

South Carolina Regional Transmission Planning Stakeholder Meeting

Columbia Metropolitan Convention Center

Columbia, SC

March 19, 2009

Goals for Today's Meeting – March 2009

- Establish Sector Designations
- Elect Sector Voting Members
- Review, discuss and receive input from the stakeholder group on the current transmission expansion plans
- Review, discuss and receive input from the stakeholder group on Key Assumptions and Data for the next Planning Cycle

Goals for Today's Meeting – March 2009

- Review and discuss Inter-regional assessment studies
- Review initial results of SIRPP economic studies related to the SCRTP area
- SCRTP Website

SCRTP Stakeholder Group

Key features of the Stakeholder Group

- Stakeholder Group (SG) participants determine their sector affiliation
- Each sector within the SG will have two voting members (14 total voting members)
- Voting members will be determined by the sector membership annually
- Each Company will have no more than one voting member in the SG
- Majority rule

Key features of the Stakeholder Group (continued)

- SG meetings are open to non-SG members
- Once formed the SG can modify the initial framework, if needed

Voting members will be determined annually by the sector membership during the Fall Meeting

- Cooperatives
- Municipals
- Network and PTP OATT Customers
- Marketers
- Generation Owners/Developers
- Transmission Owners/Operators
- ISO/RTO

Stakeholder Group Breakout

Stakeholder Group Voting Members

Transmission Owners

Municipals

ISO/RTO

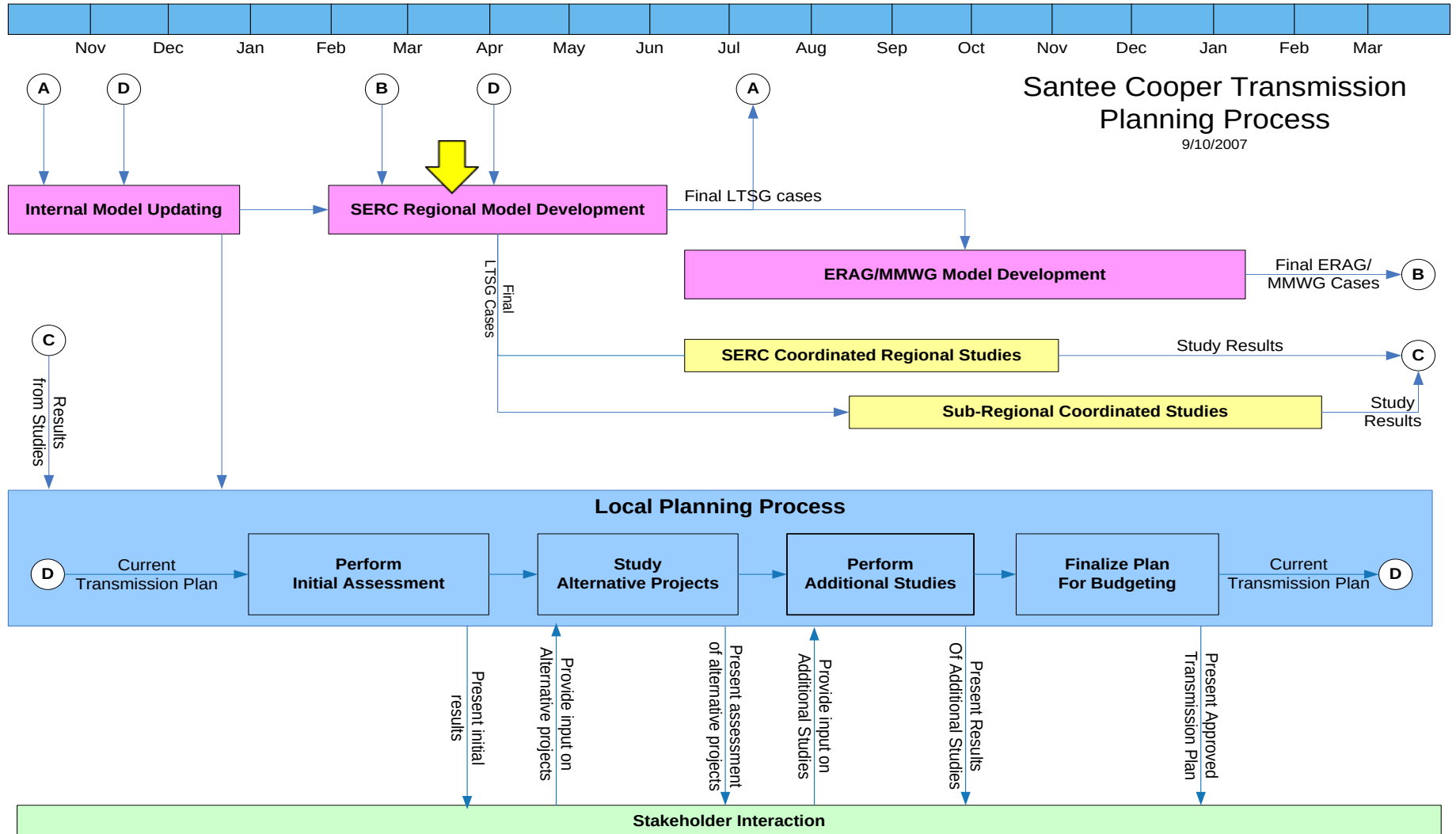
Network and PTP

Marketers

Cooperatives

Generation

Overall Planning Cycle



Santee Cooper Transmission System Facts

Santee Cooper Transmission System Facts

Lines

Voltages

Miles

230 kV

1219

100 & 115 kV

1785

69 kV

1713

≤ 46 kV (sub-transmission)

152

Total

4869

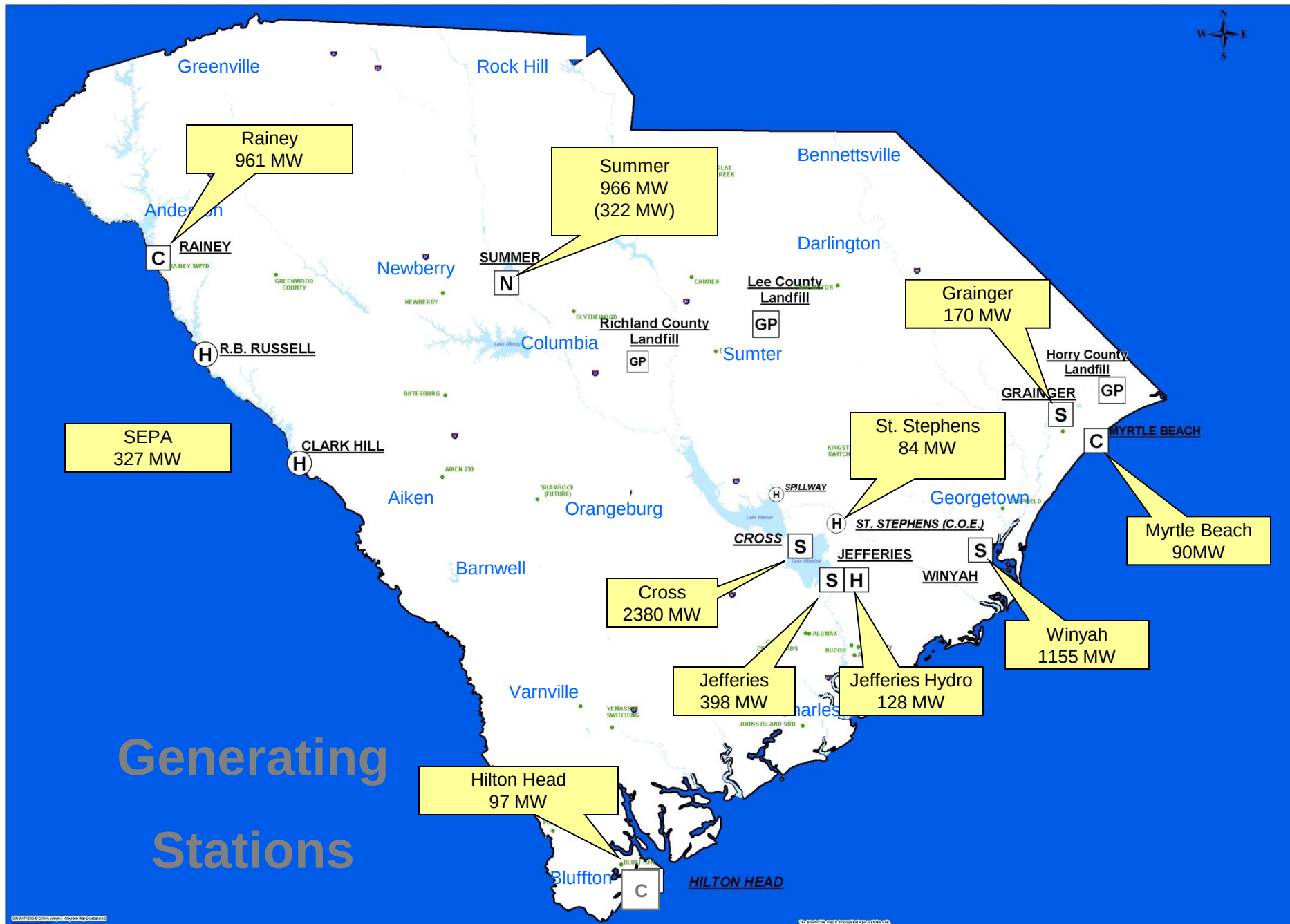
Santee Cooper Transmission System Facts

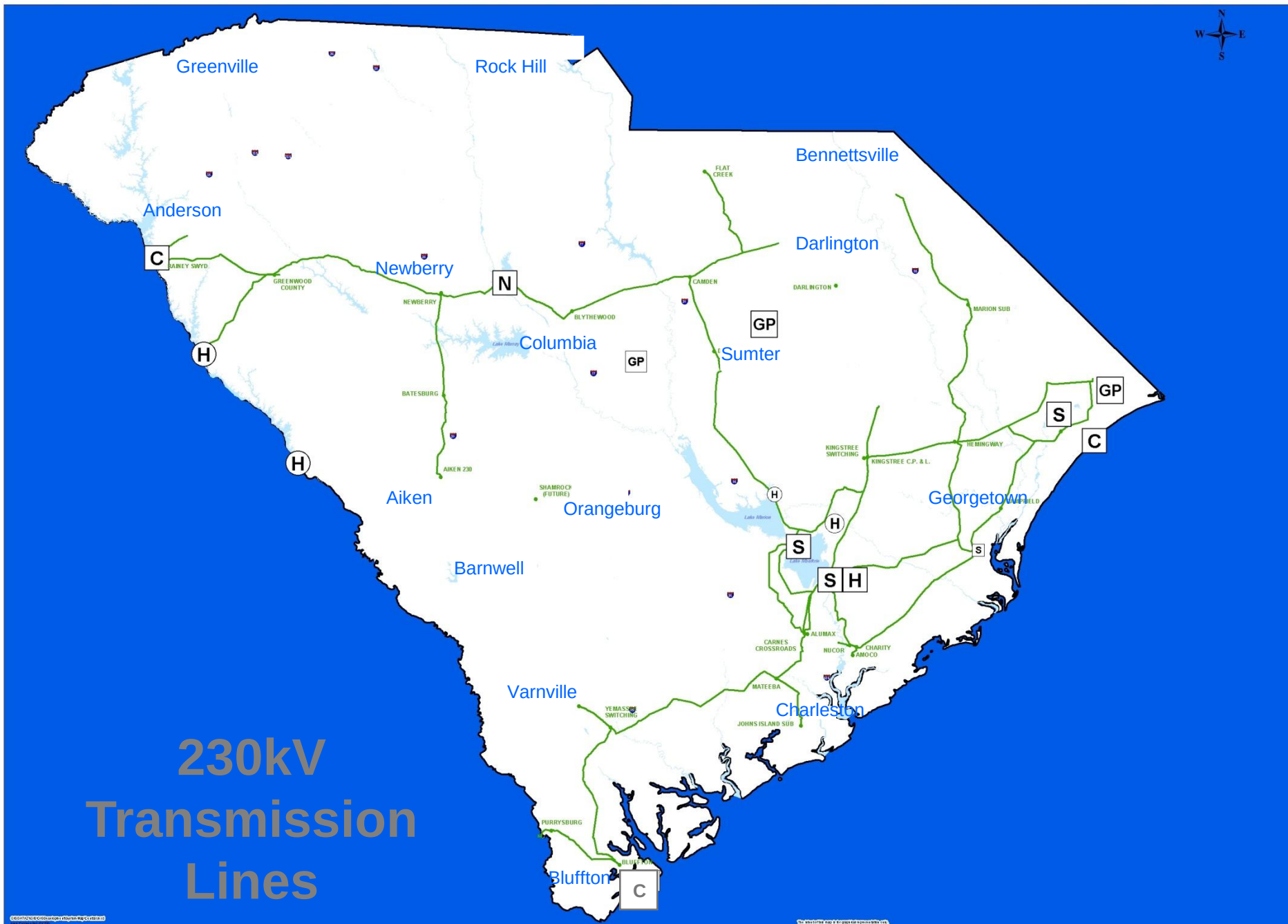
Substations

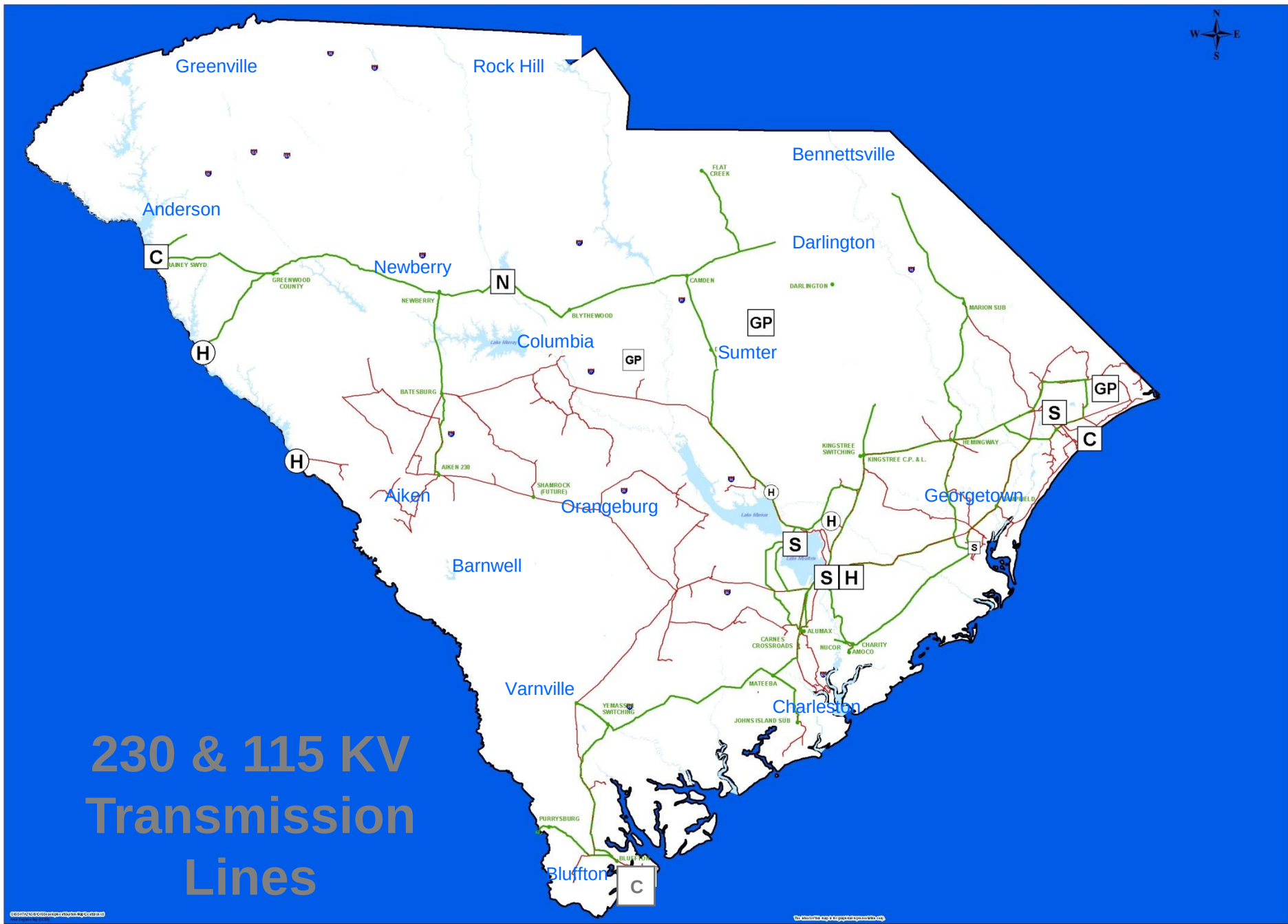
<u>Type</u>	<u>#</u>
Generation (Step-up)	8
Transmission	80
Cooperative Delivery Point	474
Distribution	80
Industrial Customer	<u>34</u>
Total	676

Santee Cooper Transmission System Facts

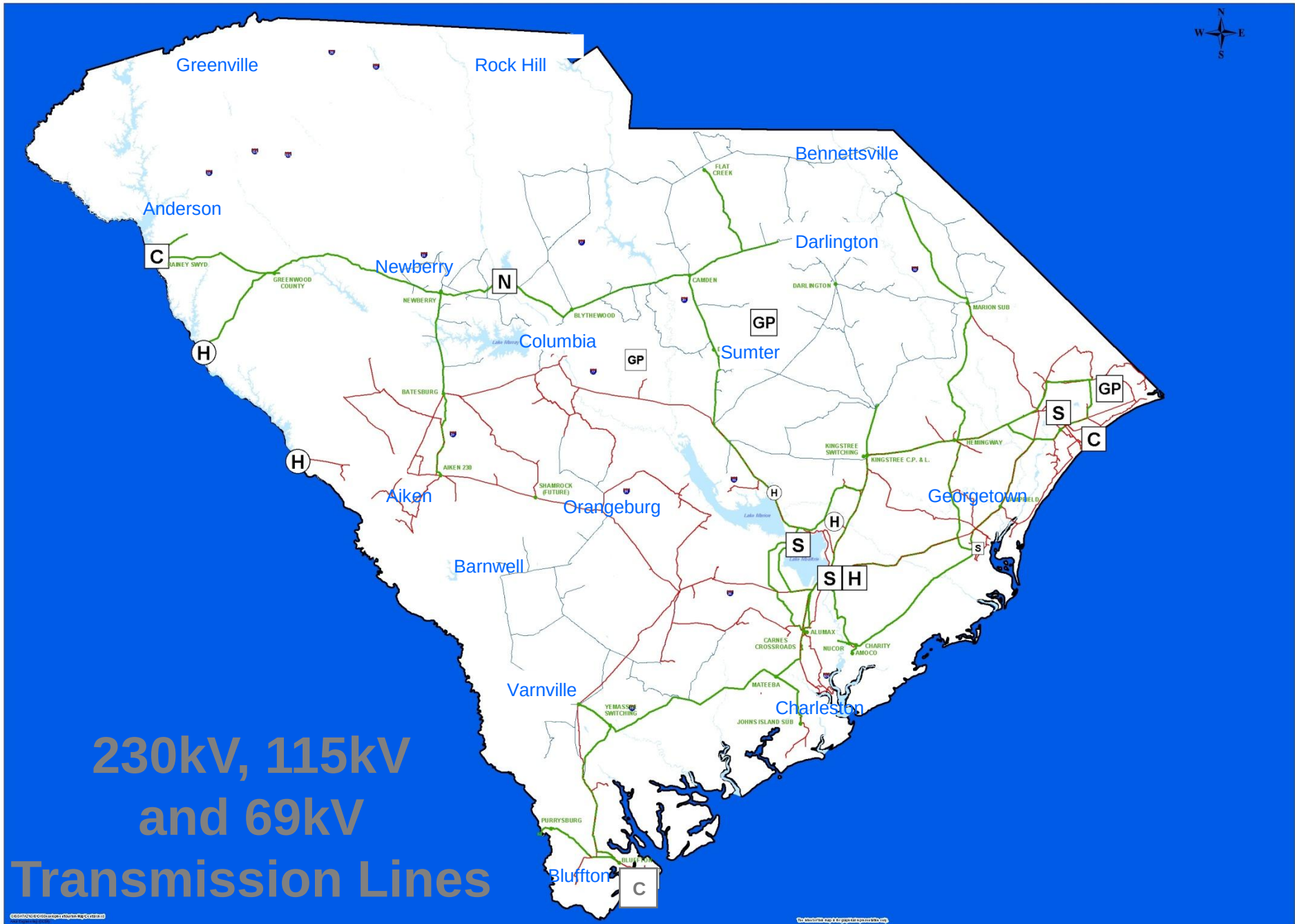
<u>Transmission Interties</u>	<u>230kV</u>	<u>115kV</u>
Duke	4	0
Progress Energy Carolinas	8	1
SCE&G	7	5
Southern	1	0
SEPA	<u>1</u>	<u>1</u>
	21	7
Total Interties	28	

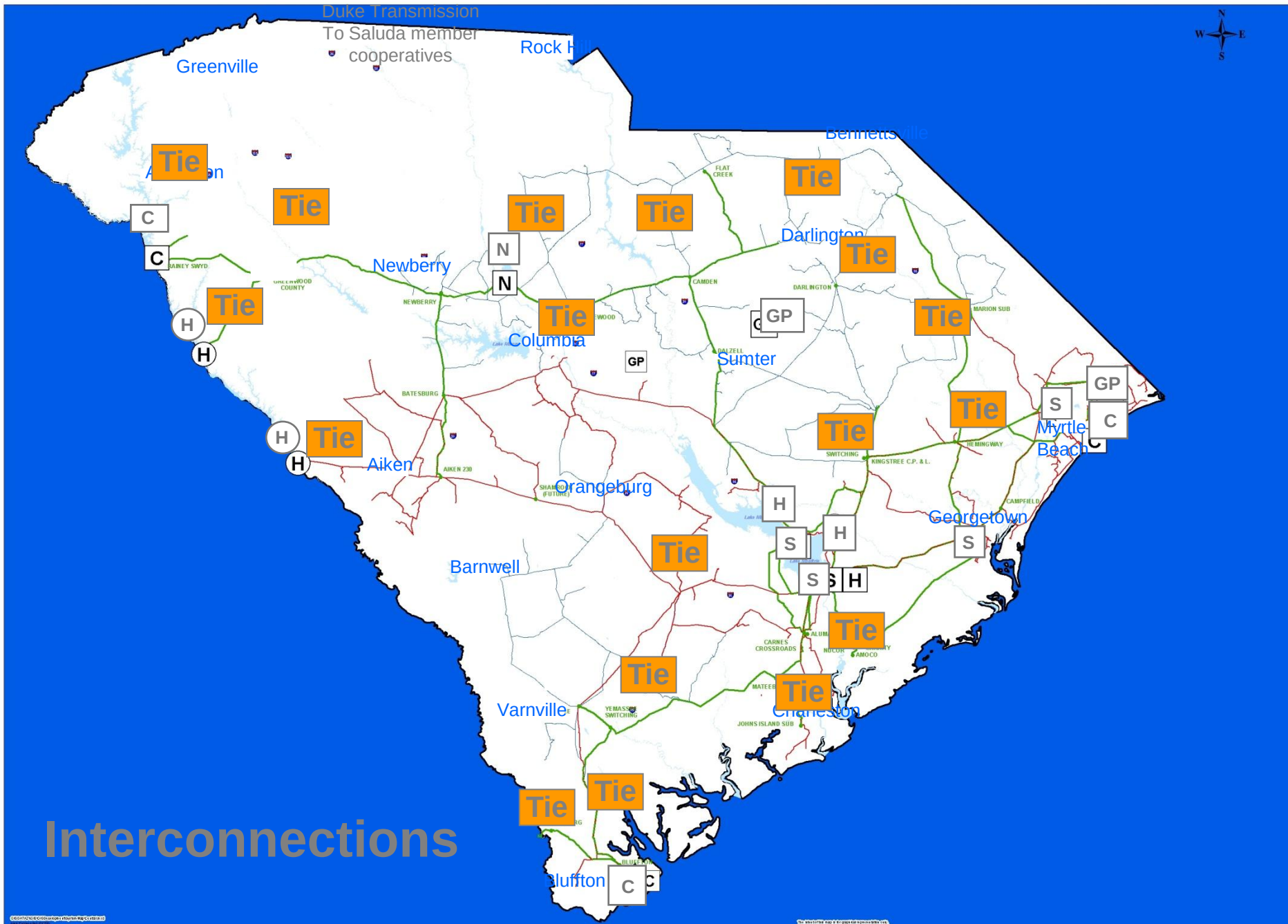






230 & 115 KV Transmission Lines





- The projects described in these presentations represent the current transmission plans within the SCRTP footprint.
- The expansion plan is continuously reviewed and may change due to changes in assumptions.
- This presentation does not represent a commitment to build.

