Southeastern Regional TRANSMISSION PLANNING

2011 SERTP

Welcome

SERTP 2011 – 3rd Quarter Meeting

"2nd RPSG Meeting"

9:00 AM – 3:00 PM

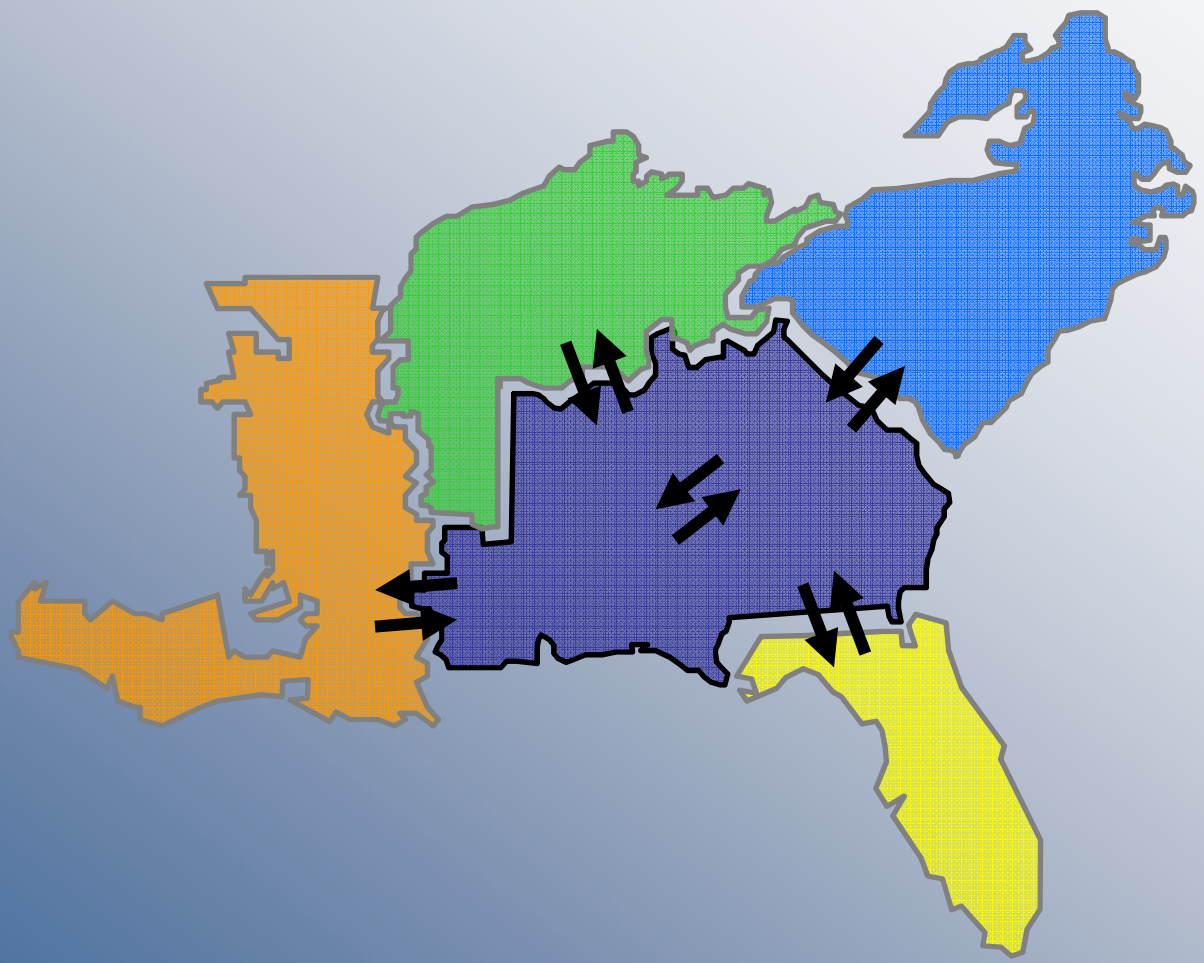
Purposes & Goals of the Meeting

- Preliminary Economic Planning Results
- FRCC Coordination Update
- SERC Regional Model Development Update
- SIRPP Update
- Next Meeting Activities

Southeastern Regional TRANSMISSION PLANNING

2011 SERTP

Economic Planning Studies



PowerSouth Energy Cooperative

Dalton Utilities

GeorgiaTransmission

MEAG POWER

South Mississippi Electric Power Association

Southern Company — Energy to Serve Your World

2011 SERTP

Three Economic Planning Studies

- TVA Border to Southern Balancing Authority
  - 3500 MW
- EES Border to Southern Balancing Authority
  - 1500 MW
- SCPSA Border to Southern Balancing Authority
  - 1000 MW

Power Flow Cases Utilized

- Study year: 2016
- Load Flow Cases:
  - 2011 Series Version 2A
    - Summer Peak
    - Shoulder

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

2011 SERTP

- The following information does not represent a commitment to proceed with the recommended enhancements nor implies that the recommended enhancements could be implemented by the study date of 2016.

- These potential solutions only address constraints identified within the Southern Balancing Area 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

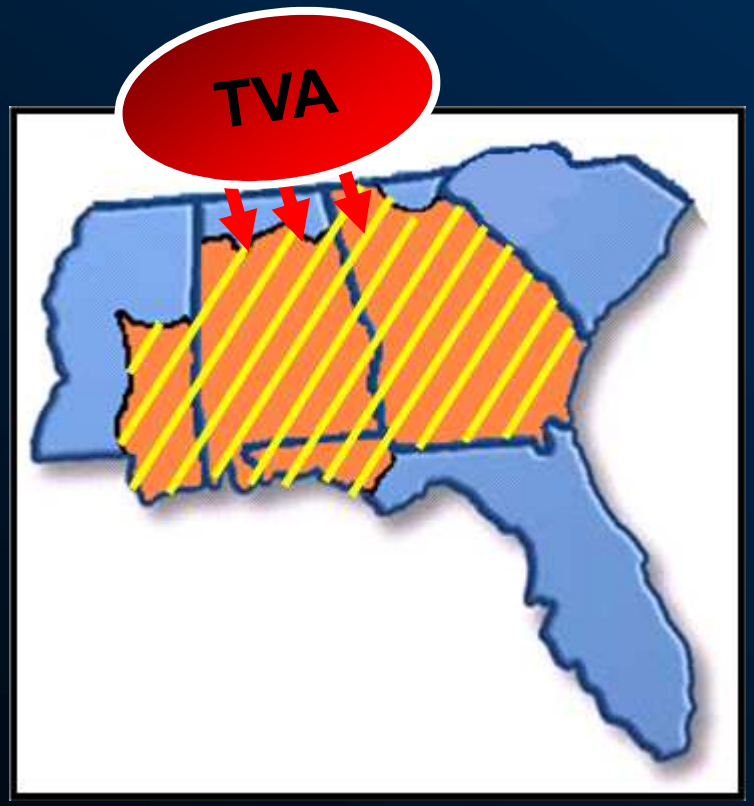
SBA

3500 MW

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

- Transfer Type: Generation to Generation
- Source: New generator interconnecting to the Shelby 500 kV substation (TVA) near Memphis, TN
- Sink: Generation within the SBA

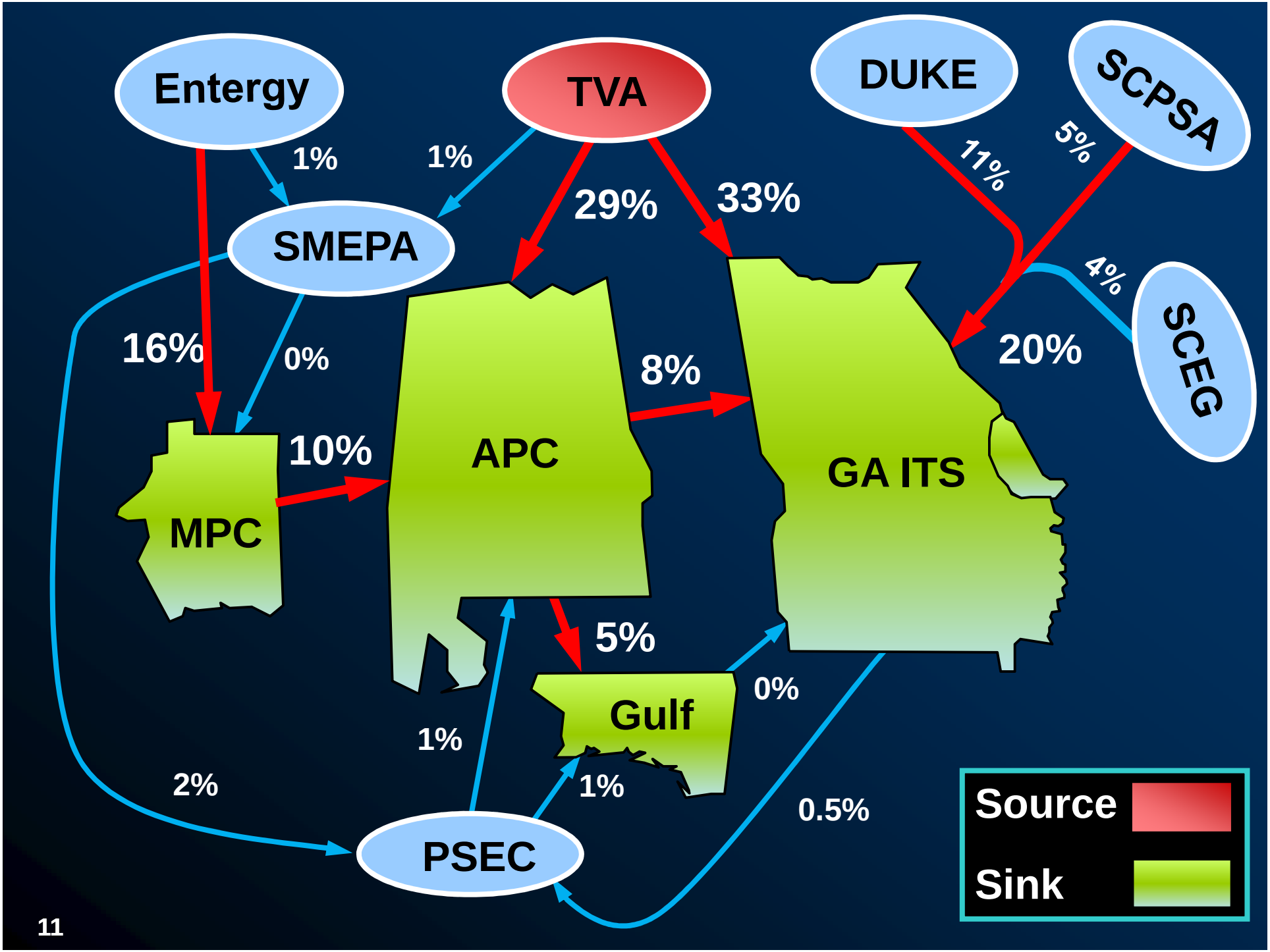


Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

- **System improvements added to the TVA model**

	Project Description
1	Constructed a new, parallel 500 kV T.L. from Shelby to Cordova
2	Constructed a new 500 kV T.L. from Johnsonville to Maury
3	Constructed a new 500 kV T.L. from Jackson to Lagoon Creek
4	Uprated the Pleasant Hill – Benton 500 kV T.L.
5	Uprated the Pleasant Hill – Union 500 kV T.L.
6	Uprated the Shelby – Cordova 500 kV T.L. #1
7	Uprated the Jackson – Haywood 500 kV T.L.


Entergy
TVA
DUKE
SCPSA
SMEPA
SCEG
MPC
APC
GA ITS
Gulf
PSEC
1%
1%
29%
33%
11%
5%
4%
16%
0%
8%
20%
10%
5%
0%
1%
1%
2%
0.5%
Source
Sink

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - Five (5) 230 kV Lines
  - Two (2) 161 / 115 kV Transformers
  - Four (4) 161 kV Lines
  - Twenty (20) 115 kV Lines

Total Cost (2011$) = $238,500,000

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

Southern Balancing Authority

Screen Results

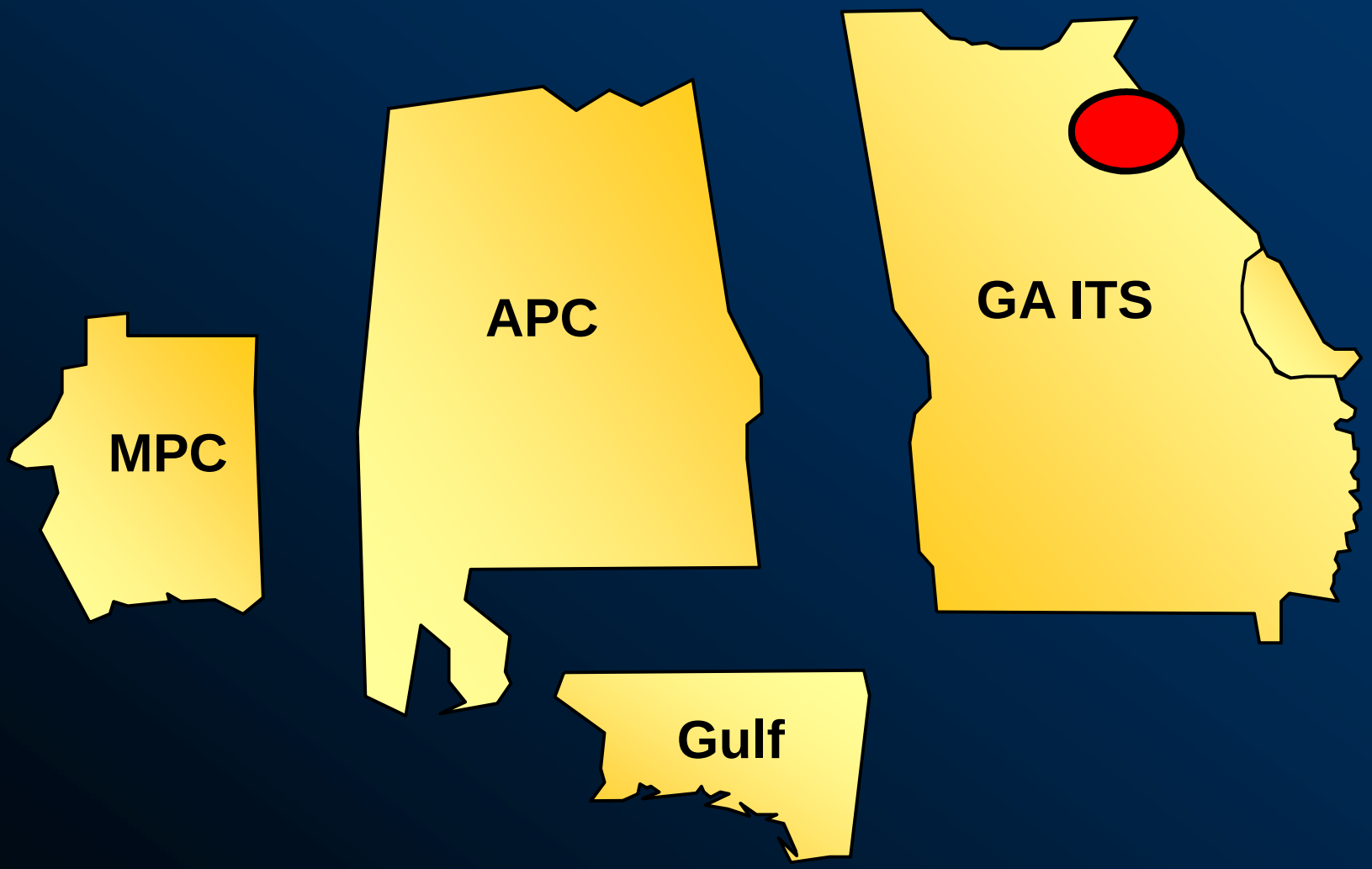
TVA Border to SBA 3500 MW

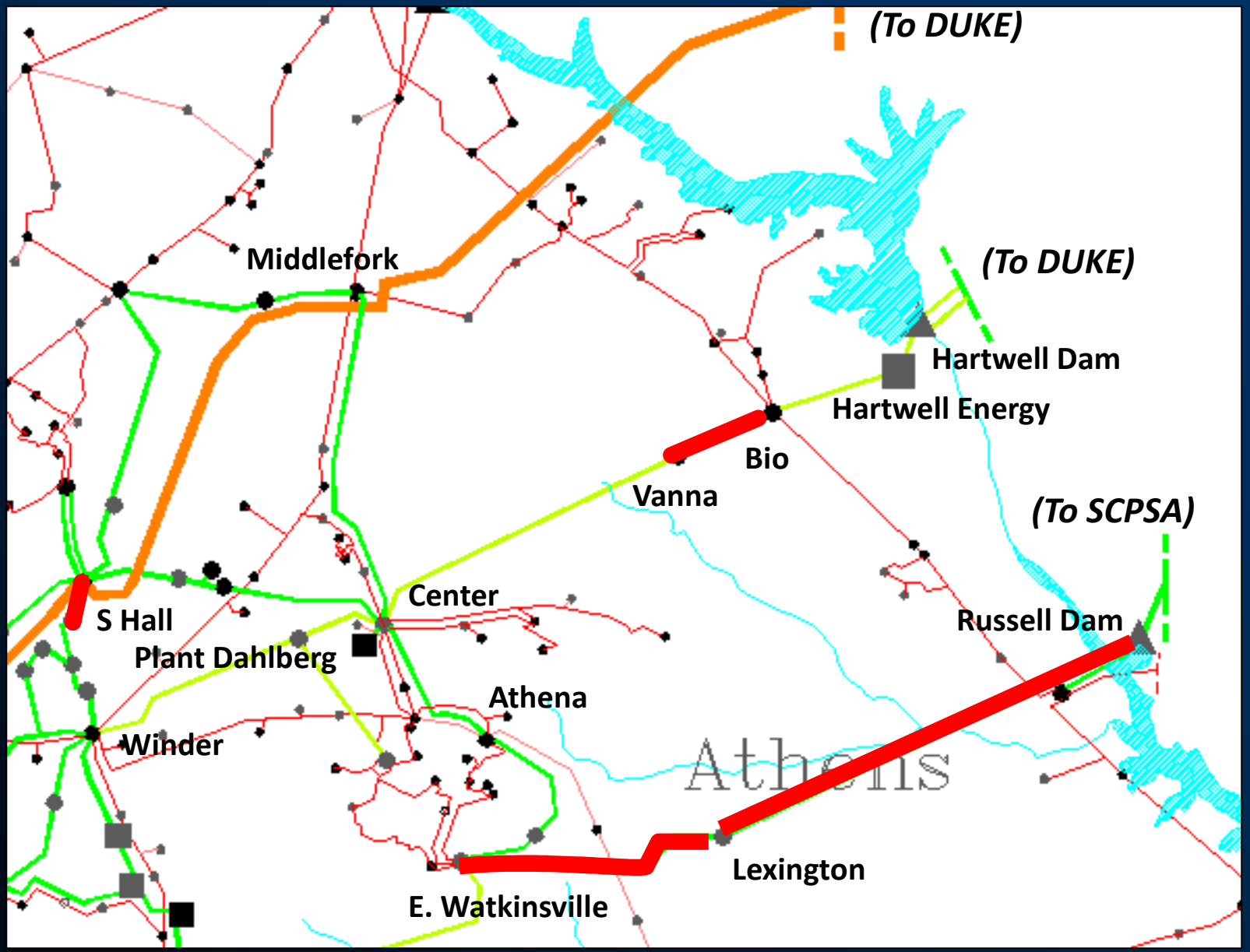
Significant Constraints – PASS 0

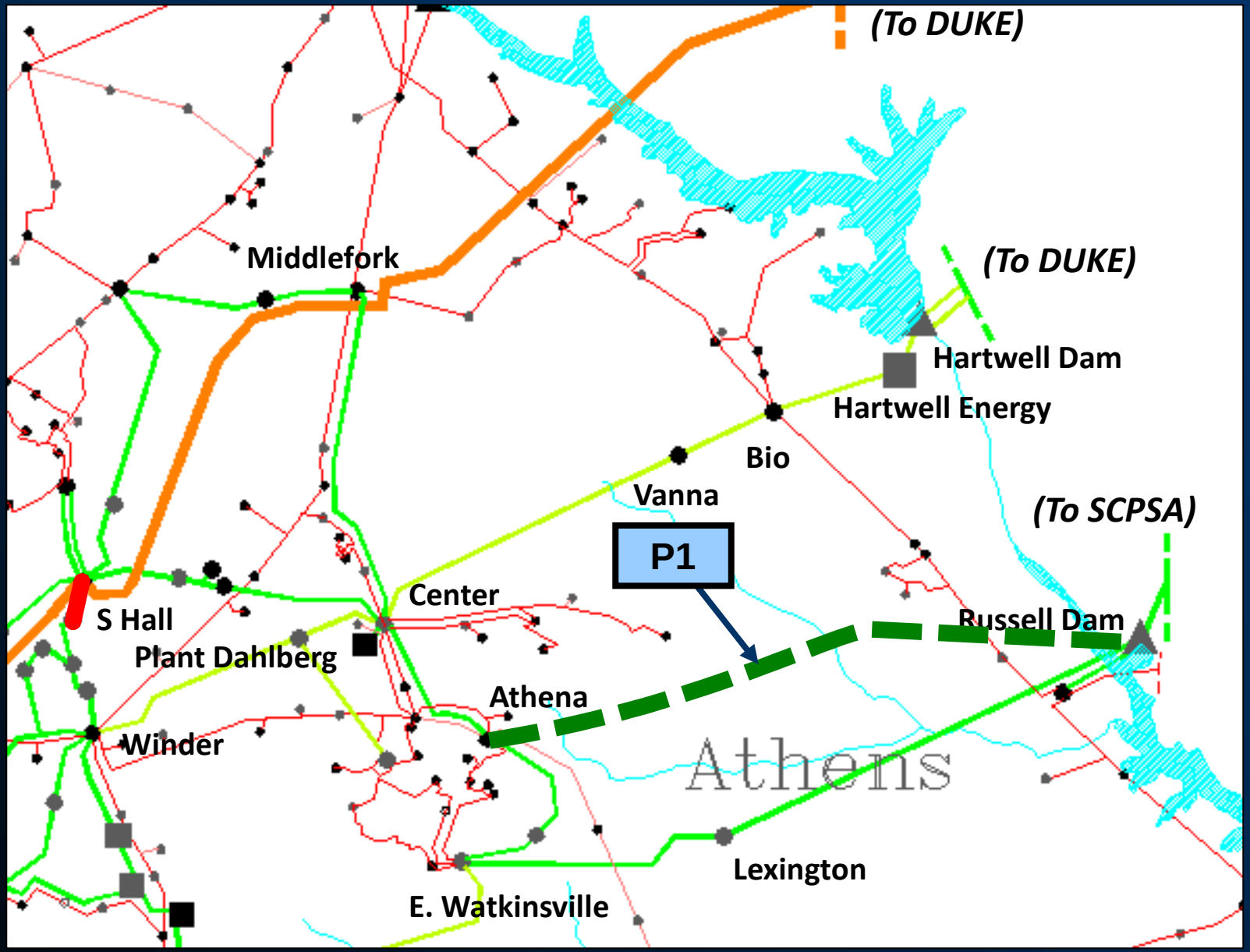
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Lexington – East Watkinsville 230 kV TL	602	93.7	105.8
Bio – Vanna 230 kV TL	433	96.2	106.9
Russell – Lexington 230 kV TL	596	98.0	110.3

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




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


(To DUKE)
(To DUKE)
Middlefork
Hartwell Dam
Hartwell Energy
Bio
Vanna
(To SCPSA)
P1
Center
S Hall
Russell Dam
Plant Dahlberg
Athena
Winder
Athens
Lexington
E. Watkinsville

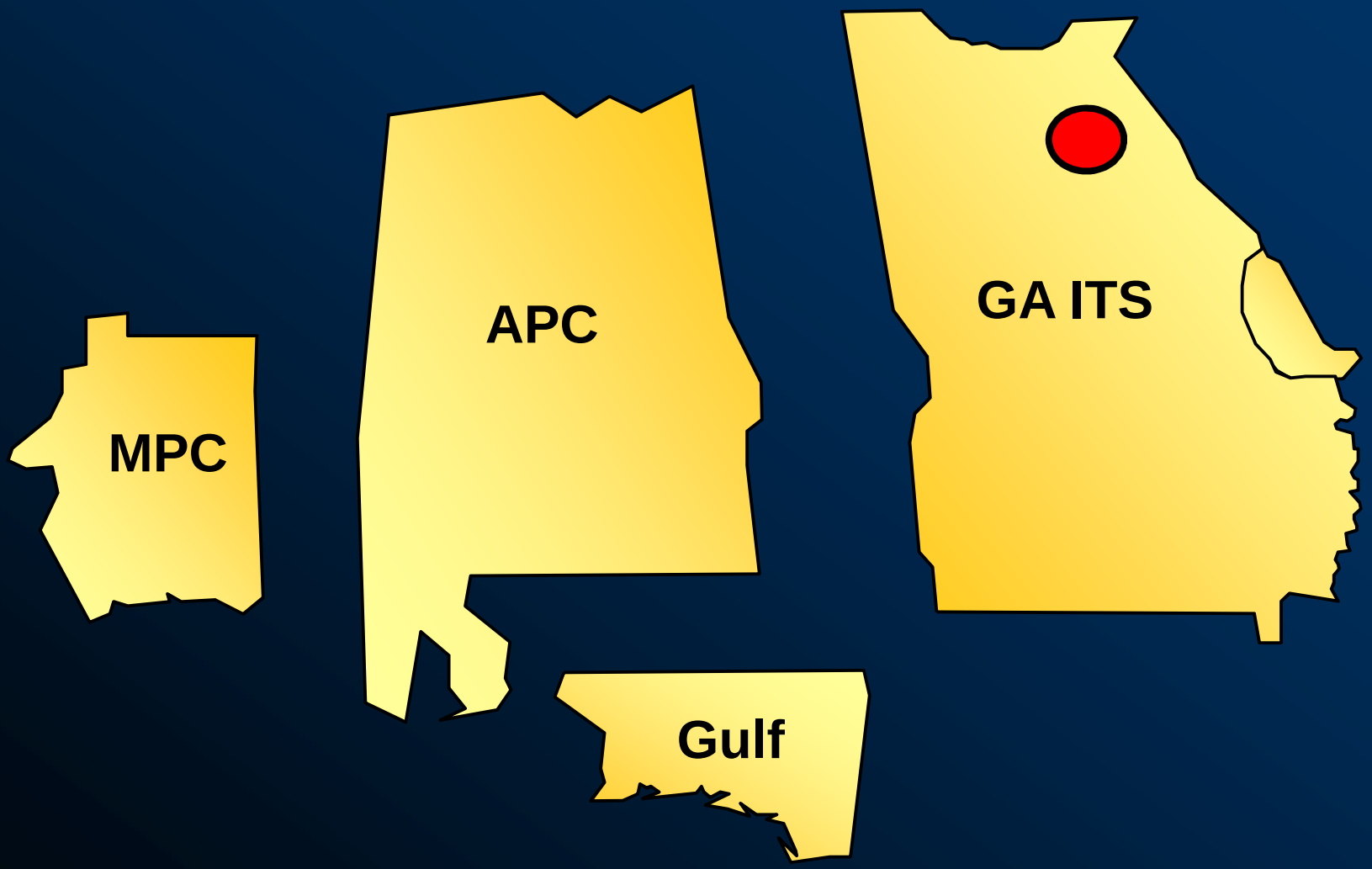
TVA Border to SBA 3500 MW

Significant Constraints – PASS 1

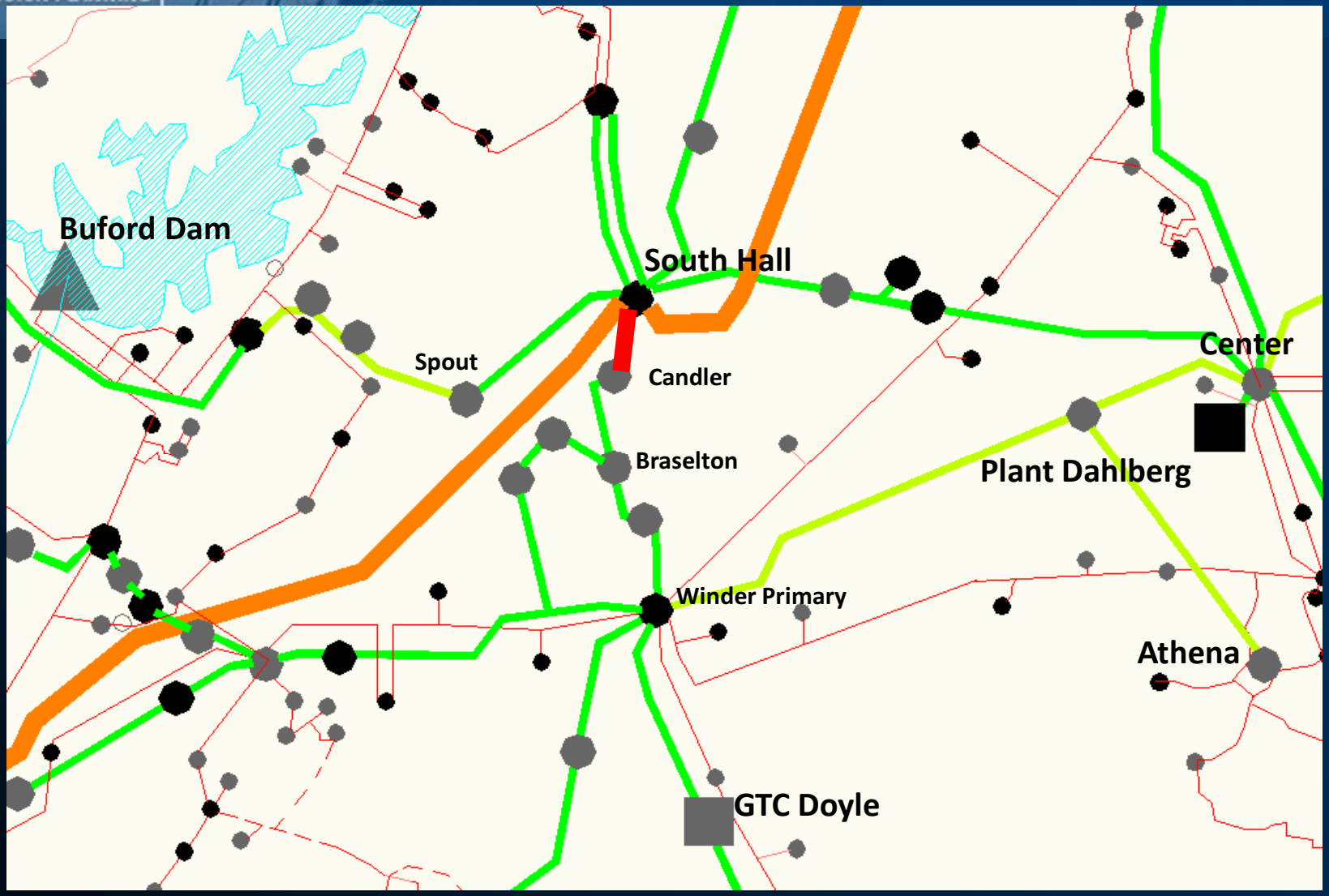
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
South Hall – Candler 230 kV TL	509	94.9	105.7

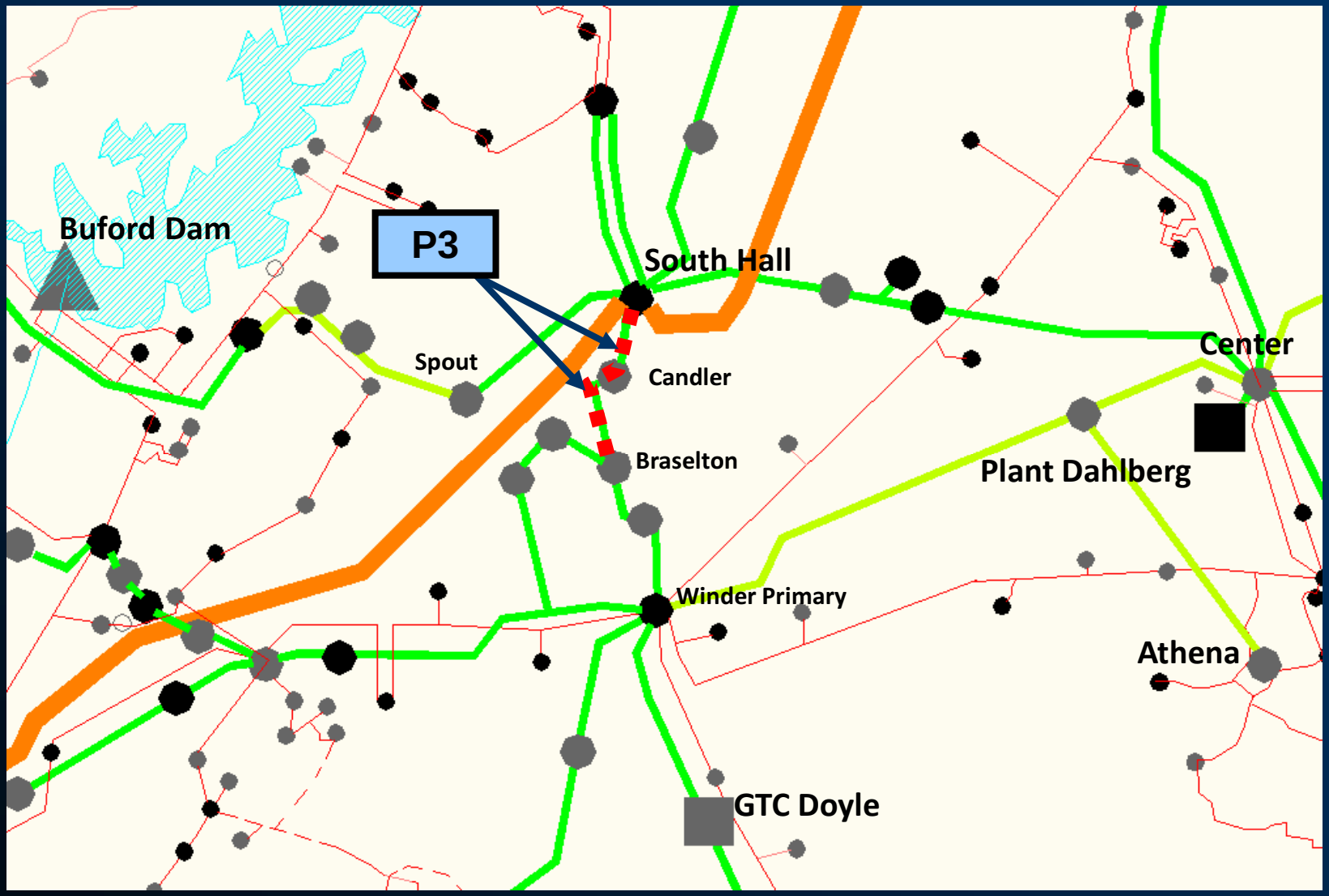
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISSION PLANNING




Buford Dam
P3
South Hall
Spout
Candler
Center
Braselton
Plant Dahlberg
Winder Primary
Athena
GTC Doyle

TVA Border to SBA 3500 MW

Significant Constraints – PASS 1 (Cont.)

