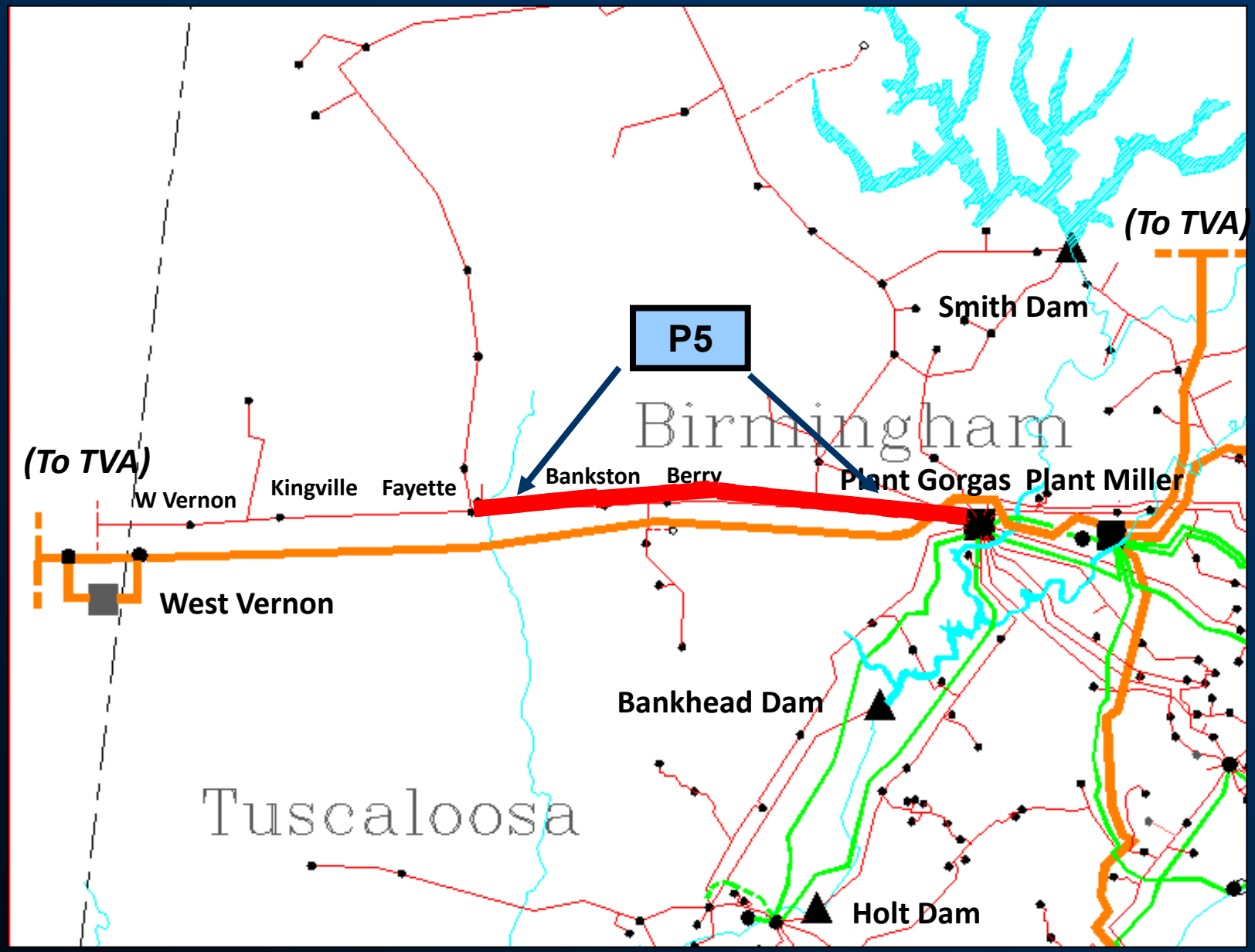
(1) A current operating procedure is sufficient to alleviate this constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this facility such that the operating procedure becomes insufficient.

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




(To TVA)
Smith Dam
Birmingham
(To TVA)
W Vernon
Kingville
Fayette
Bankston
Berry
Plant Gorgas
Plant Miller
West Vernon
Bankhead Dam
Tuscaloosa
Holt Dam


(To TVA)
W Vernon
Kingville
Fayette
Bankston
Berry
Plant Gorgas
Plant Miller
(To TVA)
Smith Dam
P5
Birmingham
West Vernon
Bankhead Dam
Tuscaloosa
Holt Dam

