

Long-Range Transmission Study for Potential Central Georgia Generation Additions

Key Issues

- North Georgia
 - High load growth
 - Generation deficient

- Central Georgia
 - 9,200 MW of existing capacity (~8,000 MW has firm service)
 - 10,000 MW of new generation requests (2011-2017)

- Overall Long-Range Transmission Plan Needed
 - Supports near-term individual TSR studies
 - Solidifies ITS long range plan

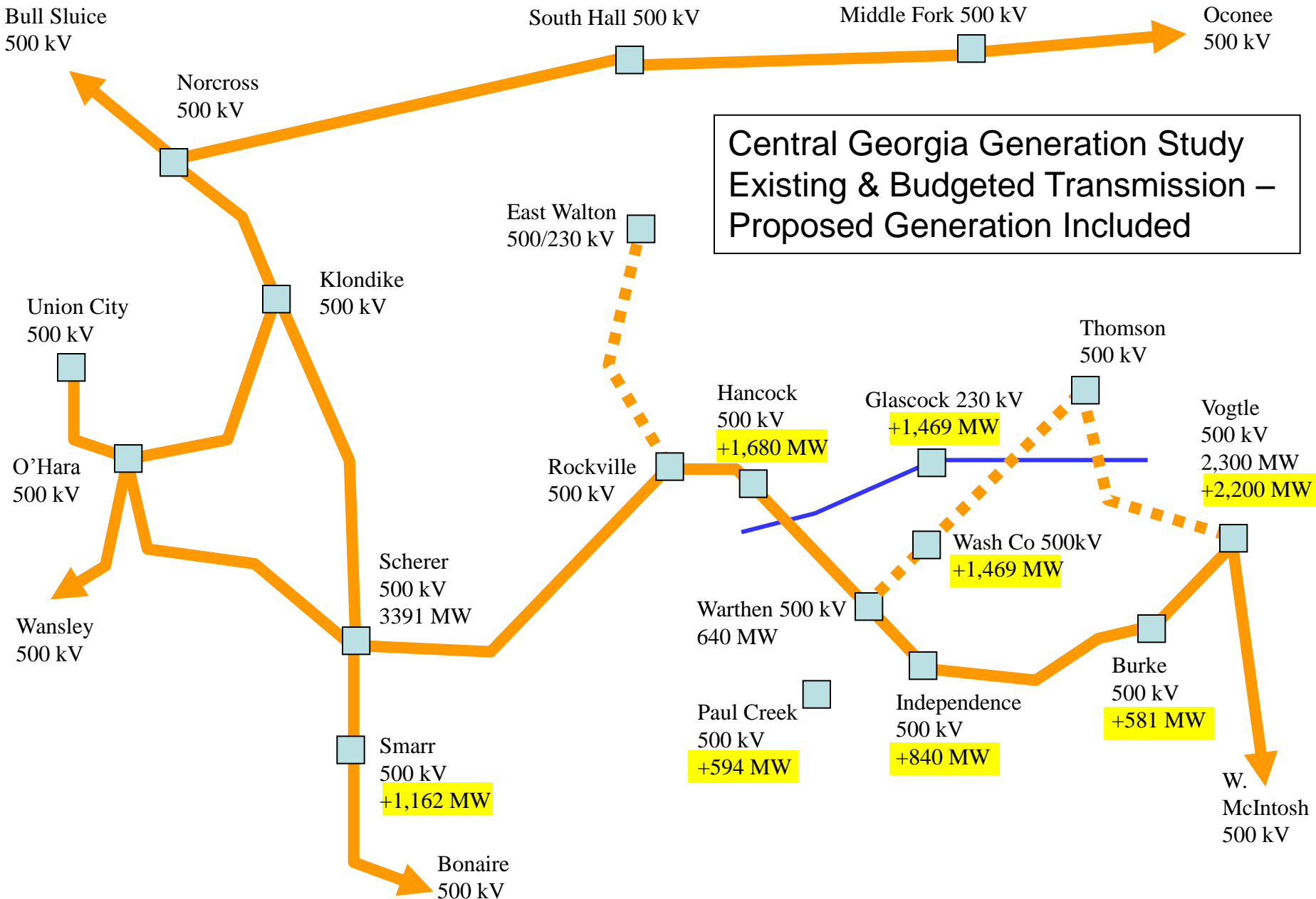
Study Challenges and Goals

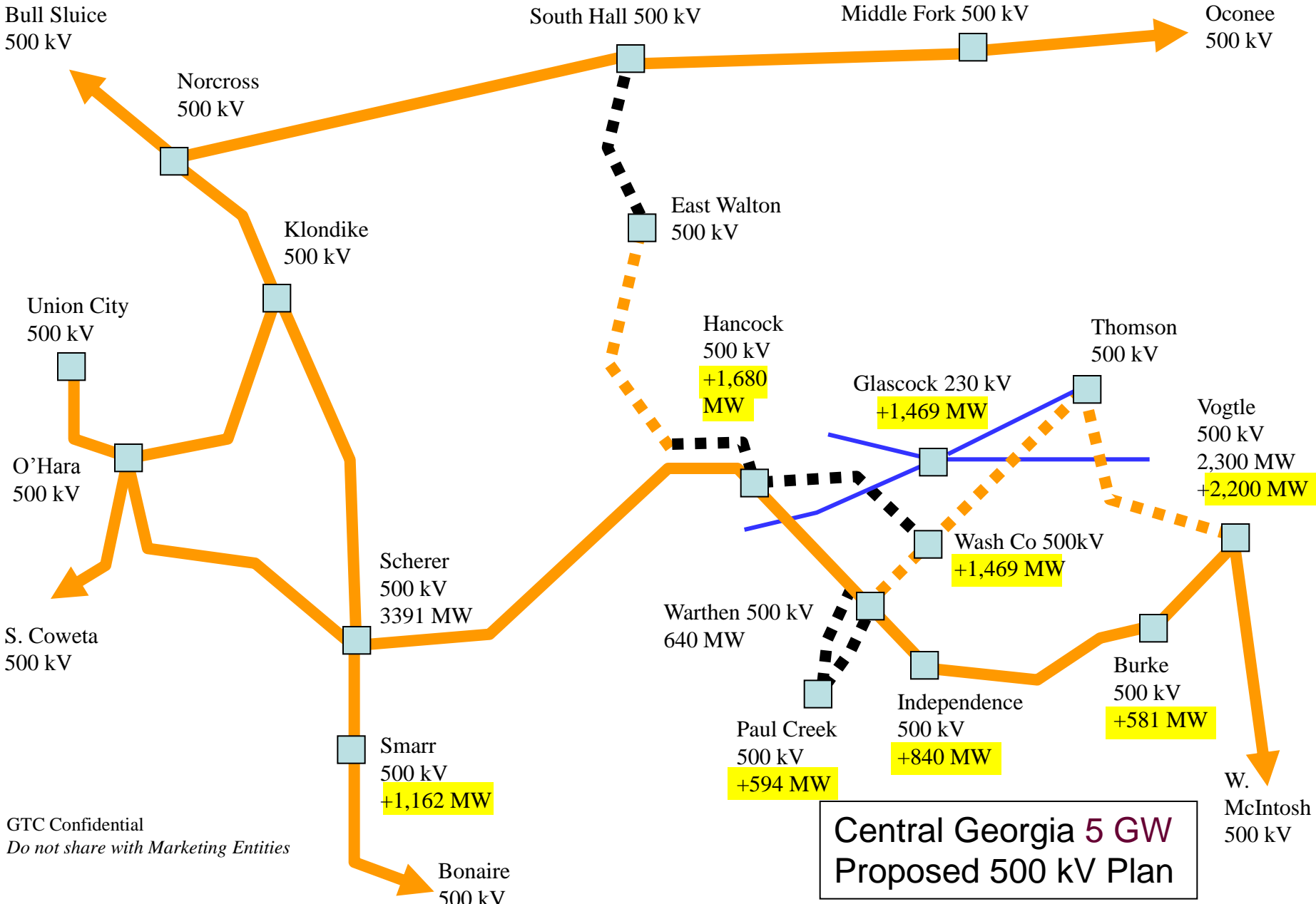
➤ Challenges

- “Export” of new generation via 500 kV and 230 kV systems
- “Absorption” issues in Northeast Georgia
- Stability and closing angle issues
- Breaker duty issues

➤ Goals

- Evaluate 500 kV system and propose plan
- Evaluate 10 GW and 5 GW scenarios
- Determine “trigger” points for new 500 kV improvements

