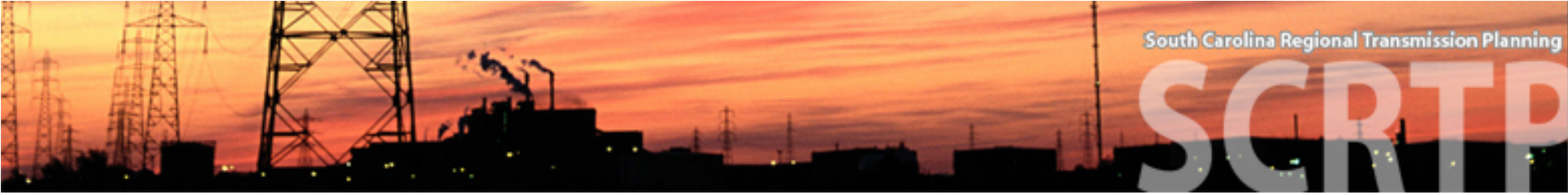

South Carolina Regional Transmission Planning

Stakeholder Meeting

Hilton Garden Inn

North Charleston, SC

September 12, 2014

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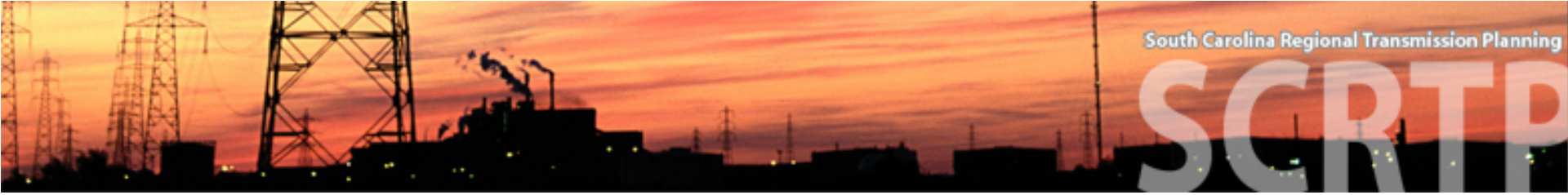

Purpose and Goals of Today's Meeting

- FERC Order 1000 Update
- Review and Discuss Modifications to Transmission Expansion Plans
- Review and Discuss Assessment and Planning Studies
  - CTCA
  - ERAG
  - SERC
  - Other
- EIPC Stakeholder Group Activities

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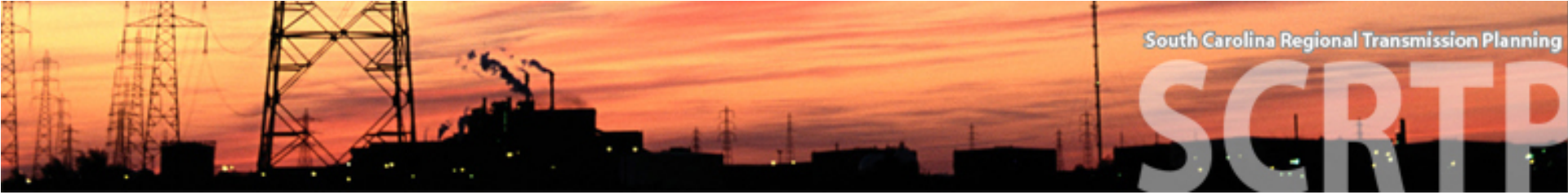

FERC Order 1000
Transmission Planning and Cost Allocation

Clay Young

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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