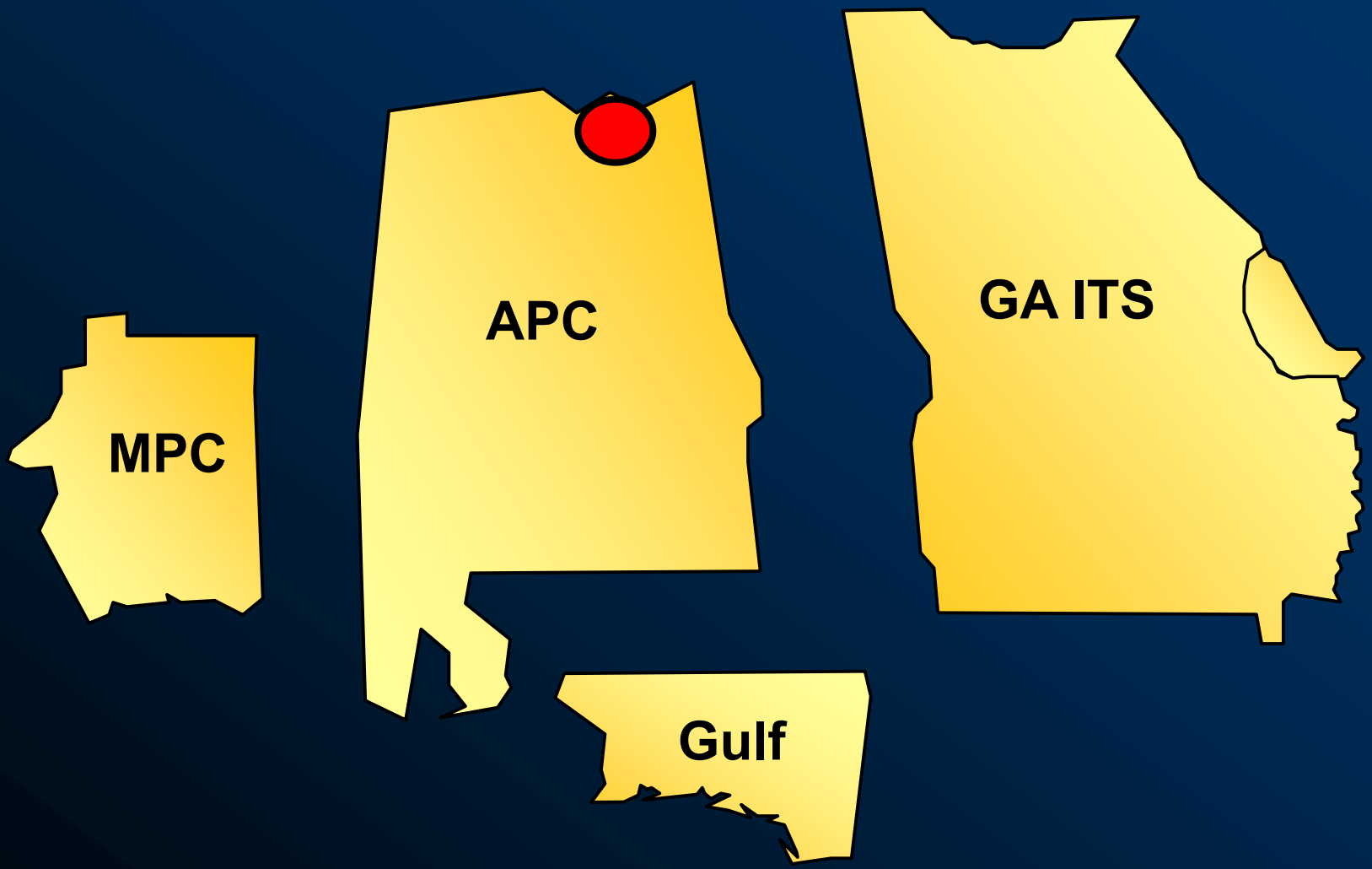
PJM West to SBA
3500 MW

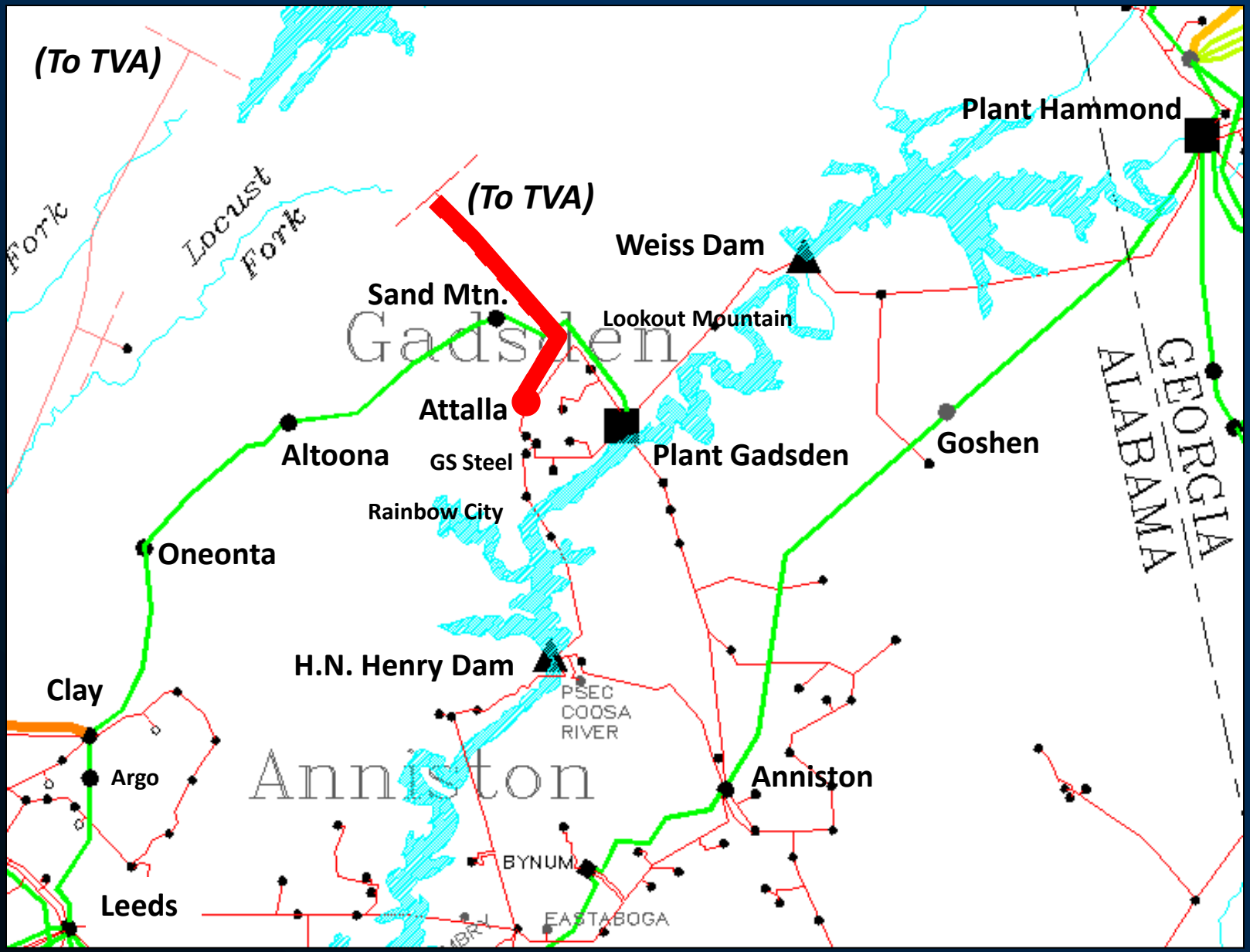
Significant Constraints – PASS 2 (Cont.)

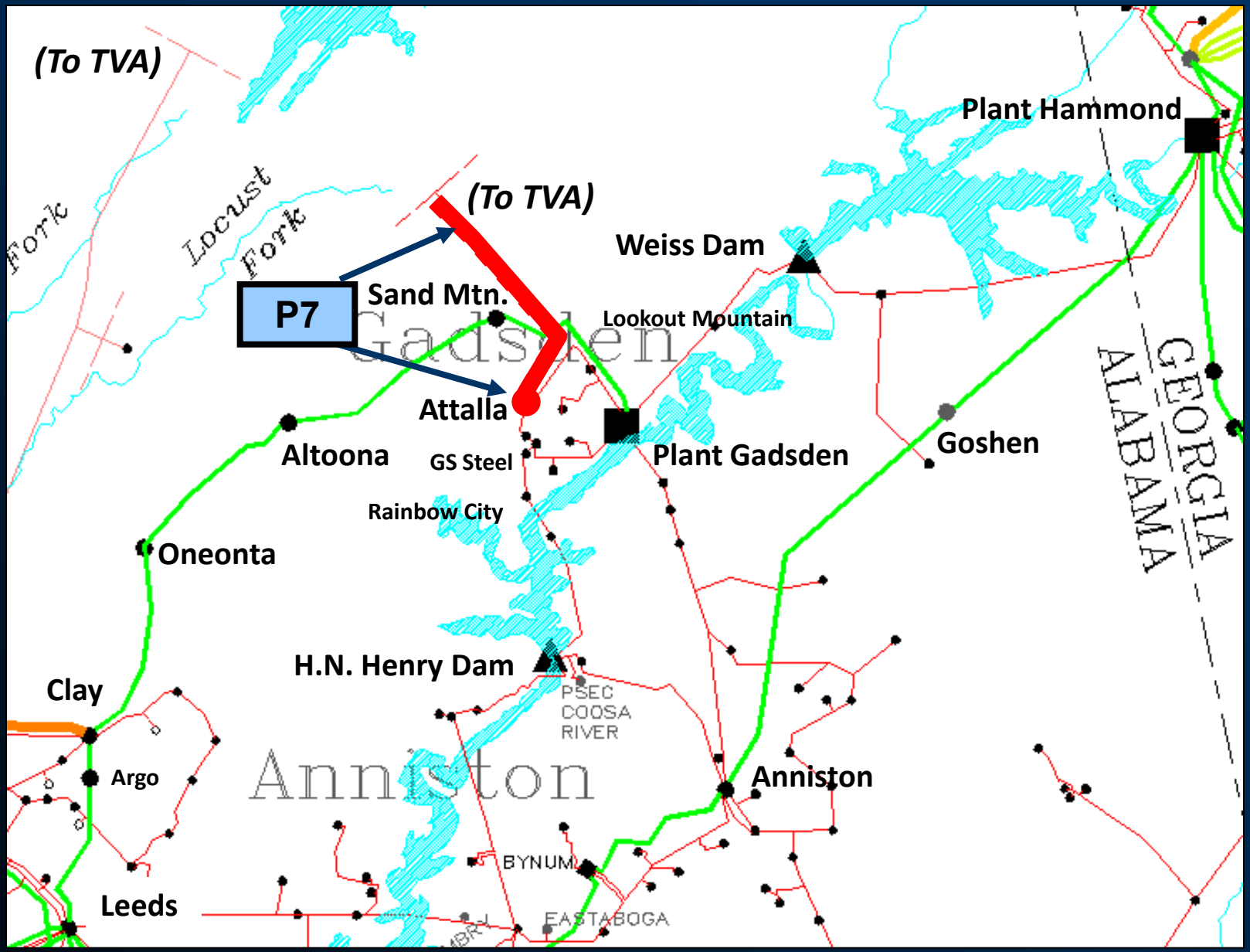
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Attalla 161 / 115 kV Transformer 1	99	83.4	106.0
Attalla 161 / 115 kV Transformer 2	111	75.7	103.4
Attalla – Albertville 161 kV TL	193	95.0	113.2

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




(To TVA)
Plant Hammond
(To TVA)
Weiss Dam
Sand Mtn.
Lookout Mountain
Gadsden
Attalla
Altoona
GS Steel
Plant Gadsden
Goshen
Rainbow City
Oneonta
H.N. Henry Dam
Clay
PSEC
COOSA
RIVER
Argo
Anniston
Anniston
BYNUM
Leeds
EASTABOGA
GEORGIA
ALABAMA