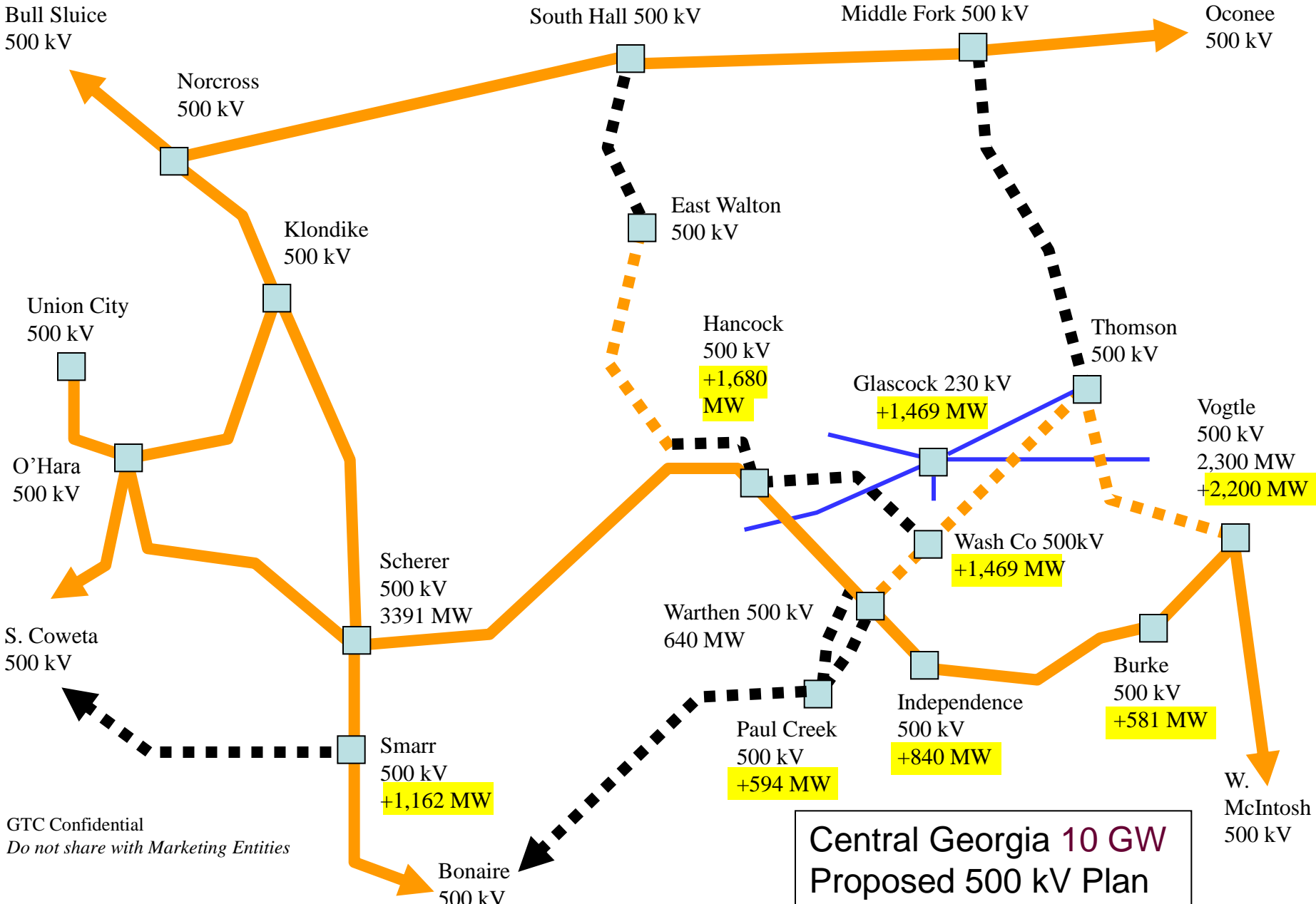




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February 19, 2009

Preliminary Study Results -
Subject to Change



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**Central Georgia 10 GW
Proposed 500 kV Plan**

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Study Results – Power Flow (5 GW)

500 kV Improvements for 5 GW Study

➤ Current Projects

- Warthen – Thomson 500 kV line (38 miles)
- Rockville (area) – East Walton 500/230 kV Project (55 miles)
 - Formerly East Walton – Rockville 500 kV Line
- Vogtle – Thomson 500 kV line (50 miles)

➤ New 500 kV Improvements Needed

- East Walton – South Hall 500 kV Line (40 miles)
- Rockville (area) – Washington CT 500 kV Line (35 miles)

Study Results – Power Flow (5 GW)

- Improvements required for 230 kV issues
 - Glascock – Wadley 230 kV Line
 - Branch 230 kV “re-configuration” or series reactors

- Improvements required for Klondike, East Walton & South Hall “absorption” issues
 - 0.5 -1% series reactors on Klondike, East Walton and South Hall 500/230 kV transformers

Study Results – Power Flow (5 GW)

- Additional 5 GW “absorption” issues
 - Up-rates or upgrades of 230/115 kV transformers at Thomson, Snellville, Bay Creek, East Social Circle, and Middle Fork
 - Address O’Hara 230 kV Line loadings
 - Address Middle Fork 230 kV Line loadings
 - One 230 kV, 500 MVAR SVC needed
