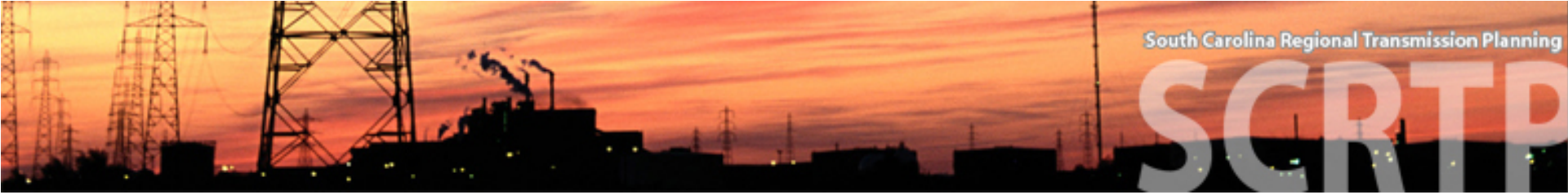


South Carolina Regional Transmission Planning

Stakeholder Meeting

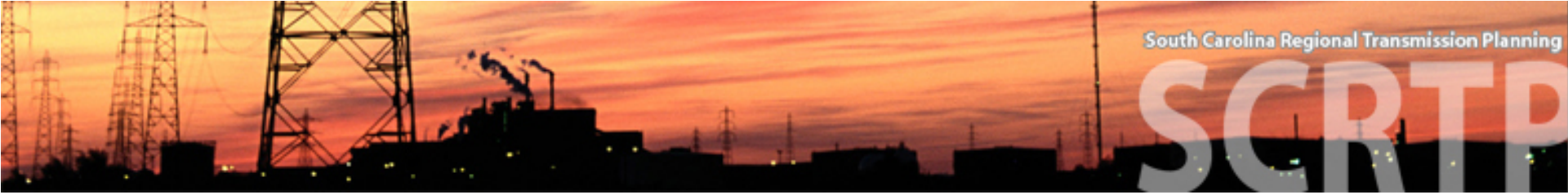
SCE&G Lake Murray Training Center

Lexington, SC

December 18, 2014

SCE&G SM
A SCANA COMPANY

santee cooper

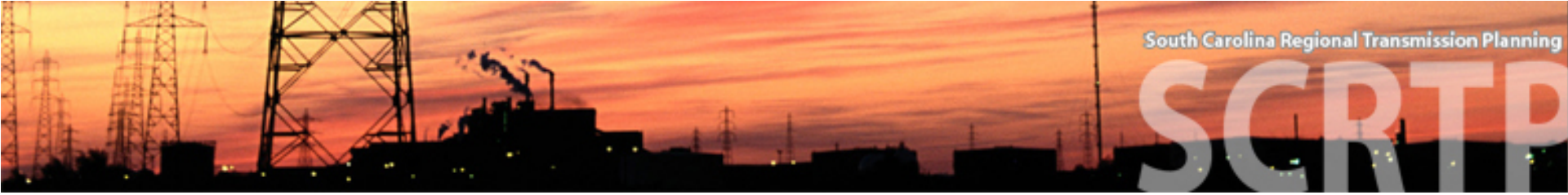


Purpose and Goals of Today's Meeting

- FERC Order 1000 Update
- Review and Discuss Key Assumptions and Data for Next Planning Cycle
- Review and Discuss Current Transmission Expansion Plans
- Review and Discuss Assessment and Planning Studies
  - CTCA
  - ERAG
  - SERC
  - Other
- EIPC Stakeholder Group Activities

SCE&G SM A SCANA COMPANY

santee cooper



FERC Order 1000
Transmission Planning and Cost Allocation

Clay Young

SCE&G SM
A SCANA COMPANY

santee cooper

FERC Order 1000

- Planning Requirements (Regional and Interregional)
  - Reliability
  - Economics
  - Public Policy
- Cost Allocation Requirements
- Non-incumbent Developer Requirements

Order 1000 Update

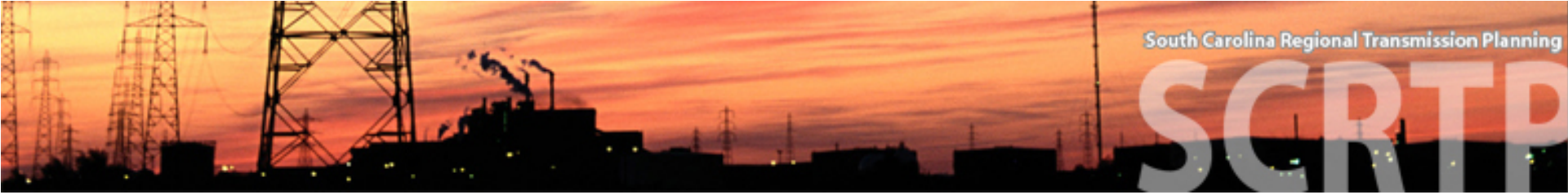
- Regional - Milestones
  - July 21, 2011 FERC issued Order 1000
  - Oct. 11, 2012 SCE&G filed a revised Attachment K (v1) including proposed Order 1000 Regional Processes
  - April 18, 2013 FERC issued Order Accepting SCE&G filing but requiring revisions
  - Oct. 15, 2013 SCE&G filed a revised Attachment K (v2) including proposed revisions

Order 1000 Update

- (Continued) Regional – Milestones
  - May 14, 2014 FERC issued Order accepting SCE&G filing but requiring additional revisions
  - July 14, 2014 SCE&G filed a revised Attachment K (v3) including proposed additional revisions
  - FERC is reviewing
  - FERC established an Effective Date of April 19, 2013

Order 1000 Update

- Interregional - Milestones
  - July 10, 2013 SCE&G filed a revised Attachment K including proposed Order 1000 Interregional Processes
  - FERC is reviewing
  - Proposed Effective Date – January 1, 2015



Transmission Planning Key Assumptions and Data

SCE&G

Phil Kleckley

SCE&G SM
A SCANA COMPANY

santee cooper

Modeling Assumptions and Data

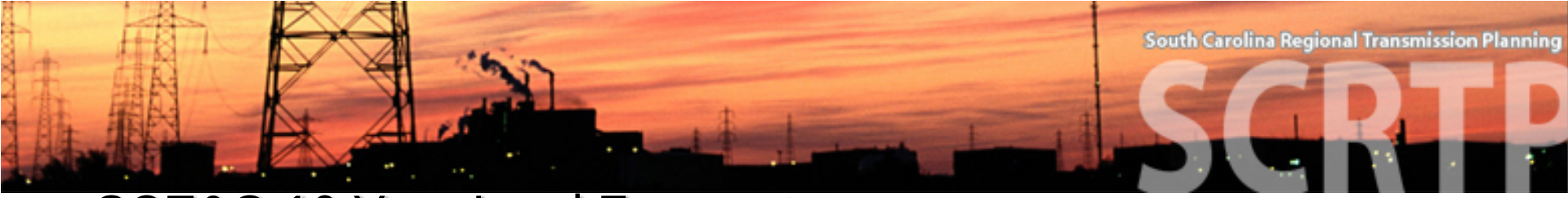
Dispersed Substation Load Forecast

- Summer/Winter Peak, Off-Peak and Seasonal Load Levels
- Resource Planning provides 10 Year system load forecasts
- Transmission Planning creates dispersed substation load forecasts

Load Forecast Process

Resource Planning Input

- Develop 10 year projected forecast based on:
  - 10 year historical load summer and winter loads
  - Load factors by customer class
  - Considers weather, personal income, population growth, economic conditions, load management, energy efficiency, etc
  - Applies regression analysis to historical data to develop models
  - Applies forecasted growth rates to develop future projections



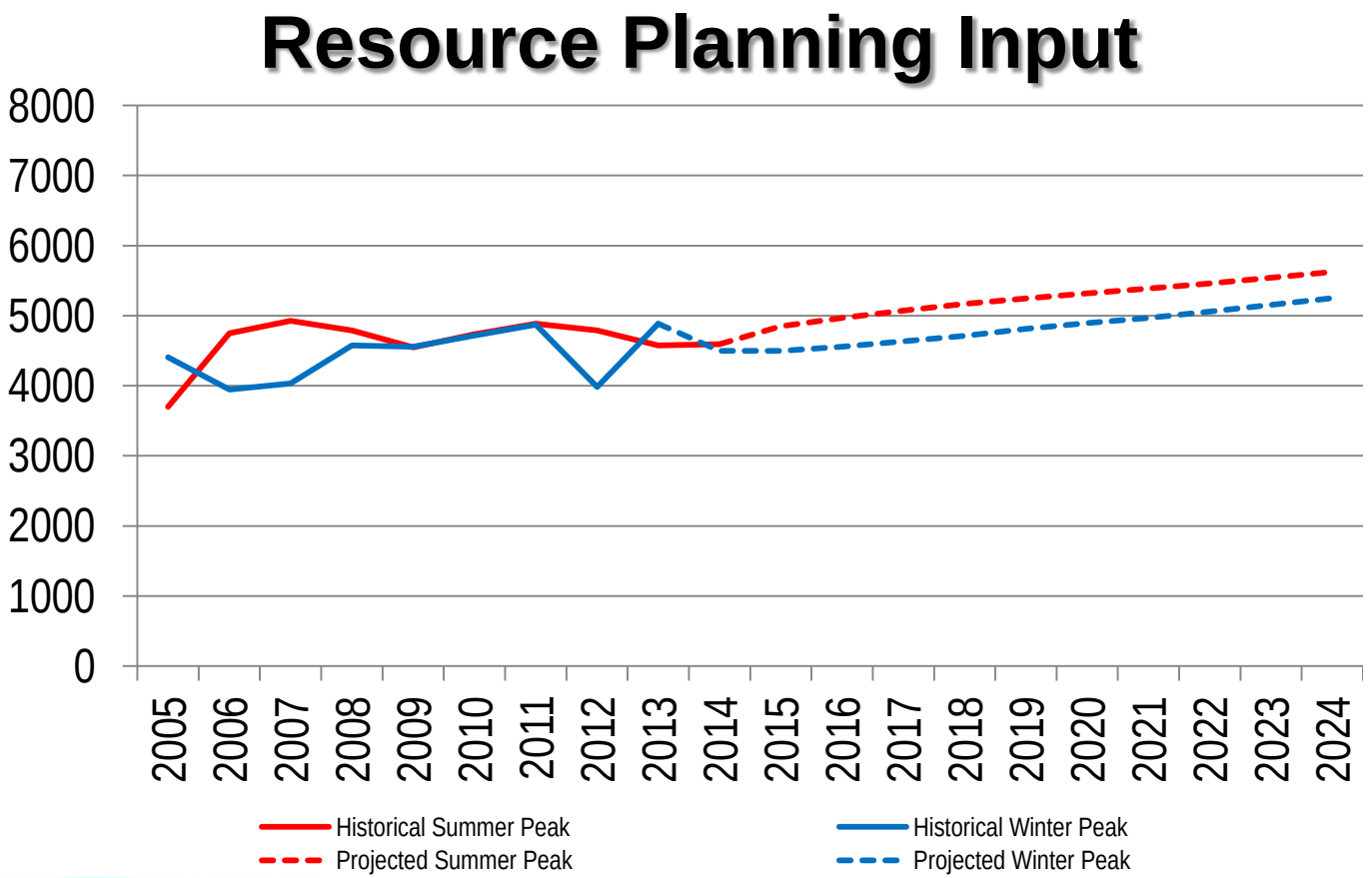
SCE&G 10 Year Load Forecast

	Summer		Winter
2015	4,849 MW	2014/2015	4,496 MW
2016	4,968 MW	2015/2016	4,557 MW
2017	5,073 MW	2016/2017	4,632 MW
2018	5,166 MW	2017/2018	4,713 MW
2019	5,245 MW	2018/2019	4,814 MW
2020	5,319 MW	2019/2020	4,894 MW
2021	5,385 MW	2020/2021	4,967 MW
2022	5,458 MW	2021/2022	5,057 MW
2023	5,550 MW	2022/2023	5,152 MW
2024	5,623 MW	2023/2024	5,249 MW

SCE&G℠ A SCANA COMPANY

santee cooper

Load Forecast Process



SCE&G SM
A SCANA COMPANY

santee cooper

Load Forecast Process

Transmission Planning Input

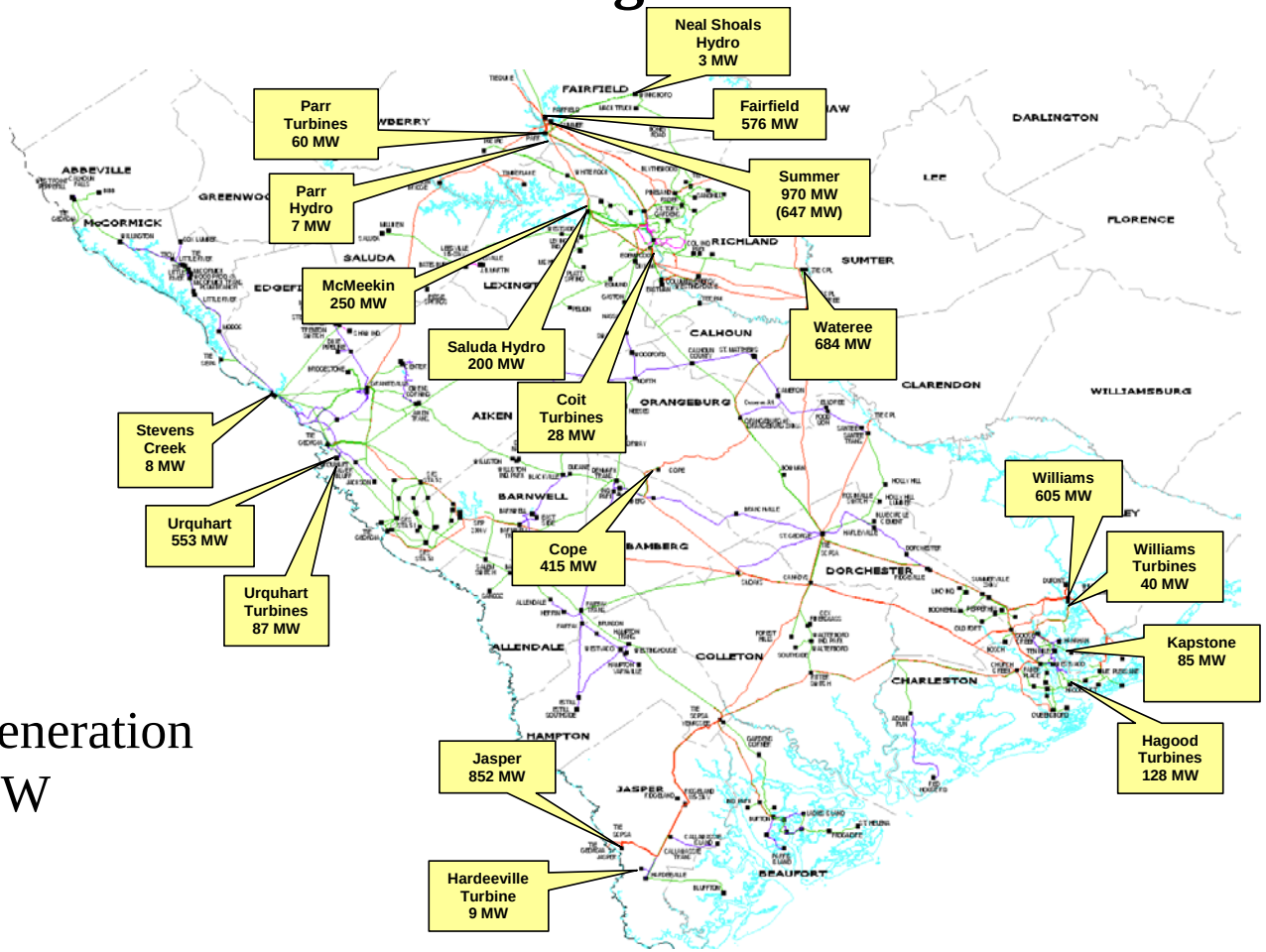
- Obtain summer and winter snapshot meter data from most recent seasons and adjust for load switching
- Develop 10 year projected forecast based on:
  - 10 year historical loading
  - Feedback from Distribution Planning, Local Managers, Large Industrial Group and Transmission Services Manager
- Wholesale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

Modeling Assumptions and Data

Generation

- Annual generator ratings used
- Input from Generation Expansion Plan – Reductions/Additions
- Input from Generation Maintenance Schedule
- Generators dispatched economically
- Merchant Generators included, modeled at contracted output

Existing Generation



Rated Generation
5,237 MW

SCE&G SM
A SCANA COMPANY

santee cooper

Generation Plan

Reductions

- 385 MW Coal 2013
- 345 MW Coal 2018

Generation Plan

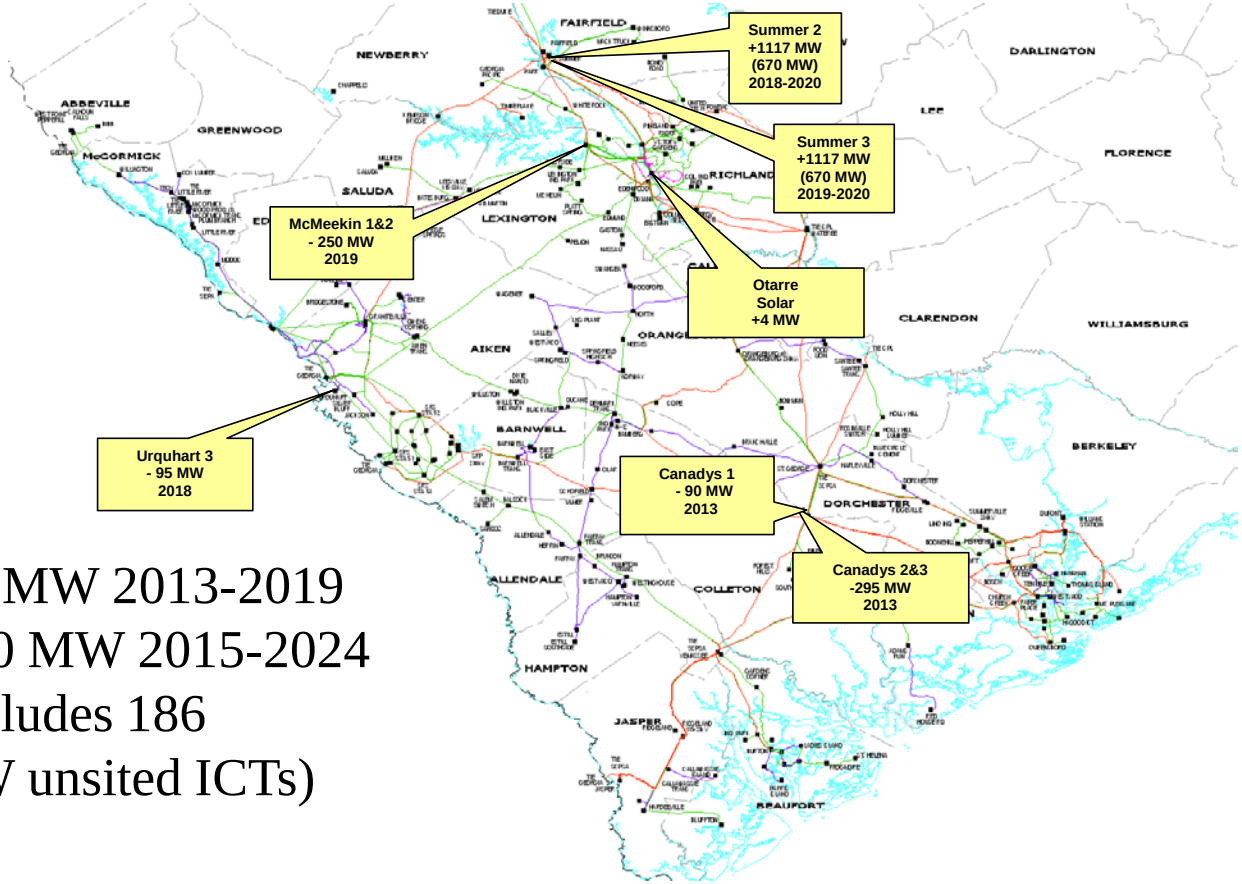
Additions

- 4 MW solar in Cayce planned for 2015
- 1117 MW of SCE&G/Santee Cooper Base Load Nuclear Generation planned for 2018 (V. C. Summer)
- 1117 MW of SCE&G/Santee Cooper Base Load Nuclear Generation planned for 2019 (V. C. Summer)