(To TVA)
Plant Hammond
(To TVA)
Weiss Dam
P7
Sand Mtn.
Lookout Mountain
Gadsden
Attalla
Altoona
GS Steel
Plant Gadsden
Goshen
Rainbow City
Oneonta
H.N. Henry Dam
PSEC
COOSA
RIVER
Clay
Argo
Anniston
Anniston
BYNUM
Leeds
EASTABOGA
GEORGIA
ALABAMA

Southeastern Regional
TRANSMISSION PLANNING

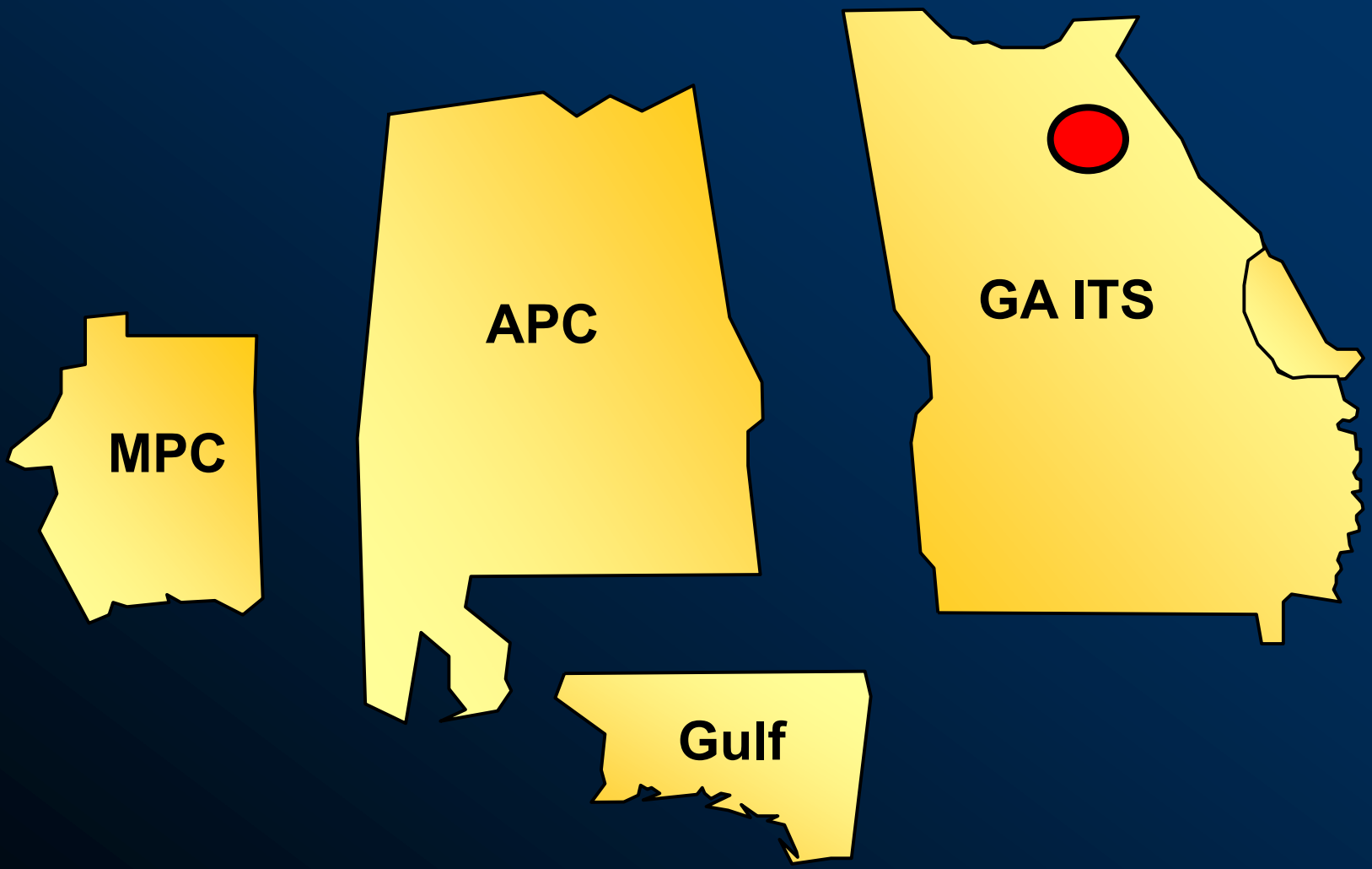
PJM West to SBA
3500 MW

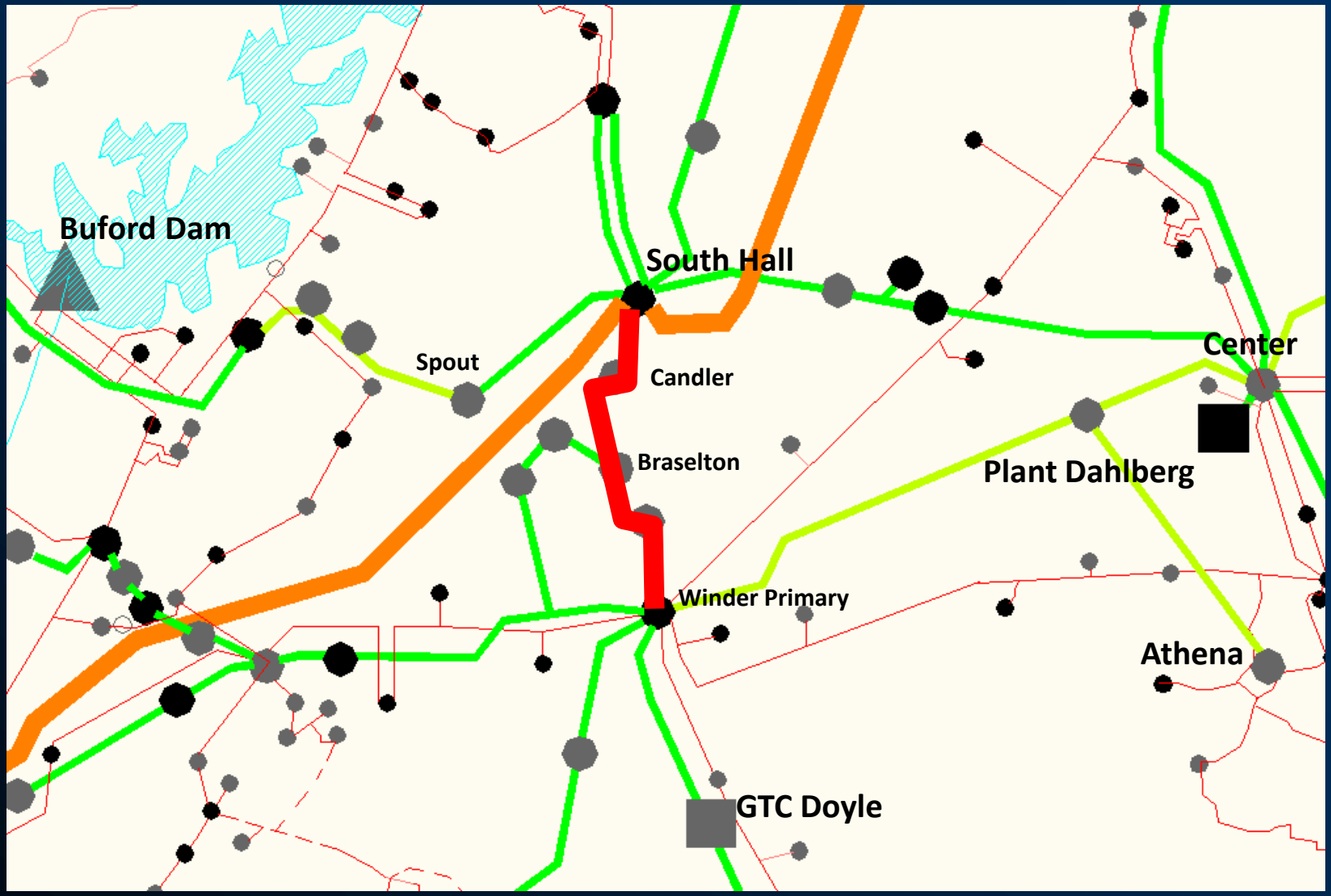
Significant Constraints – PASS 2 (cont.)

