



#### **Notice**





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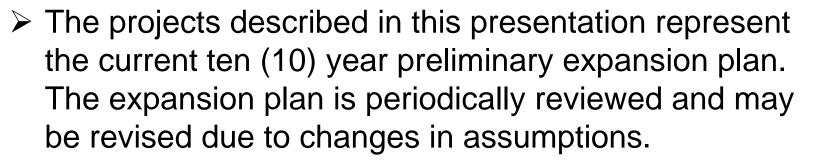


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This presentation does not represent a commitment to build for projects listed in the future.

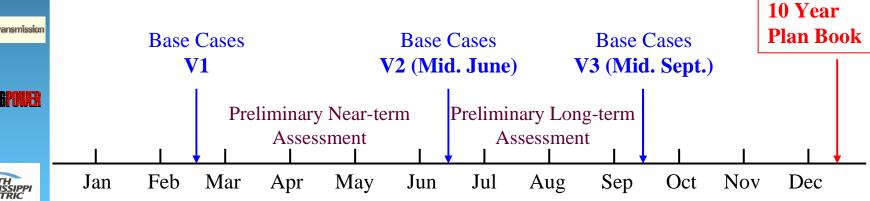




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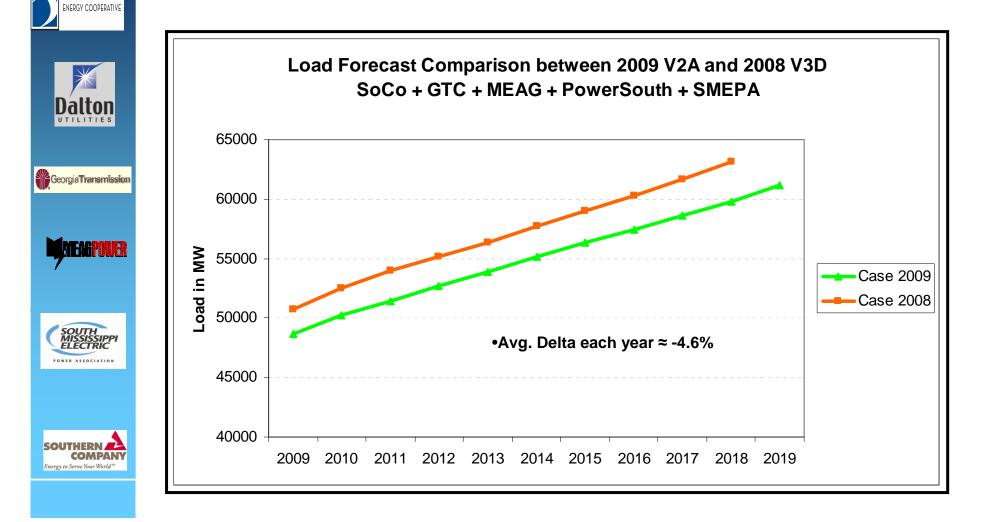
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#### Annual SERTP Base Case Creation Timeline



DowerSouth

#### **Load Forecast Update**



East



#### Georgia Integrated Transmission System (ITS)

Dalton Utilities

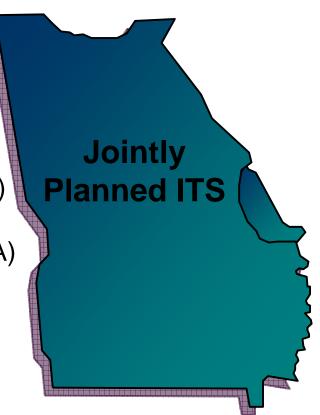


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- GTC (Georgia Transmission Corporation)
- MEAG (Municipal Electric Authority of GA)
- Southern Company Transmission





#### **Expansion Item ITS-1**

Maintains in-service date of 2010

Ola 230/115-kV Project

# Dalton

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Convert the existing East Lake - Ola 115kV line to 230kV operation.

Create a 230kV circuit from Klondike to Ola by

way of two new GTC load stations, Jackson

Creek and East Lake, by constructing a 1351 ACSR line from Jackson Creek to East Lake

Install a 400 MVA, 230/115kV autobank at OLA and three 115kV breakers to terminate the lines to McDonough, Porterdale and Island Shoals. (GTC to construct)

#### 2010 ITS-1





#### **Expansion Item ITS-2**

#### 2010 ITS- 2



#### **North Americus Series Reactors**





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Install two reactors at North Americus, a 2% 230 kV current limiting reactor on the North Americus

 North Tifton 230kV line and a 2% 230 kV current limiting reactor on the North Americus – Talbot County #2 230kV line.





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#### Expansion Item ITS- 3 2010 ITS- 3

#### McDonough – Smyrna 230 kV Line





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Acquire land and construct the Jack McDonough -Smyrna 230 kV line via Cumberland (convert from 115 kV) and GTC Galleria (new) substations. Add a 5-element GIS 230 kV ring bus at Smyrna and replace the 300-MVA 230/115 kV transformer with two 400-MVA transformers.





#### **Expansion Item ITS-4a**

#### 2010 ITS-4a



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#### Pegamore 230kV Project

- Maintains in-service date of 2010.
- Construct a new 230kV switching station (Pegamore 230kV SS) on the newly converted Bowen Villa Rica 230kV line at Huntsville Junction.
- Install three 230kV breakers to terminate the Bowen, Villa Rica, and McConnell Road 230kV Lines.
- Construct a new 230kV line using existing ROW, from Pegamore to Huntsville (GPC), and from Huntsville to the McConnell Road 230/115kV substation (GTC).
- Install a 230kV breaker at McConnell substation and terminate the Pegamore line. Convert the Huntsville, Battlefield, and Cedarcrest substations to 230kV operation (GTC).