SCE&G SM
A SCANA COMPANY

santee cooper

Generation Changes

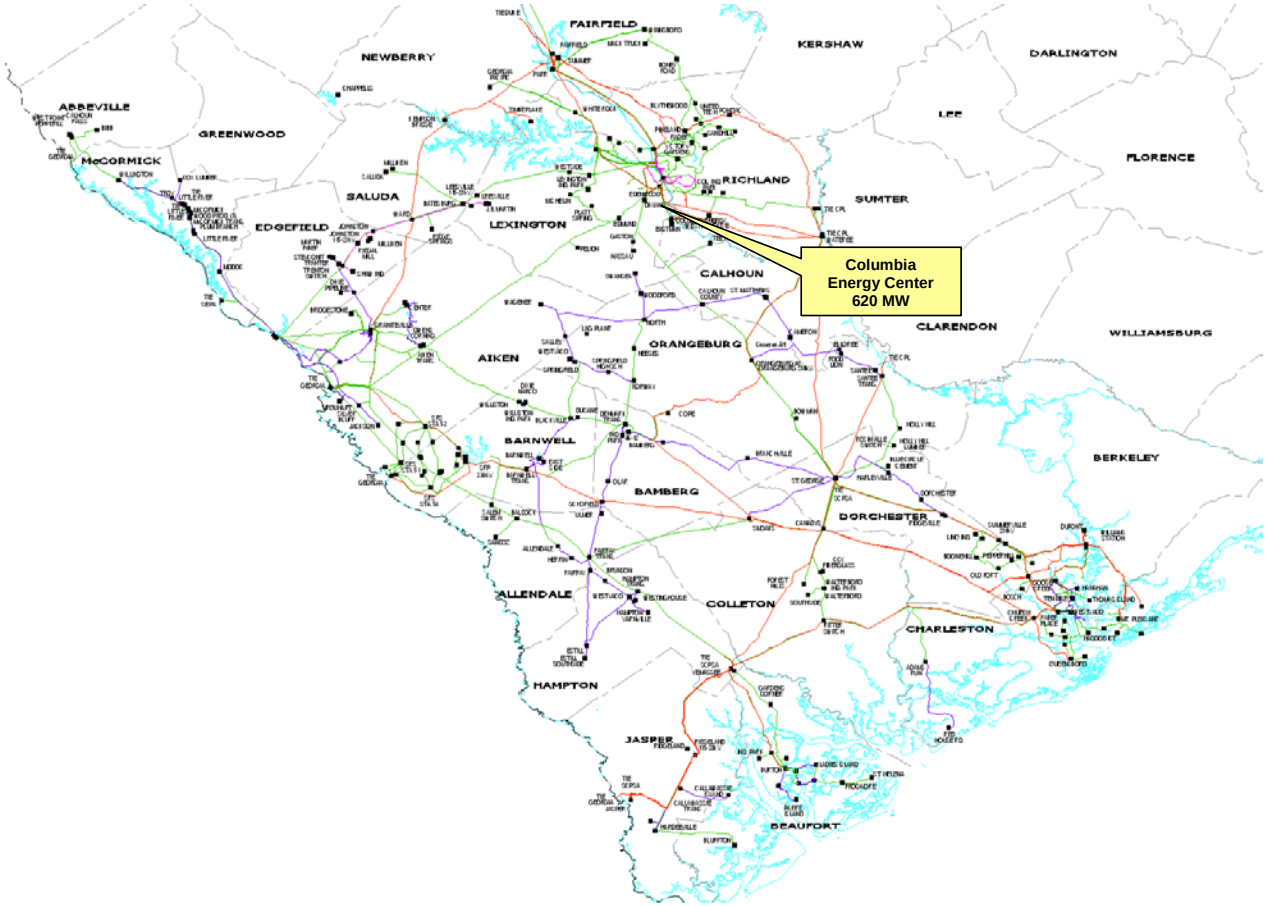


- 730 MW 2013-2019
+ 1530 MW 2015-2024
(includes 186
MW unsited ICTs)

SCE&G SM
A SCANA COMPANY

santee cooper

Merchant Generation



SCE&G SM
A SCANA COMPANY

santee cooper

Modeling Assumptions and Data

Transmission Network

- Input from Transmission Plan
- Neighboring Transmission Systems Modeled

Modeling Assumptions and Data

Planned Transmission Facilities

5/15/2014

South Carolina Electric & Gas Planned Transmission Facilities	
Planned Project	**Tentative Completion Date**
Faber Place Replace Switch House	Jul-14
Eutawville 115 kV Line Construct	Jul-14
Bayview-Mt Pleasant 115 kV Line Rebuild	Oct-14
VCS2 - Lake Murray 230 kV #2 Line Construct	Oct-14
Edenwood – Columbia Industrial Park 115 kV	Dec-14
Hagood - Bee Street 115 kV Rebuild	Jan-15
Mt Pleasant-Osceola Pk 115 kV rebuild	Jan-15
Clemson Wind Turbine 115 kV Tap Construct	Feb-15
Denny Terrace - Lyles 230 kV Line Upgrade	Apr-15
Aiken 115 kV Switching Station	May-15
Aiken Transmission - Aiken Hampton 115 kV Line Section Upgrade	May-15
Bluffton - Santee Cooper 115 kV Tie Line Construct	May-15

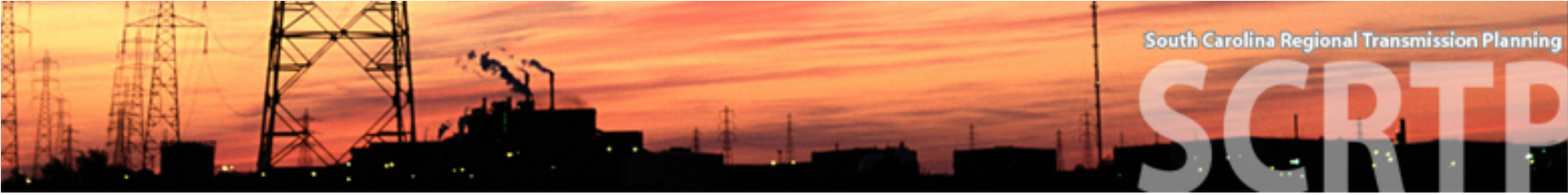
SCE&G SM A SCANA COMPANY

santee cooper

Modeling Assumptions and Data

System Interchange

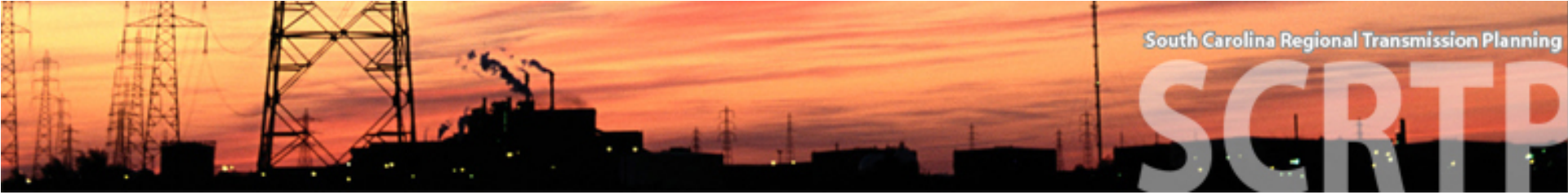
- Firm scheduled transfers included
- Coordinated with Neighbors



Questions?

SCE&G SM
A SCANA COMPANY

santee cooper



Transmission Planning Key Assumptions and Data

Santee Cooper

Rick Thornton

SCE&G SM
A SCANA COMPANY

santee cooper

Components

- Demand Forecast
- Transmission Network
- Generation Resources
- Actual System Operations

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)

Santee Cooper 10 Year Load Forecast

	Summer		Winter
2014	4,875 MW	2014/2015	5,747 MW
2015	5,198 MW	2015/2016	5,682 MW
2016	5,143 MW	2016/2017	5,589 MW
2017	5,053 MW	2017/2018	5,499 MW
2018	4,959 MW	2018/2019	5,482 MW
2019	4,931 MW	2019/2020	5,525 MW
2020	4,975 MW	2020/2021	5,577 MW
2021	5,032 MW	2021/2022	5,637 MW
2022	5,091 MW	2022/2023	5,703 MW
2023	5,153 MW	2023/2024	5,770 MW

SCE&G SM
A SCANA COMPANY

santee cooper

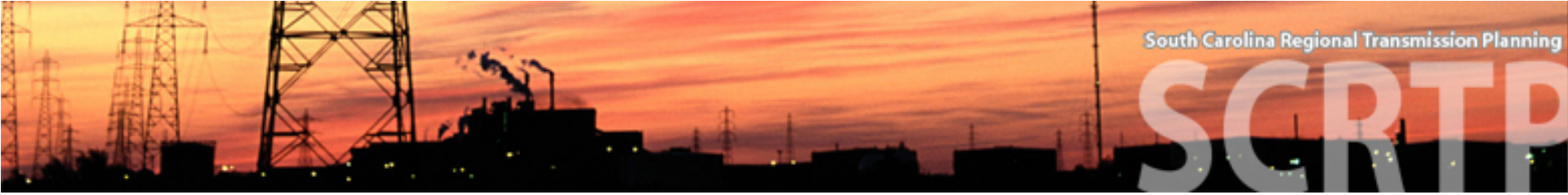
Transmission Network

Models include:

- Existing transmission system as well as committed Santee Cooper additions (uncommitted facilities are subject to change in scope or date).
- Confirmed firm PTP transmission service reservations
- 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 rating methodology is applied to transmission facilities.
- Base case models are updated annually.
- Study models may be updated prior to any study effort.

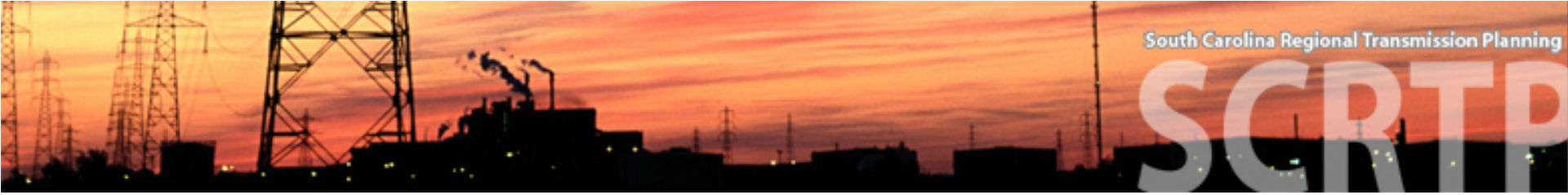


Planned Transmission Facilities

• Winnsboro 230-69 kV Substation	05/01/2014
• VC Summer-Winnsboro 230 kV Line	05/01/2014
• VC Summer-Pomaria 230 kV #2 Line	06/01/2014
• Bucksville 230-115 kV Substation	06/01/2014
• Richburg 230-69 kV Substation	03/31/2015
• Winnsboro-Richburg 230 kV Line	03/31/2015
• Purrysburg 230-115kV Substation	06/01/2015
• Purrysburg-McIntosh #2 230 kV Line	06/01/2015
• Winyah - Bucksville 230 kV Line	12/31/2015
• Richburg-Flat Creek 230 kV Line	06/01/2016
• Bucksville-Garden City 115kV Line	06/01/2016
• Bucksville-Myrtle Beach 115 kV Line	12/31/2016
• Sandy Run 230-115 kV Substation	05/31/2018
• Marion-Red Bluff 230 kV Line	12/31/2018
• Pomaria-Sandy Run-Orangeburg 230 kV Line	06/30/2019

SCE&G SM A SCANA COMPANY

santee cooper



Generation Resources

Existing Connected Generation

Cross 1- 4

Winyah 1-4

Hilton Head Turbines 1- 3

Myrtle Beach Turbines 1-5

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

Jefferies 1, 2 (Steam)

J.S. Rainey Power Block 1

J.S. Rainey 2A, 2B

J.S. Rainey 3-5

Spillway (Hydro)

St. Stephen 1-3 (Hydro)

V.C. Summer #1

SCE&G SM A SCANA COMPANY

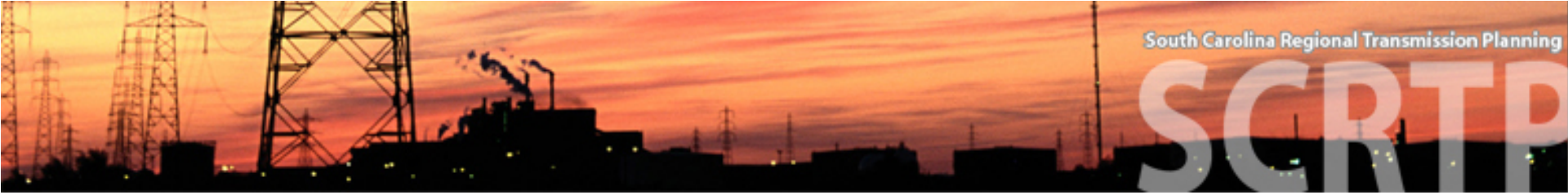
santee cooper

Generation Resources

Projected Capacity in Models

V. C. Summer #2 (2018)

V. C. Summer #3 (2019)



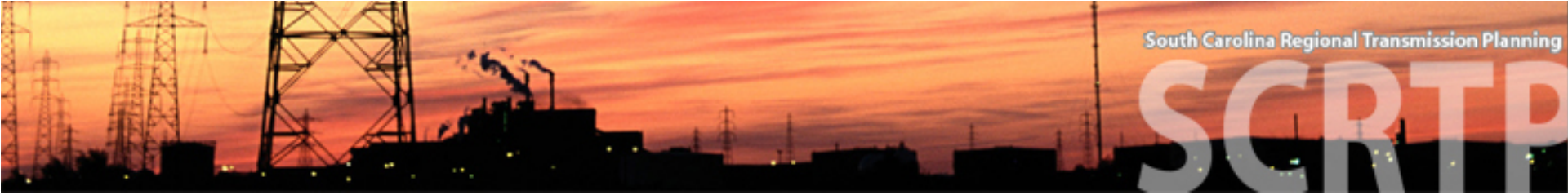
Questions?

SCE&G SM
A SCANA COMPANY

santee cooper

Reliability Transmission Planning Studies

- March – April Time Frame
- May 1, 2015 - TPL Compliance Filing
- Results reported in 2Q meeting



Stakeholder Input on Key Assumptions and Data

SCE&G SM A SCANA COMPANY

santee cooper

Current Transmission Expansion Plans

SCE&G

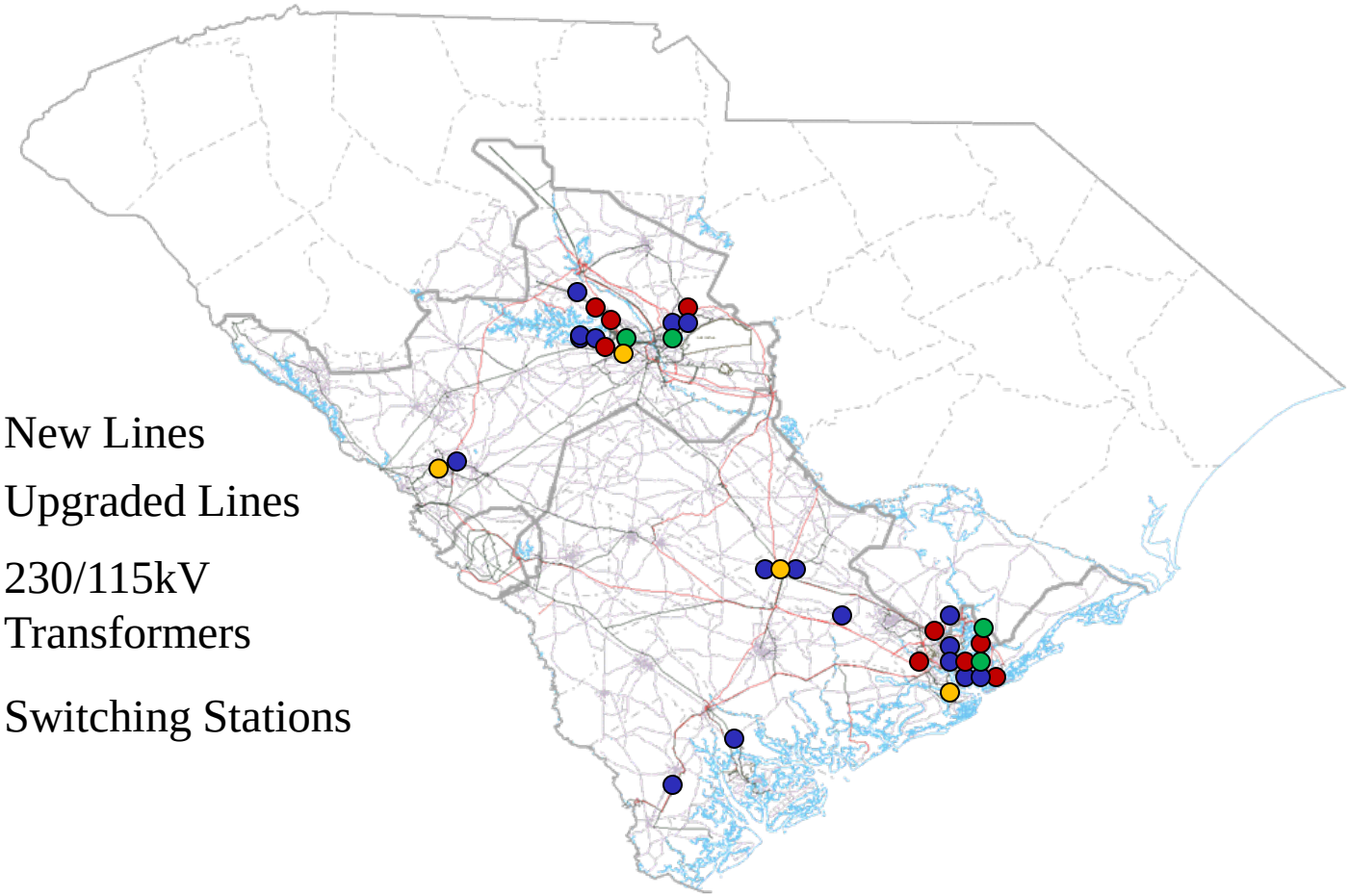
Jeff Neal

- These projects represent the current transmission plans within the SCRTP footprint