 - Address numerous 230 kV & 115 kV line loadings

Other Study Results (5 GW)

➤ Stability Analysis

- No additional system improvements identified

➤ Closing Angle Analysis

- Rockville (area) – Washington Co 500 kV Line needed

➤ Breaker Duty Analysis

- East Walton and Burke sites require 40 kA, 500 kV breakers
- All other new Central GA generation sites require 63 kA, 500 kV breakers

Trigger Points for 500 kV Improvements

- Up to 2,250 MW of new generation
 - No 500 kV Improvements
- 2,250 MW to 4,250 MW of new generation
 - East Walton 500/230 kV S/S & East Walton 230 kV lines
 - East Walton – Rockville (area) 500 kV line & East Walton 230 kV reactor
- 4,250 MW to 5,200 MW of new generation
 - East Walton – South Hall 500 kV line & South Hall 230 kV reactor
 - Rockville (area) – Washington CT 500 kV line

Note: “New” generation totals include existing generation without firm service

Trigger Points for 500 kV Improvements

- 5,200 MW to 7,100 MW of new generation
 - Thomson – Middle Fork 500 kV Line & Middle Fork 500/230 kV transformer
 - Thomson – Vogtle 500 kV Line & Middle Fork 230 kV reactor
- 7,100 MW to 9,900 MW of new generation
 - Smarr – South Coweta 500 kV Line & Branch area 230 kV reactors
- 9,900 MW to 11,100 MW of new generation
 - Paul Creek - Bonaire 500 kV Line

Note: “New” generation totals include existing generation without firm service