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## Expansion Item ITS-52010 ITS-5Thomson 500/230 kV Project

- Maintains in-service date of 2010.
- Expand the 500-kV ring bus at Warthen and terminate the Thomson Primary 500-kV line.
- Construct a 500-kV switchyard and expand the 230-kV switchyard at Thomson Primary.
- ➤ Install a 1344 MVA, 500/230-kV transformer at Thomson Primary.
- Replace the 140 MVA, 230/115-kV transformer at Thomson Primary with a 300 MVA transformer.
- Build 23 miles of 230-kV line on new ROW from Thomson Primary to Dum Jon.
- Install a 230-kV breaker at Dum Jon to terminate the Thomson Primary line.
- Replace the 125 MVA, 230/115-kV transformer at Evans Primary with a 300 MVA transformer (GTC).
- Construct 35 miles of 500-kV line from Warthen to Thomson Primary.





#### **Expansion Item ITS-6**

#### 2010 ITS-6

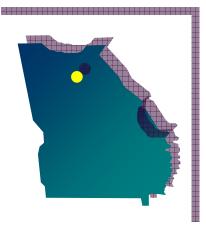


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#### Union Point - Warrenton 115 kV Rebuild

Maintains in-service date of 2010.

Rebuild the Union Point - Warrenton 115-kV line (26.7 miles of 336 ACSR) with 1351 ACSR conductor at 230-kV specs.







#### Expansion Item ITS-7a 2011 ITS-7a



### Dalton







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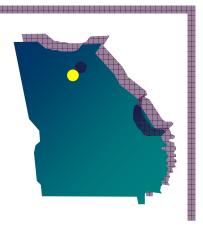


Create a 230/115kV network substation at Factory Shoals.

➢Install one 230/115kV 125MVA or greater autobank (plant transfer).

➤Tap the Adamsville-Douglasville 230kV line from Buzzard Roost (GTC) for 230kV source using existing line.

Create a 115kV network station by breakering up the Douglasville-Greenbriar 115kV line, with option for a third 115kV bay.





#### Expansion Item ITS-7b 2011 ITS-7b







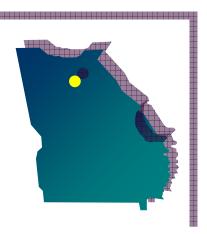


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#### **Factory Shoals**

Install Install three 230kV breakers at Buzzard Roost, looping in the Adamsville-Douglasville 230kV line, with a third terminal serving Factory Shoals.Tap the Adamsville-Douglasville 230kV line from Buzzard Roost (GTC) for 230kV source using existing line.

Install relaying as necessary at Factory Shoals and Buzzard Roost.





#### **Expansion Item ITS-8**

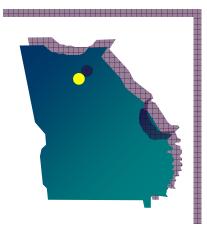
#### 2014 ITS-8



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#### **East Carrolton**

GTC - Construct the E. Carrollton 230/115 kV substation looping the Hickory Level -Yellowdirt 230 kV line and the Possum Branch-Yates 115 kV line.







➢GPC - Reconductor 1.5 miles of 477, 115 kV line with 1351 ACSR, 115 kV line from Clem-Oak Mtn.-Holox-E.Carrollton-Southwire-Carrollton#2 Jct.

#### **Expansion Item ITS-9**

#### 2014 ITS-9



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#### Goshen

MEAG - Re-conductor the Goshen - Waynesboro 115-kV line, 18.7 miles, with 1033 ACSR.



#### MAEAGPOWER

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#### Supporting Statement

Loss of the Wilson - Waynesboro 230-kV line will load the Goshen - Waynesboro 115-kV line to 112% of its 124 MVA conductor rating.





#### **Expansion Item ITS-10**

#### 2016 ITS-10



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#### Gordon – North Dublin 230 kV Line

- $\succ$  Project delayed to 2016 from 2014.
- ➢ GPC Build the Gordon N Dublin 230 kV line, 32 miles, using 1351 ACSR conductor. Terminate the line at Gordon.





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➤ GTC - At North Dublin, terminate the new Gordon 230-ky line.



Dalton

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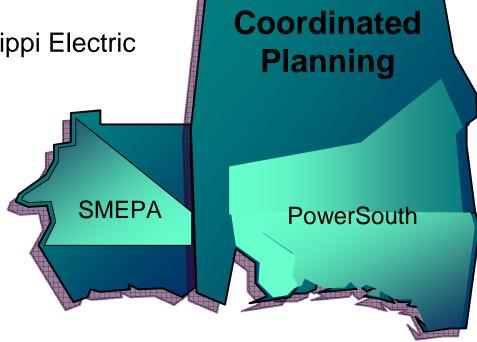
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### West

#### **Coordinated Planning**

- PS (PowerSouth Energy Cooperative)
- SMEPA (South Mississippi Electric Power Association)
- Southern Company Transmission



#### Southeastern Region **Transmission** Planning 2010 W-1 **Expansion Item W-1** PowerSouth VERGY COOPERATIV East Pelham TS Project Jalto Construct a 400 MVA 230/115 kV Georgia Transmission substation at the new East Pelham site **MEAGPOUR** New 8.8mi East Pelham – Alabaster<sup>4</sup> SS 115 kV line in 2010 OWER ASSOCIATIO

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#### 2011 W-2



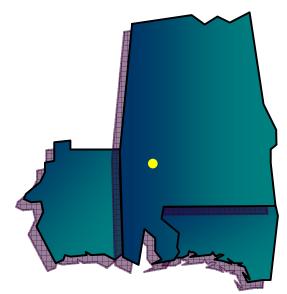
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#### McIntosh – CAES 115kV TL

- Reconductor 1.74 mile McIntosh C.A.E.S. bundled (2) 795 26/7 ACSR 115 kV TL with bundled (2) 795 26/7 ACSS @ 160°C design.
- Loop Barry S.P. McIntosh T.S. "B" 115 kV TL into C.A.E.S. and reconductor this TL from C.A.E.S. to McIntosh T.S. with bundled (2) 795 26/7 ACSS @ 160°C design (1.74 miles).
- Upgrade the C.A.E.S. and Barry S.P. "B" 115 kV terminals at McIntosh T.S. to 3000 A. Replace main bus at McIntosh T.S. with 2 – 1590 AAC.