- The expansion plan is continuously reviewed and may change due to changes in key assumptions and data

- This presentation does not represent a commitment to build

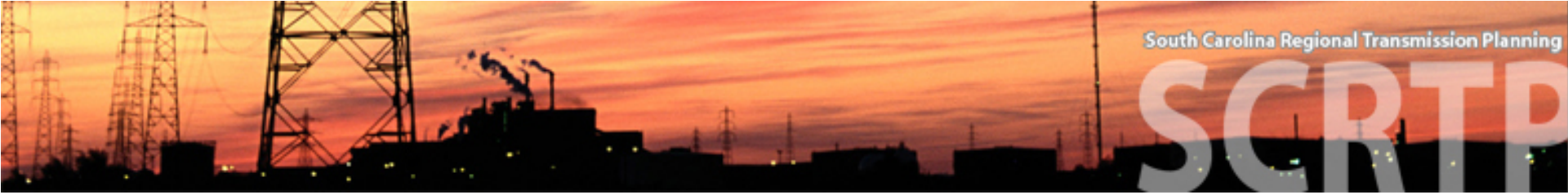
SCE&G Planned Projects



- New Lines
- Upgraded Lines
- 230/115kV Transformers
- Switching Stations

SCE&G℠ A SCANA COMPANY

santee cooper



SCE&G Current Projects

- Active Projects
  - Denny Terrace – Lyles 230/115kV Rebuild (NND)
  - Saluda River Transmission 230/115 kV Substation (NND)
  - Hagood – Bee Street 115kV Rebuild (System Improvement)

- Future Projects
  - Lake Murray – SRT – Lyles 230/115kV
  - St. George 230kV Substation
  - Hagood – Faber Place 115kV Rebuild
  - Cainhoy 230/115 kV Transmission Substation
  - Burton – Yemassee 115kV #2 Rebuild

SCE&G SM A SCANA COMPANY

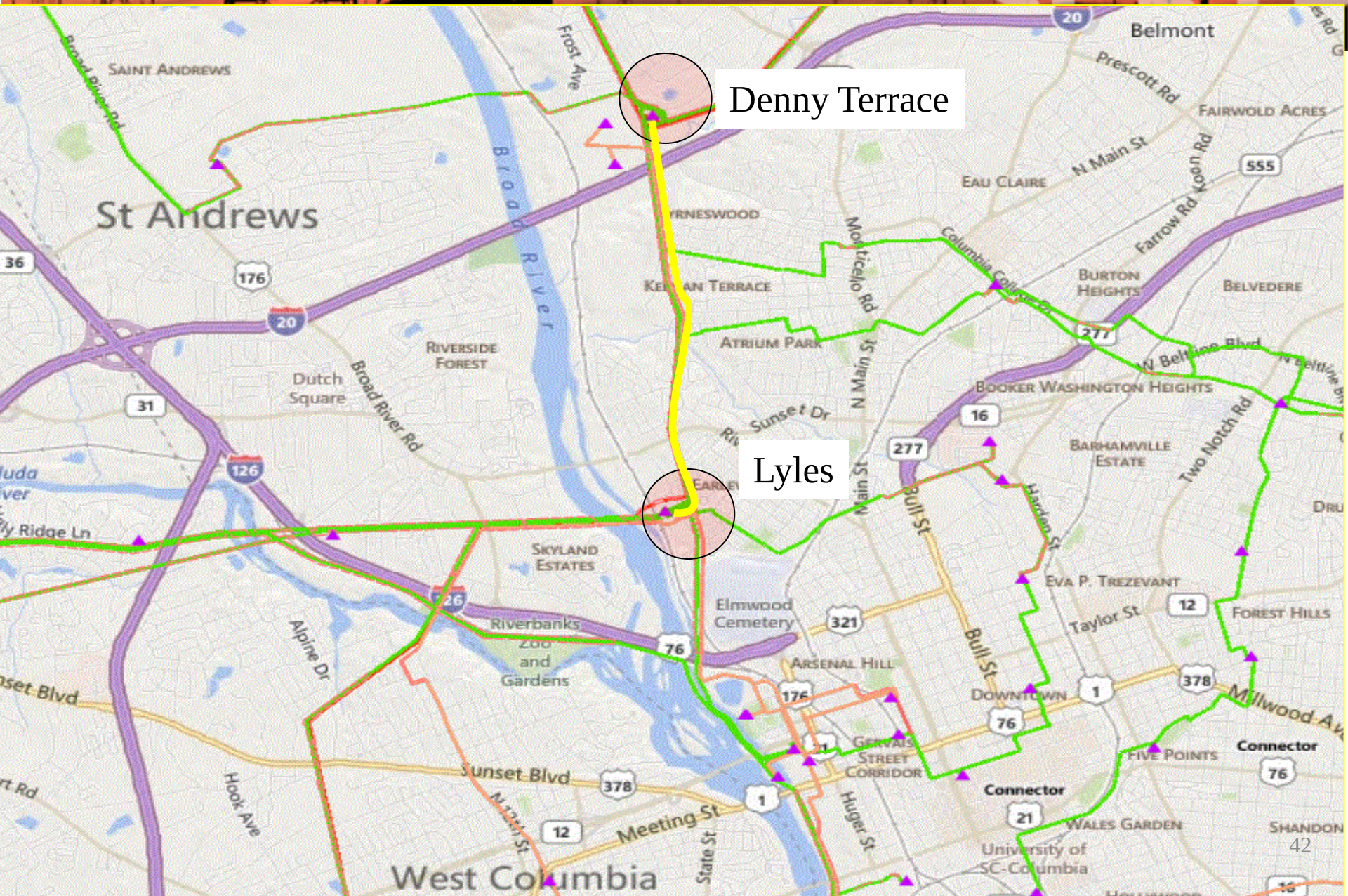
santee cooper

Active Projects

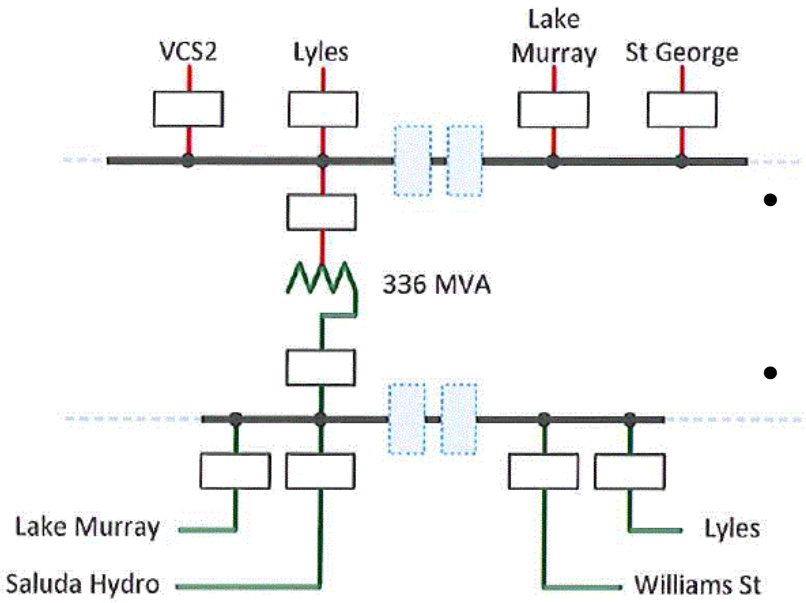
Denny Terrace – Lyles 230/115 kV Rebuild

- Tear out existing lattice tower construction, rebuild 230 kV SPDC B1272 ACSR conductor, approximately 2.6 miles
  - SPDC construction to include:
    - Denny Terrace – Lyles 230 kV (NND)
    - Denny Terrace – Lyles 115 kV #2 (NERC TPL System Improvement)
- Upgrade 230 kV terminals at Denny Terrace and Lyles
- Scheduled for completion by January 30, 2015

Denny Terrace – Lyles 230/115 kV Rebuild



Saluda River Transmission 230/115 kV

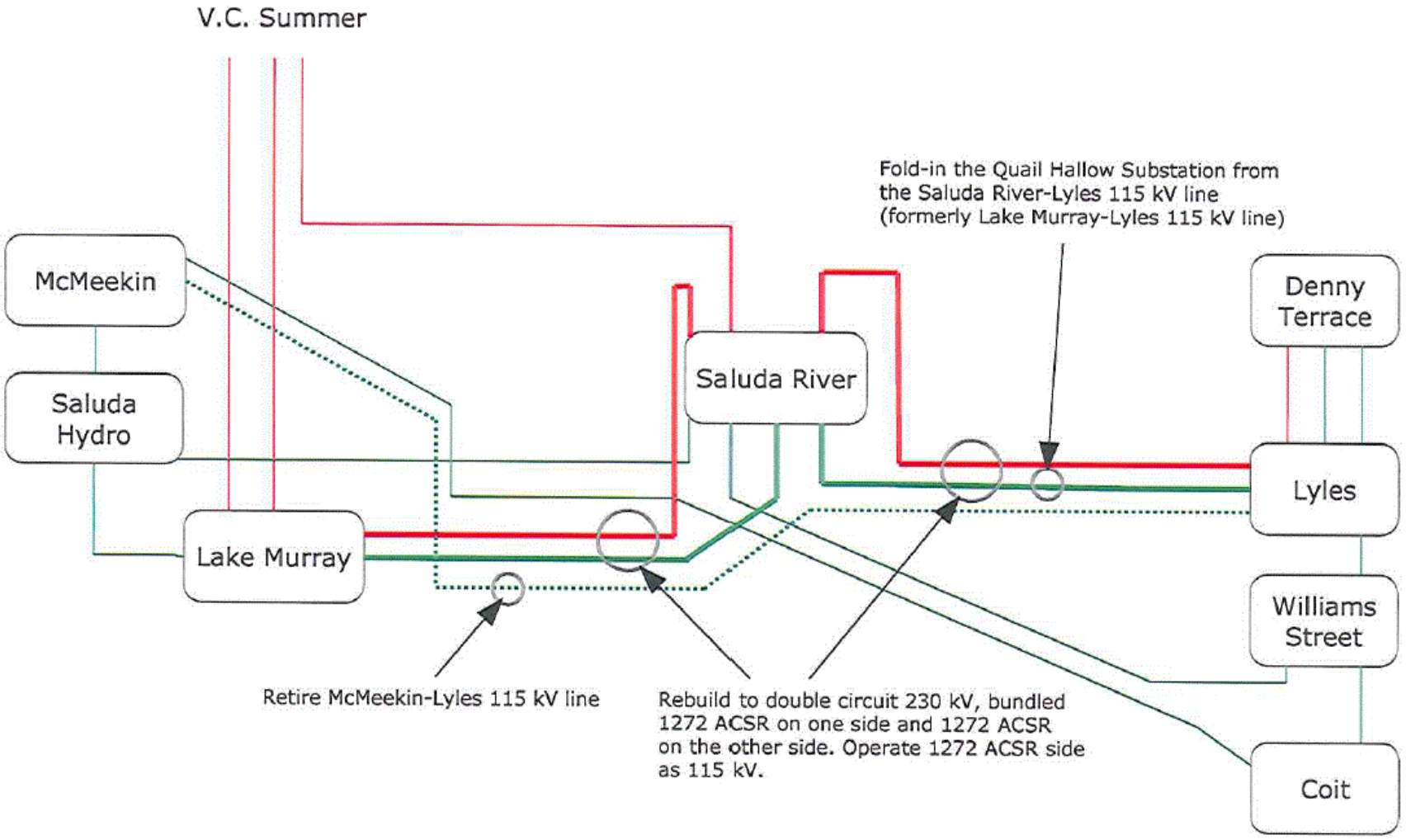


- Construct 230/115 kV substation at Saluda River
  - One 230/115 kV 336 MVA Autotransformer
  - Four 230 kV line terminals
  - Four 115 kV line terminals
- Lake Murray – Lyles 230 kV construction and fold-in added to project after decision to retire McMeekin (NERC TPL System Improvement)
- Lyles – SRT to be completed by 5/31/15, SRT – Lake Murray to be completed by 10/1/15 (tentative) (NERC TPL System Improvement)

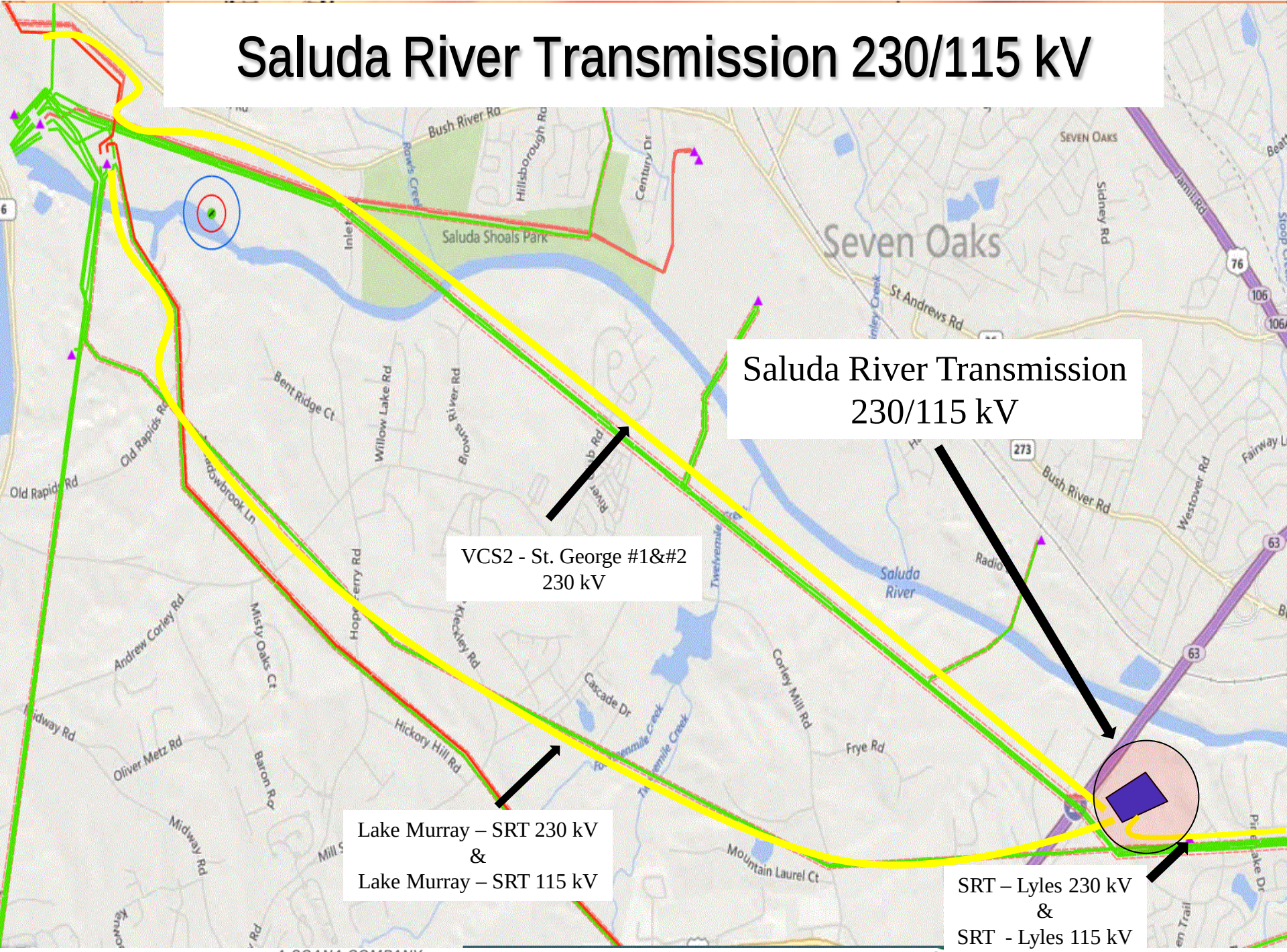
SCE&G SM A SCANA COMPANY

santee cooper

Saluda River Transmission 230/115 kV



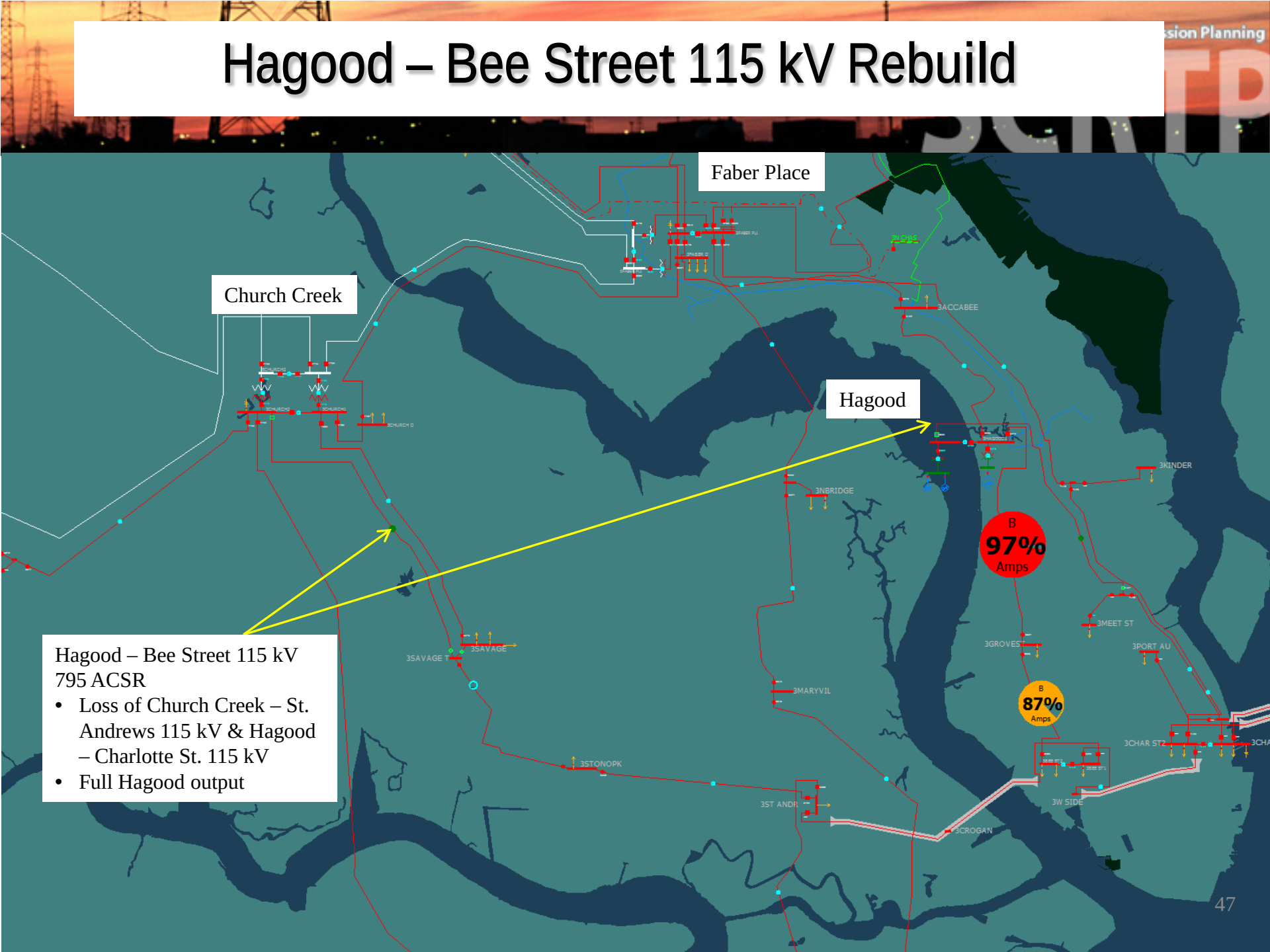
Saluda River Transmission 230/115 kV



Hagood – Bee Street 115 kV Rebuild

- Rebuild existing 115 kV line between Hagood – Bee Street, upgrading from 795 ACSR to B795 ACSR.
- Project required to alleviate NERC Category C contingency in combination with full Hagood ICT's output, and for improved reliability of steel pole construction
- Scheduled for completion by December 31, 2014