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Gaston – Power Systems 230 kV TL	602	92.9	108.4
Power Systems – Fayetteville DS 230 kV TL	577	96.6	112.8
Fayetteville DS – Co. Line Rd 230 kV TL	577	95.7	111.9
Mitchell Dam – Clanton Tap 115 kV TL	138	97.0	104.6

TVA Border to SBA 3500 MW

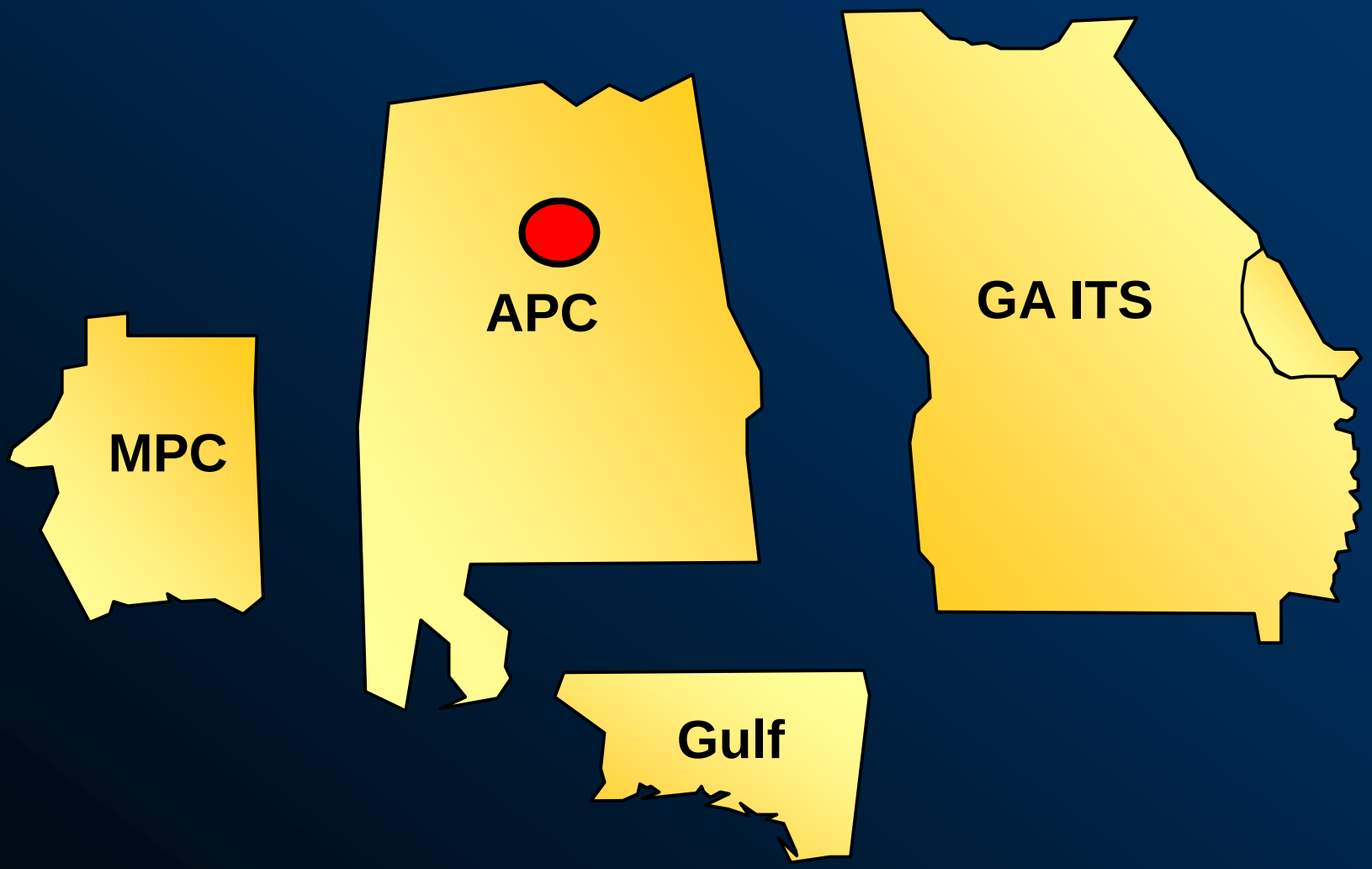
Significant Constraints – PASS 1 (Cont.)

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
GKN Westland Aerospace – Halla Climate Control 115 kV TL	107	92.6	106.0
Alex City Tap – Kellyton 115 kV TL	113	97.1	106.0
Kellyton – Sunny Level Tap 115 kV TL	113	99.0	107.8
Hollins – Sunny Level Tap 115 kV TL	113	99.8	114.1
Sylacauga – Hollins 115 kV TL	113	104.6(1)	119.1

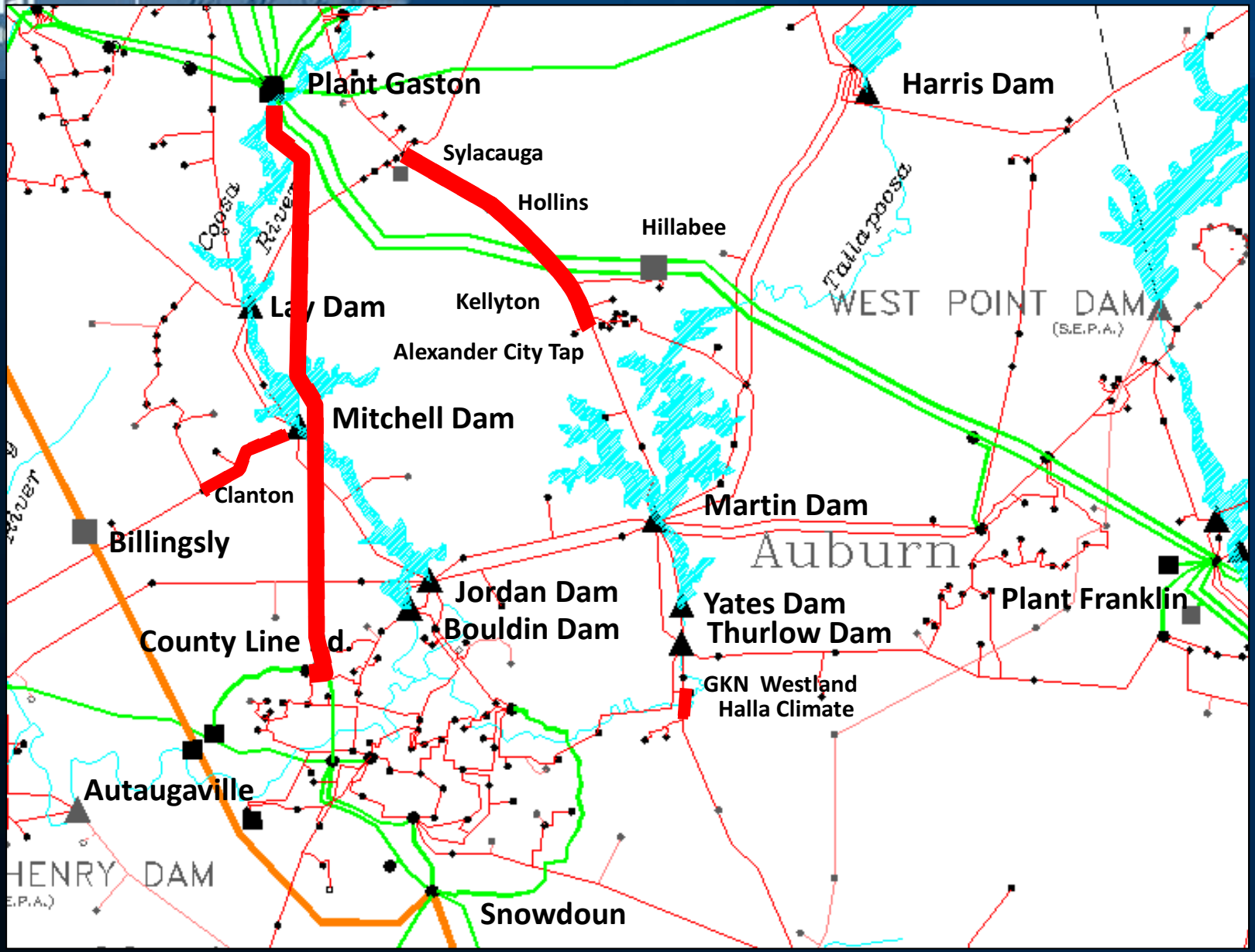
(1) A current operating procedure is sufficient to alleviate this constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this facility such that the operating procedure becomes insufficient.

Southeastern Regional
TRANSMISSION PLANNING

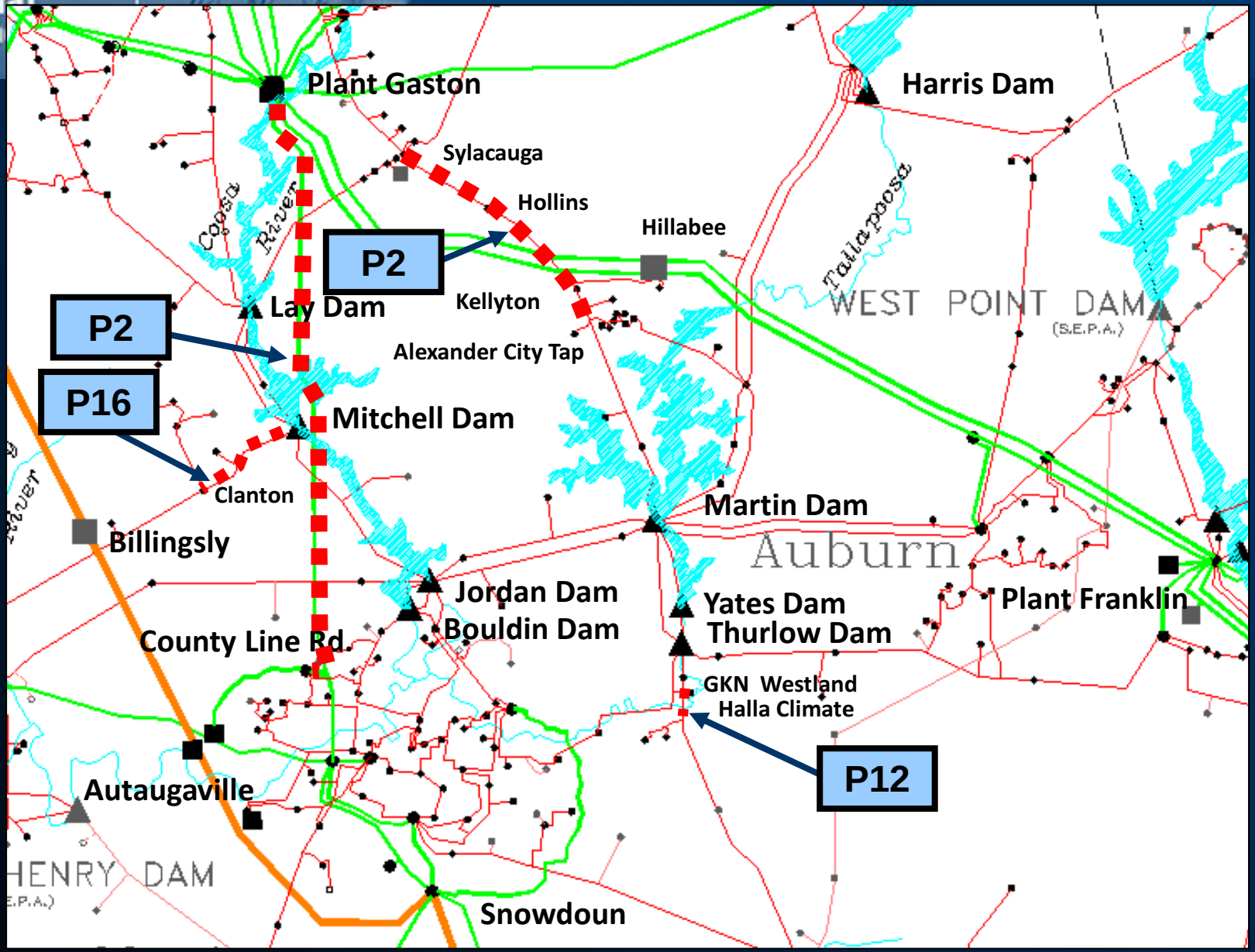
Significant Constraints



Southeastern Regional
TRANSMISSI



Southeastern Regional
TRANSMISSI



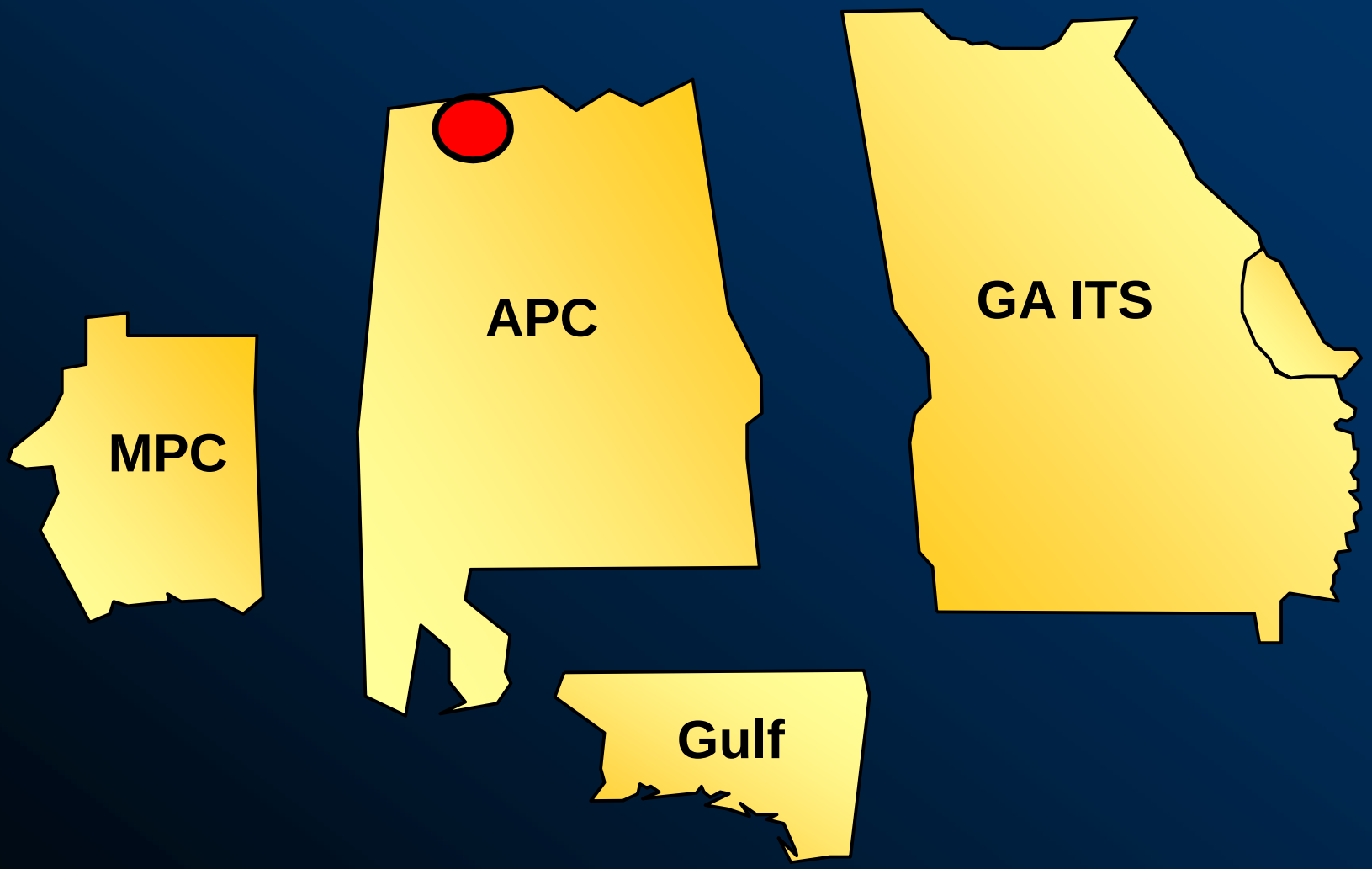
TVA Border to SBA 3500 MW

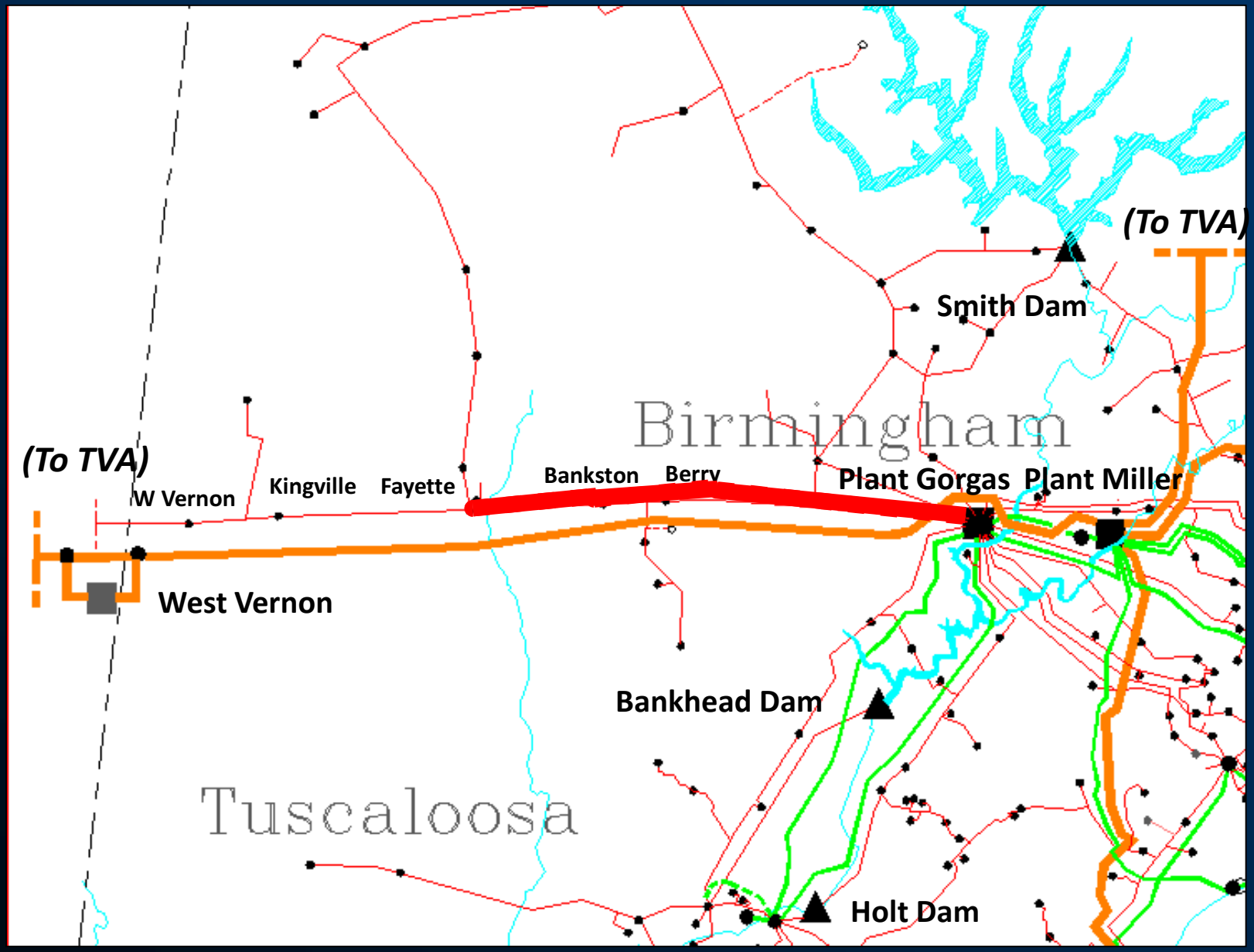
Significant Constraints – PASS 1 (Cont.)

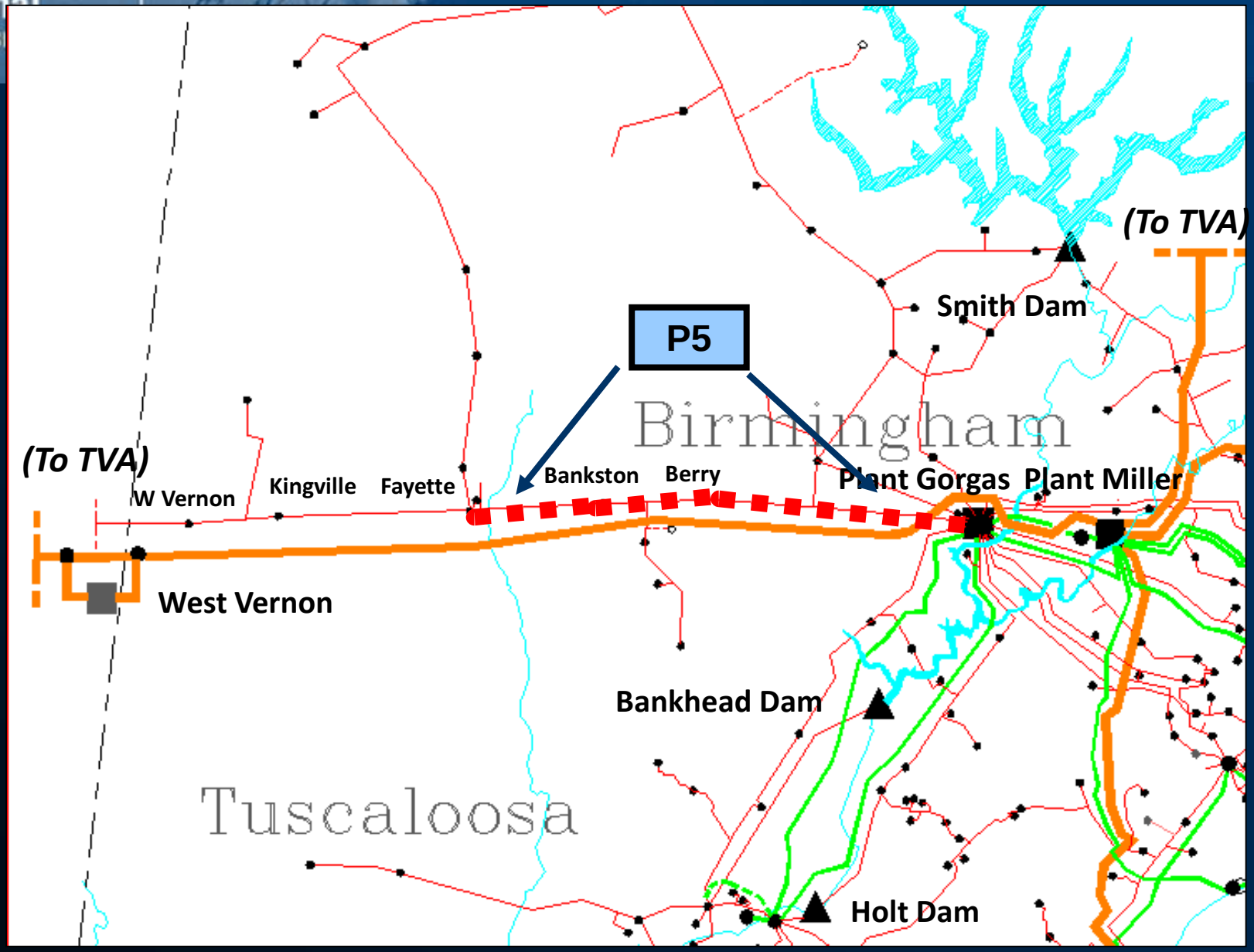
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Oakman Tap – Gorgas 161 kV TL	193	80.7	122.6
Oakman Tap – Berry 161 kV TL	193	81.2	123.0
Pitts & Midway Tap – Berry 161 kV TL	193	83.4	125.2
Pitts & Midway Tap – Bankston 161 kV TL	193	92.0	133.9
Fayette CS – Bankston 161 kV TL	193	93.8	135.8
Fayette TS – Fayette CS 161 kV TL	193	93.8	135.8

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




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


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

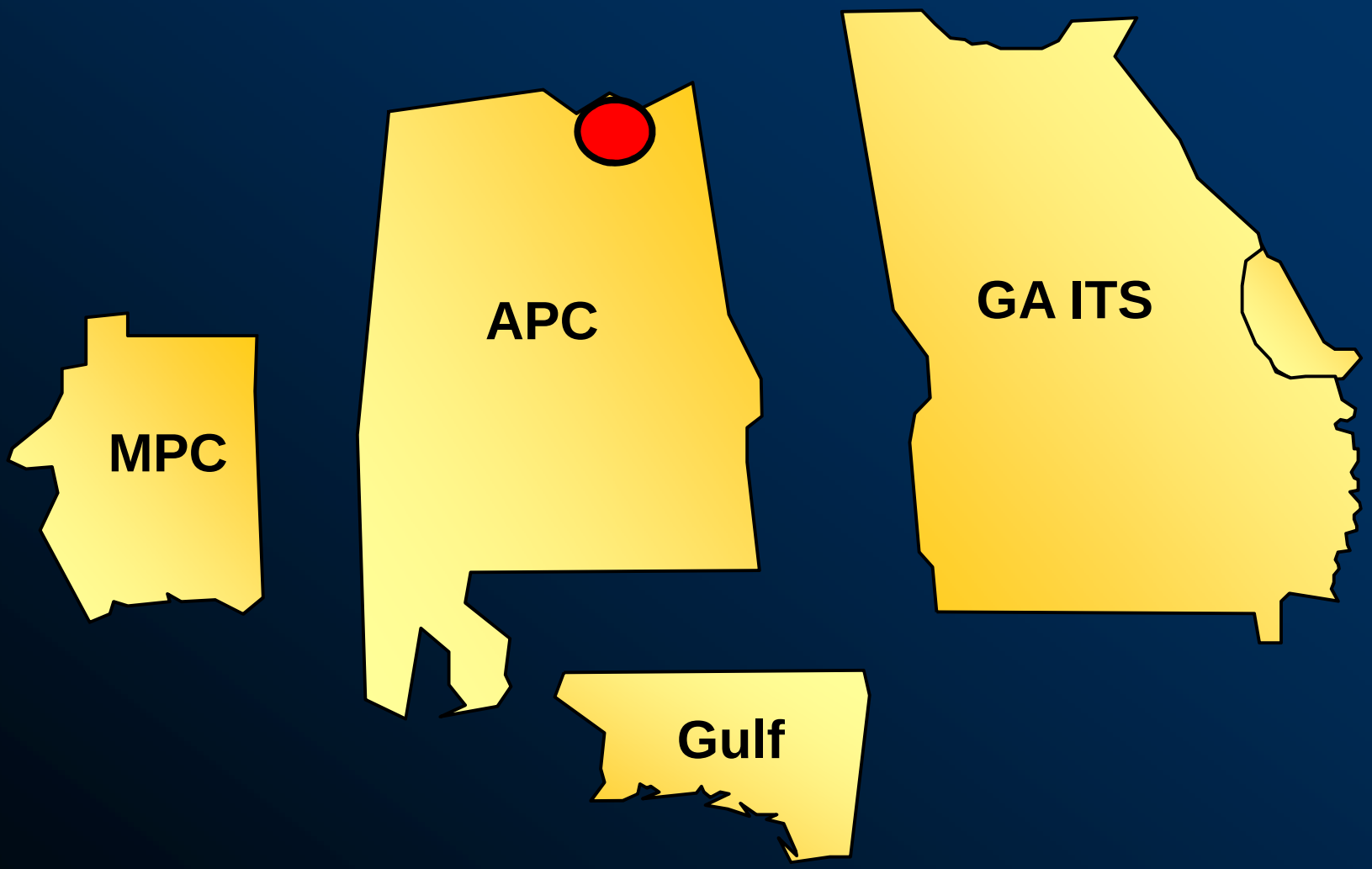
TVA Border to SBA 3500 MW

Significant Constraints – PASS 1 (Cont.)

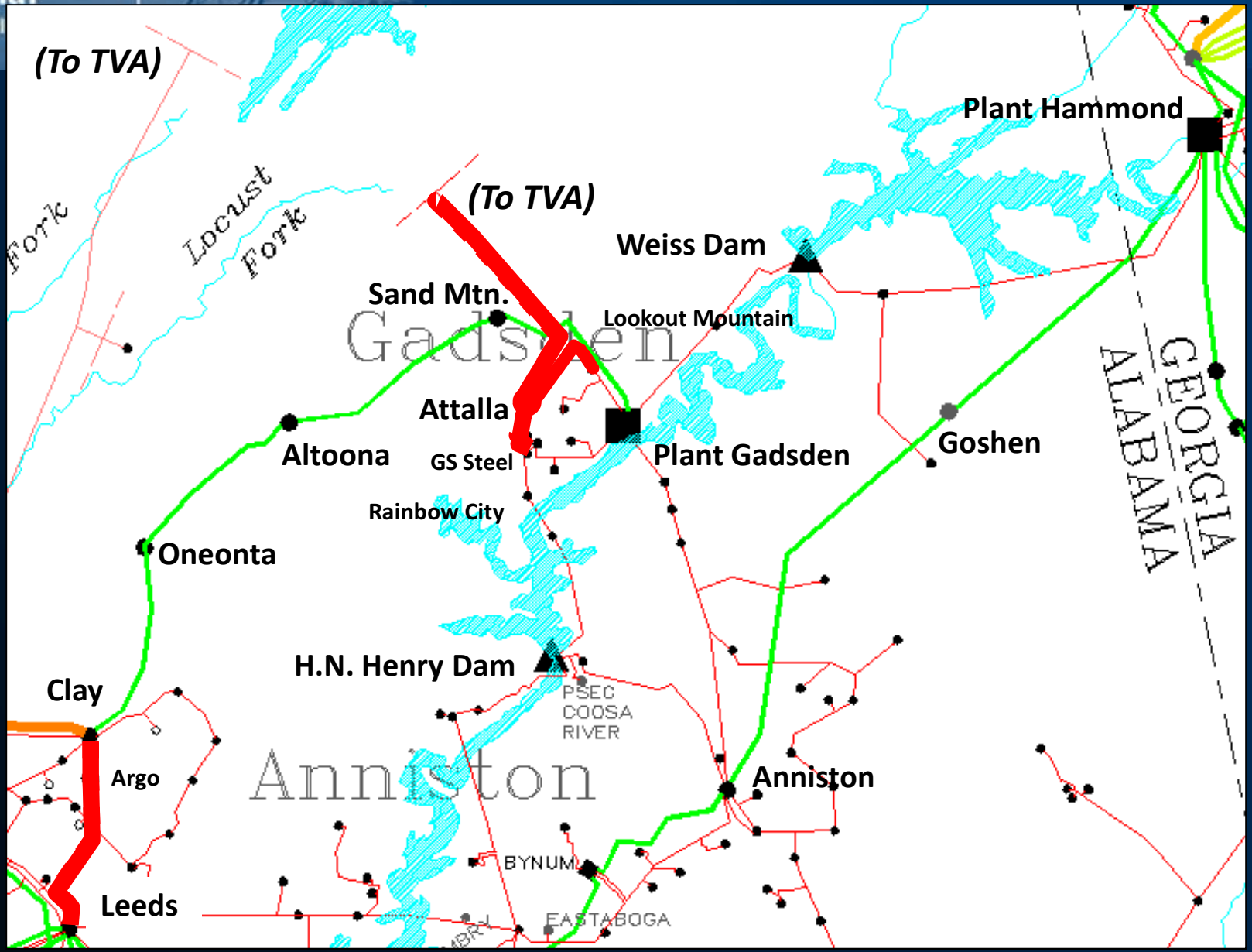
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
GS Steel – North Rainbow 115 kV TL	112	81.7	103.8
GS Steel – Attalla 115 kV TL	138	71.5	106.8
Leeds TS – Argo DS 230 kV TL	602	75.8	107.0
Clay – Argo DS 230 kV TL	602	78.2	109.5
Attalla 161 / 115 kV Transformer 1	99	89.4	122.9
Attalla 161 / 115 kV Transformer 2	111	88.4	121.4
Attalla – Albertville 161 kV TL	193	96.7	132.9

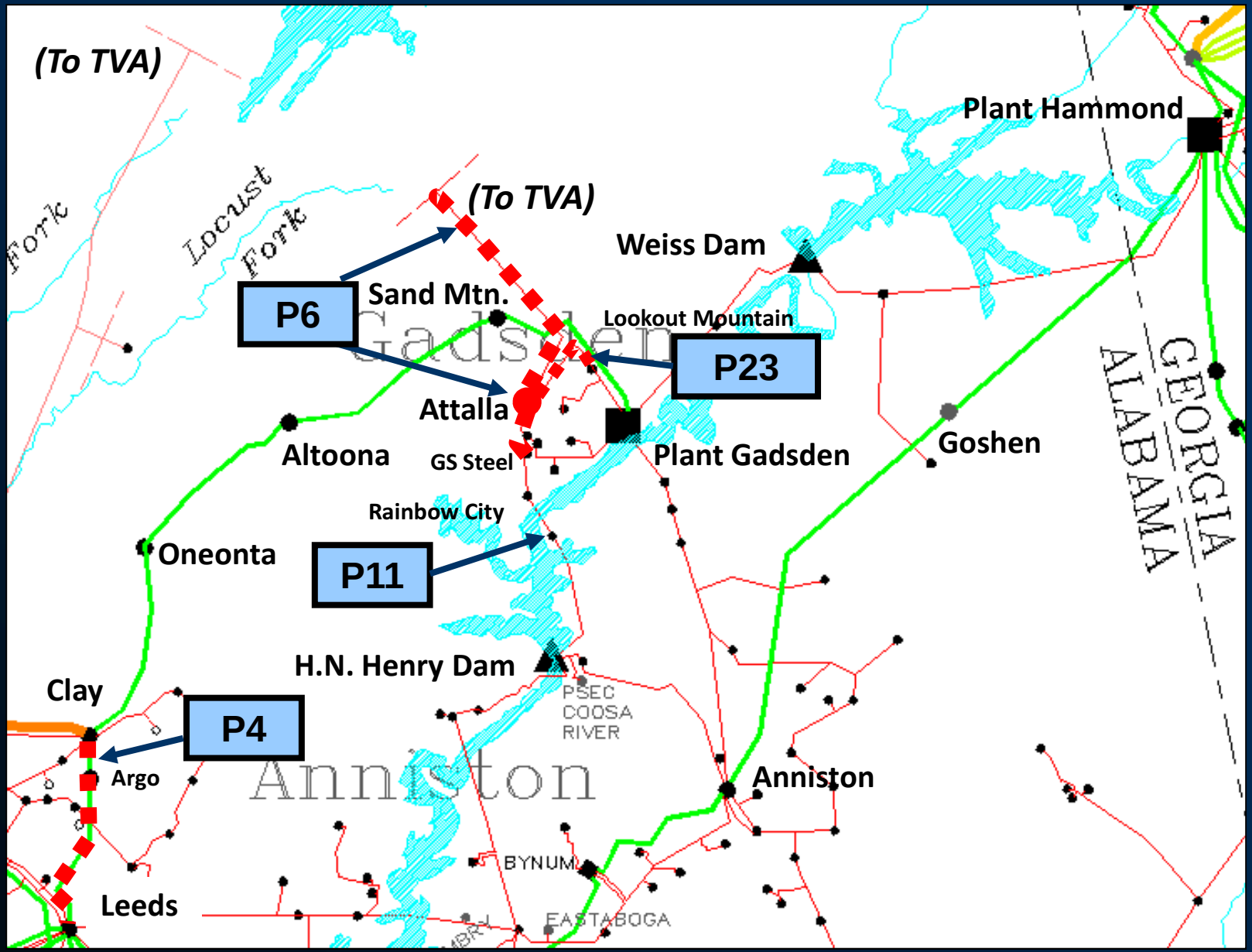
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISSI