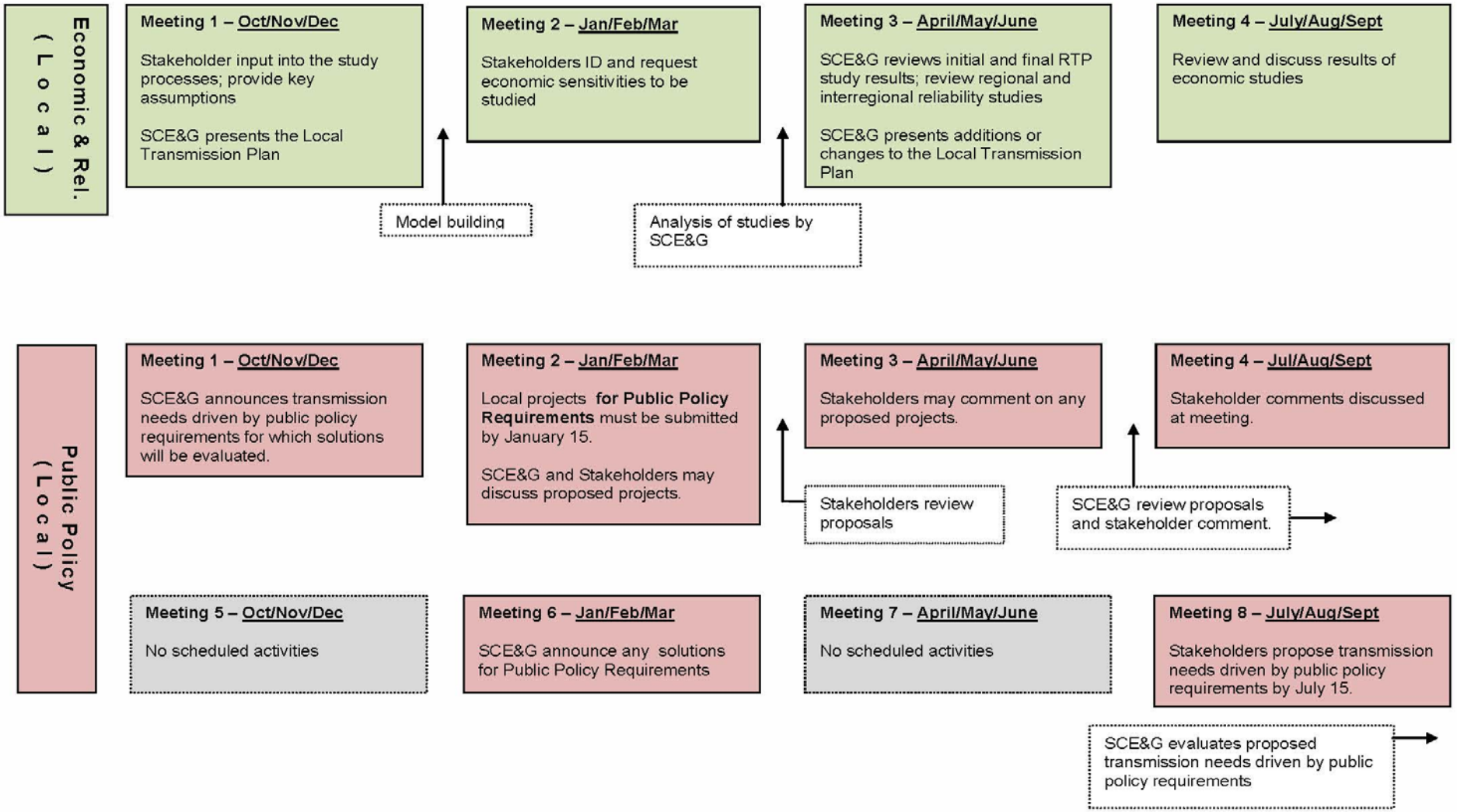
Order 1000 Update

- (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

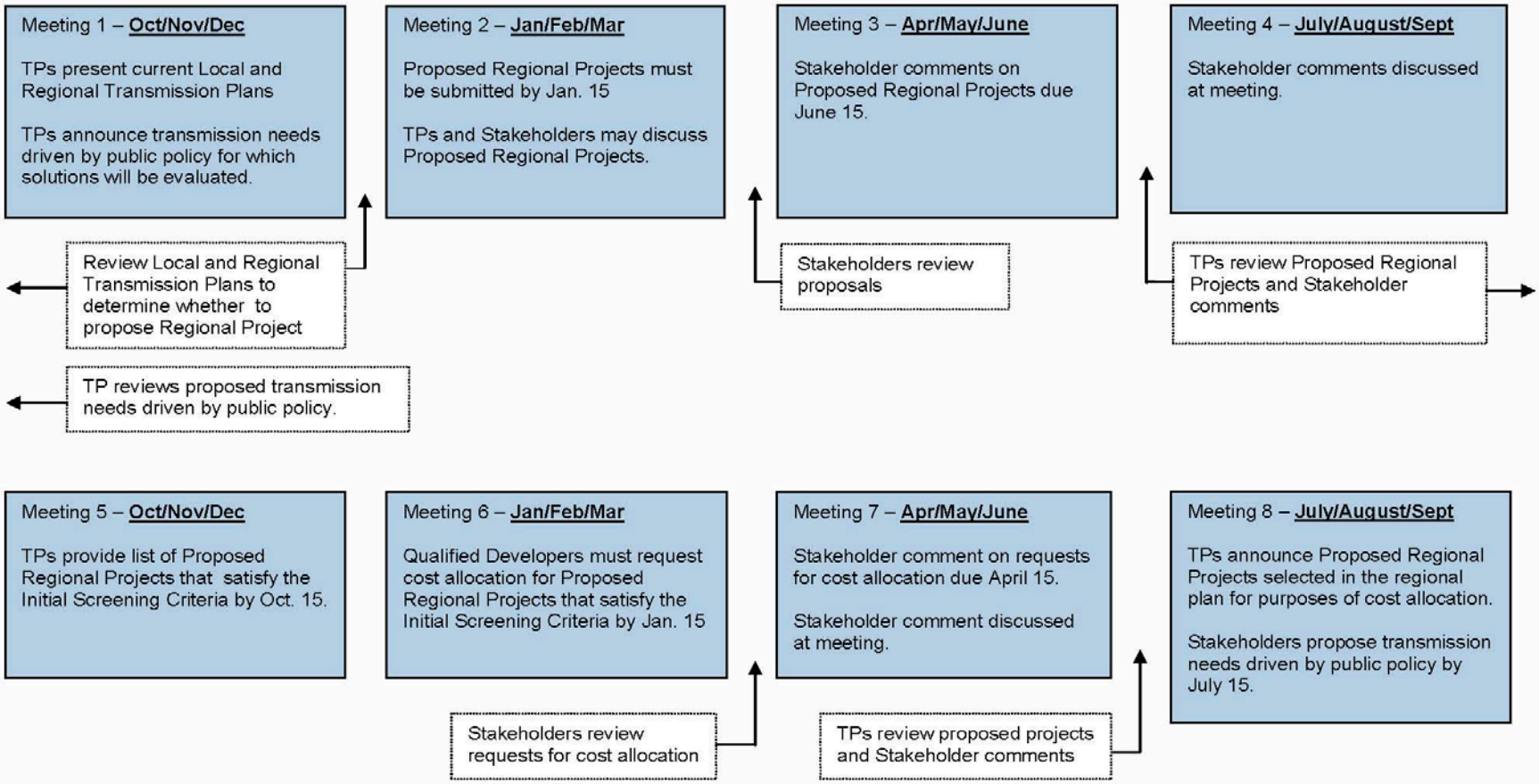
Order 1000 Update

- Interregional - Milestones
  - July 10, 2013 SCE&G filed a revised Attachment K including proposed Order 1000 Interregional Processes
  - FERC is reviewing