Supporting Description:

With the new addition of generation at C.A.E.S. and a Washington County #1offline scenario and loss of West McIntosh – C.A.E.S. 115kV TL, the McIntosh T.S. – C.A.E.S. 115kV TL exceeds its thermal rating.

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#### **Expansion Item W-3**

#### 2012 W-3



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#### Shoal River to Santa Rosa 230kV T.L

Construction 52.0 miles of 131.5 54/19 ACSR 230kV
 T.L. From Shoal River to Santa Rosa. Install two (2) 230/115kV 400 MVA bank at Santa Rosa. Convert and reconductor the existing Santa Rosa #1 115 kV
 T.L. with a new 230 kV T.L.

Supporting Description:



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The existing submarine cable from Bluewater (PowerSouth) to Crystal Beach exceeds its thermal rating for the loss of the Laguna Beach – Phillips 115 kV T.L. and also for the P.C. Airport – Shaky Joe 230 kV T.L.



#### Expansion Item W-4a

#### 2012 W-4a



#### <u>Heidelberg Area 115 kV Network</u> <u>Improvements</u>

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Previous Heidelberg area improvements schedule:

2013:

Construct new Desoto 115/46 kV substation, convert the Conoco load over to distribution and convert the Quitman to Desoto 115 kV spec. line to 115 kV operation.

#### 2014:

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Add line breakers and reconductor bus at Waynesboro. Construct a new 795 ACSR line from Waynesboro thru Shubuta to Desoto.



Jalto

#### Expansion Item W-4b

#### 2012 W-4b

#### New Plan for Heidelberg Area Improvements

Background:



The original project of converting a section of 46 kV to 115 kV and constructing a new 115 kV line was to off set two long, 115 kV rebuilds. However, since one of the lines is scheduled to be rebuilt due to the addition of the Kemper IGCC plant the project scope has changed.



2012:

Rebuild Plant Sweatt to Stonewall 115 kV line (now due to Kemper IGCC Plant)



2014: Rebuild Laurel North to Heidelberg 115 kV line.



#### **Expansion Item W-5**

#### 2012 W-5



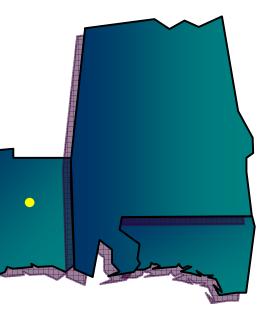
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#### Rebuild Hurricane Creek to Wiggins SS 115 kV Line

- An outage of the Landon to Hwy 53 115 kV line segment will cause the Hurricane Creek to Wiggins SS and Wiggins SS to Wiggins 5th AVE 115 kV lines to exceed their thermal rating by 2012.
- Rebuild the Hurricane Creek to Wiggins SS 115 kV line in 2011 and defer the Wiggins SS to Wiggins 5th Ave 115 kV line upgrade until 2013 (by use of existing operating guide).





#### Expansion Item W-6 2013 W-6



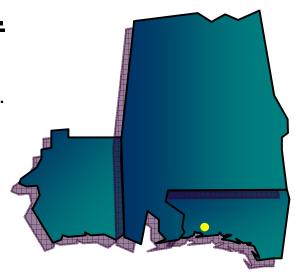
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#### Air Products - Avalon Tap 115 kV T.L.

Construct a new 5.0 miles 477.0 26/7 ACSR 11kV T.L. from Air Product to Avalon Tap



For the loss of the Crist S.P. - Pace #1115kV T.L. the Crestview - Holt-Munson - Jay Road 2 115kV T.L. sections exceed their thermal ratings.





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#### Expansion Item W- 7

#### 2013 W-7



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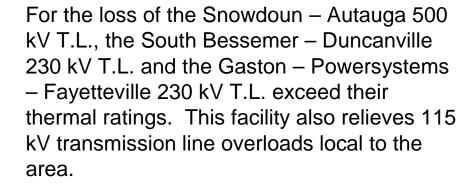
#### <u>Autaugaville</u>

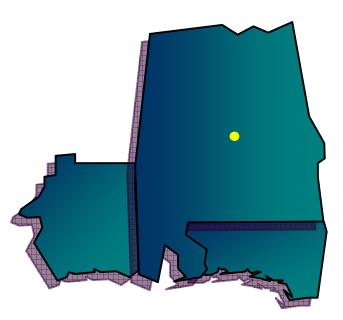
Install Autaugaville 500/230 kV Autobank and construct a 1.3 mile 230 kV T.L. from the Autauga 500 kV S.S. to Autauga 230 kV S.S.

#### Supporting Description:



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#### Expansion Item W-8

#### 2013 W-8



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#### Reconductor of Pinckard TS – Slocomb TS 115 kV TL

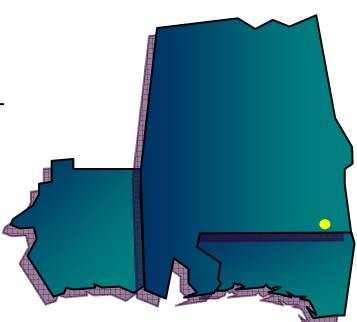
- Reconductor 20.73 miles of the Pinkard TS-AL/FL state line with 1351 ACSS built to 230 kV specifications.
- Upgrade the Holmes Creek Terminals at Pinckard TS to 2000A
- Upgrade Switch 8717 to a 2000A Switch



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#### Supporting Description:

Outage of Farley – Sinai Cemetery 230kV TL with Smith #3 generator off-line causes the Pinckard TS – Slocomb TS 115 kV to exceed its thermal rating.