(To TVA)
(To TVA)
Plant Hammond
Weiss Dam
P6
Sand Mtn.
Lookout Mountain
P23
Attalla
Altoona
GS Steel
Plant Gadsden
Goshen
Rainbow City
Oneonta
P11
H.N. Henry Dam
Clay
P4
PSEC
COOSA
RIVER
Argo
Anniston
Leeds
BYNUM
EASTABOGA
GEORGIA
ALABAMA

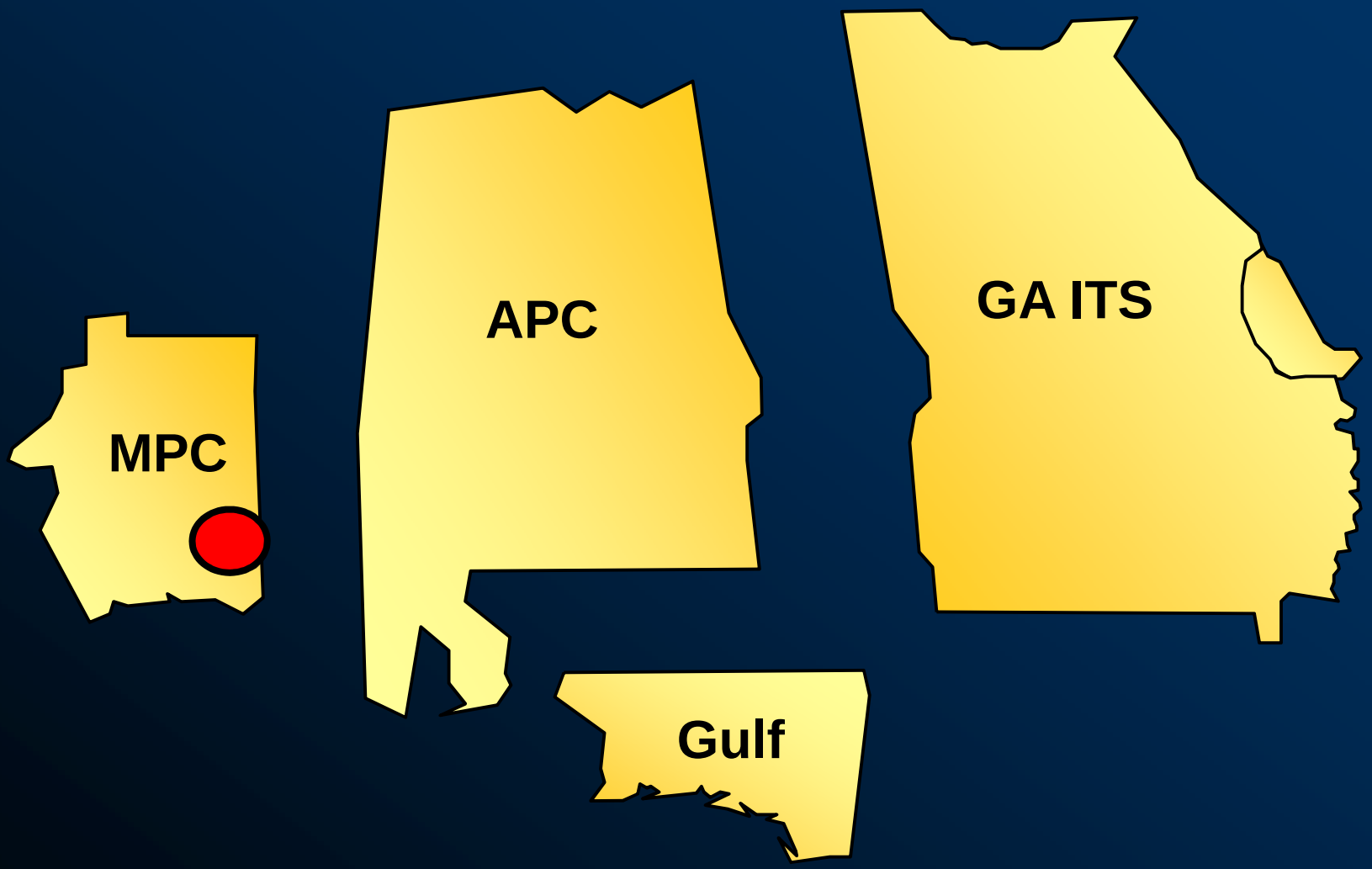
TVA Border to SBA 3500 MW

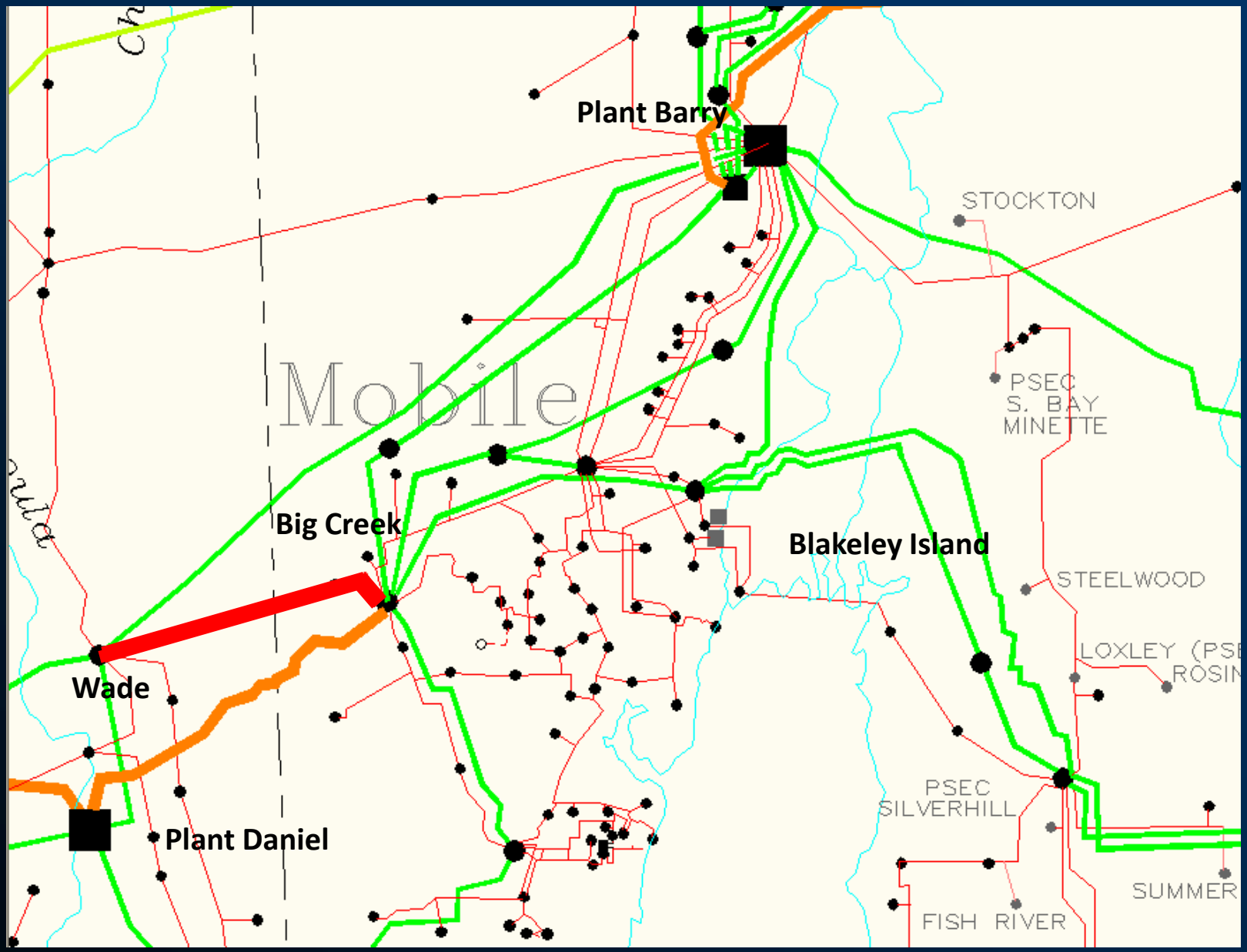
Significant Constraints – PASS 1 (Cont.)

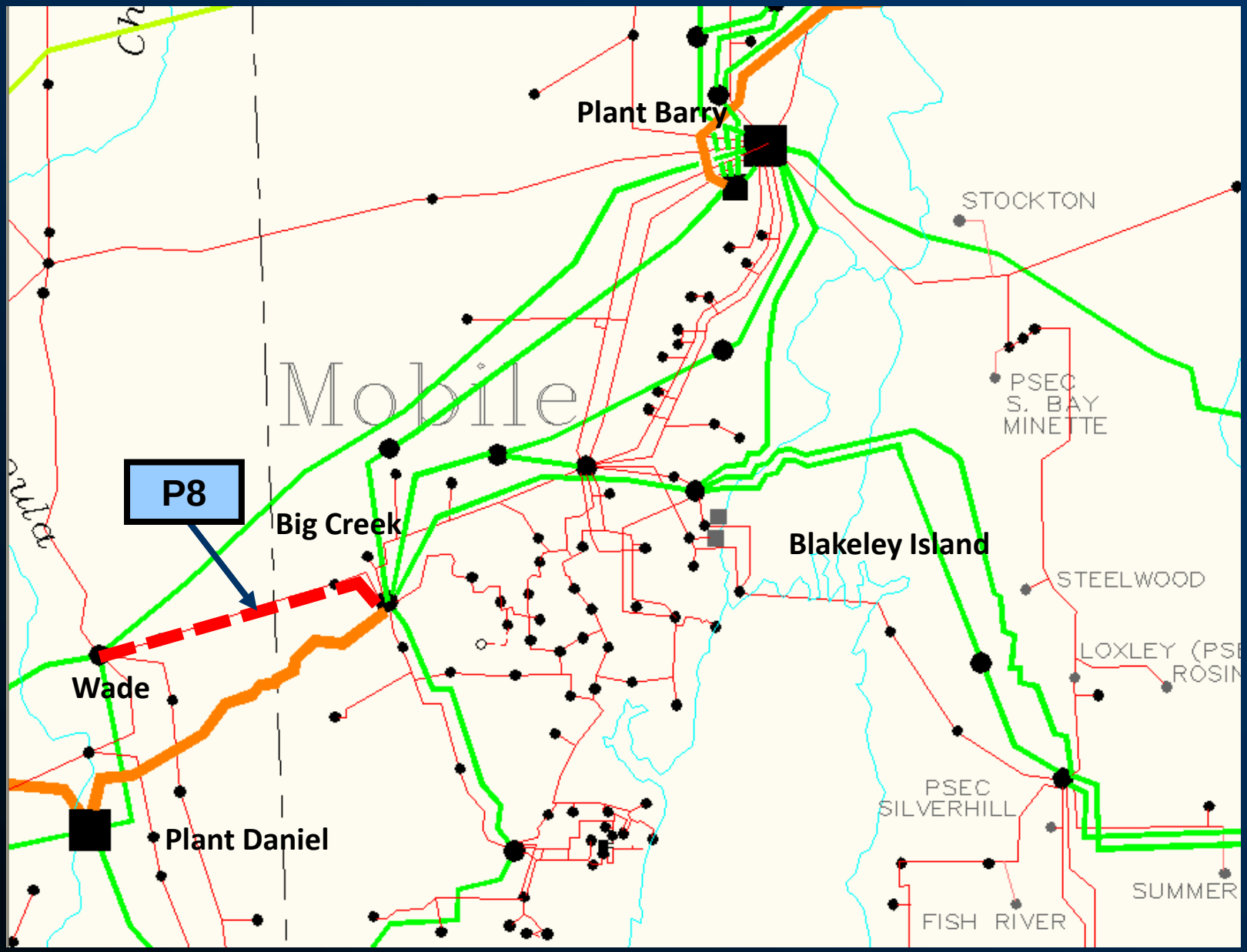
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Tanner Williams – Harleston 115 kV TL	107	80.7	105.1
Wade SS – Harleston 115 kV TL	104	89.3	114.4

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




Plant Barry
STOCKTON
Mobile
PSEC
S. BAY
MINETTE
Big Creek
Blakeley Island
STEELWOOD
LOXLEY (PSE
ROSIN
Wade
Plant Daniel
PSEC
SILVERHILL
SUMMER
FISH RIVER


Plant Barry
STOCKTON
Mobile
PSEC
S. BAY
MINETTE
P8
Big Creek
Blakeley Island
STEELWOOD
LOXLEY (PSE
ROSIN
Wade
Plant Daniel
PSEC
SILVERHILL
SUMMER
FISH RIVER

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	Russell Dam – Athena 230 kV TL	$61,000,000
P2	Gaston – County Line Road 230 kV TL	$53,500,000
P3	South Hall – Winder Primary 230 kV TL	$10,000,000
P4	Clay TS – Leeds TS 230 kV TL	$18,600,000
P5	Fayette – Gorgas 161 kV TL	$29,000,000
P6	Attalla 161 / 115 kV Transformers Attalla – Albertville 161 kV TL	$18,700,000(1)
P7	Sylacauga – Martin 115 kV TL	$8,300,000
P8	Wade – Big Creek 115 kV TL	$6,300,000
-	- Continued -	-

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

TVA Border to SBA 3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
-	- Continued -	-
P9	Logtown West - NASA 115 kV TL	$2,900,000
P10	Jesup – Ludowici 115 kV TL	$2,700,000
P11	Henry Dam – Gulf States Steel 115 kV TL	$1,600,000
P12	Thurlow Dam – Union Springs 115 kv TL	$1,100,000
P13	Kathleen – Bonaire 115 kV TL	$1,500,000
P14	South Park DS – Pratt City 115 kV TL	$1,500,000
P15	Bessemer – South Bessemer 115 kV TL	$100,000
P16	Mitchell Dam – North Selma 115 kV TL	$3,600,000
P17	Hattiesburg North – Eaton 115 kV TL	$1,500,000
-	- Continued -	-

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
-	- Continued -	-
P18	Hattiesburg County – Highway 11 115 kV TL	$1,200,000
P19	East Point – Morrow 115 kV TL	$1,300,000
P20	Blankets Creek – Woodstock 115 kV TL	$500,000
P21	Collins – Magee 115 kV TL	$3,000,000(1)
P22	Morton – Forest Industrial 115 kV TL	$1,300,000
P23	Attalla – Lookout Mountain 115 kV TL	$1,800,000

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

SBA Total Cost (2011$) = $231,100,000

Southeastern Regional
TRANSMISSION PLANNING

TVA Border to SBA
3500 MW

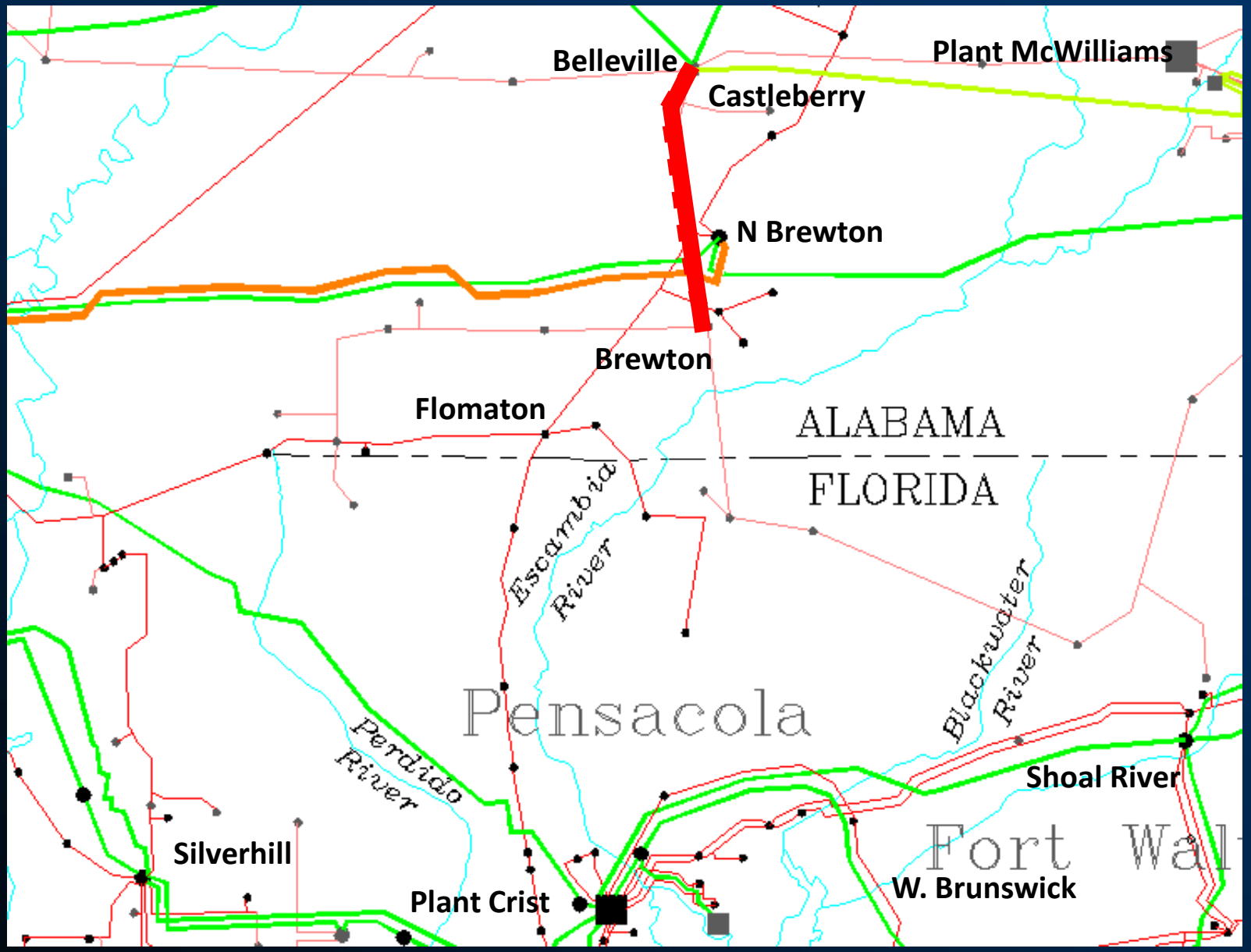
PowerSouth

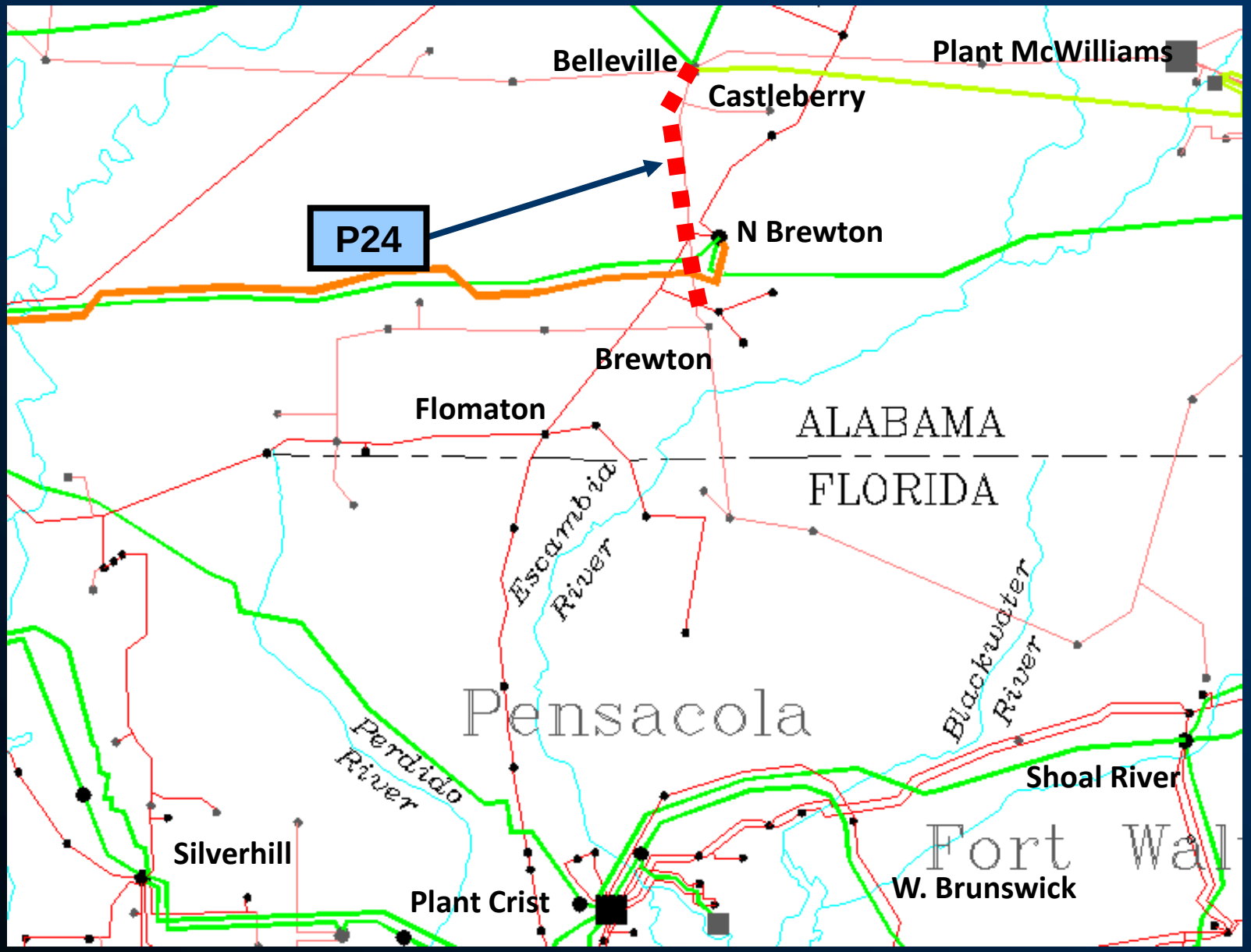
Screen Results

TVA Border to SBA 3500 MW

Significant Constraints – PASS 0

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Brewton – Castleberry Junction 115 kV TL	142	84.8	101.0
Belleville – Castleberry Junction 115 kV TL	142	87.5	103.8


Belleville
Plant McWilliams
Castleberry
N Brewton
Brewton
Flomaton
ALABAMA
FLORIDA
Escambia River
Blackwater River
Pensacola
Perdido River
Shoal River
Silverhill
Plant Crist
W. Brunswick


Belleville
Plant McWilliams
Castleberry
P24
N Brewton
Brewton
Flomaton
ALABAMA
FLORIDA
Escambia River
Blackwater River
Pensacola
Perdido River
Shoal River
Silverhill
Plant Crist
W. Brunswick
Fort Wal

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P24	Belleville – Brewton 115 kV TL	$3,600,000

PS Total Cost (2011$) = $3,600,000

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

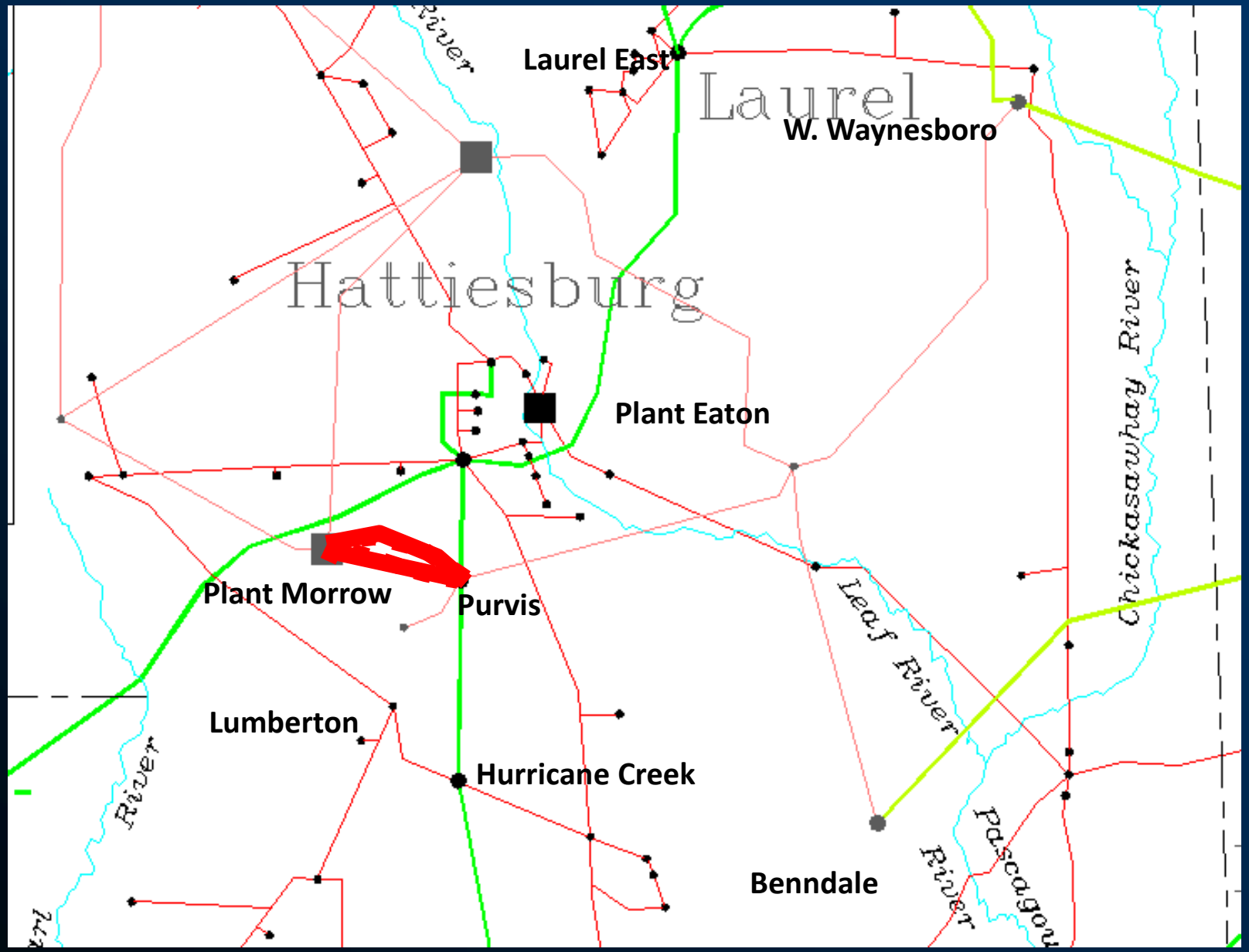
South Mississippi Electric

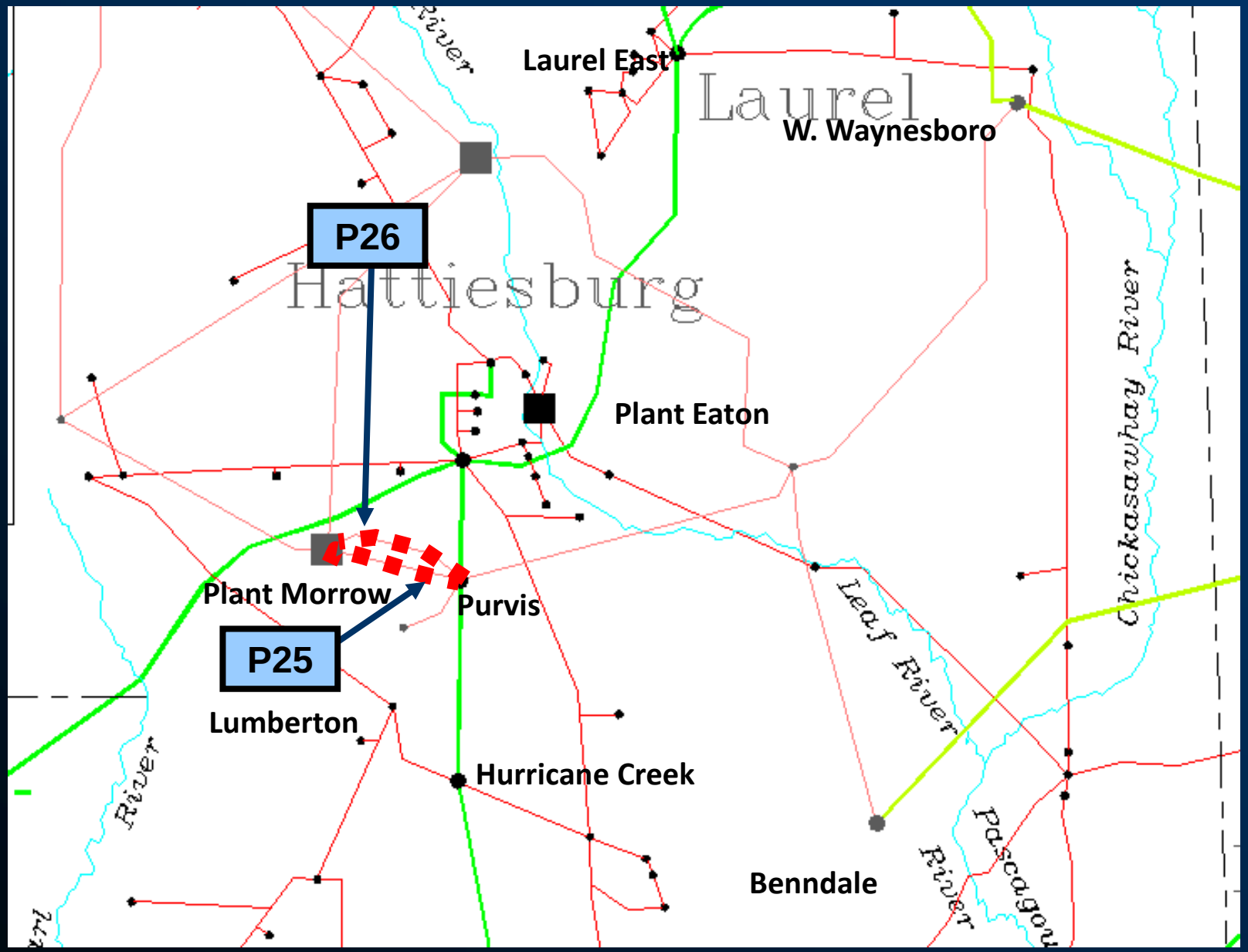
Screen Results

TVA Border to SBA 3500 MW

Significant Constraints – PASS 0

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Purvis – Morrow 161 kV TL 1	296	58.0	108.5
Purvis – Morrow 161 kV TL 2	296	57.5	108.3


Laurel East
Laurel
W. Waynesboro
Hattiesburg
Plant Eaton
Plant Morrow
Purvis
Lumberton
Hurricane Creek
Benndale
Leaf River
Chickasawhay River
Pascagoula River


Laurel East
Laurel
W. Waynesboro
P26
Hattiesburg
Plant Eaton
Chickasawhay River
Plant Morrow
Purvis
P25
Leaf River
Lumberton
Hurricane Creek
Benndale
Pascagoula River

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P25	Purvis Bulk – Morrow 161 kV TL Circuit 1	$1,900,000
P26	Purvis Bulk – Morrow 161 kV TL Circuit 2	$1,900,000

SME Total Cost (2011$) = $3,800,000

TVA Border to SBA 3500 MW

Additional Screen

80% of Summer Peak Load

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW (80%)

Transmission System Impacts

- Thermal Constraints Identified:
  - Two (2) 230 kV Lines
  - Two (2) 161 / 115 kV Transformers
  - Two (2) 161 kV Lines
  - Five (5) 115 kV Lines

Total Cost (2011$) = $138,400,000

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW (80%)

Southern Balancing Authority

Screen Results

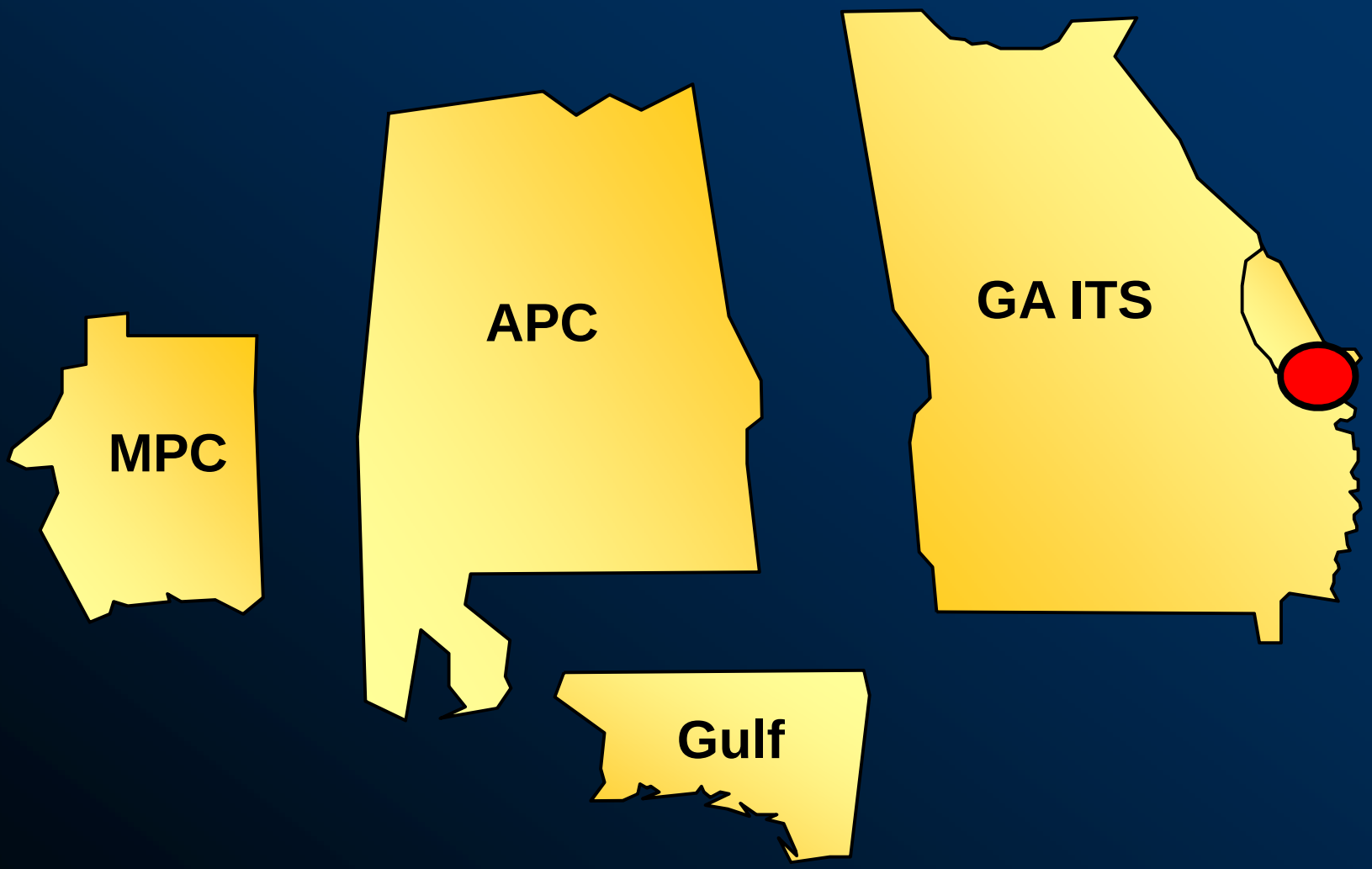
TVA Border to SBA 3500 MW (80%)