Appendix K-3
Timeline for Local Transmission Planning

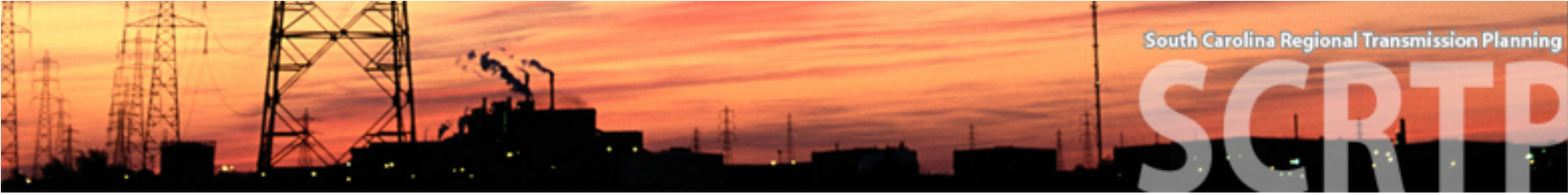


Appendix K-4
Timeline for Regional Transmission Planning



FERC Order 1000

Stakeholder Input, Comments and Questions



Proposed Transmission Expansion Plan Changes

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Jeff Neal

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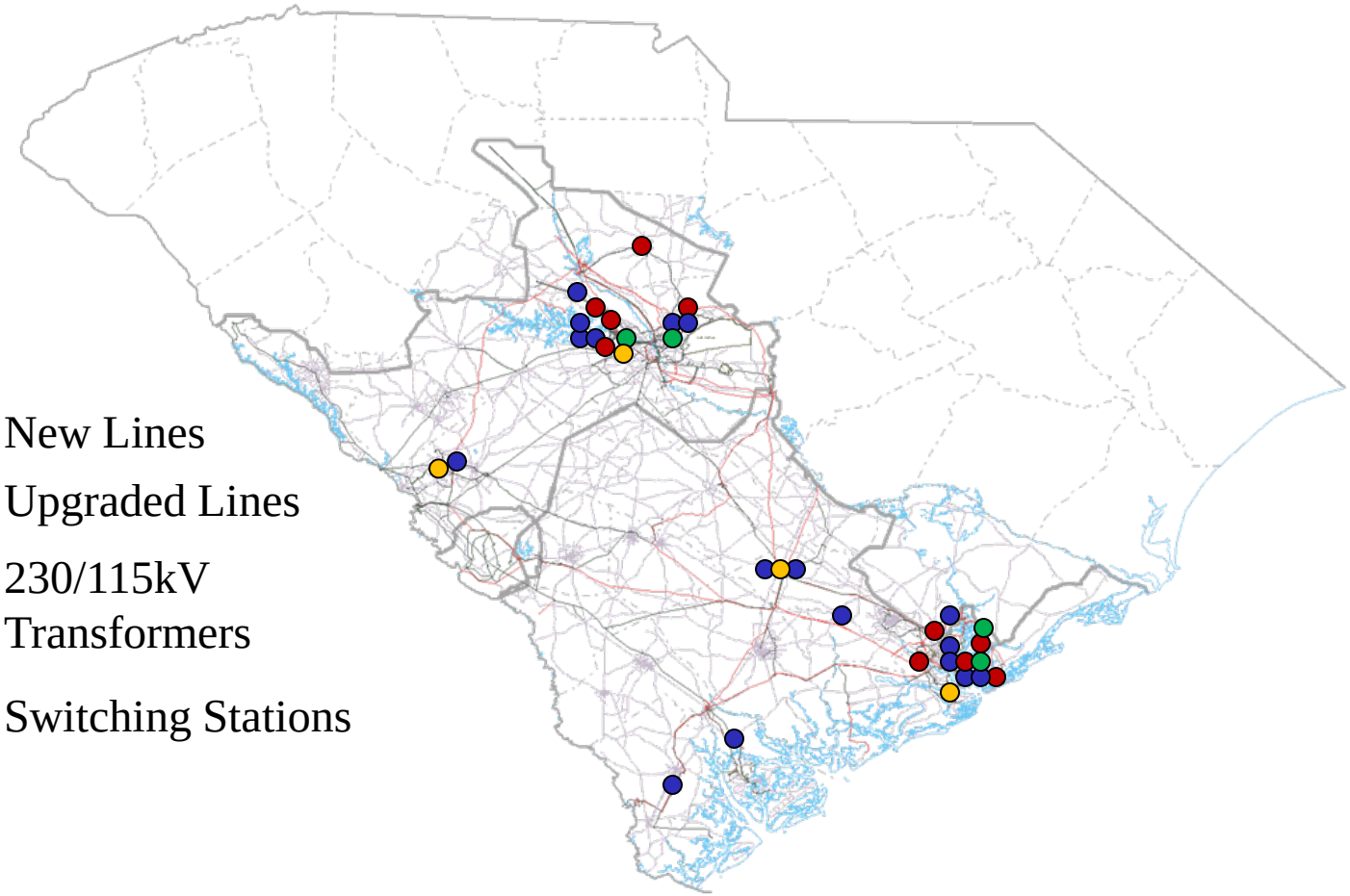
- These projects represent the current transmission plans within the SCRTP footprint
- The expansion plan is continuously reviewed and may change due to changes in key data and assumptions
- This presentation does not represent a commitment to build