Hagood – Bee Street 115 kV Rebuild

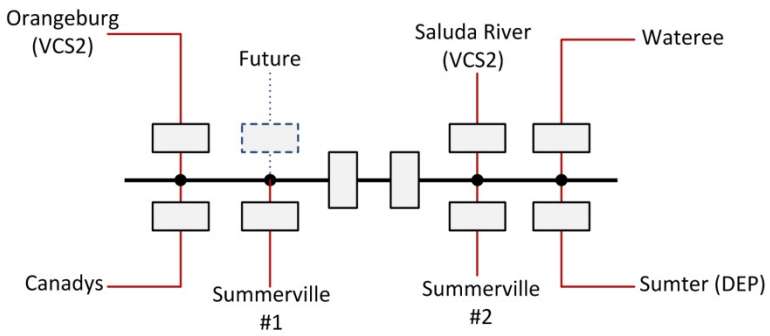


Hagood – Bee Street 115 kV
795 ACSR

- Loss of Church Creek – St. Andrews 115 kV & Hagood – Charlotte St. 115 kV
- Full Hagood output

Future Projects

St. George 230 kV Switching Station

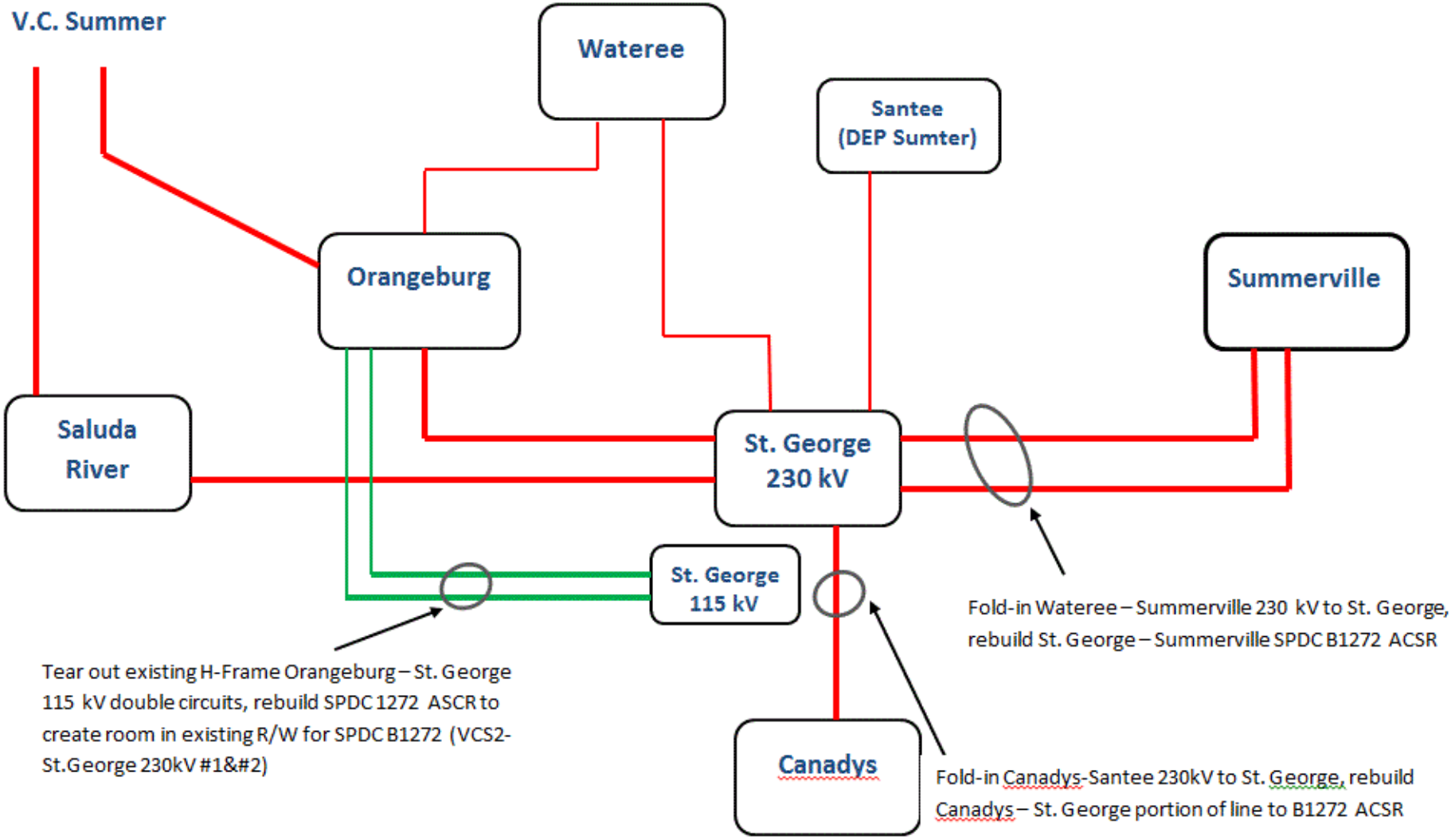


- Construct 230 kV substation at St. George
  - Seven 230 kV line terminals
  - Back to Back bus tie breaker
- Scheduled for completion May 2016, with surrounding line rebuilds completed by May 2017

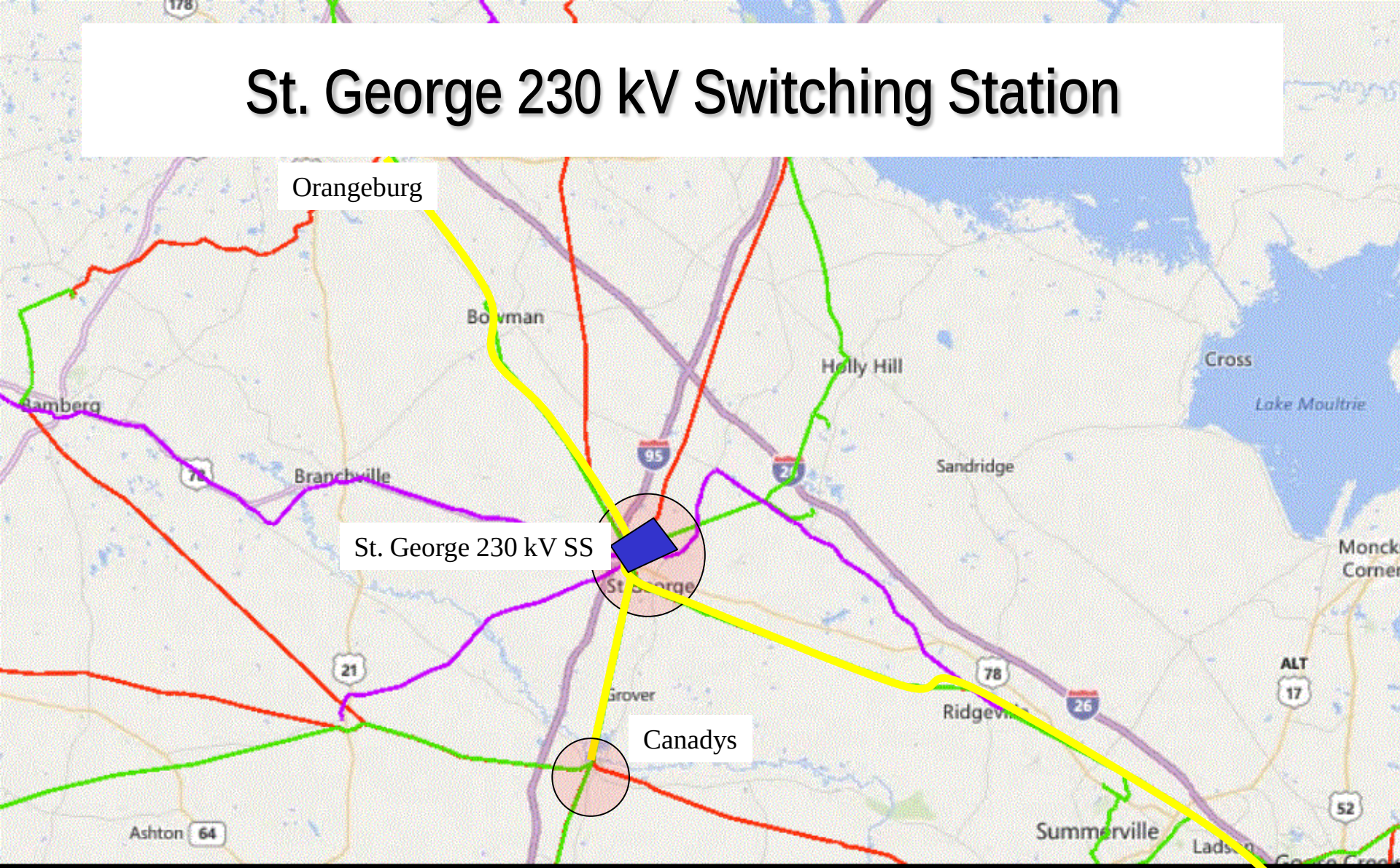
SCE&G SM
A SCANA COMPANY

santee cooper

St. George 230 kV Switching Station



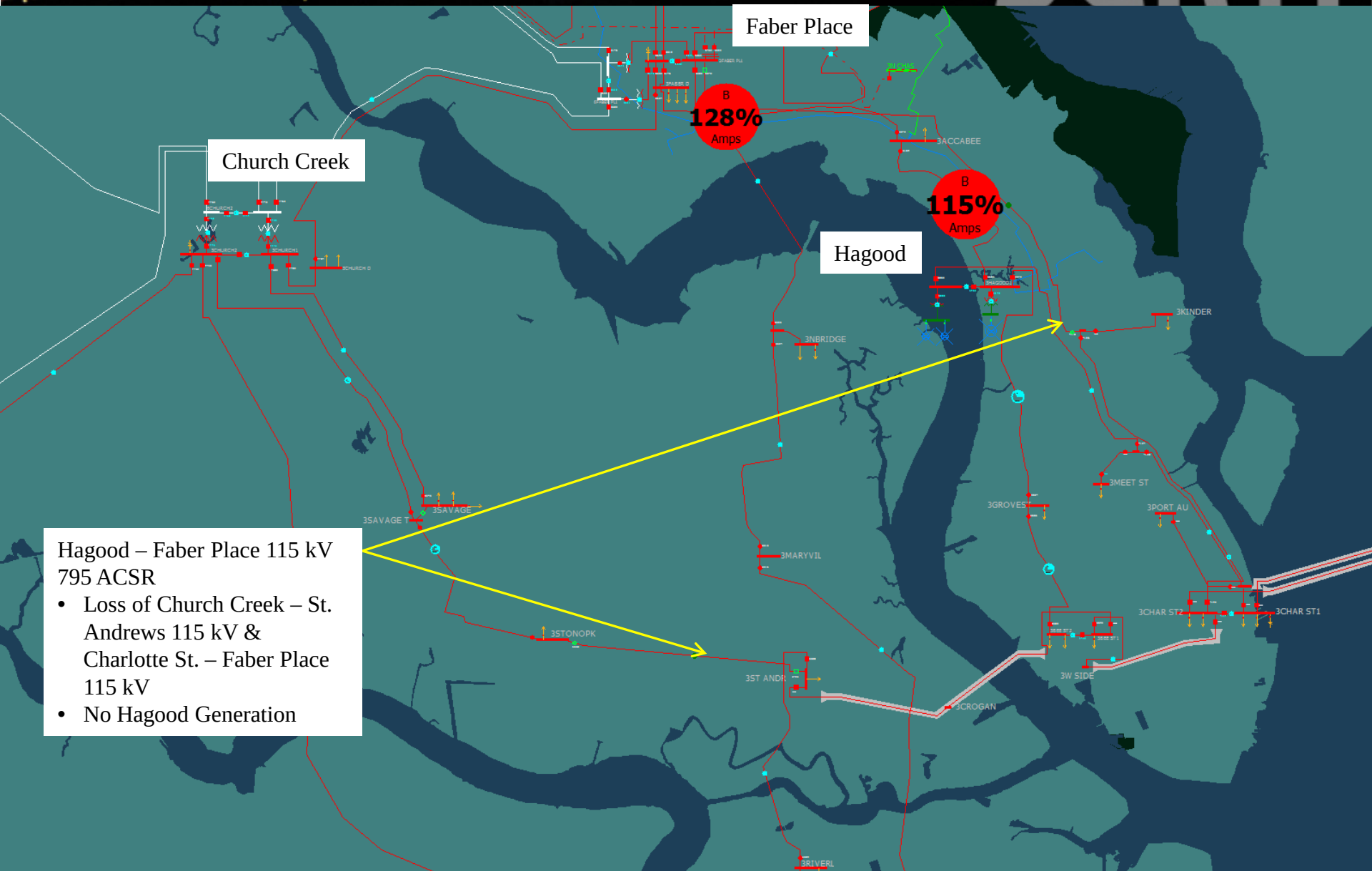
St. George 230 kV Switching Station



Hagood – Faber Place 115 kV Rebuild

- Rebuild existing 115 kV line between Hagood – Faber Place, upgrading from 795 ACSR to 1272 ACSR.
- Project required to alleviate NERC Category C contingency in combination with Hagood generators offline, and for improved reliability of steel pole construction
- Hagood – Faber Place 115 kV #2 to be built in 2017 to further alleviate loading constraints, and to provide increased reliability to peninsula
- Scheduled for completion by May 31, 2015

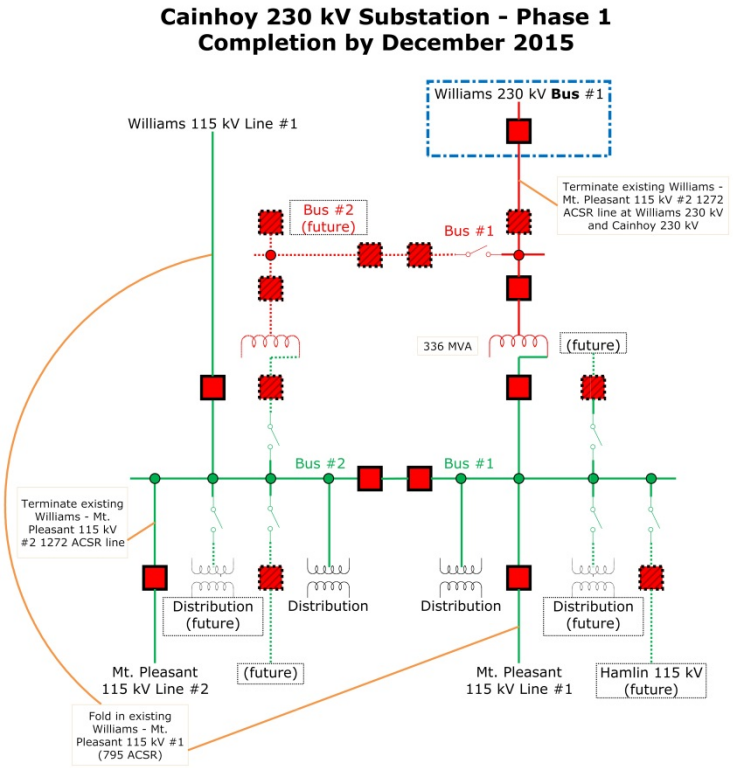
Hagood – Faber Place 115 kV Rebuild



Hagood – Faber Place 115 kV 795 ACSR

- Loss of Church Creek – St. Andrews 115 kV & Charlotte St. – Faber Place 115 kV
- No Hagood Generation

Cainhoy 230/115 kV Transmission



Phase I (Completed by May 2015)

- Construct 230/115 kV transmission substation near existing Cainhoy distribution substation
  - Three 115 kV line terminals
  - Back-to-back bus tie breakers on 115 kV bus
  - One 230/115 kV 336 MVA autotransformer with high side and low side breakers
  - Relocate Cainhoy distribution transformers to new 115 kV site
- Add one 230 kV terminal to #1 AM Williams 230 kV bus
- Fold Williams – Mt. Pleasant 115 kV #2 into Cainhoy 230 kV and 115 kV
  - ➢**Creates Williams – Cainhoy 230 kV & Cainhoy – Mt. Pleasant 115 kV #2**
- Fold Williams – Mt. Pleasant 115 kV #1 into Cainhoy 115 kV #2 bus
  - ➢**Creates Williams – Cainhoy 115 kV and Cainhoy – Mt. Pleasant 115 kV #1**