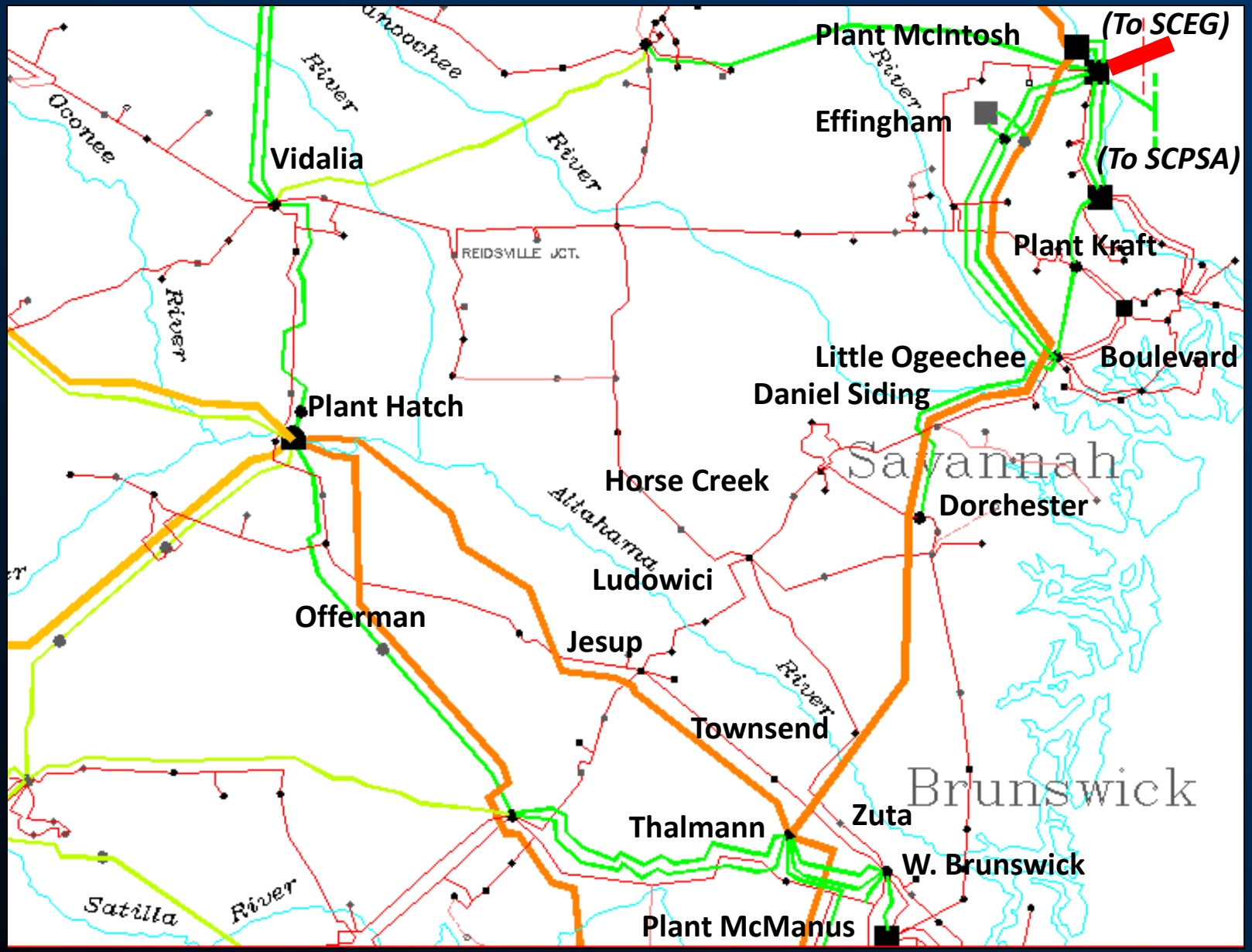
Additional Constraints – PASS 0

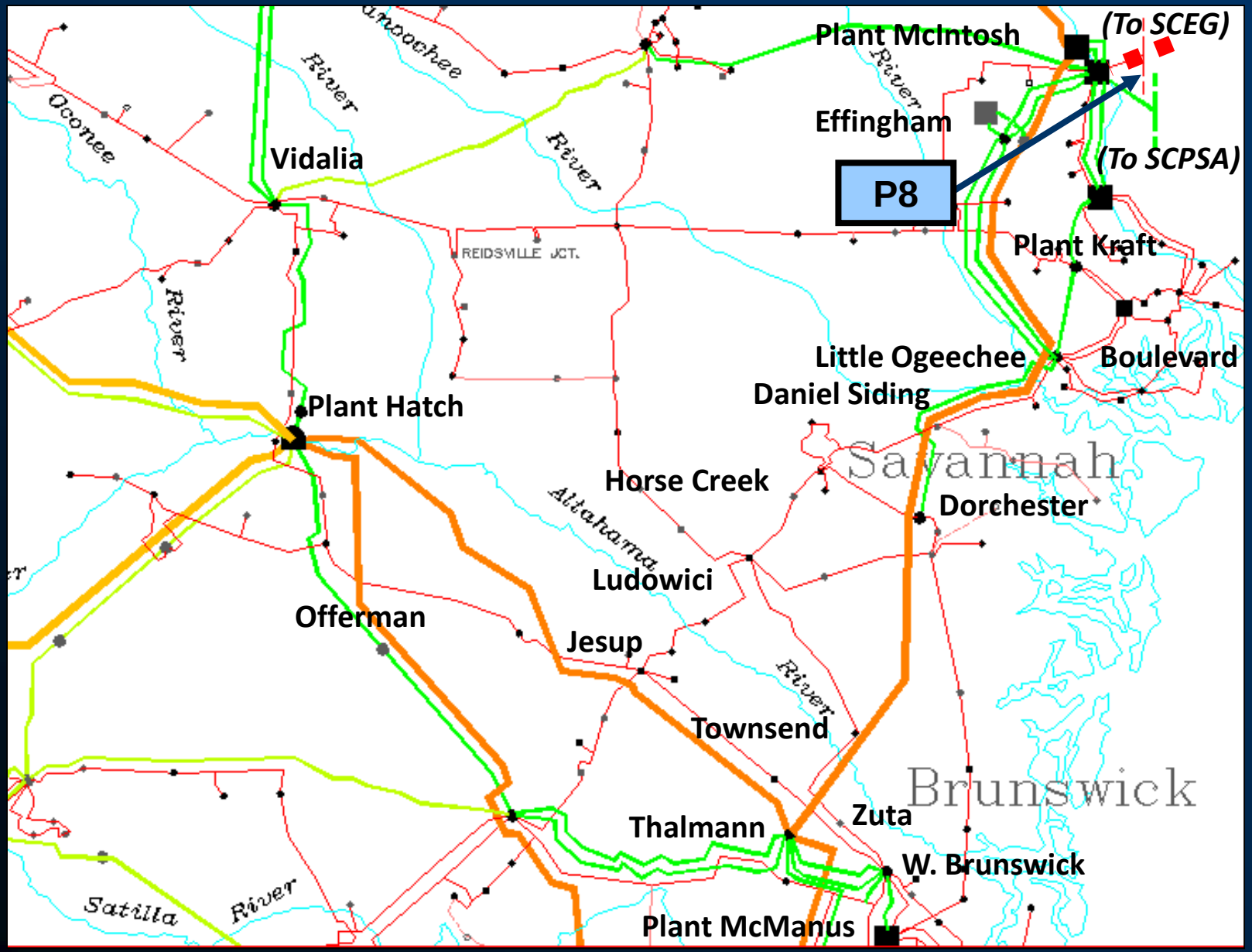
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
McIntosh – Jasper 115 kV TL	230	52.2	111.1

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




Plant McIntosh
(To SCEG)
Effingham
(To SCPSA)
Vidalia
Plant Kraft
Little Ogeechee
Boulevard
Daniel Siding
Plant Hatch
Savannah
Horse Creek
Dorchester
Ludowici
Offerman
Jesup
Townsend
Brunswick
Zuta
Thalmann
W. Brunswick
Plant McManus
Oconee River
Ocmulgee River
Altamaha River
Satilla River
REIDSVILLE JCT.


Plant McIntosh
(To SCEG)
Effingham
(To SCPSA)
P8
Vidalia
Plant Kraft
Little Ogeechee
Boulevard
Daniel Siding
Plant Hatch
Savannah
Horse Creek
Dorchester
Ludowici
Offerman
Jesup
Townsend
Brunswick
Zuta
Thalmann
W. Brunswick
Plant McManus
Oconee River
Ocmulgee River
Altamaha River
Satilla River
REIDSVILLE JCT.

Southeastern Regional TRANSMISSION PLANNING

TVA Border to SBA 3500 MW (80%)

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	Gaston – County Line Road 230 kV TL	$53,500,000
P2	Clay TS – Leeds TS 230 kV TL	$18,600,000
P3	Fayette – Gorgas 161 kV TL	$29,000,000
P4	Attalla 161 / 115 kV Transformers Attalla – Albertville 161 kV TL	$18,700,000(1)
P5	Sylacauga – Martin 115 kV TL	$8,300,000
P6	Wade – Big Creek 115 kV TL	$6,300,000
P7	South Park DS – Pratt City 115 kV TL	$1,500,000
P8	McIntosh – Jasper Tap 115 kV TL	$900,000(1)
P9	Henry Dam – Gulf States Steel 115 kV TL	$1,600,000

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

SBA Total Cost (2011$) = $138,400,000

Questions on the TVA Border to SBA Transfer?

EES Border

to

SBA

1500 MW

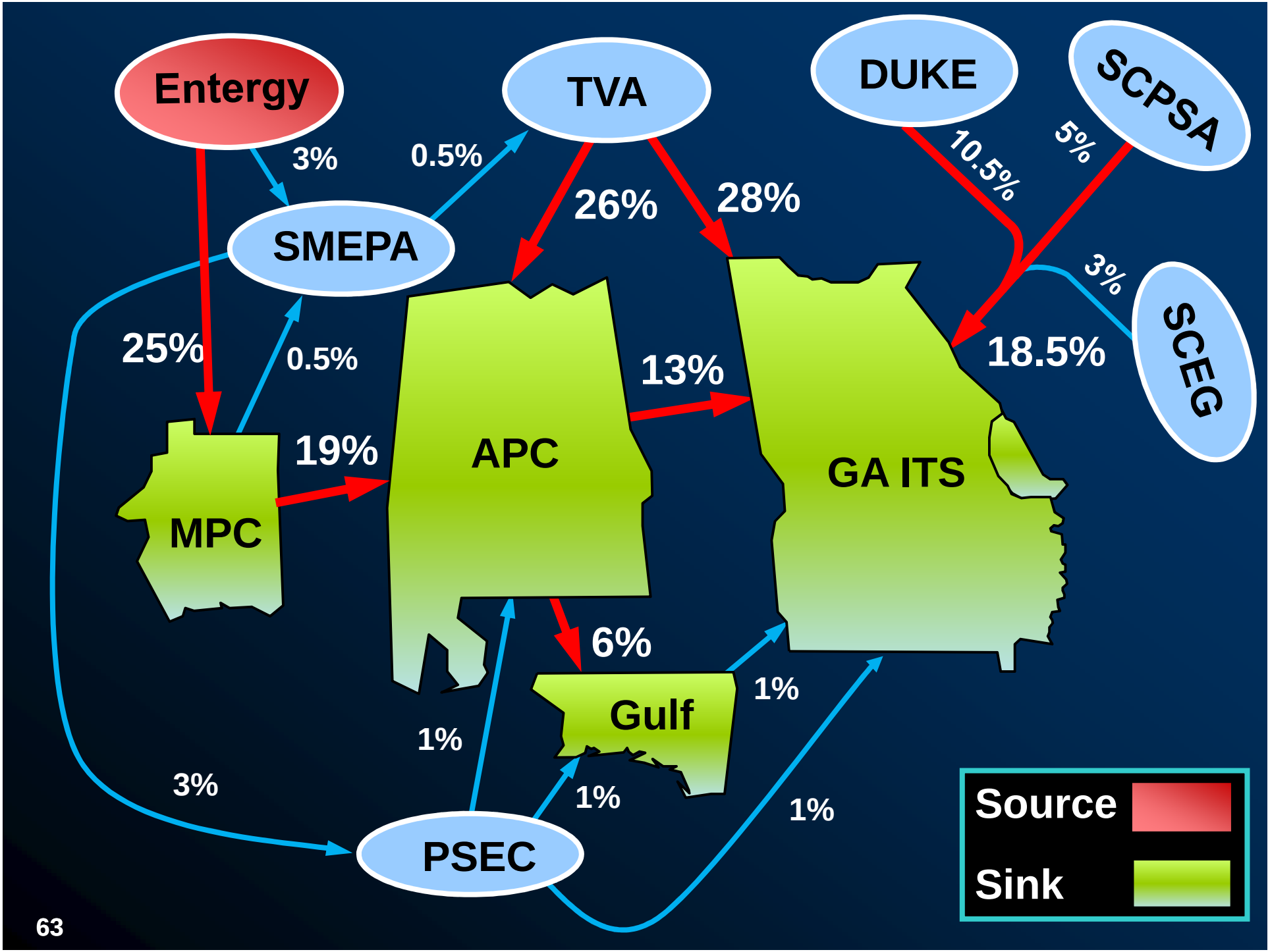
Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW

- Transfer Type: Generation to Generation
- Source: New generator interconnecting to the El Dorado 500 kV substation (EES) near El Dorado, AR
- Sink: Generation within the SBA

Source

Sink


Entergy
TVA
DUKE
SCPSA
SMEPA
SCEG
MPC
APC
GA ITS
Gulf
PSEC
3%
0.5%
26%
28%
10.5%
5%
3%
25%
0.5%
13%
18.5%
19%
6%
1%
1%
1%
3%
1%
Source
Sink

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - Three (3) 230 kV Lines
  - One (1) 230 / 115 kV Transformer
  - Two (2) 161 / 115 kV Transformers
  - Two (2) 161 kV Lines
  - Twelve (12) 115 kV Lines

Total Cost (2011$) = $200,100,000

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW

Southern Balancing Authority

Screen Results

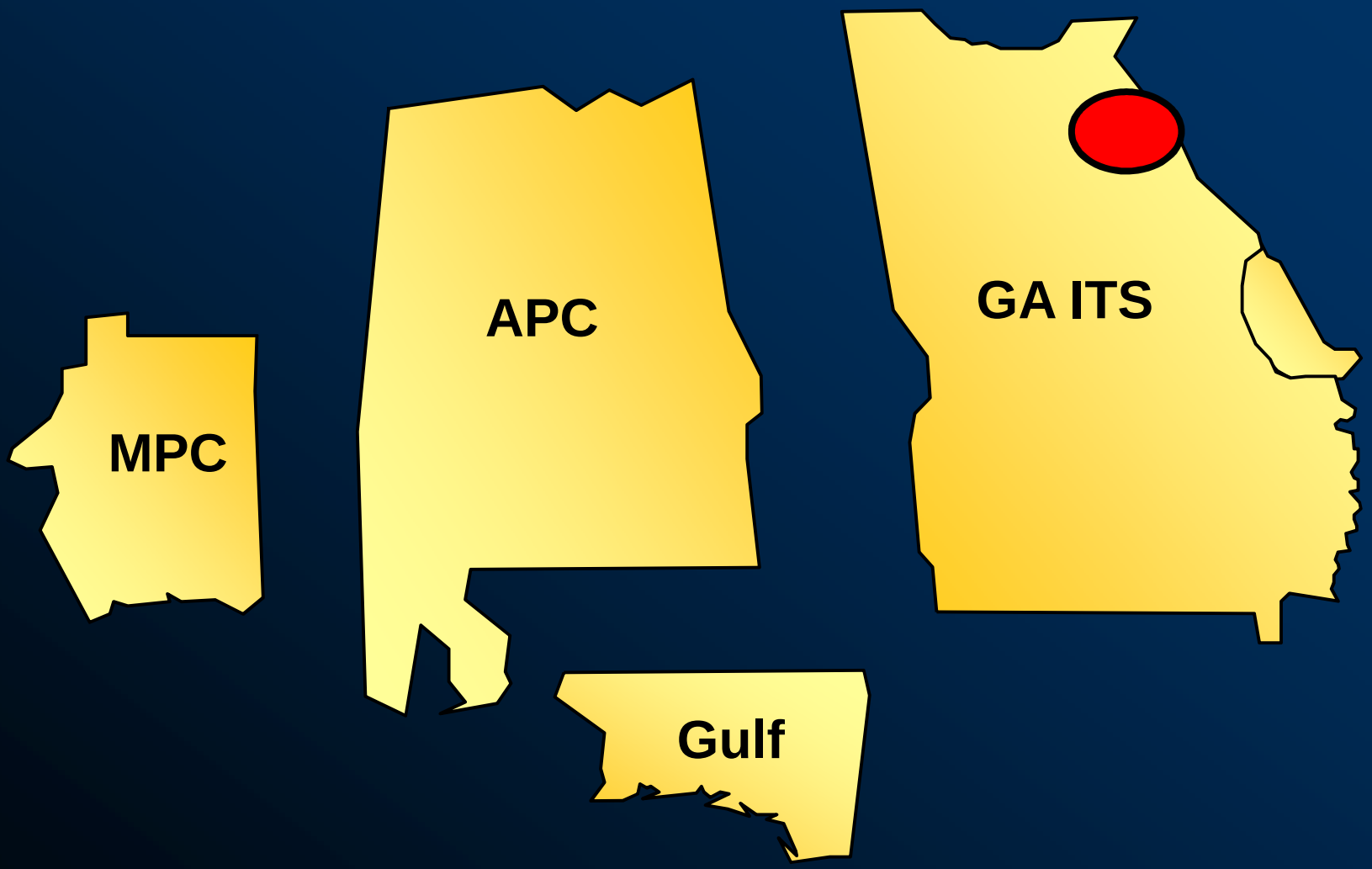
EES Border to SBA 1500 MW

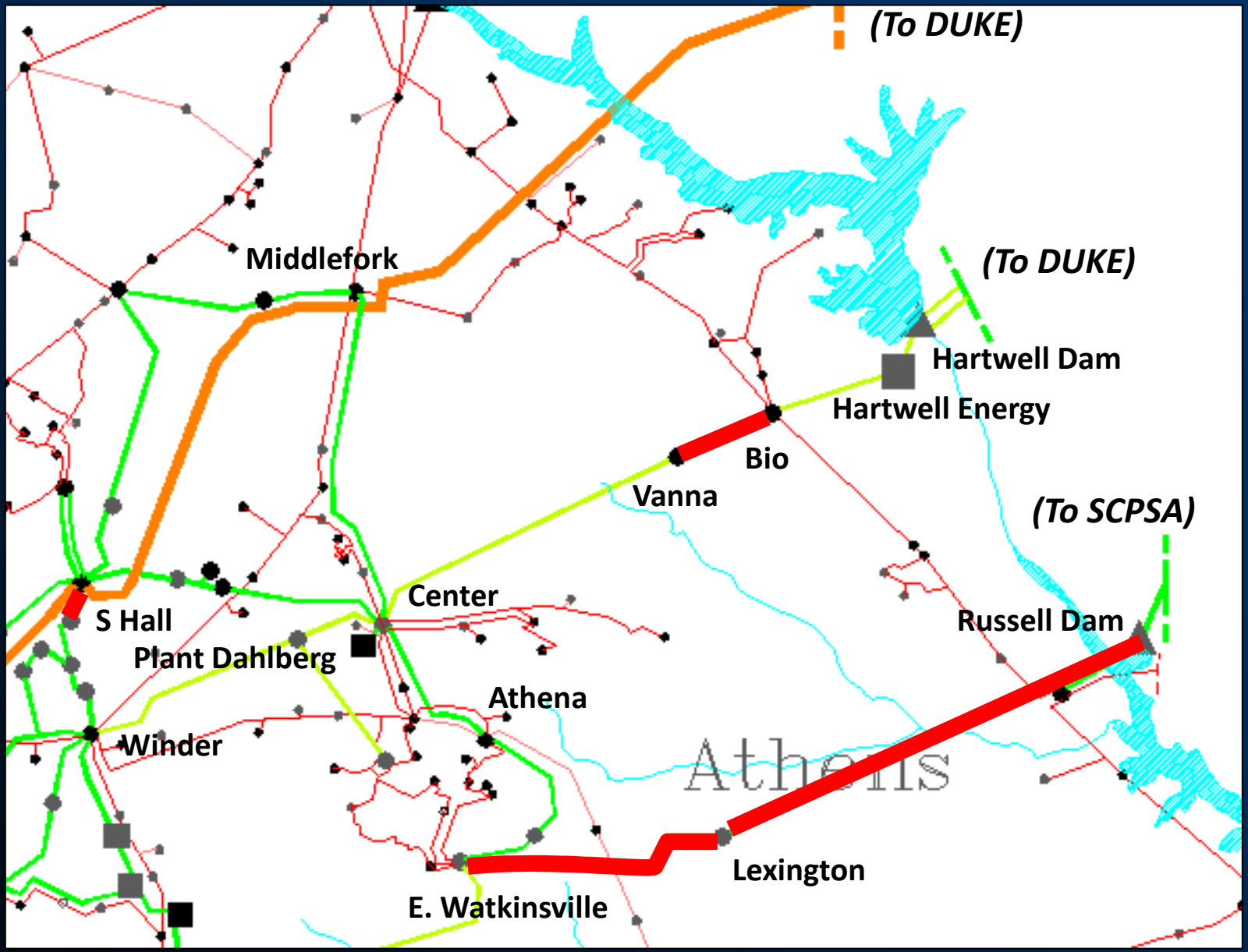
Significant Constraints – PASS 0

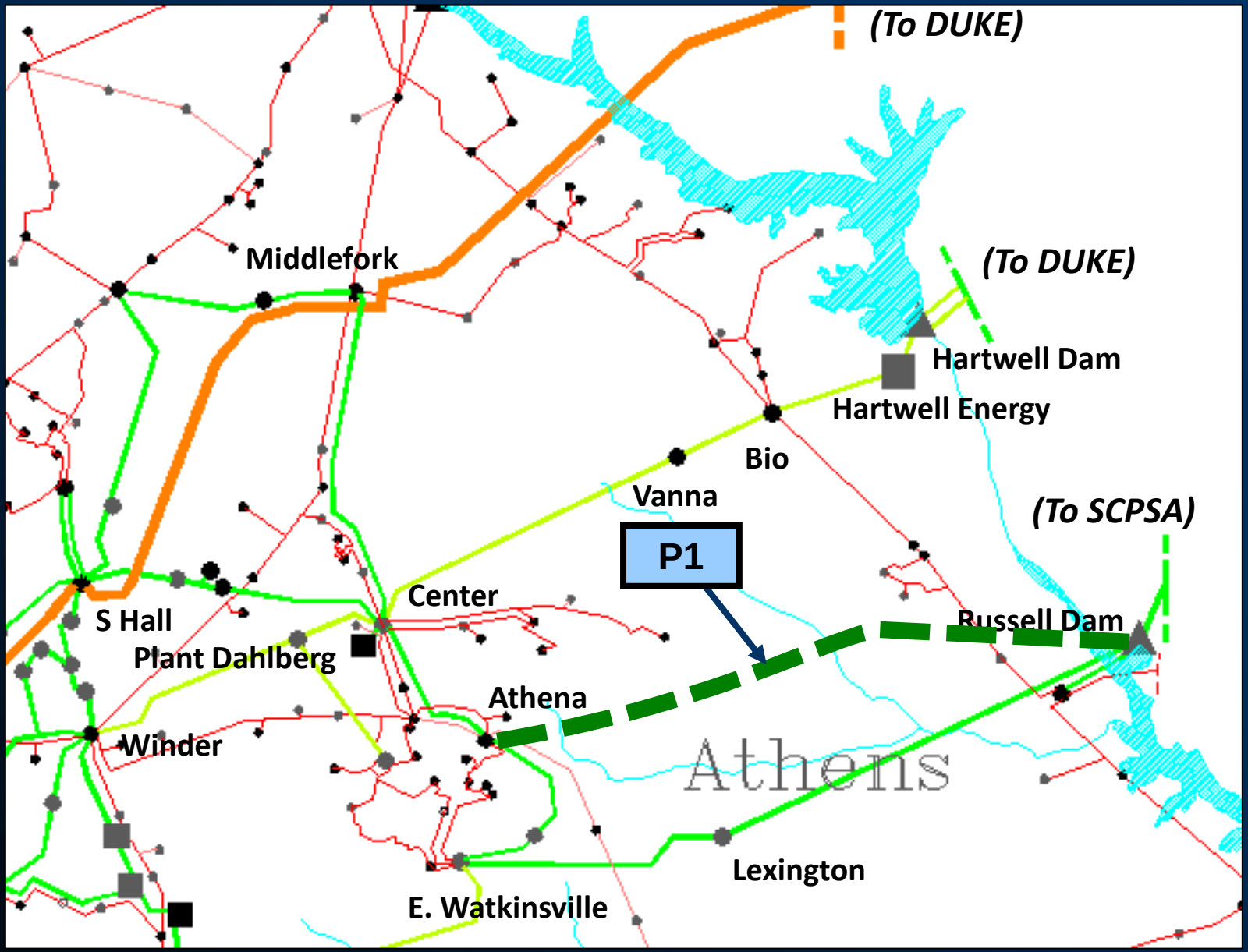
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Lexington – East Watkinsville 230 kV TL	602	93.7	102.5
Bio – Vanna 230 kV TL	433	96.2	104.5
Russell – Lexington 230 kV TL	596	98.0	107.0

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




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


(To DUKE)
Middlefork
(To DUKE)
Hartwell Dam
Hartwell Energy
Bio
Vanna
(To SCPSA)
P1
Center
S Hall
Plant Dahlberg
Russell Dam
Athena
Winder
Athens
Lexington
E. Watkinsville

Southeastern Regional TRANSMISSION PLANNING

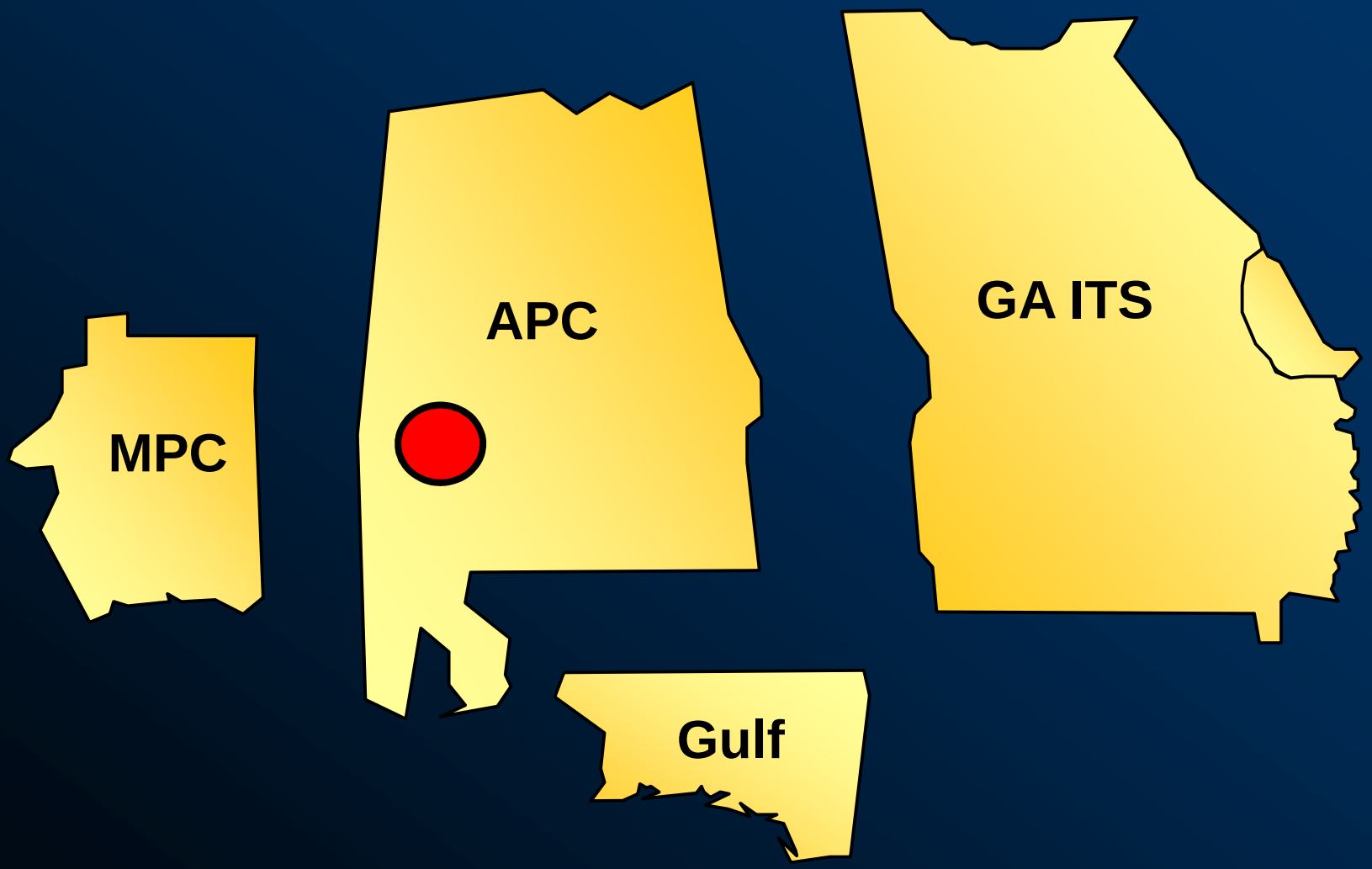
EES Border to SBA 1500 MW

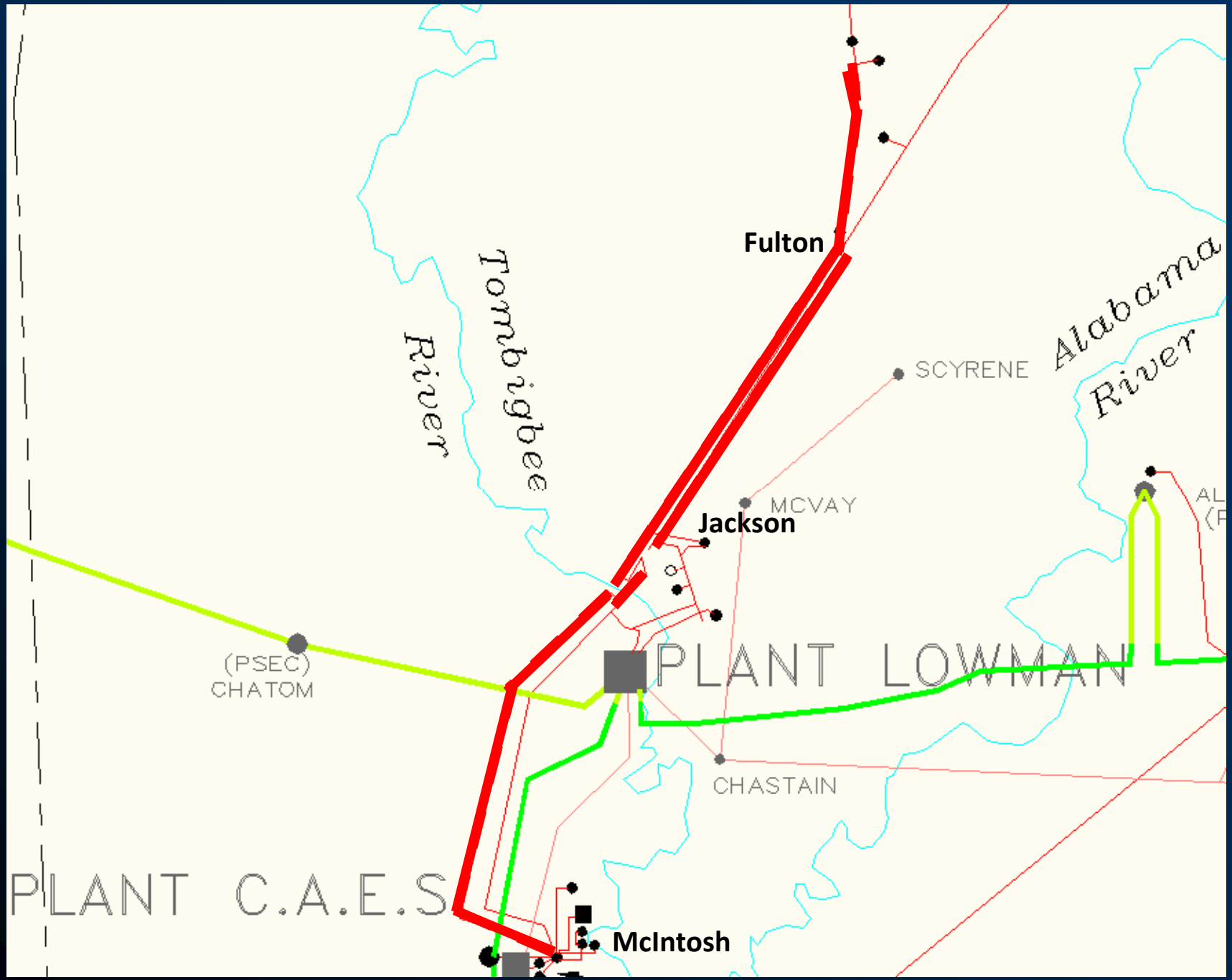
Significant Constraints – PASS 1

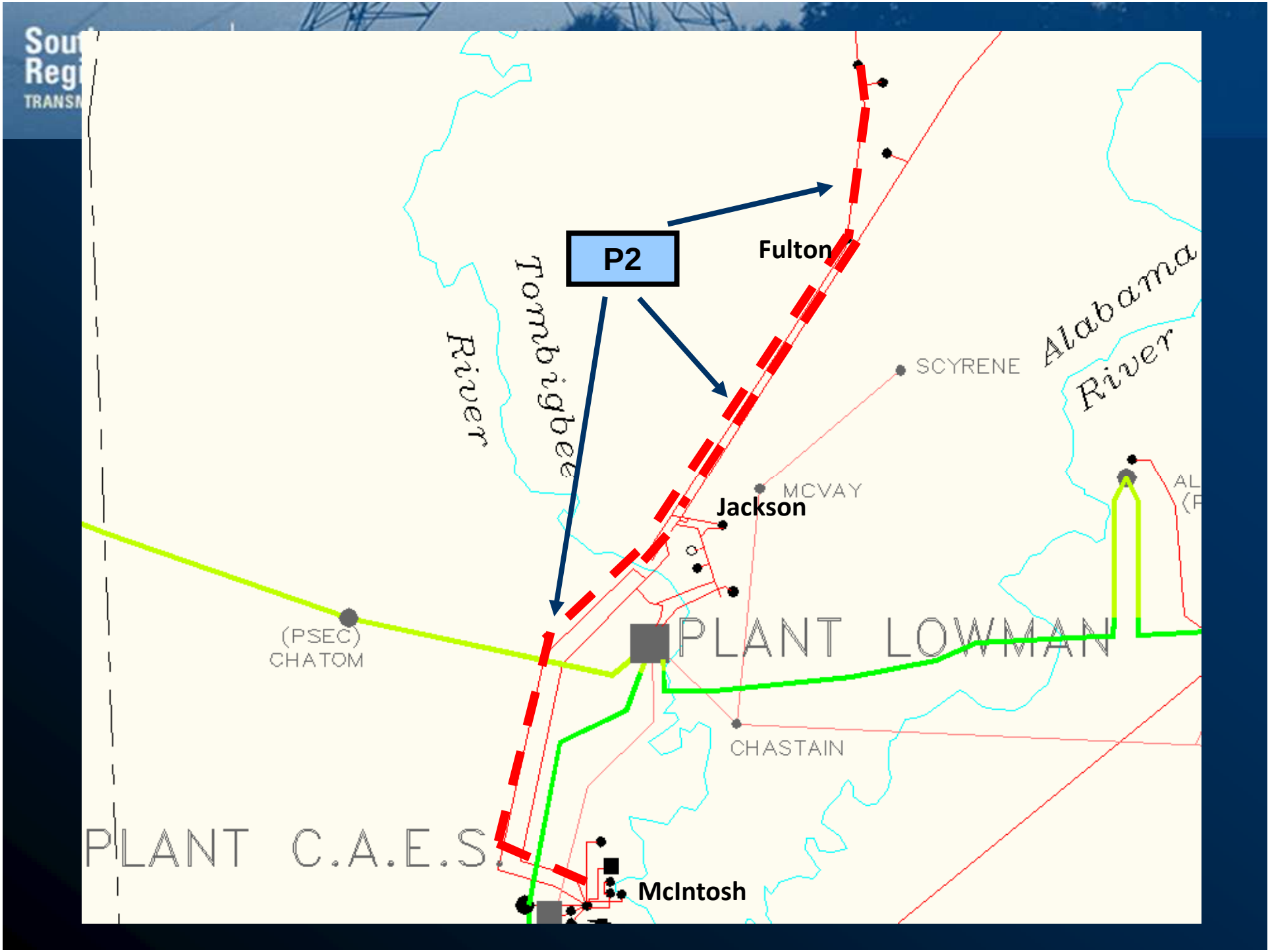
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
LSA Tap – GDC Tap 115 kV TL	112	86.4	100.2
Fulton – Jackson Tap B 115 kV TL	138	88.9	103.8
Jackson Tap B – Lowman Tap B 115 kV TL	138	88.9	103.8
Fulton – GDC Tap 115 kV TL	112	92.1	105.9
Fulton – Jackson Tap A 115 kV TL	112	92.6	109.3
Lowman Tap A - McIntosh 115 kV TL	112	92.7	109.4