SCE&G Planned Projects



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

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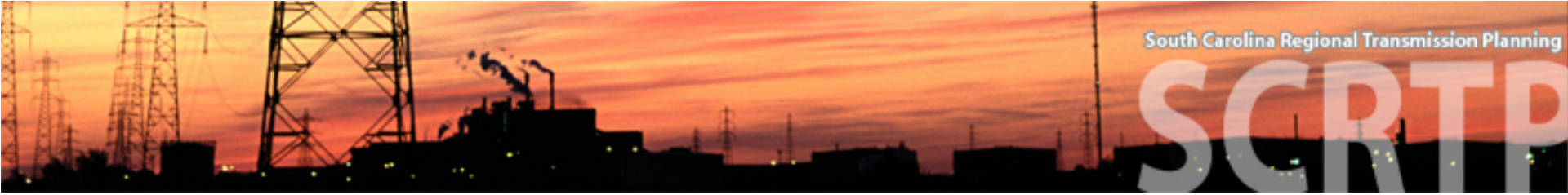

SCE&G Current Projects

- NND Related Projects
  - VCS2 – Lake Murray 230kV #1
  - Denny Terrace – Lyles 230/115kV Rebuild
  - Saluda River Transmission 230/115 kV Substation
  - St. George 230kV Substation
- TPL/Reliability Based Projects
  - Lake Murray – SRT – Lyles 230/115kV
  - Hagood – Bee Street 115kV Rebuild
  - Hagood – Faber Place 115kV Rebuild
  - Yemassee – Burton 115kV #2 Rebuild

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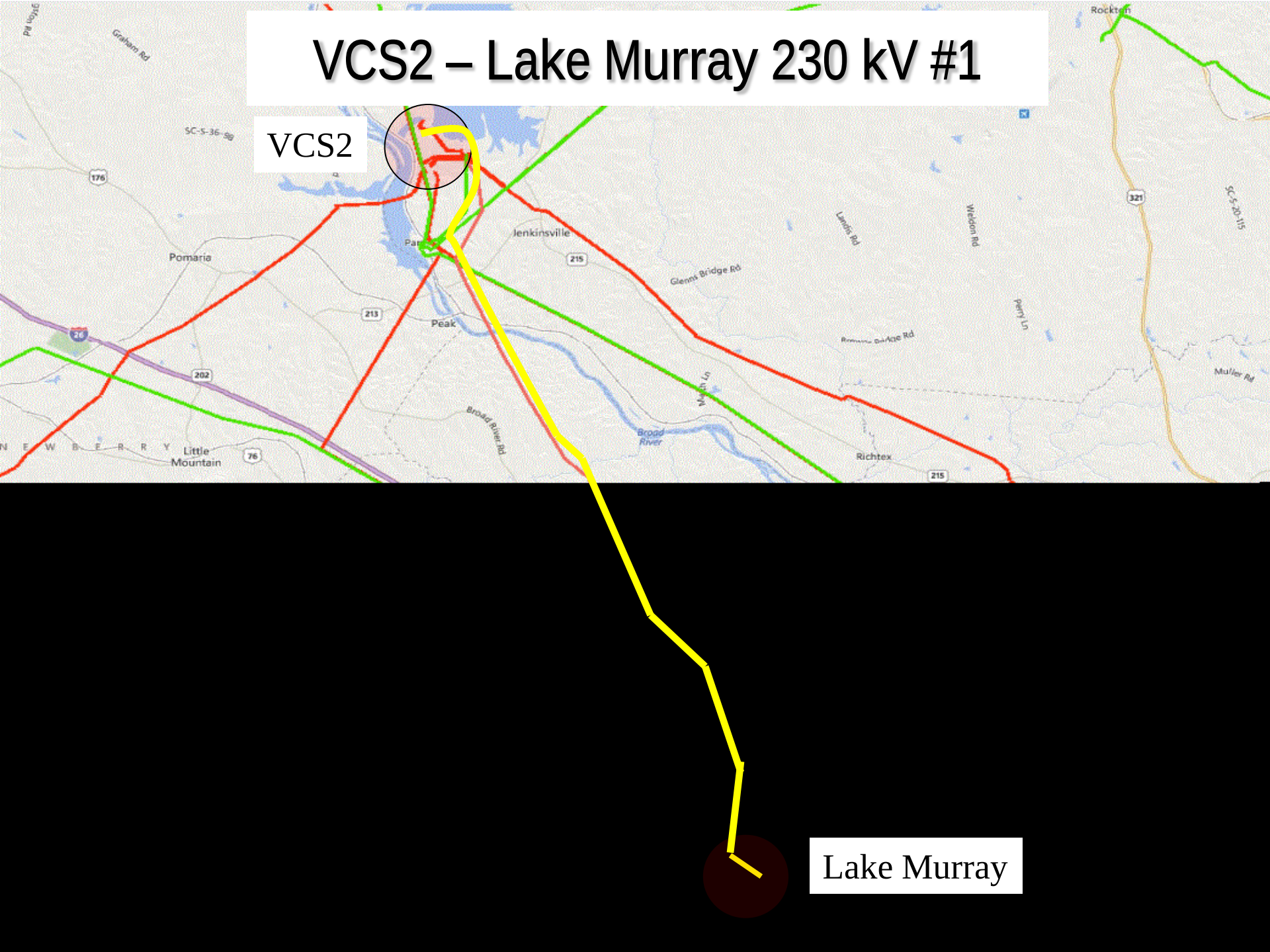
VCS2 – Lake Murray 230 kV #1

- Construct 230 kV SPDC B1272 ACSR conductor, approximately 24 miles from VCS2 to Lake Murray
  - SPDC construction to include new VCS2 – St. George 230 kV #1
- Add new 230 kV terminal at Lake Murray
- Scheduled to be completed by September 30, 2014
  - Initially scheduled for completion in May, 2014. Delayed due to outage constraints and DOT permitting for I-26 crossing