SCE&G SM A SCANA COMPANY

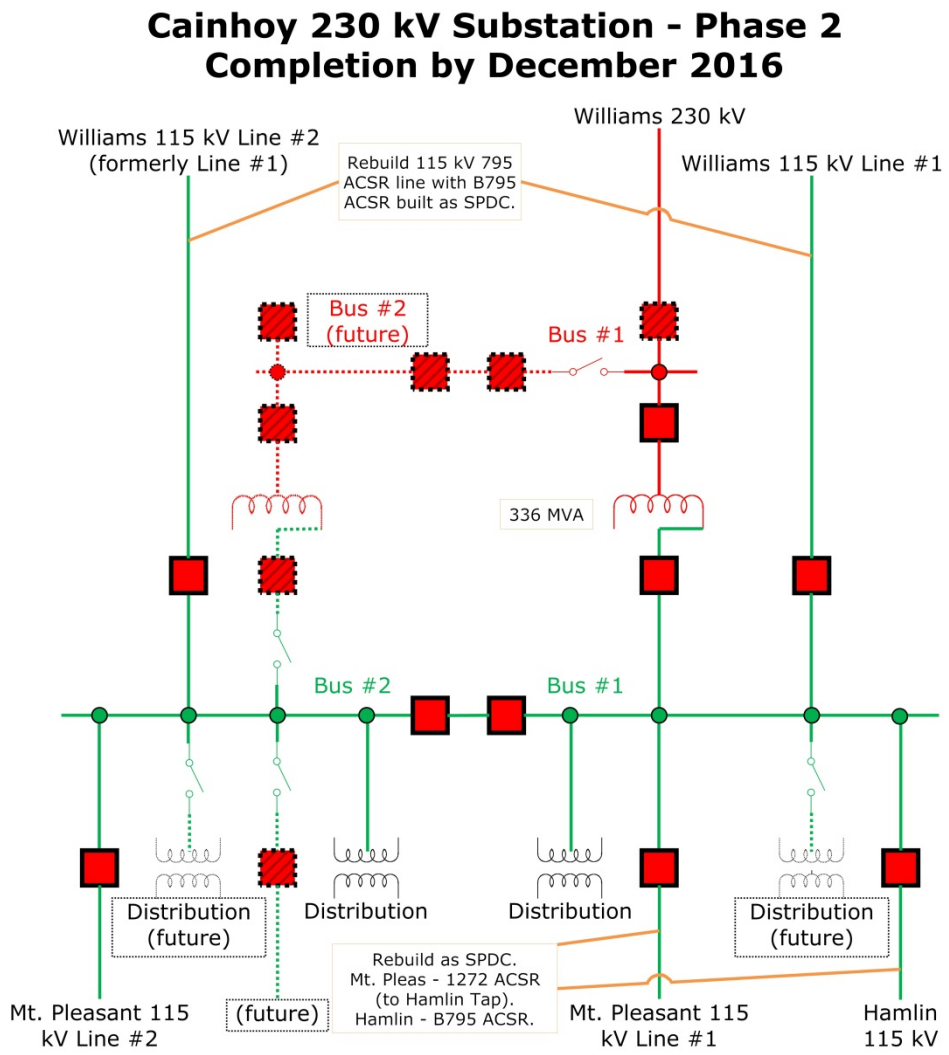
santee cooper

Cainhoy 230/115 kV Transmission

SCE&G SM
A SCANA COMPANY

santee cooper

Cainhoy 230/115 kV Transmission



Phase II (Completed by December 2016)

- Rebuild Cainhoy – Hamlin 115 kV to SPDC
  - **Creates Cainhoy – Mt. Pleasant 115 kV partially 1272 ACSR & Cainhoy – Hamlin 115 kV B795 ACSR**
- Add 115 kV Hamlin terminal
- Rebuild Williams – Cainhoy 230 kV SPDC
  - **Creates Williams – Cainhoy 115 kV #1 &#2 B795 ACSR**
- Upgrade terminals at Williams to 2000A for Cainhoy 115 kV circuits

SCE&G SM A SCANA COMPANY

santee cooper

Cainhoy 230/115 kV Transmission

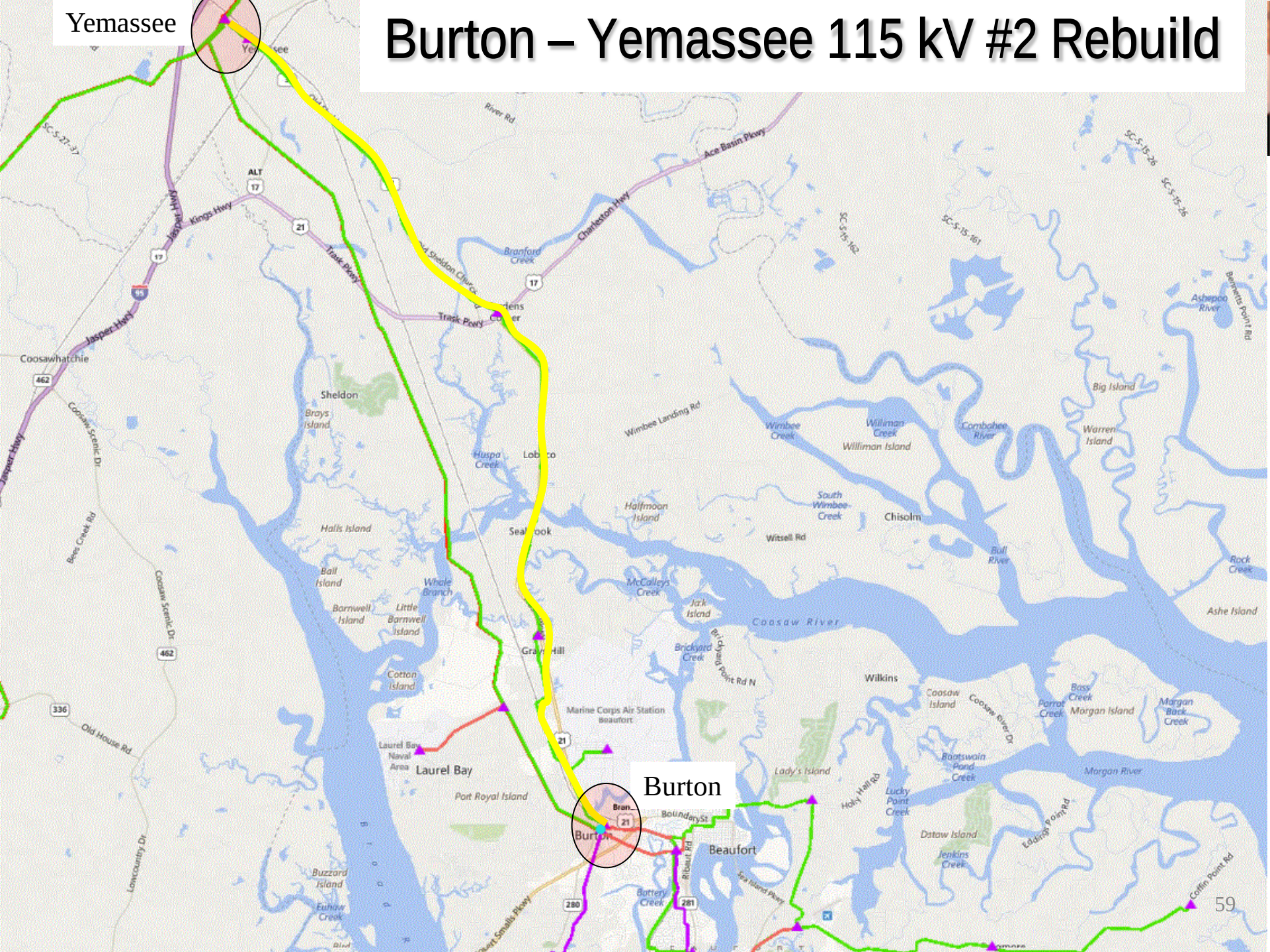
SCE&G SM
A SCANA COMPANY

santee cooper

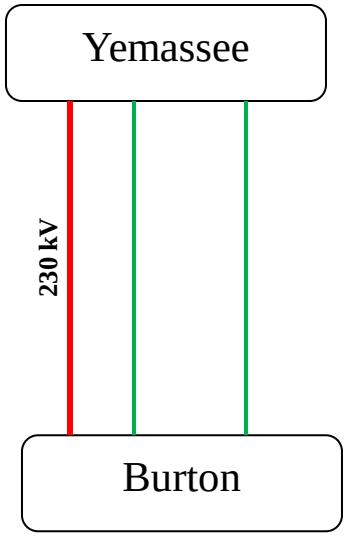
Burton – Yemassee 115 kV #2 Rebuild

- Remove existing H-Frame 477 ACSR 115 kV line, rebuild approximately 21 miles SPDC B795 ACSR
  - Burton – Yemassee 115 kV #2 upgraded
  - Burton – Yemassee 115 kV #3 created
- Upgrade/Add 115 kV terminals at Yemassee & Burton
- Project required to alleviate potential N-2 contingency overload that requires load shedding under peak conditions
  - Radial load shed only, does not have any adverse effects on BES
- Scheduled for completion by December 31, 2015

Burton – Yemassee 115 kV #2 Rebuild

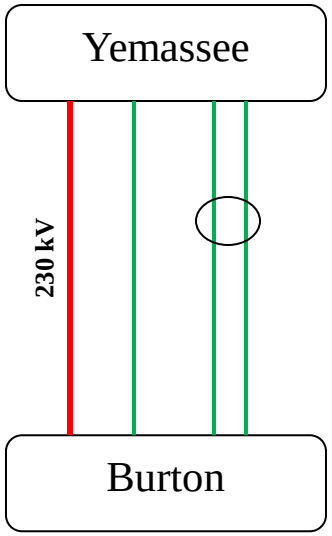


Burton – Yemassee 115 kV #2 Rebuild



Current Configuration:
1-230 kV 1272 ACSR
2-115 kV 477 ACSR

Total Capacity: 500 MVA



Future Configuration:
1-230 kV 1272 ACSR
1-115 kV 477 ACSR
2-115 kV B795 ACSR

Total Capacity: 1,074 MVA

SCE&G A SCANA COMPANY

santee cooper

SCE&G Planned Project Scope/Date Changes

Bayview-Charlotte St 115 kV #2 Underground Cable Repair

- Damage to conduit discovered shortly after initial installation/energization, complete and extensive project overhaul required
- Completion delayed to December 31, 2015

Urquhart – Graniteville 230/115 kV Rebuild SPDC

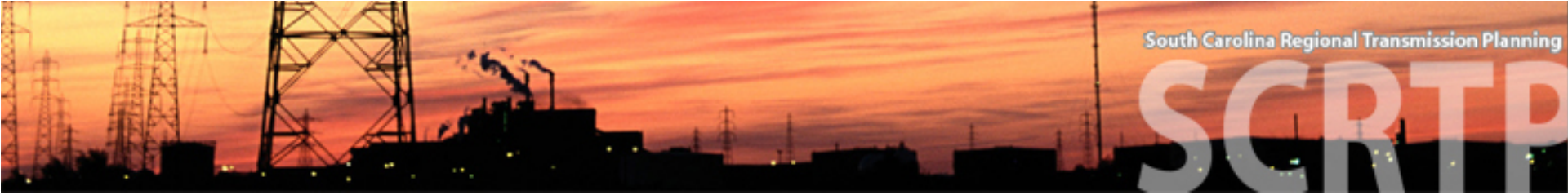
- Numerous delays encountered, including R/W issues, underbuild, etc.
- Currently exploring other options to replace this project
- Scheduled for completion in May 31, 2016 but most likely will be delayed or replaced with another alternative

Cainhoy - Hamlin/Mt. Pleasant 115 kV Rebuild SPDC

- This area is winter peaking and it was determined that the project is needed prior to 2017 winter
- Expedited date to 12/01/2016

Queensboro 115 kV Switching Station

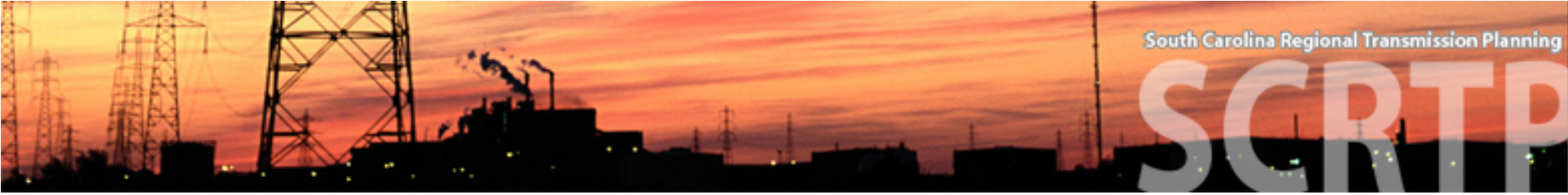
- This project was previously scheduled with an in service date of 05/31/2019
- Project expedited to 12/01/2016 to address system limits in the West Ashley/James Island area
- Also studying possible SCPSA tie-line to serve as back-up support for SCE&G and SCPSA under emergency conditions



Questions?

SCE&G SM
A SCANA COMPANY

santee cooper



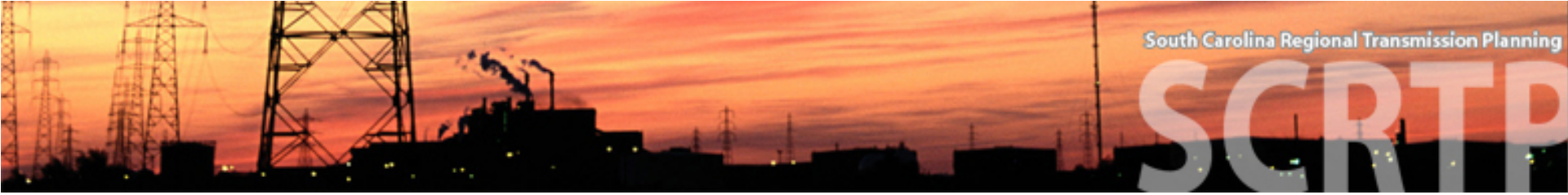
Current Transmission Expansion Plans

Santee Cooper

Rick Thornton

SCE&G SM
A SCANA COMPANY

santee cooper



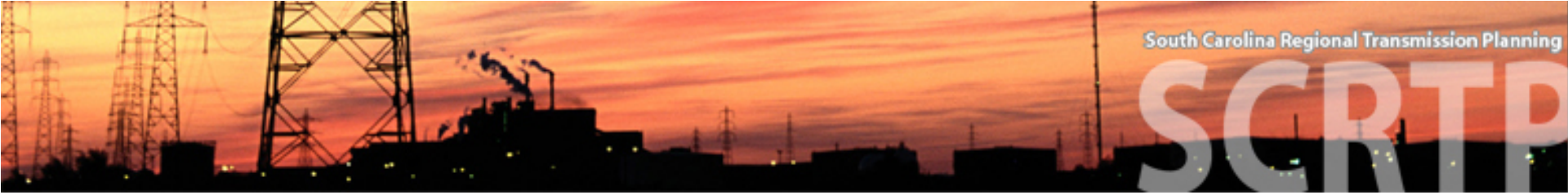
Transmission Network

Completed Projects

- Winnsboro 230-69 kV Substation 05/2014
- VCS-Winnsboro 230 kV Line 05/2014
- Bucksville 230-115 kV Substation 05/2014
- VCS-Pomaria #2 230 kV Line 06/2014

SCE&G SM
A SCANA COMPANY

santee cooper



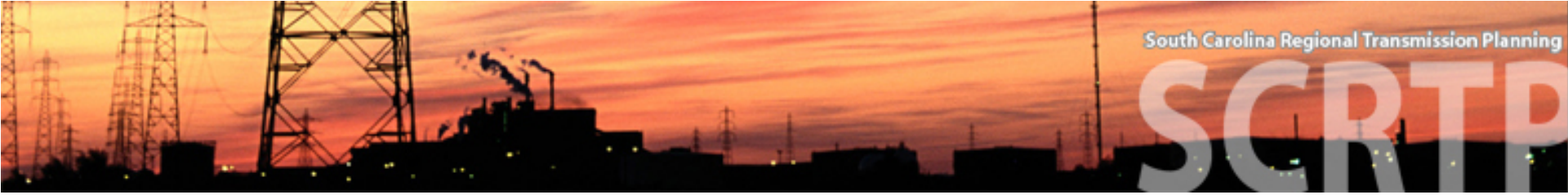
Transmission Network

Active Projects

• Richburg 230-69 kV Substation	04/2015
• Winnsboro-Richburg 230 kV Line	04/2015
• Purrysburg 230-115 kV Substation	06/2015
• Purrysburg-McIntosh 230 kV Line #2	06/2015
• Winyah-Bucksville 230 kV Line	12/2015

SCE&G SM
A SCANA COMPANY

santee cooper



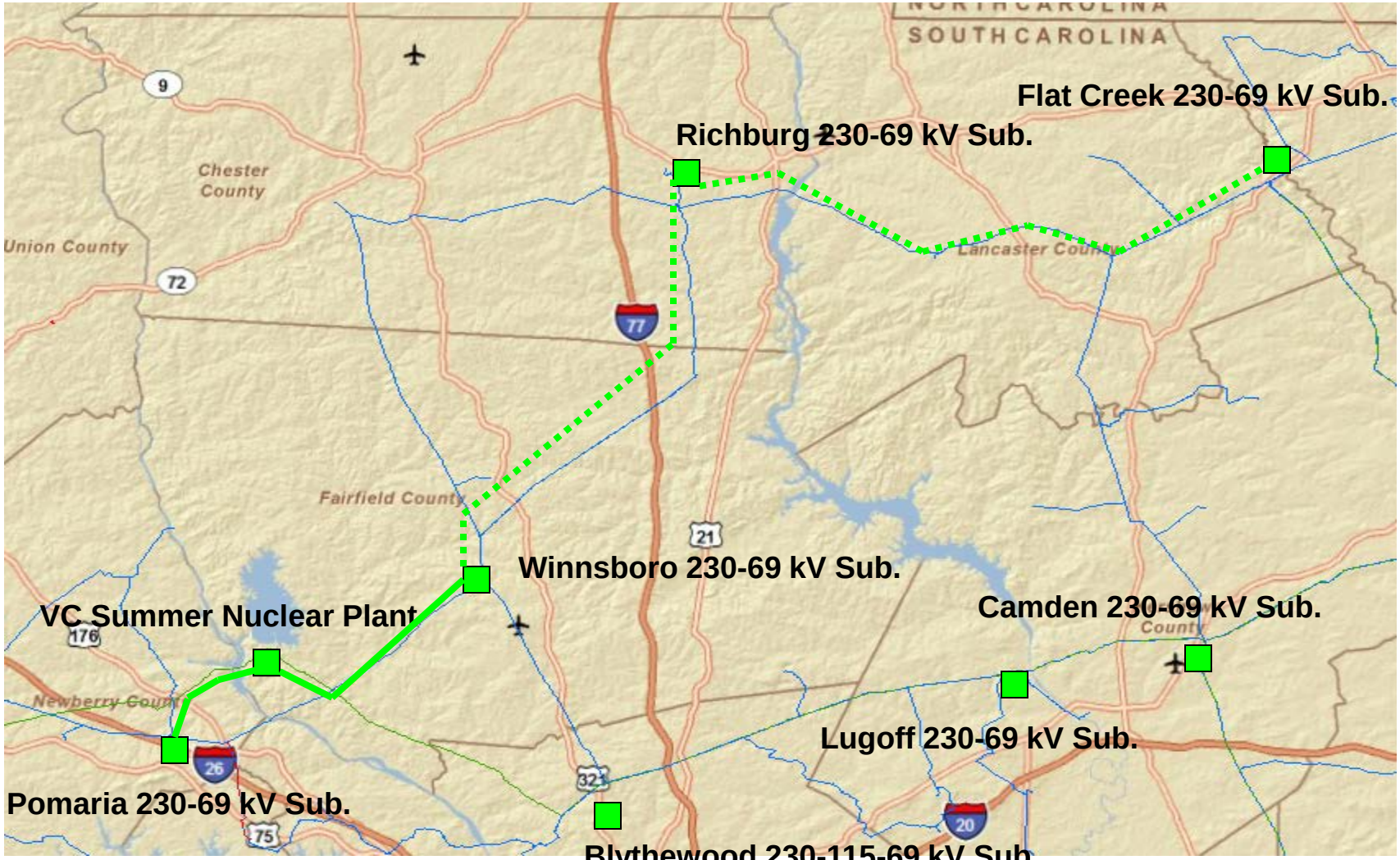
Transmission Network

Active Projects

• Richburg-Flat Creek 230 kV Line	06/2016
• Bucksville-Garden City 115 kV Line	06/2016
• Bucksville-Myrtle Beach 115 kV Line	12/2016
• Sandy Run 230-115 kV Substation	05/2018
• Pomaria-Sandy Run-Orangeburg 230 kV Line	06/2019