#### Expansion Item W- 9 2014 W- 9



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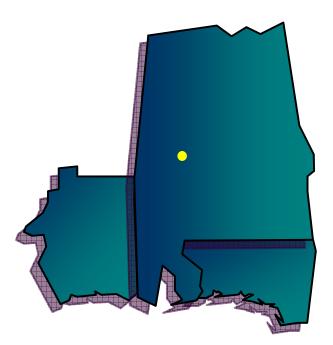
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#### Epes – Eutaw 115 kV T.L

- Construct Epes Eutaw 115kV T.L. with 1033 54/7 ACSS
- Loss of the Duncanville S.S. Bradley Road 230kV TL. results in the Epes – Eutaw 115 kV T.L. exceeding its thermal rating.





#### Expansion Item W-10 2014 W-10



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#### **County Line Road**

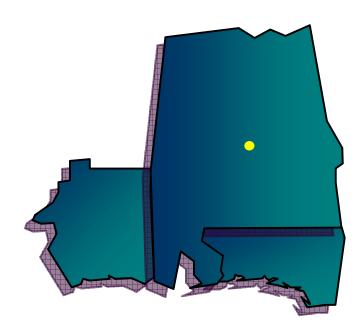
Install 2nd 230/115kV Autobank at County Line Road.



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For the loss of the County Line Road autotransformer ckt. #1 the West Montgomery –Maxwell AFB 115 kV T.L. and the West Montgomery 230/115 kV autotransformer exceed their thermal ratings.





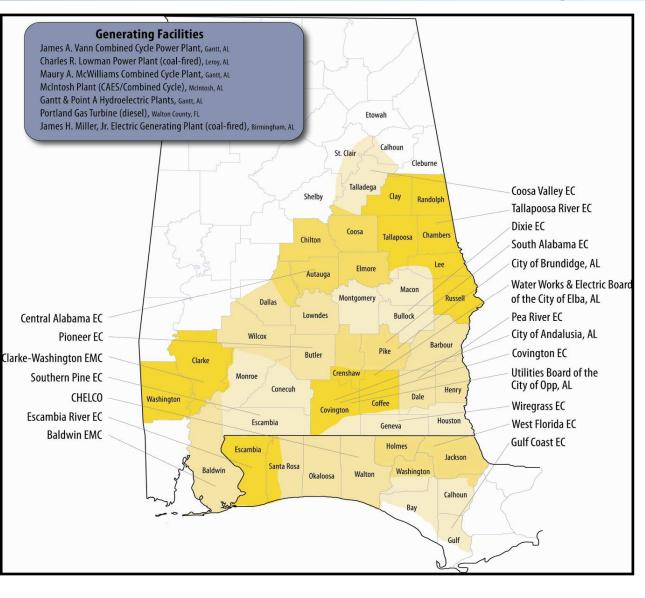




#### **PowerSouth**



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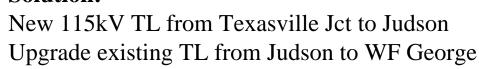
#### Clio area Upgrades

Scenario:
 Old lines, low capacity
 Overloads under contingencies
 New Baker Hill station required 115kV conversion of 46.

Solution:



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#### 2011 PS-2



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### **Baldwin County, AL**

#### Scenario:

Load growth near Orange Beach is being served radially The system's inability to respond to single contingency conditions







### Dalton

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#### 2011 PS-2

#### **≻**Solution

115 kV Miflin Jct.-Florida Ave (water x-ing)

Construct Miflin Jct. Switching Station

Uprate Miflin Jct-Wolf Bay Jct.

15 MVAR Capacitor Banks at Gulf Shores and Florida Avenue

Reconfigure Turkey Hill to allow 2 lines into the bus

#### 2011 PS-3



#### Liberty-Defuniak 115kV Line

North-to-South flows
 Overloads due to Smith #3 offline
 High load growth along beach area

Solution:

Reconductor with 1033 ACSS for 300 MVA capacity



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## 2010 PS-4



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## Bluewater-Villa Tasso Jct.

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Overloads due to Smith #3 offline High load growth along beach area

Solution:

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Uprate to 100 deg C design temp (167 MVA)

## 2010 PS-5



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## Belleville 230-115kV 2<sup>nd</sup> Transformer







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Single 230-115kV Transformer at Belleville overloads under a McWilliams unit out and N-1 contingency

#### Solution:

Install spare transformer (90/120/150 MVA) for parallel operation

## 2011 PS-6



DowerSouth RGY COOPERAT

# Dale Co.-Bay Springs Jct

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This line overloads for a Smith #3 out and a N-1 contingency

### Solution:

Uprate to 100 deg C design temp (167 MVA)





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## South Mississippi Electric Power Association





### SMEPA's System Expansion Plans

- 10 Year Transmission Plan
  - Years 2008 2013
    - Under Construction
    - Included in Transmission Construction Work Plan (TCWP)
  - Years 2014 2018
    - Not Included in TCWP





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### 2009 – Cole Road Transformer Replacement

### Problem

- 161/69kV Transformer Overloads During Outage of Adjacent Unit
- High Load Growth Area
- Solution
  - Upgrade 2 161/69kV Transformers



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### 2010 – Polkville 161kV Source

- Problem
  - 69kV Contingencies Low Voltages & Line Overloads
  - 69kV Transmission Capacity
    - Industrial Load Growth

### Solution

- Tap 161kV Line 172 with White Oak SS
- Build Polkville 161/69kV Substation and Transmission Line



### 2010 – Purvis Bulk Transformer Replacement

### Problem

- Limited Export Capability with MPCo
- Additional Export Capability Needed in 2011