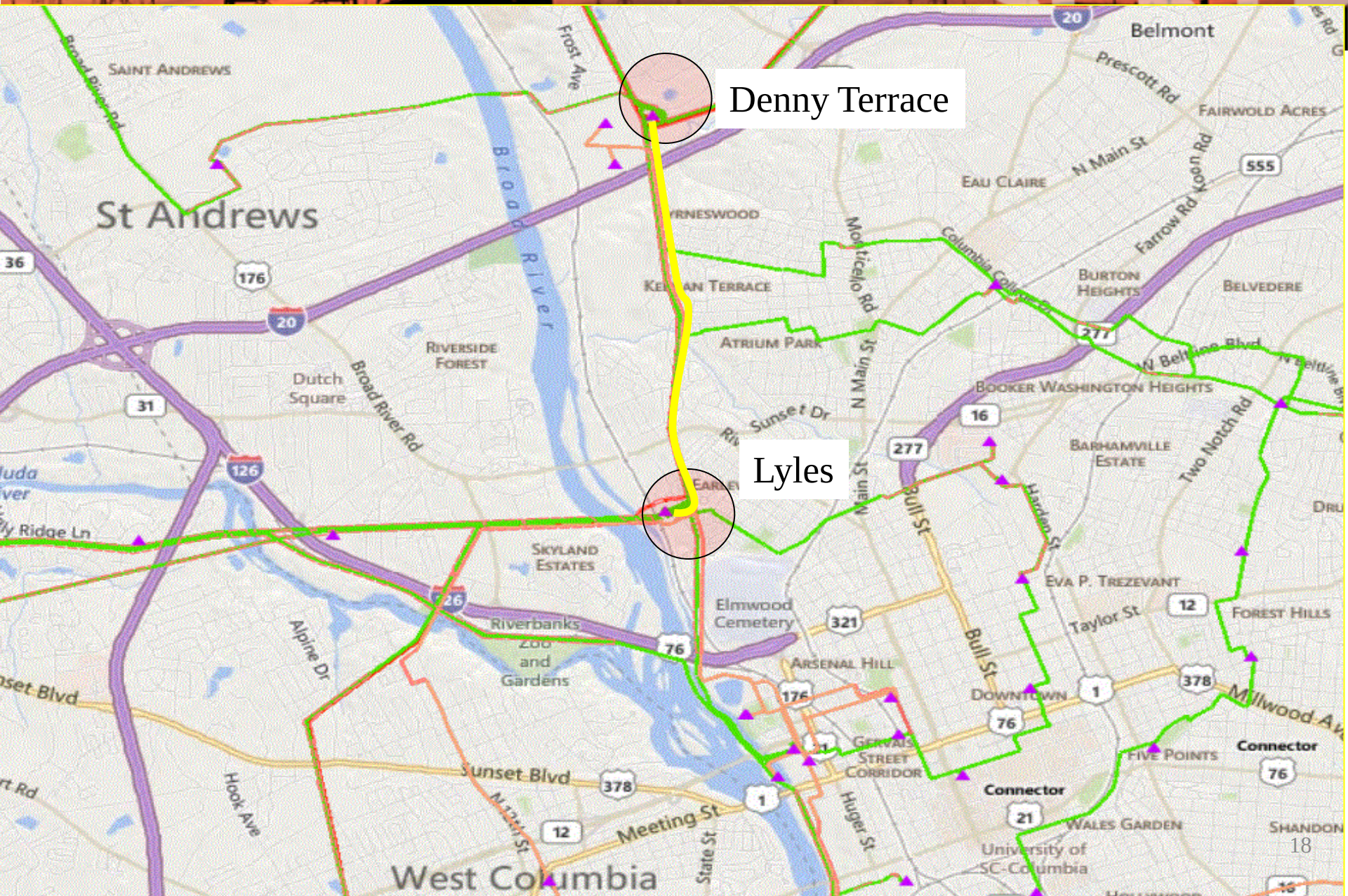
VCS2 – Lake Murray 230 kV #1



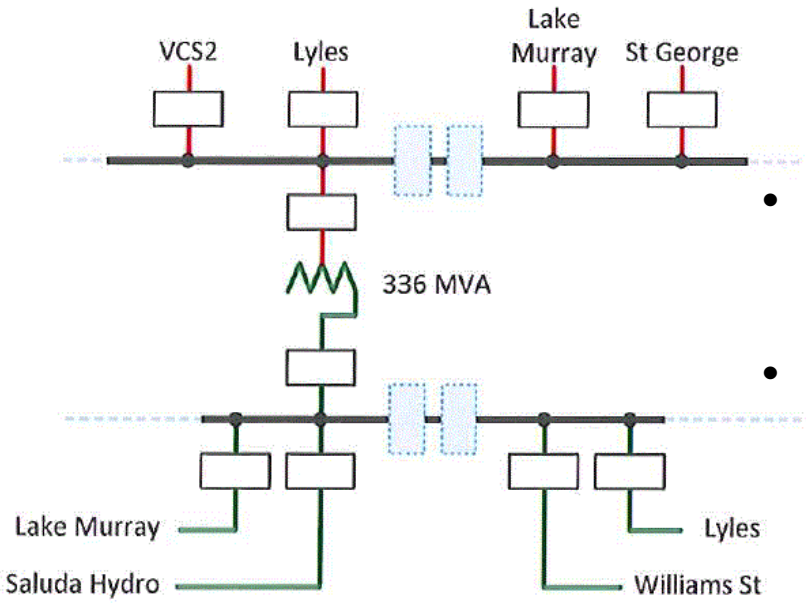
Denny Terrace – Lyles 230/115 kV Rebuild

- 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 #1 (NERC TPL System Improvement)
- Upgrade 230 & 115 kV terminals at Denny Terrace and Lyles
- Scheduled for completion by January 30, 2015
  - Initially scheduled for completion in Fall 2013, delayed due to outage constraints and other issues. Outage constraints alleviated with completion of two VCS2 – Lake Murray 230 kV circuits.