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




Fulton
Tombigbee River
Alabama River
SCYRENE
MCVAY
Jackson
(PSEC)
CHATOM
PLANT LOWMAN
CHASTAIN
PLANT C.A.E.S
McIntosh


P2
Fulton
Jackson
McIntosh
SCYRENE
MCVAY
CHASTAIN
(PSEC)
CHATOM
PLANT LOWMAN
PLANT C.A.E.S.
Tombigbee River
Alabama River

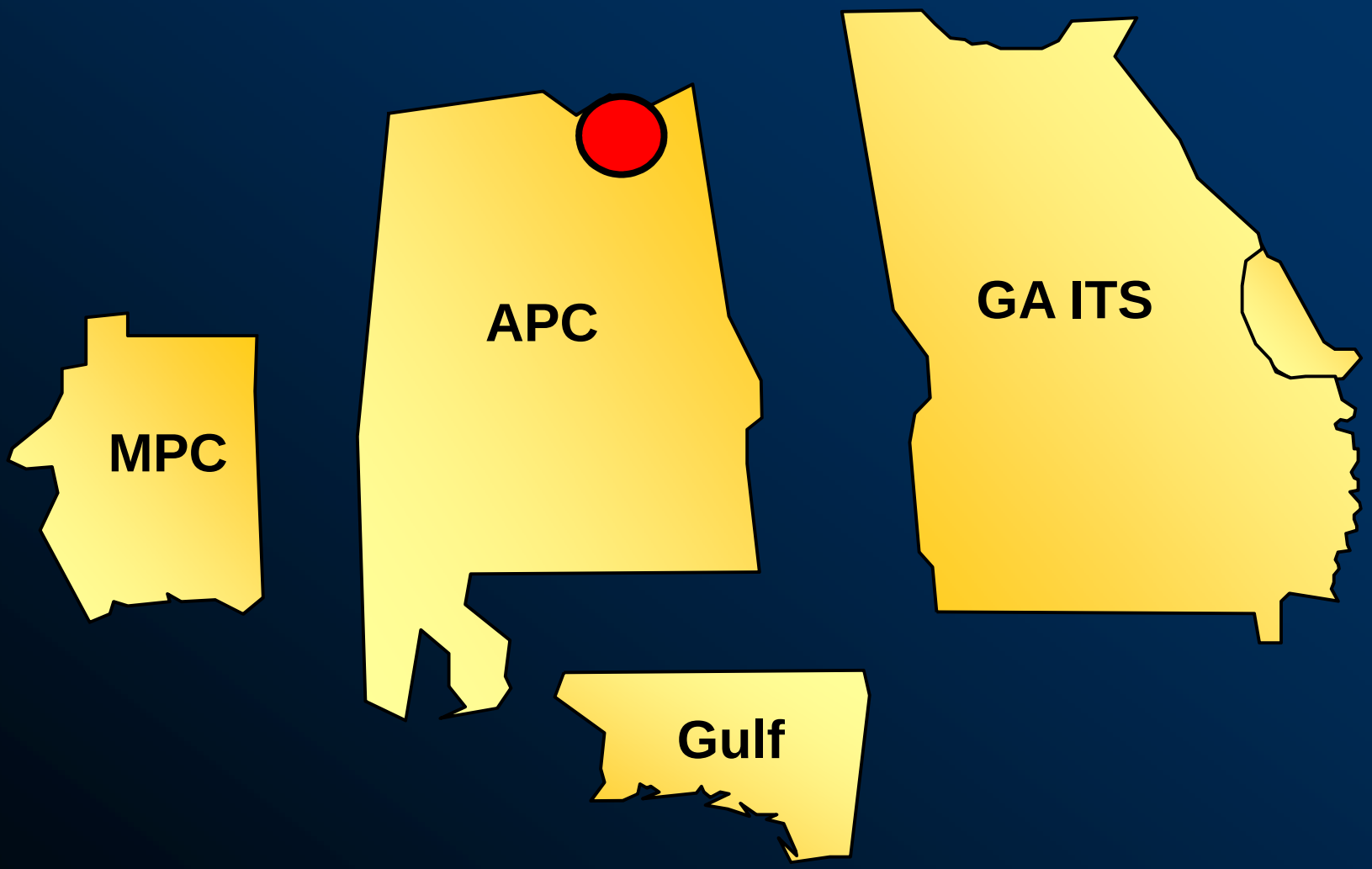
EES Border to SBA 1500 MW

Significant Constraints – PASS 1 (Cont.)

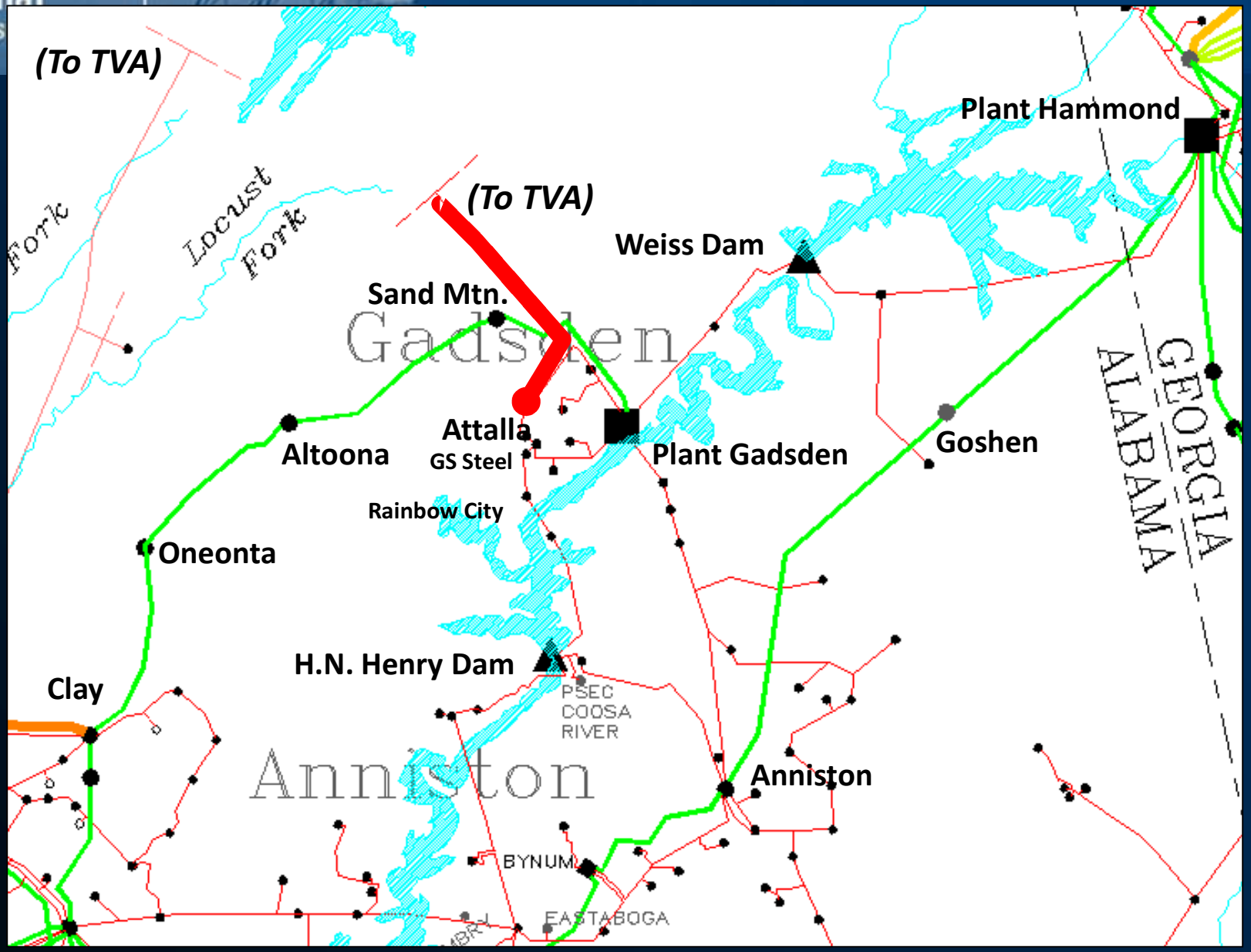
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Attalla 161 / 115 kV Transformer 1	111	88.4	106.9
Attalla 161 / 115 kV Transformer 2	99	88.4	108.2
Attalla – Albertville 161 kV TL	193	96.7	117.0

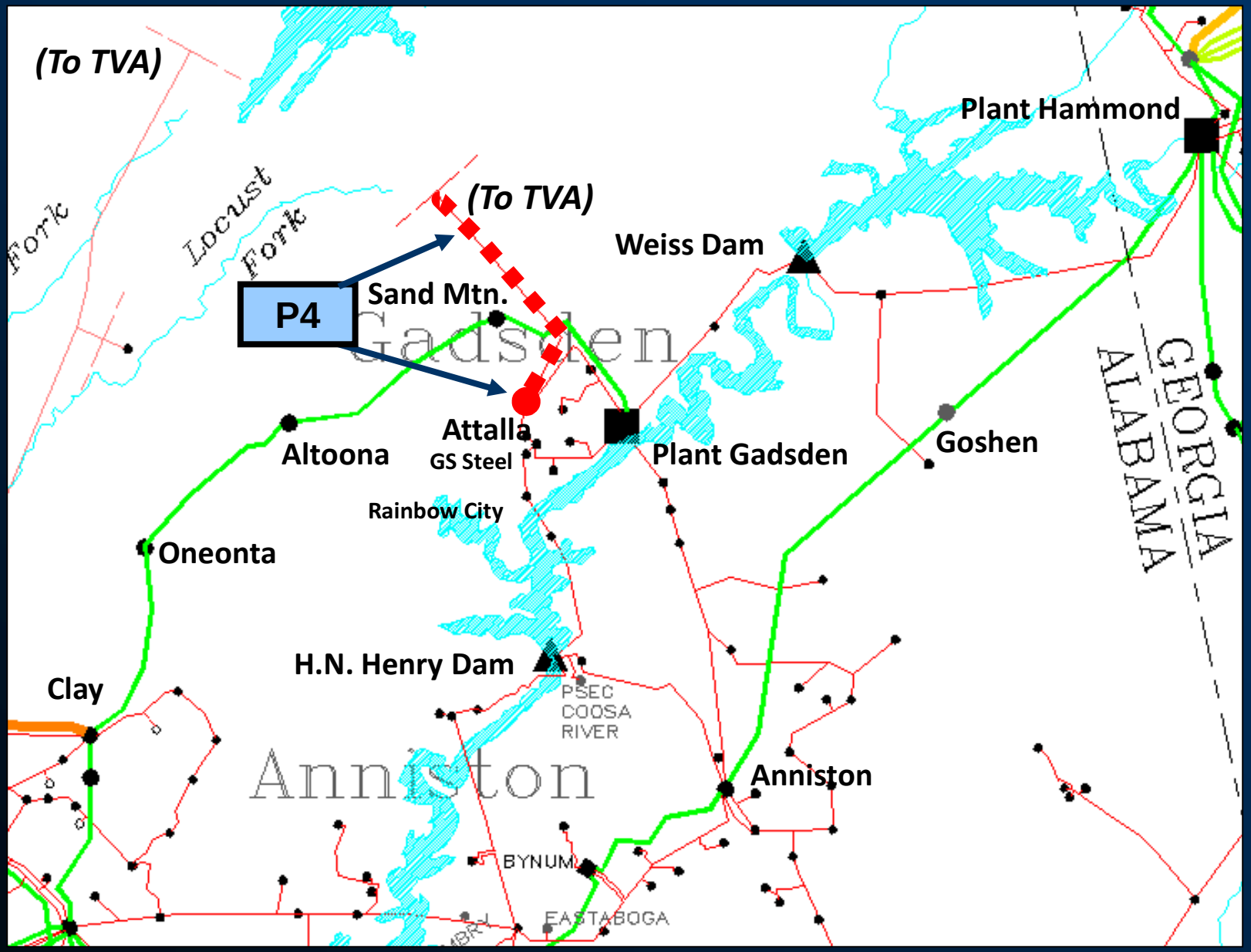
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISS




(To TVA)
Plant Hammond
(To TVA)
Weiss Dam
Fork
Locust
Fork
P4
Sand Mtn.
Gadsden
Attalla
GS Steel
Plant Gadsden
Goshen
Altoona
Rainbow City
Oneonta
H.N. Henry Dam
Clay
PSEC
COOSA
RIVER
Anniston
Anniston
BYNUM
EASTABOGA
GEORGIA
ALABAMA

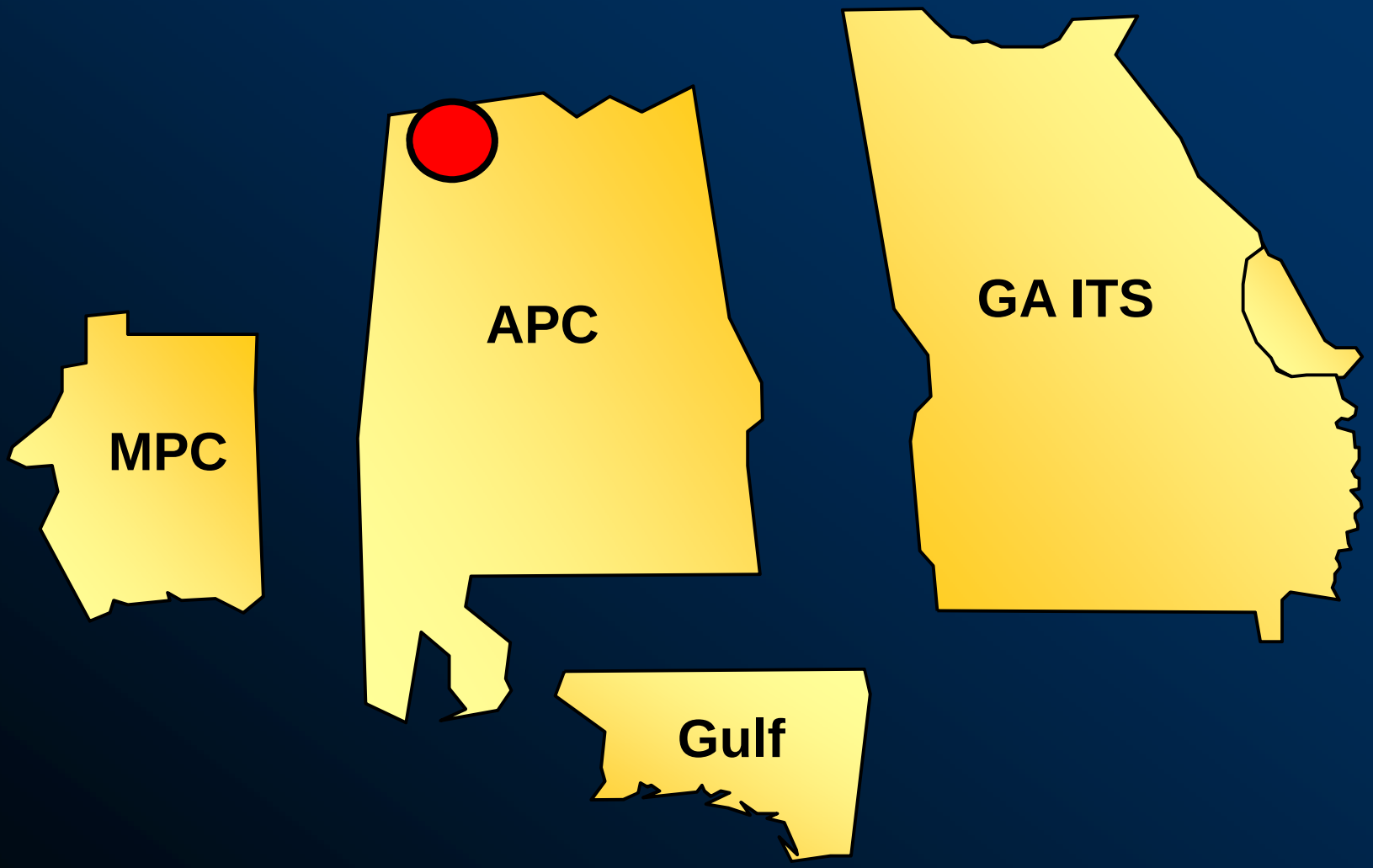
EES Border to SBA 1500 MW

Significant Constraints – PASS 1 (Cont.)

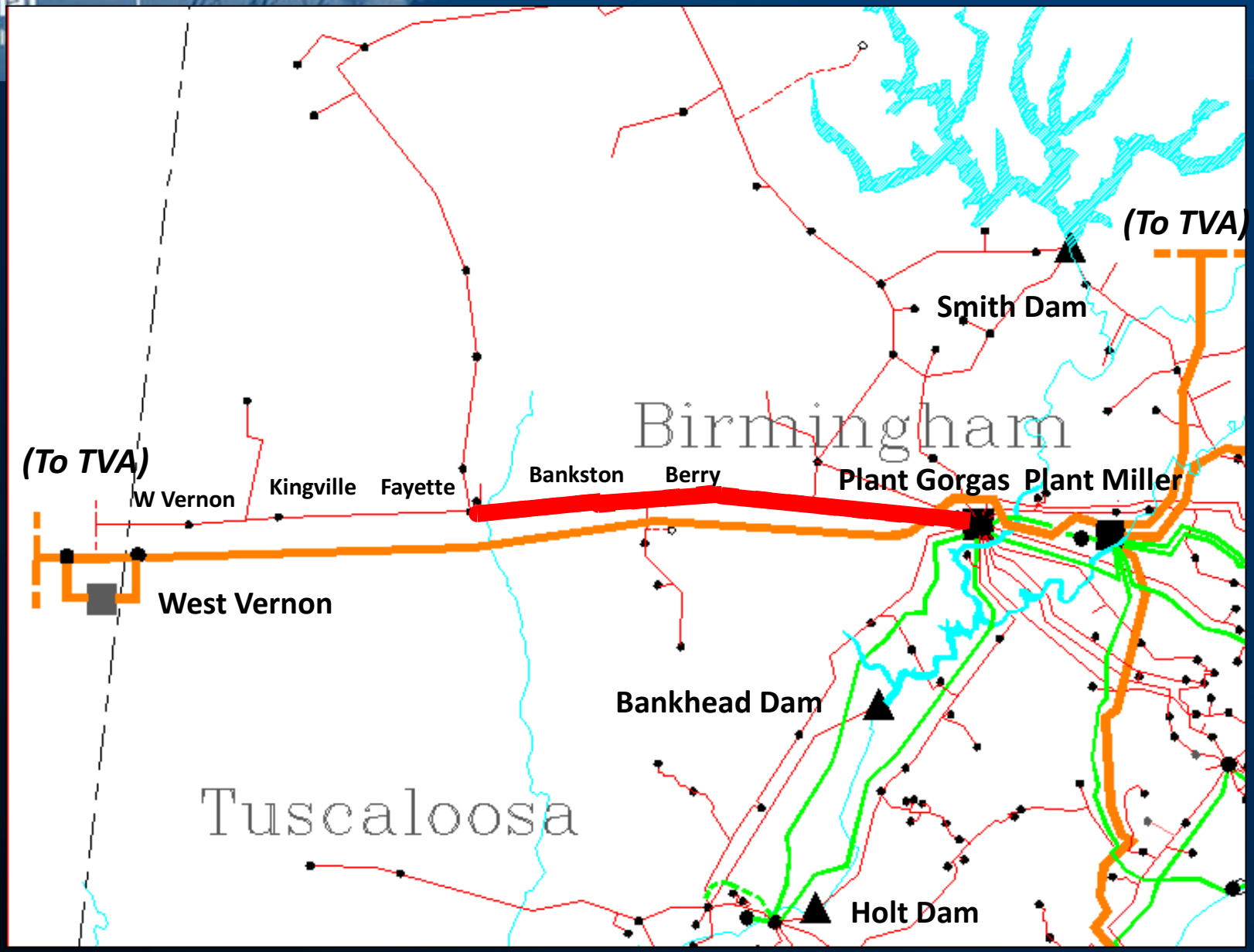
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Oakman Tap – Gorgas 161 kV TL	193	80.7	116.0
Oakman Tap – Berry 161 kV TL	193	81.2	116.4
Berry – Pitts &Midway Tap 161 kV TL	193	83.4	118.6
Bankston – Pitts & Midway Tap kV TL	193	92.0	127.3
Fayette CS – Bankston 161 kV TL	193	93.8	129.1
Fayette TS – Fayette TS 161 kV TL	193	93.8	129.1

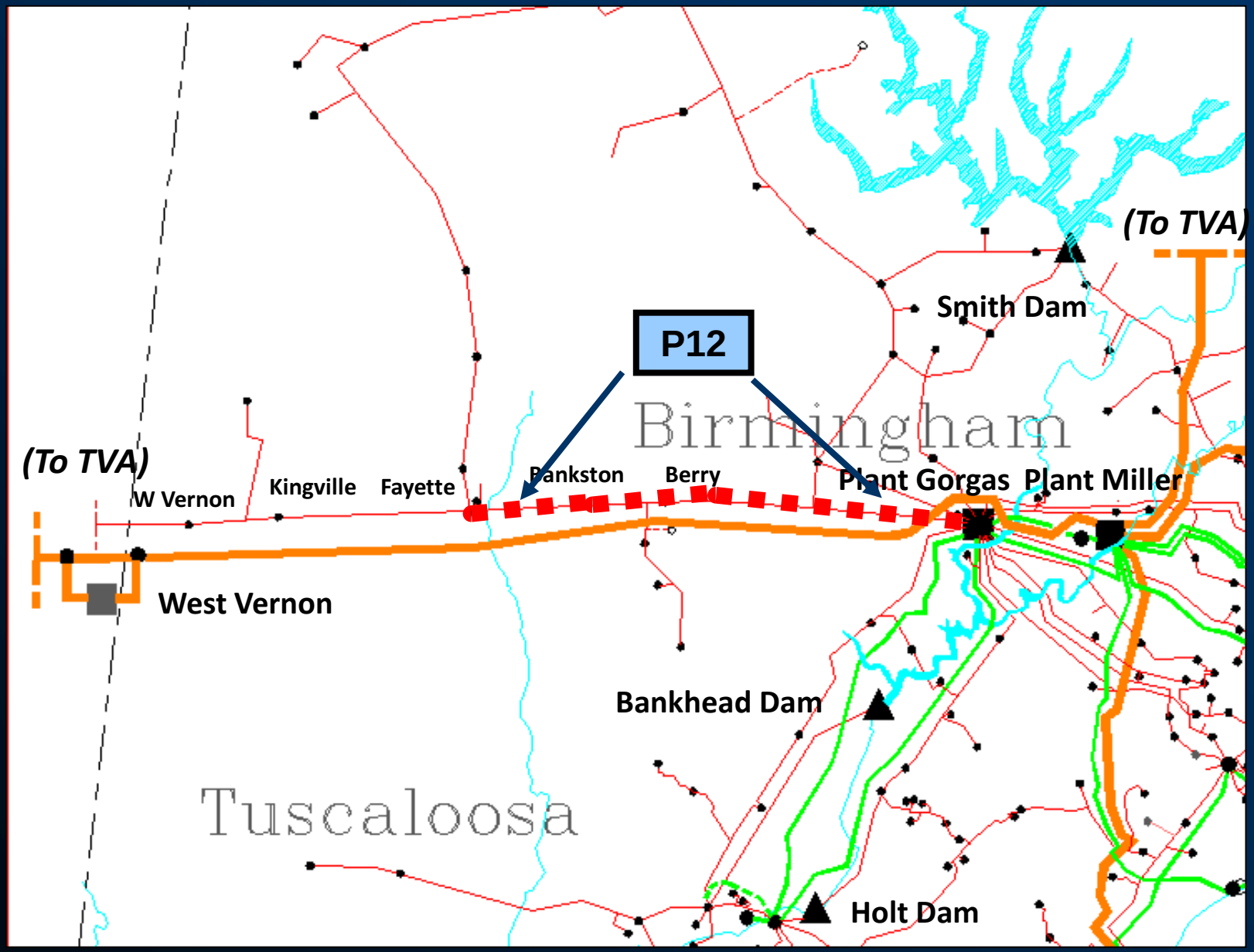
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISSI




(To TVA)
W Vernon
Kingville
Fayette
Pankston
Berry
Plant Gorgas
Plant Miller
(To TVA)
Smith Dam
P12
Birmingham
West Vernon
Bankhead Dam
Tuscaloosa
Holt Dam

EES Border to SBA 1500 MW

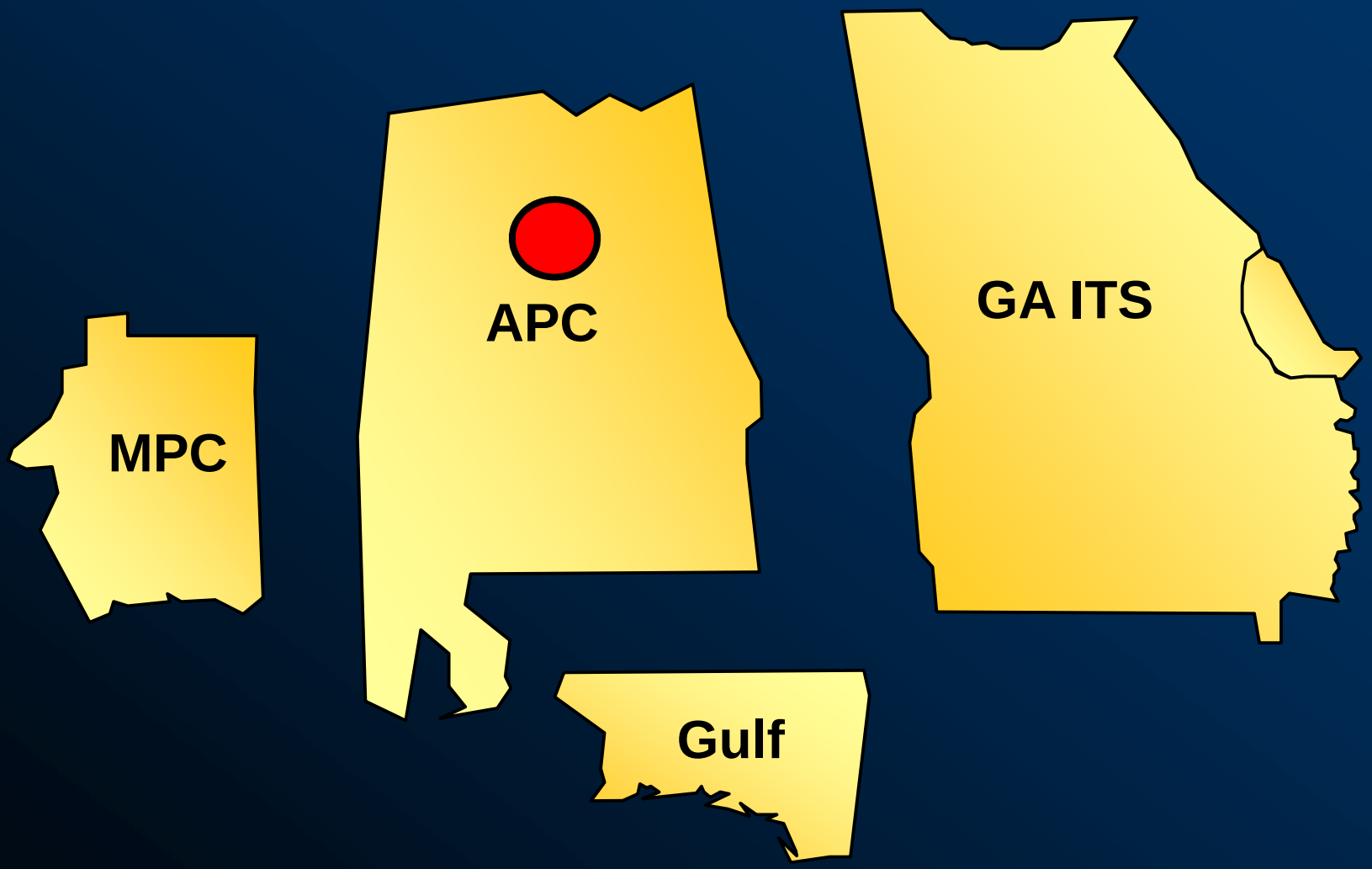
Significant Constraints – PASS 1 (Cont.)

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Sylacauga – Hollins 115 kV	113	104.6(1)	118.0
Hollins – Sunny Level Tap 115 kV	113	99.4	113.1
Sunny Level Tap – Kellyton 115 kV	113	93.2	106.9
Kellyton – Alexander City Tap 115 kV	113	91.3	105.0

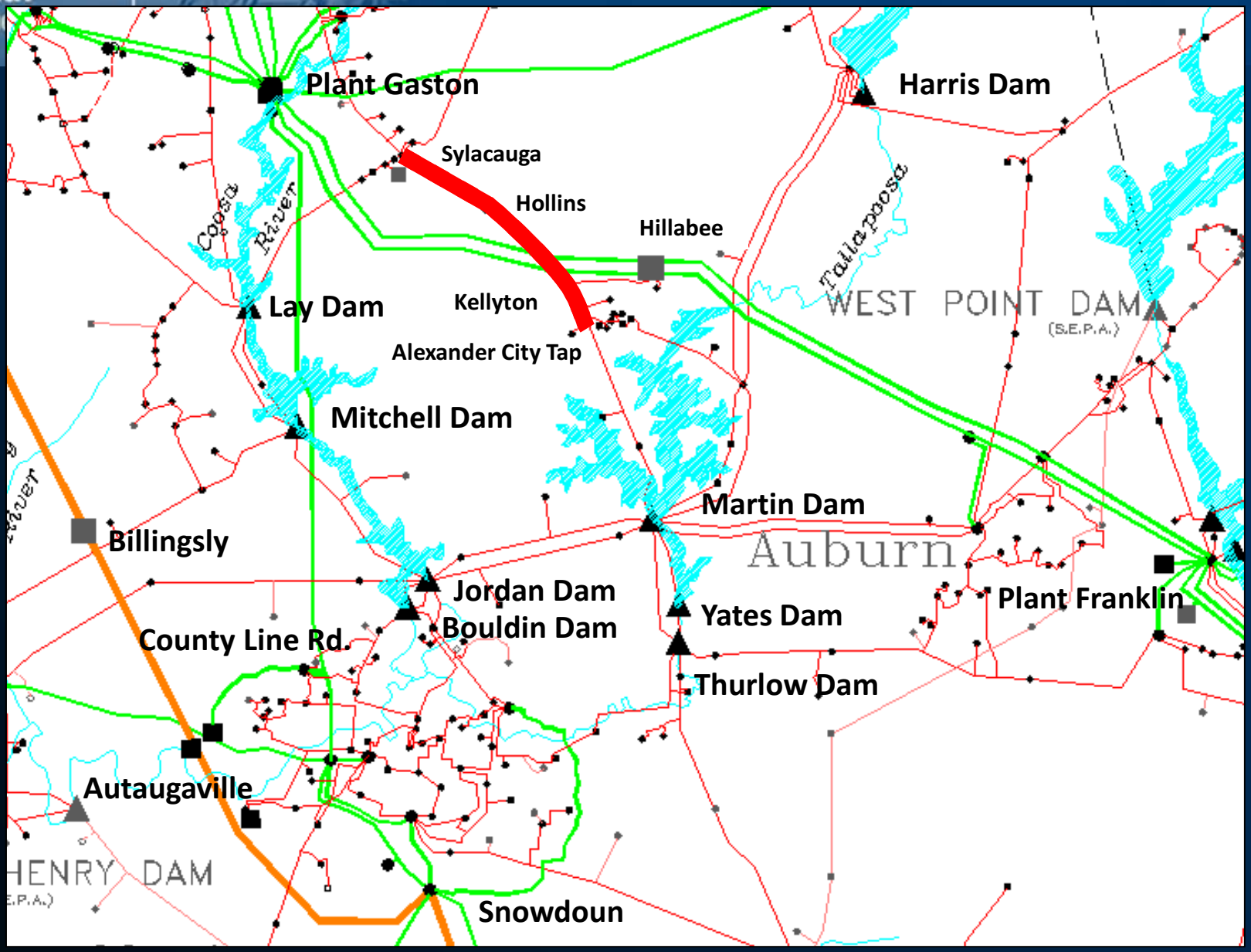
(1) A current operating procedure is sufficient to alleviate this constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this facility such that the operating procedure becomes insufficient.