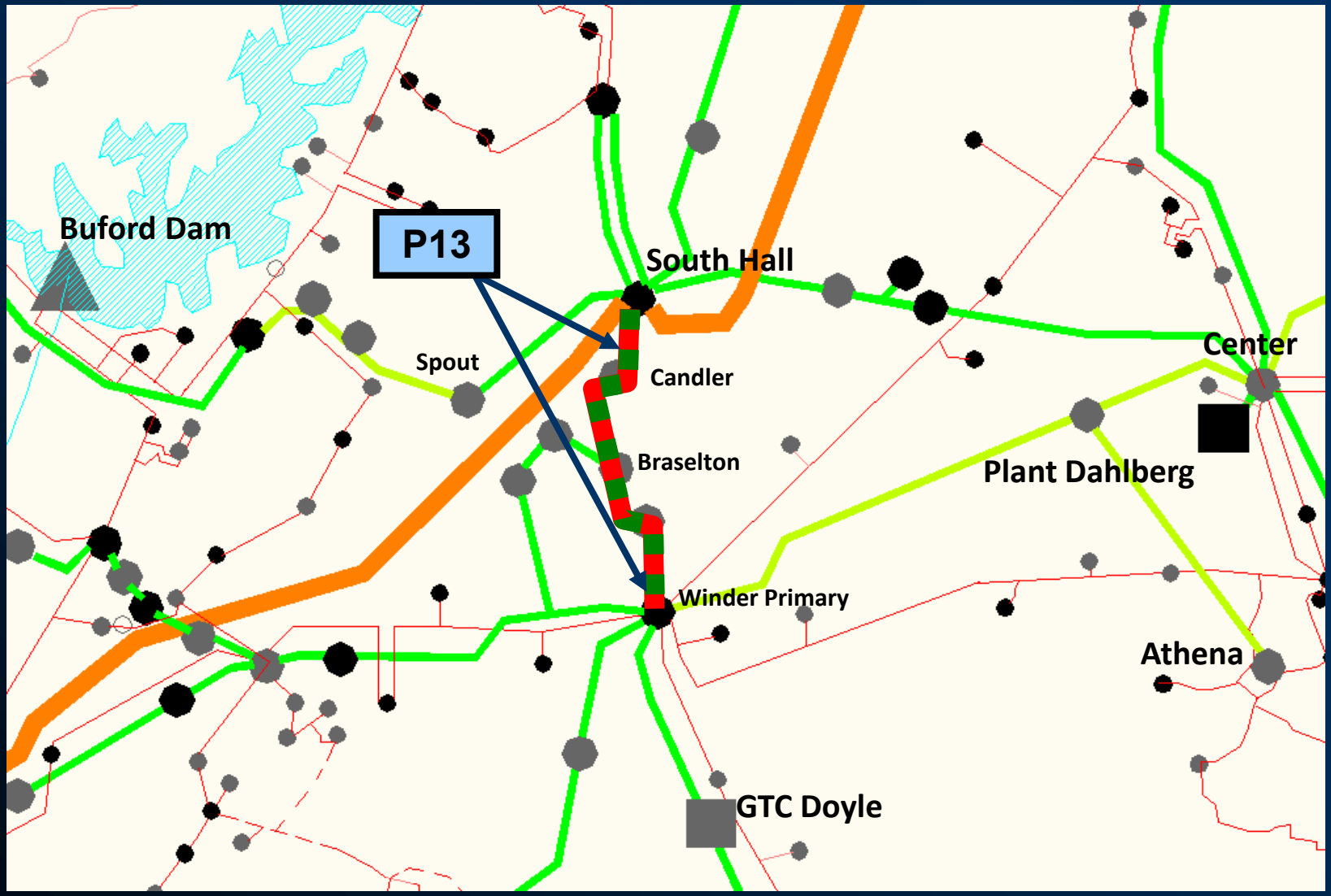
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
South Hall – Candler 230 kV TL	509	92.3	124.2
Candler – Braselton 230 kV TL	509	86.2	118.0
Braselton – Winder 230 kV TL	497	75.1	107.0

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




Buford Dam
South Hall
Spout
Candler
Braselton
Center
Plant Dahlberg
Winder Primary
Athena
GTC Doyle


Buford Dam
P13
South Hall
Spout
Candler
Braselton
Center
Plant Dahlberg
Winder Primary
Athena
GTC Doyle

