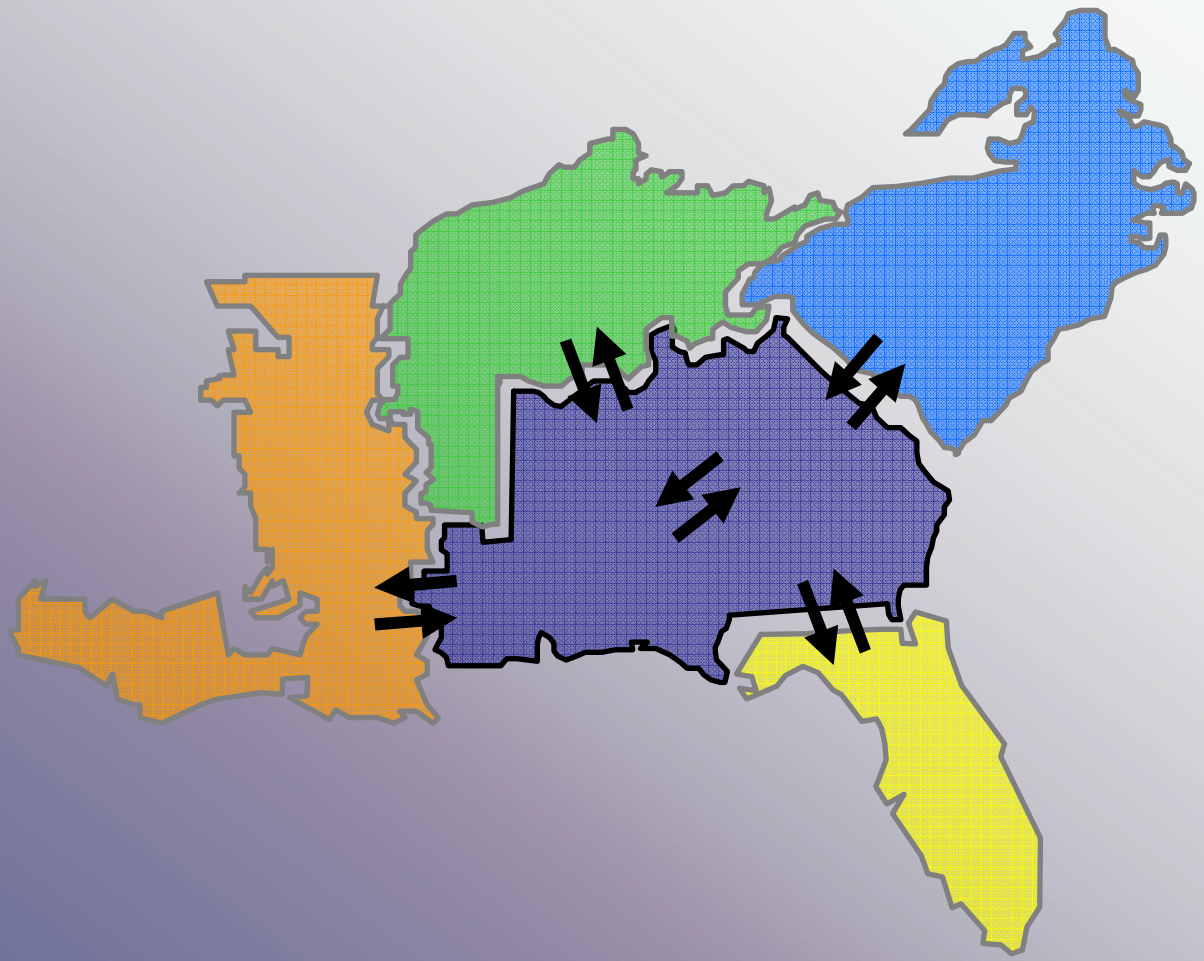
Southeastern Regional TRANSMISSION PLANNING

2009 SERTP

Economic Planning Studies



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Southeastern Regional TRANSMISSION PLANNING

2009 SERTP

Five Economic Planning Studies

- North Georgia to FRCC
  - 650 MW
- SCE&G to Georgia
  - 1000 MW
- Gulfport, MS to Georgia
  - 1000 MW
- Washington County, GA to Georgia
  - 5000 MW
- Savannah, GA to Southern Balancing Authority
  - 400 MW Summer Peak
  - 1000 MW Off Peak

Southeastern Regional TRANSMISSION PLANNING

2009 SERTP

Power Flow Cases Utilized

- Study year: 2014
- Load Flow Cases:
  - 2009 Series Version 2A
  - Summer Peak with 2250 MW Interchange to FRCC, 3600 MW to FRCC, and Shoulder

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Southeastern Regional TRANSMISSION PLANNING

2009 SERTP

Five Economic Planning Studies

- Preliminary Report Components:
  - Thermal Analysis
    - DC contingency analysis to attain monitored/contingency pairs with Siemens PSS MUST
    - AC verified with Siemens PTI PSS/E
  - Stability Impacts
  - Potential Solutions
    - Transmission Projects and Cost Estimates

Southeastern Regional TRANSMISSION PLANNING

2009 SERTP

- The following information is preliminary and subject to change pursuant to additional analyses. The following results contain limited stability analysis and do not contain results from interface analysis.
- 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 2014.
- 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.

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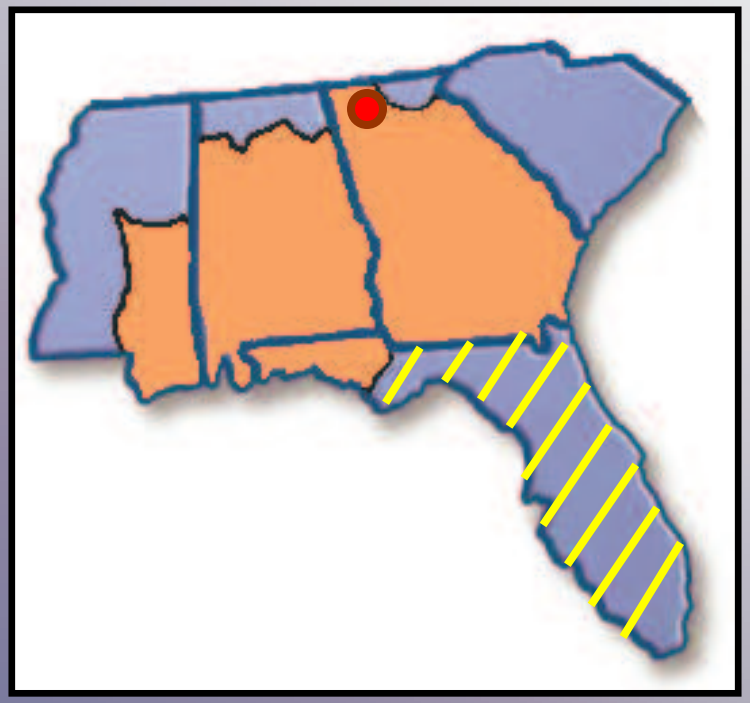
North Georgia to FRCC

650 MW

Southeastern Regional TRANSMISSION PLANNING

North Georgia to FRCC: 650 MW

- Transfer Type: Generation to Load
- Source: 500 kV, Murray County, GA
- Sink: 650 MW of FRCC load scaled up
  - **488 MW Florida Power & Light**
  - **162 MW Progress Energy Florida**



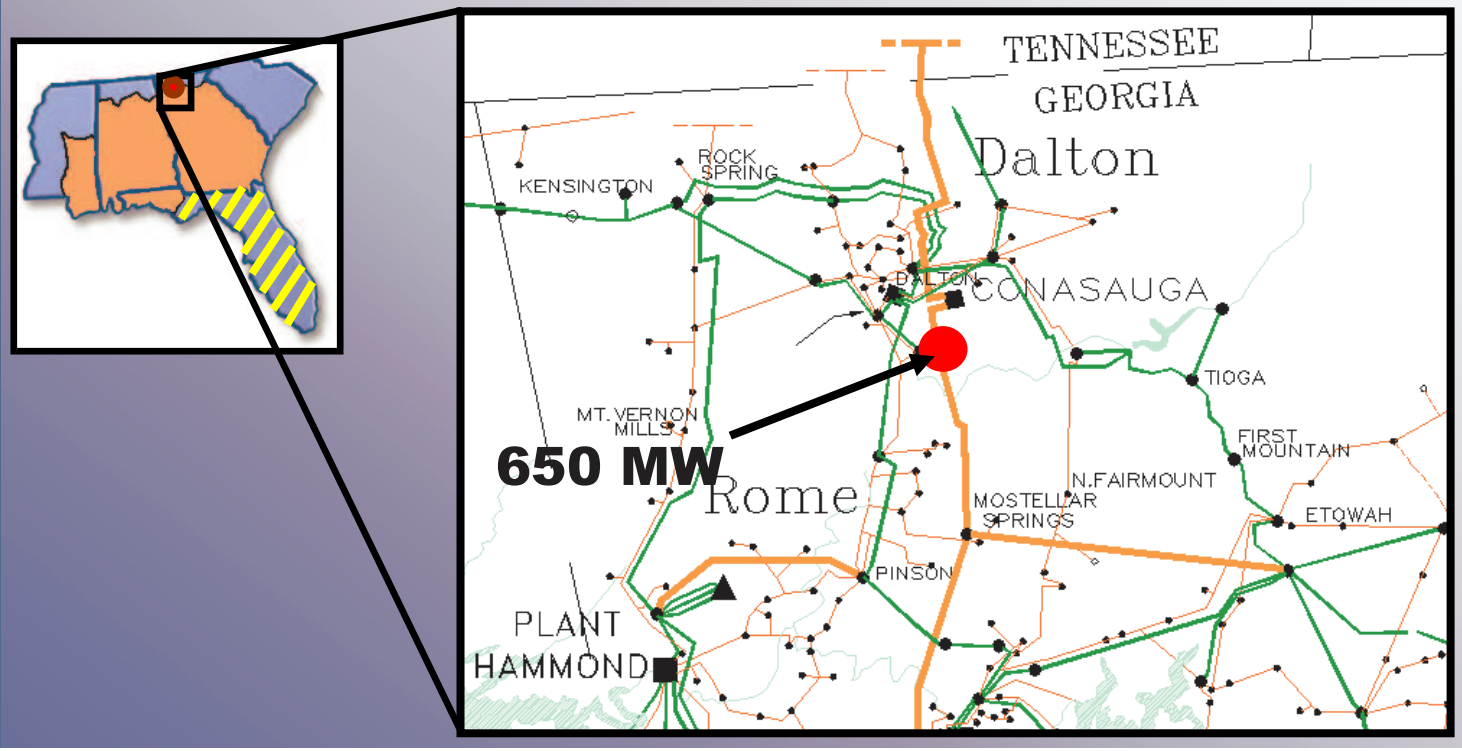
Source

Sink

Southeastern Regional TRANSMISSION PLANNING

North Georgia to FRCC: 650 MW

- Transfer Type: Generation to Load
- Source: 500 kV, Murray County, GA
- Sink: 650 MW of FRCC load scaled up
  - **488 MW Florida Power & Light**
  - **162 MW Progress Energy Florida**



Southeastern Regional TRANSMISSION PLANNING

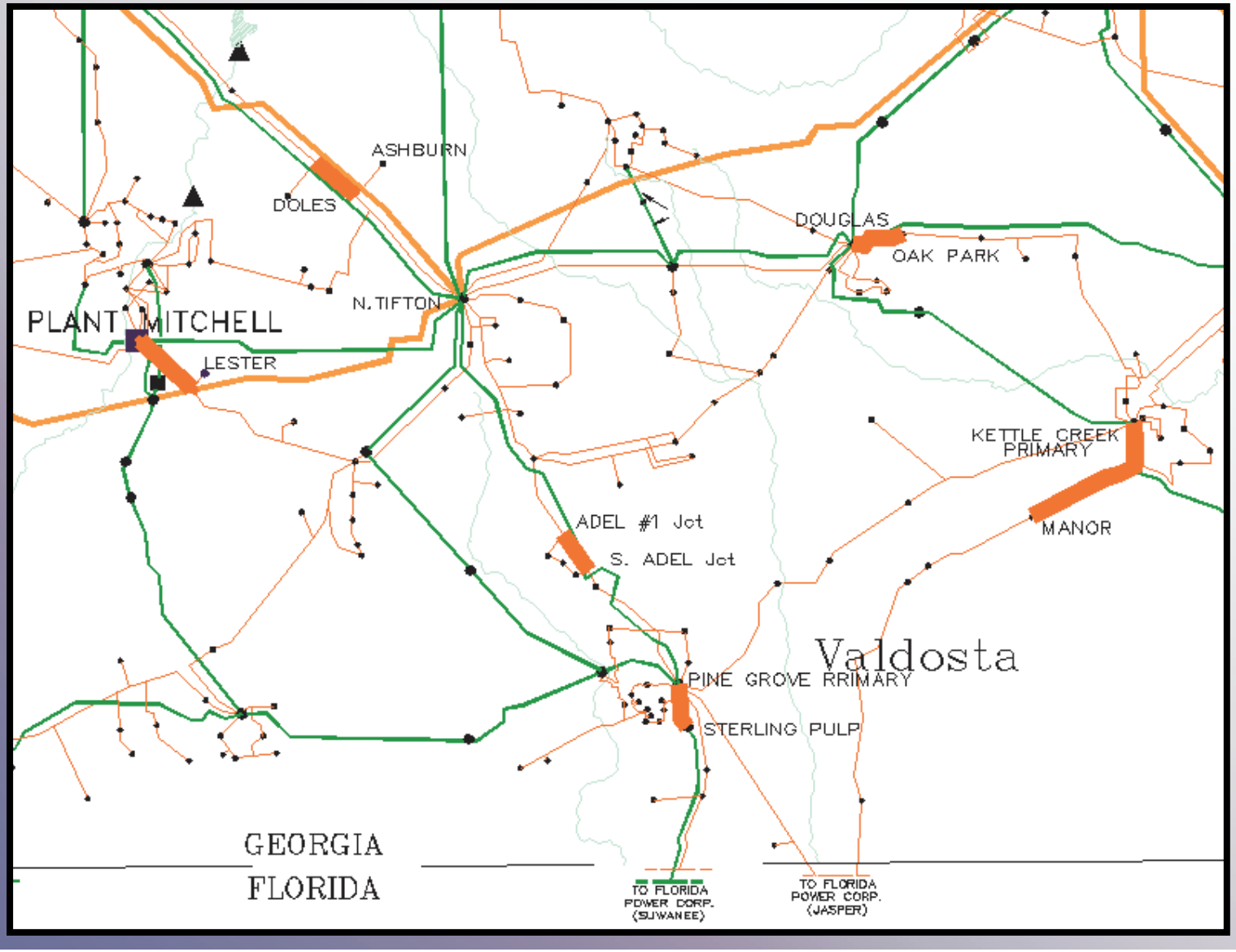
North Georgia to FRCC: 650 MW

Transmission System Impacts

- Constraints Identified:
  - One (1) 500kV Line
  - One (1) 230kV Line
  - Six (6) 115kV Lines