Transmission Expansion Drivers:

- Criteria Testing
 - NERC Reliability Standards
 - Internal Planning Guidelines
- Customer Needs
 - Distribution & Industrial
 - Wholesale (cooperative & municipal)
 - Network
 - Firm PTP
- Generator Interconnection Needs
- Actual system performance (poor performance)

Santee Cooper Transmission Expansion Plan

Transmission Network

Active Projects

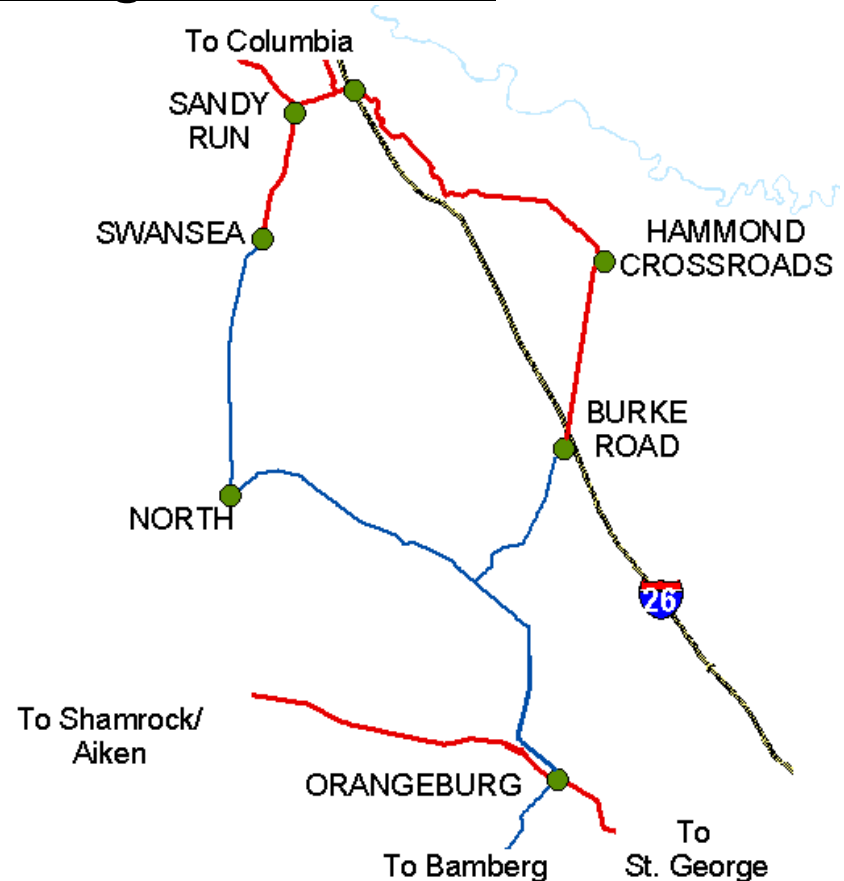
- Replace Hilton Head Submarine Cable 06/2009
- Varnville-Bluffton 115 kV Line Reconfiguration 06/2009
- Shamrock 230-115-69 kV Substation 06/2009
- Rebuild Georgetown Switching Station-Campfield 115 kV Lines 11/2009
- Sandy Run-Orangeburg 115 kV Line 04/2010
- Silver Bluff-North Augusta 115 kV Line Section 05/2010
- Carolina Forest 230-115 kV Substation 06/2010
- Rebuild Burke Road Tap for 115 kV Operation 12/2010
- Pee Dee-Lake City 230 kV Line 01/2011
- West County Line-North Augusta 115 kV Line Section 03/2011

Transmission Network Planned Projects

- Carolina Forest-Dunes #2 115 kV Line 12/2010
- Arcadia-Garden City #2 115 kV Line 06/2012
- Pomaria 230-69 kV Substation 12/2012
- Orangeburg 230-115 kV Substation 06/2013

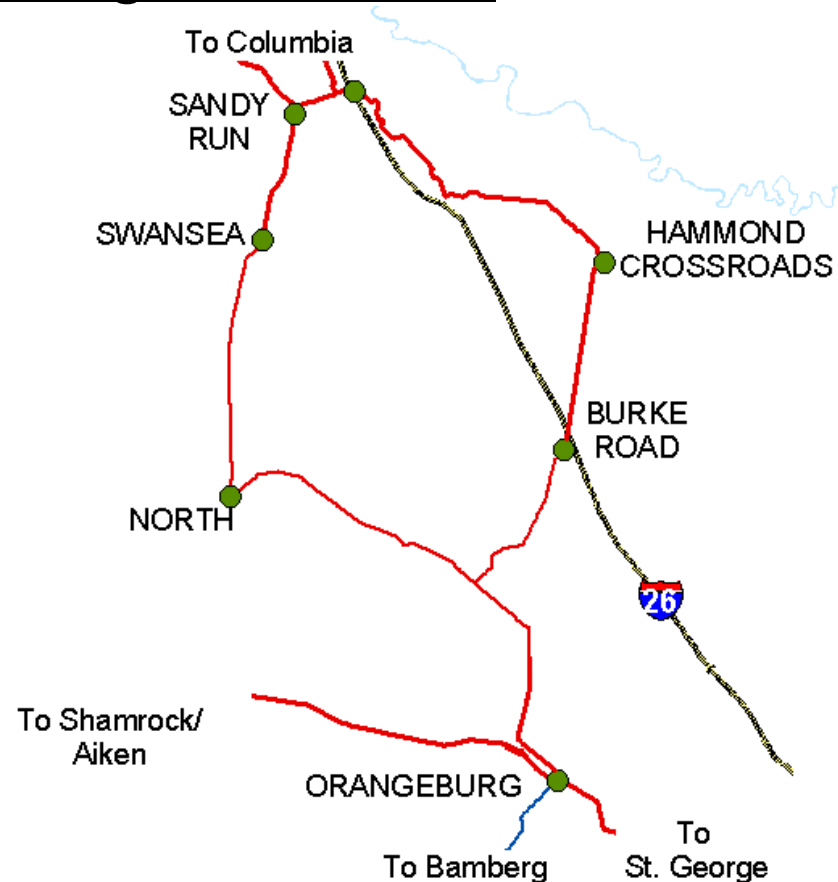
Sandy Run-Orangeburg 115 kV Line

- **Scope of Project:**
 - Convert Orangeburg-Swansea 69 kV line section to 115 kV
 - Rebuild Burke Road 69 kV Tap for 115 kV
 - In-service date – 2010, dependent on cooperative's conversion to 115 kV

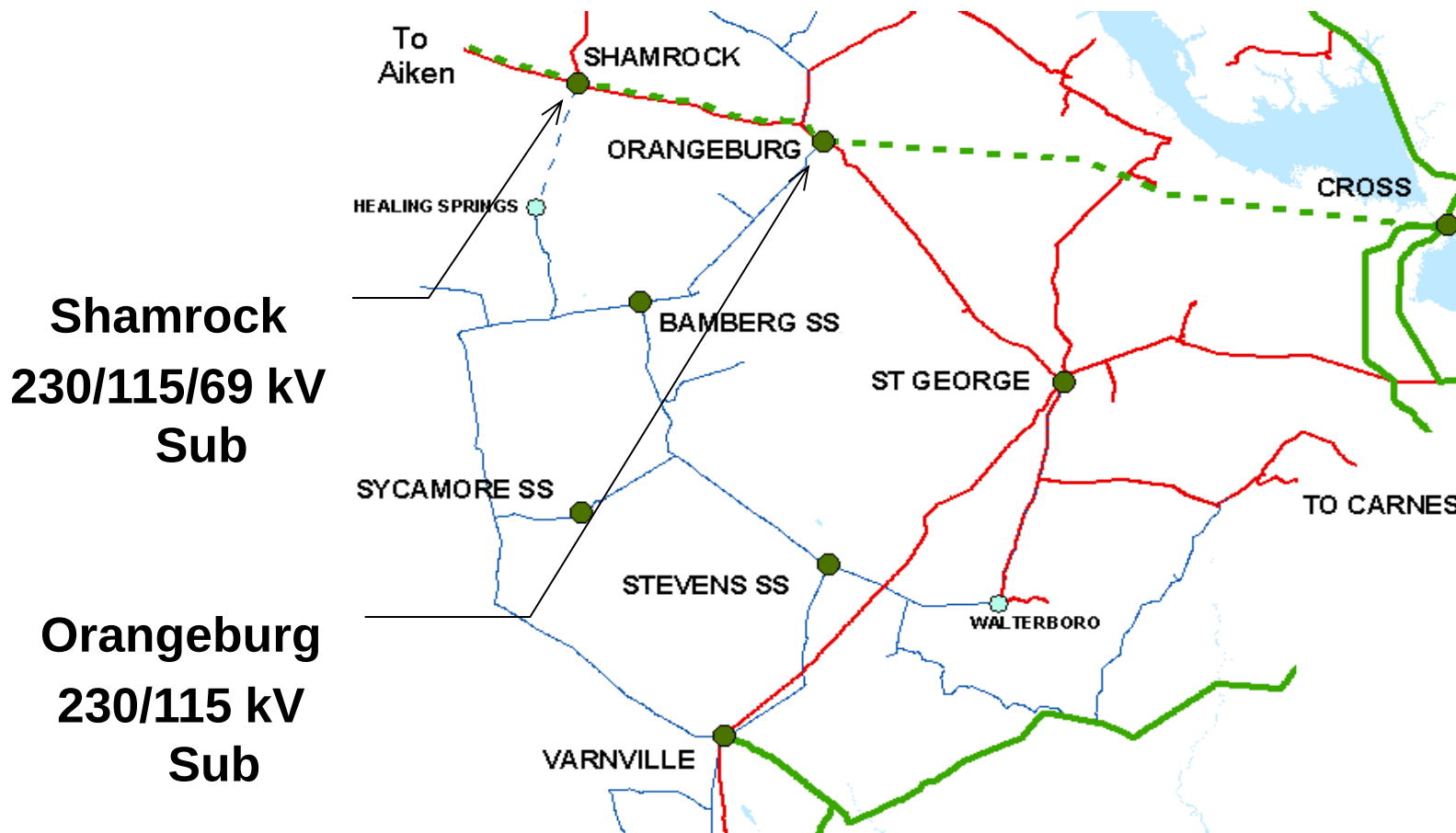


Sandy Run-Orangeburg 115 kV Line

- **Result:**
 - Orangeburg-Sandy Run 115 kV Line – a new connection between Columbia and Orangeburg Area



Orangeburg-St. George-Varnville 69 kV System



Orangeburg-St. George-Varnville 69 kV System

- **Projects:**

- Shamrock 230/115 kV Substation

- In-service date – June 2009

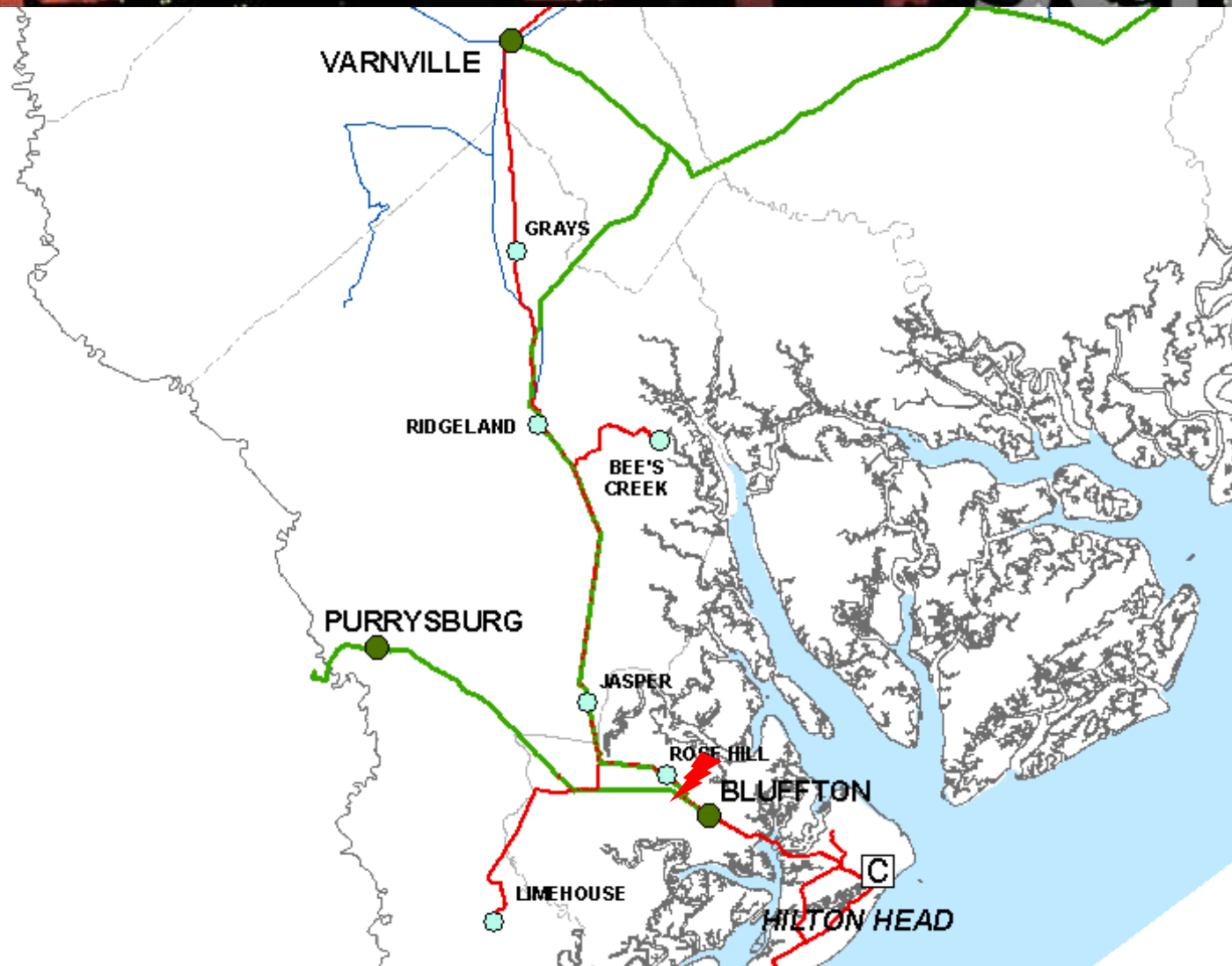
- **Benefits:**

- Strengthen transmission service to the area

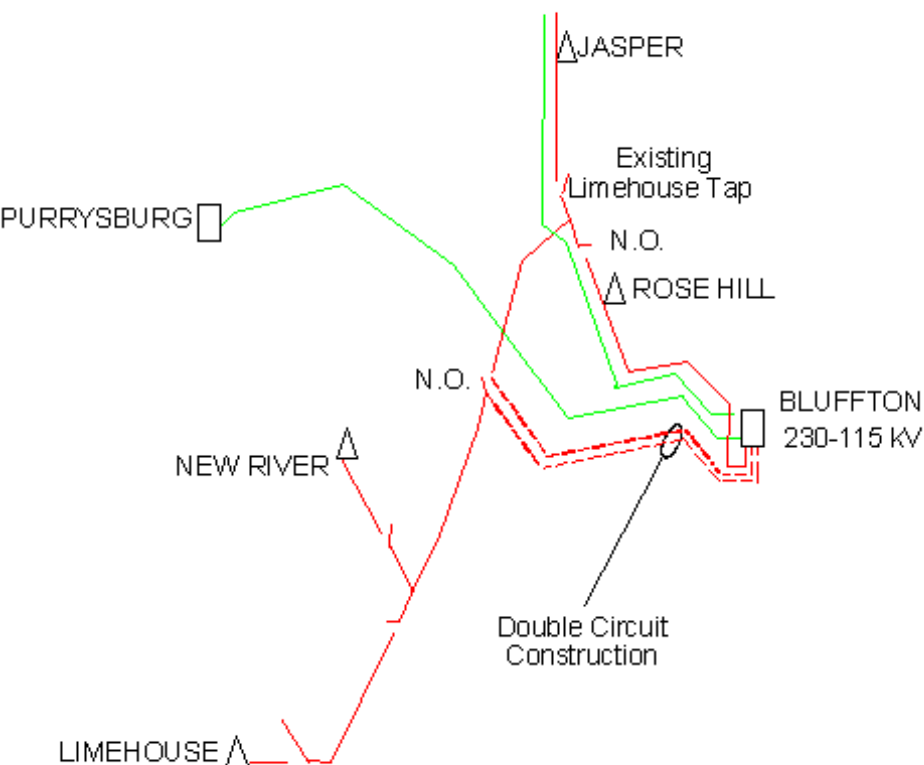
- Will facilitate future conversion of the 69 kV to 115 kV

Bluffton-Varnville 115 kV Line

- **Problem:**
 - Contingency:
 - Outage of Bluffton-Rose Hill 115 kV Line Section
 - Result:
 - Low voltage at delivery points served from the line
 - Possible line overload