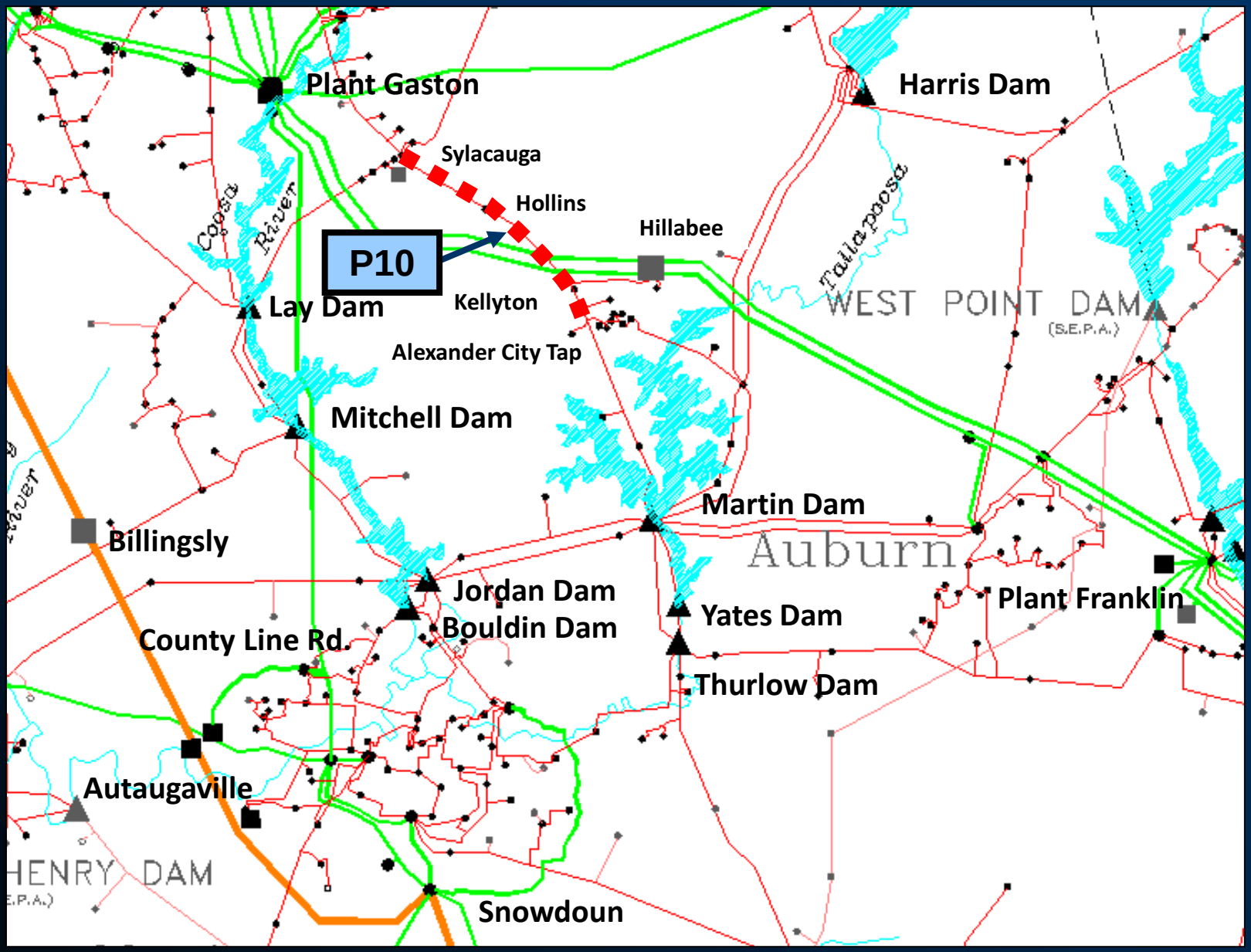
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISSI




Plant Gaston
Harris Dam
Sylacauga
Hollins
Hillabee
P10
Lay Dam
Kellyton
Alexander City Tap
WEST POINT DAM
(S.E.P.A.)
Mitchell Dam
Martin Dam
Billingsly
Auburn
Jordan Dam
Bouldin Dam
Yates Dam
Plant Franklin
County Line Rd.
Thurlow Dam
Autaugaville
HENRY DAM
Snowdoun

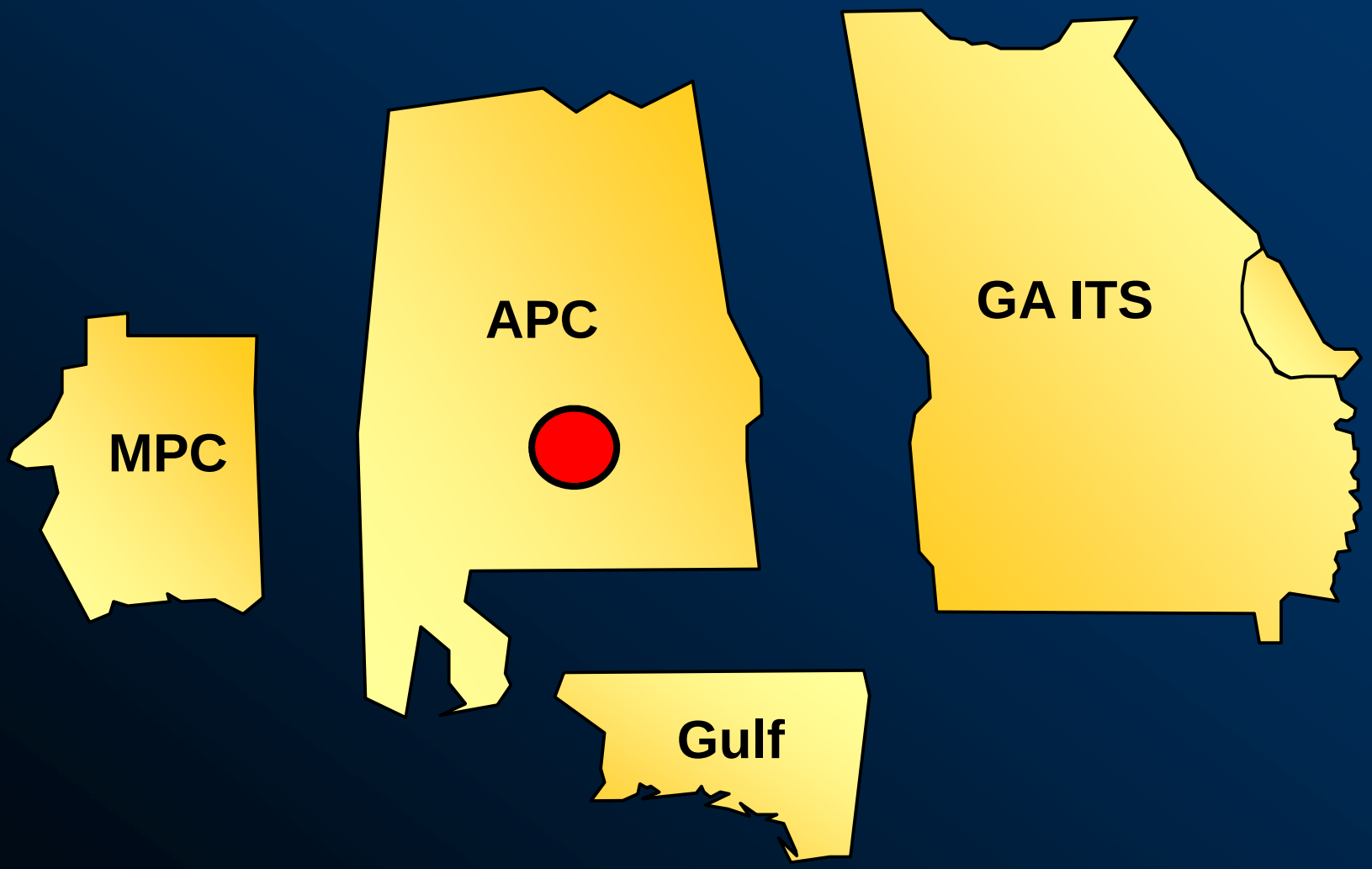
EES Border to SBA 1500 MW

Significant Constraints – PASS 1 (Cont.)

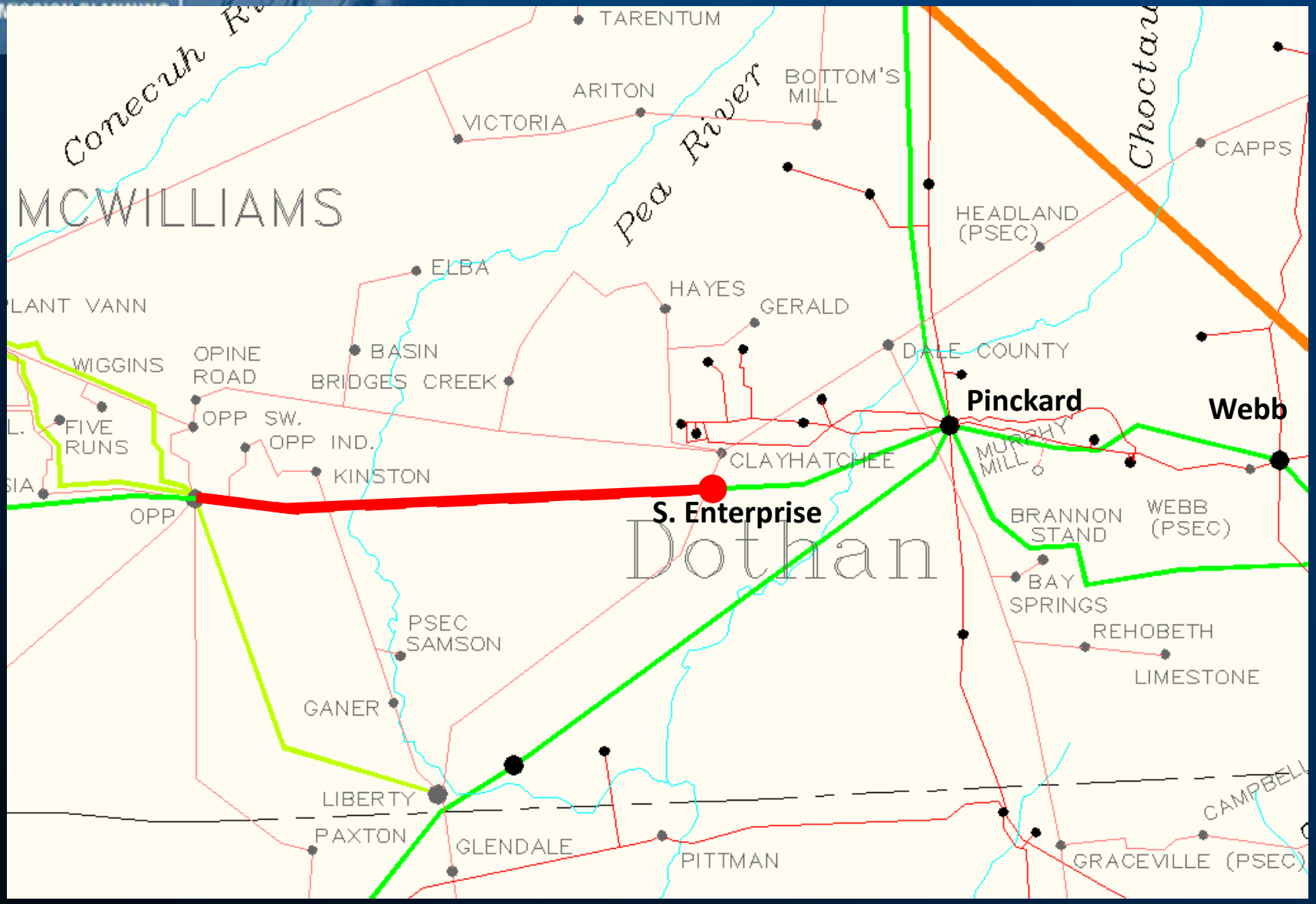
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Opp – S. Enterprise 230 kV TL	498	96.7	104.8
S. Enterprise XFMR 230/115 kV	250	96.1	106.9

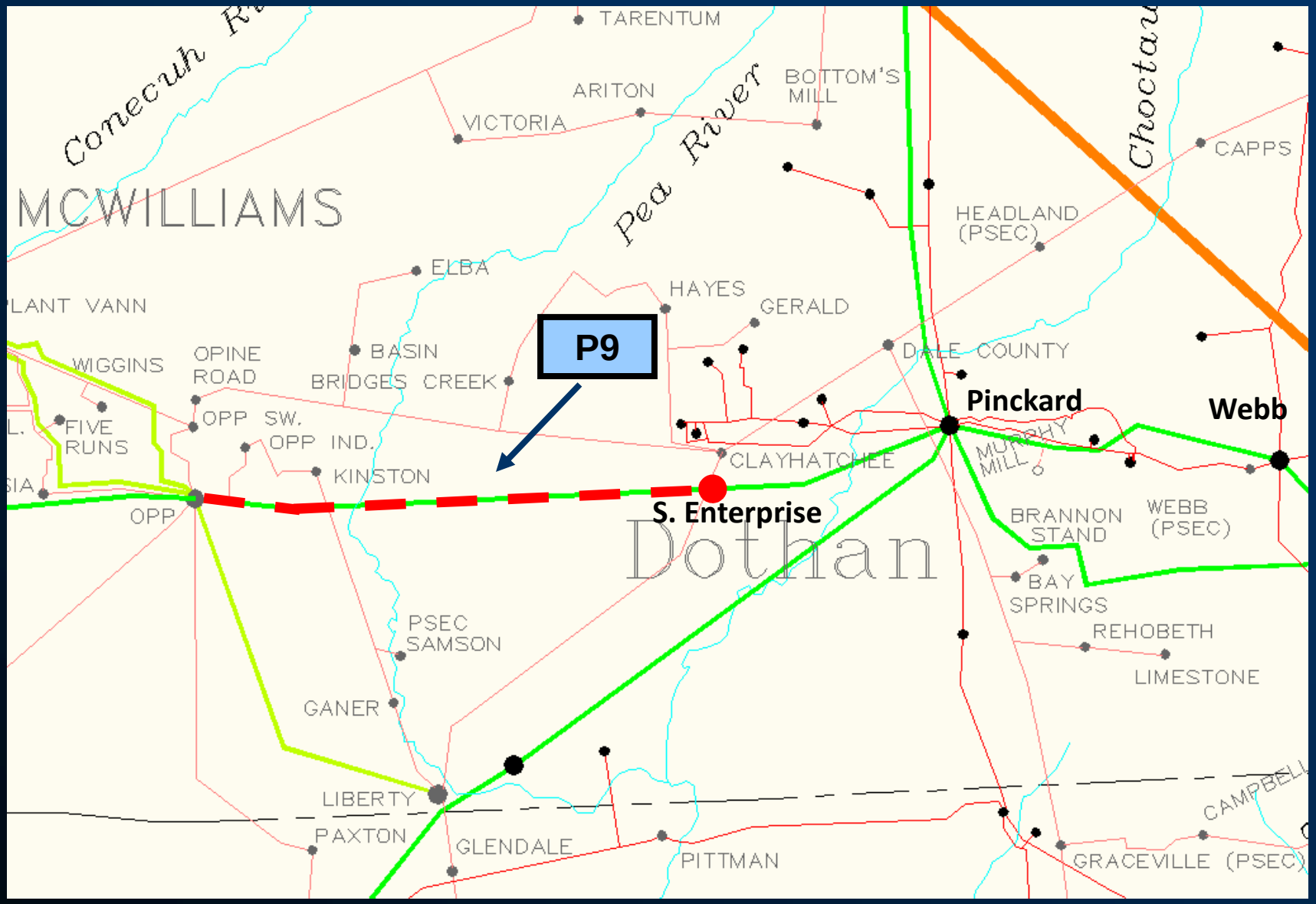
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional




TARENTUM
ARITON
VICTORIA
BOTTOM'S MILL
Pea River
MCWILLIAMS
ELBA
HAYES
GERALD
CAPPS
HEADLAND (PSEC)
DALE COUNTY
P9
WIGGINS
OPINE ROAD
BASIN
BRIDGES CREEK
OPP SW.
OPP IND.
KINSTON
FIVE RUNS
OPP
CLAYHATCHEE
Pinckard
Webb
S. Enterprise
Dothan
BRANNON STAND
WEBB (PSEC)
BAY SPRINGS
REHOBETH
LIMESTONE
PSEC SAMSON
GANER
LIBERTY
PAXTON
GLENDALE
PITTMAN
GRACEVILLE (PSEC)

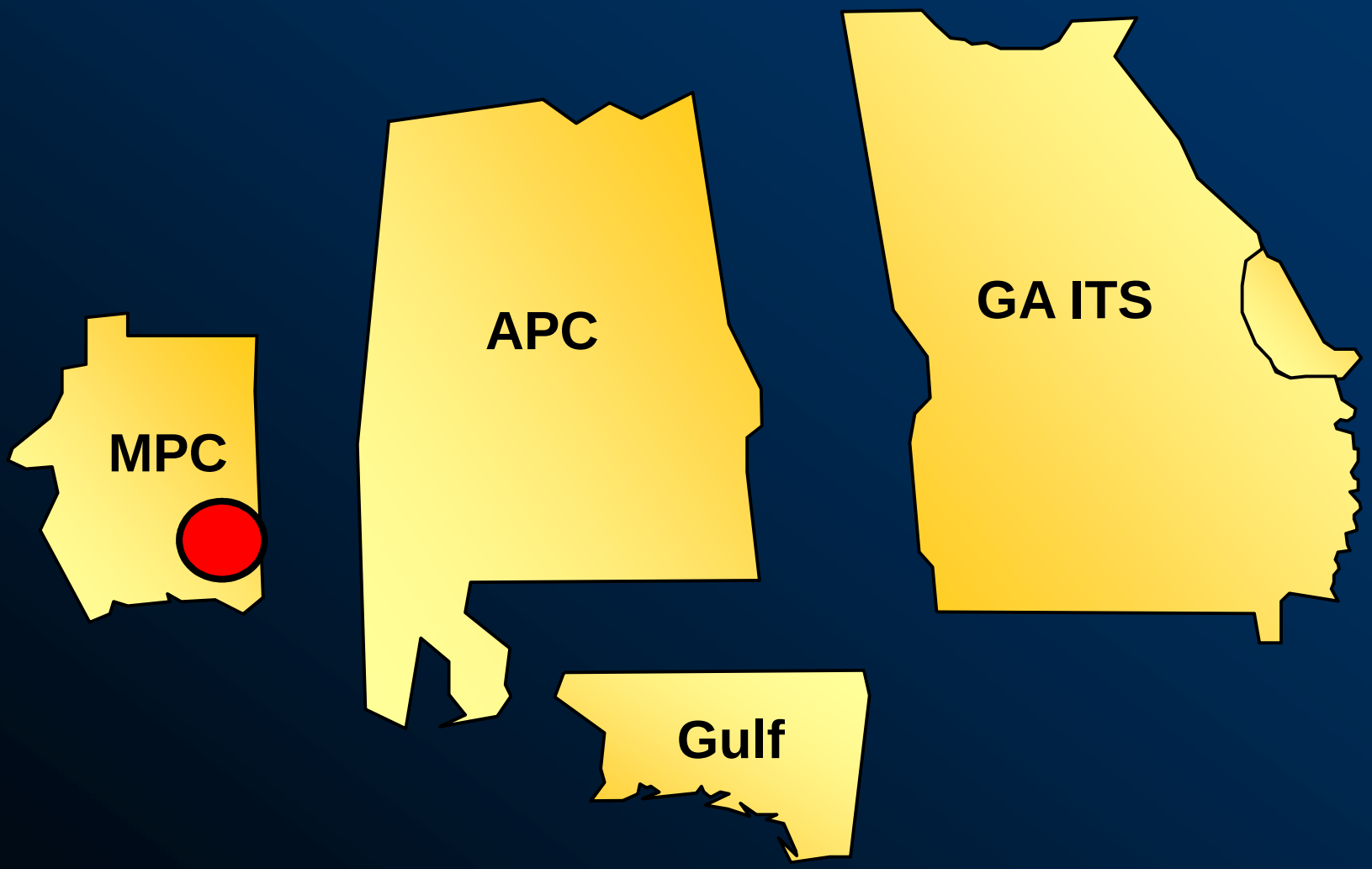
EES Border to SBA 1500 MW

Significant Constraints – PASS 1 (Cont.)

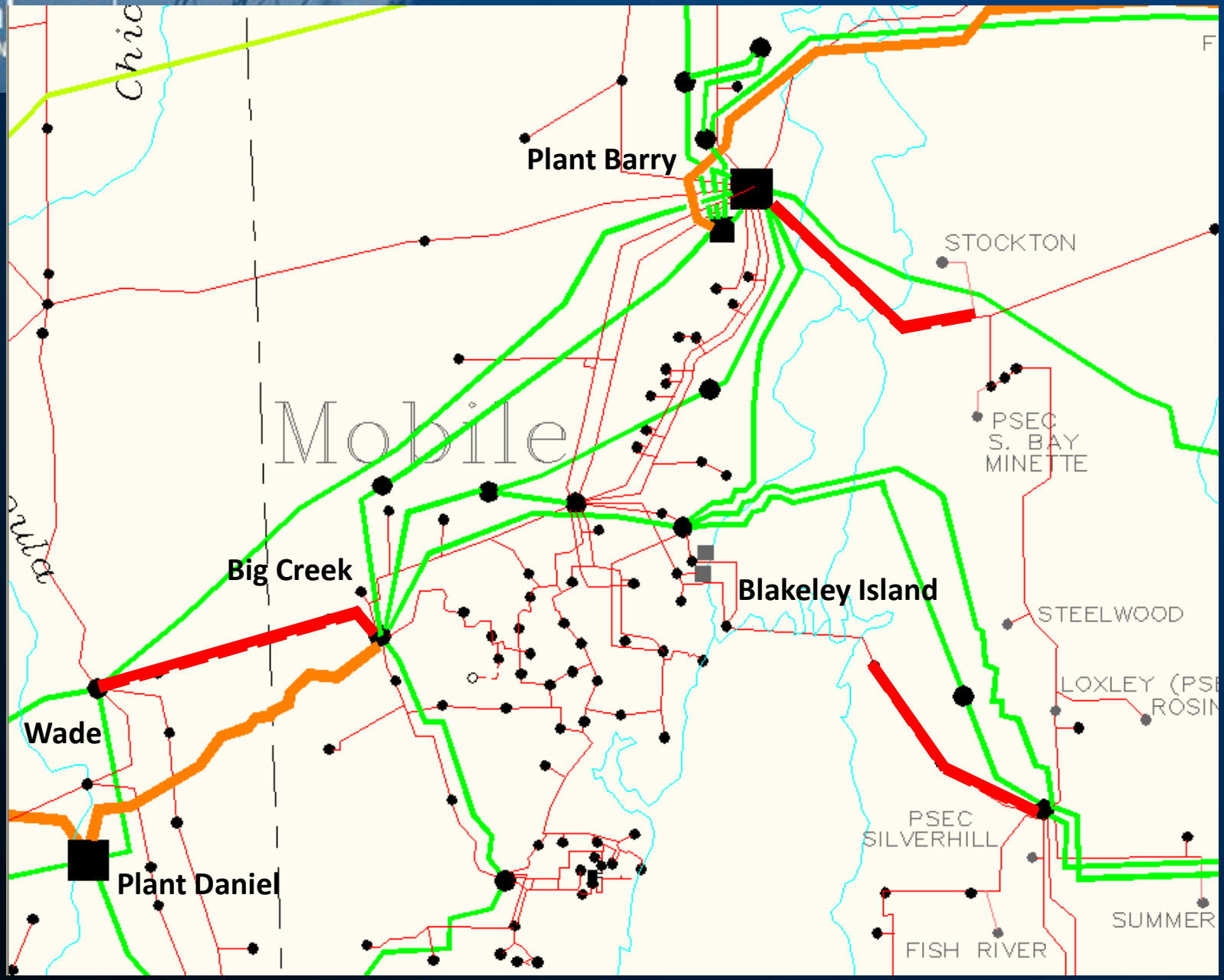
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Spanish Fort – Belforest 115 kV	212	96.9	102.8
Barry – Stockton 115 kV	212	97.7	103.1
Wade – Harleston 115 kV	104	87.5	105.7

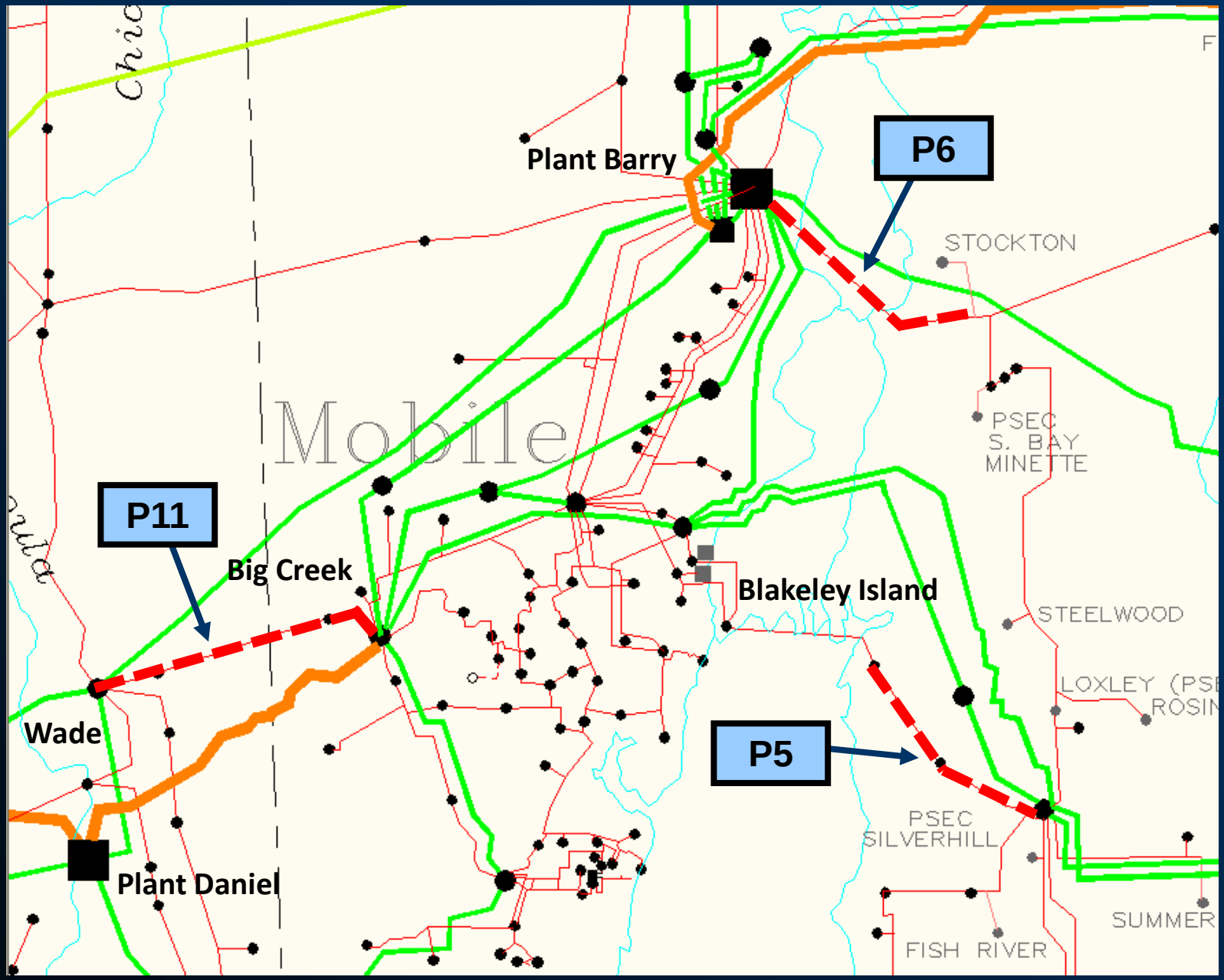
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISSION




Plant Barry
P6
STOCKTON
Mobile
PSEC
S. BAY
MINETTE
P11
Big Creek
Blakeley Island
STEELWOOD
LOXLEY (PSE
ROSIN
Wade
P5
PSEC
SILVERHILL
Plant Daniel
SUMMER
FISH RIVER

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	Russell Dam – Athena 230 kV TL	$61,000,000
P2	Fulton Area Improvements	$27,600,000
P3	Jesup – Ludowici 115 kV TL	$2,700,000
P4	Attalla 161 / 115 kV Transformers	$18,700,000(1)
	Attalla – Albertville 161 kV TL	
P5	Blakeley Island - Silverhill 115 kV TL	$11,100,000
P6	Barry - Atmore 115 kV TL	$6,300,000
P7	Logtown West - NASA 115 kV TL	$1,100,000
P8	Morton – Forest Industrial 115 kV TL	$1,400,000(1)
P9	South Enterprise – Opp 230 kV TL	$22,100,000
-	- Continued -	-

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

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
-	- Continued -	-
P10	Sylacauga – Martin 115 kV TL	$8,300,000
P11	Wade – Big Creek 115 kV TL	$6,300,000
P12	Fayette – Gorgas 161 kV TL	$29,000,000
P13	Collins – McGee 115 kV TL	$3,000,000(1)

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

SBA Total Cost (2011$) = $198,600,000

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW

PowerSouth

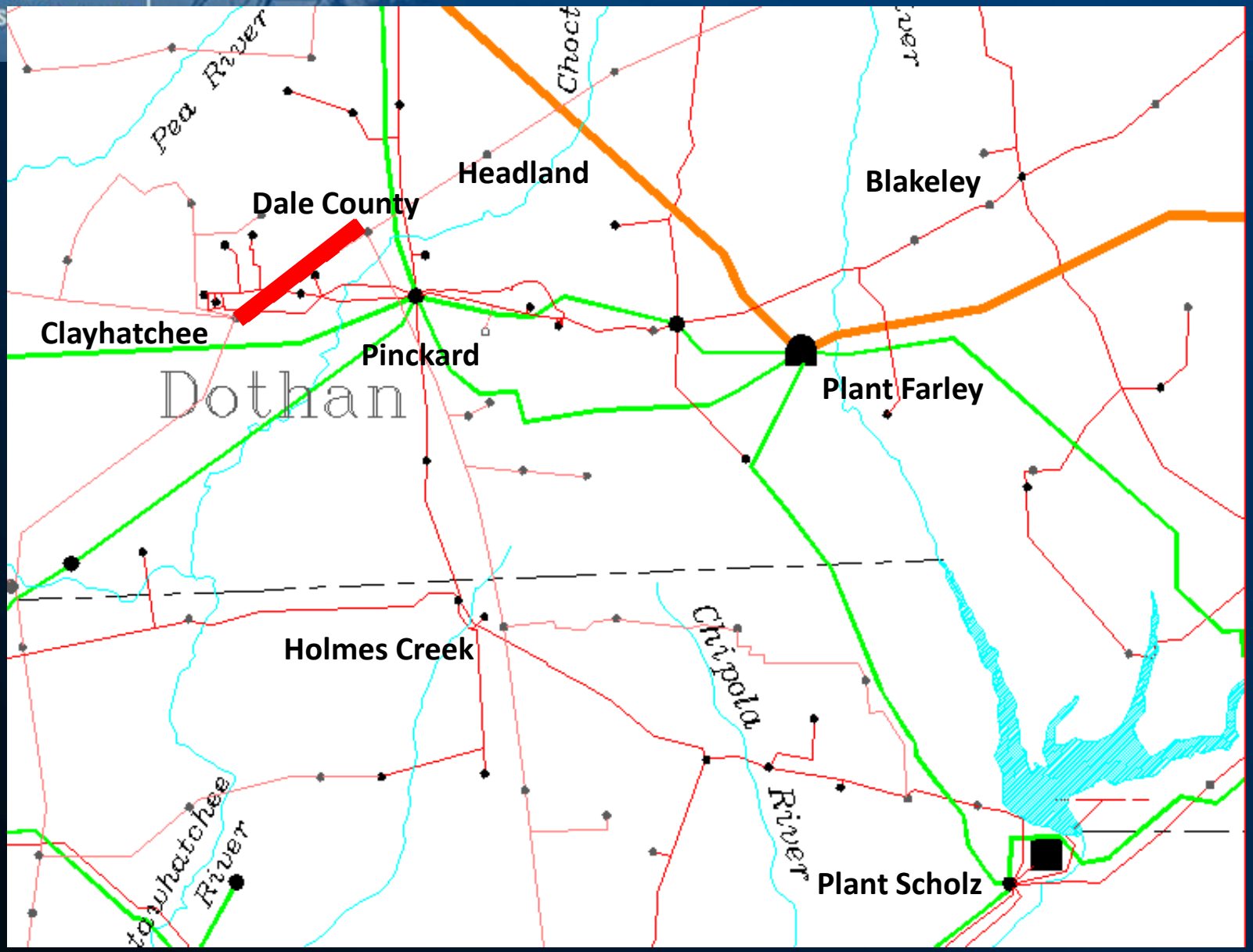
Screen Results

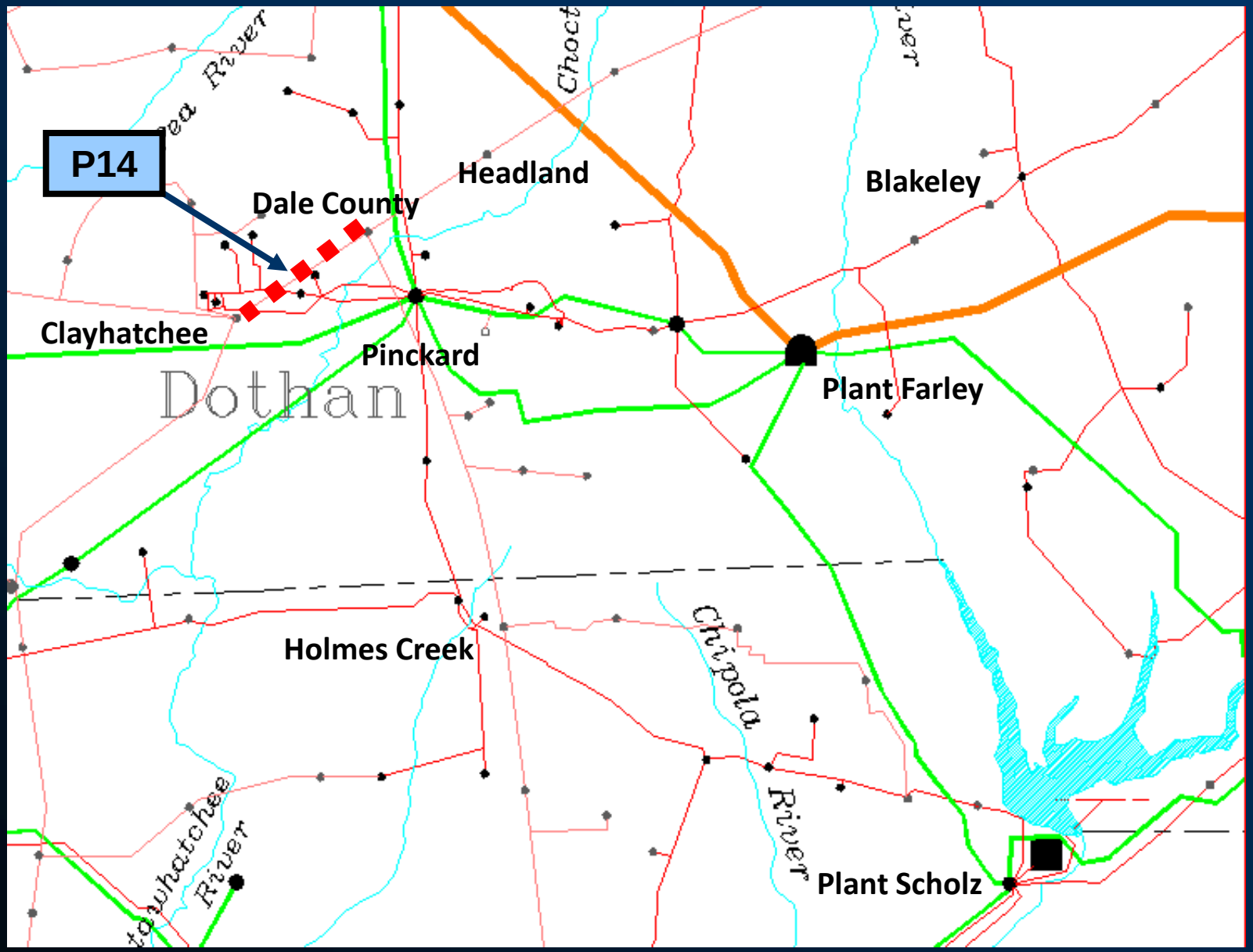
EES Border to SBA 1500 MW

Significant Constraints – PASS 0

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Clayhatchee – Dale County 115 kV TL	157	83.0	105.0

Southeastern Regional
TRANSMISS




P14
Dale County
Headland
Blakeley
Clayhatchee
Pinckard
Dothan
Plant Farley
Holmes Creek
Chipola River
Plant Scholz

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P24	Clayhatchee – Dale County 115 kV TL	$1,500,000

PS Total Cost (2011$) = $1,500,000

EES Border to SBA 1500 MW

Additional Screen

80% of Summer Peak Load

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW (80%)

Transmission System Impacts

- Thermal Constraints Identified:
  - One (1) 161 kV Lines
  - Three (3) 115 kV Lines

- *No additional constraints identified*

Total Cost (2011$) = $46,300,000

Southeastern Regional TRANSMISSION PLANNING

EES Border to SBA 1500 MW (80%)

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	Sylacauga – Martin 115 kV TL	$8,300,000
P2	Fayette – Gorgas 161 kV TL	$29,000,000
P3	Wade – Big Creek 115 kV TL	$6,300,000
P4	Jesup – Ludowici 115 kV TL	$2,700,000

SBA Total Cost (2011$) = $46,300,000

Questions on the EES Border to SBA Transfer?