Southeastern Regional TRANSMISSION PLANNING

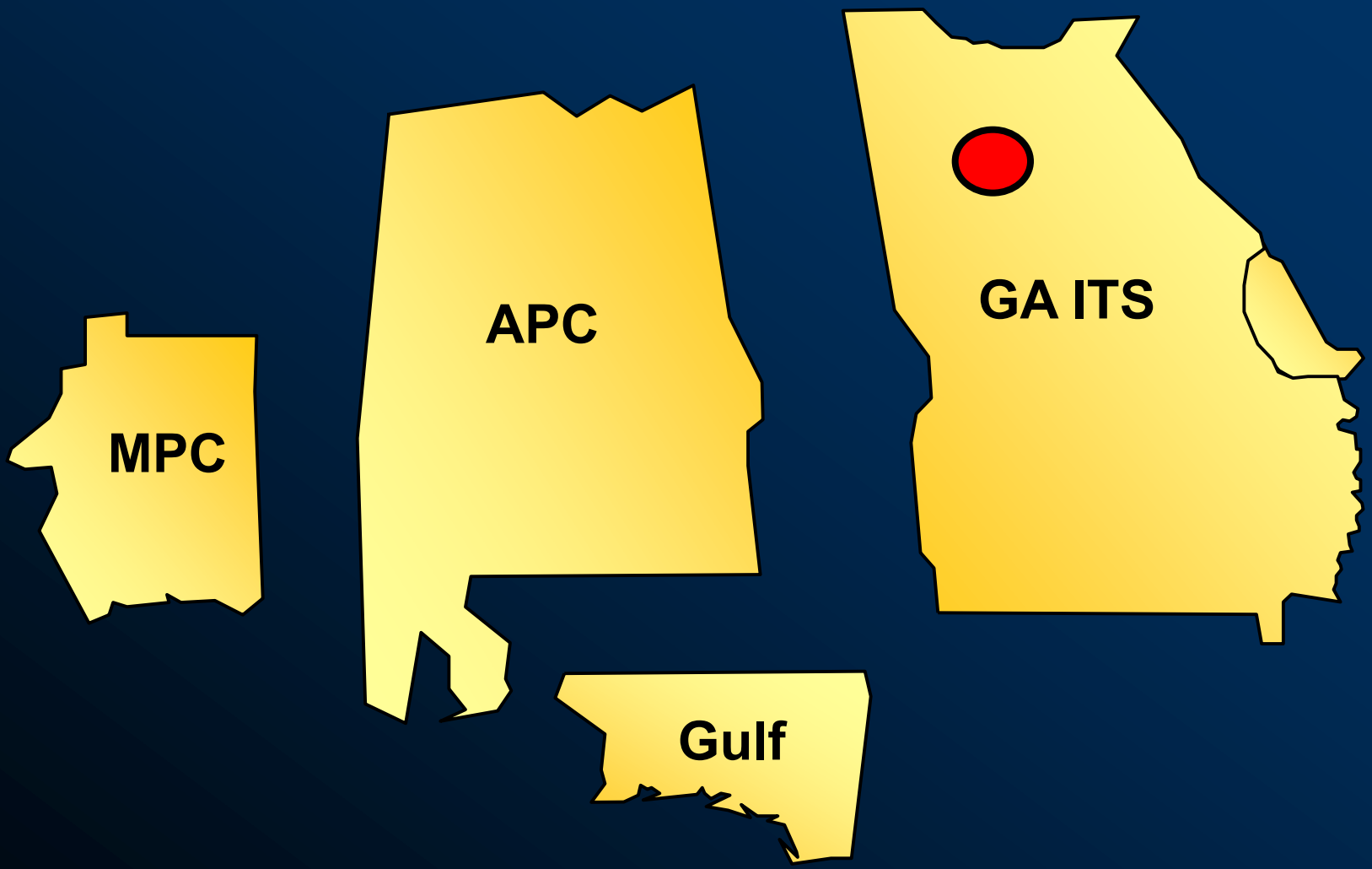
PJM West to SBA 3500 MW

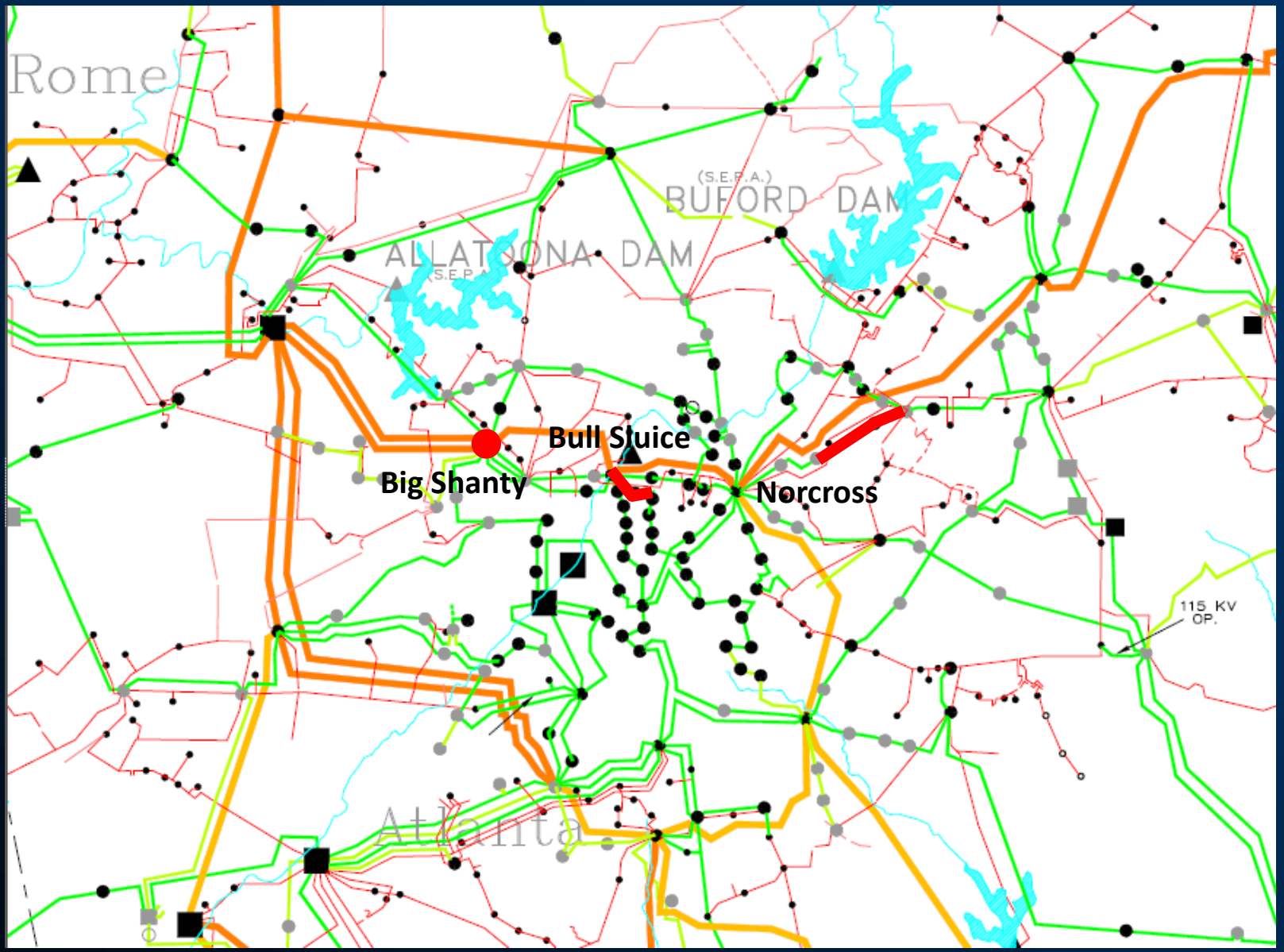
Significant Constraints – PASS 2 (cont.)

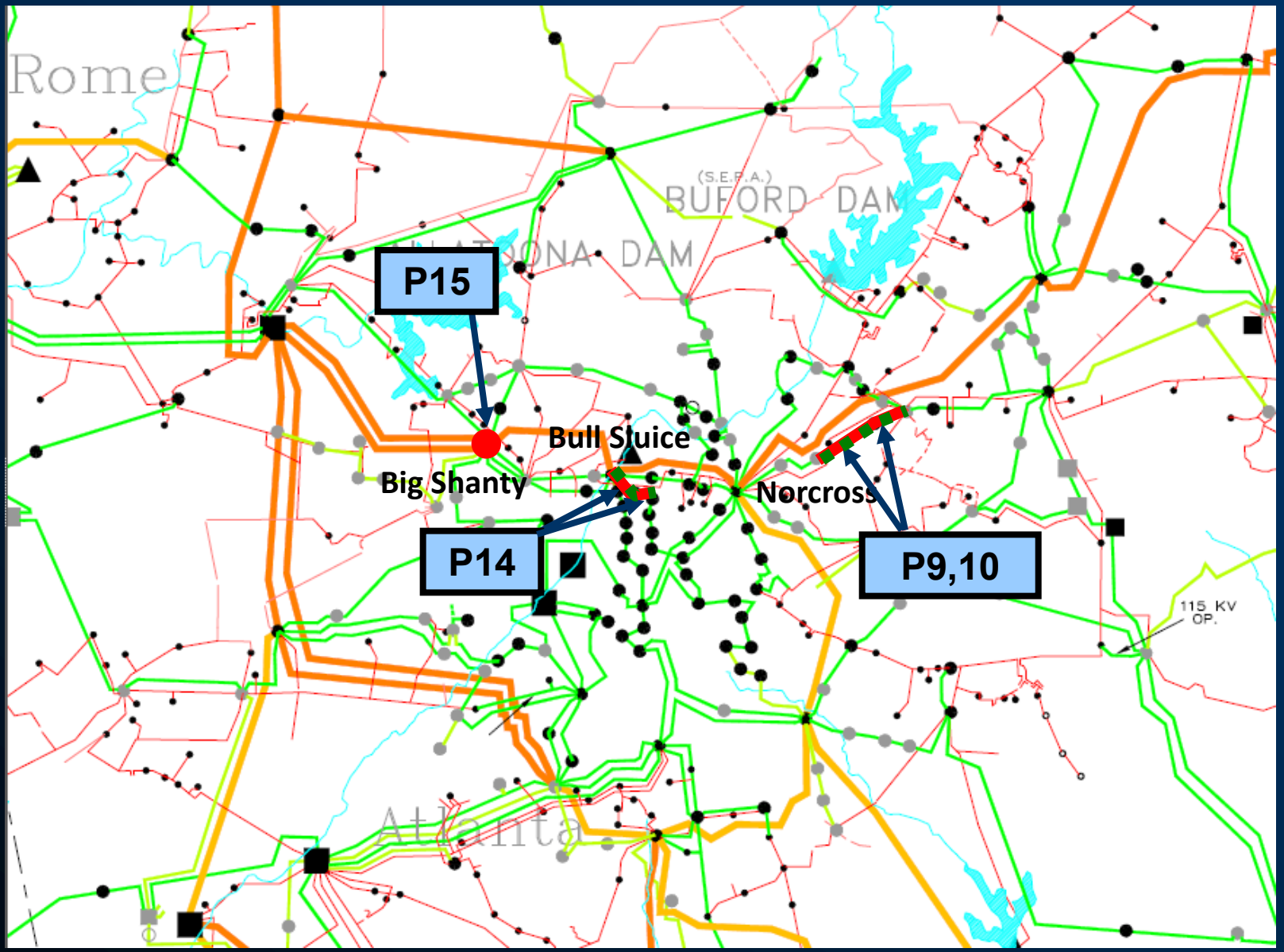
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Big Shanty 500 / 230 kV TL	1344	81.8	101.2
Bull Sluice – N Springs 230 kV TL	539	95.8	111.0
N Springs – North Park 230 kV TL	539	92.5	107.6
Lawrenceville – Purcell Rd 230 kV TL	509	90.7	102.4
Purcell Rd – Boggs Rd 230 kV	509	98.0	109.8

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




Rome
(S.E.P.A.)
BUFORD DAM
ALLATOONA DAM
(S.E.P.A.)
Bull Sluice
Big Shanty
Norcross
115 KV
OP.
Atlanta


Rome
(S.E.P.A.)
BUFORD DAM
P15
Bull Sluice
Big Shanty
Norcross
P14
P9,10
115 KV
OP.
Atlanta