SCE&G SM
A SCANA COMPANY

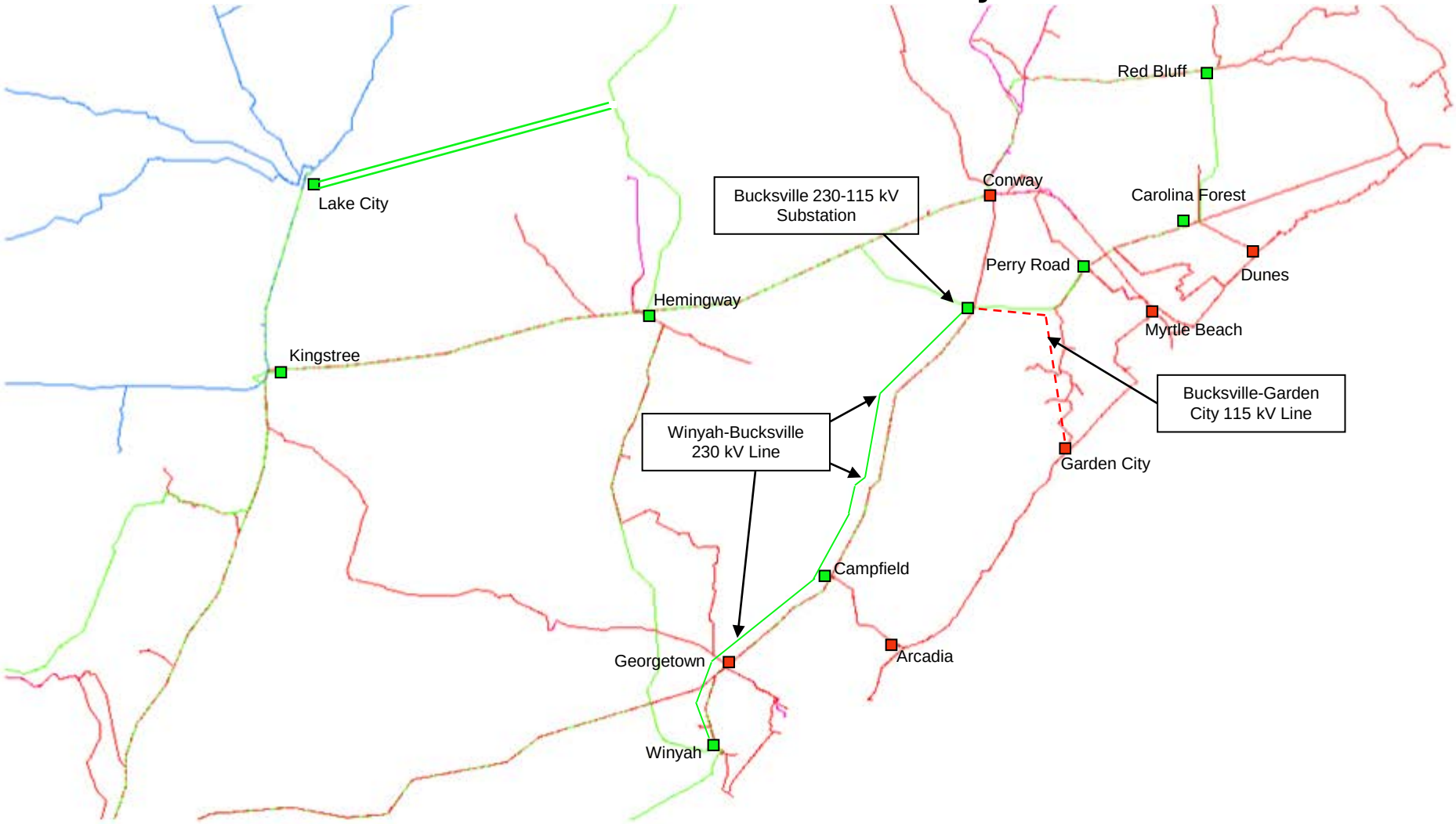
santee cooper



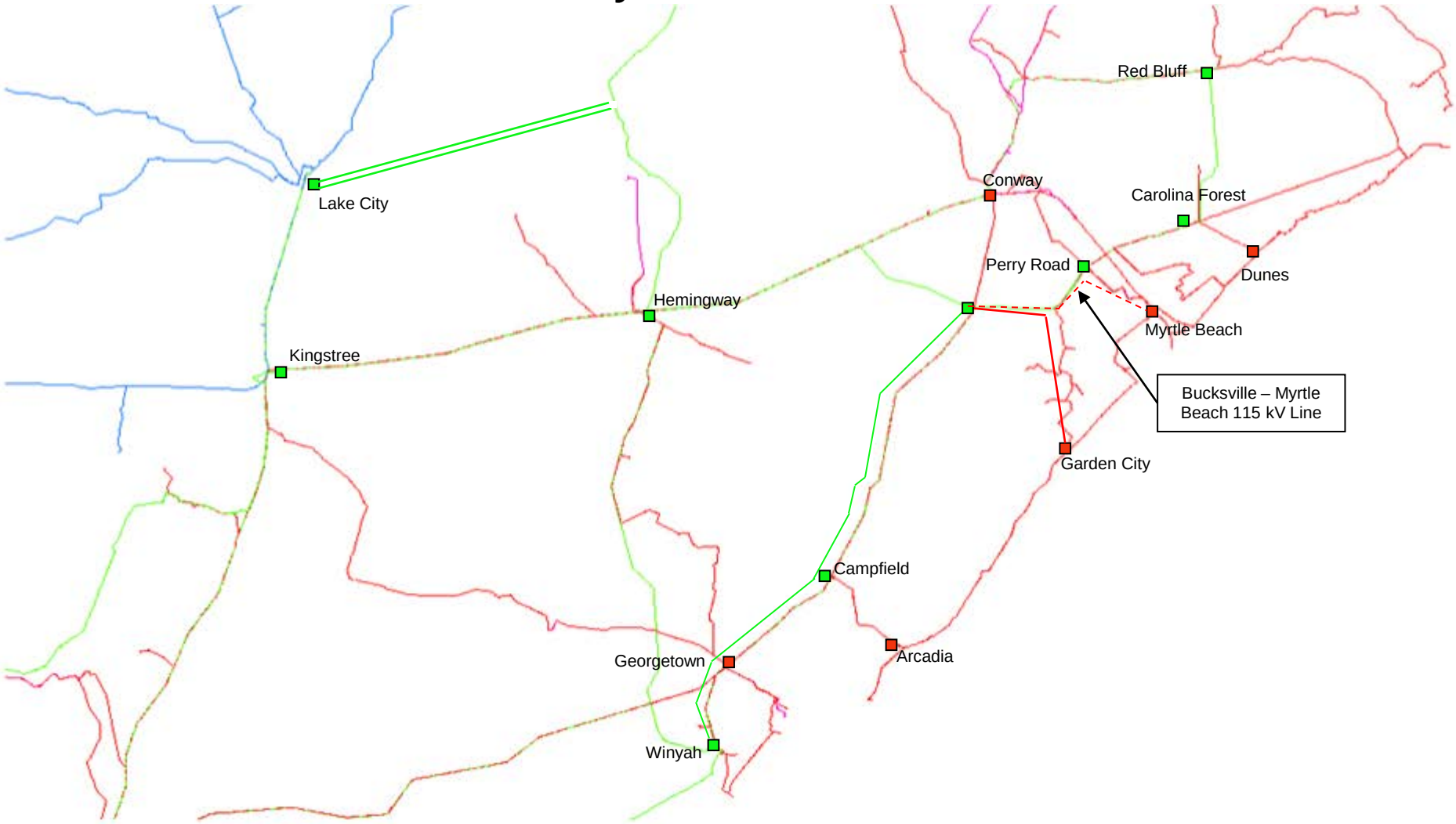
SCE&G SM
A SCANA COMPANY

santee cooper

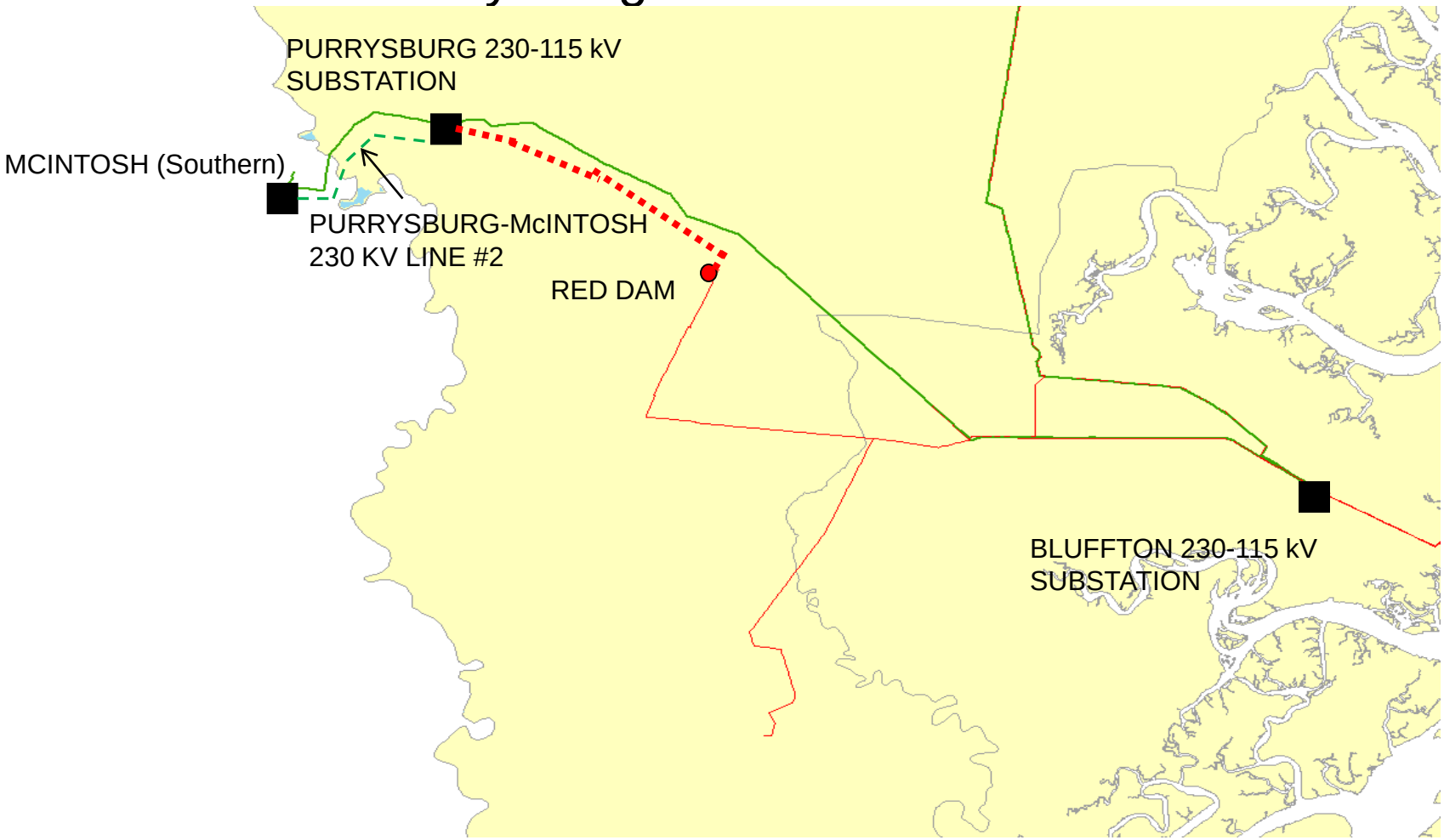
Bucksville Transmission Projects



Bucksville – Myrtle Beach 115 kV Line



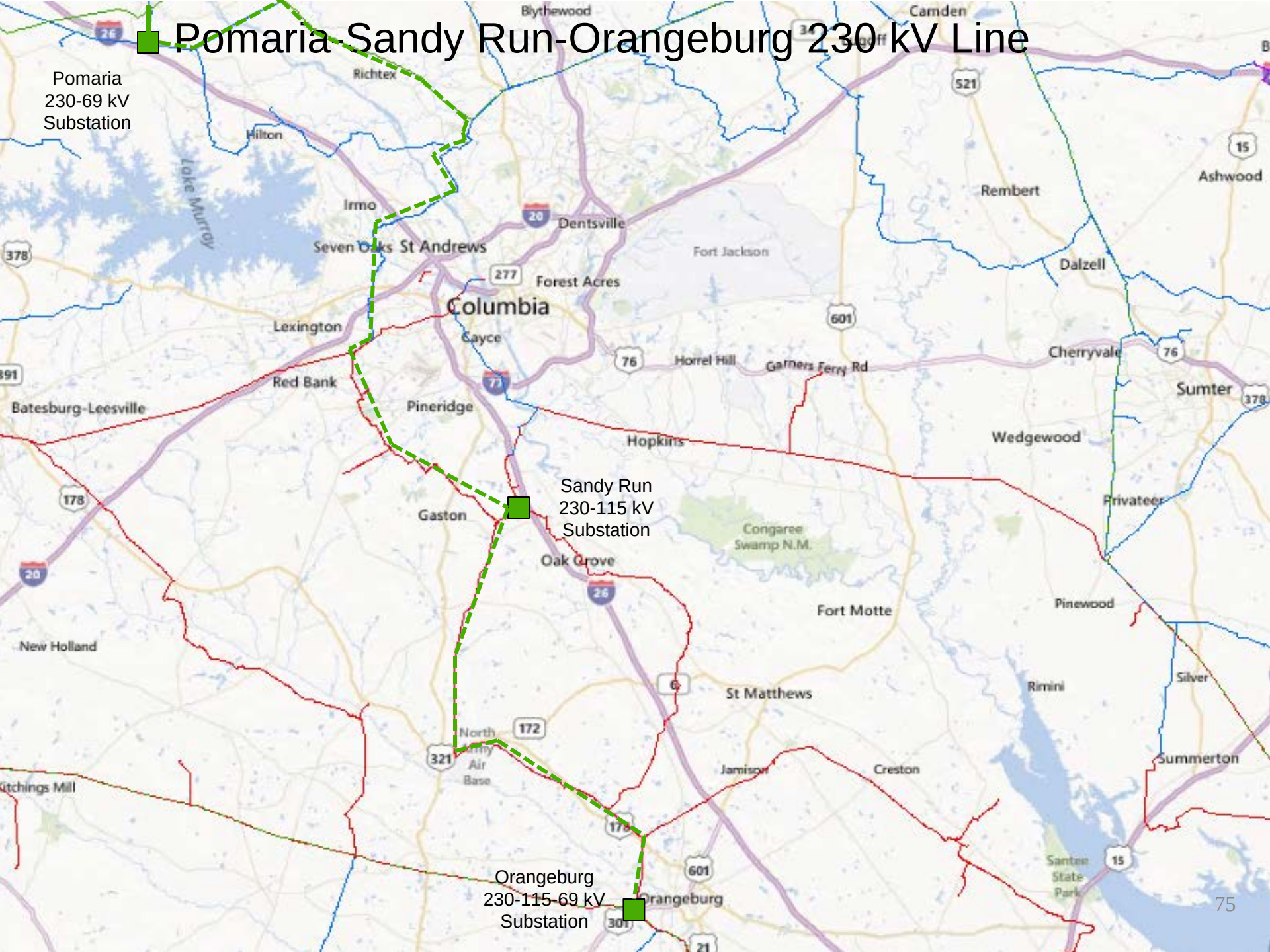
Purrysburg 230-115 kV Substation

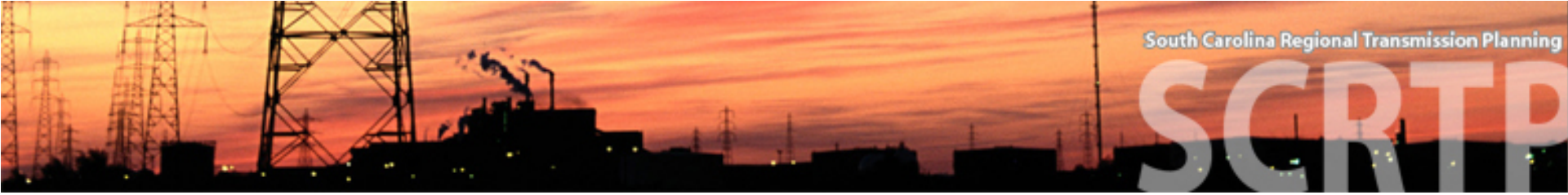


SCE&G SM
A SCANA COMPANY

santee cooper

Pomaria-Sandy Run-Orangeburg 230 kV Line





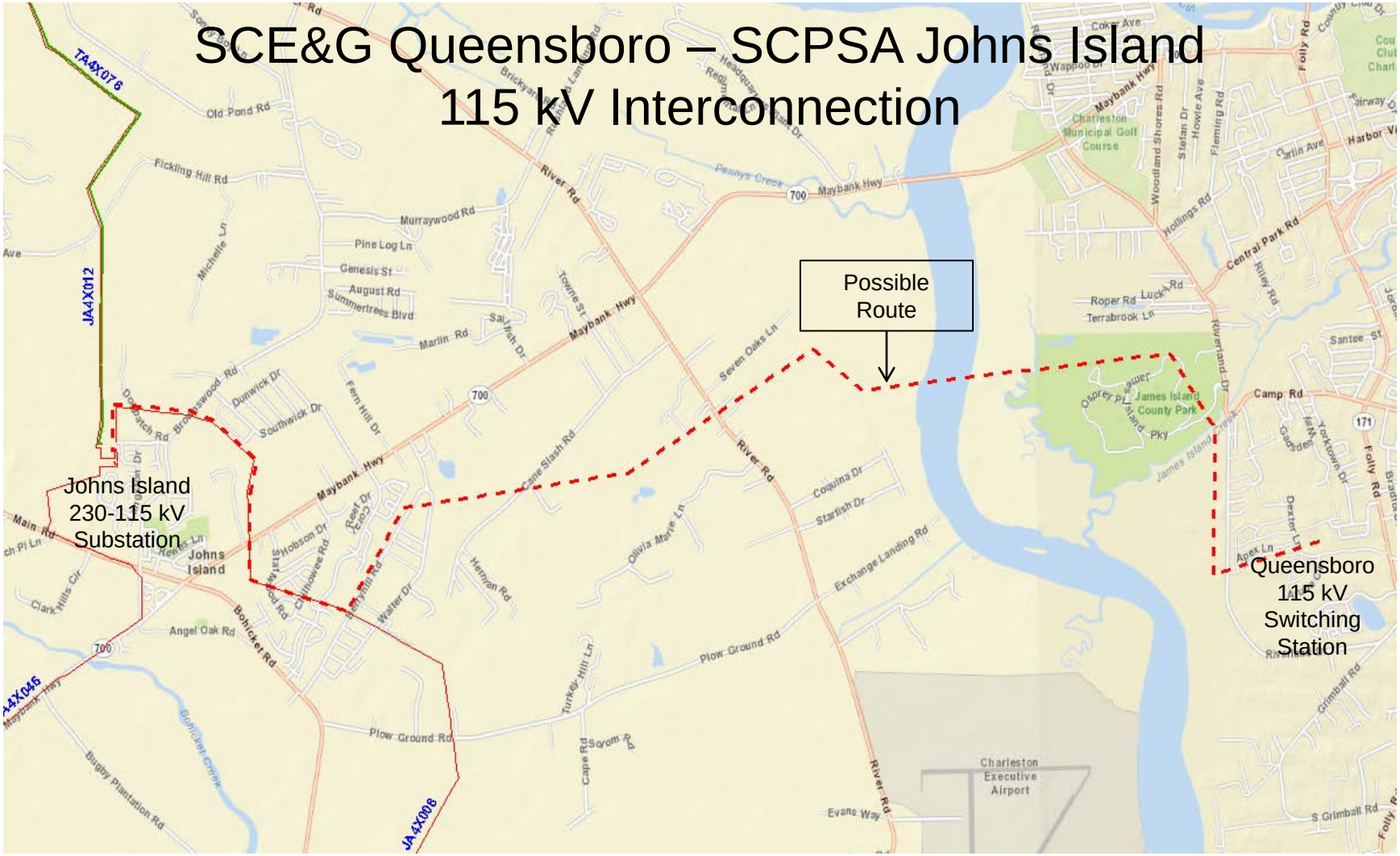
Transmission Network Planned Projects

- SCE&G Queensboro-SCPSA Johns Island 115 kV Interconnection — 06/2017
- Marion-Red Bluff 230 kV Line — 12/2018
- Dalzell-Lake City 230 kV Line — 04/2020
- Sandy Run-Pinewood 230 kV Line — 12/2021