Southeastern Regional
TRANSMISSION PLANNING

Overloaded Elements



Southeastern Regional TRANSMISSION PLANNING

North Georgia to FRCC: 650 MW

Transmission Project Estimates

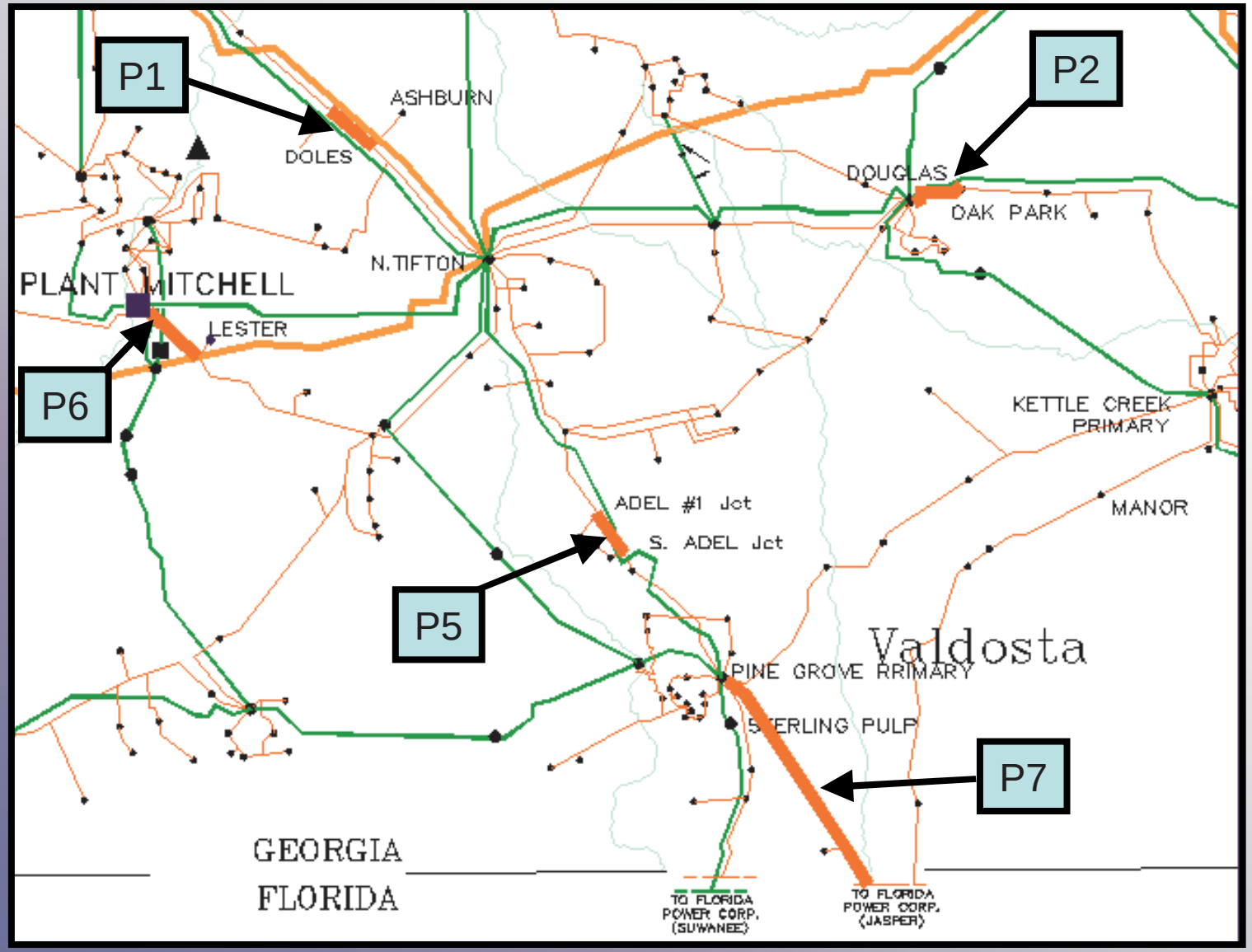
Item	Potential Project	Cost
P1	North Americus – North Tifton 115kV TL	$1,350,000
P2	Douglas – Kettle Creek Primary 115kV TL	$900,000
P3	Thalmann – Duval 500kV TL	N/A[1]
P4	Lloyd Shoals – South Griffin 115kV TL	$500,000
P5	Barneyville – Pine Grove Primary 115kV TL	$250,000
P6	Mitchell – Moultrie 115kV TL	$3,000,000
P7	Jasper – Pine Grove Primary 115kV TL	$11,000,000

Total Cost: $17,000,000

[1] Limiting element is within FRCC

Southeastern Regional TRANSMISSION PLANNING

Potential Enhancements



Southeastern Regional
TRANSMISSION PLANNING

SCE&G

TO

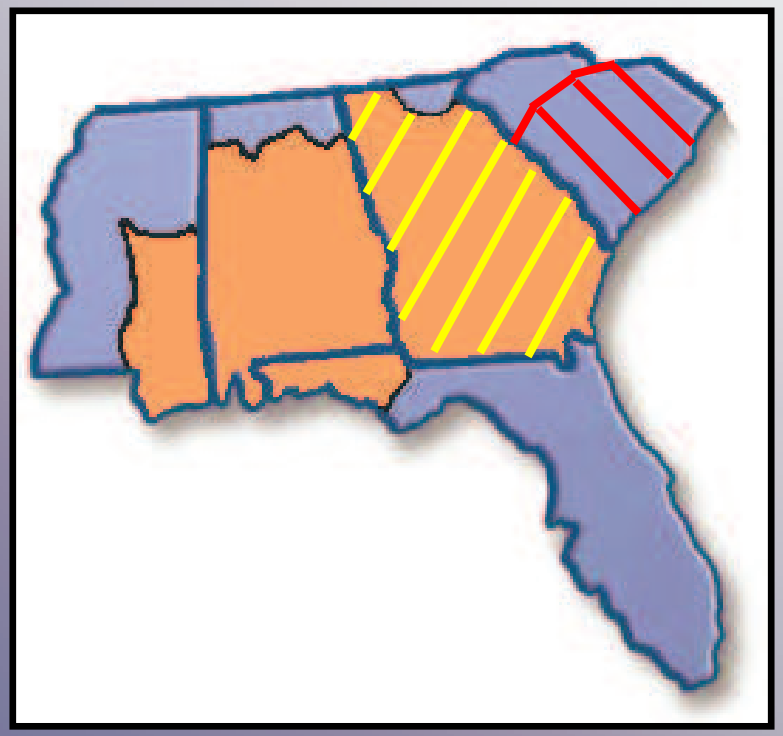
GEORGIA

1000 MW

Southeastern Regional TRANSMISSION PLANNING

SCE&G to Georgia: 1000 MW

- Transfer Type: Load to Generation
- Source: SCE&G Load
- Sink: Georgia Generation