### Solution

- Upgrade 2 161/230kV Transformers with 448MVA units
- Relocate 2 161/230kV, 215 MVA Transformers to West Waynesboro



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### 2011 – Silver Creek Interconnection

#### Problem

- Single Interconnection with Entergy (Magee)
  - Outage impacts SMEPA's ability to serve off-system load
- Solution
  - Build Silver Creek 115/161kV Substation (300MVA)
  - Tap 161kV Line 168 and Build 161kV Transmission Line



### 2012 – South Hoy 161kV Source

- Problem
  - 69kv Low Voltages and Line Overloads during 69kV Contingency
- Solution
  - Construct 161/69kV Substation at South Hoy
  - Construct 161kV Line Moselle to South Hoy



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- Problem
  - Generation Deficient in 2012
- Solution
  - Add 2-83MW Combustion Turbines at SMEPA's Moselle Generation Station
  - Repower 2-59MW Steam Units with HRSGs
- Comments
  - Combined Cycle (CC) configuration most efficient option
  - Building at Existing Facility Reduces Construction Time



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### Problem

- 69kv Low Voltages and Line Overloads during 69kV Contingency
- 69kV Transmission Capacity

2013 – Prentiss 161/69kV Substation

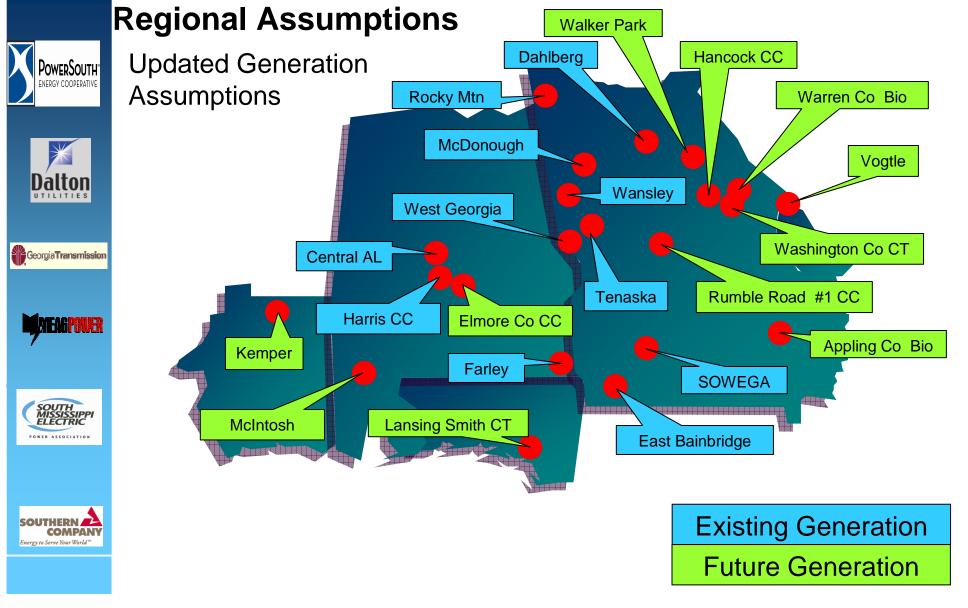
- Solution
  - Tap Silver Creek 161kV Interconnection
  - Build Prentiss 161/69kV Substation



### 2017 – East Waynesboro 230/69kV Substation

#### Problem

- 69kV Low Voltages and Line Overloads during 69kV Contingency
- 69kV Transmission Capacity
- Solution
  - Tap 230kV Line 230 (PowerSouth Tie) & 69kV Line 23
  - Build E. Waynesboro 230/69kV Substation
  - Upgrade Supporting 69kV Transmission



### **Updated Generation Assumptions**

	Year	Site	MW
	2010	Dahlberg CT (SoCo)	292
lton		Dahlberg CT (GTC)	-185
ITIES		Tenaska, Heard County (SoCo)	942
ransmission		West Ga. Gen (GTC)	160
		Rocky Mtn (GTC)	45
AGPONER		Wansley #7 CC (GTC)	409
		Rocky Mtn (SoCo)	15
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Year	Site	MW
2011	Rocky Mtn (GTC)	44
	Rocky Mtn (SoCo)	15
	Farley 1 Uprate (SoCo)	25
	Lindsay Hill CC (GTC)	200
	McDonough Coal 2 (SoCo)	-251
	McDonough CC4 (SoCo)	840
	McDonough CC5 (SoCo)	840
	Walker Park (MEAG)	42
	Wansley #7 CC (GTC)	166
	East Bainbridge (GTC)	6
	McIntosh 4 & 5 (PS)	448

### **Updated Generation Assumptions**

				_		
PowerSouth" ENERGY COOPERATIVE	Year	Site	MW		Year	S
	2012	McDonough CC6 2 (SoCo)	840		2013	S
Dalton		Walker Park (MEAG)	42			V
Georgia <b>Transmission</b>		Farley 2 Uprate (SoCo)	25		0044	
		Wansley #7 CC (GTC)	409		2014	C C
MATEAGPOWER		WashingtonCo CT (GTC)	551			k
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION		Murray II (SoCo)	-620			v A
		McDonough Coal 1 (SoCo)	-250			V
		(3000)				V
						E

Year	Site	MW
2013	SOWEGA (GTC)	90
	Central Alabama CC (SoCo)	885
	West Ga. Gen (GTC)	160
2014	Dahlberg CT (SoCo)	-292
	Dahlberg CT (GTC)	235
	Kemper (SoCo)	600
	Wansley #7 CC (GTC)	97
	Appling Co Bio (GTC)	100
	Warren Co Bio (GTC)	100
	Walker Park (MEAG)	42
	Baconton CT (SoCo)	-196