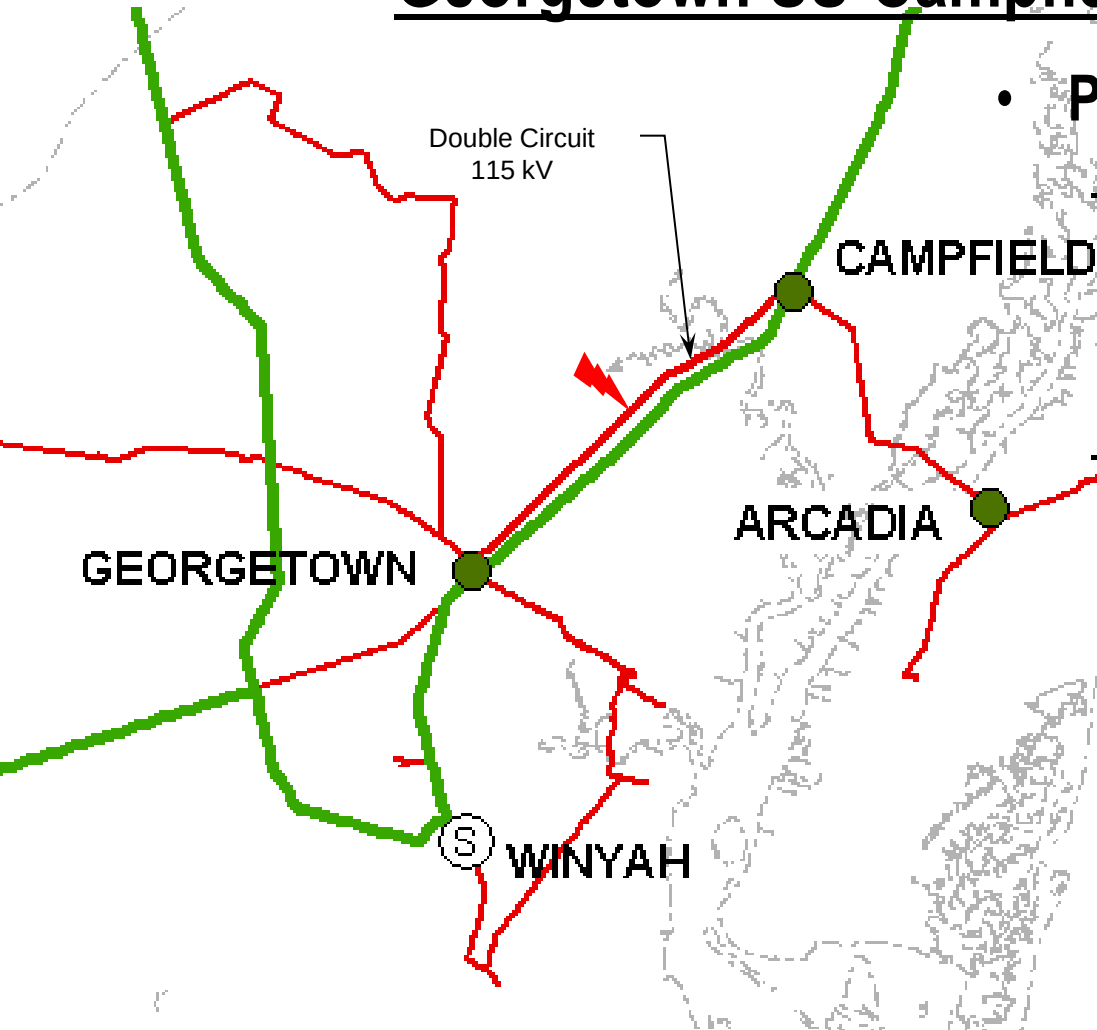


Varnville-Bluffton 115 kV Line Reconfiguration



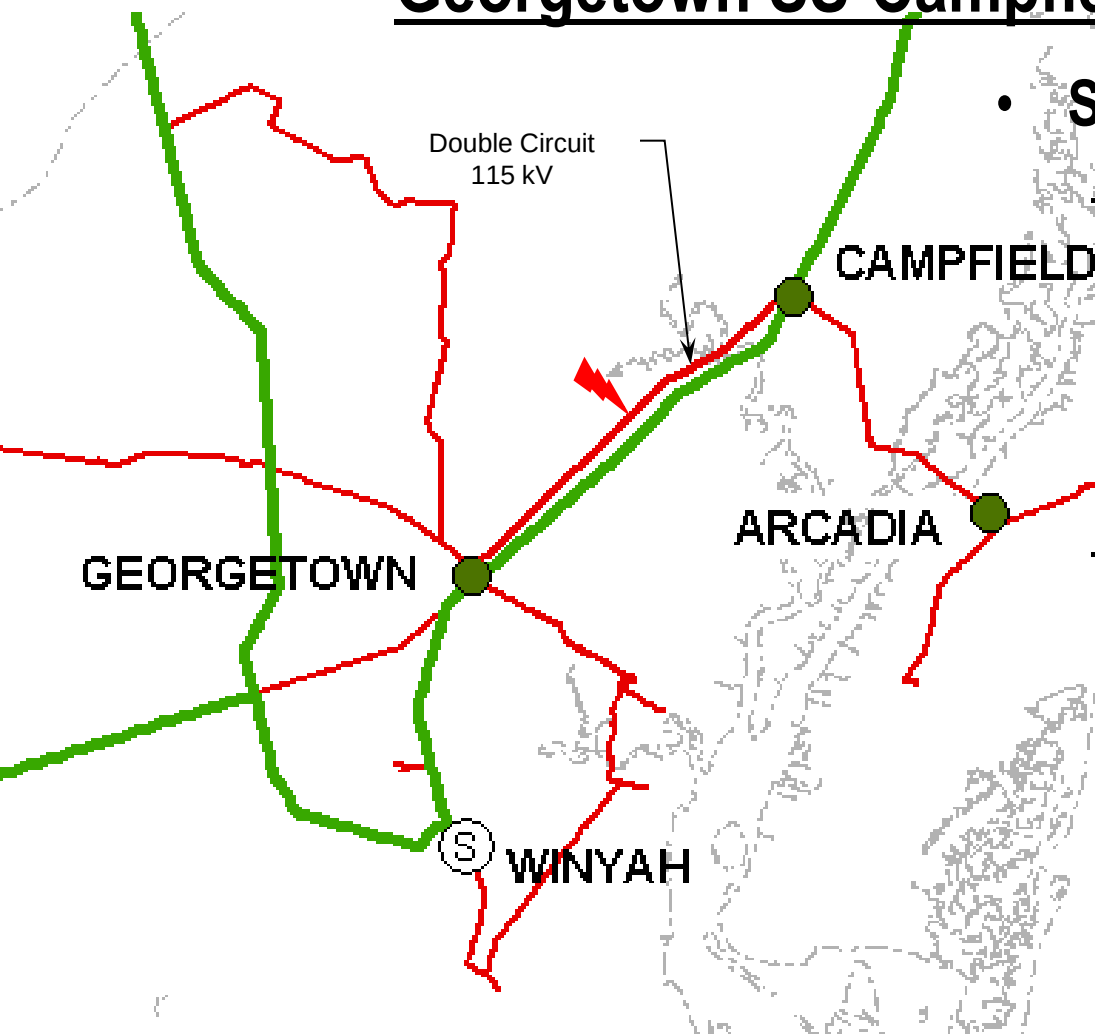
- **Solution:**
 - Construct a double circuit from Bluffton Sub to Limehouse Tap
 - Reconfigure the Bluffton-Varnville 115 kV Line to remove Rose Hill
 - In-service date – June 2009
- **Result:**
 - Relieves low voltage and line loading

Georgetown SS-Campfield 115 kV Lines



- **Problem:**
 - Contingency:
 - Outage of either GTSS-Campfield 115 kV Line
 - Result:
 - Other GTSS-Campfield 115 kV Line overloads
 - Operating guide may be used

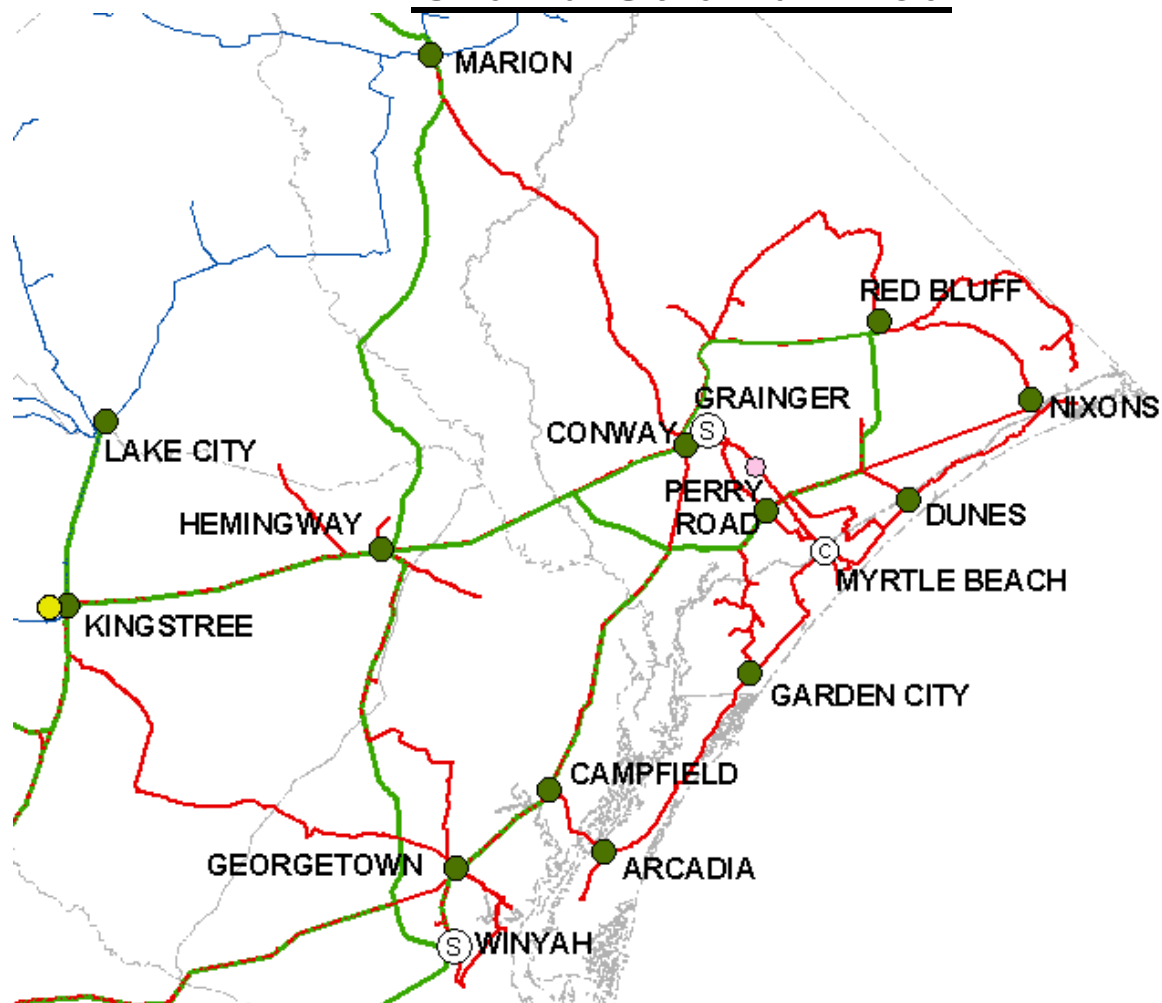
Georgetown SS-Campfield 115 kV Lines



- **Solution:**

- Rebuild double circuit 115 kV line as 230/115 kV line
- In-service date – November 2009

Grand Strand Area



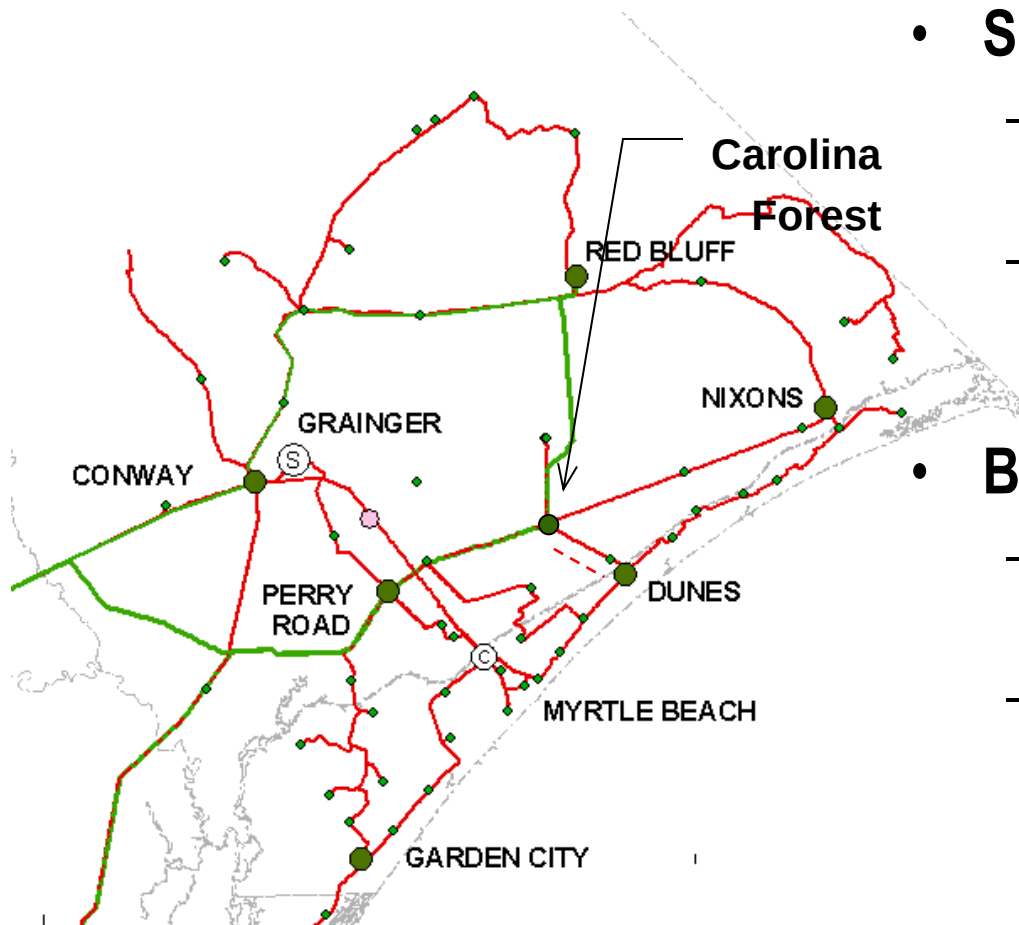
Myrtle Beach Area

- **Issues:**
 - Large load center served from radial transmission
 - Tightly-integrated transmission system
 - Numerous contingencies impact “source” lines into the area
 - Line loadings projected to exceed their normal rating

Myrtle Beach Area Major Transmission Projects

- Carolina Forest 230/115 kV Substation
- Arcadia-Garden City #2 115 kV Line

Carolina Forest 230/115 kV Substation



- **Solution:**

- Construct the Carolina Forest 230/115 kV Substation
- Construct 115 kV line from Carolina Forest to Dunes 115-12 kV Substation

- **Benefits:**

- Provide another bulk source into the central part of Myrtle Beach
- Relieve dependency on Perry Road and Myrtle Beach Substations

Garden City-Arcadia 115 kV Line

- **Problem:**
 - Contingency:
 - Outage of Campfield-Perry Road 230 kV Line
 - Severe or extreme events in the Myrtle Beach Area
 - Result:
 - Arcadia-Litchfield 115 kV line section may overload
 - Base case loading projected to exceed normal rating in 2012

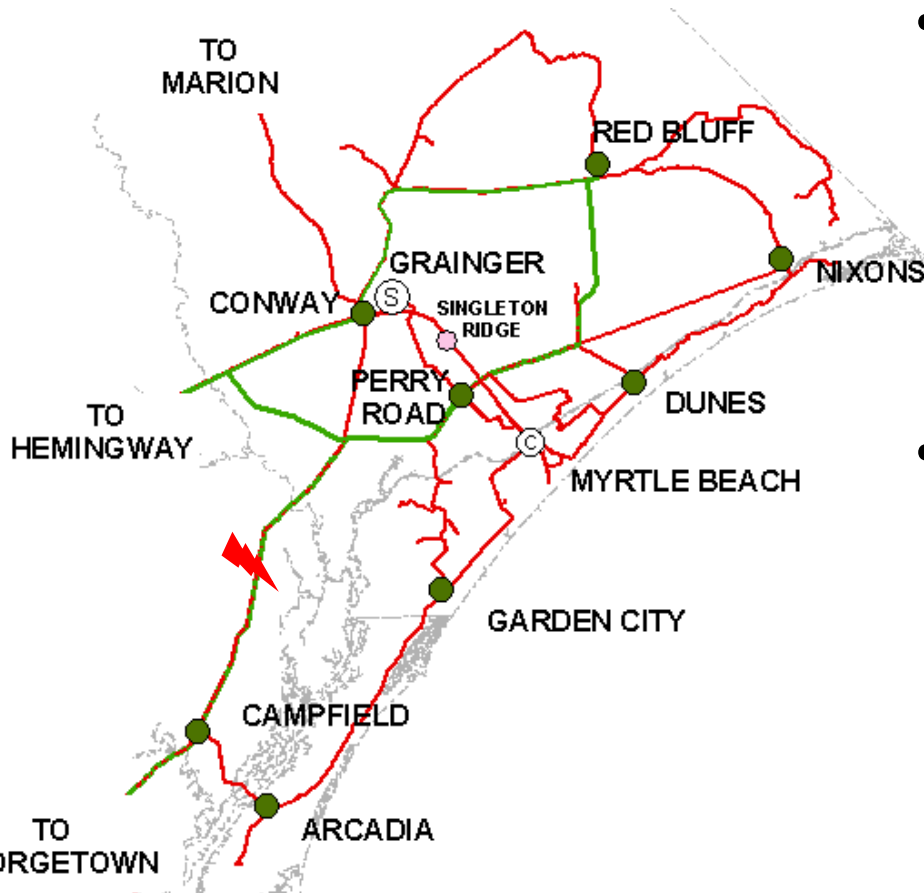
Garden City-Arcadia 115 kV Line

- **Solution:**

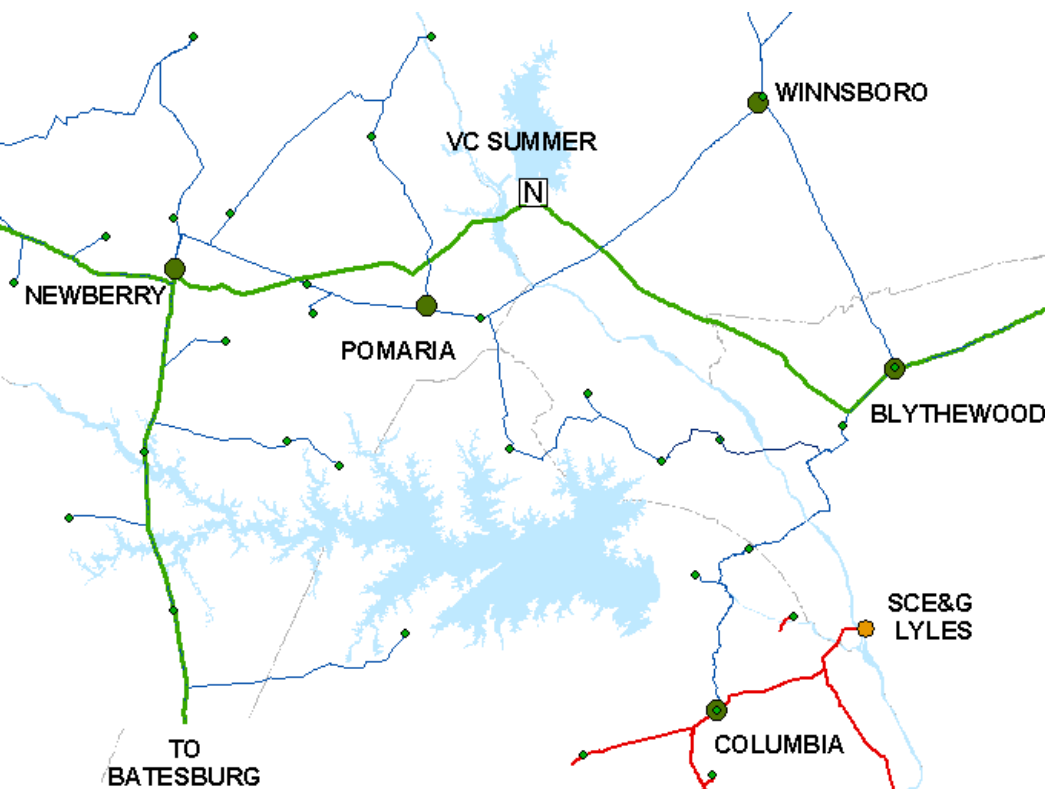
- Rebuild the existing Garden City-Arcadia 115 kV Line as a double circuit line

- **Benefit:**

- Provide another source into southern portion of Myrtle Beach area.



Columbia-Newberry 69 kV System



Problem:

- Contingencies impacting the 69 kV lines in the area

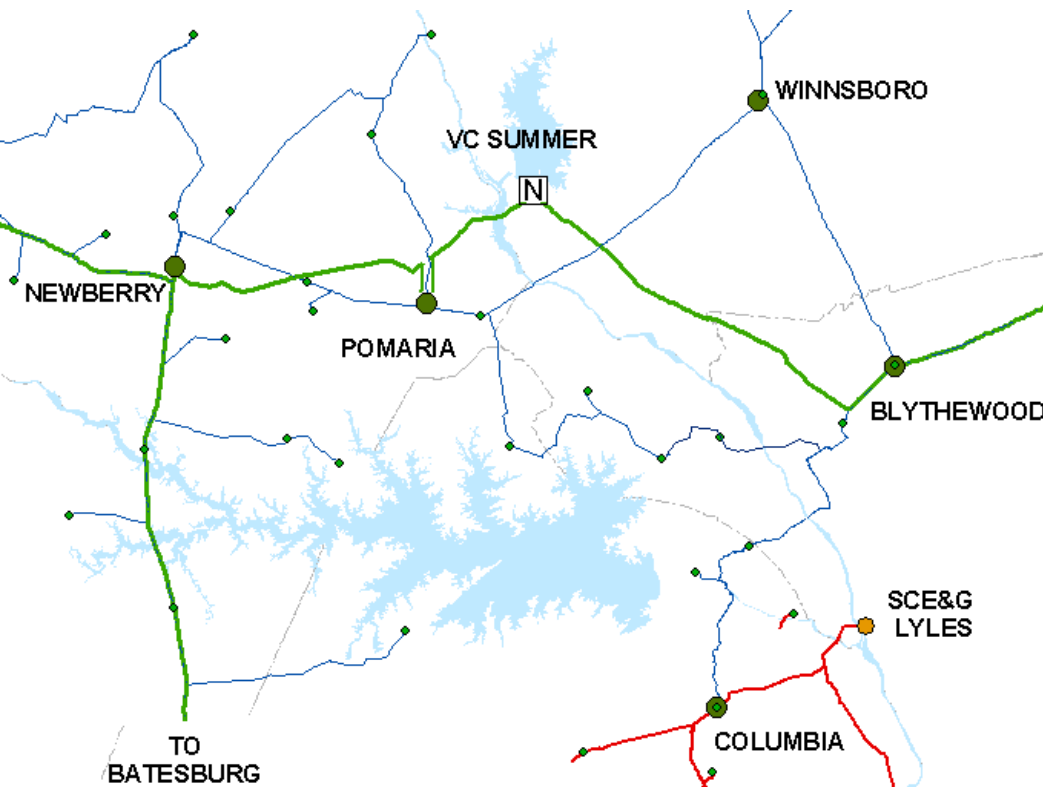
Result:

- Low voltage in the local area

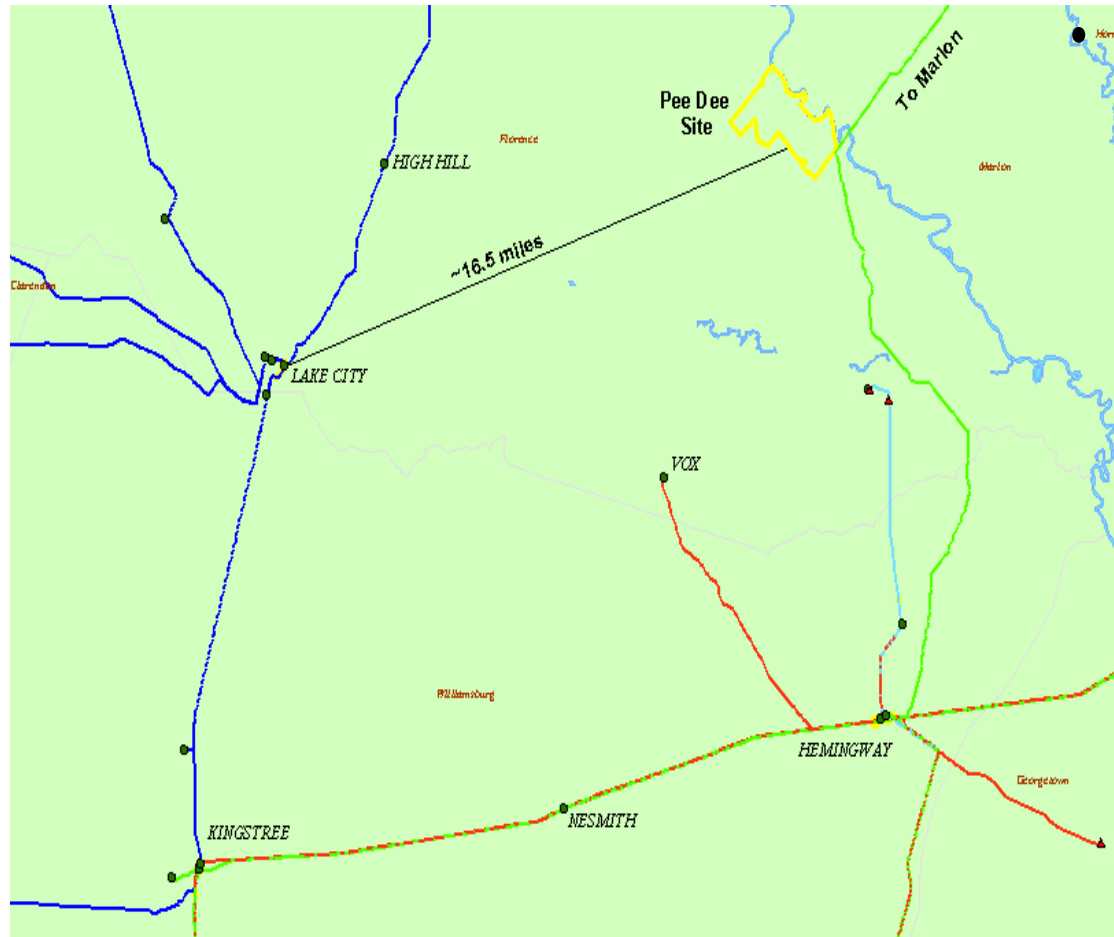
Columbia-Newberry 69 kV System

Solution:

- Fold-in VC Summer-Newberry 230 kV Line
- Expand Pomaria 69 kV SS into 230/69 kV Substation



Pee Dee-Lake City 230 kV Line



Long-range plan:

- Construct 230 kV switchyard at the proposed Pee Dee Site
- Fold the Hemingway-Marion 230 kV Line into Pee Dee
- Construct a 230 kV circuit from Pee Dee to Lake City

SCE&G Transmission System Facts

SCE&G Transmission System Facts

Lines

Voltages

Miles

230 kV

1117

115 kV

1716

46 kV (sub-transmission)

682

33 kV (sub-transmission)

71

Total

3586

SCE&G Transmission System Facts

Substations

<u>Type</u>	<u>#</u>
Generation (Step-up)	21
Transmission	45
Distribution	213
Single Customer	<u>163</u>
Total	442

SCE&G Transmission System Facts

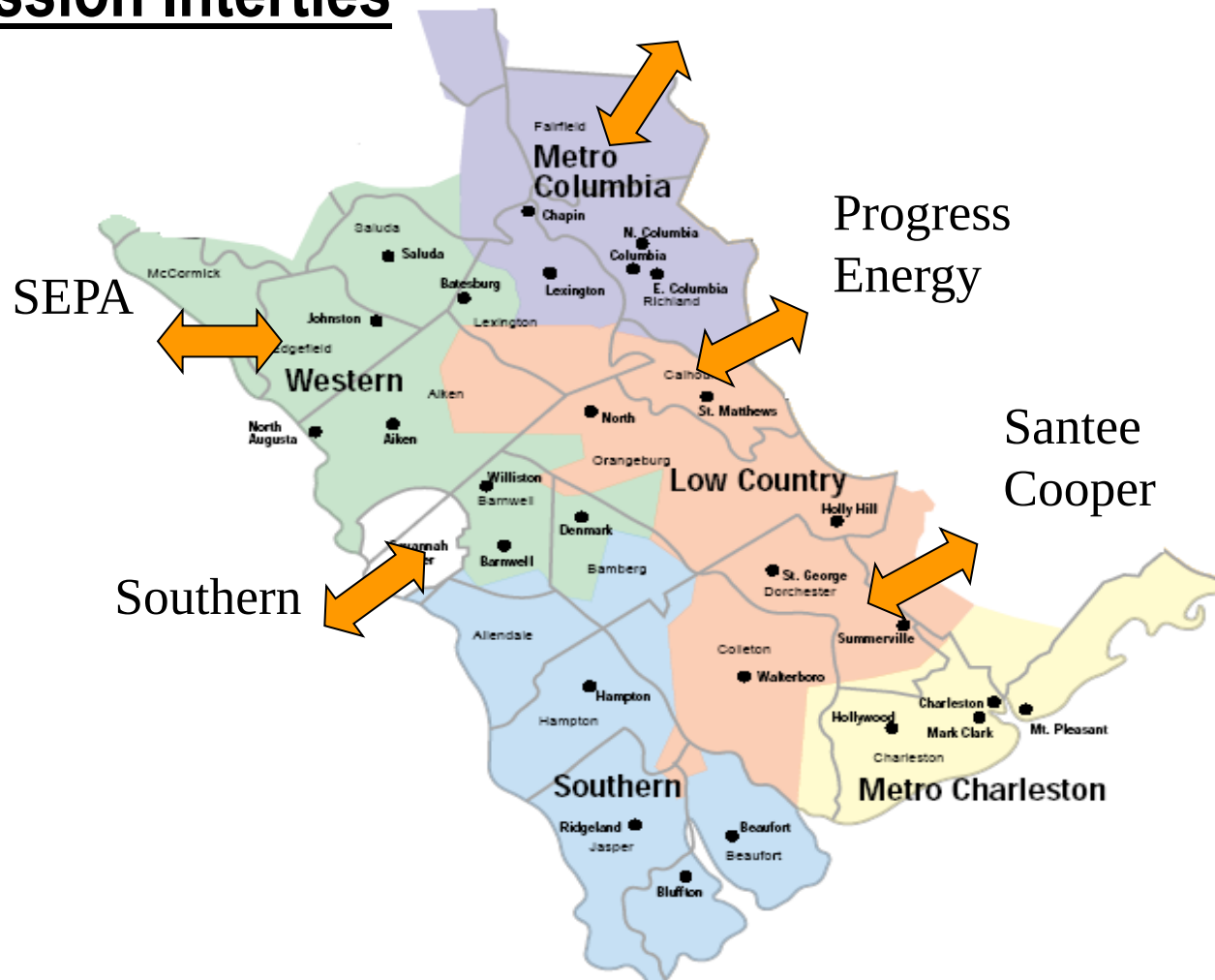
<u>Transmission Interties</u>	<u>230kV</u>	<u>115kV</u>
Duke	2	2
Progress Energy Carolinas	2	1
Santee Cooper	7	5
Southern (Georgia Power)	1	1
SEPA	<u>0</u>	<u>1</u>
	12	10

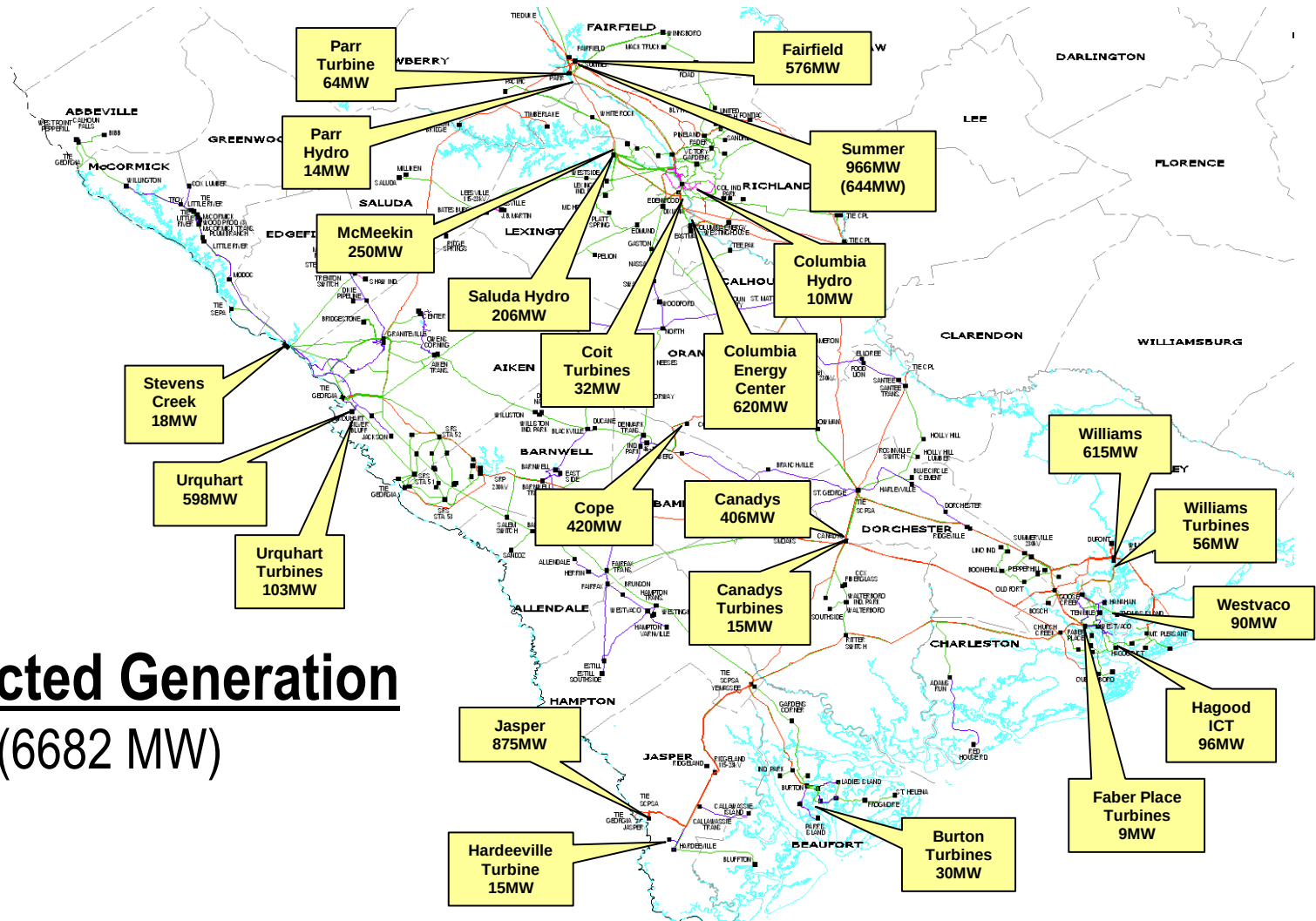
Total Interties

22

Transmission Interties

Duke

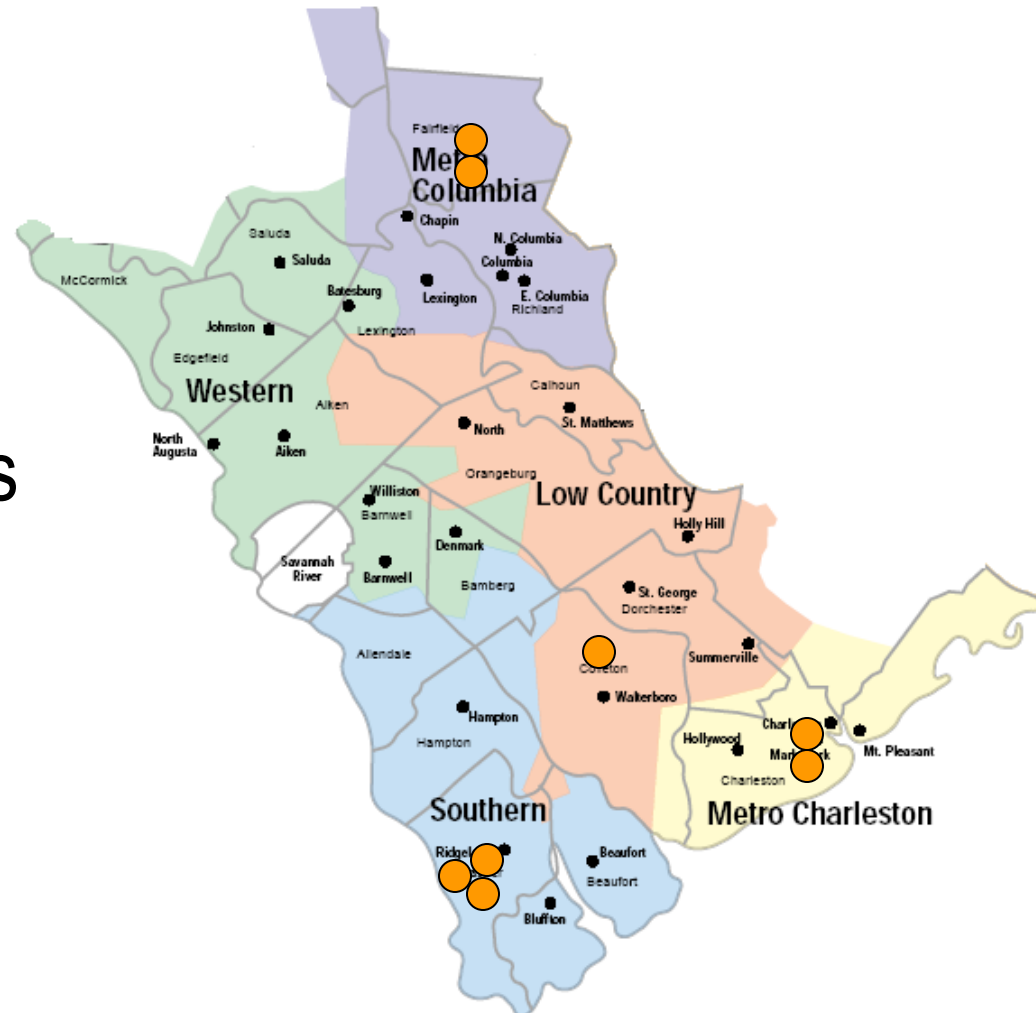




(next 10 Years)

- 2 Nuclear Units
- 6 Combustion Turbines

Total – 2796 MW



SCE&G Transmission Expansion Plan

SCE&G Active Transmission Projects

- Hopkins Westinghouse Junc. 115kV Line Construct 03/31/2009
- Cola. Ind. Pk. - Westinghouse Junc. 115kV Line Upgrade 03/31/2009
- Charleston Airport - Vought Aircraft 115kV Line Construct 03/31/2009
- Urquhart - Belvedere 115kV Line Upgrade 04/30/2009
- Salem Sw. Station Add 115kV 24MVAR Capacitor Bank 05/01/2009
- Goose Ck - Ashley Phosphate Line Upgrade 05/01/2009

SCE&G Planned Transmission Projects 2009-2018

- **Pepperhill - Coosaw Ck 115kV Line Construct** 12/31/2009
- **Pepperhill - Ladson Tap 115kV Upgrade to Double Circuit** 12/31/2009
- **Pineland Sub Add 2nd 336MVA Autotransformer** 12/31/2009
- **Accabee - Hagood - Charlotte St 115kV Construct** 05/01/2010
- **Bayview-Charlotte St 115kV Line Upgrade Overhead** 05/01/2010
- **Belvedere - Belvedere Sw. Sta. Rebuild to Dbl Circuit** 05/01/2010
- **Church Creek - Savage Rd 115kV Bypass Construct** 05/01/2010
- **Ritter Add 2nd 115kV 36MVAR Capacitor Bank** 05/01/2010
- **St Andrews - Queensboro 115kV Line Upgrade** 05/01/2010
- **Graniteville Sub: Add #3 336 Autotransformer** 12/01/2010
- **Denny Terrace - Pineland 230kV Line Construct** 05/01/2011

SCE&G Planned Transmission Projects 2009-2018 (continued)

- Lake Murray Trans Add 2nd 336MVA Autotransformer 05/01/2011**
- Mt Pleasant - Bayview 115kV Line Upgrade 12/01/2011**
- Aiken #3 to Aiken Hampton 115kV Line Upgrade 05/01/2012**
- Cainhoy - Thomas Island 115kV Line Construct 05/01/2012**
- Cainhoy - A.M. Williams 115kV #1 Convert to 230kV 05/01/2012**
- Pepperhill - Summerville 230kV Line Construct 05/01/2012**
- Ritter 230/115kV Sub Construct 05/01/2012**
- Yemassee - Burton 115kV Rebuild to Double Circuit 05/01/2012**
- Yemassee Add 3rd 336MVA Autotransformer 05/01/2012**
- Edenwood - Lake Murray Trans 230kV Line Upgrade 05/01/2013**
- Lyles - Williams St 115kV Line Upgrade 05/01/2013**
- Canadys-Church Creek 230KV-Rebuild to Double Circuit 12/01/2012**

SCE&G Planned Transmission Projects 2009-2018 (continued)

- Aiken Hampton - Aiken Transmission 115kV Line Upgrade 05/01/2014**
- Belvedere - Stevens Ck 115kV Line Upgrade to Dbl Circuit 05/01/2014**
- Cainhoy: Cainhoy 230/115kV Construct 05/01/2014**
- Lyles - Denny Terrace 115kV Lines #1 and #2 Upgrade 05/01/2014**
- Okatie 230/115kV Sub Construct 05/01/2014**
- Columbia Industrial Park: Add 2nd 336 Autotransformer 05/01/2015**
- Faber Place - Accabee 115kV Lines #1 and #2 Upgrade 05/01/2015**
- Cainhoy - A.M.W. 230kV #2 and 115kV #2 Lines Construct 05/01/2016**
- Cainhoy - Hamlin 115kV Rebuild to Dbl Circuit 05/01/2016**
- Lexington Junction 115kV Switching Station Construct 05/01/2016**
- Urquhart - Graniteville 230kV Line #2 Construct 05/01/2016**
- Queensboro 230/115kV Sub Construct 05/01/2018**

V.C. Summer Unit #2 Related Projects

SCE&G

- Denny Terrace - Lyles 230kV Line Upgrade 12/01/2015
- Denny Terrace Add 3rd 336 Autotransformer 12/01/2015
- Lake Murray Add 3rd 336 Autotransformer 12/01/2015
- Lake Murray - McMeekin 115kV Line Upgrade 12/01/2015
- Lake Murray - Saluda 115kV Line Upgrade 12/01/2015
- Saluda - McMeekin 115kV Line Upgrade 12/01/2015
- VCS2 - Lake Murray #2 230kV Line Construct 12/01/2015
- VCS2 - Winnsboro - Killian 230kV Line Construct 12/01/2015

Santee Cooper

- VCS Sub #1 - Winnsboro - Richburg - Flat Creek - 230kV 12/01/2015
- Winnsboro 230/69kV Construct 12/01/2015
- Richburg 230/69kV Construct 12/01/2015

V.C. Summer Unit #3 Related Projects

SCE&G

- Saluda - Duke 115kV Tielines Upgrade 12/01/2018
- South Columbia 230/115kV Construct 12/01/2018
- South Lexington 230/115kV Construct 12/01/2018
- St George 230kV Switching Station Construct 12/01/2018
- St George - Canadys 230kV Line Upgrade 12/01/2018
- St George - Summerville 230kV Line Upgrade 12/01/2018
- VCS Sub #2 - St George 230kV Double Circuit Construct 12/01/2018

Santee Cooper

- VCS Sub2-Pomaria-Sandy Run-Orangeburg-St George-Varnville 230kV 12/01/2018
- Sandy Run 230/115kV Construct 12/01/2018
- St George 230/115kV Construct 12/01/2018

Transmission Expansion Project Categories

1. New Line

Construct a New 230kV or 115kV Transmission Line

2. Line Upgrade

Rebuild, Reconductor, or Increase Operating Voltage of an Existing Circuit

- Increases Ampacity of Existing Rights-of-Way
- Often Involves Rebuilding a Single Circuit Towerline as a Single Pole Double Circuit