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 5/31/16 (tentative) (NERC TPL System Improvement)

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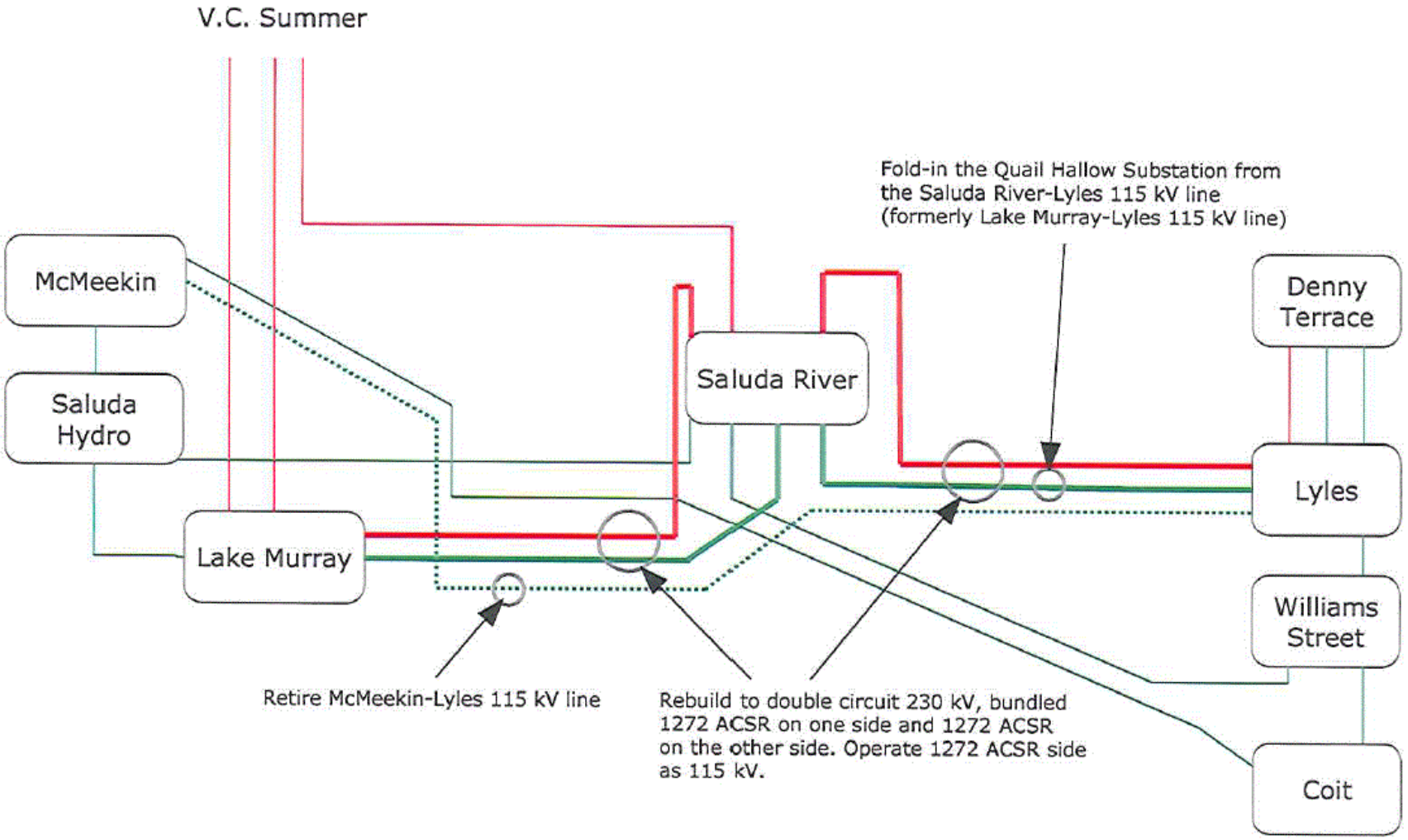
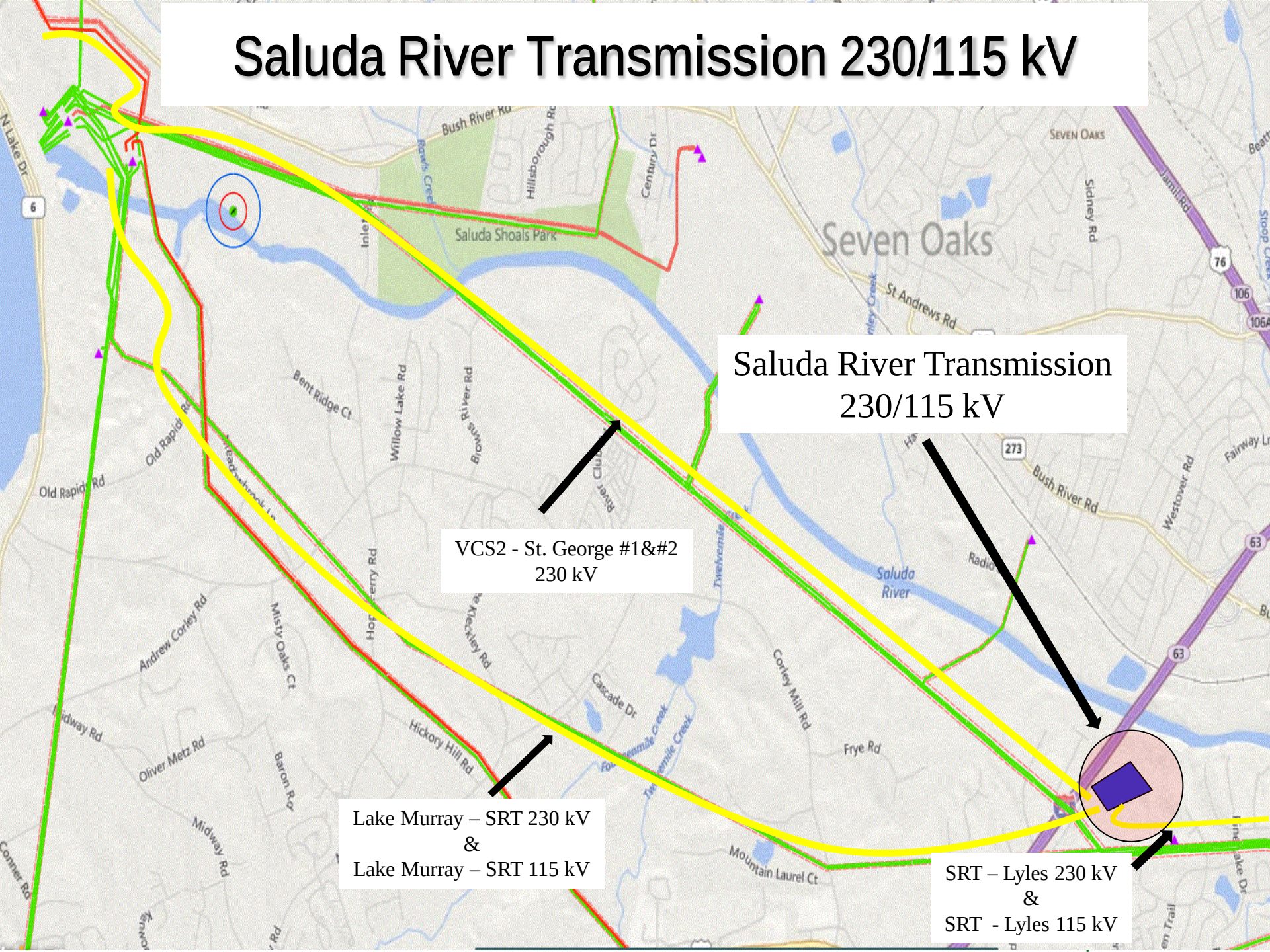
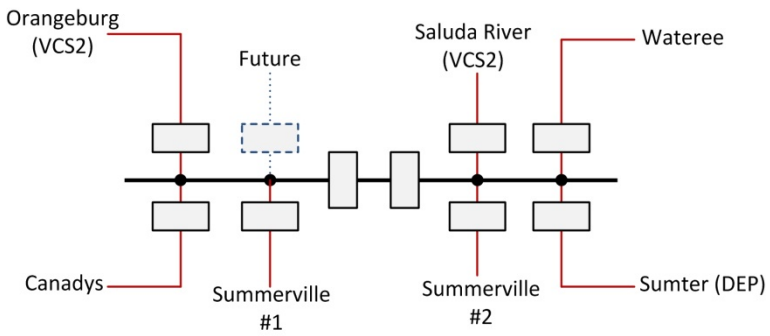
Saluda River Transmission 230/115 kV