**Red Text = Change from 08 Expansion Plan** 

### **Updated Generation Assumptions**

	Year	Site	MW	Year	Site	MW
	2015	Hancock CC 1 (SoCo)	840	2017	Vogtle 4 (GTC)	330
		Rumble Road #1 CC (GTC)	1162		Vogtle 4 (SoCo)	504
Dalton		Wansley #7 CC (GTC)	-97		Vogtle 4 (MEAG)	250
		SOWEGA CT (GTC)	-90		Vogtle 4 (Dalton)	18
Georgia Transmission	2016	Vogtle 3 (GTC)	330		Hancock CC 2 (SoCo)	840
		Vogtle 3 (MEAG)	250		Wansley #6 CC (SoCo)	-572
MATEAGPOUR		Vogtle 3 (Dalton)	18	2018	Wansley #6 CC (GTC)	575
/		Vogtle 3 (SoCo)	504		L. Smith CTs (SoCo)	320
SOUTH		Dahlberg CT (GTC)	140	2019	Elmore Co CC1 (SoCo)	840
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION		WashingtonCo CT (GTC)	367		Hancock CC3 (SoCo)	840
		Wansley #7 CC (GTC)	-409		Wansley #6 CC (GTC)	-286
					WashingtonCo CT (GTC)	551
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**SERTP Economic Study Requests** 

### 2009 SERTP-RPSG ECONOMIC STUDY REQUESTS SCOPE



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- The year to be studied (study year) will be 2014.
- The load levels to be evaluated will be the Summer Peak, Summer Peak w/ 3600 and Summer Shoulder. If the scenario warrants other load levels may be evaluated.

### Study Criteria

The study criteria with which results will be evaluated will include the following reliability elements:

- NERC Reliability Standards
- SERC requirements
- Individual company criteria (voltage, thermal, stability and short circuit)



#### **Case Development**



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The 2009 Series 2014 Version 2A case will be used as a starting point for the analysis of the five economic study requests. To perform the study for each of the five requested scenarios, two cases with various units offline will be modeled. An "Off" Case which is the starting base case with no transfer modeled, and then an "On" Case, which is the "Off" Case, modified to represent the specific scenario being studied.

### **Methodology**



Gen-Gen and/or Load-Load Shifts will be utilized for the thermal analysis of the economic studies. Initially, power flow analyses will be performed based on the assumption that thermal limits will be the controlling limit for assessing system reliability. Voltage, stability and short circuit studies may be performed if circumstances warrant.





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The technical analysis will be performed in accordance with the study methodology. Results from the technical analysis will be reported throughout the Southern Control Area to identify transmission elements approaching/exceeding their limits such that Participating Transmission Owners and Stakeholders are aware of potential issues and appropriate steps can be identified to correct these issues.

The SERTP will report power flow results based on the following criteria:

• Thermal loadings in "On" cases greater than 100%.

**Technical Analysis and Study Results** 

- Thermal loadings in the "On" Case greater than 90% that change by + 5% of applicable rating.
- Identification of potential improvements to address overloads of 100% or greater.
- Reporting on elements of 115 kV and greater.
- Voltages appropriate to each Participating Transmission Owner's planning criteria.







Georgia Transmission

### **Solution Development**

- The Participating Transmission Owners, with input from the Stakeholders, will develop potential alternatives to address the identified constraints.
- The Participating Transmission Owners will test the effectiveness of the potential alternatives using the same cases, methodologies, assumptions and criteria described above.
- The Participating Transmission Owners will develop planning-level cost estimates for the potential alternatives.





#### **Economic Scenarios**











#### Washington County to Georgia – 5000 MW

The following scenarios will be analyzed:

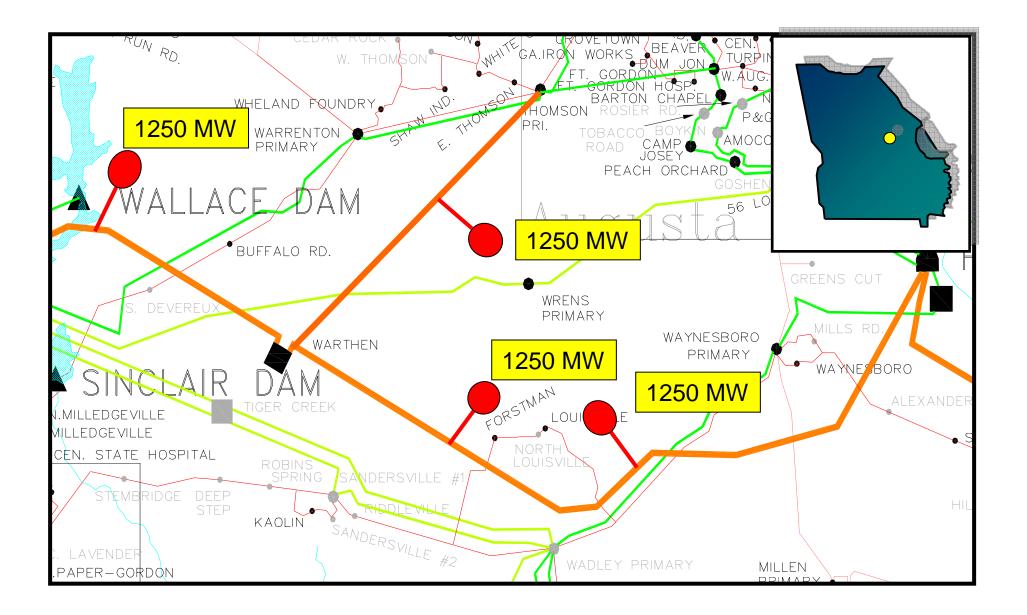
4 – 1250 MW plants interconnected along the Vogtle – Scherer 500 kV transmission line and the Warthen – Thomson 500 kV transmission line.

 Northwest Georgia Area to Florida Border – 650 MW
 1 – 650 MW plant interconnected along the Conasauga – Mostellar Springs 500 kV transmission line.