Source

Sink

Southeastern Regional TRANSMISSION PLANNING

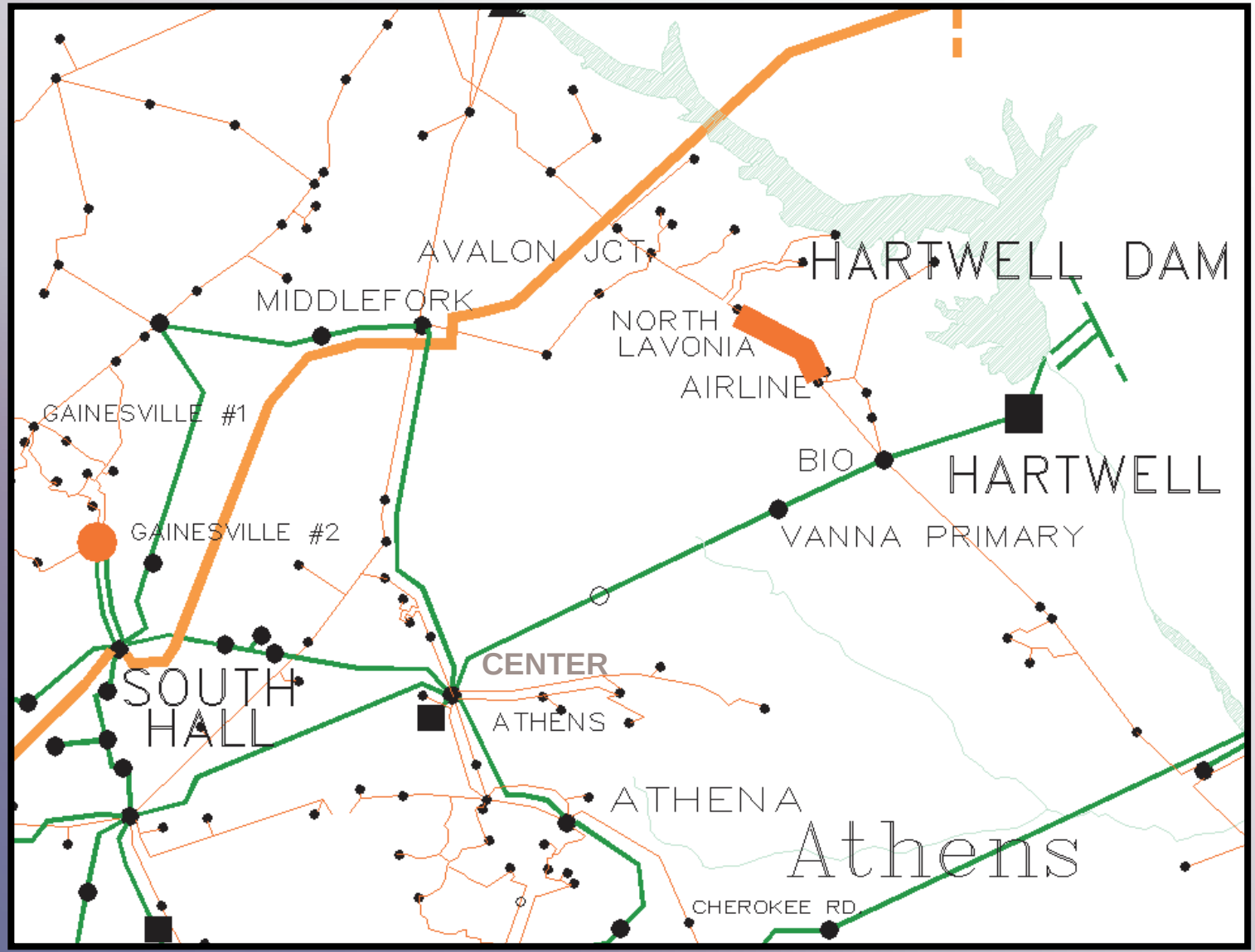
SCE&G to Georgia: 1000 MW

Transmission System Impacts

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

Southeastern Regional
TRANSMISSION PLANNING

Overloaded Elements



Southeastern Regional TRANSMISSION PLANNING

SCE&G to Georgia: 1000 MW

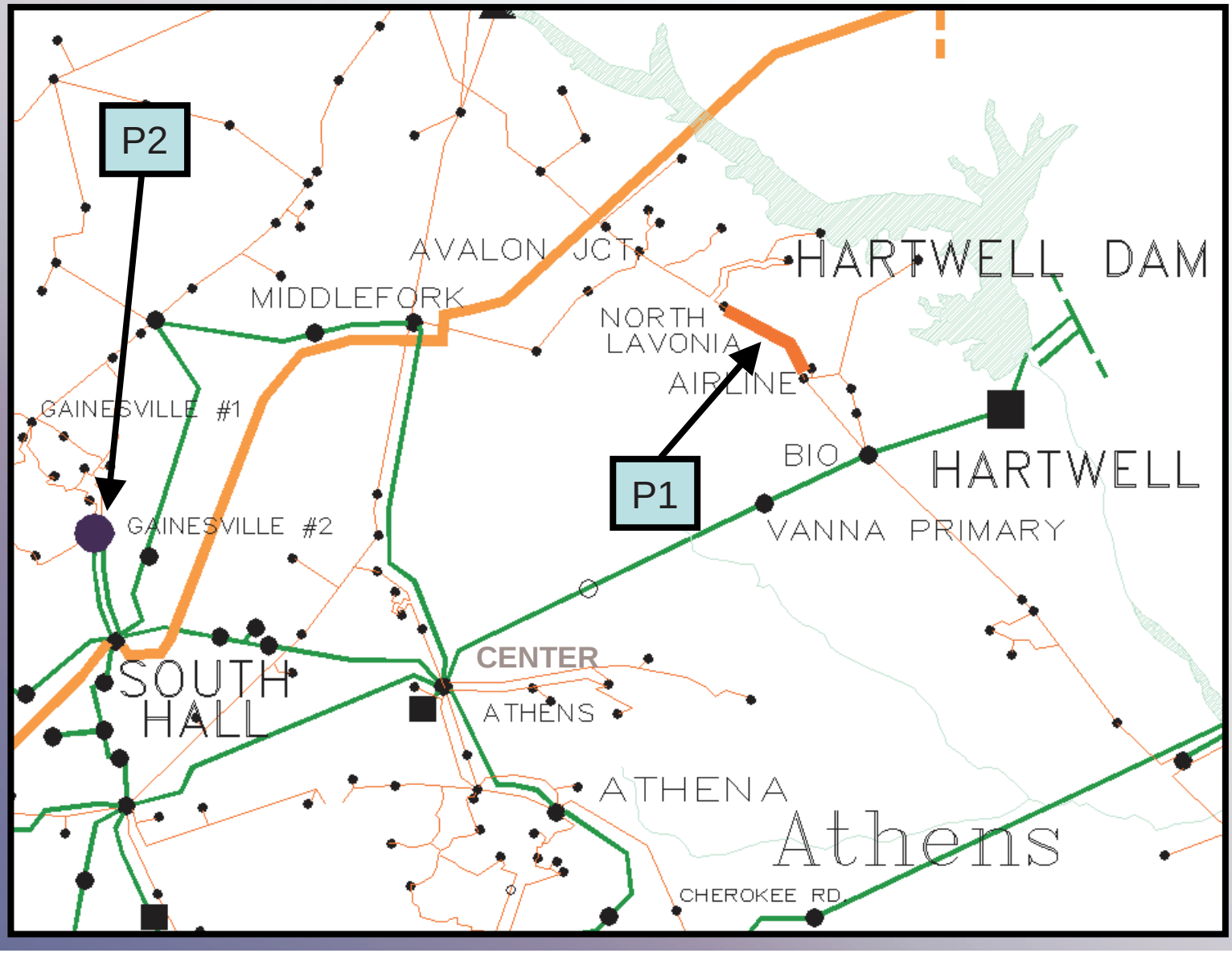
Transmission Project Estimates

Item	Potential Project	Cost
P1	Avalon Junction – Bio 115kV TL	$3,800,000
P2	Gainesville #2 115kV Substation	$200,000

Total Cost: $4,000,000

Southeastern Regional TRANSMISSION PLANNING

Potential Enhancements



Southeastern Regional
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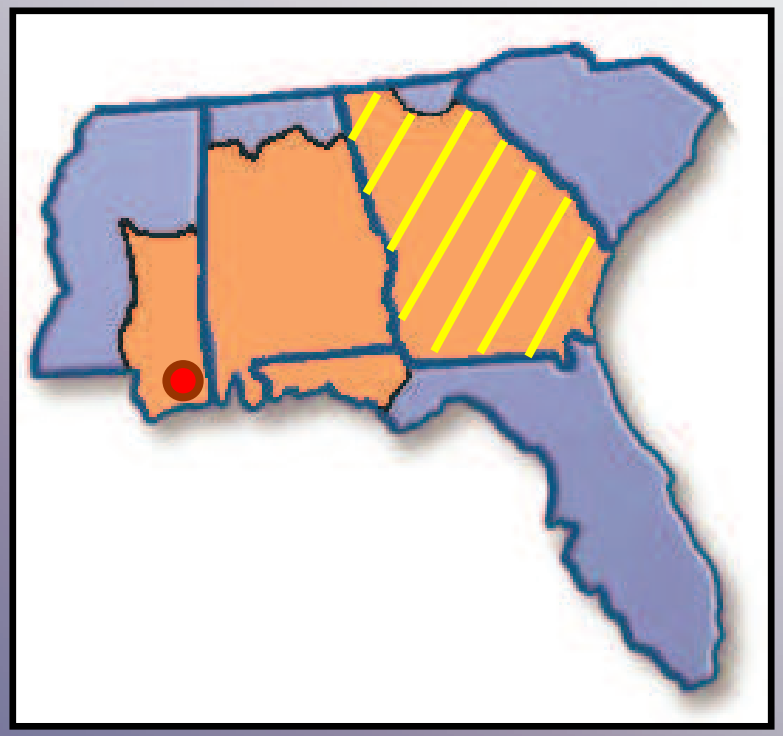
Gulfport, MS
to
Georgia

1000 MW

Southeastern Regional TRANSMISSION PLANNING

Gulfport, MS to Georgia: 1000 MW

- Transfer Type: Generation to Generation
- Source: 500 kV, Harrison County, MS
- Sink: Georgia Generation



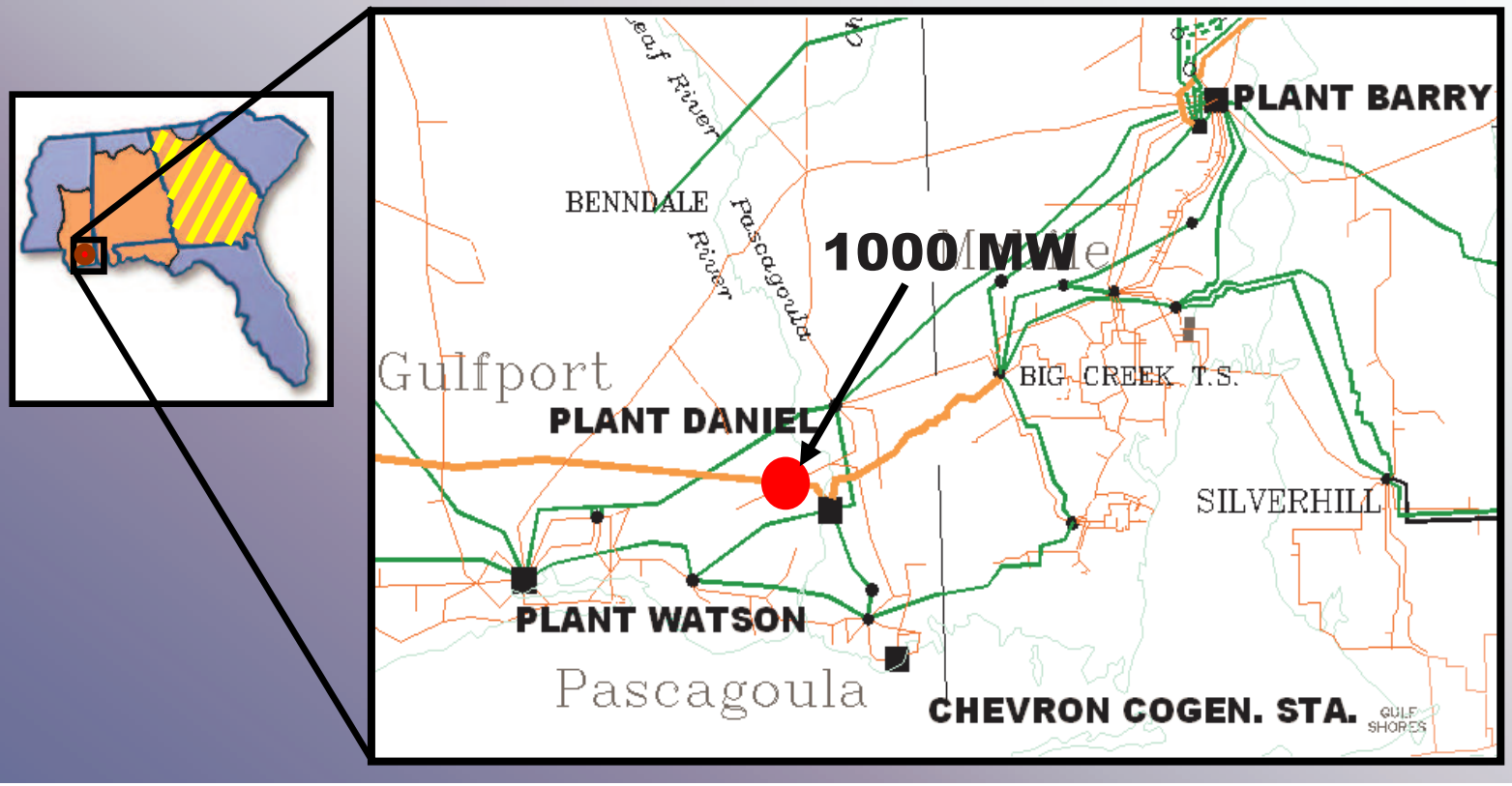
Source

Sink

Southeastern Regional TRANSMISSION PLANNING

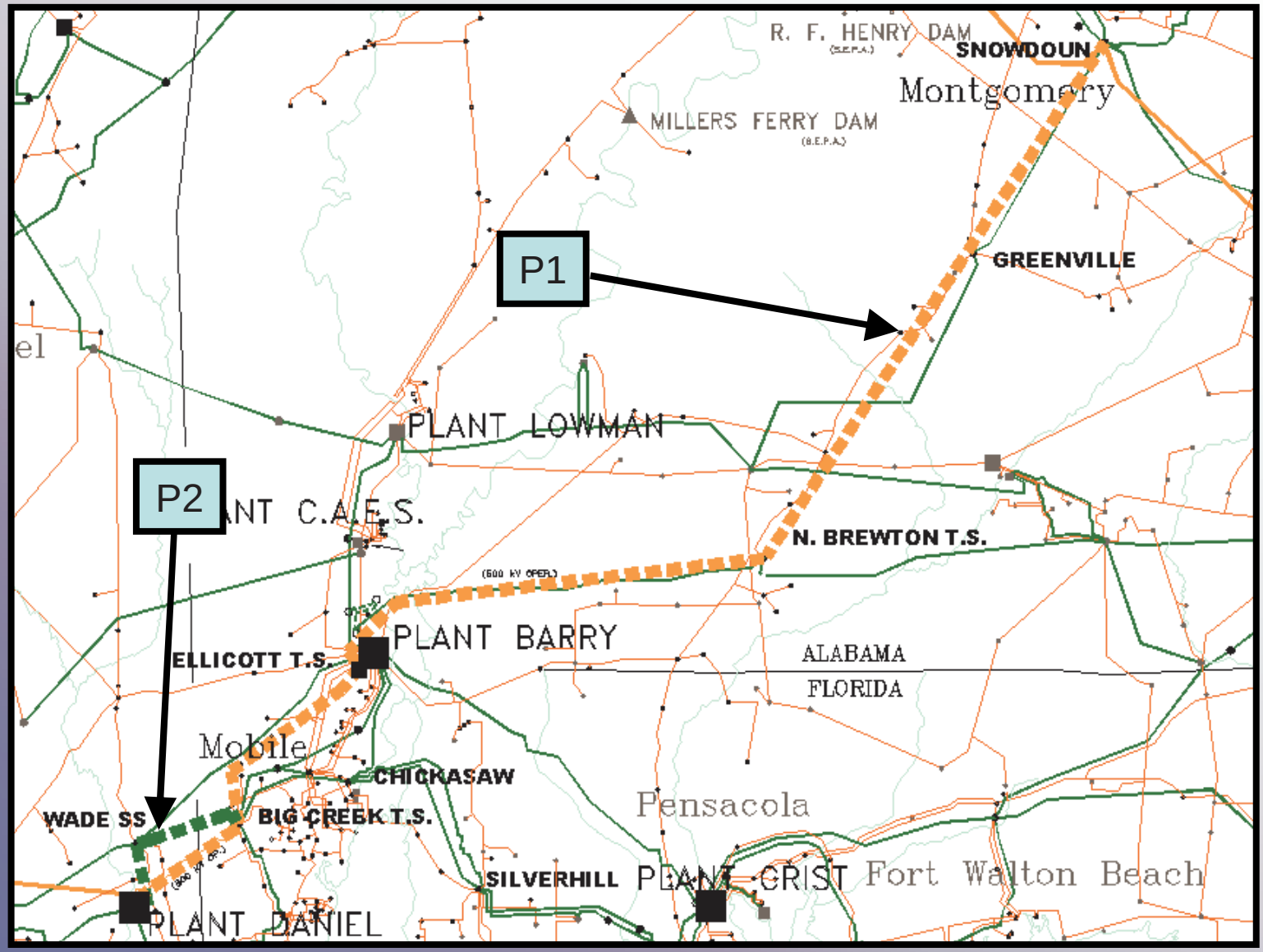
Gulfport, MS to Georgia: 1000 MW

- Transfer Type: Generation to Generation
- Source: 500 kV, Harrison County, MS
- Sink: Georgia Generation