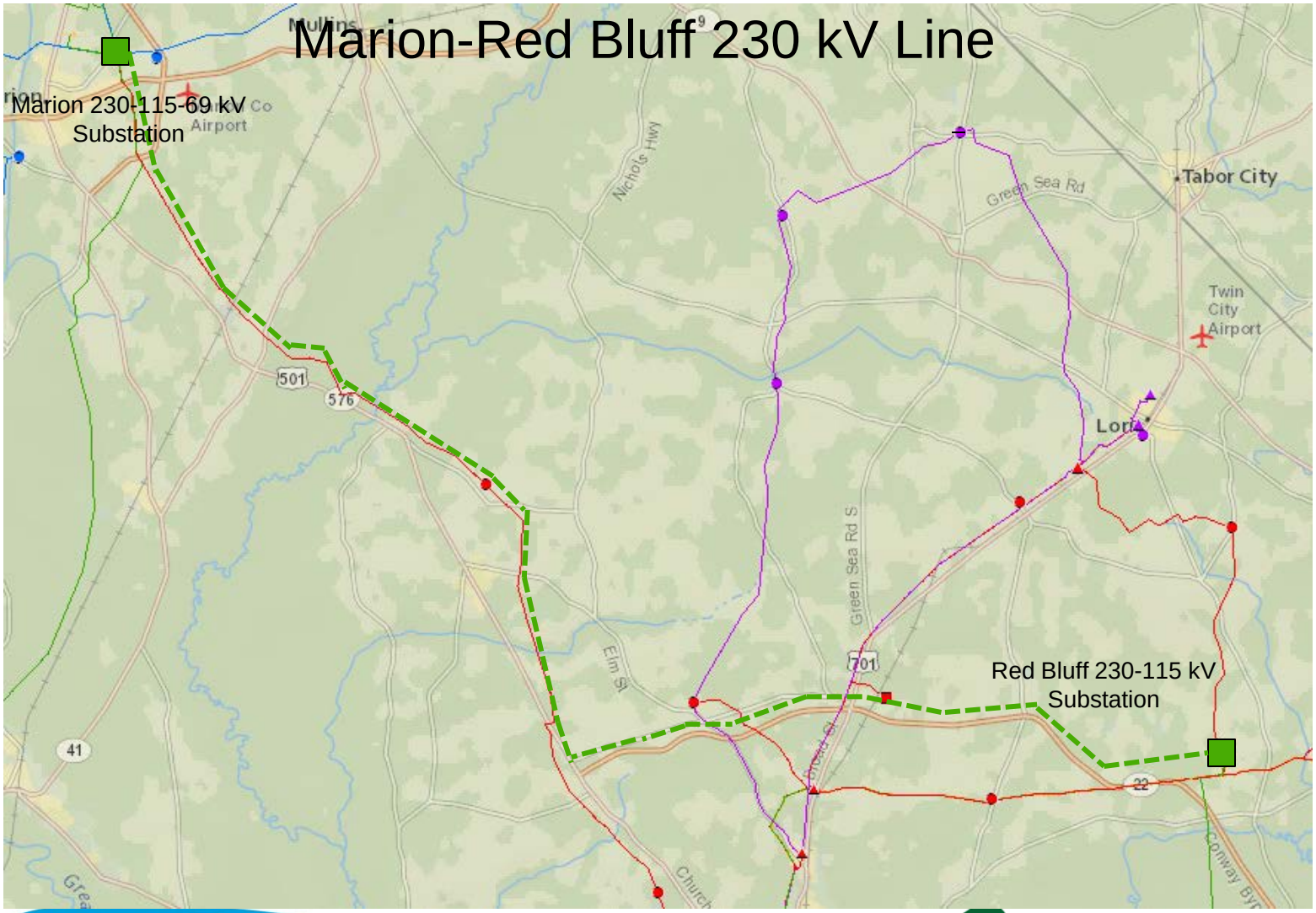
SCE&G SM
A SCANA COMPANY

santee cooper

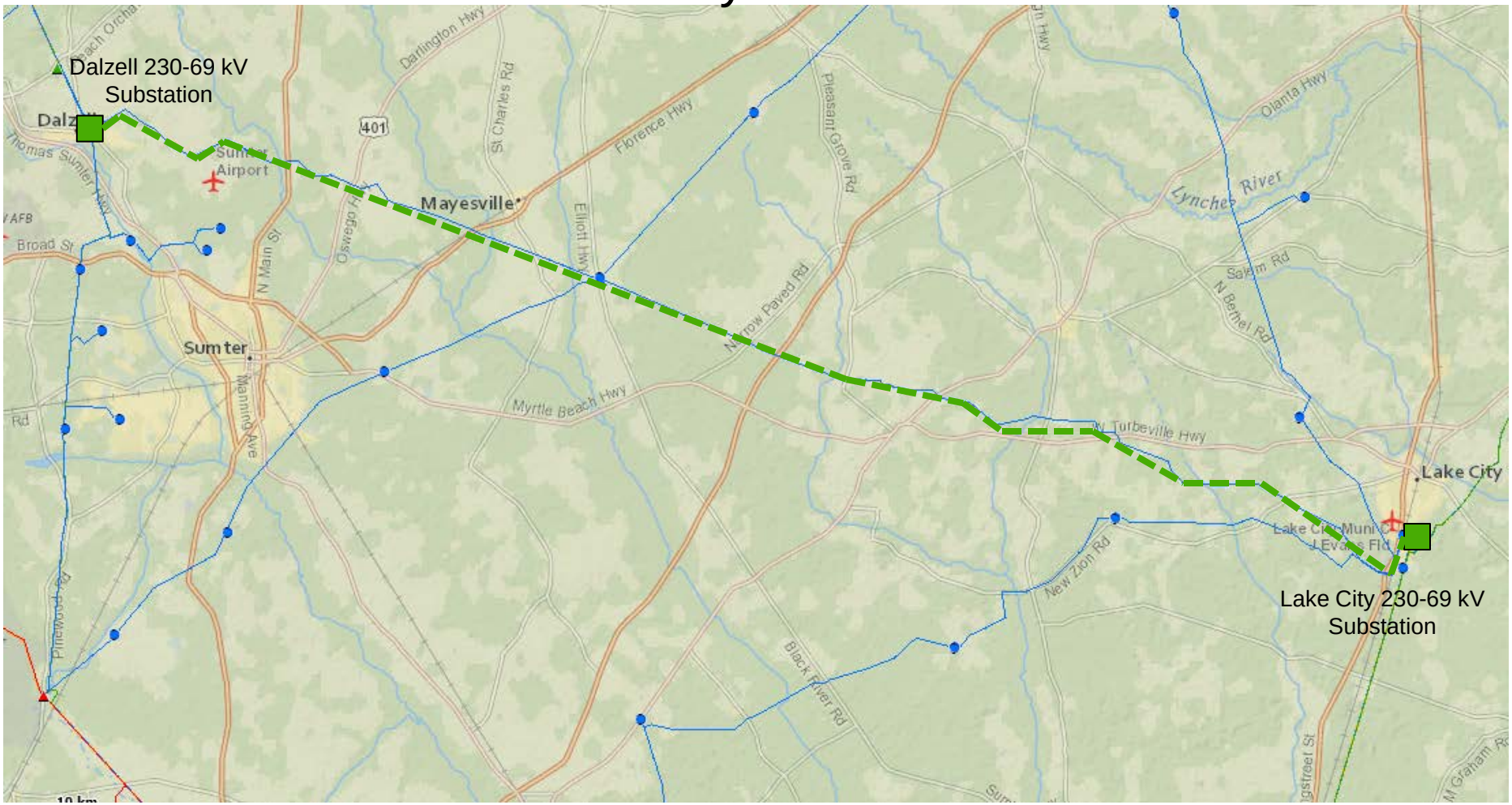
SCE&G Queensboro – SCPSA Johns Island 115 kV Interconnection



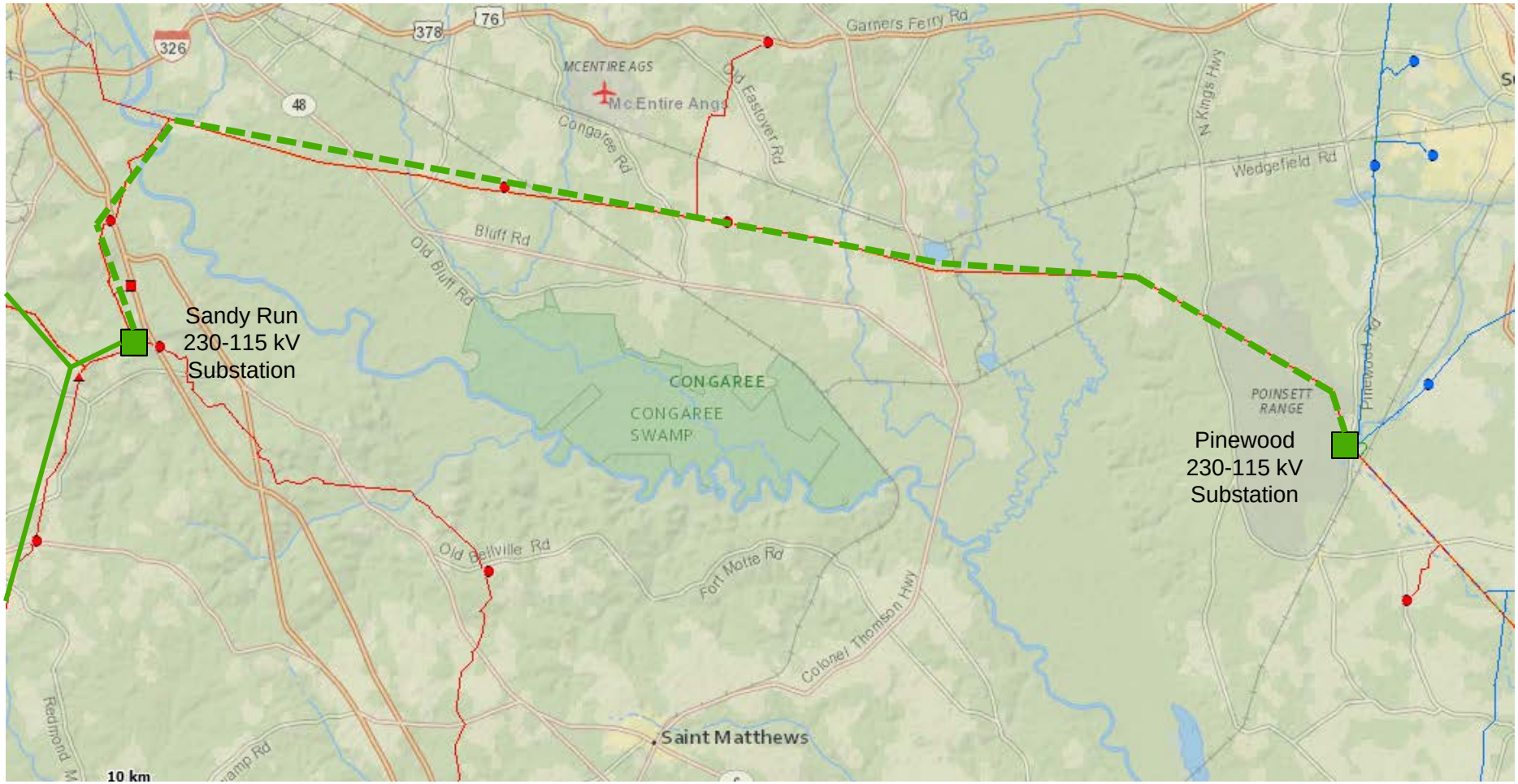
Marion-Red Bluff 230 kV Line

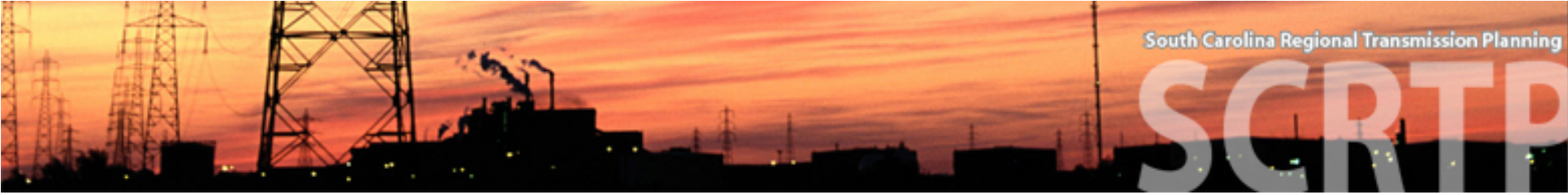


Dalzell-Lake City 230 kV Line



Sandy Run-Pinewood 230 kV Line





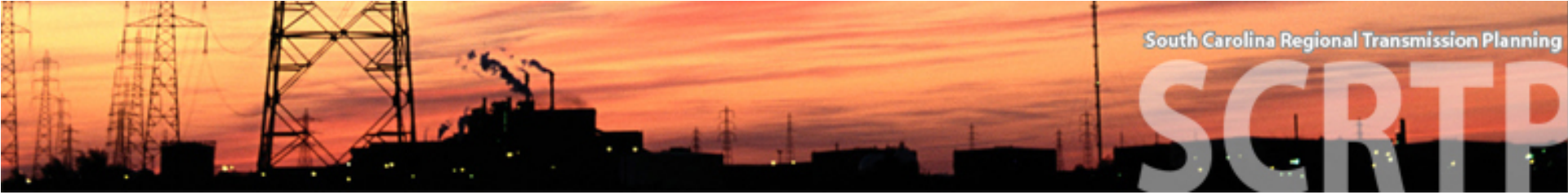
Stakeholder Input on Current Transmission Expansion Plans

SCE&G SM A SCANA COMPANY

santee cooper

Reliability Assessment Studies

Rick Thornton



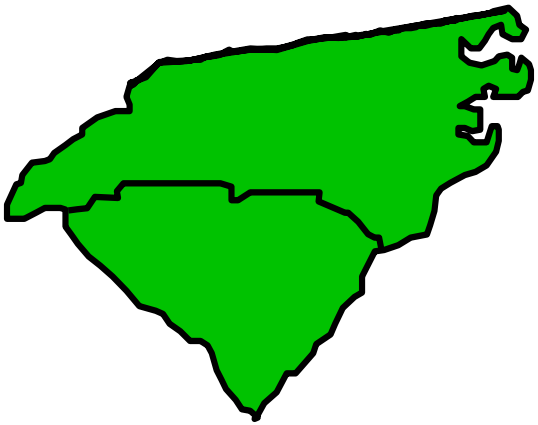
Multi-Party Assessments

- Carolina Transmission Coordination Arrangement (CTCA) Assessments
- Southeastern Electric Reliability Corporation (SERC) Assessments
- Southeast Inter-Regional Participation Process (SIRPP)

SCE&G SM
A SCANA COMPANY

santee cooper

CTCA Future Year Assessments



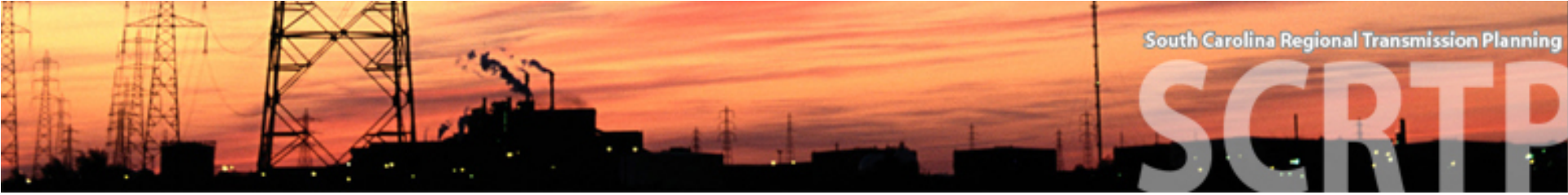
SCE&G SM
A SCANA COMPANY

santee cooper

CTCA Purpose

- Collection of agreements developed concurrently by the Principals, Planning Representatives, and Operating Representatives of multiple two-party Interchange Agreements

- Establishes a forum for coordinating certain transmission planning and assessment and operating activities among the specific parties associated with the CTCA



CTCA Purpose

Interchange Agreements associated with the CTCA

Duke Energy Carolinas ("Duke") and Duke Energy Progress ("Progress")

Duke Energy Carolinas ("Duke") and South Carolina Electric & Gas Company ("SCE&G")

Duke Energy Carolinas ("Duke") and South Carolina Public Service Authority ("SCPSA")

Duke Energy Progress ("Progress") and South Carolina Electric & Gas Company ("SCE&G")

Duke Energy Progress ("Progress") and South Carolina Public Service Authority ("SCPSA")

South Carolina Electric & Gas Company ("SCE&G") and South Carolina Public Service Authority ("SCPSA")

SCE&G SM
A SCANA COMPANY

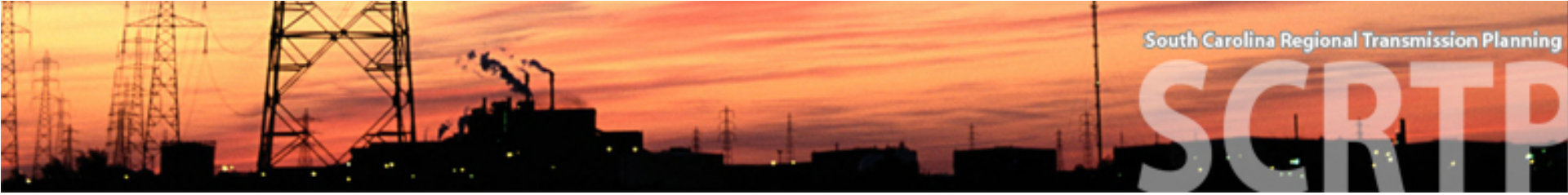
santee cooper

CTCA Power Flow Study Group

- Duke Energy Carolinas ("Duke")
- Duke Energy Progress ("Progress")
- South Carolina Electric & Gas ("SCEG")
- South Carolina Public Service Authority ("SCPSA")

CTCA Studies

- Assess the existing transmission expansion plans of Duke, Progress, SCEG, and SCPSA to ensure that the plans are simultaneously feasible.
- Identify any potential joint solutions that are more efficient or cost-effective than individual company plans, which also improve the simultaneous feasibility of the Participant companies' transmission expansion plans.
- The Power Flow Study Group ("PFSG") will perform the technical analysis outlined in this study scope under the guidance and direction of the Planning Committee ("PC").