3. Autotransformer

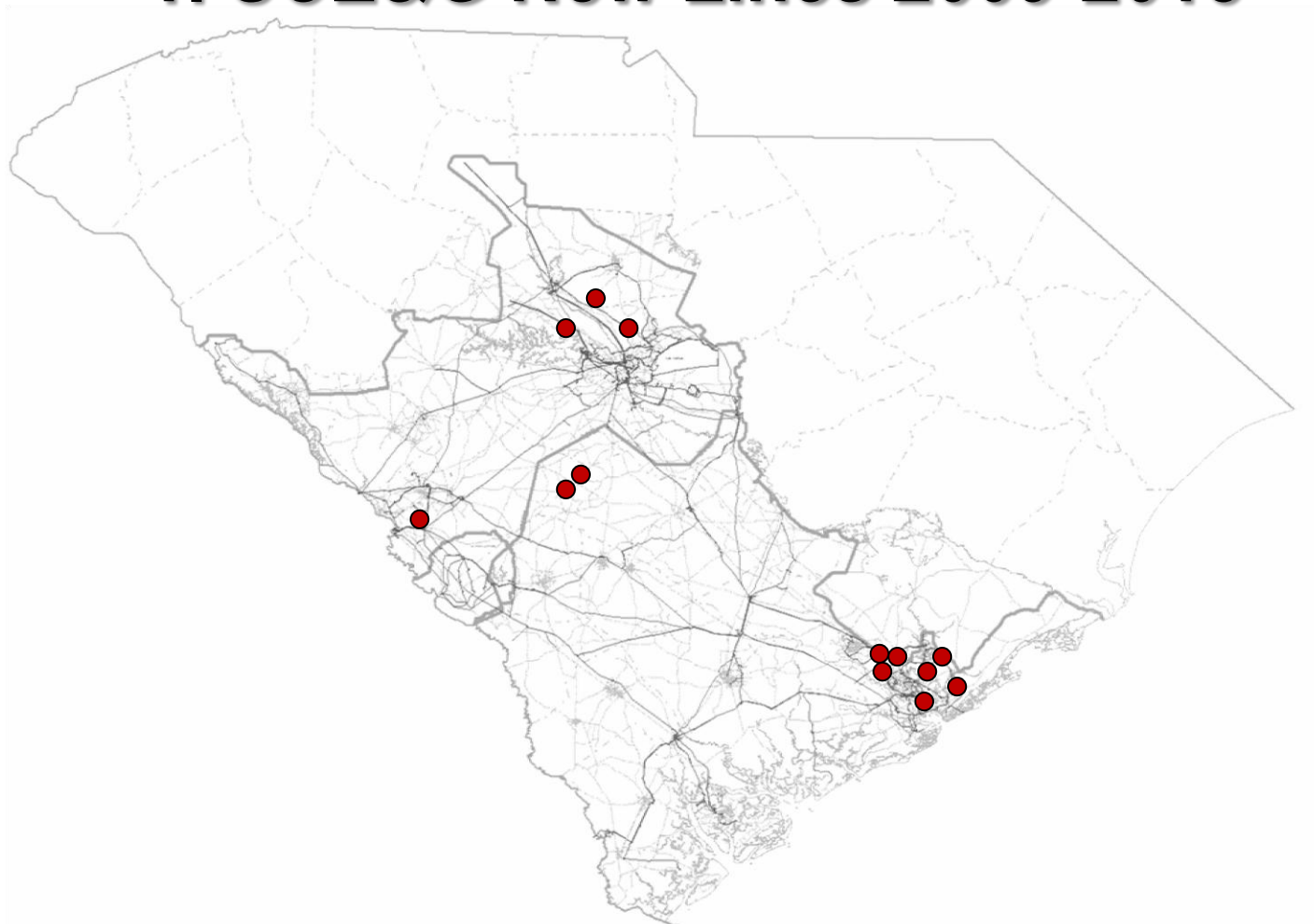
Establish New 230/115kV Substation or Increase Capacity at Existing Substations

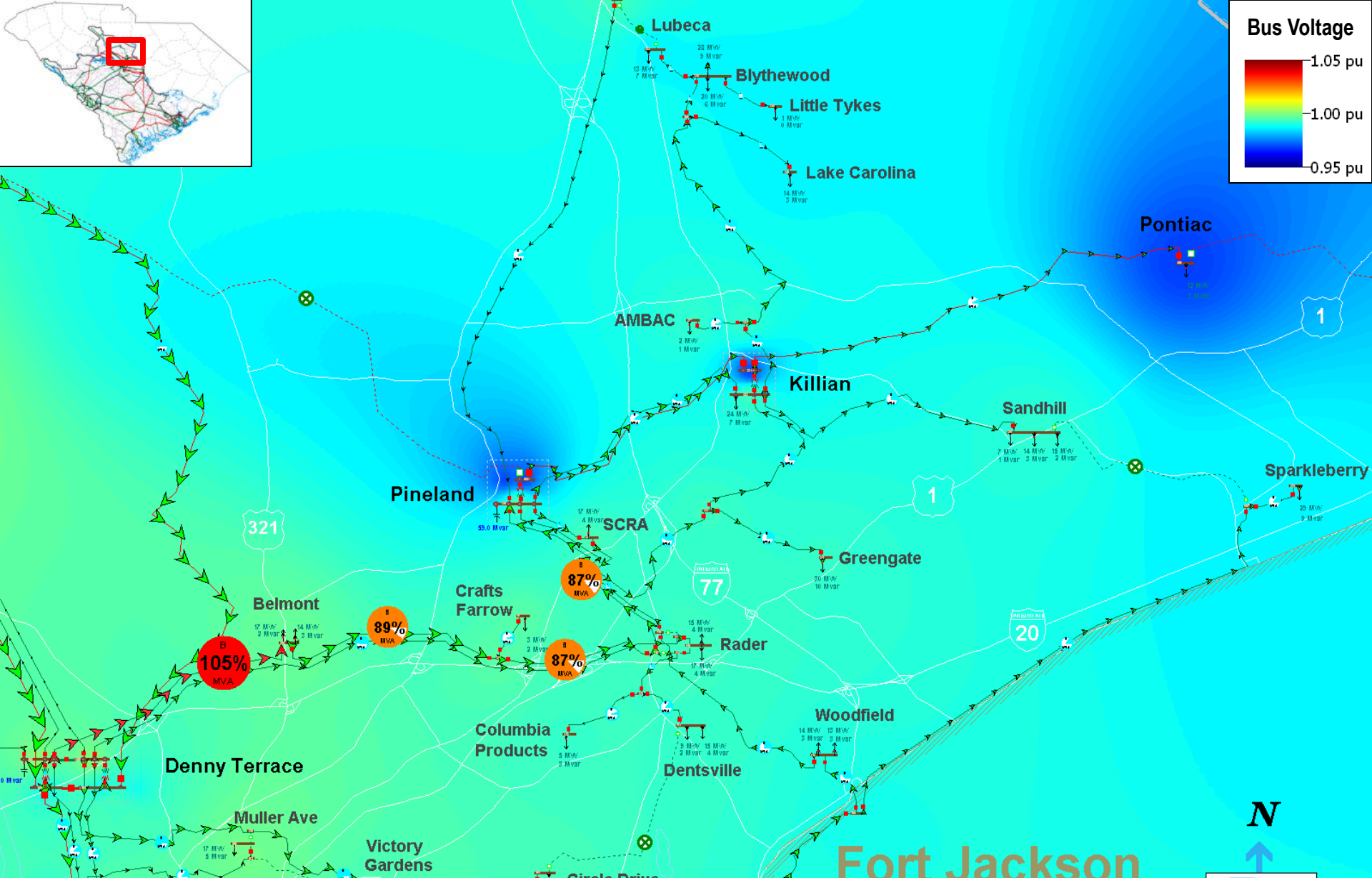
- Adds Strong 230kV Sources at Load Centers
- Allows 230 and 115kV Systems to Support Each Other

4. Capacitor Banks, Switching Stations and Other

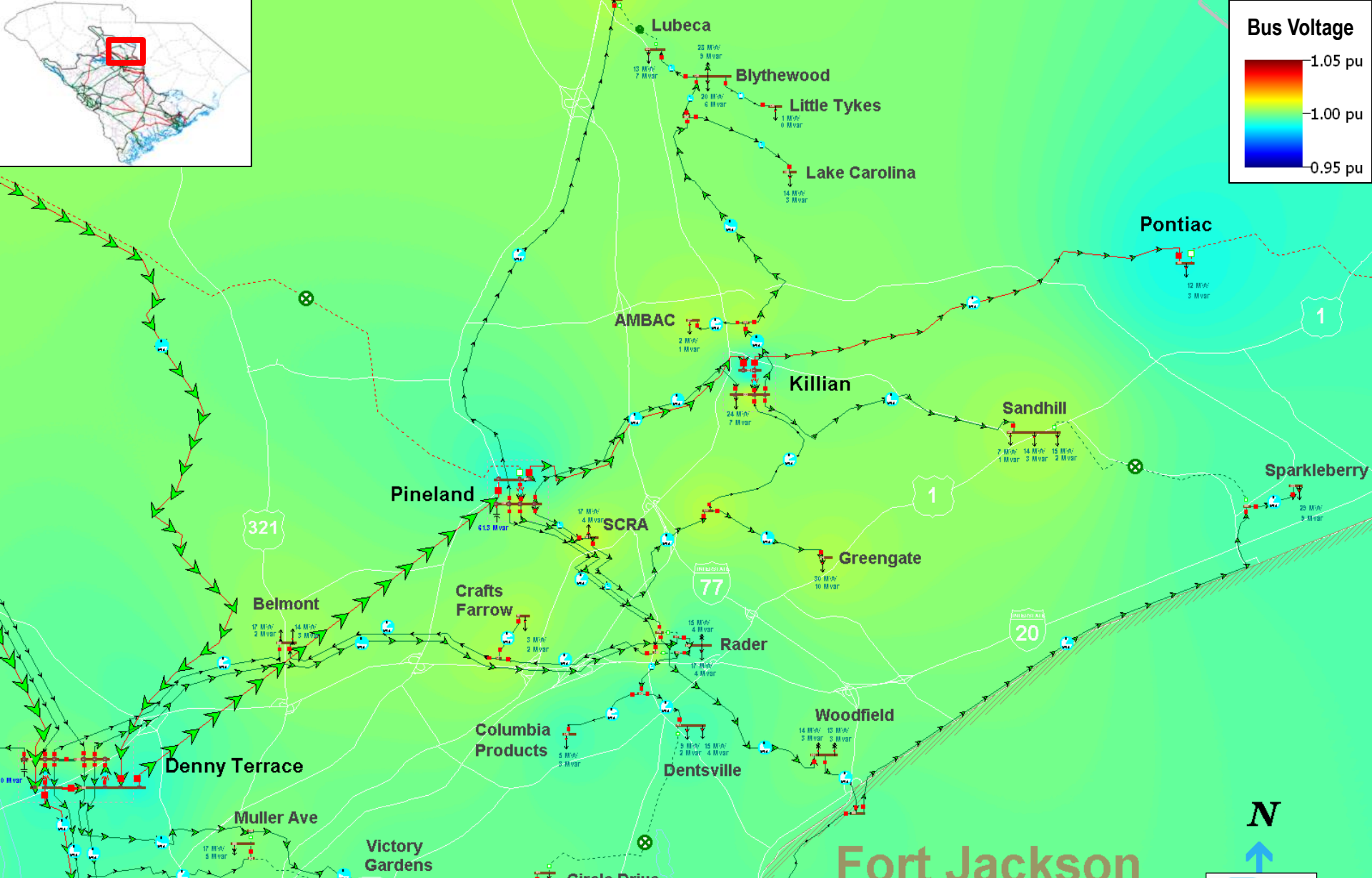
- Can be More Economic Alternatives to More Costly Upgrades
- Improves System Performance Under Contingencies

1. SCE&G New Lines 2009-2018



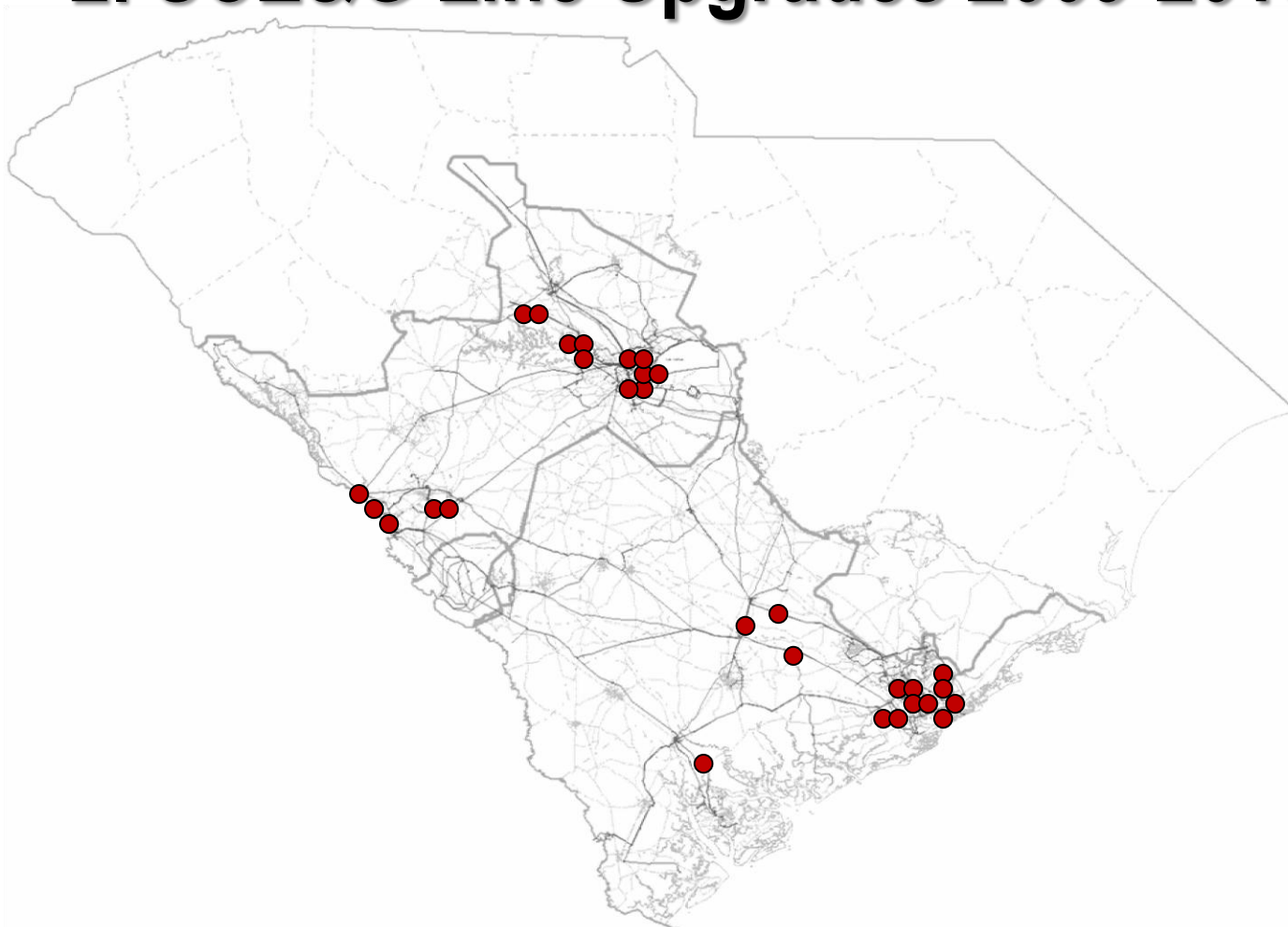


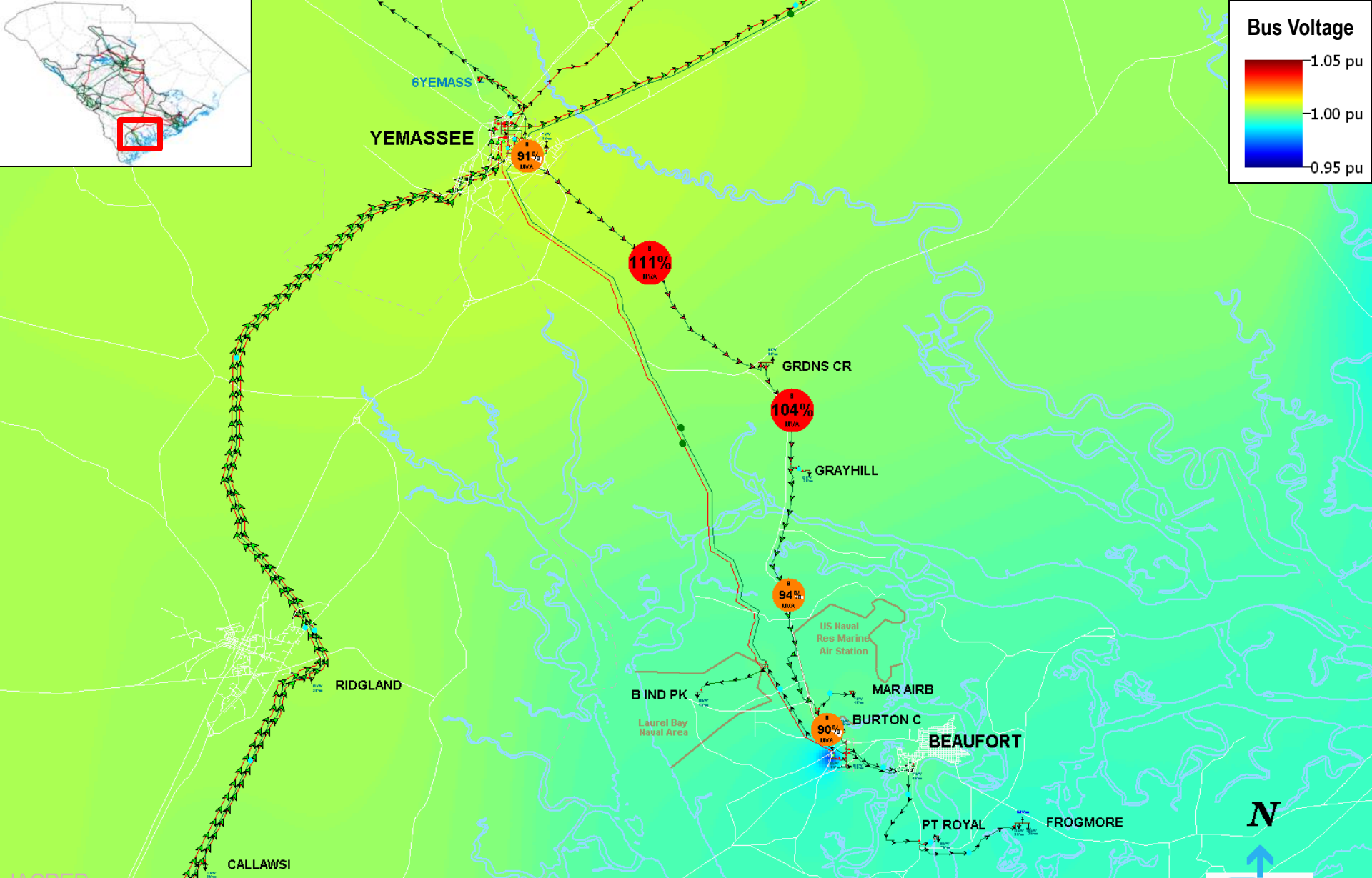
New Line Example: Northeast Columbia Area with Loss of Two 230kV Sources



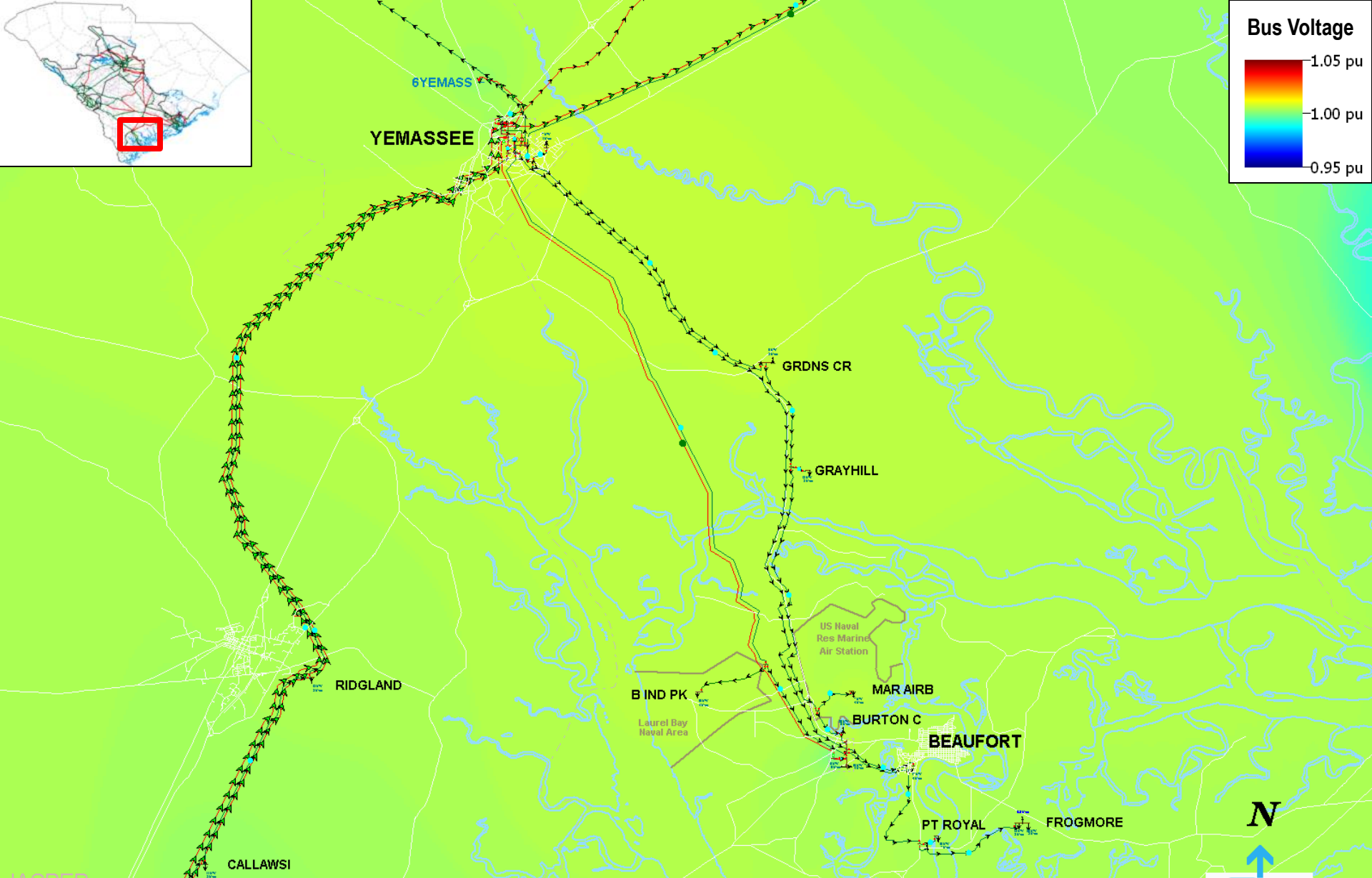
New Line Example: Construct Denny Terrace-Pineland 230kV Line