Southeastern Regional
TRANSMISSION PLANNING

SCPSA Border

to

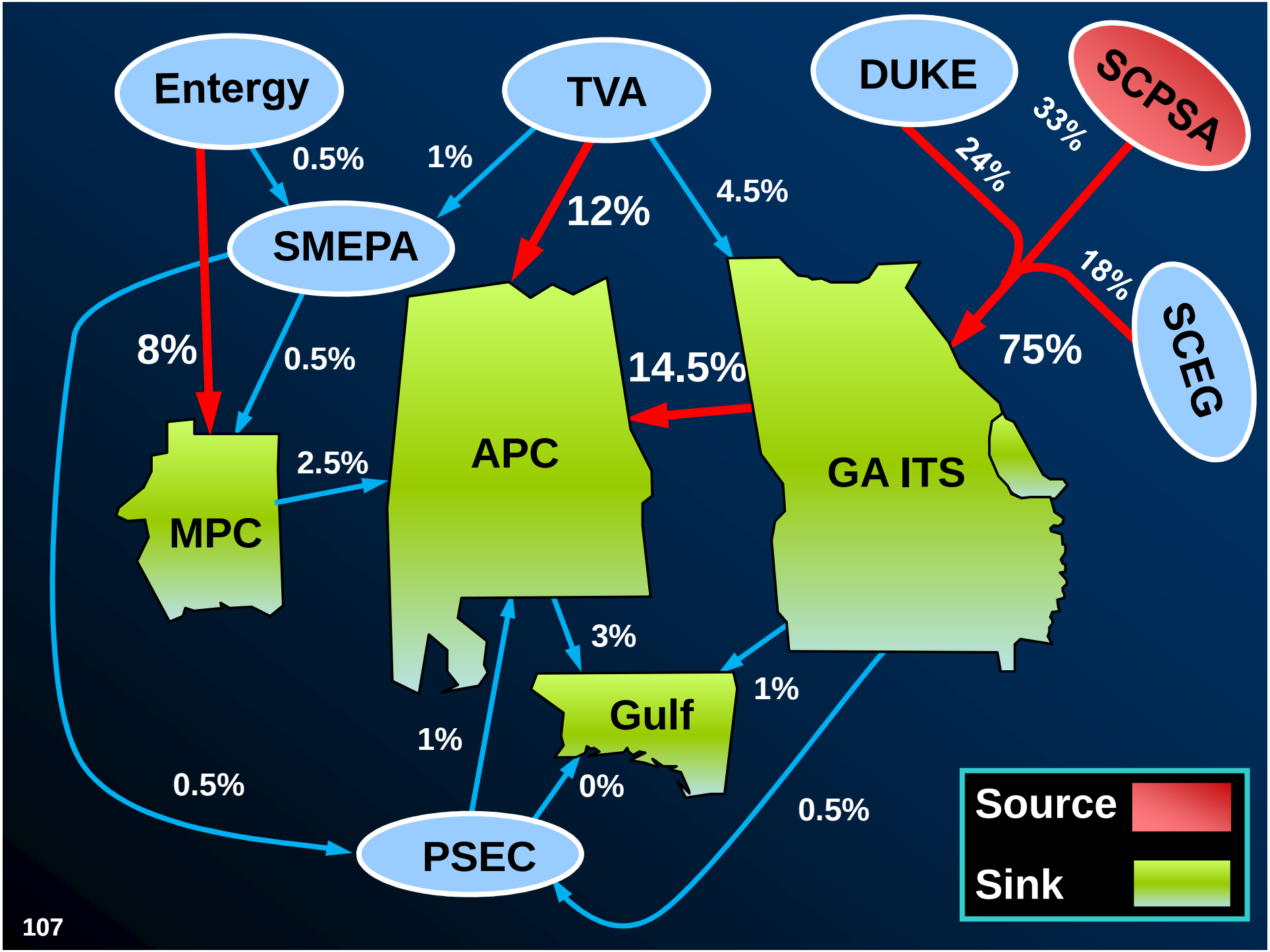
SBA

1000 MW

Southeastern Regional TRANSMISSION PLANNING

SCPSA Border to SBA 1000 MW

- Transfer Type: Load to Generation
- Source: Uniform load reduction in SCPSA
- Sink: Generation within the SBA


Entergy
TVA
DUKE
SCPSA
SMEPA
SCEG
APC
GA ITS
MPC
Gulf
PSEC
0.5%
1%
12%
4.5%
24%
33%
18%
8%
0.5%
14.5%
75%
2.5%
3%
1%
1%
0.5%
0%
0.5%
Source
Sink

Southeastern Regional TRANSMISSION PLANNING

SPCSA Border to SBA 1000 MW

Transmission System Impacts

- Thermal Constraints Identified:
  - Two (2) 230 kV Lines
  - Two (2) 161 / 115 kV Transformers
  - Two (2) 161 kV Lines
  - Eight (8) 115 kV Lines

Total Cost (2011$) = $105,700,000

SCPSA Border to SBA 1000 MW

Southern Balancing Authority

Screen Results

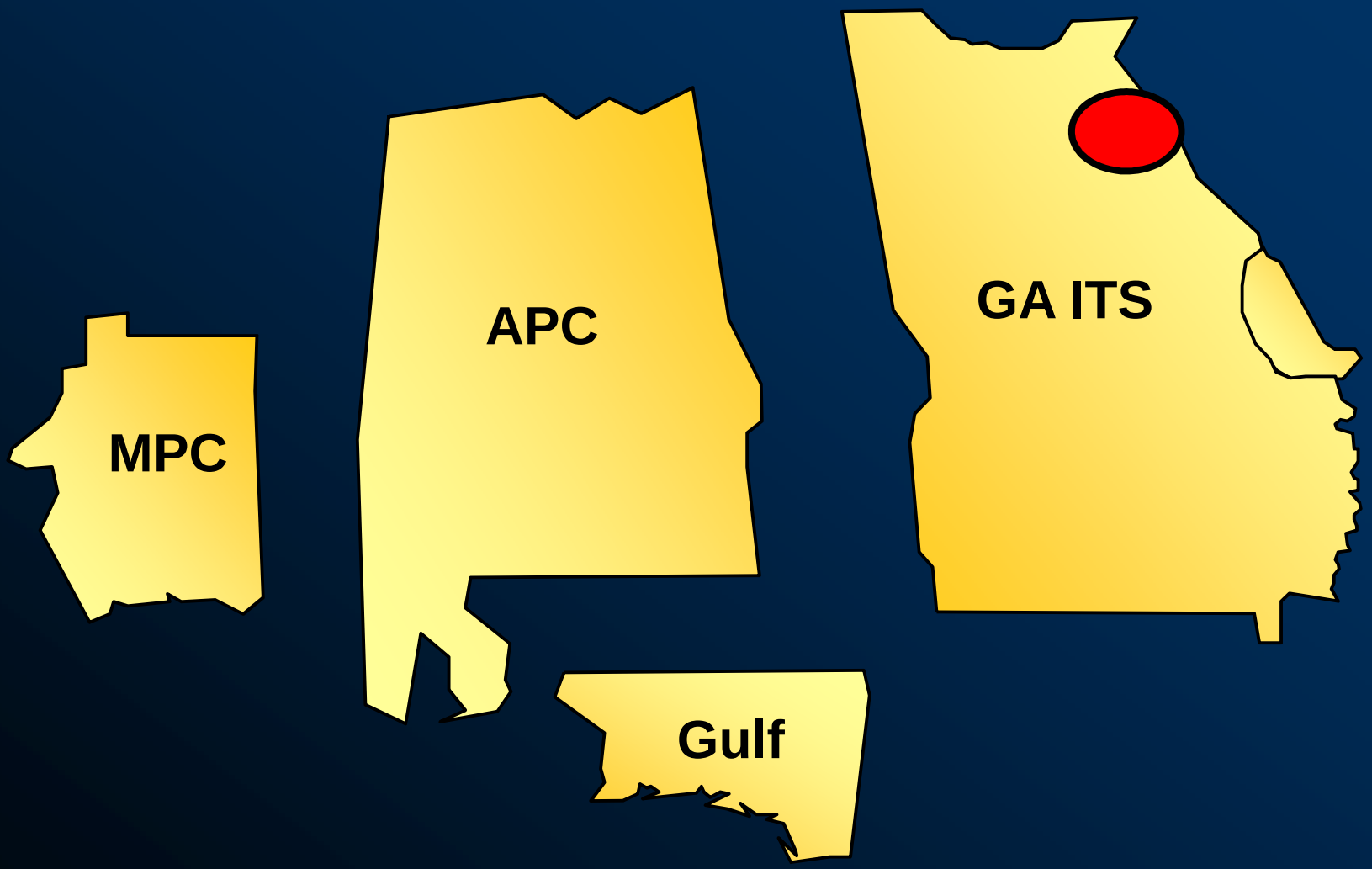
SCPSA Border to SBA 1000 MW

Significant Constraints – PASS 0

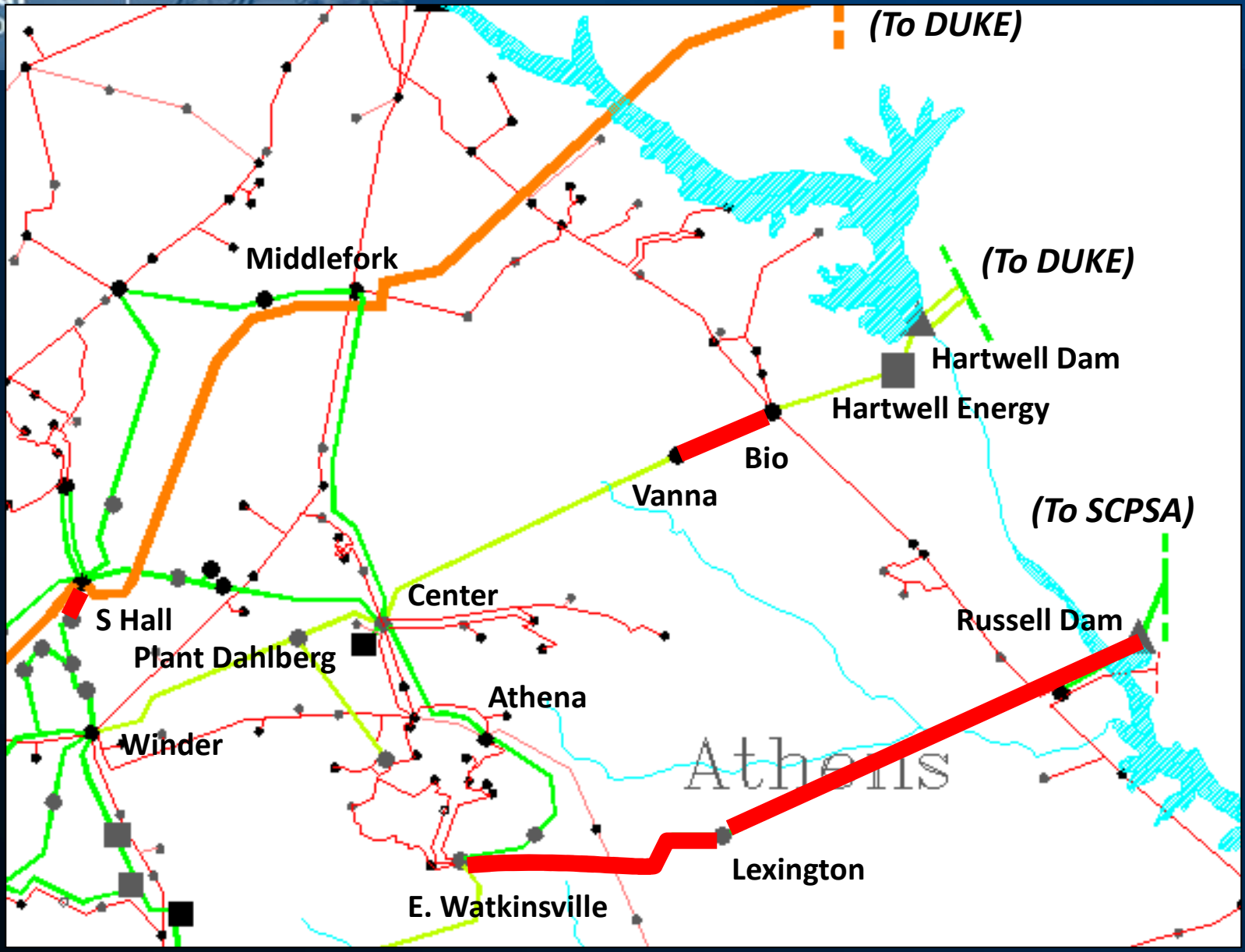
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Lexington – East Watkinsville 230 kV TL	602	93.7	103.3
Bio – Vanna 230 kV TL	433	96.2	104.0
Russell – Lexington 230 kV TL	596	98.0	107.8

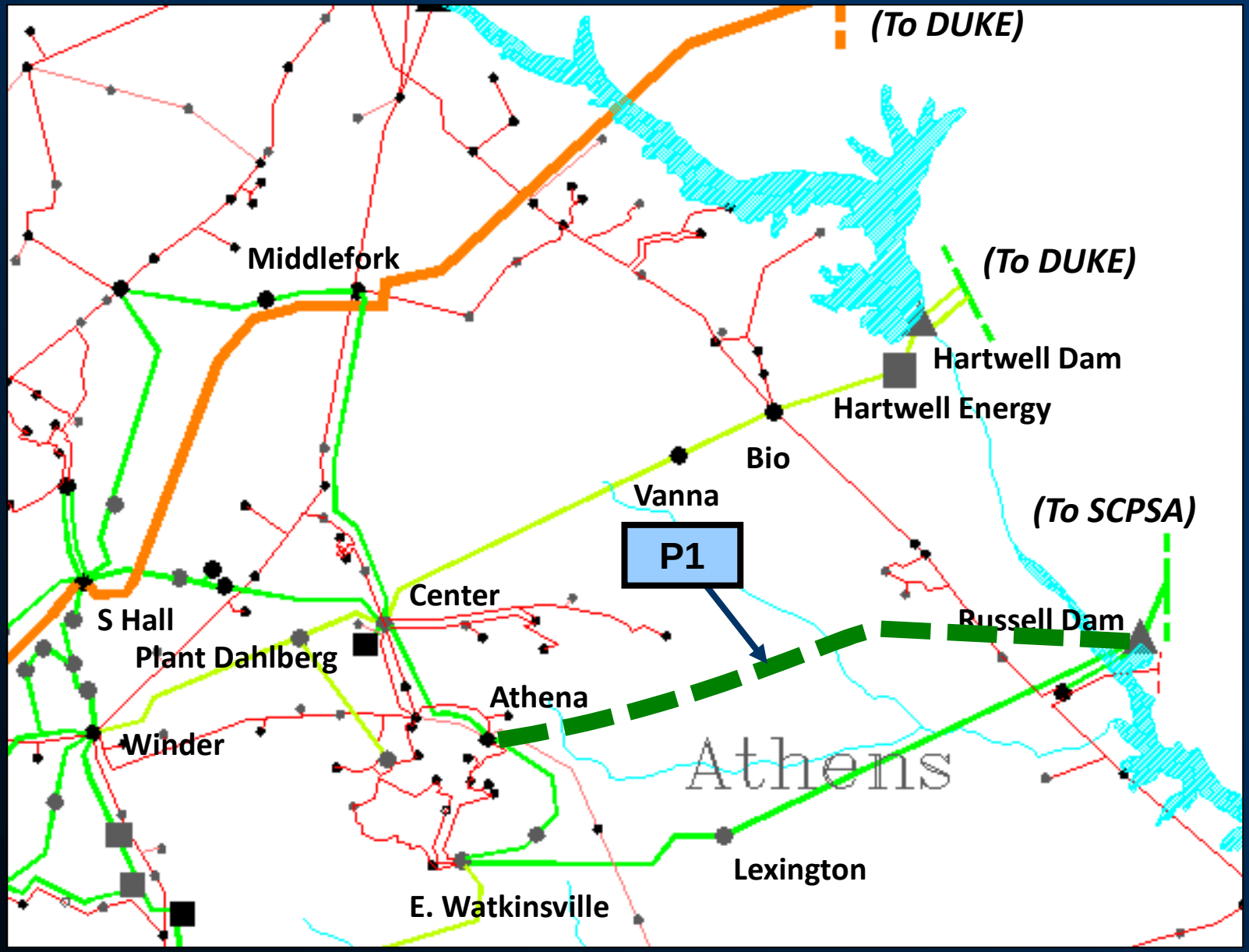
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional TRANSMISSIO




(To DUKE)
Middlefork
(To DUKE)
Hartwell Dam
Hartwell Energy
Bio
Vanna
(To SCPSA)
P1
Center
S Hall
Plant Dahlberg
Russell Dam
Athena
Winder
Athens
Lexington
E. Watkinsville

Southeastern Regional TRANSMISSION PLANNING

SCPSA Border to SBA 1000 MW

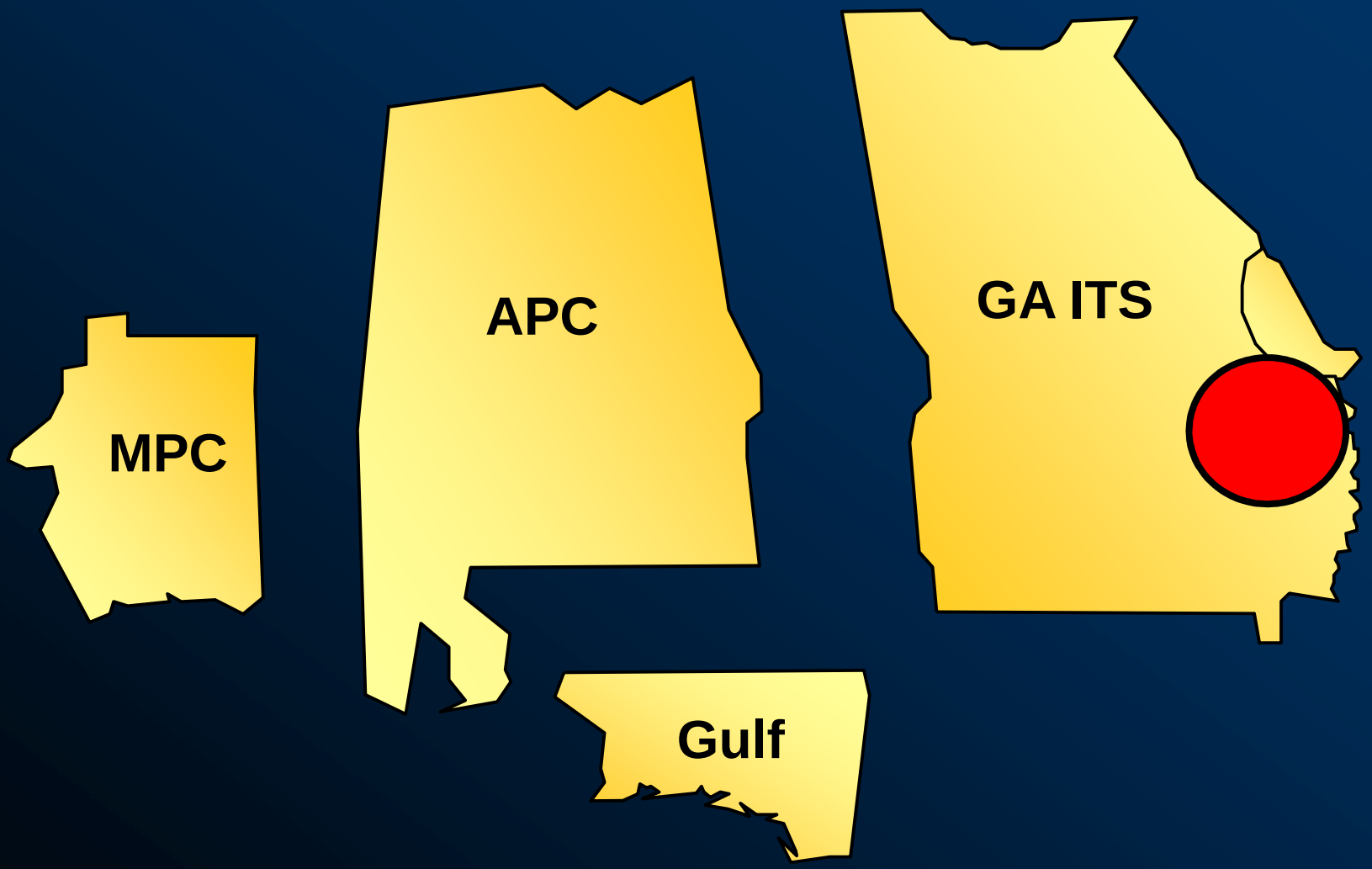
Significant Constraints – PASS 1

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Daniel Siding – Rich Hill Tap 115 kV TL	255	95.8	102.1
Rich Hill Tap – Little Ogeechee 115 kV TL	255	105.2(1)	111.5
Horse Creek – Elam Chapel 115 kV TL	155	88.2	102.3
Zuta – Townsend 115 kV TL	114	87.1	101.4
Jesup – North Jesup 115 kV TL	124	87.7	106.0
North Jesup – Rayonier 115 kV TL	124	98.6	116.6
McIntosh – Jasper 115 kV TL	230	71.5	134.7

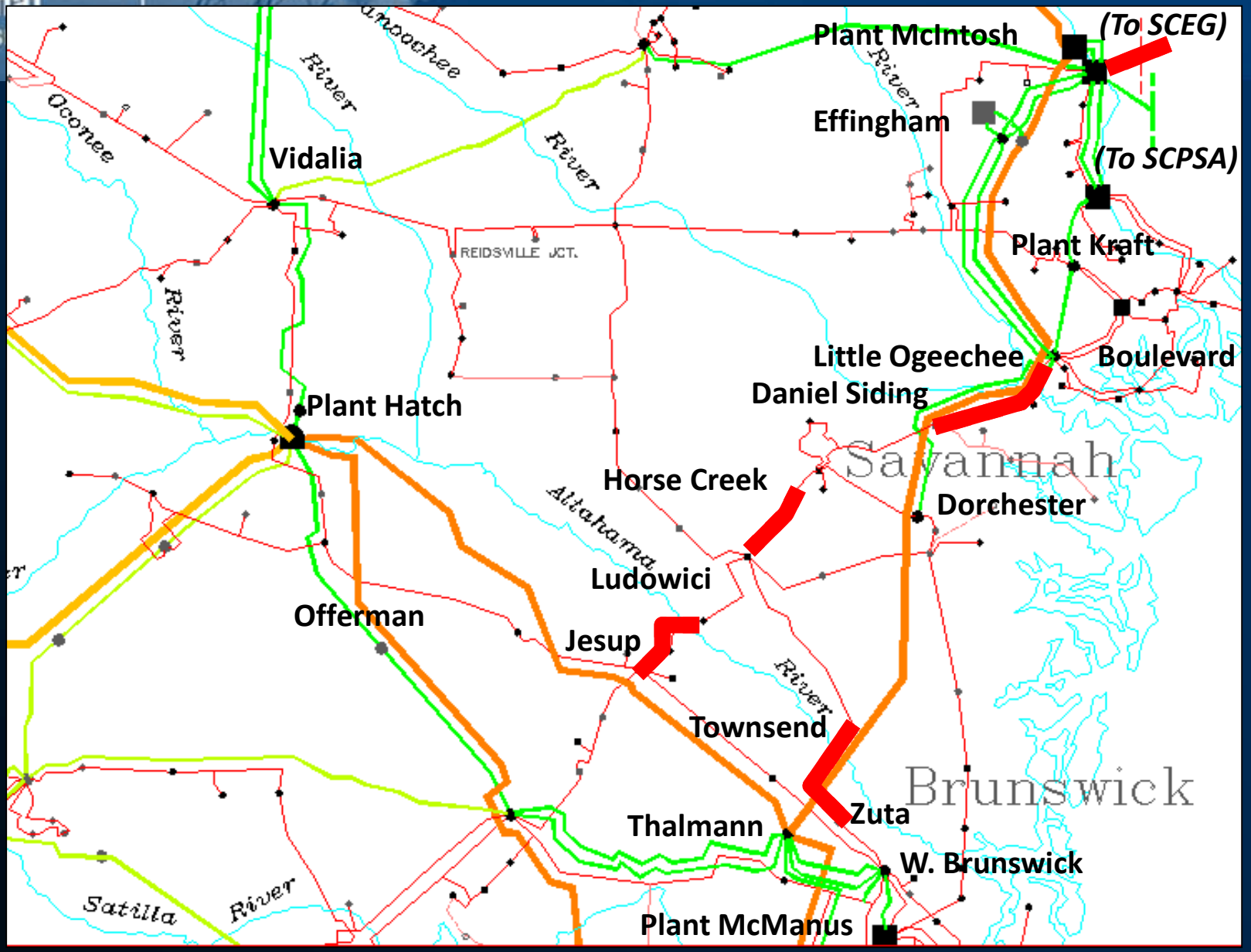
(1) A current operating procedure is sufficient to alleviate this constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this facility such that the operating procedure becomes insufficient.

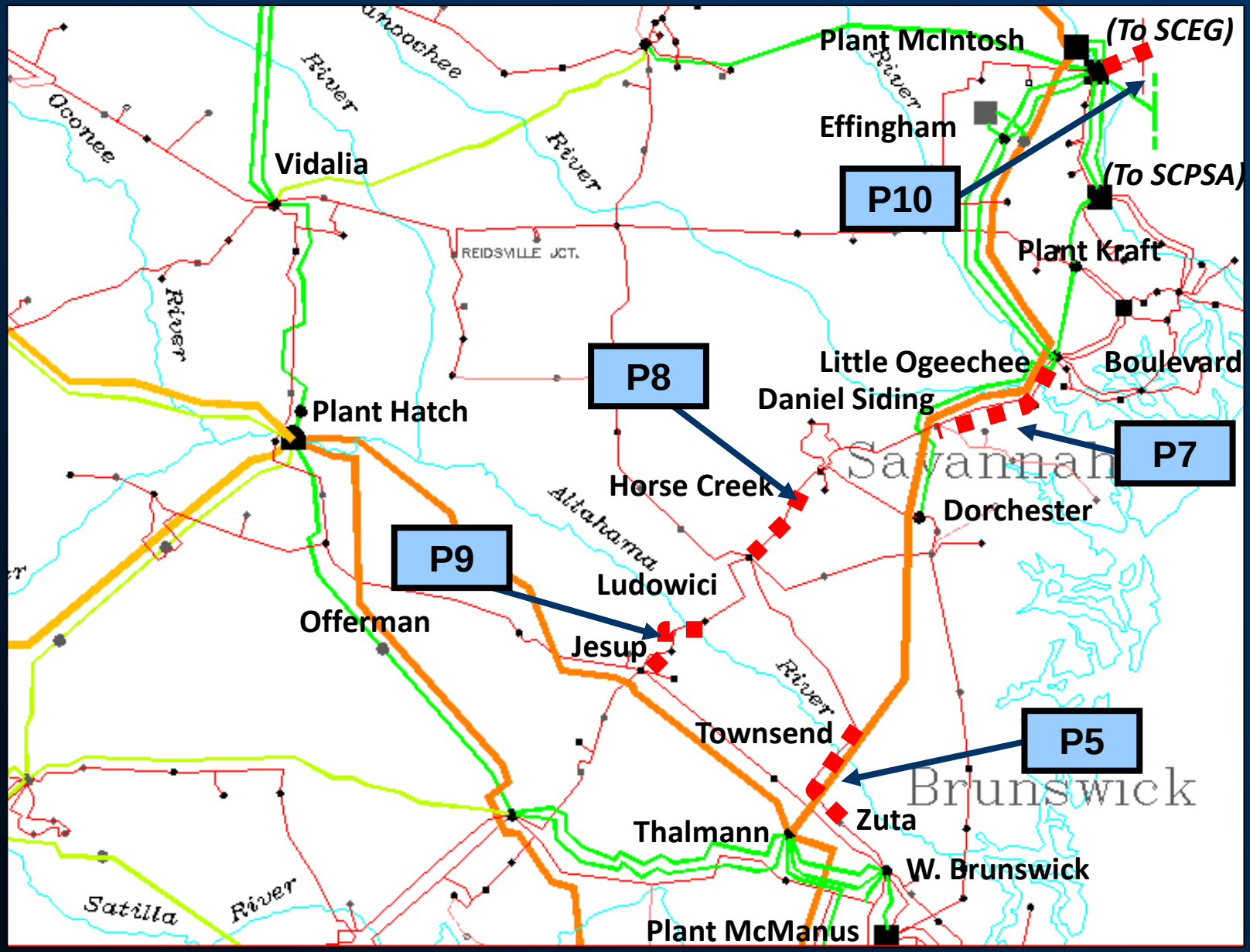
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISS




Plant McIntosh
(To SCEG)
Effingham
(To SCPSA)
Vidalia
P10
Plant Kraft
REIDSVILLE JCT.
Little Ogeechee
Boulevard
P8
Daniel Siding
Plant Hatch
P7
Savannah
Horse Creek
Dorchester
P9
Ludowici
Offerman
Jesup
Townsend
P5
Brunswick
Zuta
Thalmann
W. Brunswick
Plant McManus
Oconee River
Ocmulgee River
Altamaha River
Satilla River

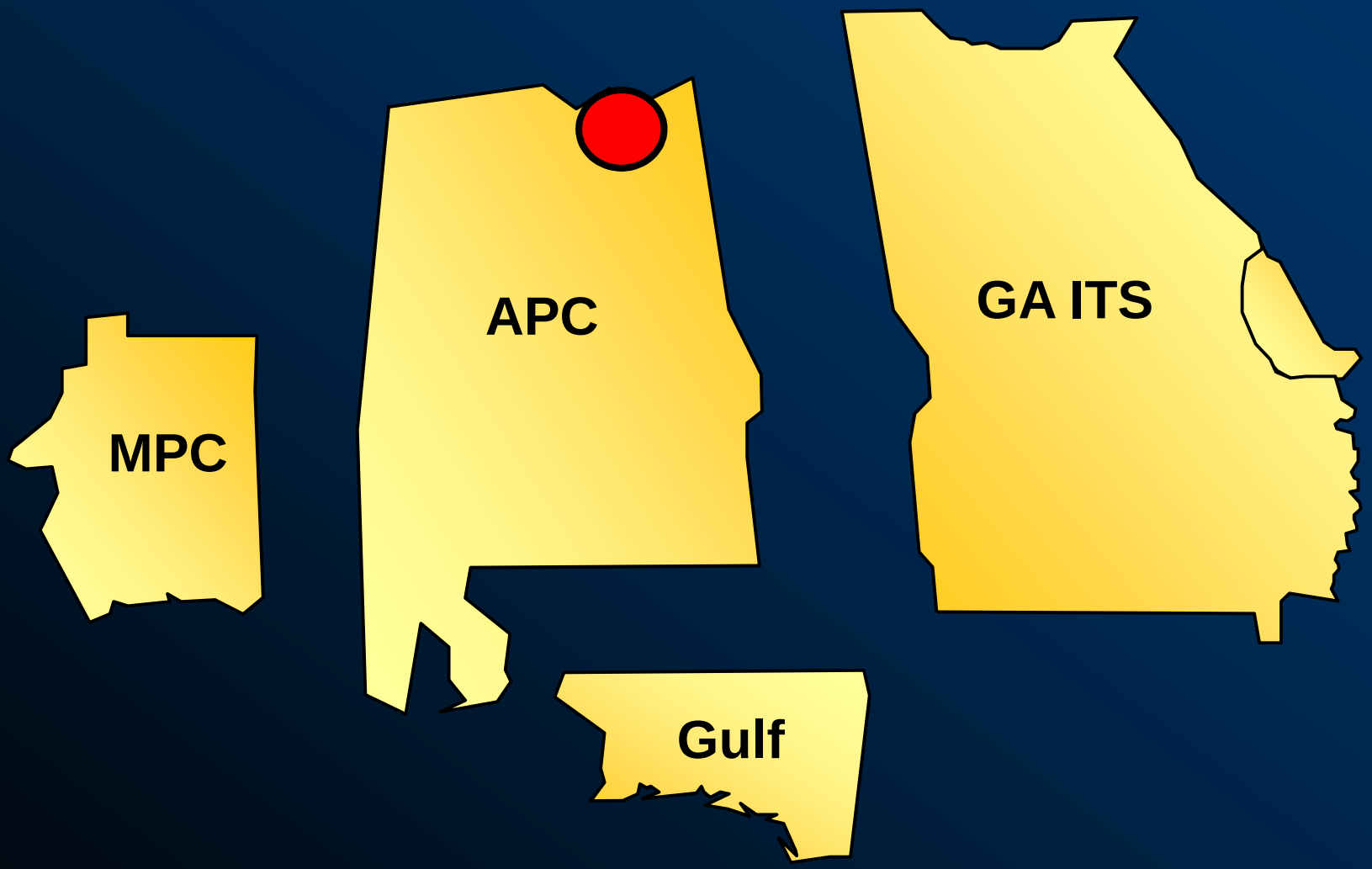
SCPSA Border to SBA 1000 MW

Significant Constraints – PASS 1 (Cont.)