Southeastern Regional
TRANSMISSION PLANNING

SWQ Enhancements



Southeastern Regional TRANSMISSION PLANNING

Gulfport, MS to Georgia: 1000 MW

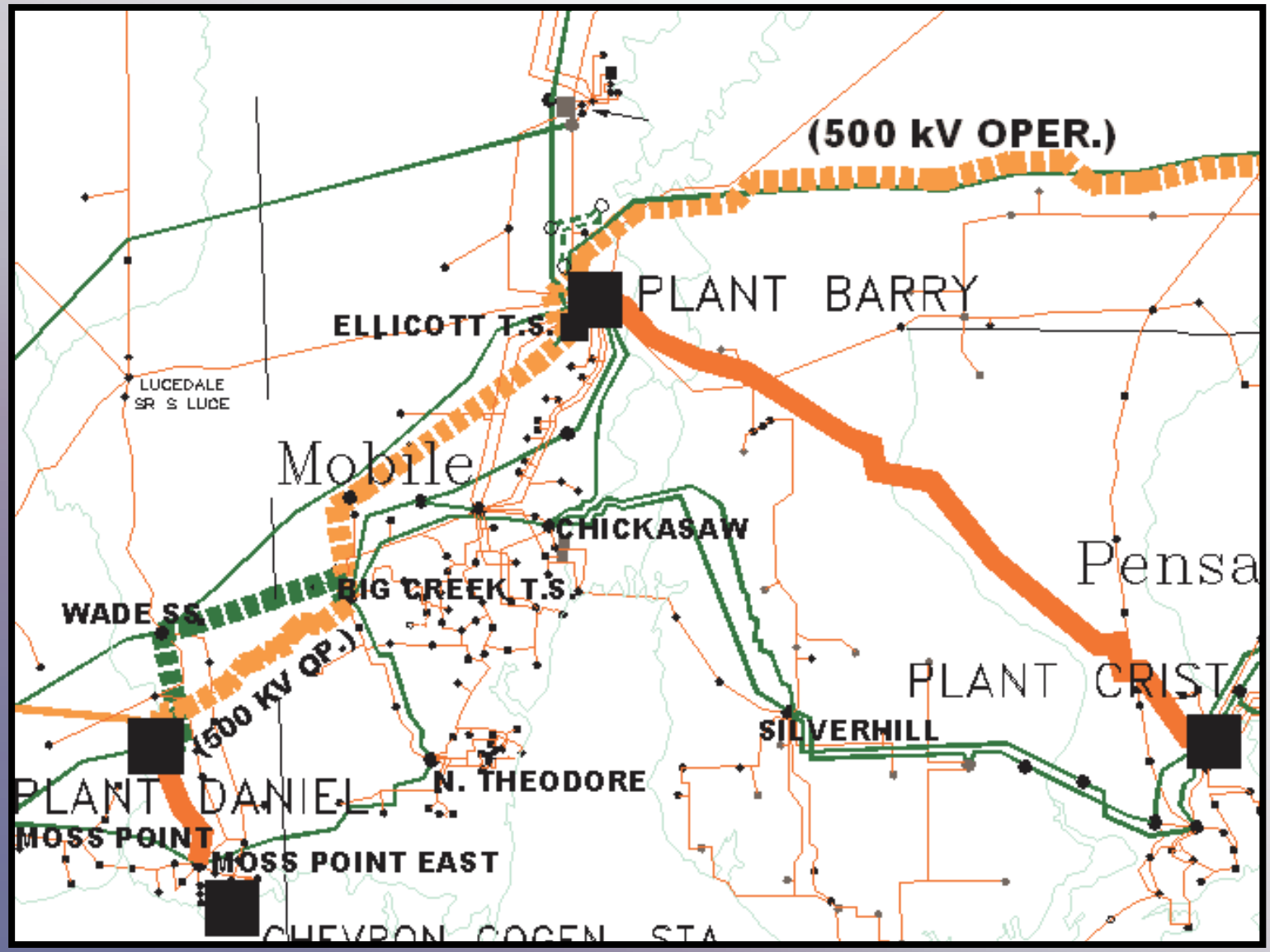
Transmission System Impacts

- Constraints Identified[1]:
  - Six (6) 230kV Lines
  - Nine (9) 115kV Lines

[1] Constraints remaining after implementing Southwest Quadrant enhancement

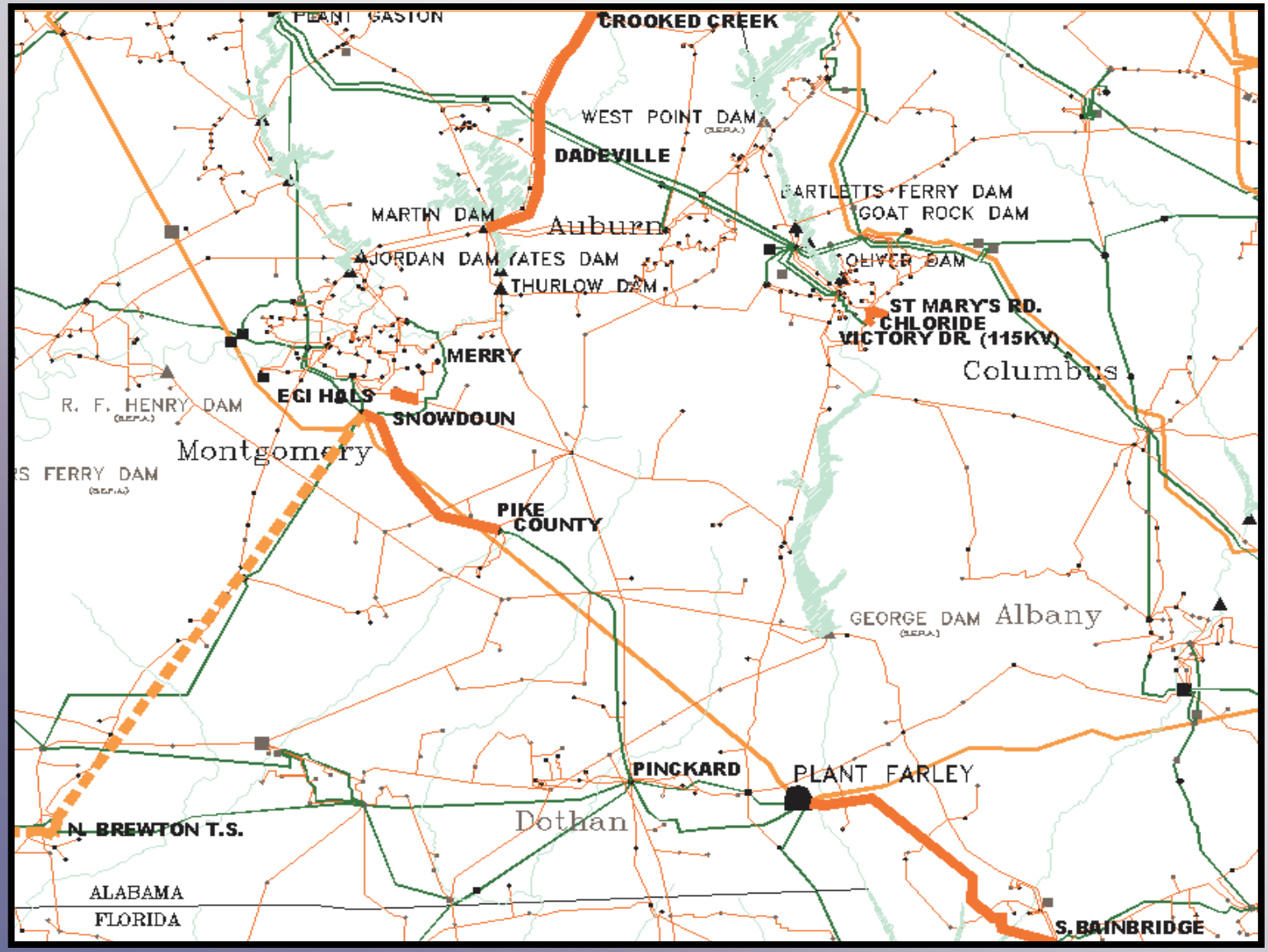
Southeastern Regional TRANSMISSION PLANNING

Constraints After SWQ Enhancements



Southeastern Regional TRANSMISSION PLANNING

Constraints After SWQ Enhancements



Southeastern Regional TRANSMISSION PLANNING

Gulfport, MS to Georgia: 1000 MW

Transmission Project Estimates

Item	Potential Project	Cost
P1	Daniel – Snowdoun 500kV TL	$340,000,000
P2	Daniel – Bennett 230kV TL	$23,000,000
P3	Barry - Crist 230kV TL	$2,200,000
P4	South Montgomery – Union Spring 115kV TL	$3,500,000
P5	Pike County – Snowdoun 230kV TL	$18,300,000
P6	Farley – South Bainbridge 230kV TL	$2,500,000
P7	Anniston – Bynum 230kV TL	$10,000,000
P8	Bull Creek – Victory Drive 115kV TL	$2,500,000
P9	Crooked Creek – Martin Dam 115kV TL	$8,500,000
P10	Madison Park – Thurlow Dam 115kV TL	$750,000

Total Cost: $411,250,000

Southeastern Regional TRANSMISSION PLANNING

Proposed Enhancements

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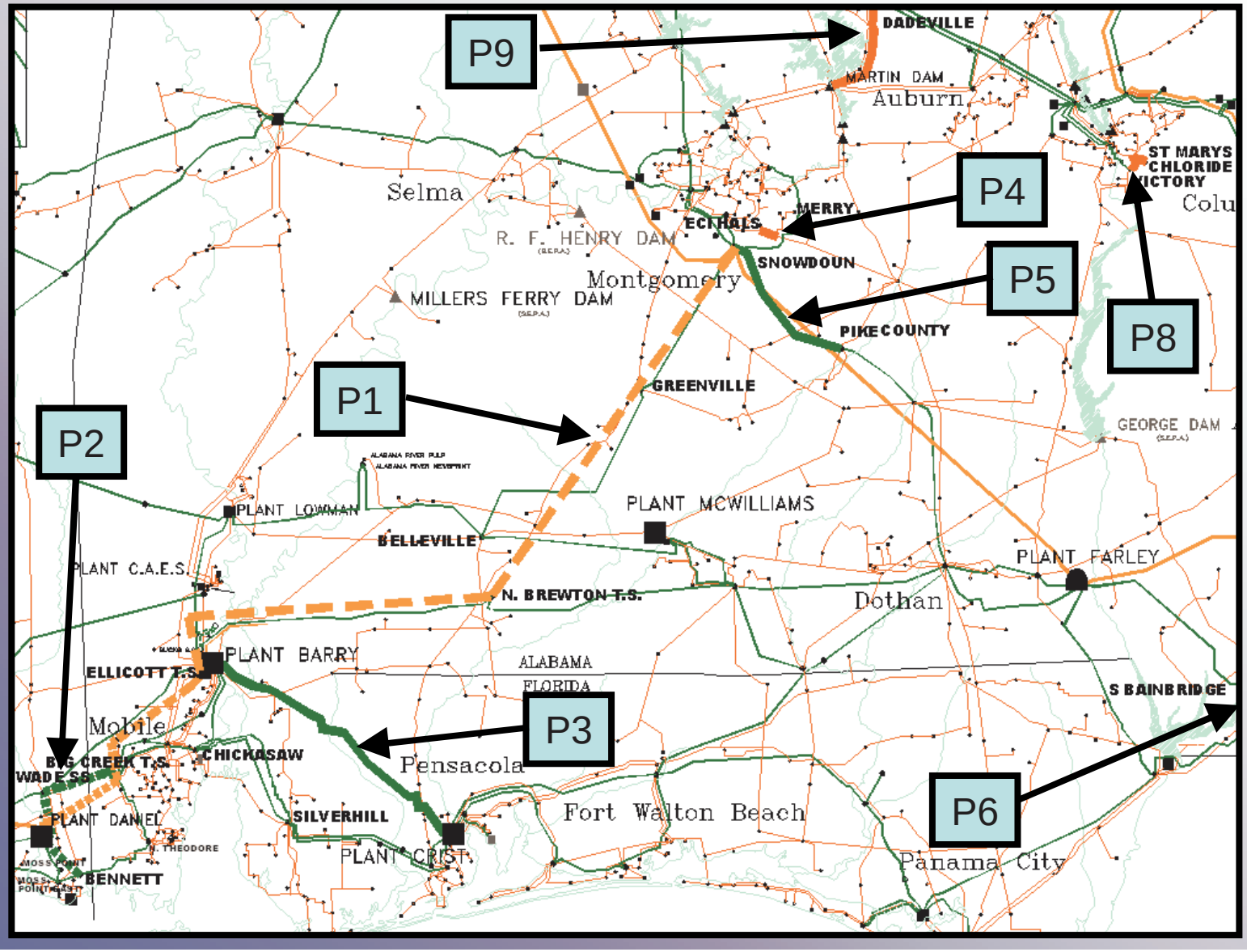