2. SCE&G Line Upgrades 2009-2018



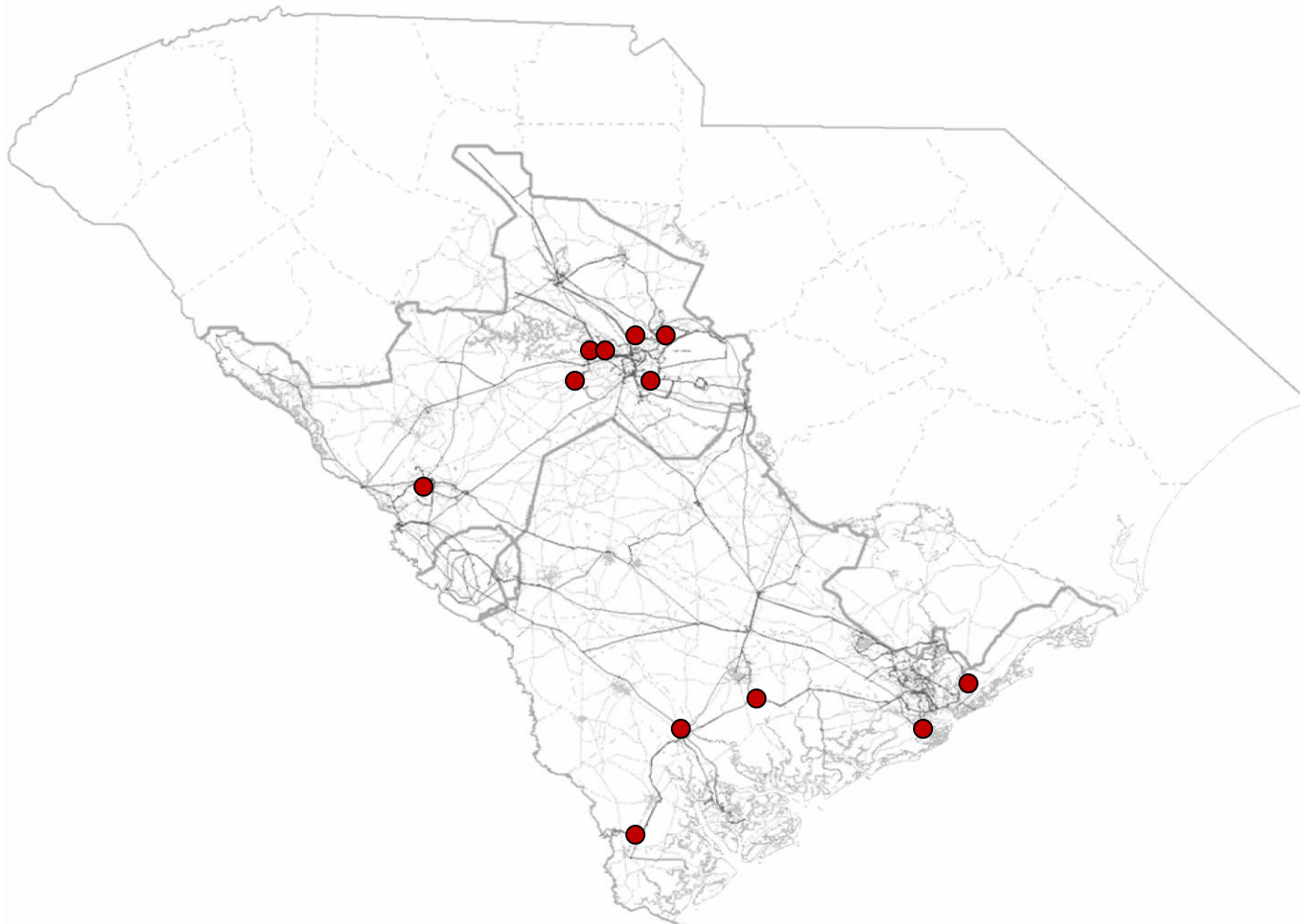


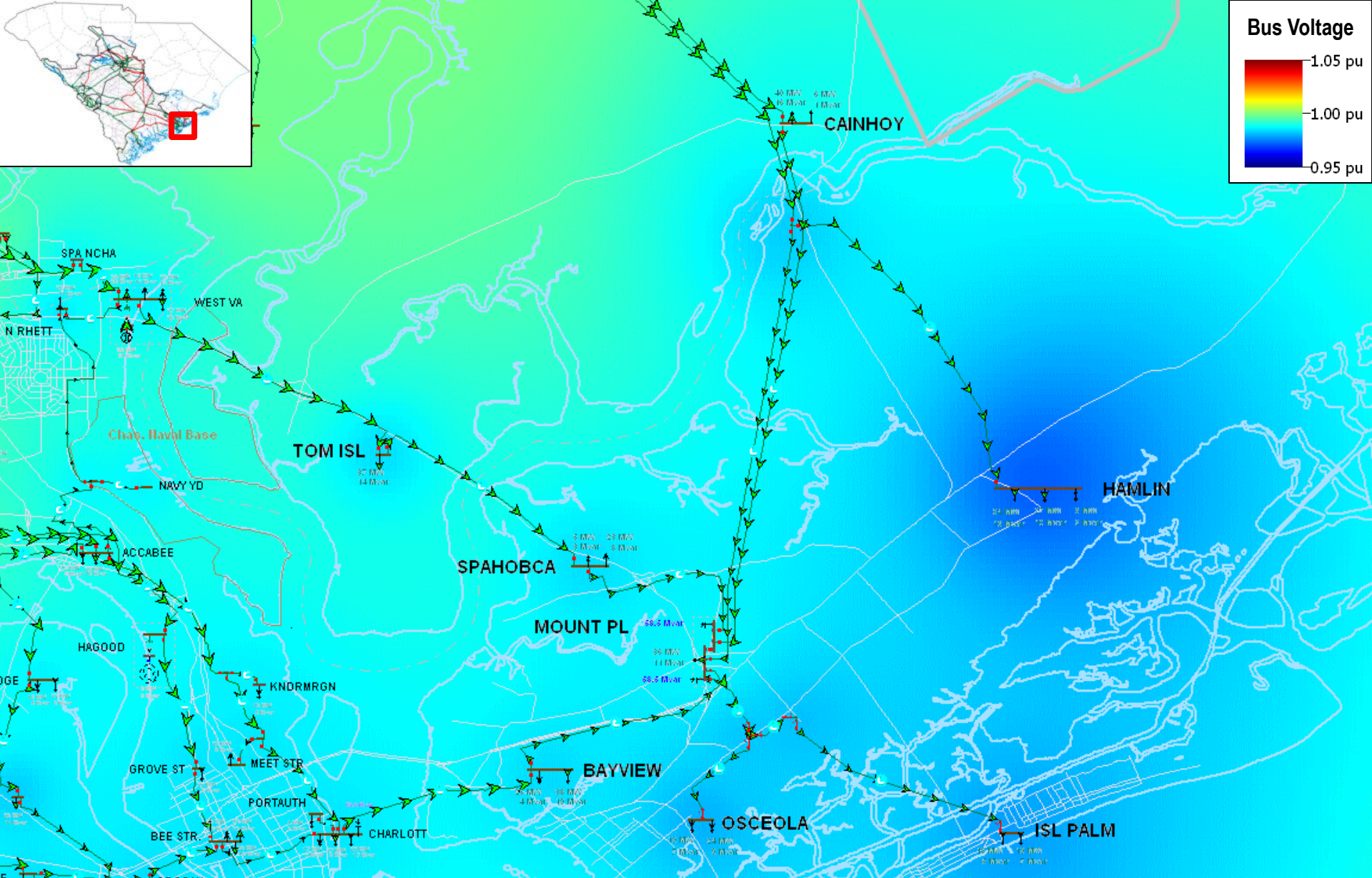
Line Upgrade Example: Yemassee-Beaufort Area with Loss of Two Lines



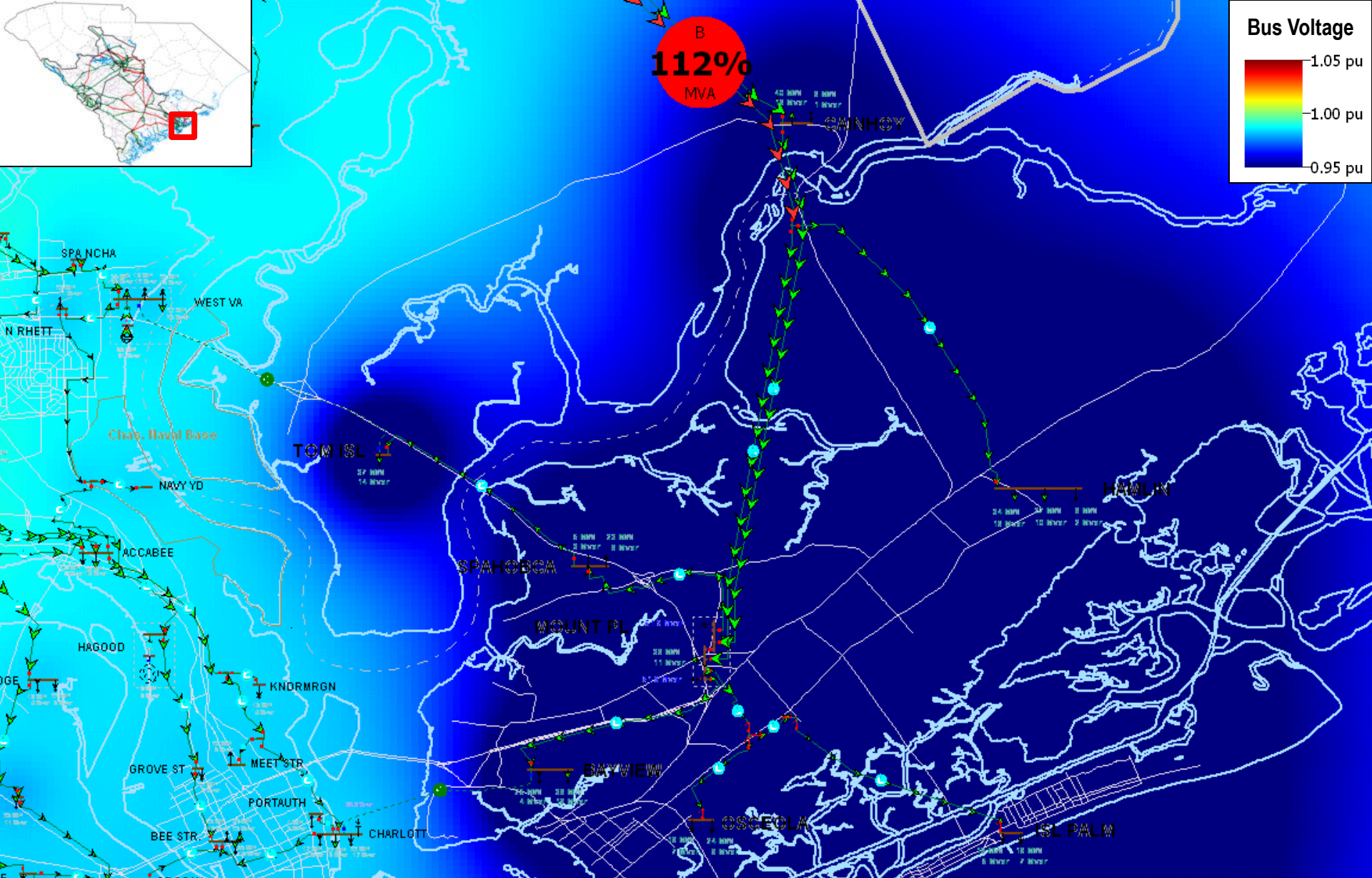
Line Upgrade Example: Rebuild Line #2 as 115kV Double Circuit

3. SCE&G Autotransformer Additions Additions 2009-2018

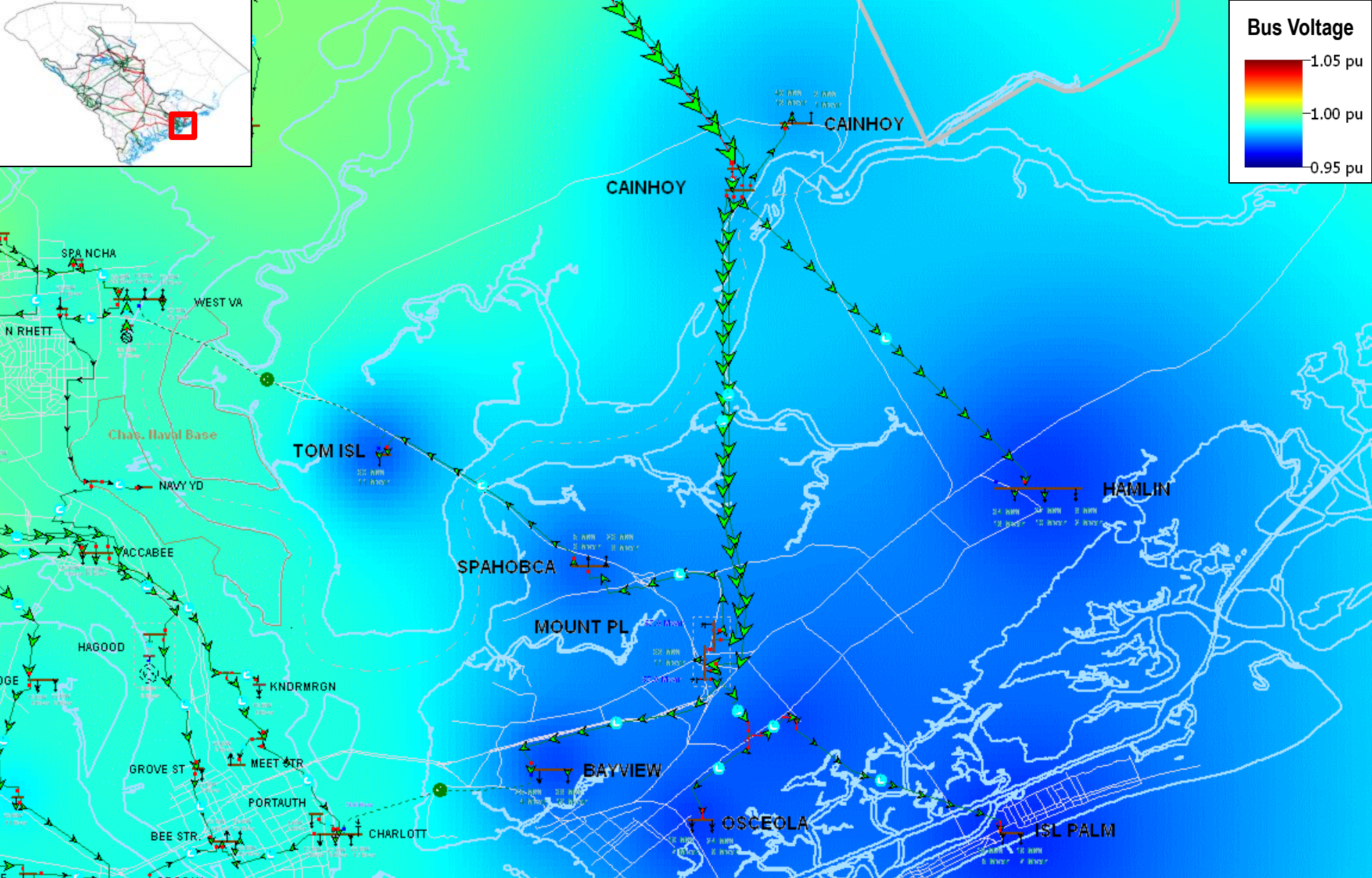




Autotransformer Example: Mt. Pleasant Area under Heavy Load



Autotransformer Example : Loss of Goose Creek and Peninsula Sources

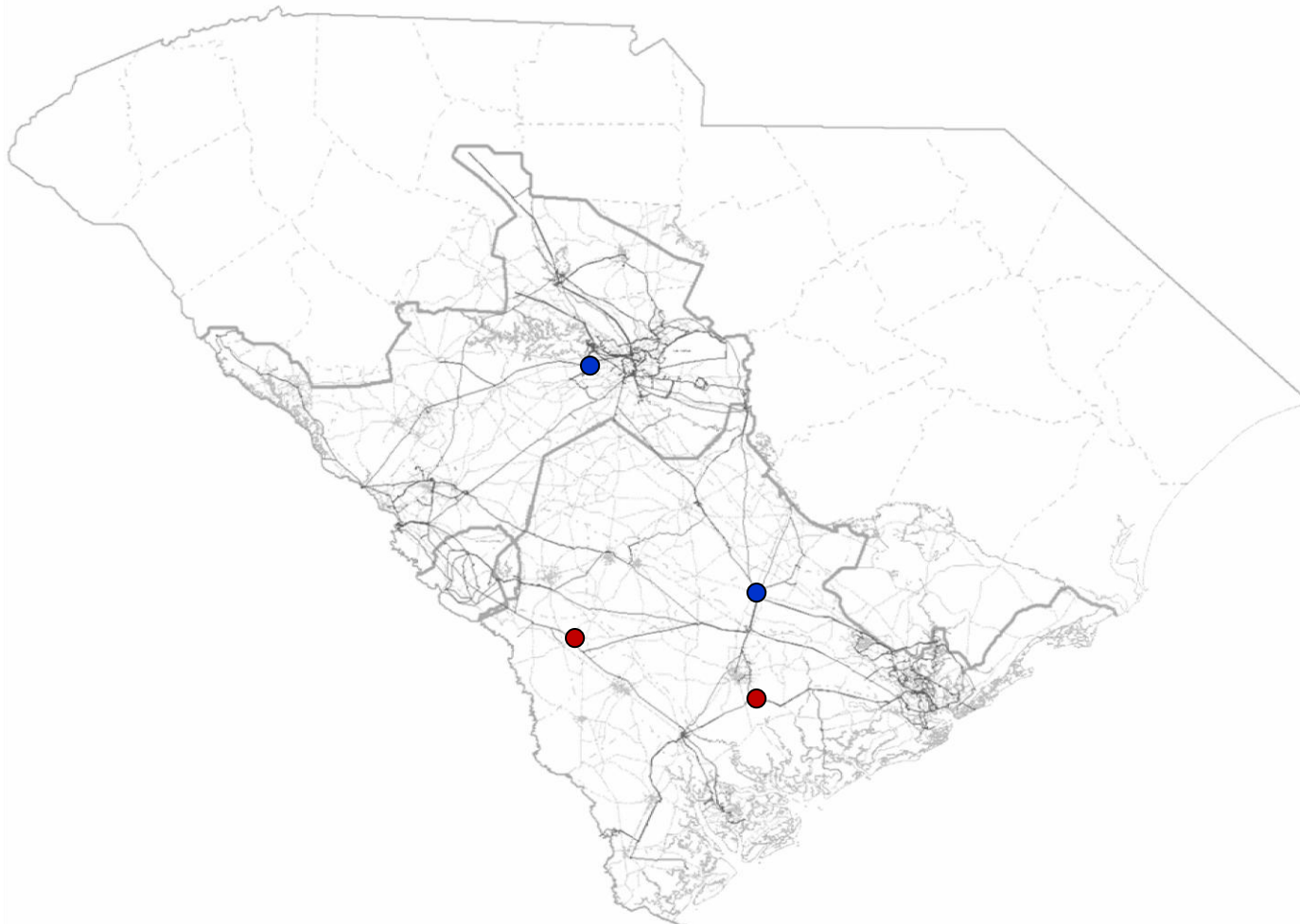


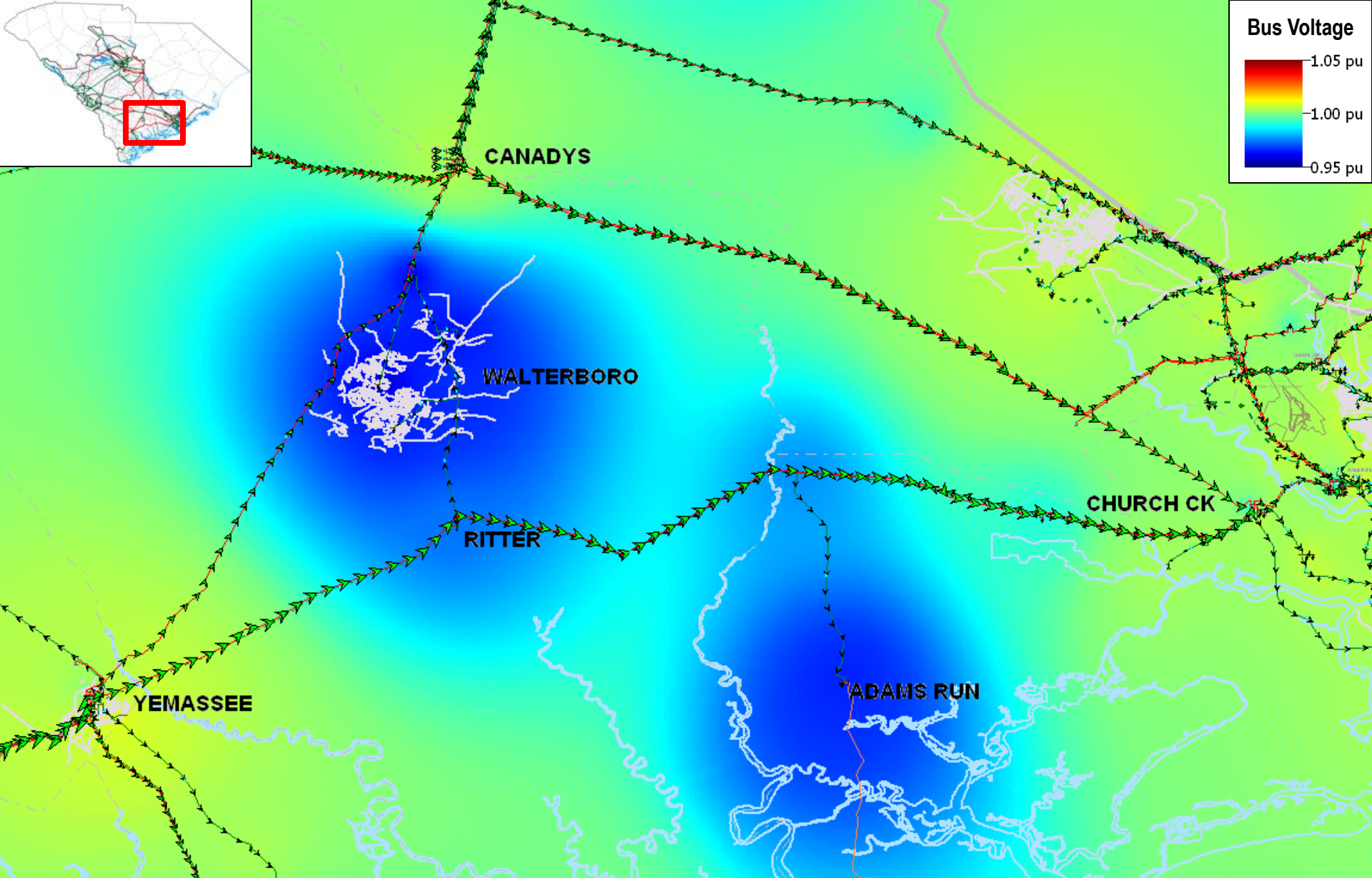
Autotransformer Example: Adding 230/115kV Transformation at Cainhoy