CTCA Studies
2014 Study

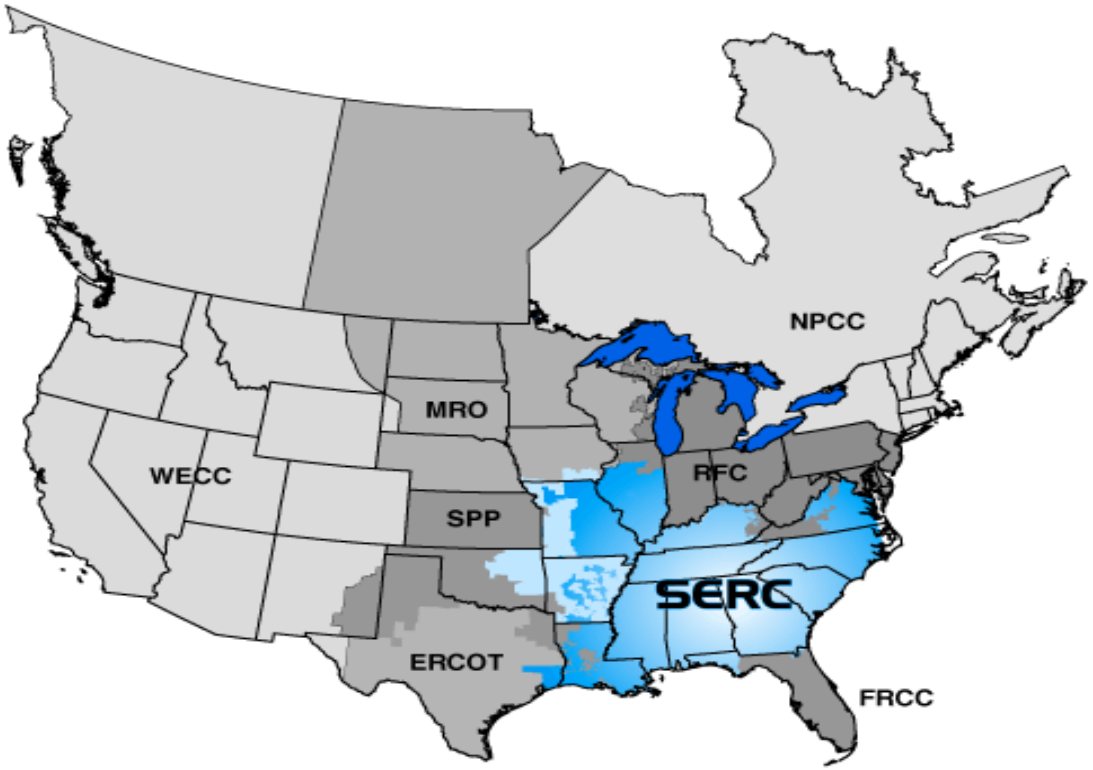
- LTSG 2014 Series 2018 Summer and 2021 Summer Peak Load Models
- PFSG analyzed existing transmission expansion plans using NERC and individual companies' reliability criteria
- Determine if there are opportunities for joint alternative plans
- Final report approved in October.
- No potential joint alternatives were identified based on current transmission plans.

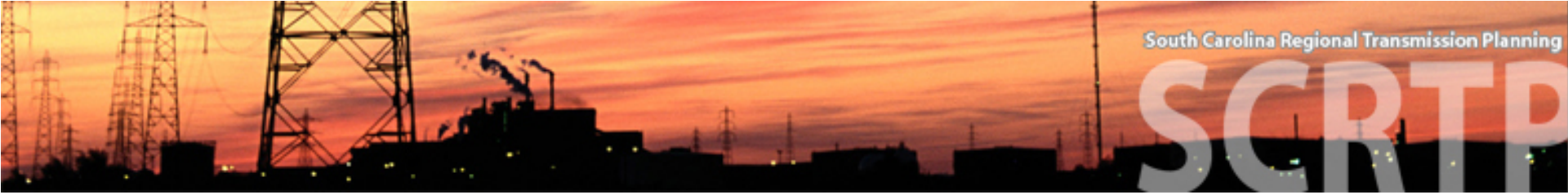
SCE&G SM A SCANA COMPANY

santee cooper

SERC LTSG Assessments

SERC Future Year Assessments
Long Term Study Group (LTSG)



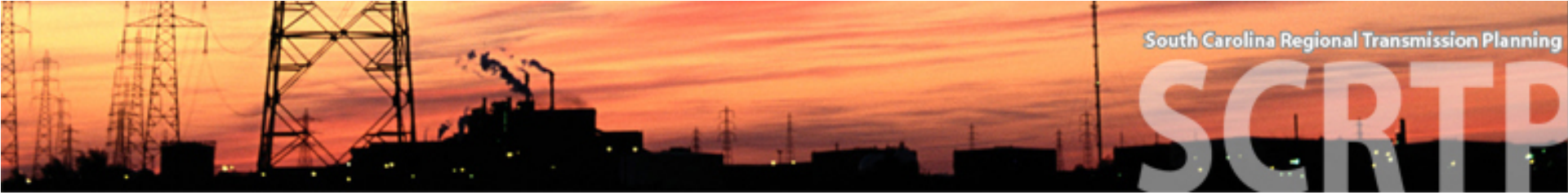


SERC LTSG Study
Purpose

- Analyze the performance of the members' transmission systems and identify limits to power transfers occurring non-simultaneously among the SERC members.
- Evaluate the performance of bulk power supply facilities under both normal and contingency conditions for future years.
- Focus on the evaluation of sub-regional and company-to-company transfer capability.

SCE&G SM
A SCANA COMPANY

santee cooper



SERC Long Term Study Group
2014 Work Schedule

- LTSG Data Bank Update –May 20-22 Hosted by TVA
- Study Case: 2016 Summer Peak Load
- Work completed by LTSG August thru October
- Report approved by RSSC December 2

SCE&G SM A SCANA COMPANY

santee cooper

SERC Long Term Study Group
2016 Market Dispatch Sensitivity

- Impact of Market Dispatch from MISO and PJM
- Study Case: 2016 Summer Peak Load
- Draft Report Approval in December
  - No SCE&G or SCPSA Facilities Affected

SERC Assessments

Questions?

ERAG Assessments

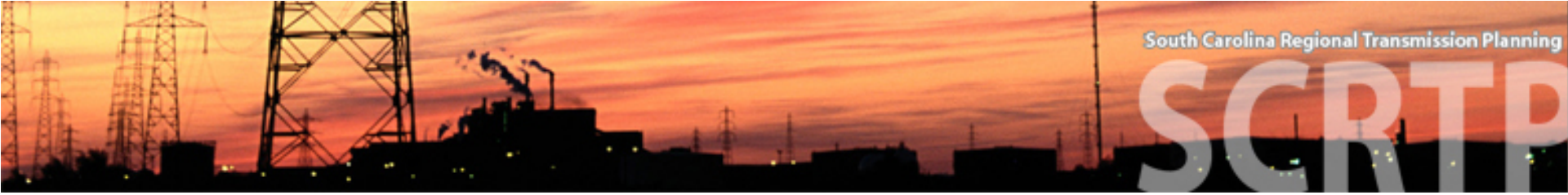
ERAG 2014/15 Winter Study

- Study Effects of Regional Transfers

- Draft Report Approval in December
  - No SCE&G or Santee Cooper Facilities Affected

ERAG Assessments

Questions?



Eastern Interconnection

Planning Collaborative Update

Phil Kleckley

SCE&G SM
A SCANA COMPANY

santee cooper

About the EIPC

- 22 Planning Authority (Planning Coordinator) members including ISOs/RTOs, non-ISO regions, municipals, cooperatives, …
- Members are from the U.S. and Canada
- Approximately 95% of the Eastern Interconnection customers covered

EIPC Supporting Activities

- CEII: Continue to make EIPC models available to those who have completed the EIPC CEII process (based on regional clearance)

- Website: www.eipconline.com
  - Continue to host the EIPC website
  - Review current EIPC website and recommend modifications as appropriate
  - Post material from both grant and non-grant EIPC activities

EIPC Stakeholder Process

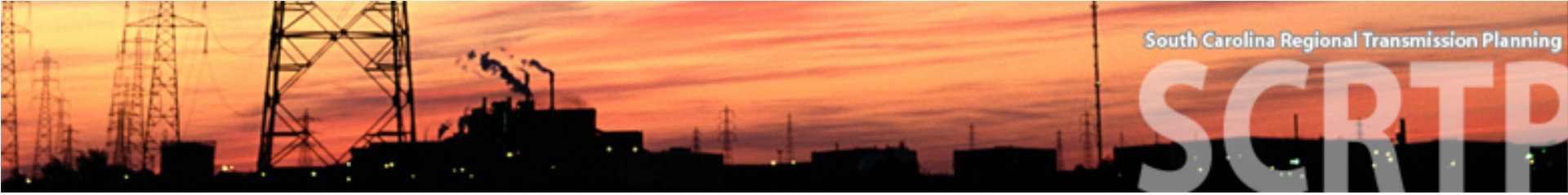
- Existing stakeholder groups previously created for other purposes such as compliance with FERC Order 890 will used to facilitate stakeholder input

- Ensure a regional focus:
  - Present roll-up models and results
  - Receive stakeholder feedback, input, comments and suggestions on specific scenarios to be studied
  - Present the results of scenario studies
  - Seek stakeholder feedback on reports that are created

EIPC 2014 Study

- Webinar conducted March 25, 2014

- Presented study scenario options to stakeholders
  - 2 EIPC Proposals
  - 5 Stakeholder Proposals



EIPC Study Selections (Stakeholder Suggested)

Scenario A

2023 Summer Peak Load With Updated NY Transmission Owners' Transmission Solutions (and solicit other Regions' updates)

- Re-perform transfer analysis to identify effect of model updates on transfer capability between areas

Scenario B

2023 Scenario A updates plus Heat Wave And Drought Conditions With Long Distance Transfers

- Perform Heat Wave and Drought Analysis

SCE&G A SCANA COMPANY

santee cooper

EIPC 2014 Study

- Webinar conducted September 9, 2014
- Presented transfer analysis results of updated 2023 Summer Roll-up case
- Presented final input assumptions for Heat Wave & Drought scenario

EIPC 2014 Study

- Webinar conducted November 21, 2014
- Presented transfer analysis results of updated 2023 Summer Roll-up case
- Presented results of Heat Wave & Drought scenario

EIPC 2014 Study

Transfer Analysis Results

- Analyzed 5,000 MW transfers between selected areas
- Monitored N-0 & N-1 branch overloads
- Updates to 2023 Roll-up showed no significant impact on Eastern Interconnection transfer capability

EIPC 2014 Study

Heat Wave and Drought Scenario Assumptions

- Submitted by: Eastern Interconnection States' Planning Council (EISPC)
- Modeled a severe and pervasive heat wave and drought condition in study year 2023
- Identified any constraints if large amounts of power are transferred during extremely high temperatures and drought conditions

EIPC 2014 Study

Heat Wave and Drought Scenario Assumptions

- Utilized updated 2023 summer peak roll-up model
- Modeled effect of heat wave on sink area
  (scale up load by 5% or 15,000 MW
- Modeled effect of drought condition on sink area
  (scale sink generation down by 5% - unused capacity not available)
- Modeled effect of power transfer from source
  (scale available generation up 30,000 MW)

EIPC 2014 Study

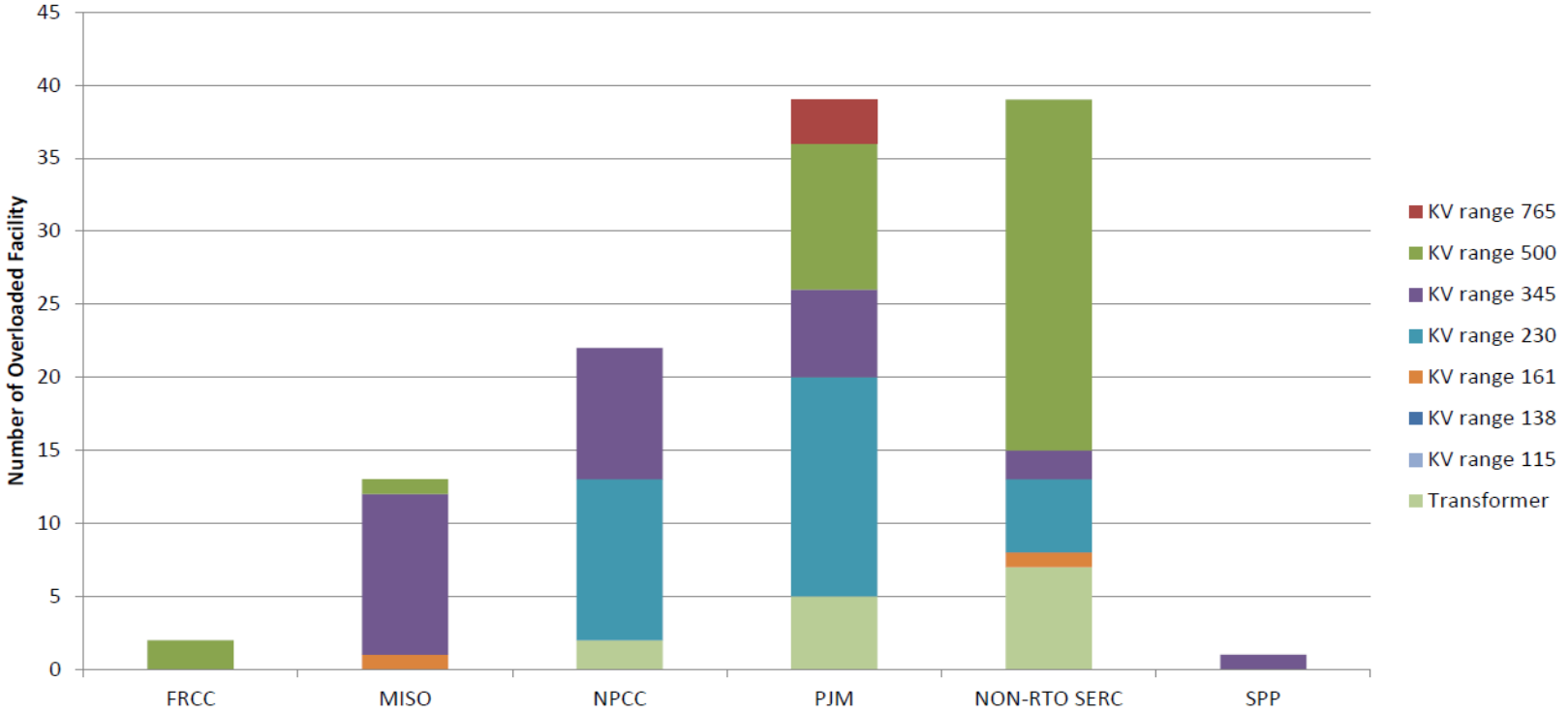
Heat Wave and Drought Scenario

- Performed N-1 contingency analysis on 200 kV and above and where lower voltage levels are required
- Monitored all lines 161 kV and above
- Used MUST transfer analysis to identify facilities with >3% Transfer Distribution Factor

EIPC 2014 Study

Heat Wave and Drought Scenario Results

Table illustrates the impacted facilities by KV range

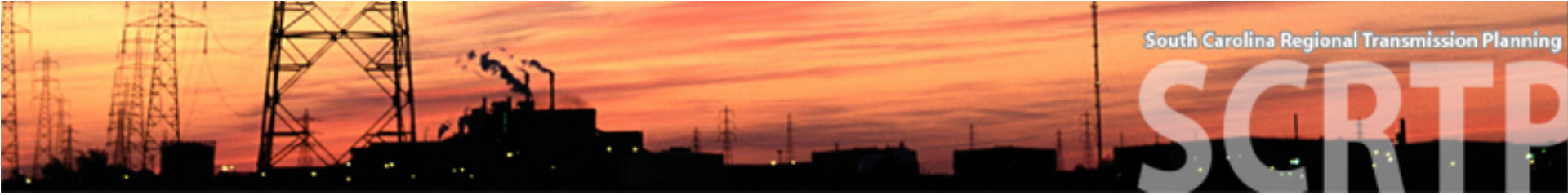


SCE&G SM A SCANA COMPANY

santee cooper

2014 EIPC Study Report

- 2014 study report to be amendment to 2013 study report
- Draft report is to be posted for stakeholder comments in December, 2014



Questions?

Contact Phil Kleckley

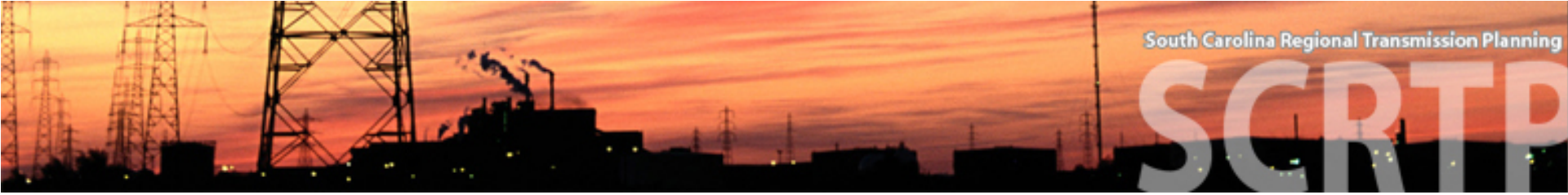
pkleckley@scana.com

SCE&G SM A SCANA COMPANY

santee cooper

Next SCRTP Meeting

- Update on FERC Order 1000
- Stakeholder Group selects up to 5 Economic Planning Scenarios for Study
- Assessment and Planning Study Update
- EIPC Update
- SCRTP Email Distribution List will be notified
- Register online



South Carolina Regional Transmission Planning

Stakeholder Meeting

SCE&G Lake Murray Training Center

Lexington, SC

December 18, 2014

SCE&G SM
A SCANA COMPANY

santee cooper