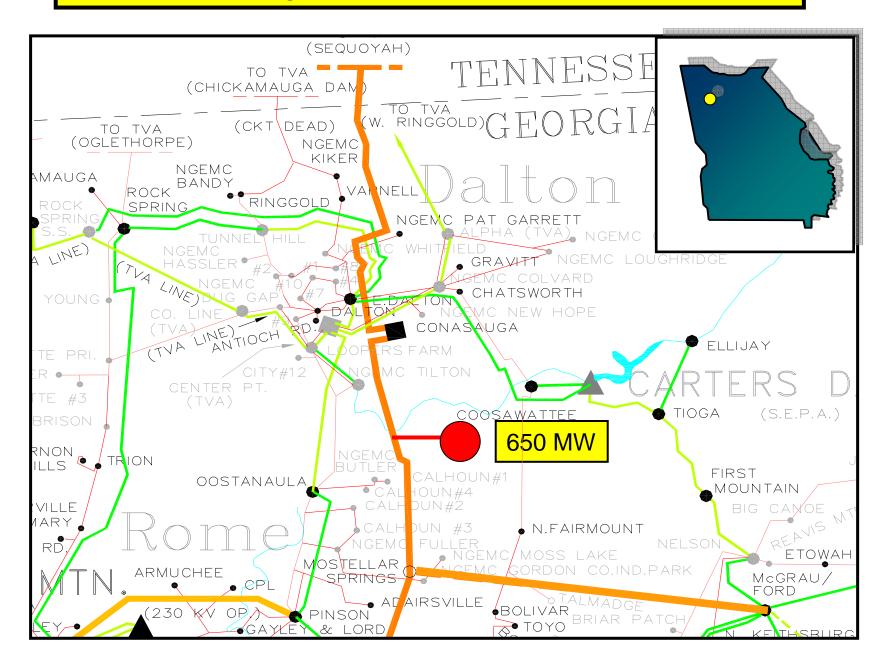
## SCE&G to Georgia – 1000M 1000 MW transferred from SCE&G to Georgia load

- Gulfport, Miss to Georgia 1000MW
   1 1000MW plant interconnecting in the Daniel 500 kV Area.
- Savannah,Ga to Southern 1000MW
   400 MW (at peak) and 1000 MW (off peak) delivered to the Little Ogeechee 230 kV substation.

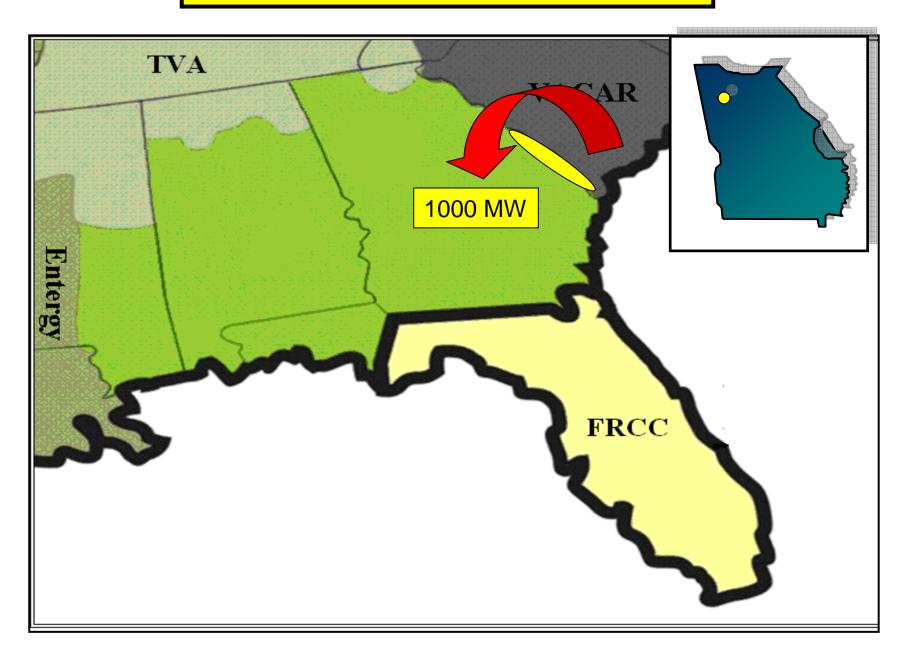
### Washington County to Georgia Load – 5000 MW



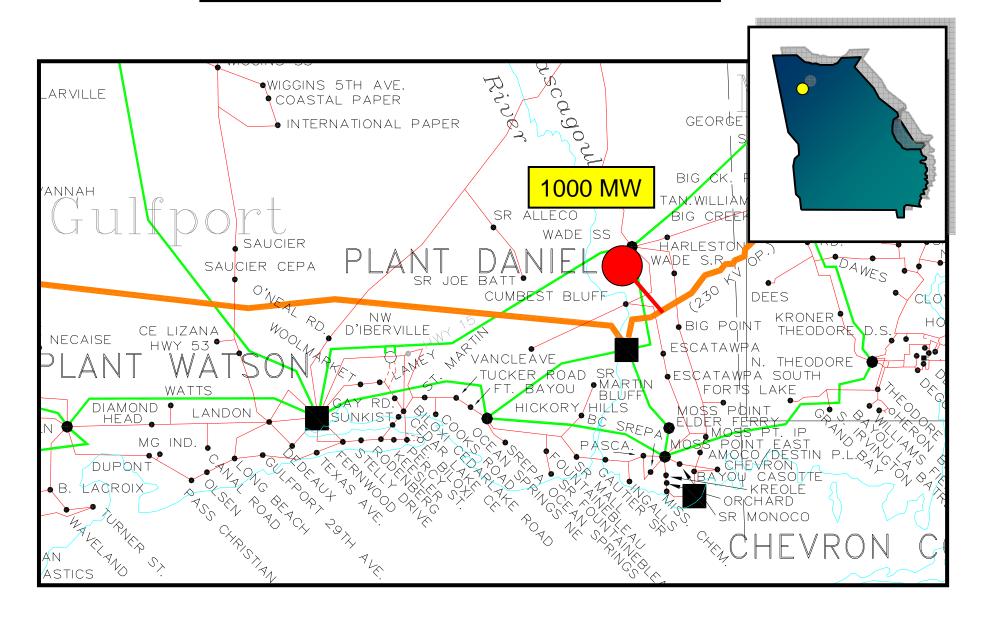
### Northwest Georgia Area to Florida Border – 650 MW