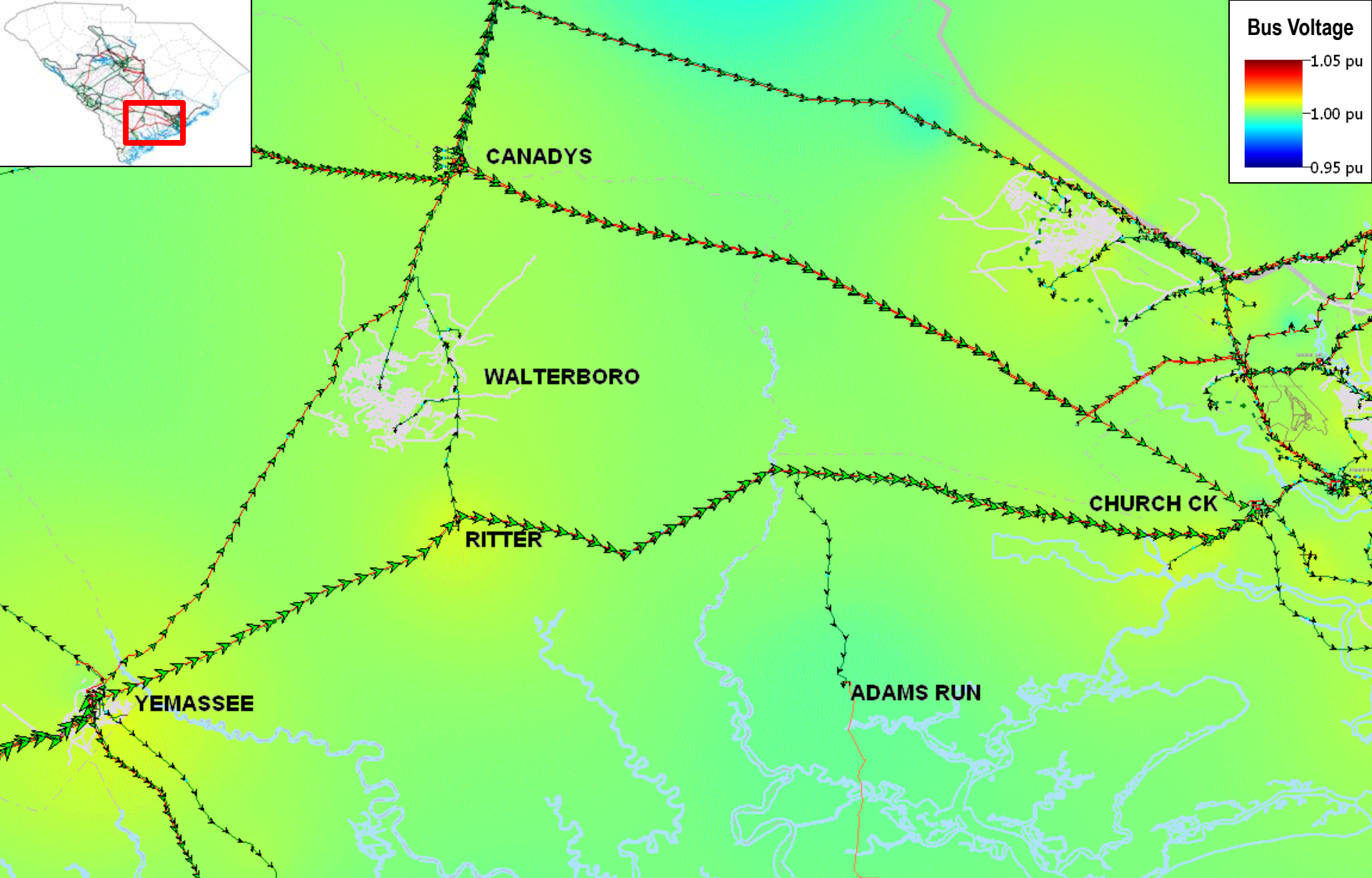
Autotransformer Example : Future Cainhoy Expansion

4. SCE&G Capacitor Banks and Switching Station Additions 2009-2018





Capacitor Bank Example: Ritter Area with Loss of Canadys and Yemassee Sources



Capacitor Bank Example: Increase Switched Capacitance at Ritter

Stakeholder Comments and Input

Current Transmission Expansion Plans

Santee Cooper

Transmission Planning Key Assumptions and Data

Components

- Demand Forecast
- Transmission Network
- Generation Resources

Demand Forecast

- Santee Cooper produces a Corporate Load Forecast annually and this forecast is provided to Transmission Planning.
- Forecast incorporates updates to econometric models using consultant-based research.
- Forecast utilizes current historical data and economic outlook for Santee Cooper's service area.

Demand Forecast

Load forecast is developed with contributions from:

- Santee Cooper (retail, industrial)
- Central Electric Power Cooperative, Inc. (retail, industrial)
- Cities of Bamberg and Georgetown (municipal)

Demand Forecast

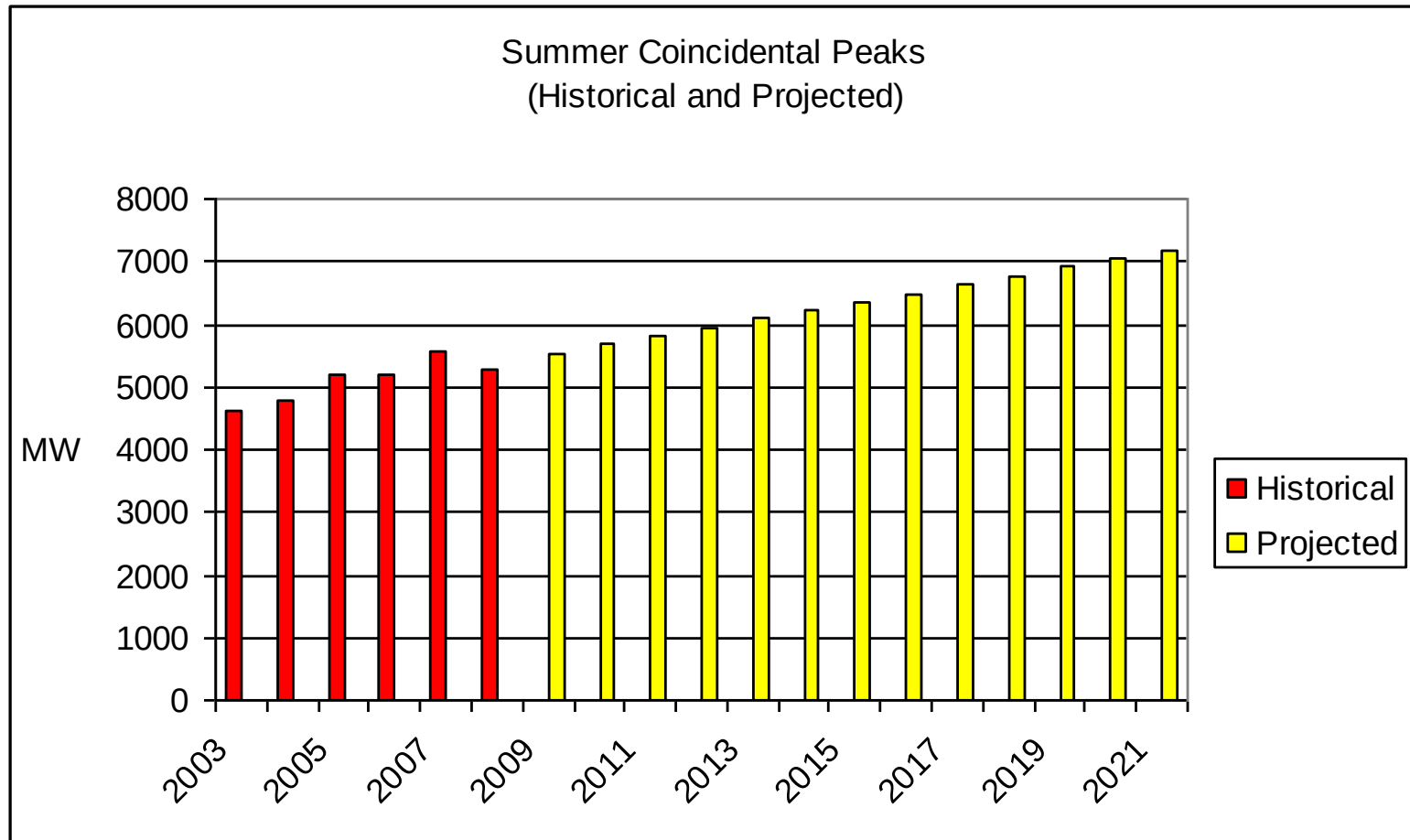
- Transmission Planning uses customer-provided station-level forecasts for modeling and reliability assessments.
- Customer-provided forecasts are compared to the corporate load forecast to ensure consistency.
- Processes for tabulating actual and forecast demands are consistently applied for all study efforts.

Demand Forecast

Santee Cooper Load Forecast is comprised of four primary categories:

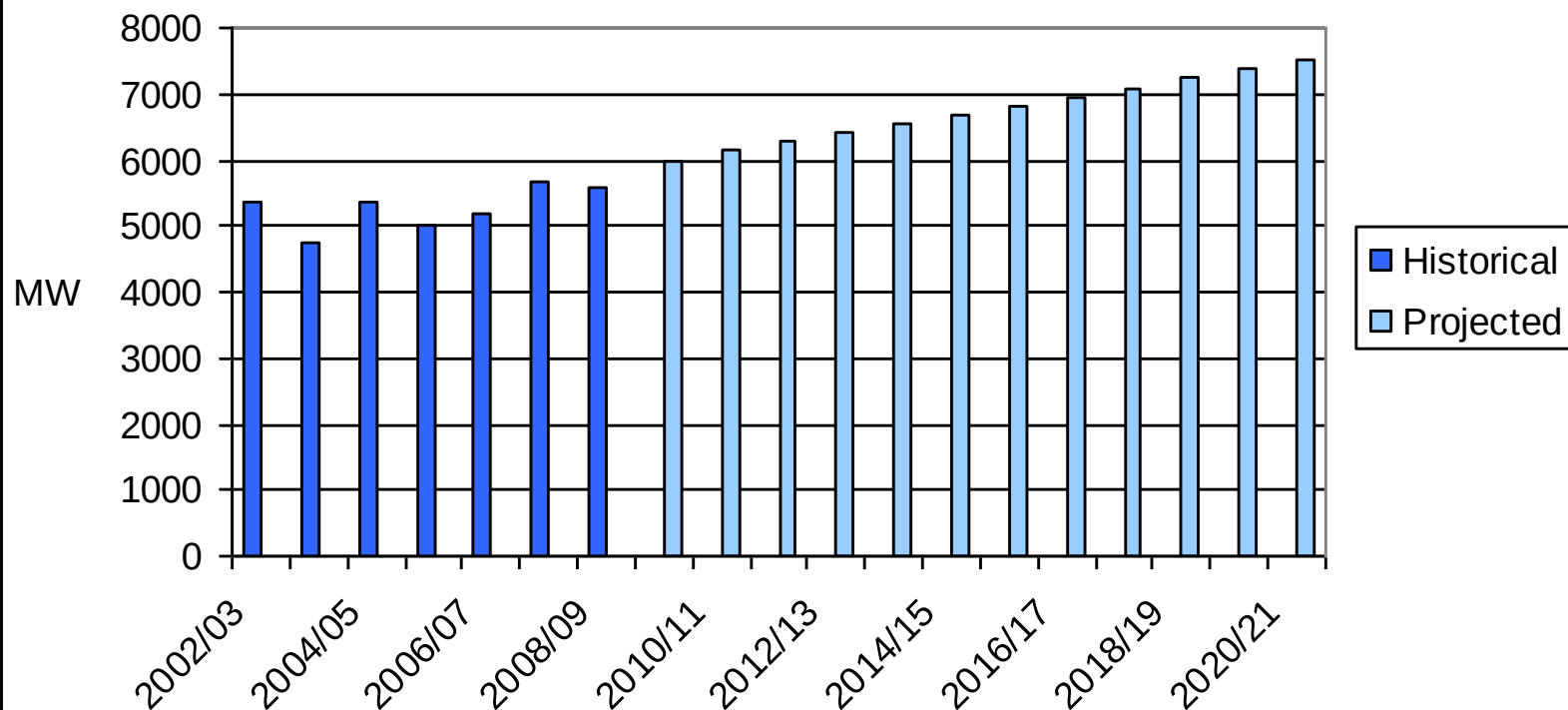
- Authority
- Cooperative
- Industrial
- Municipal

Demand Forecast



Demand Forecast

Winter Coincidental Peaks
(Historical and Projected)



Transmission Network

Models include:

- Existing transmission system as well as committed Santee Cooper additions (uncommitted facilities are subject to change in scope or date).
- Neighboring transmission system representations.
- All facilities assumed to be available for service.
- Normal operating status (in-service or OOS) of facilities is represented.

Transmission Network

- Uniform ratings methodology is consistently applied to transmission facilities.
- Base case models are updated annually.
- Study models may be updated prior to any study effort.

Transmission Network

Active Projects Included in Models

- Replace Hilton Head Submarine Cable 06/2009
- Varnville-Bluffton 115 kV Line Reconfiguration 06/2009
- Shamrock 230-115-69 kV Substation 06/2009
- Rebuild Georgetown Switching Station-Campfield 115 kV Lines 11/2009
- Sandy Run-Orangeburg 115 kV Line 04/2010
- Silver Bluff-North Augusta 115 kV Line Section 05/2010
- Carolina Forest 230-115 kV Substation 06/2010
- Rebuild Burke Road Tap for 115 kV Operation 12/2010
- Pee Dee-Lake City 230 kV Line 01/2011
- West County Line-North Augusta 115 kV Line Section 03/2011

Transmission Network

Planned Projects Included in Models

- Carolina Forest-Dunes #2 115 kV Line 12/2010
- Arcadia-Garden City #2 115 kV Line 06/2012
- Pomaria 230-69 kV Substation 12/2012
- Orangeburg 230-115 kV Substation 06/2013

Generation Resources

Existing Connected Generation

Cross 1- 4

Grainger 1, 2

Hilton Head Turbines 1- 3

Jefferies 1, 2, 3, 4, 6 (Hydro)

Jefferies 1-4 (Steam)

Myrtle Beach Turbines 1-5

Montenay Charleston

J.S. Rainey Power Block 1

J.S. Rainey 2A, 2B

J.S. Rainey 3-5

Spillway

St. Stephen 1-3

V.C. Summer

Winyah 1-4

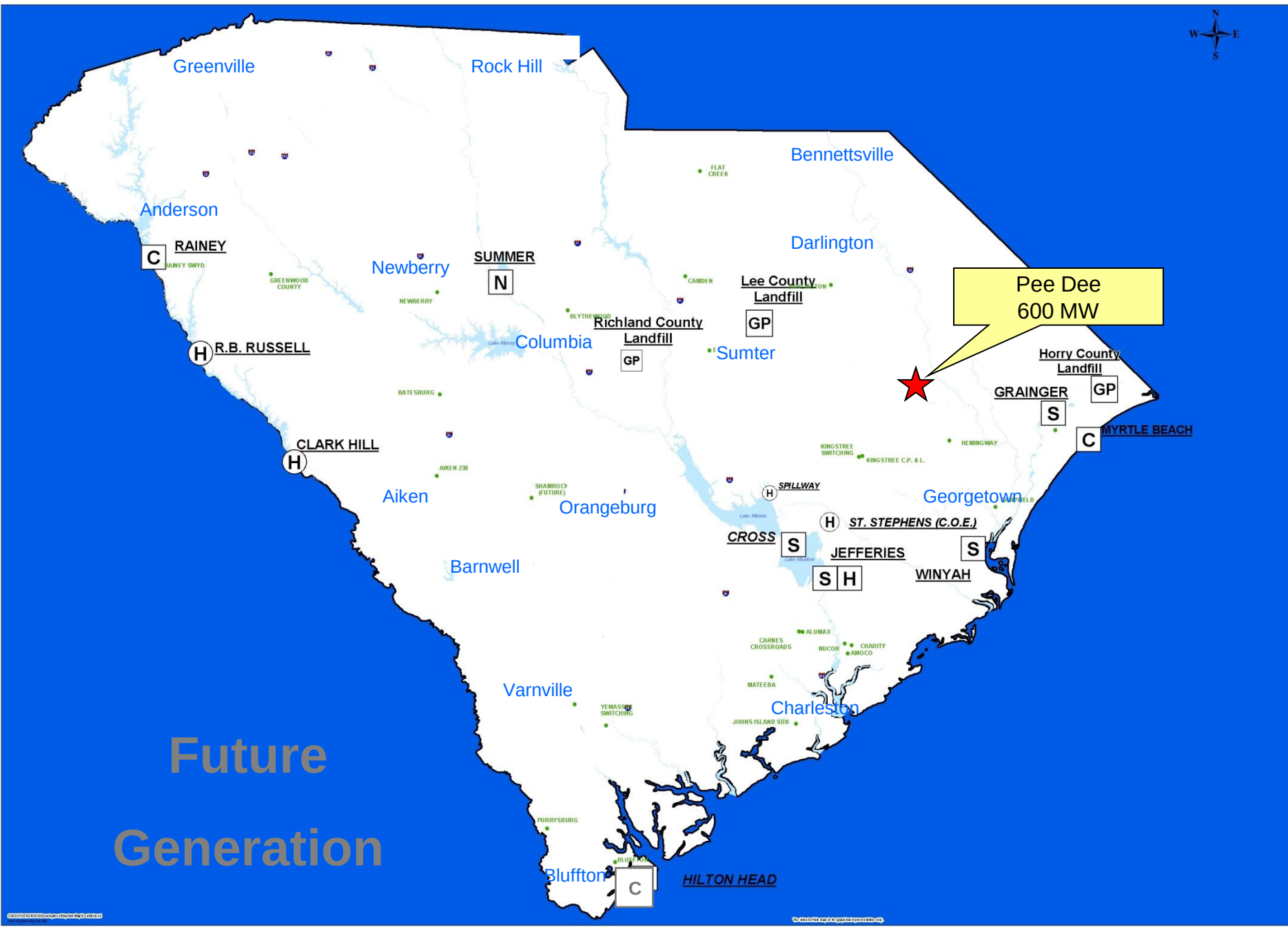
Generation Resources

Projected Capacity in Models

Pee Dee (Jan 2014)

V. C. Summer #2 (June 2016)

V. C. Summer #3 (January 2019)



SCE&G

Transmission Planning Key Assumptions and Data

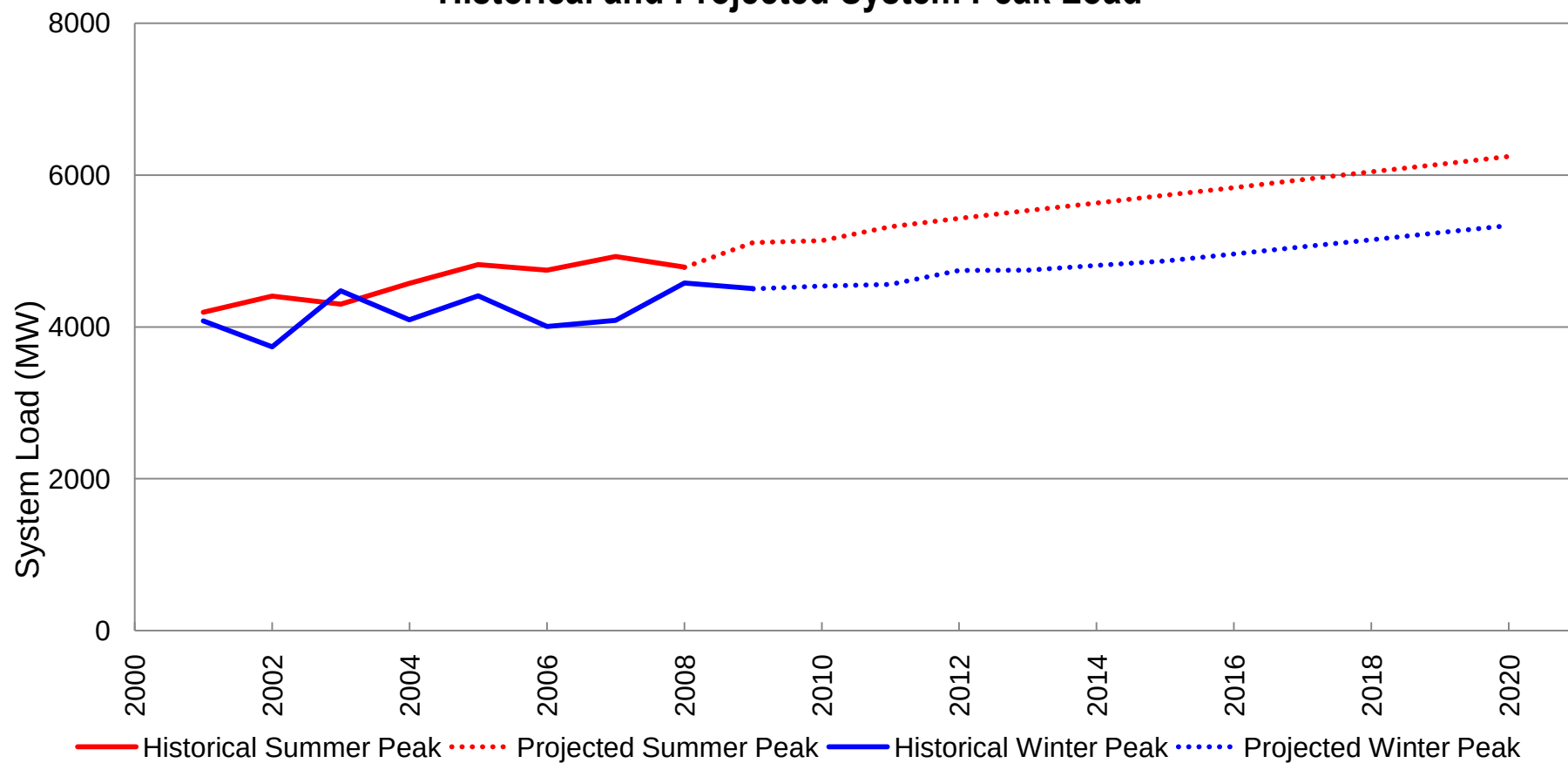
Load Forecasting

Power System Modeling

SCE&G Load Forecasting

- Load Forecast Performed Annually
- SCE&G is normally summer Peaking
- SCE&G creates a summer and winter forecast