Southeastern Regional TRANSMISSION PLANNING

PJM West to SBA 3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	Widows Creek – Bowen 500 kV TL	$141,000,000(1)
P2	Russell Dam – Athena 230 kV TL	$60,000,000
P3	McIntosh – Yemassee 115 kV TL	$2,100,000(1)
P4	Nelson Substation	$6,200,000
P5	Fayette – Gorgas 161 kV TL	$21,300,000
P6	Adamsville – Jack McDonough 230 kV TL	$1,500,000
P7	Attalla 161 / 115 kV Transformers Attalla – Albertville 161 kV TL	$19,800,000(1)
P8	Morton – Forest Industrial 115 kV TL	$1,500,000(1)
P9	Lawrenceville – Norcross 230 kV TL	$2,400,000
-	- Continued -	-

(1) Cost provided is for the portion of the solution located within the participating Transmission Owners' territory

Southeastern Regional
TRANSMISSION PLANNING

PJM West to SBA
3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
-	- Continued -	-
P10	Lawrenceville – Norcross 230 kV TL	$3,000,000
P11	Possum Branch – Yates 115 kV TL	$600,000
P12	South Coweta – Yates 115 kV TL	$2,800,000
P13	South Hall – Winder 230 kV TL	$17,400,000
P14	Bull Sluice – North Park 230 kV TL	$3,200,000
P15	Big Shanty Substation	$34,000,000
P16	Lawrenceville – Moon Road 115 kV TL	$1,700,000
P17	Bessemer Substation	$6,200,000
-	- Continued -	-

Southeastern Regional TRANSMISSION PLANNING

PJM West to SBA 3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
-	- Continued -	-
P18	Lloyd Shoals – Porterdale 115 kV TL	$2,000,000
P19	Goshen – McIntosh 115 kV TL	$700,000
P20	Porterdale Substation	$250,000

SBA Total Cost (2012$) = $327,650,000

Questions on the PJM West to SBA Transfer?

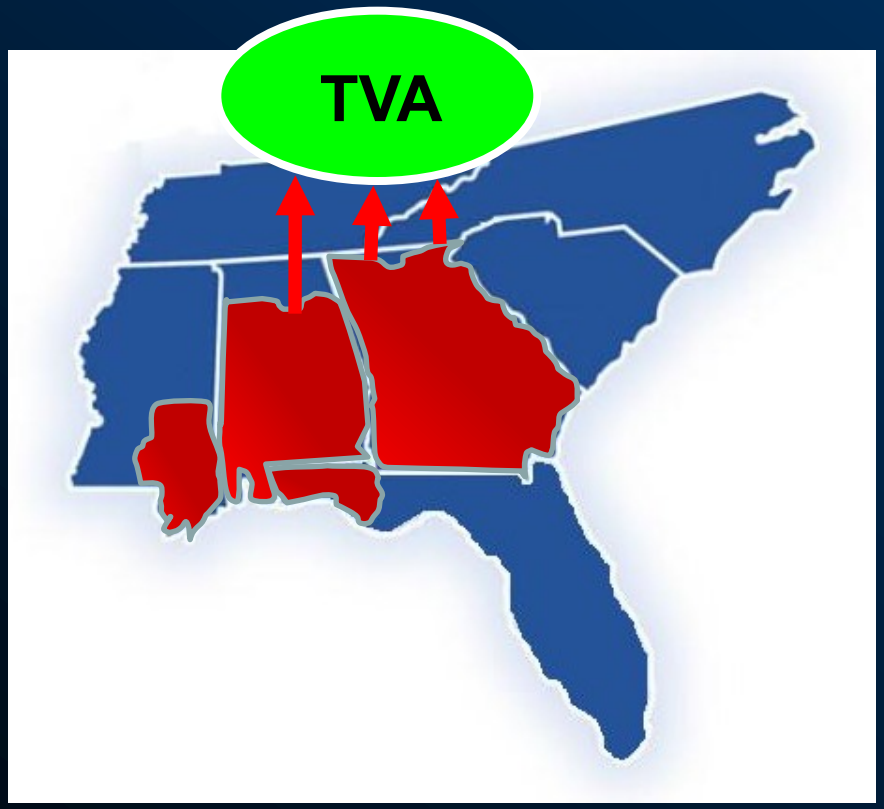
SBA
to
TVA Border

1000 MW

Southeastern Regional TRANSMISSION PLANNING

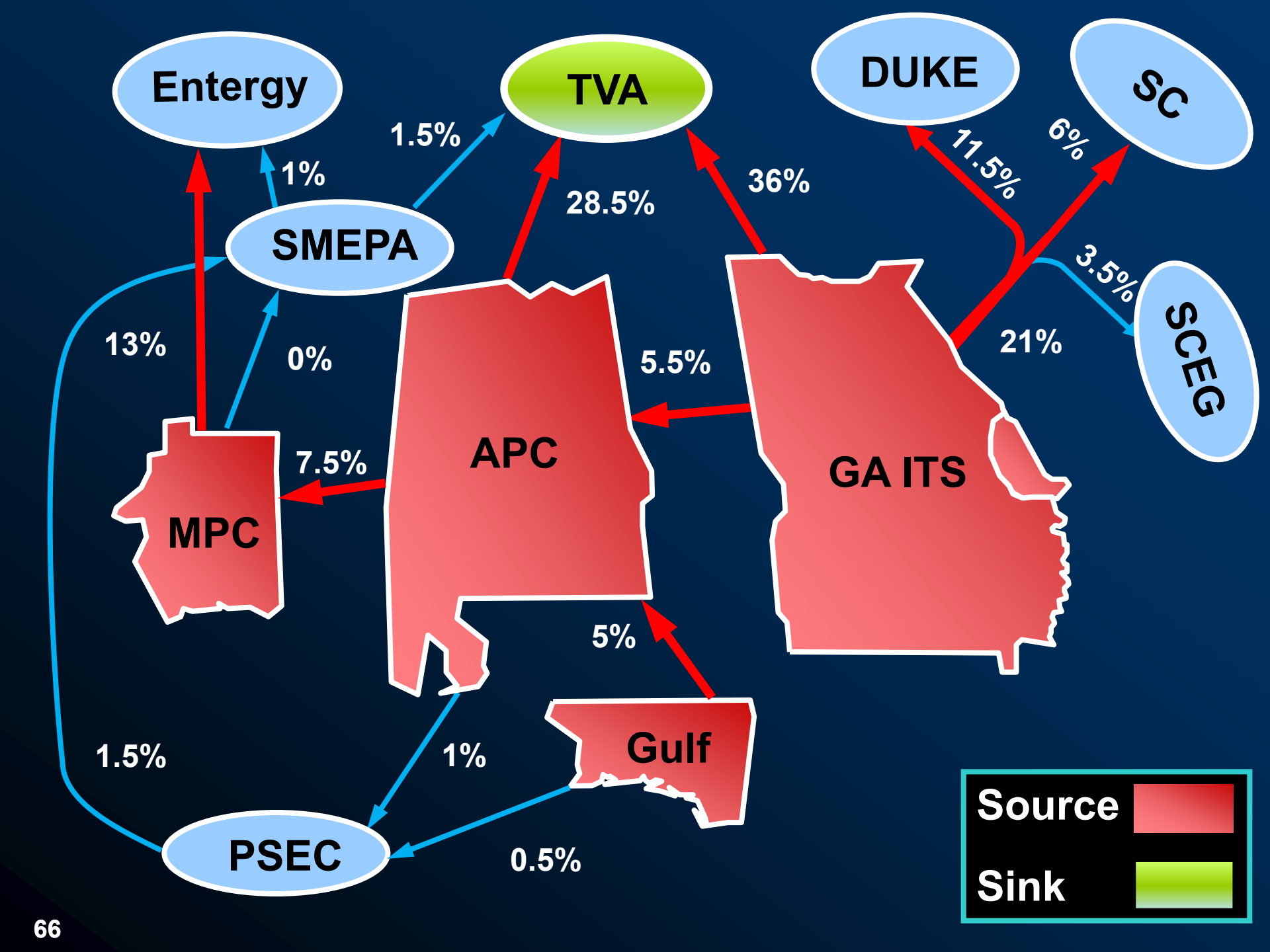
SBA to TVA Border 1000 MW

- Transfer Type: Generation to Load (2013)
- Source: Generation within the SBA
- Sink: Uniform load increase in TVA



Source

Sink


Entergy
TVA
DUKE
SC
SMEPA
SCEG
APC
GA ITS
MPC
Gulf
PSEC
1.5%
1%
28.5%
36%
11.5%
6%
3.5%
13%
0%
5.5%
21%
7.5%
5%
1.5%
1%
0.5%
Source
Sink

SBA to TVA Border
1000 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - None

Total Cost (2012$) = $0

Questions on the SBA to TVA Border transfer?