Southeastern Regional
TRANSMISSION PLANNING

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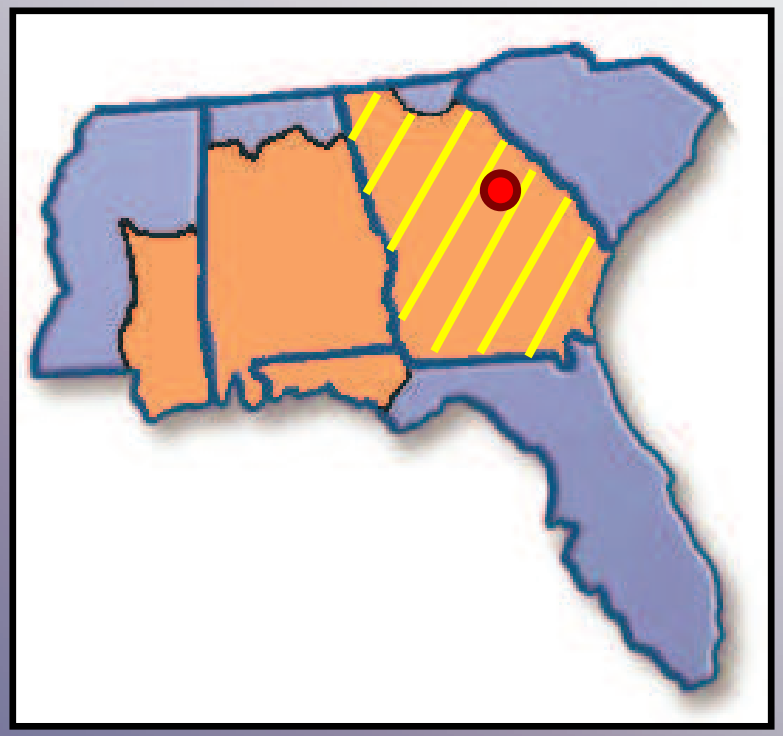
Washington County to Georgia

5000 MW

Southeastern Regional TRANSMISSION PLANNING

Washington Co. to Georgia: 5000 MW

- Transfer Type: Generation to Generation
- Source: Washington County, GA
- Sink: Georgia Generation



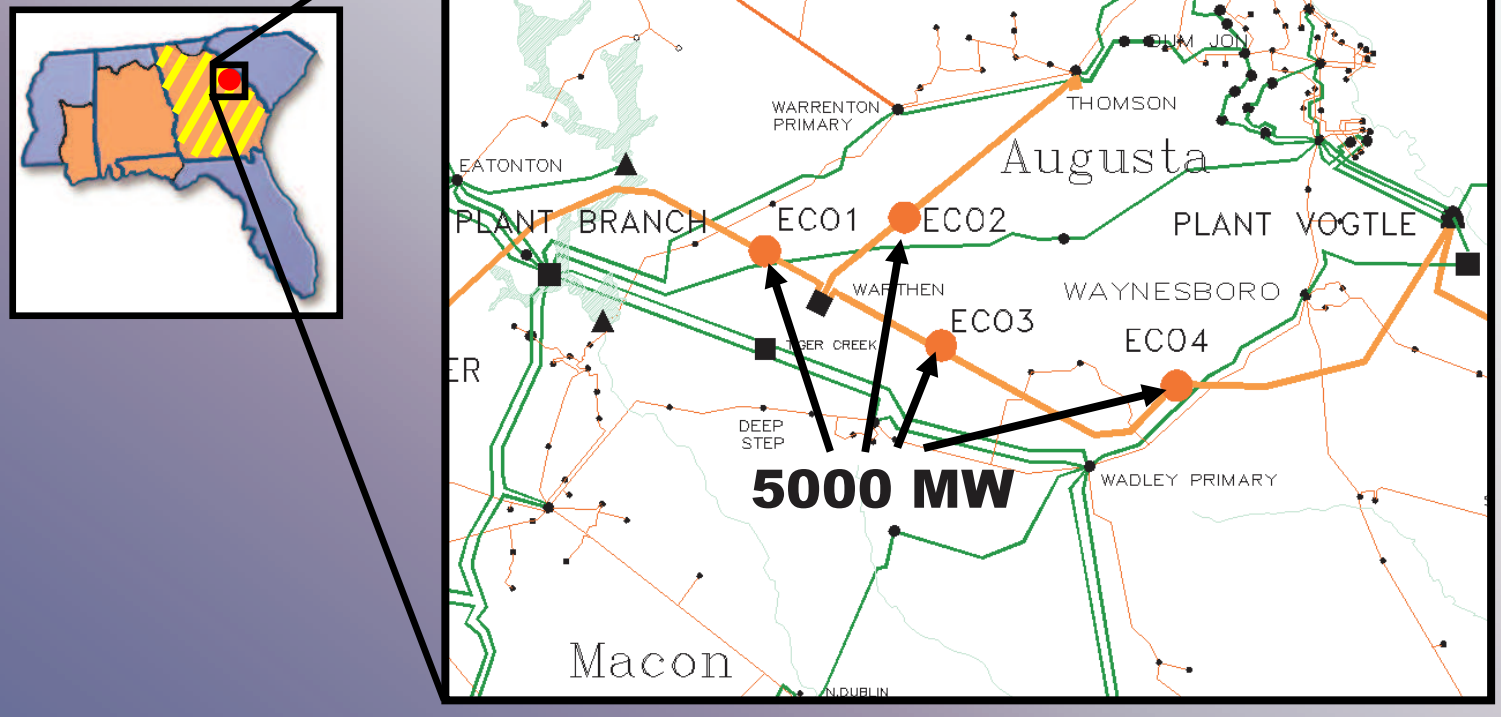
Source

Sink

Southeastern Regional TRANSMISSION PLANNING

Washington Co. to Georgia: 5000 MW

- Transfer Type: Generation to Generation
- Source: Washington County, GA
- Sink: Georgia Generation



Southeastern Regional TRANSMISSION PLANNING

Washington Co. to Georgia: 5000 MW

Transmission System Impacts

- Constraints Identified:
  - Ten (10) 500kV Lines
  - Four (4) 500 - 230kV Transformers
  - Thirty (30) 230kV Lines
  - Six (6) 230kV - 115kV Transformers
  - Twenty-three (23) 115kV Lines

Southeastern Regional
TRANSMISSION PLANNING

Overloaded Elements

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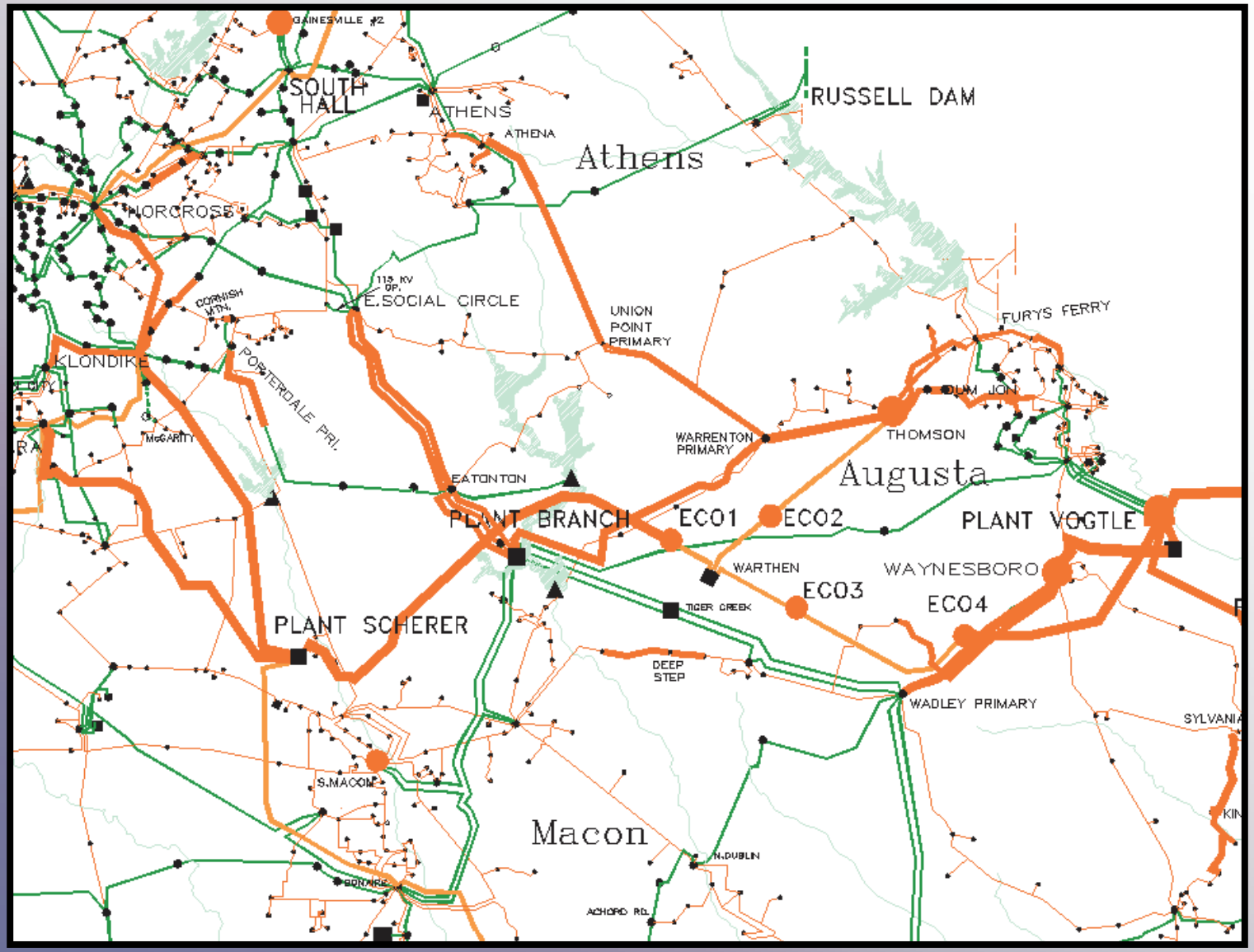
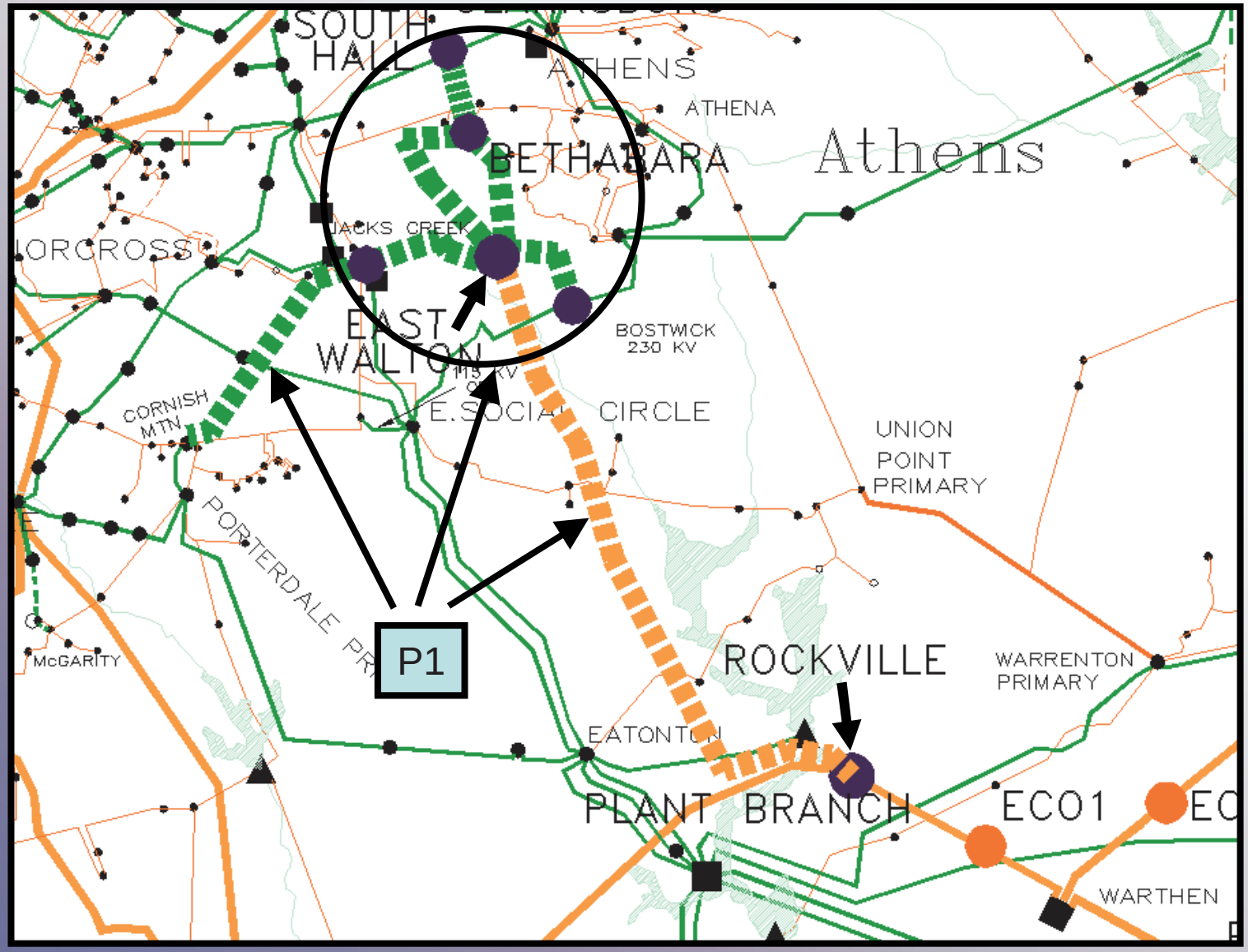