Historical and Projected System Peak Load



SCE&G 10 Year Load Forecast

	<u>Summer</u>		<u>Winter</u>
2009	5,113 MW	2009/2010	4,538 MW
2010	5,136 MW	2010/2011	4,561 MW
2011	5,320 MW	2011/2012	4,744 MW
2012	5,431 MW	2012/2013	4,748 MW
2013	5,531 MW	2013/2014	4,812 MW
2014	5,632 MW	2014/2015	4,870 MW
2015	5,733 MW	2015/2016	4,962 MW
2016	5,834 MW	2016/2017	5,056 MW
2017	5,939 MW	2017/2018	5,149 MW
2018	6,041 MW	2018/2019	5,242 MW

Dispersed Load Forecast contains data for each load point on the Transmission System:

- SCE&G Retail Distribution Transformer Loads
- Industrial Customer Loads
- Wholesale Customer Loads

Load Forecast Process

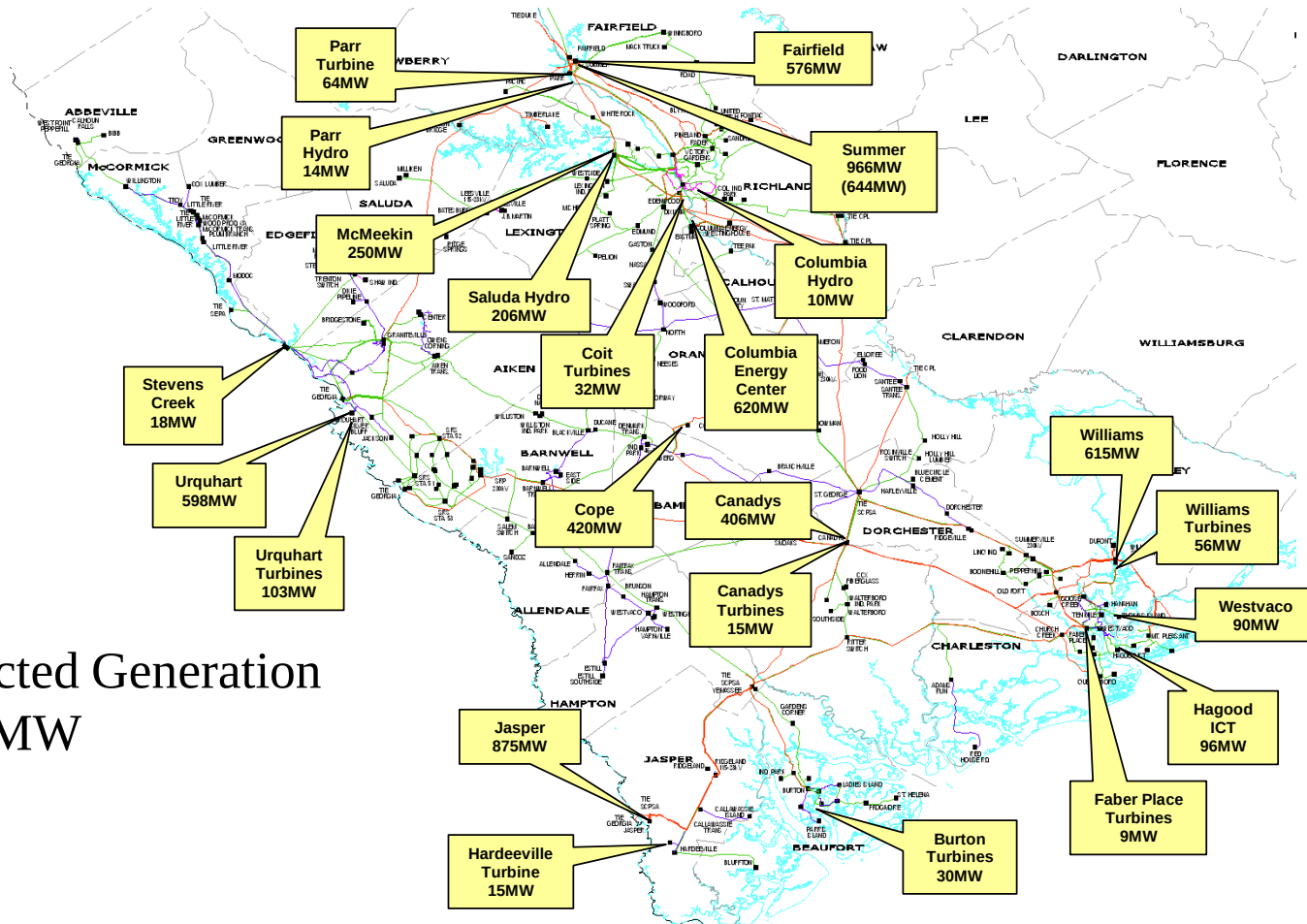
- Obtain peak meter data from most recent season and adjust for load switching
- Develop 10 year projected forecast based on:
 - 10 year historical loading
 - Feedback from Distribution Planning, Local Managers, Large Industrial Group and Transmission Services Manager
- Dispersed forecasted load points are integrated into Corporate forecasted load.
- Wholesale loads are modeled as provided by the customer in the annual submittal

Power System Modeling Assumptions

Model Development Assumptions

- Dispersed substation load forecast
 - Summer/Winter Peak, Off-Peak and Seasonal Load Levels
- Existing generation
 - Input from Generation Maintenance Schedule
- Generation additions
 - Input from Generation Expansion Plan
- Transmission additions
 - Input from Planners and Engineering
- Firm Transmission Service
 - Input from OASIS, Coordinate with Neighbors
- Neighboring Transmission Systems Modeled

Generation Assumptions



Connected Generation
6,682 MW

SCE&G Generation Expansion

- 34MW of SCE&G Peaking Generation planned for 2010
- 1117MW of SCE&G/Santee Cooper Base Load Nuclear Generation planned for 2016
- 1117MW of SCE&G/Santee Cooper Base Load Nuclear Generation planned for 2019

Stakeholder Comments and Input

Planning Key Assumptions

Regional and Inter-regional Assessment Studies

- SCRTP will review the results of
 - the most recent VACAR, SERC, and ERAG reliability studies
 - ERAG Future Year Study
 - VACAR 2013 Summer / Winter Reliability Study
 - VACAR 2015 Summer Reliability Study
 - SERC 2019 Summer Future Year Study

ERAG Future Year Studies

- Future Year Working Group members have been identified by the ERAG Management Committee
- Scope document for the SERC EAST – RFC 2014 Summer Near Term Study is under reviewed and will be approved in April 2009.

VACAR 2013 Summer / Winter Reliability Study

Purpose

- Assess the ability of transmission system to respond to a request for VACAR Reserves to replace a lost generator within VACAR.
- 2013 Summer and Winter Peak period.
- Work completed in Two Phases.

VACAR 2013 Summer / Winter Reliability Study

June 2008

- Phase 1: Assess transmission performance under normal conditions and loss of a single element.
- Phase 2: Assess transmission performance under multiple contingency events.
 - Include combinations with one or two common tower contingencies.

VACAR 2013 Summer / Winter Reliability Study Results

- Phase 1: The assessment under normal and single contingencies identified no thermal overloads in the South Carolina Electric & Gas or Santee Cooper systems.

VACAR 2013 Summer / Winter Reliability Study

Results

- Phase 2: The assessment under multiple contingencies identified thermal overloads in the South Carolina Electric & Gas and Santee Cooper systems.
 - 4 overloads in South Carolina Electric & Gas system
 - 14 overloads in Santee Cooper system
 - No facilities within the SCRTP footprint overloaded in Phase 2 deemed as significant facilities

VACAR 2015 Summer Reliability Study

March 2009

Purpose

- Analysis of the performance of the members' transmission system that identifies limits to power transfers occurring non-simultaneously among, the VACAR members.
- Analysis of the effects of heavy North to South and South to North parallel transfers on VACAR members inter-company transfer capabilities.
- Analysis of the effects of a moderate West to East intra-PJM parallel transfer on the VACAR members inter-company transfer capabilities.

VACAR 2015 Summer Reliability Study

Results

- No Facilities in South Carolina Electric & Gas system were identified as limitations in the 2015 VACAR Summer Reliability Study.
- Two Facilities in Santee Cooper's system were identified as limitations in the 2015 VACAR Summer Reliability Study
 - Winyah to Campfield 230 kV Line (SCEG-CPLE and SCEG-DVP)
 - Pee Dee to Marion 230 kV Line (SCPSA-Duke)

VACAR 2015 Summer Reliability Study

Parallel Transfers

- Two additional facilities in South Carolina Electric & Gas and Santee Coopers' system are impacted for North to South parallel transfers.
- One additional facility in South Carolina Electric & Gas and Santee Coopers' system are impacted for South to North parallel transfers.
- Facilities in South Carolina Electric & Gas and Santee Cooper's system are not impacted by West to East transfers.

SERC LTSG 2019 Future Year Study

March 2009

Purpose

- Analysis of the performance of the members' transmission system that identifies limits to power transfers occurring non-simultaneously among, the SERC members.
- Evaluate the effects of the potential Southeast Generation Expansion as a scenario case.
- Analysis of the performance of the members' transmission system under normal conditions and loss of a single element using the reference and scenario case.

SERC LTSG 2019 Future Year Study Results

- One Facility in Santee Cooper's system was identified as a limitation in 2019.
 - Conway to Dunn 115 kV Line
- Four Facilities in South Carolina Electric & Gas' system were identified as limitations in 2019.
 - McIntosh to Jasper 115 kV
 - V.C. Summer 2 to Newport 230 kV Interconnection (SCEG-Duke)
 - Vogtle to Savannah River Services 230 kV Interconnection (SCEG-Southern)
 - White Rock to Bush River 115 kV Interconnection (SCEG-Duke)

Regional and Inter-regional Assessment Studies

Questions ?

SIRPP Economic Planning Studies

SCRTP Area Initial Results

SIRPP Activities

- Two Meetings in the last year (04/03/08 and 07/10/08) and three Conference Calls/Webex in the last year (11/13/08, 03/03/09 and 03/16/09)
- Selected Five SIRPP Economic Studies
- Work on Preliminary Results is ongoing

Five Economic Transfer Scenarios Selected for Study

- EES to GA-ITS transfer of 2000MW
- PJM CLASSIC to SOCO transfer of 3000MW
- PJM WEST to SOCO transfer of 2000MW
- SOCO to PJM CLASSIC transfer of 3000MW
- SPP to SIRPP transfer of 5000MW

Southeast Inter-Regional Participation Process

2009 Economic Sensitivity – Preliminary Results

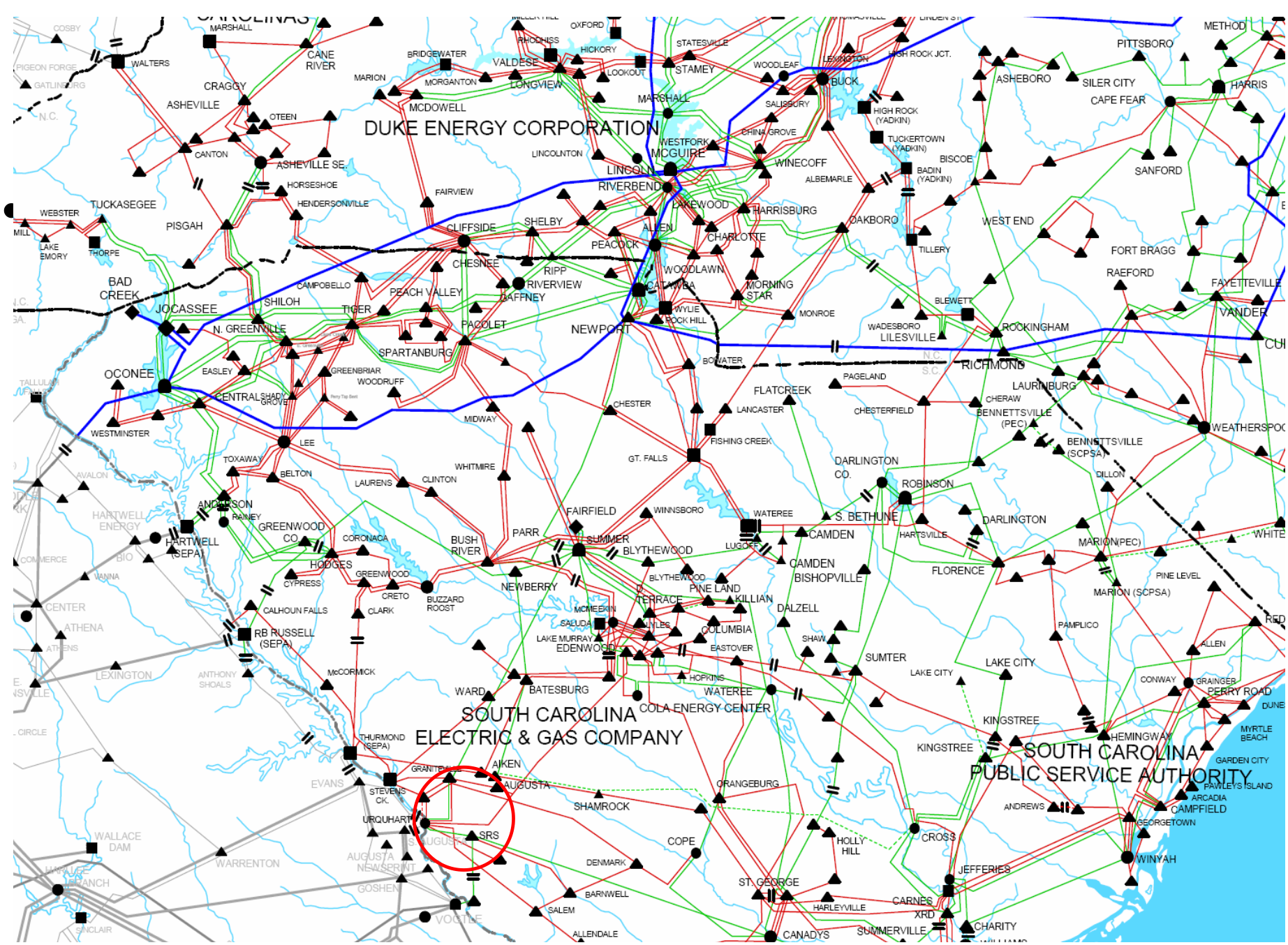
February 19, 2009

Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
SOCO to PJM	3000 MW	SOCO	PJM	2014
Load Flow Cases				
2008 Series MMWG: 2014 Summer Peak				

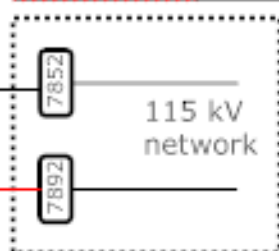
Transmission System Impacts

AREA	Limiting Element	Rating (MVA)	TDF	Contingency	Scenario	Project
SCEG	370302 GRANITEVILLE 230 370306 URQ 230 1	509.9	3.17%	370015 SRS 230 370406 CANADYS 230 1 370360 BARNWEL 115 370380 S.R.P. 115 1	N/A	P1
SCEG	370302 GRANITEVILLE 230 370306 URQ 230 1	509.9	3.05%	370015 SRS 230 370380 S.R.P. 115 1 370015 SRS 230 370380 S.R.P. 115 2	N/A	P1
SCEG	370302 GRANITEVILLE 230 370306 URQ 230 1	509.9	3.06%	370360 BARNWEL 115 370380 S.R.P. 115 1 370380 S.R.P. 115 370915 STA#53 115 1	N/A	P1
SCEG	370302 GRANITEVILLE 230 370306 URQ 230 1	509.9	3.16%	370015 SRS 230 370406 CANADYS 230 1 370380 S.R.P. 115 370915 STA#53 115 1	N/A	P1



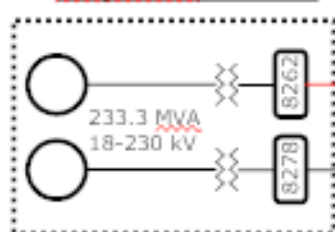
Ward 230 kV

Graniteville 230/115kV



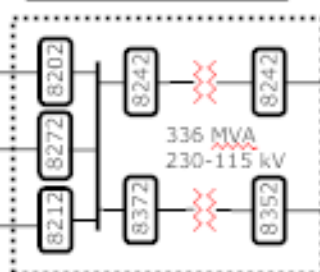
115 kV
network

Urquhart 230 kV



Vegtle 230 kV
(SQCQ)

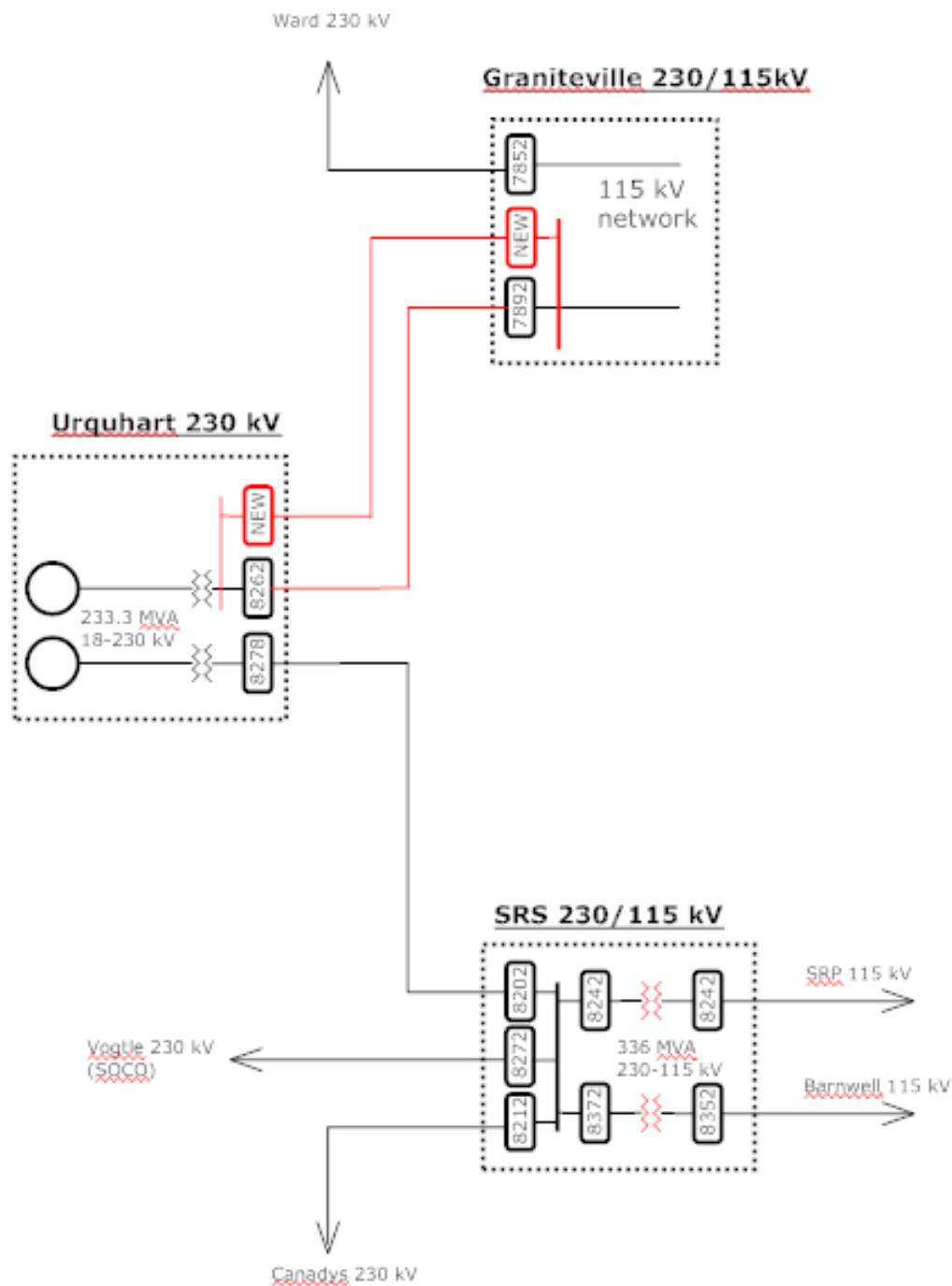
SRS 230/115 kV



SRP 115 kV

Barnwell 115 kV

Canadys 230 kV



Southeast Inter-Regional Participation Process 2009 Economic Sensitivity – Preliminary Results February 19, 2009

Potential Solutions for Identified Problems

The following projects are identified as potential solutions to address the identified constraints and are based on the assumptions used in this study. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission system expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Estimated Cost
P1	370302 GRANITEVILLE 230 370306 URQ 1 Construct second circuit (Graniteville to Urquhart) Construct a 17.6 mile 230 kV line, Bundled 1272 ACSR conductor at 125°C	5/1/2014	\$4,300,000 ₁

1. Cost to accelerate this existing project two years from 2016 to 2014.

SIRPP Economic Planning Studies

Questions?

SCRTP Website

www.scrtp.com

SCRTP Stakeholder Group

Discussion of SCRTP Process

Next Meeting

- Stakeholders notified by email
- Discuss initial results of reliability studies
- Discuss options to address found constraints
- Stakeholders can provide additional options

South Carolina Regional Transmission Planning Stakeholder Meeting

Columbia Metropolitan Convention Center

Columbia, SC

March 19, 2009