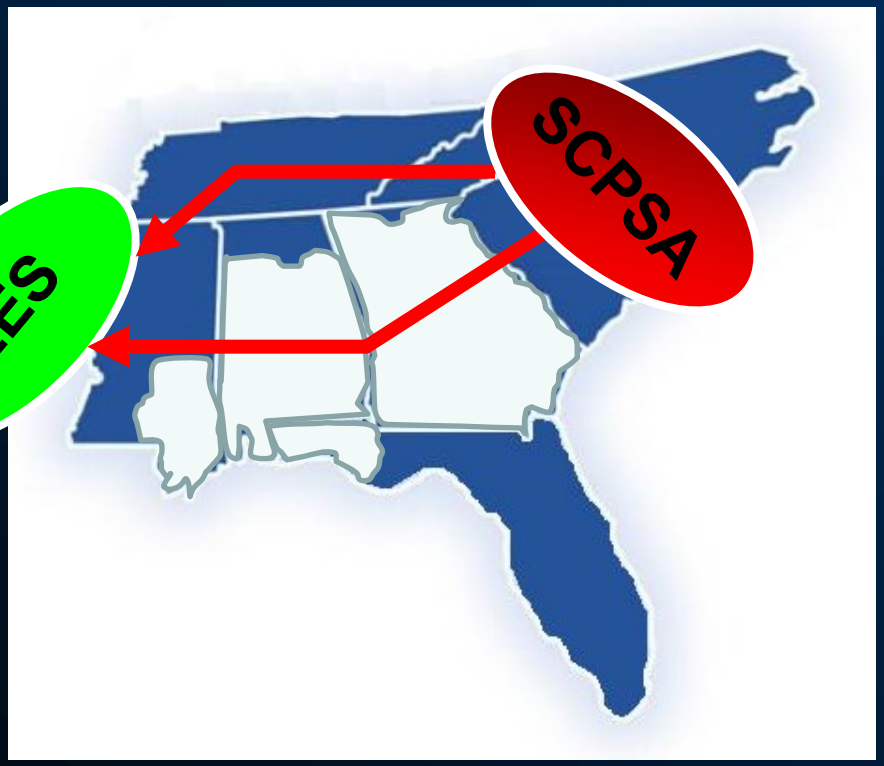
SCPSA Border
to
EES Border

500 MW

Southeastern Regional TRANSMISSION PLANNING

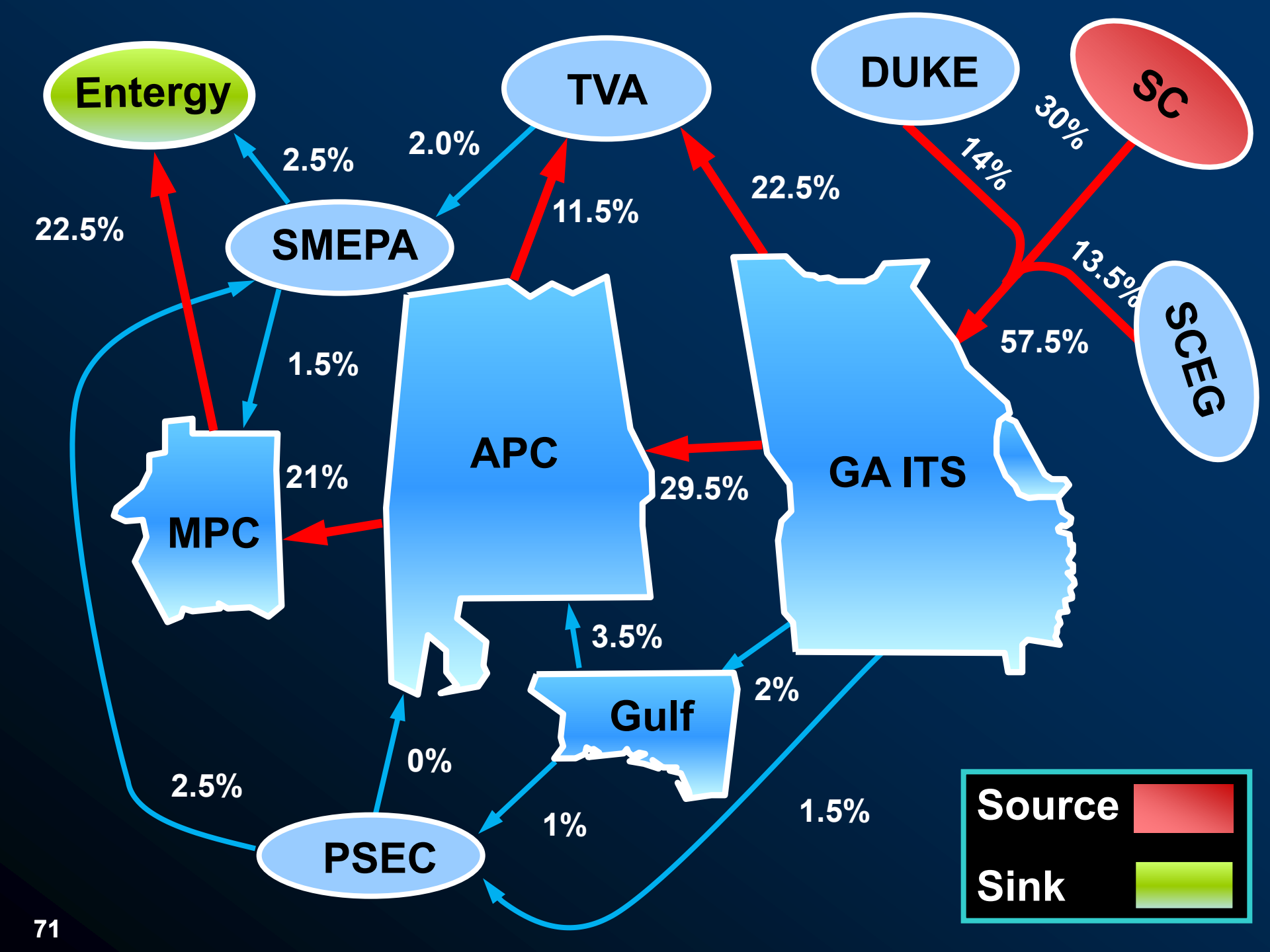
SCPSA Border to EES Border 500 MW

- Transfer Type: Load to Load (2013)
- Source: Uniform load reduction in SCPSA
- Sink: Uniform load increase in EES



Source

Sink


Entergy
TVA
DUKE
SC
2.5%
2.0%
30%
14%
22.5%
22.5%
11.5%
SMEPA
13.5%
SCEG
57.5%
1.5%
APC
GA ITS
MPC
21%
29.5%
3.5%
Gulf
2%
0%
2.5%
1%
1.5%
PSEC
Source
Sink

Southeastern Regional TRANSMISSION PLANNING

SCPSA Border to EES Border 500 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - None

Total Cost (2012$) = $0

2012 SERTP

Questions on the SCPSA Border to EES Border transfer?