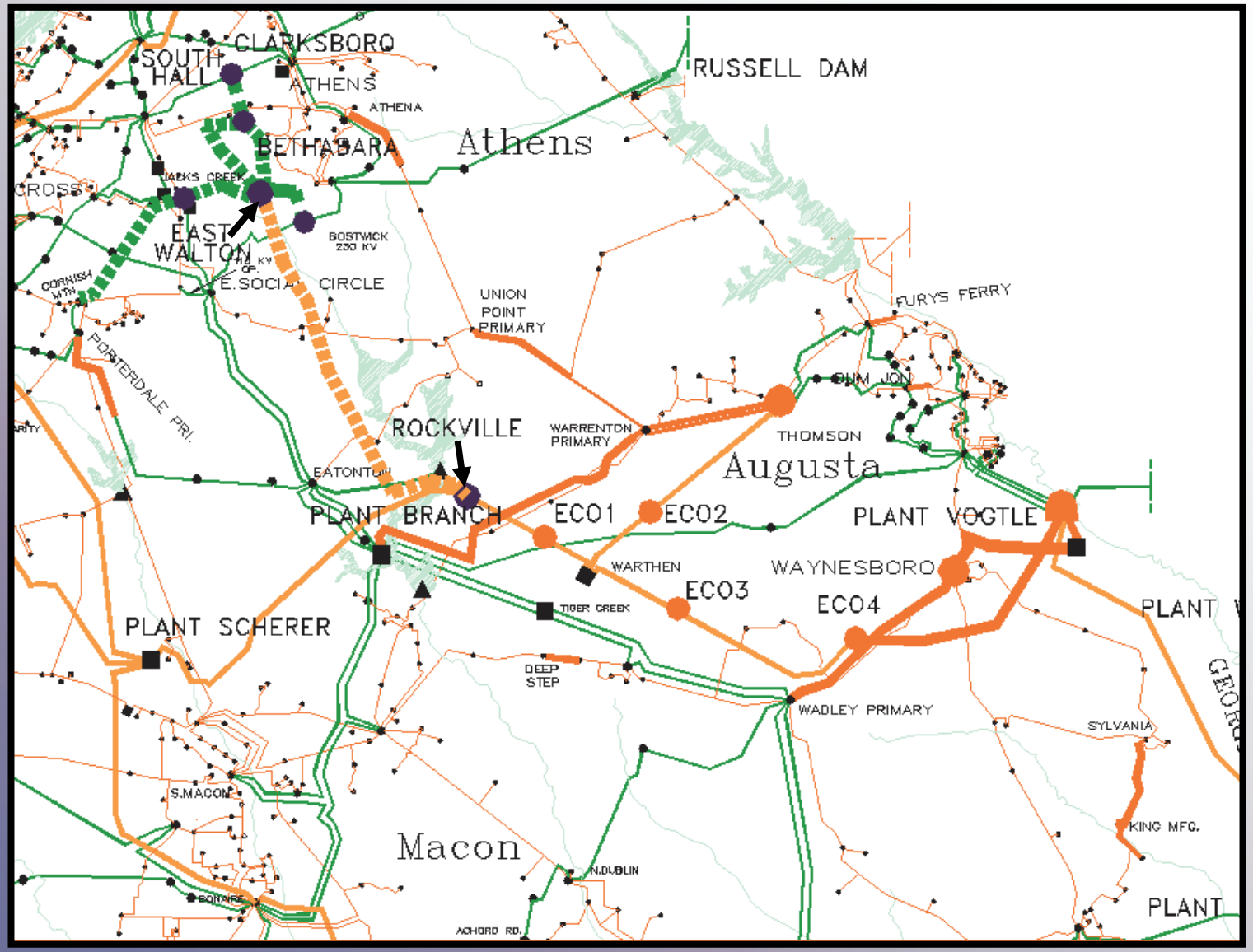
Southeastern Regional
TRANSMISSION PLANNING

Potential Enhancements (P1)



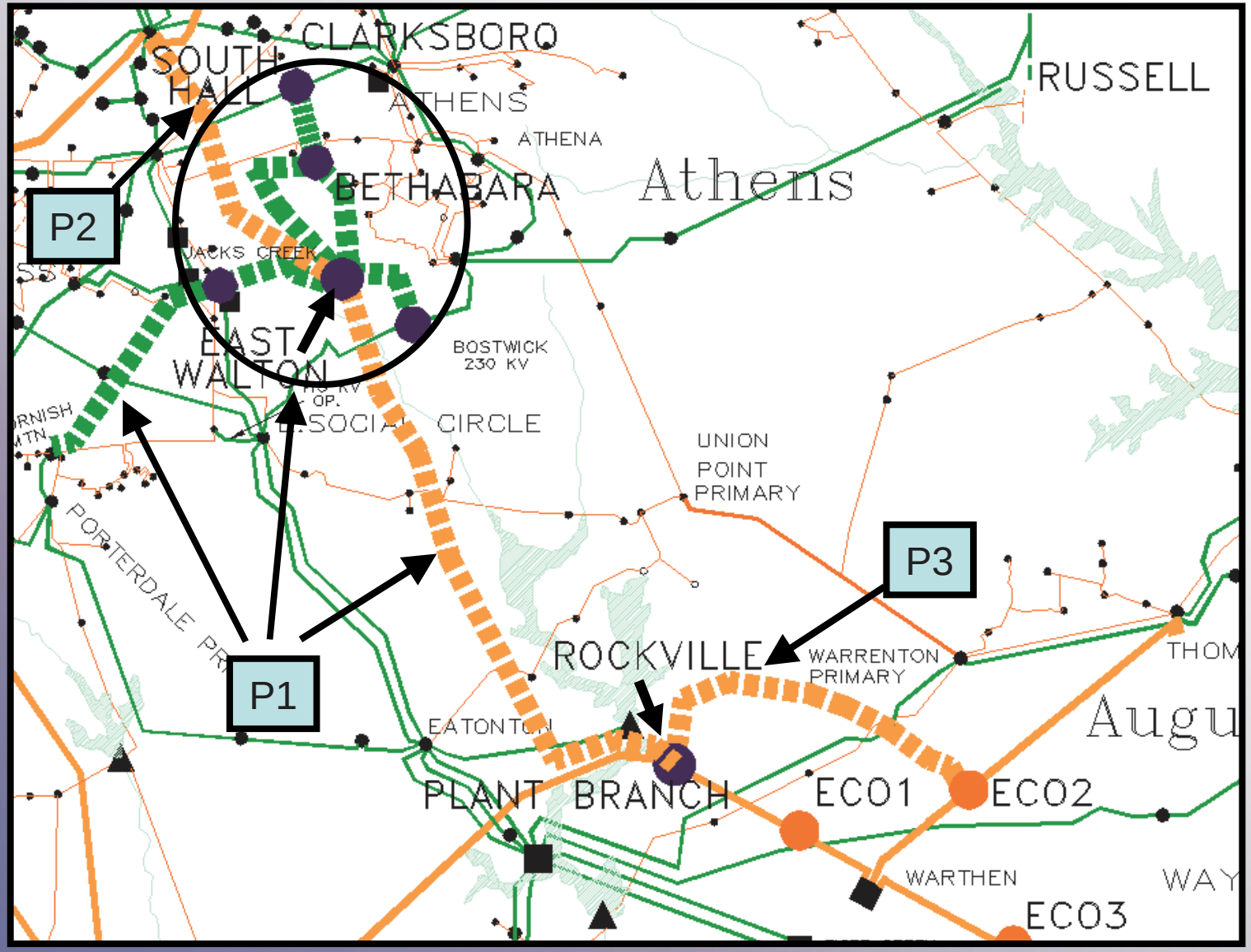
Southeastern Regional
TRANSMISSION PLANNING

Constraints After P1



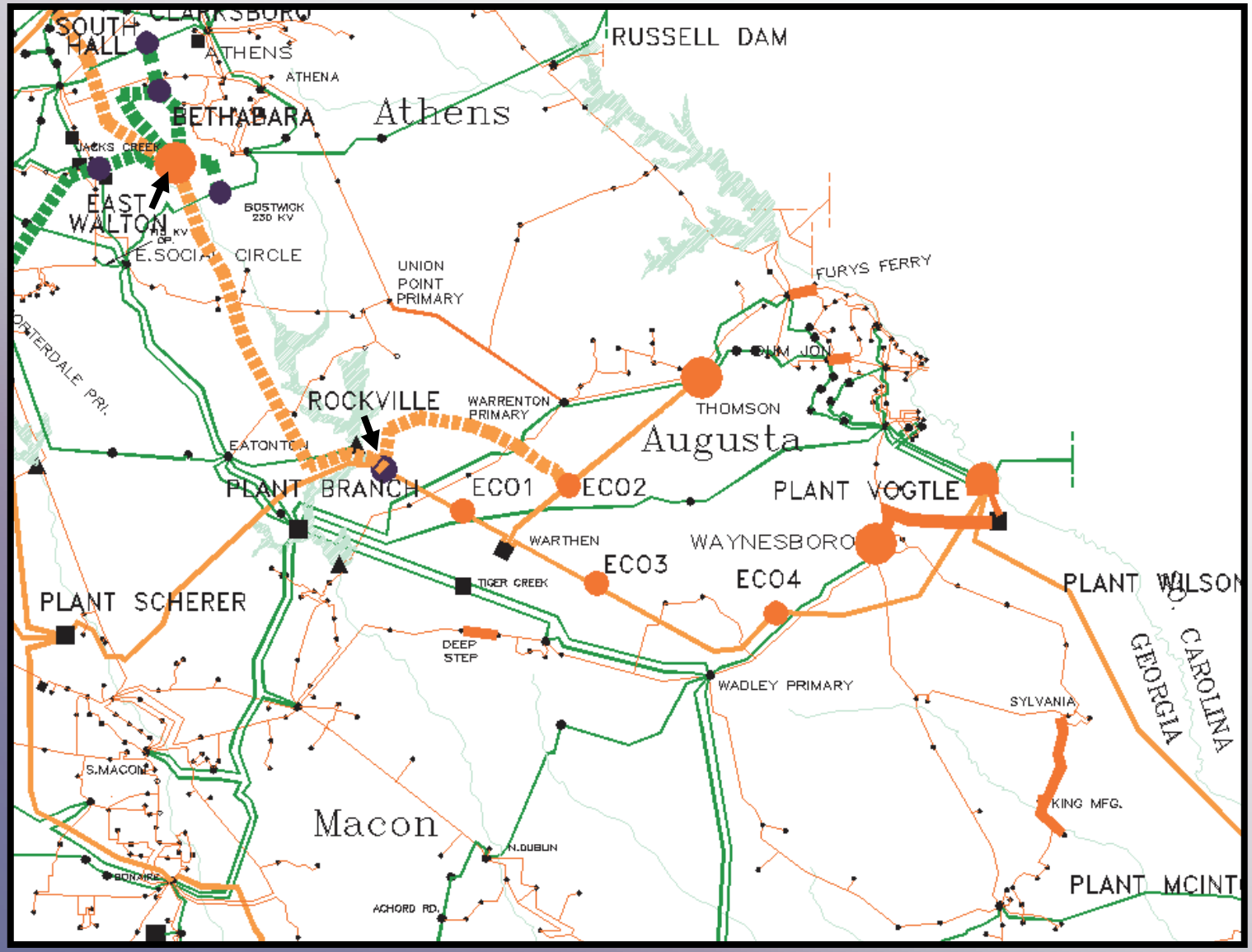
Southeastern Regional TRANSMISSION PLANNING

Potential Enhancements (P1 through P3)