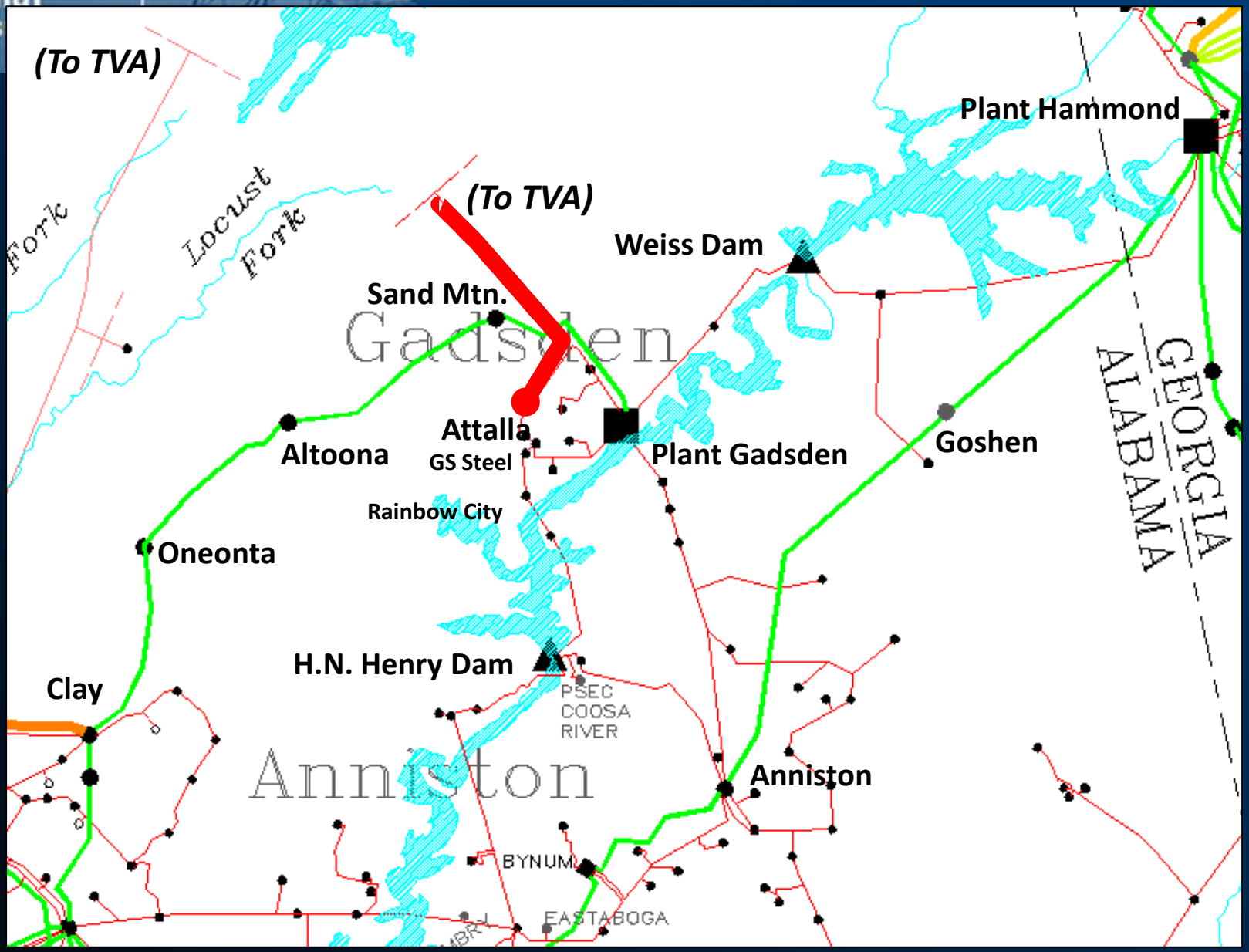
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Attalla 161 / 115 kV Transformer 1	111	88.4	100.4
Attalla 161 / 115 kV Transformer 2	99	88.4	101.6
Attalla – Albertville 161 kV TL	193	96.7	109.9

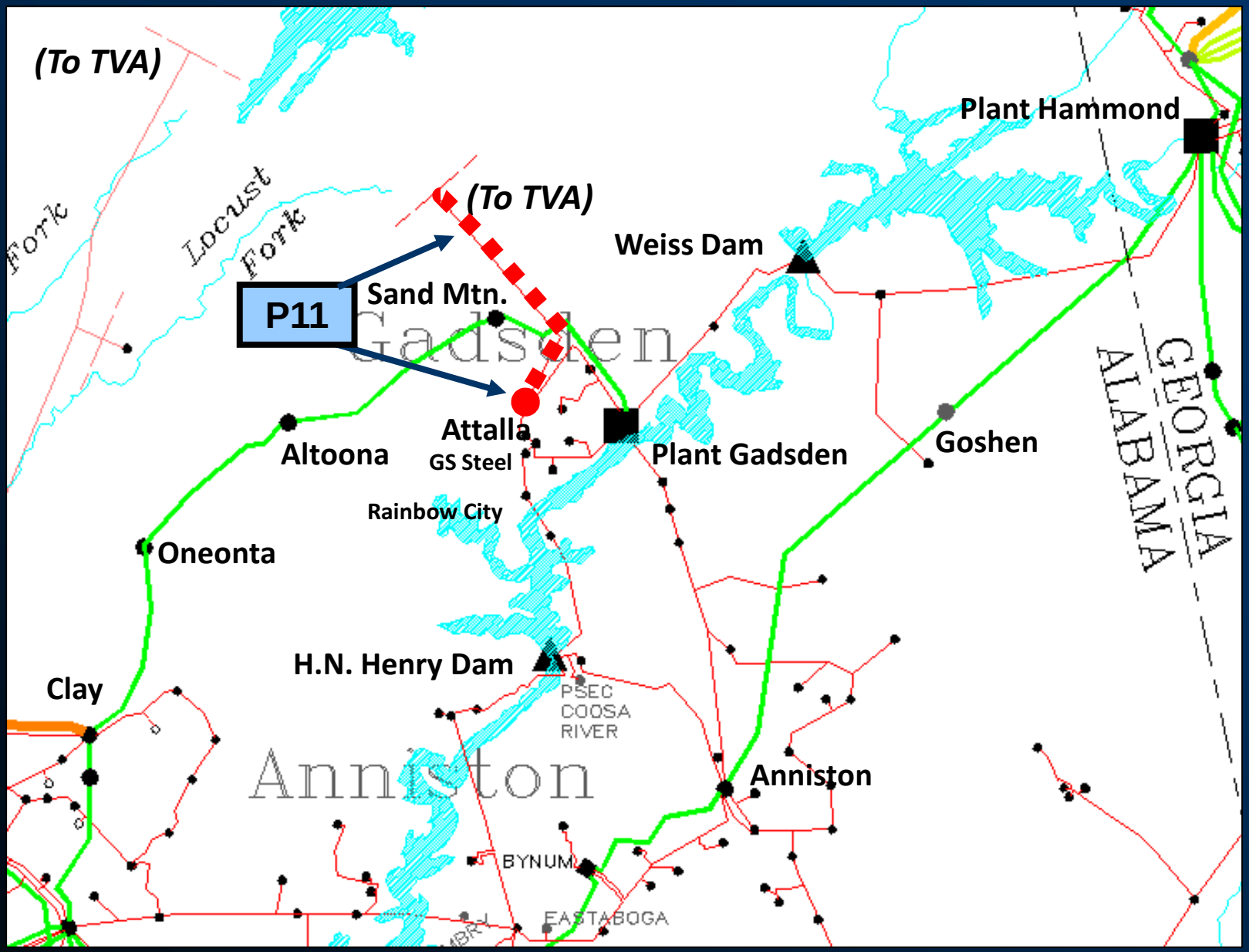
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISS




(To TVA)
(To TVA)
Plant Hammond
Weiss Dam
P11
Sand Mtn.
Gadsden
Attalla
GS Steel
Altoona
Plant Gadsden
Goshen
GEORGIA
ALABAMA
Rainbow City
Oneonta
H.N. Henry Dam
Clay
PSEC
COOSA
RIVER
Anniston
Anniston
BYNUM
EASTABOGA

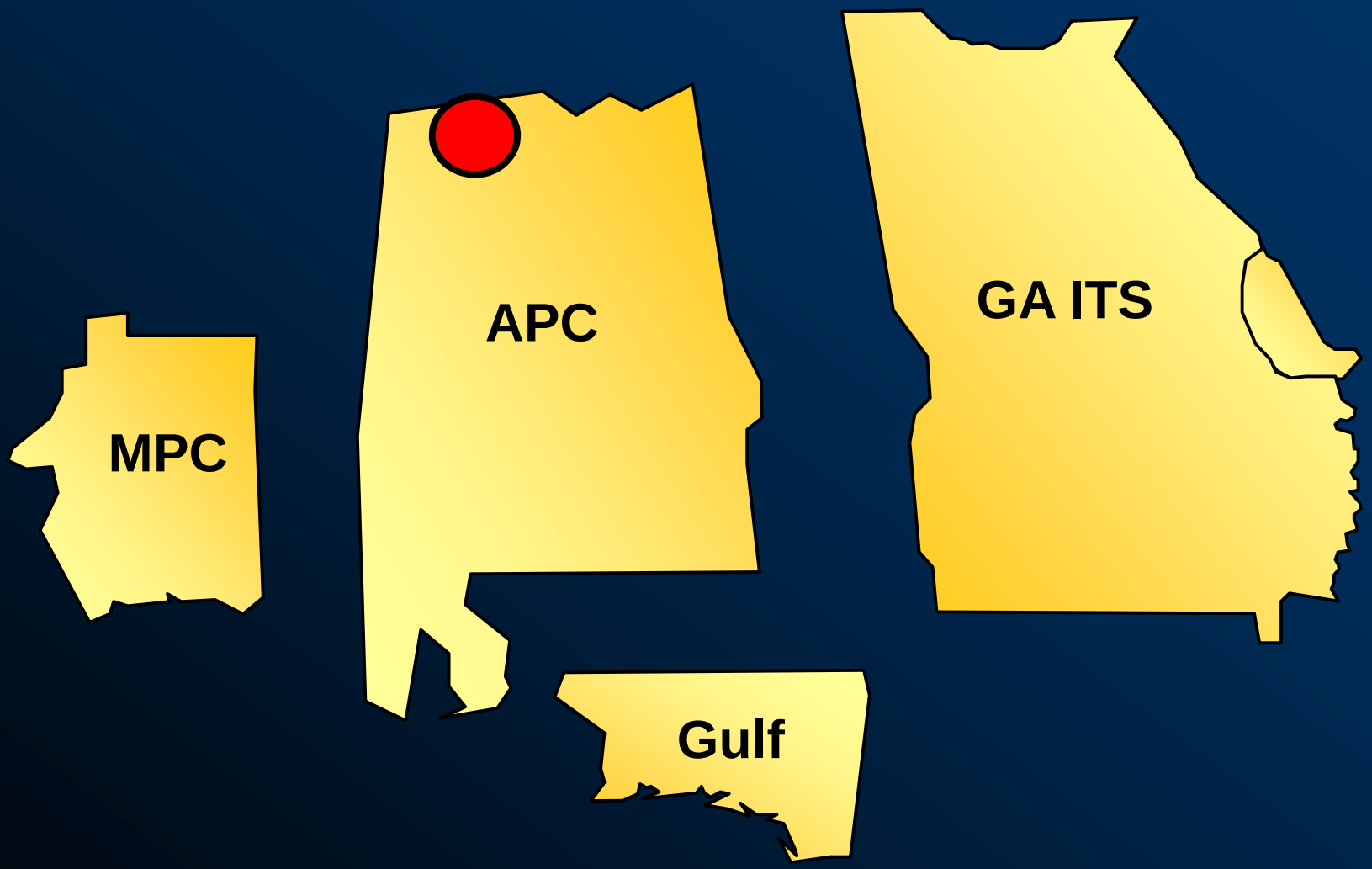
SCPSA Border to SBA 1000 MW

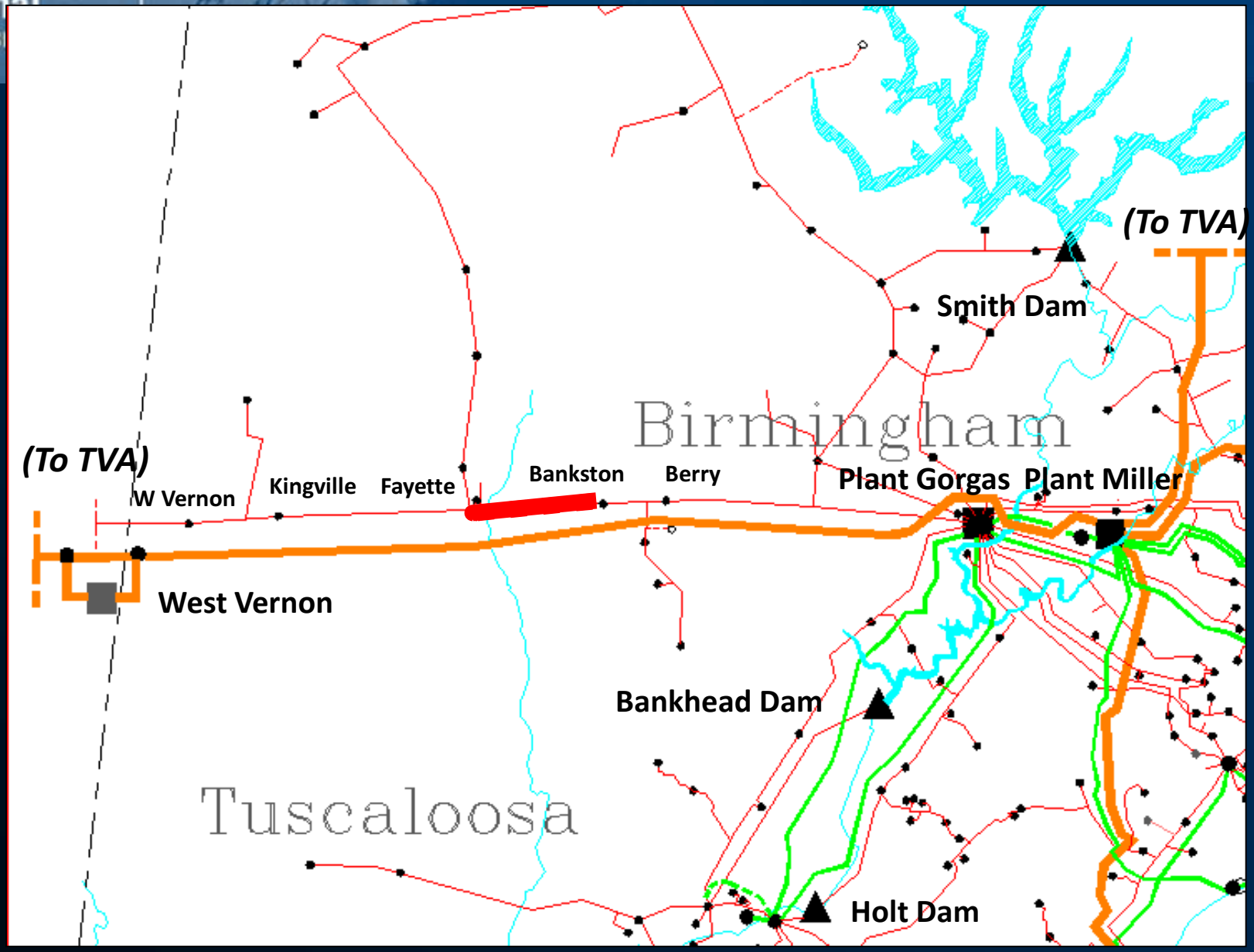
Significant Constraints – PASS 1 (Cont.)

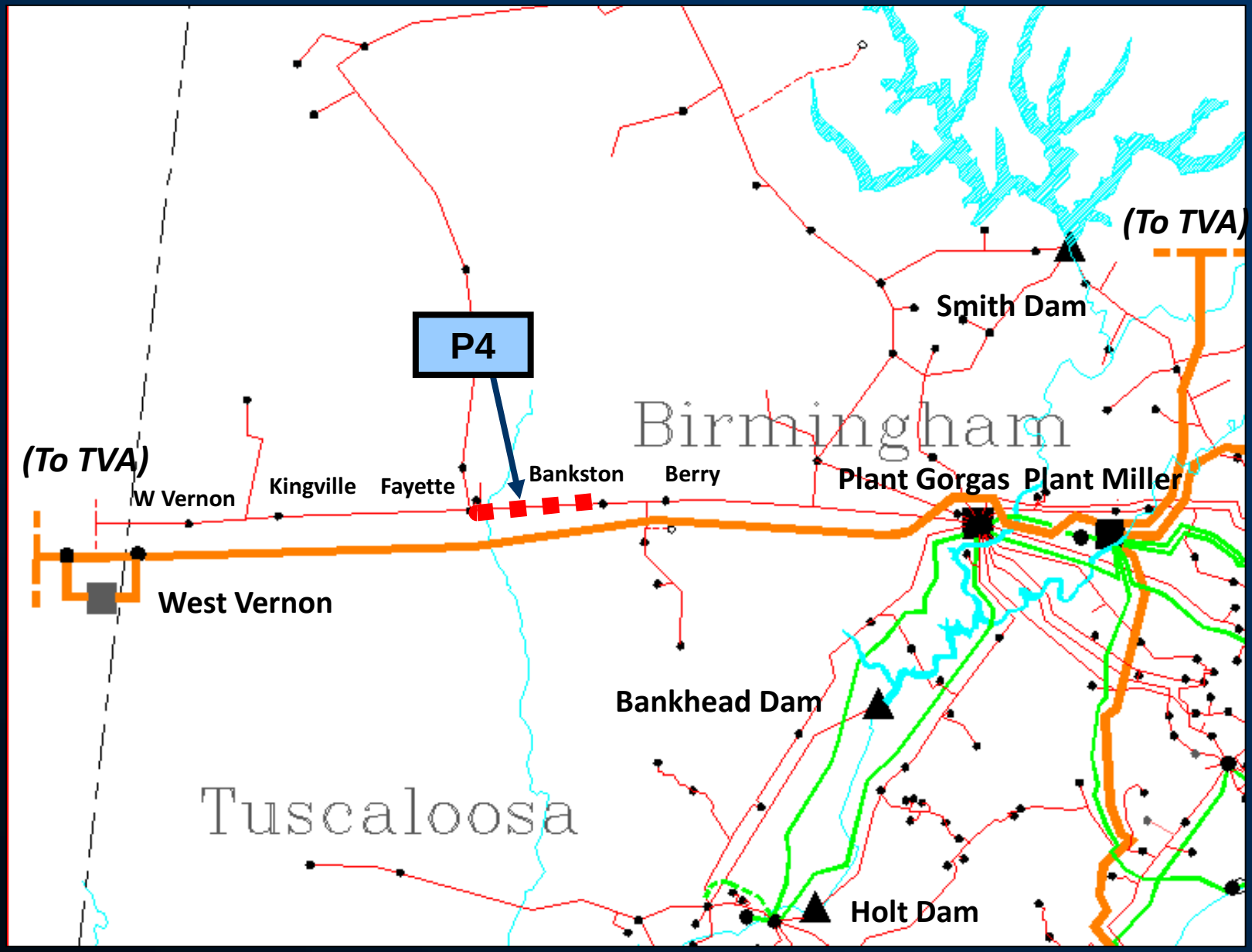
Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Fayette CS – Bankston 161 kV TL	193	93.8	101.3
Fayette TS – Fayette TS 161 kV TL	193	93.8	101.4

Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints




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


(To TVA)
W Vernon
Kingville
Fayette
P4
Bankston
Berry
Birmingham
Plant Gorgas
Plant Miller
(To TVA)
Smith Dam
West Vernon
Bankhead Dam
Tuscaloosa
Holt Dam

SCPSA Border to SBA 1000 MW

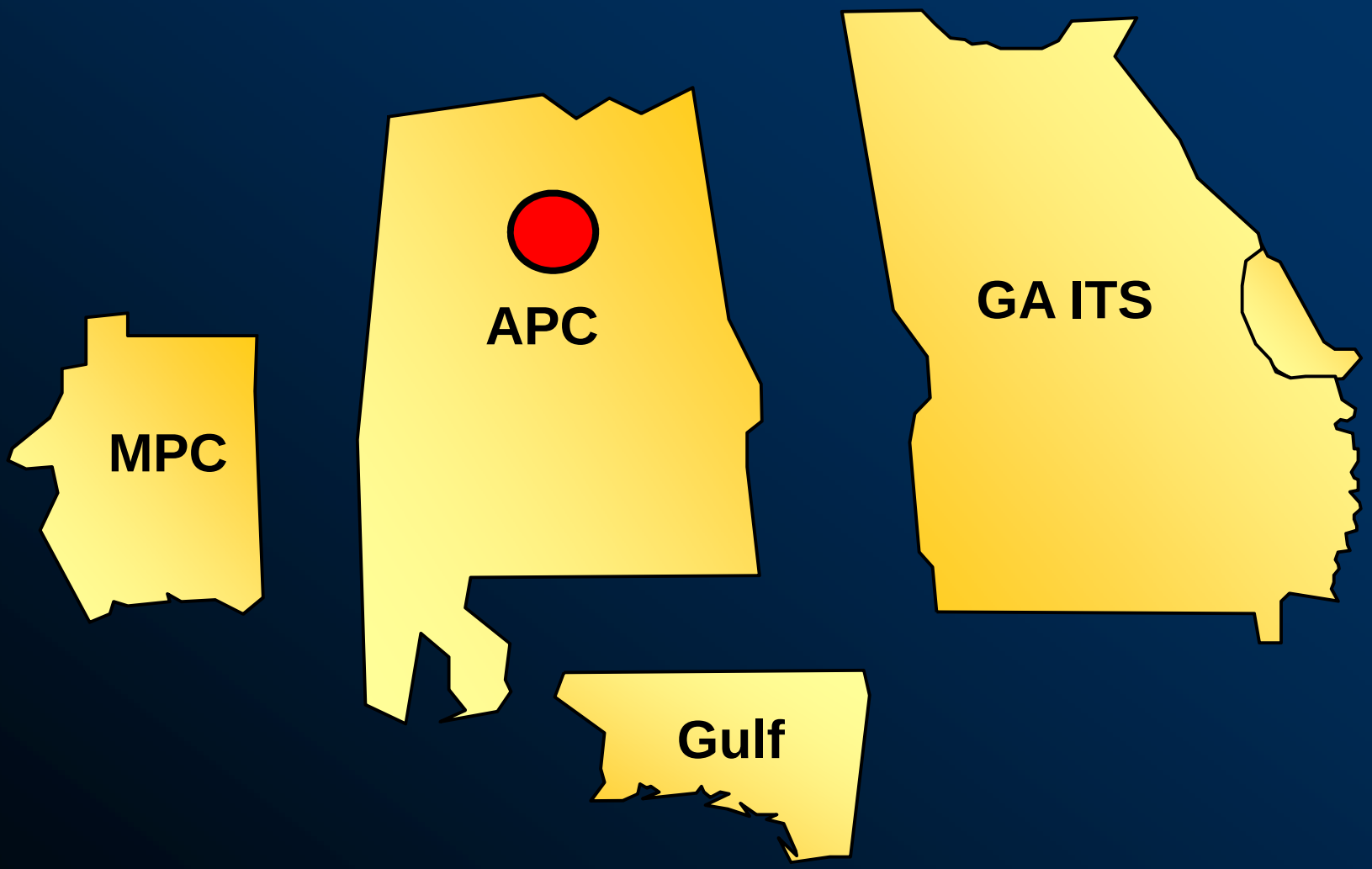
Significant Constraints – PASS 1 (Cont.)

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Sylacauga – Hollins 115 kV	113	104.6(1)	111.4
Hollins – Sunny Level Tap 115 kV	113	99.8	106.5
Sunny Level Tap – Kellyton 115 kV	113	93.5	100.3

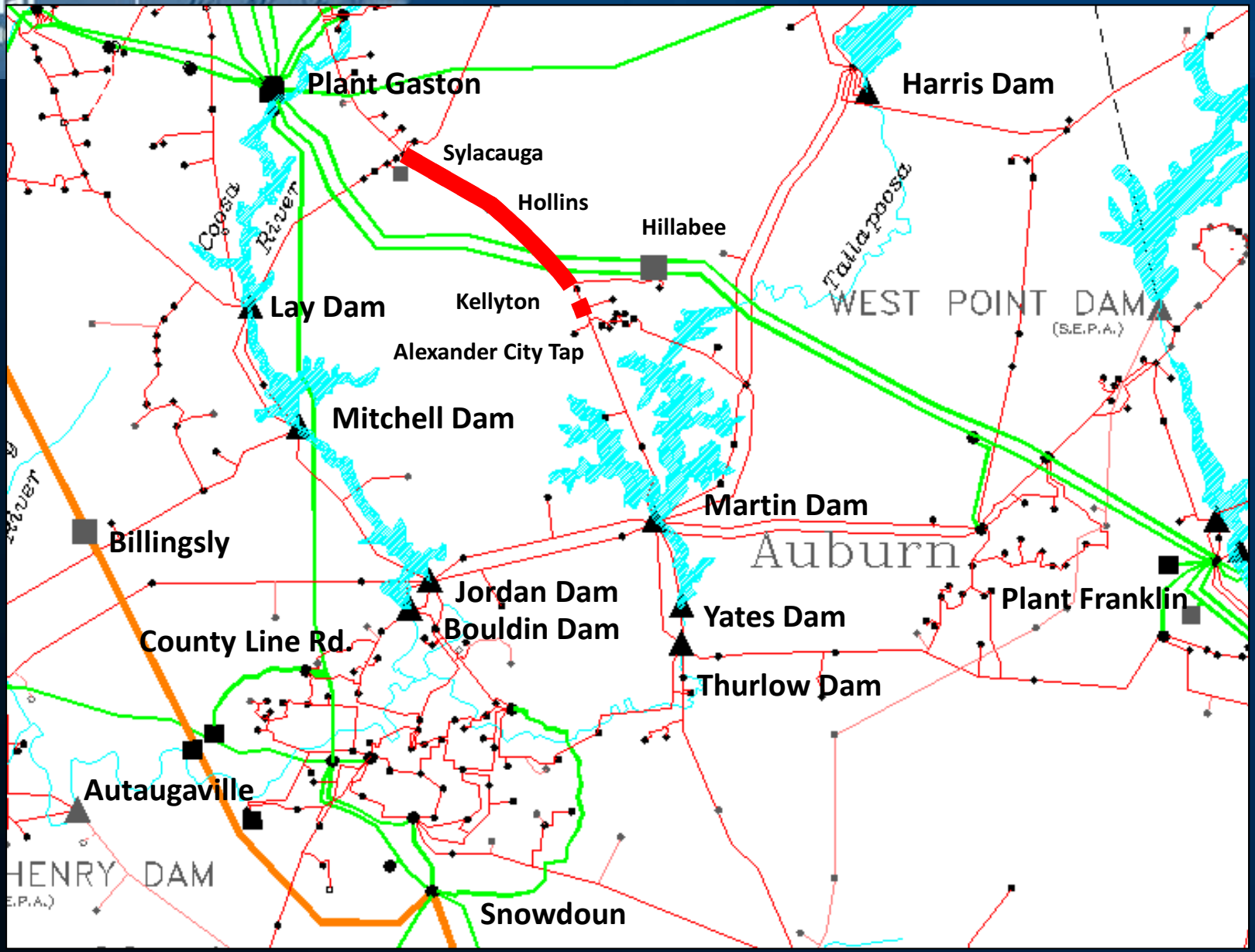
(1) A current operating procedure is sufficient to alleviate this constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this facility such that the operating procedure becomes insufficient.

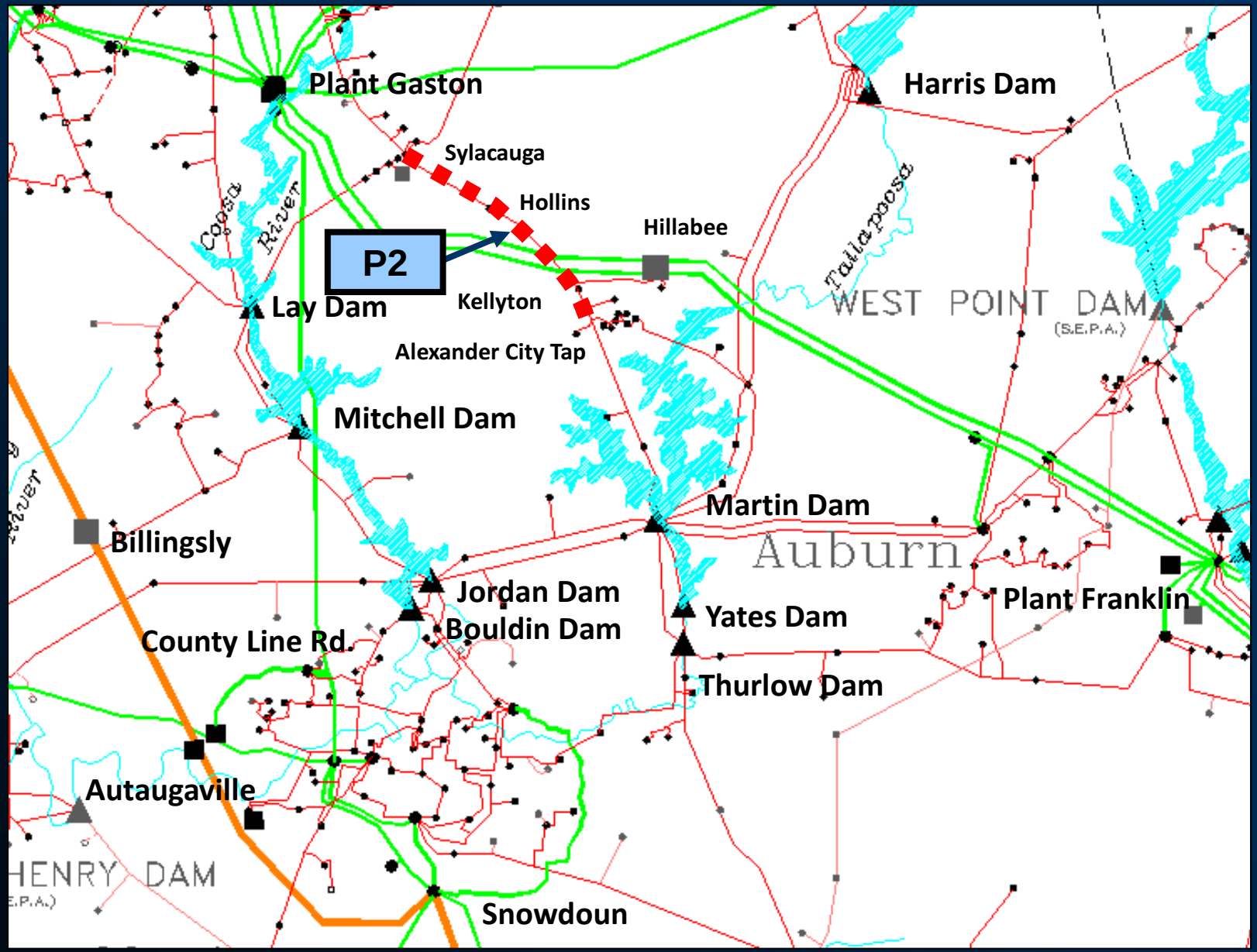
Southeastern Regional
TRANSMISSION PLANNING

Significant Constraints



Southeastern Regional
TRANSMISSI




Plant Gaston
Harris Dam
Sylacauga
Hollins
Hillabee
P2
Coosa River
Talapoosa
WEST POINT DAM
(S.E.P.A.)
Lay Dam
Kellyton
Alexander City Tap
Mitchell Dam
Martin Dam
Billingsly
Auburn
Jordan Dam
Plant Franklin
Yates Dam
Bouldin Dam
County Line Rd.
Thurlow Dam
Autaugaville
HENRY DAM
Snowdoun

Southeastern Regional TRANSMISSION PLANNING

SCPSA Border to SBA 1000 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
P1	Russell Dam – Athena 230 kV TL	$61,000,000
P2	Sylacauga – Martin 115 kV TL	$8,300,000
P3	Wade Substation	$50,000
P4	Fayette – Gorgas 161 kV TL	$4,800,000
P5	West Brunswick – Ludowici 115 kV TL	$50,000
P6	Kathleen – Bonaire 115 kV TL	$1,500,000
P7	Daniel Siding – Little Ogeechee 115 kV TL	$4,800,000
P8	Horse Creek – Ludowici 115 kV TL	$2,900,000
P9	Jesup – Ludowici 115 kV TL	$2,700,000
-	- Continued -	-

Southeastern Regional TRANSMISSION PLANNING

SCPSA Border to SBA 1000 MW

Projects Identified

Item	Proposed Enhancements	Cost ($)
-	- Continued -	-
P10	McIntosh – Jasper Tap 115 kV TL	$900,000(1)
P11	Attalla 161 / 115 kV Transformers Attalla – Albertville 161 kV TL	$18,700,000(1)

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

SBA Total Cost (2011$) = $105,700,000

Questions on the SCPSA Border to SBA Transfer?

FRCC Coordination Update

❖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

2011 SERTP

❖SERC Regional Model Development

- 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

The Five Economic Planning Studies

- PEC to Southeast (2000 MW)
  - Study Year: 2020
- HVDC to VACAR (3000 MW)
  - Study Year: 2016
- SCRTP to PJM West (1000 MW)
  - Study Year: 2016
- SCRTP to TVA (1000 MW)
  - Study Year: 2016
- PJM West to VACAR (1000 MW)
  - Study Year: 2016

PEC to Southeast

Transmission System Impacts for the SIRPP

- One (1) 500 kV Static-Var Compensator
- Fourteen (14) 230 kV Lines
- One (1) 161 kV Line
- One (1) 138 kV Line
- Five (5) 115 kV Lines

Total Cost: $557,720,000

HVDC to VACAR

Transmission System Impacts for the SIRPP

- One (1) 500 / 230 kV Transformer
- Nine (9) 230 kV Lines
- One (1) 115 kV Lines

Total Cost: $166,800,000(1)

(1)Cost of HVDC line and interconnecting facilities are not included in the above total

SCRTP to PJM West

Transmission System Impacts for the SIRPP

- One (1) 230 kV Line
- Four (4) 115 kV Lines

Total Cost: $19,000,000

SCRTP to TVA

Transmission System Impacts for the SIRPP

- Two (2) 230 kV Lines
- Eight (8) 161 kV Lines
- Four (4) 115 kV Lines

Total Cost: $108,900,000

PJM West to VACAR

Transmission System Impacts for the SIRPP

- Three (3) 230 kV Lines
- One (1) 115 kV Line

Total Cost: $26,300,000

Southeastern Regional TRANSMISSION PLANNING

2010 – 2011 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/
- 2011 – 2012 SIRPP 1st Meeting will be held on September 30th, 2011 in Columbia, SC

- Feedback
  - Alternative Solutions
    - 10 Year Transmission Expansion Plan
    - Economic Planning Study Results

❖Next Meeting Activities

- Annual Transmission Planning Summit
  - Location: TBD
  - Date: December 2011
  - Purpose:
    - Final Economic Planning Results
    - Final 10 Year Transmission Expansion Plan
    - Assumptions Input Session