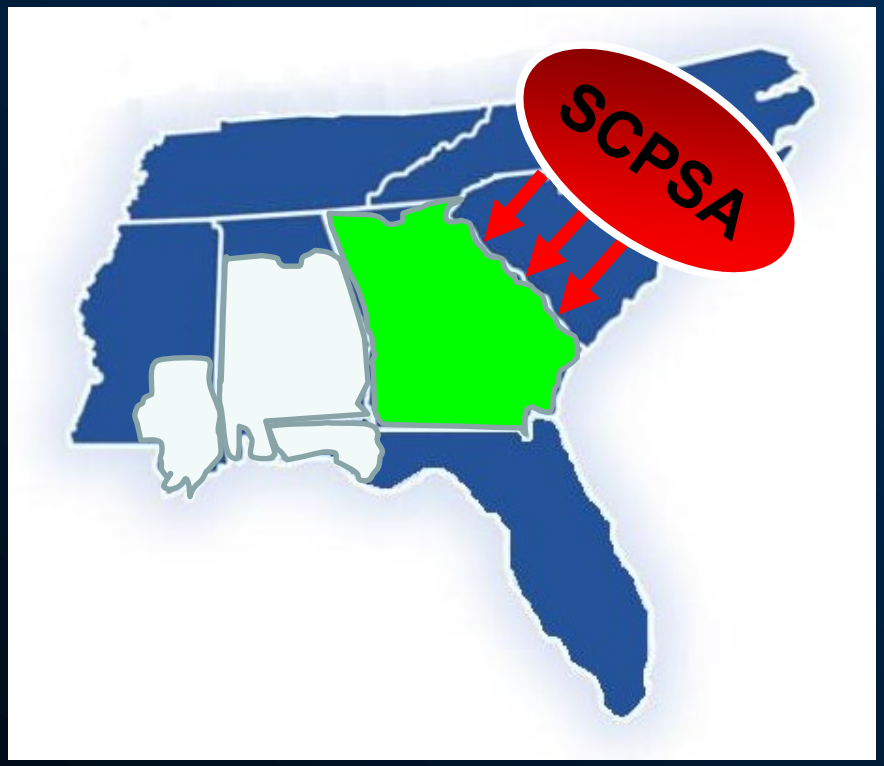
SCPSA Border
to
GTC

200 MW

Southeastern Regional TRANSMISSION PLANNING

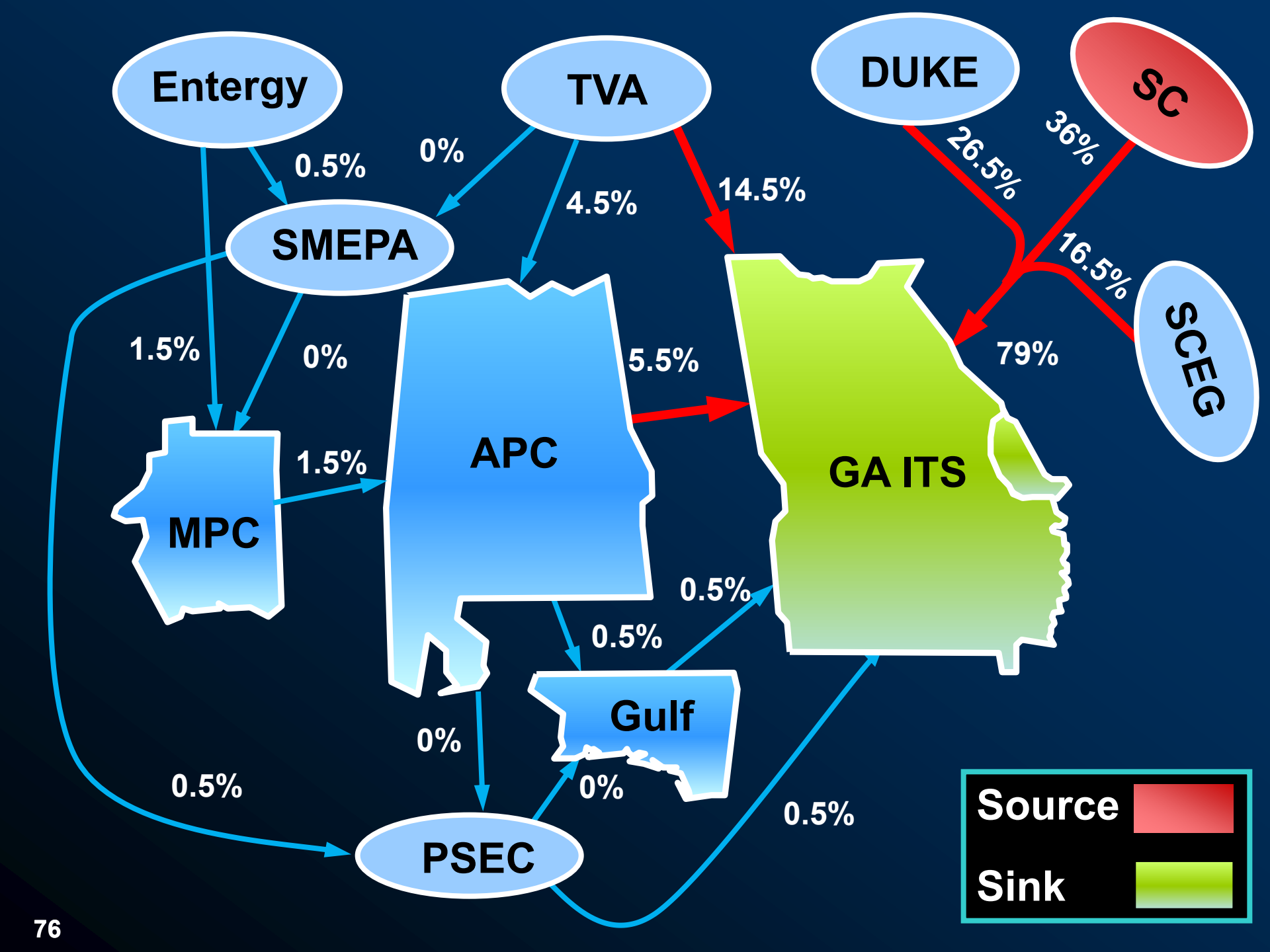
SCPSA Border to GTC 200 MW

- Transfer Type: Load to Generation (2013)
- Source: Uniform load reduction in SCPSA
- Sink: GTC Generation



Source

Sink


Entergy
TVA
DUKE
SC
SMEPA
SCEG
APC
GA ITS
MPC
Gulf
PSEC
0.5%
0%
4.5%
14.5%
26.5%
36%
16.5%
1.5%
0%
5.5%
79%
1.5%
0.5%
0.5%
0%
0.5%
0%
0.5%
Source
Sink

SPCSA Border to GTC 200 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - None

Total Cost (2012$) = $0

Questions on the SCPSA Border to GTC Transfer?

2012 SERTP

Economic Planning Studies

- Next Steps
  - Complete any additional assessments (i.e. stability impacts)
  - Evaluate stakeholder-proposed alternatives to identified enhancements
  - Develop final study results and discuss at SERTP Summit

FRCC Coordination Update

Southeastern Regional
TRANSMISSION PLANNING

2012 SERTP

- FRCC Coordination Update
  - Exchanged the latest transmission models for the ten year planning horizon
  - Models will be incorporated into subsequent base cases

SERC Regional Model Development Update

Southeastern Regional
TRANSMISSION PLANNING

2012 SERTP

- SERC Regional Model Development & Reliability Assessment
  - Data Bank Update ("DBU")
    - May 24th – May 26th
    - SERC Models Completed
  - Linear Transfers and AC verification performed
  - Currently compiling the results into the SERC LTSG report

SIRPP Update

2011 – 2012 SIRPP Update

The Five Economic Planning Studies

- SCE&G to Progress Energy Carolinas (200 MW)
  - Study Year: 2017
- Southern to Duke Energy Carolinas (50 MW)
  - Study Year: 2017
- SCRTP to FRCC (200 MW)
  - Study Year: 2017
- LG&E/KU to Southern (200 MW)
  - Study Year: 2017
- Southern to LG&E/KU (200 MW)
  - Study Year: 2013

2011 – 2012 SIRPP Update

SCE&G to PEC

Transmission System Impacts for the SIRPP

- Three (3) 230 kV TLs
- One (1) 230 / 115 kV Transformer
- Five (5) 115 kV TLs

Total Cost: $26,415,000

2011 – 2012 SIRPP Update

Southern to Duke

Transmission System Impacts for the SIRPP

- One (1) 230 / 115 kV Transformer
- Four (4) 115 kV TLs

Total Cost: $17,715,000

2011 – 2012 SIRPP Update

SCRTP to FRCC

Transmission System Impacts for the SIRPP

- One (1) 500 kV Static-Var Compensator
- Two (2) 230 kV TLs
- One (1) 230 / 115 kV Transformer
- Three (3) 115 kV TLs

Total Cost: $122,815,000

2011 – 2012 SIRPP Update

LG&E/KU to Southern

Transmission System Impacts for the SIRPP

- No constraints identified

Total Cost: $0

2011 – 2012 SIRPP Update

Southern to LG&E/KU

Transmission System Impacts for the SIRPP

- No constraints identified

Total Cost: $0

Southeastern Regional
TRANSMISSION PLANNING

2011 – 2012 SIRPP Update

- More detailed information concerning these studies is available on the Southeast Inter-Regional Participation Process website at the following link:
  - http://www.southeastirpp.com/

2012 SERTP

- Next Meeting Activities
  - Annual Transmission Planning Summit
    - Location: TBD
    - Date: December 2012
    - Purpose:
      - Final Economic Planning Results
      - 10 Year Transmission Expansion Plan
      - Assumptions Input Session
  - October 17th Interim Stakeholder Meeting