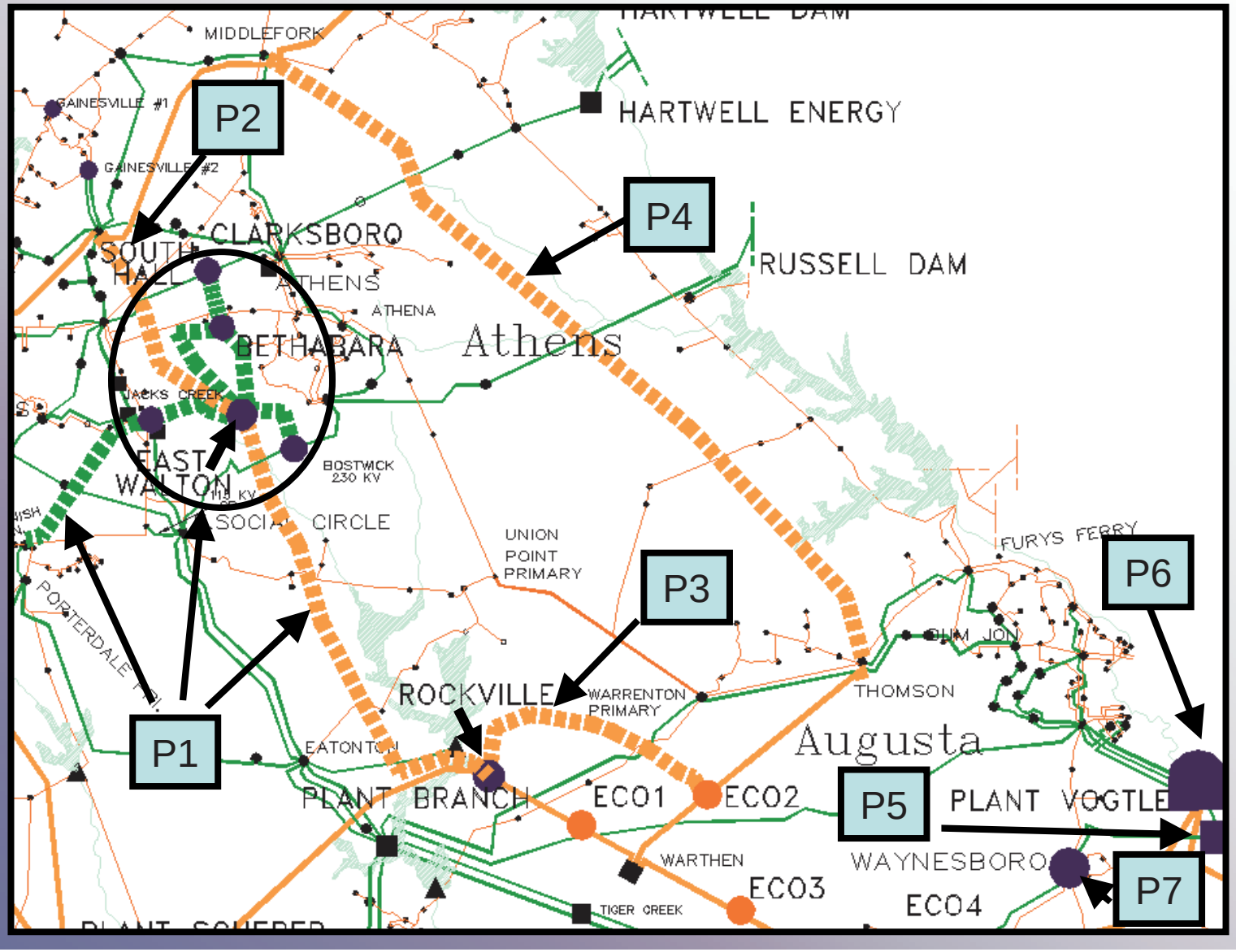
Southeastern Regional
TRANSMISSION PLANNING

Constraints After P3



Southeastern Regional TRANSMISSION PLANNING

Potential Enhancements (P1 through P8)



Southeastern Regional TRANSMISSION PLANNING

Washington Co. to Georgia: 5000 MW

Transmission Project Estimates

Item	Potential Project	Cost
P1	1 Yr. Advancement of Bethabara 230/115kV Project from 2015	$3,200,000
	1 Yr. Advancement of East Walton 500/230kV Project from 2015	$13,300,000
P2	East Walton – South Hall 500kV TL	$54,500,000
P3	Rockville – ECO2 500kV TL	$81,700,000
P4	3 Yr. Advancement of the Middlefork – Thomson 500kV TL	$47,300,000
P5	Wilson 230kV Substation	$300,000
P6	Vogtle 500/230kV Substation	$35,300,000
P7	Waynesboro 230/115kV Substation	$0
P8	Jesup – Ludowici Primary 115kV TL	$1,750,000

Total Cost: $237,350,000

Southeastern Regional
TRANSMISSION PLANNING

Savannah, GA

to

Southern Balancing Authority

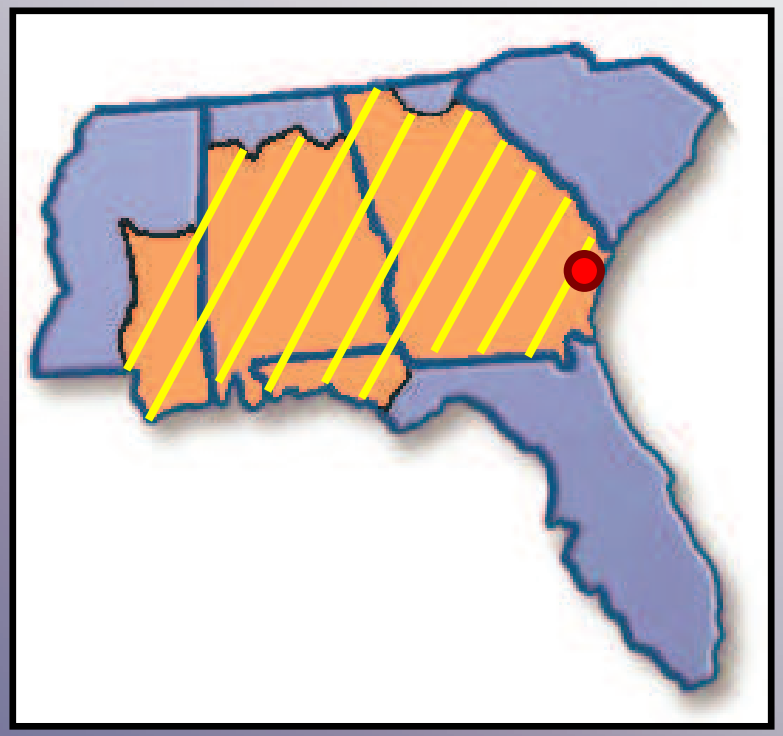
400 MW – Summer Peak

1000 MW – Off Peak

Southeastern Regional TRANSMISSION PLANNING

Savannah, GA to Southern Balancing Authority

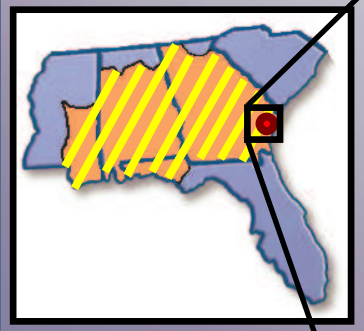
- Transfer Type: Generation to Generation
- Source: Savannah, GA
- Sink: Southern Balancing Authority

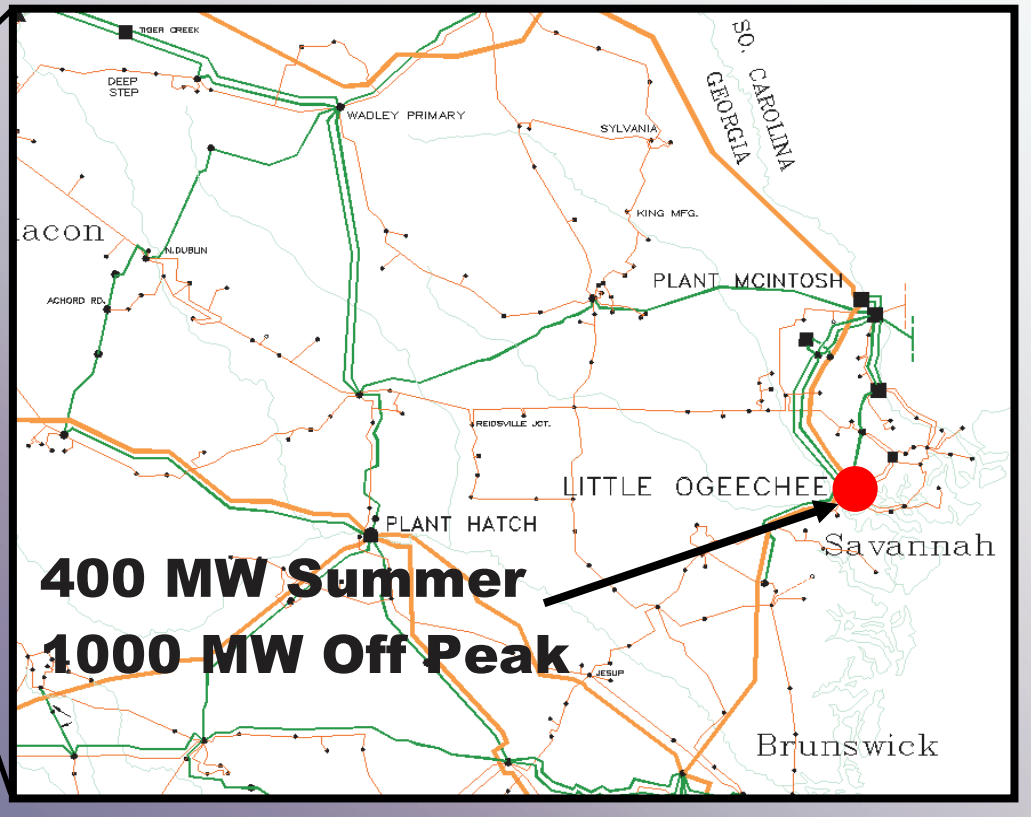


Southeastern Regional TRANSMISSION PLANNING

Savannah, GA to Southern Balancing Authority

- Transfer Type: Generation to Generation
- Source: Savannah, GA
- Sink: Southern Balancing Authority





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Southeastern Regional TRANSMISSION PLANNING