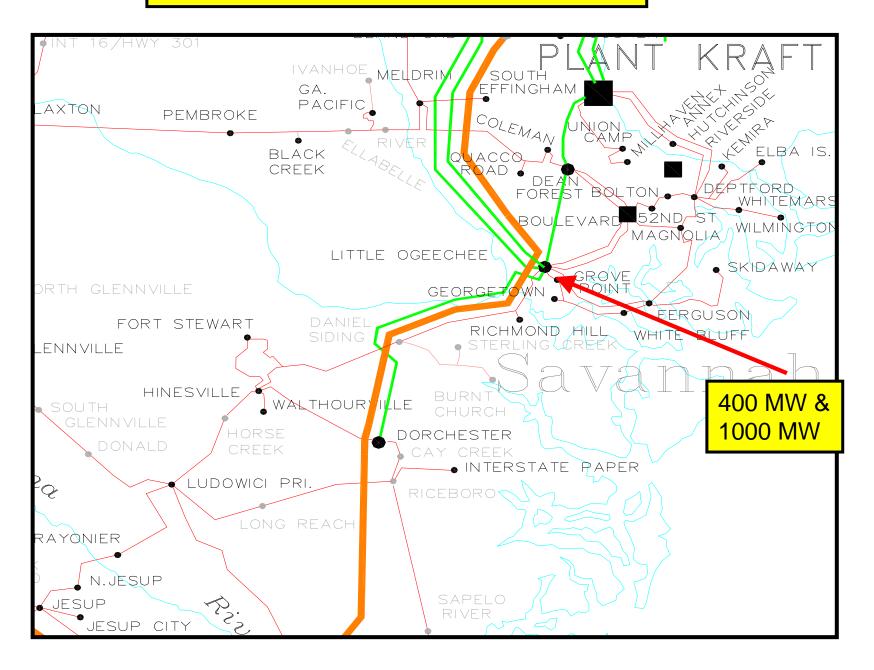
### SCE&G to Georgia Load – 1000 MW



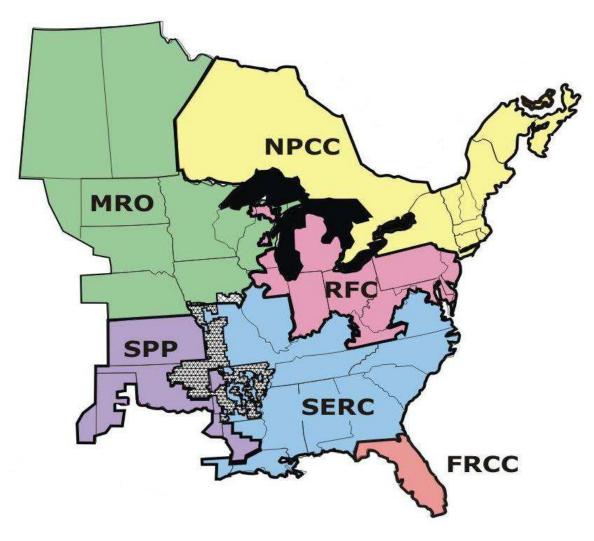
### Gulfport, MS to Georgia – 1000 MW



### Savannah to Southern – 1000 MW



### **Preview SERC and ERAG Assessments**



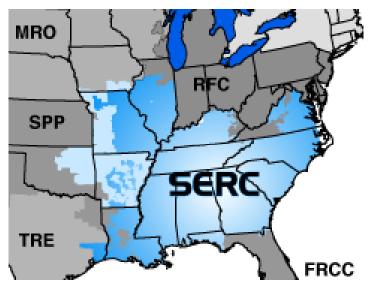






### **SERC Annual Activities**

- Power Flow Model update and assembly
  - LTSG and NTSG assessments2015 summer LTSG
- Update Model submitted to the ERAG/MMWG annual update



### **ERAG Annual Activities**

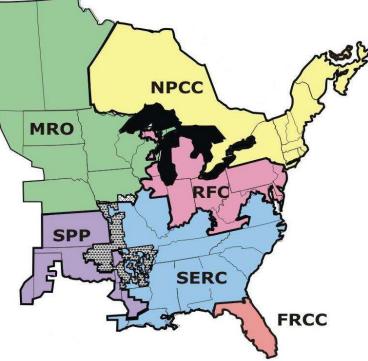
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Georgia Transmission

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- Facilitate coordinated planning and operating assessments.
- ERAG administers the development of a library of power-flow base case models for the benefit of NERC members.
- This activity is handled by the MMWG and includes direct representation from each ERAG region in the Eastern Interconnection (RFC, MRO, NPCC, SERC, FRCC, and SPP) as well as liaison reps from TRE and WECC.
- Near-term and long-term assessments be performed annually. (2010 S and 2014 S)





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### **Next Meeting Activities**

September – 2009

- Second RPSG Meeting
  - Preliminary Results of the 5 Economic Study Requests
  - Provide feedback to the Stakeholders regarding the preliminary transmission expansion plan alternatives that the Stakeholders may have provided at the Preliminary Expansion Plans Meeting, or within a designated time following that meeting. (14 days)