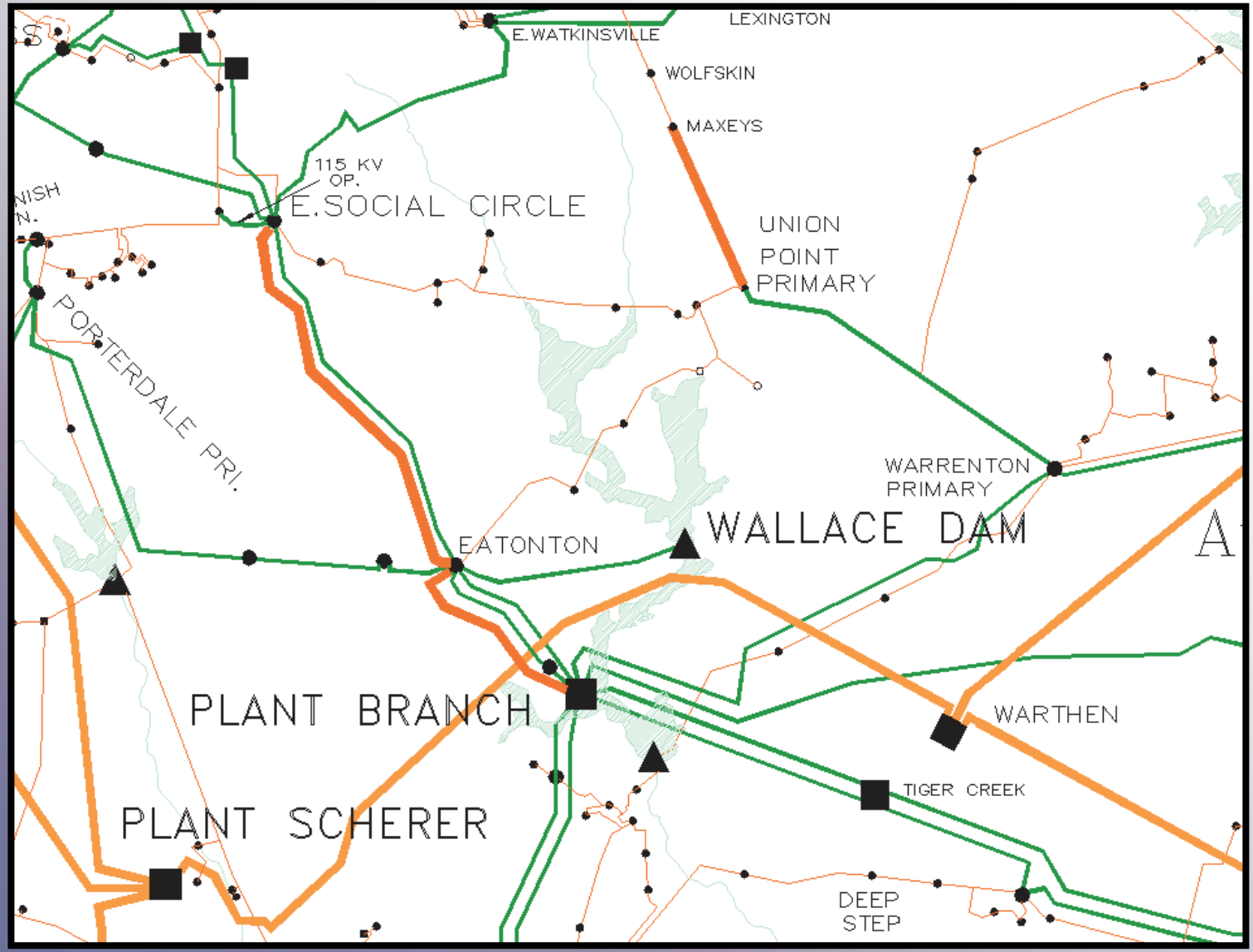
Savannah, GA to SBA
400 MW Summer Peak

Transmission System Impacts

- Constraints Identified:
  - Two (2) 230kV Lines
  - One (1) 115kV Line

Southeastern Regional
TRANSMISSION PLANNING

Overloaded Elements



Southeastern Regional TRANSMISSION PLANNING

Savannah, GA to SBA
400 MW Summer Peak

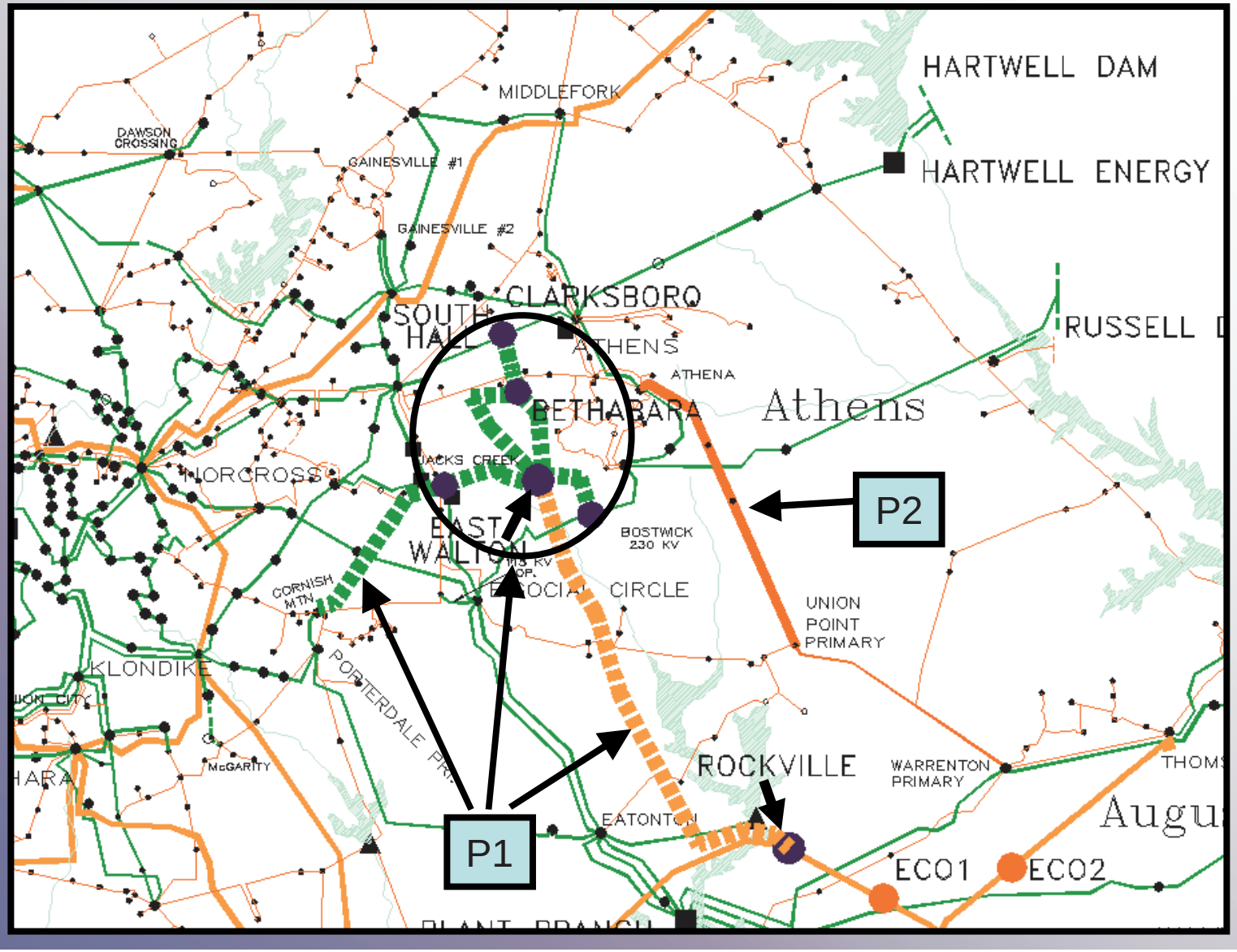
Transmission Project Estimates

Item	Potential Project	Cost
P1	1 Yr. Advancement of the Bethabara 230/115kV Project from 2015	$3,200,000
	1 Yr. Advancement of the East Walton 500/230 kV Project from 2015	$13,300,000
P2	Athena – Union Point 115kV TL	$11,300,000

Total Cost: $27,800,000

Southeastern Regional
TRANSMISSION PLANNING

Potential Enhancements



Southeastern Regional TRANSMISSION PLANNING

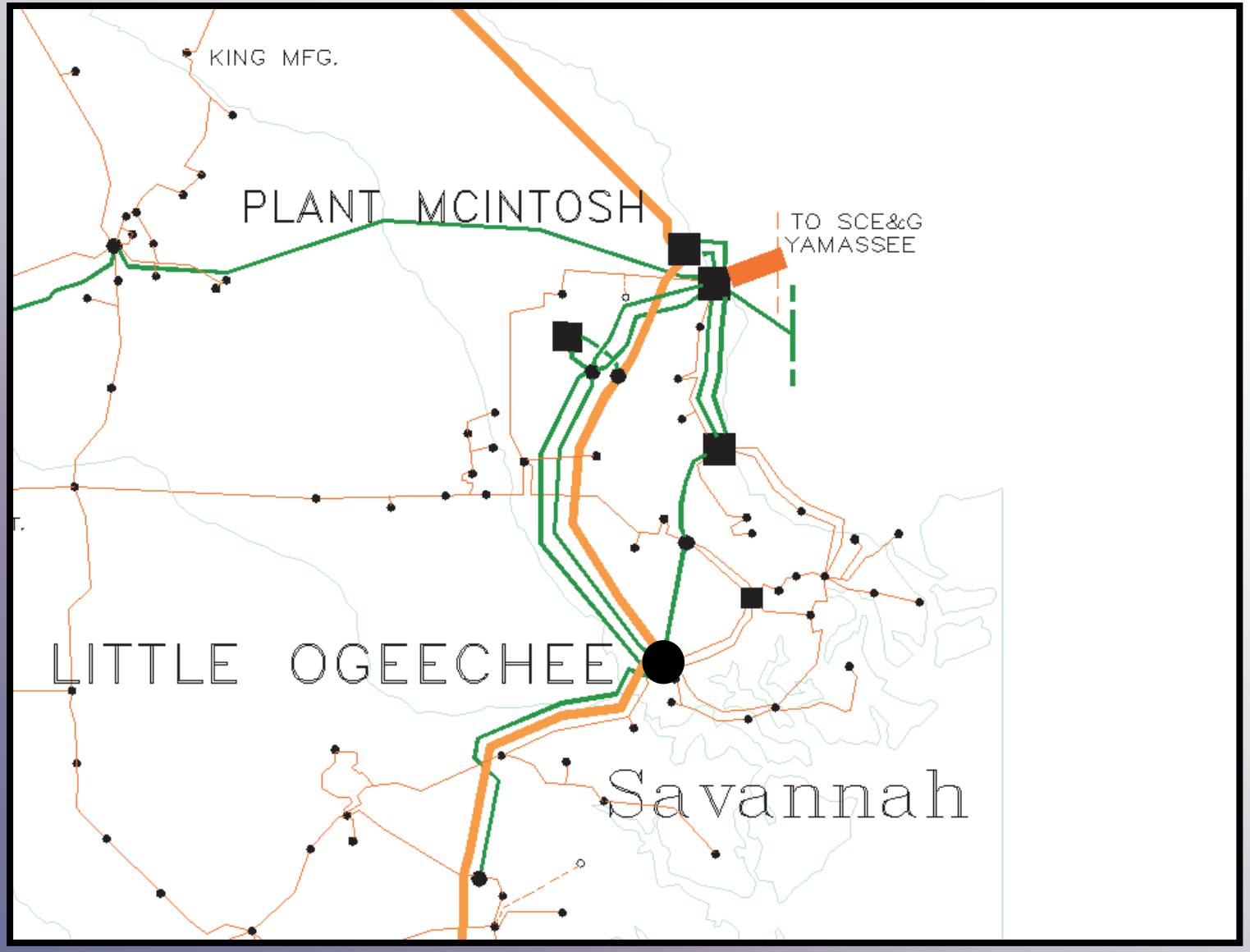
Savannah, GA to SBA
1000 MW Off Peak

Transmission System Impacts

- Constraints Identified:
  - One (1) 115kV Line

Southeastern Regional TRANSMISSION PLANNING

Overloaded Elements



Southeastern Regional TRANSMISSION PLANNING

Savannah, GA to SBA
1000 MW Off Peak

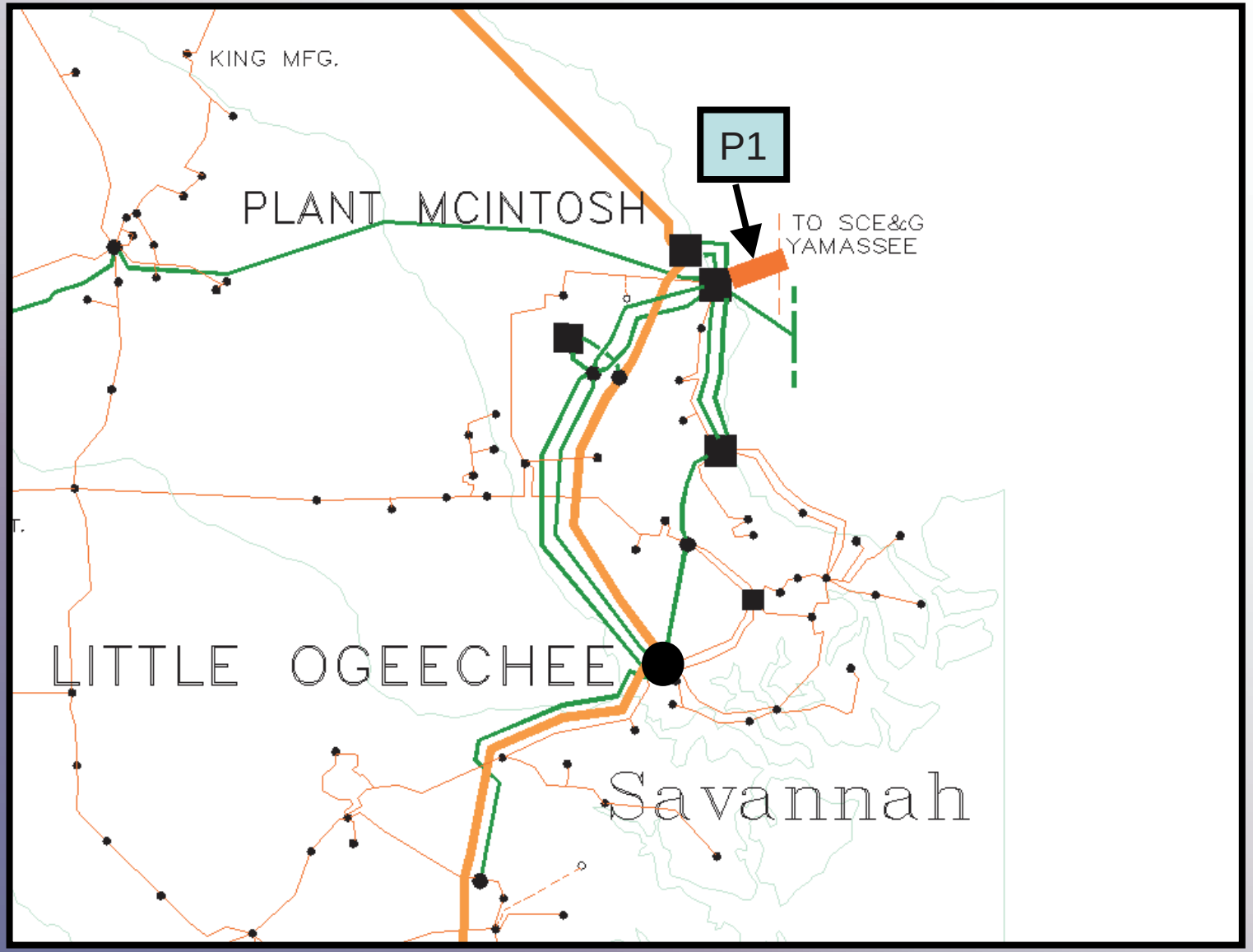
Transmission Project Estimates

Item	Potential Project	Cost
P1	McIntosh – Yemassee 115kV TL	$675,000

Total Cost: $675,000

Southeastern Regional TRANSMISSION PLANNING

Potential Enhancements



Southeastern Regional TRANSMISSION PLANNING

2009 SERTP

Project Cost Summary

- North Georgia to FRCC
  - $17,000,000
- SCE&G to Georgia
  - $4,000,000
- Gulfport, MS to Georgia
  - $411,250,000
- Washington County to Georgia
  - $237,350,000
- Savannah, GA to Southern Balancing Authority
  - $28,475,000
    - $27,800,000 for Summer Peak
    - $675,000 for Off Peak

Southeastern Regional
TRANSMISSION PLANNING

Questions?