Saluda River Transmission 230/115 kV



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

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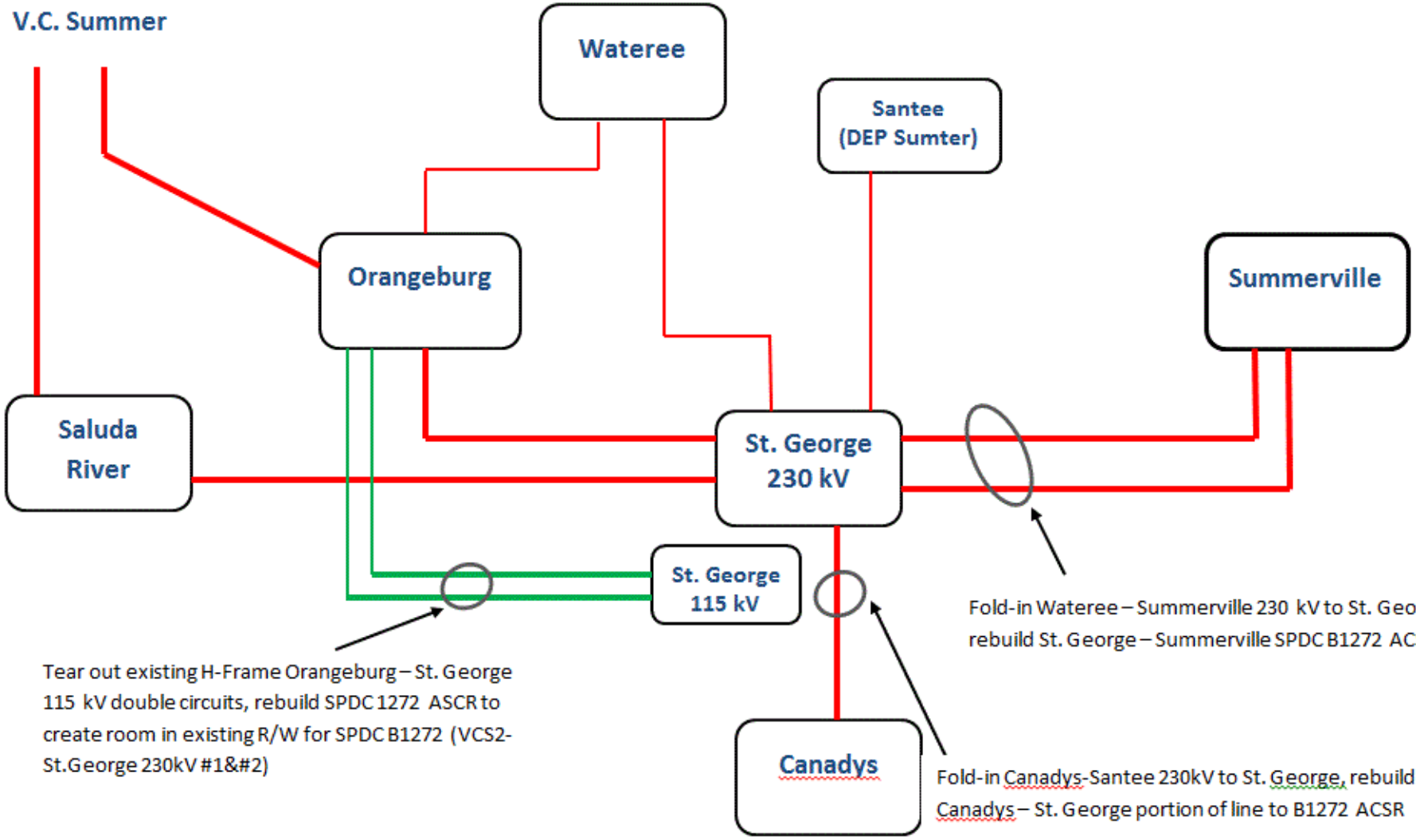
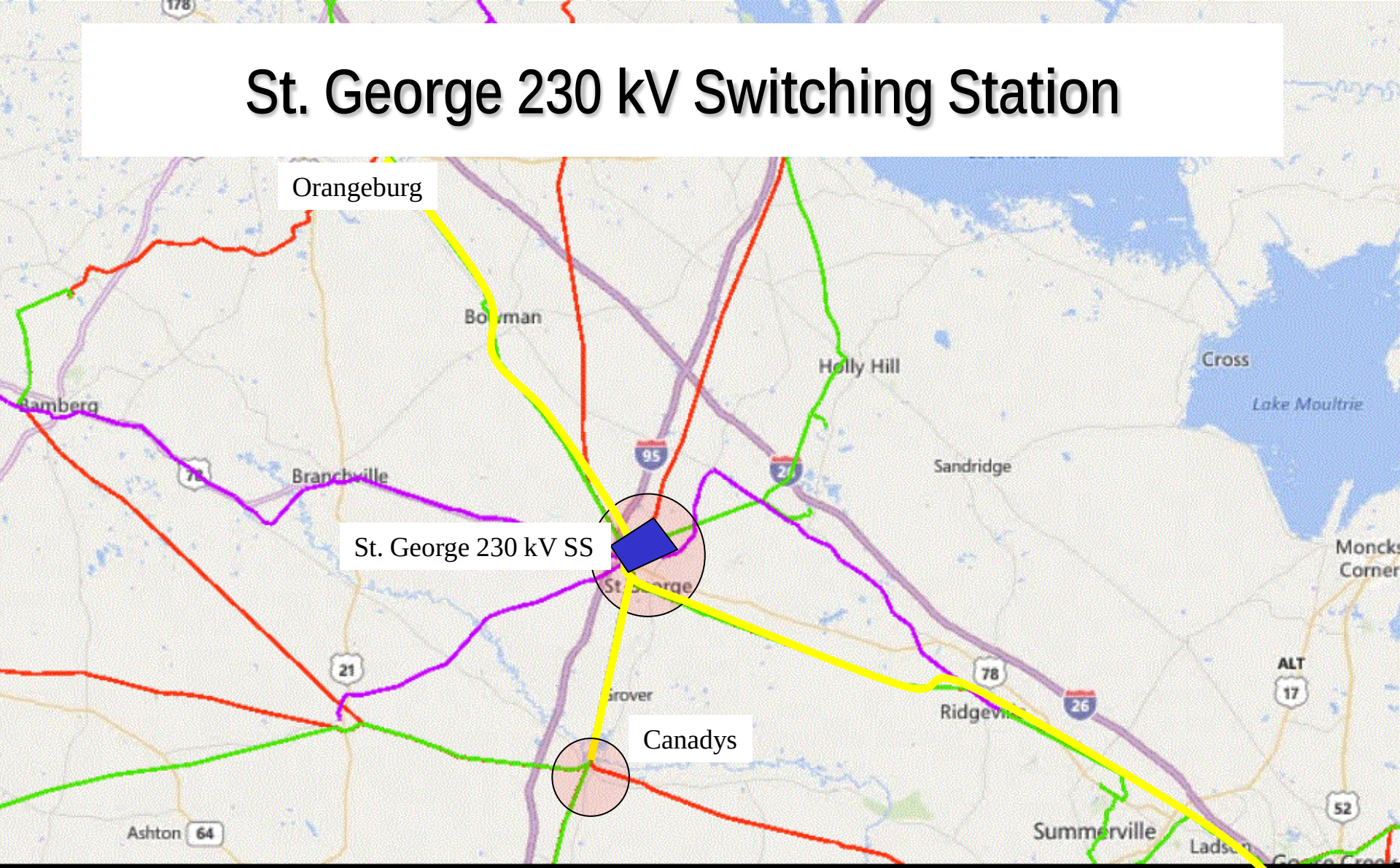
St. George 230 kV Switching Station



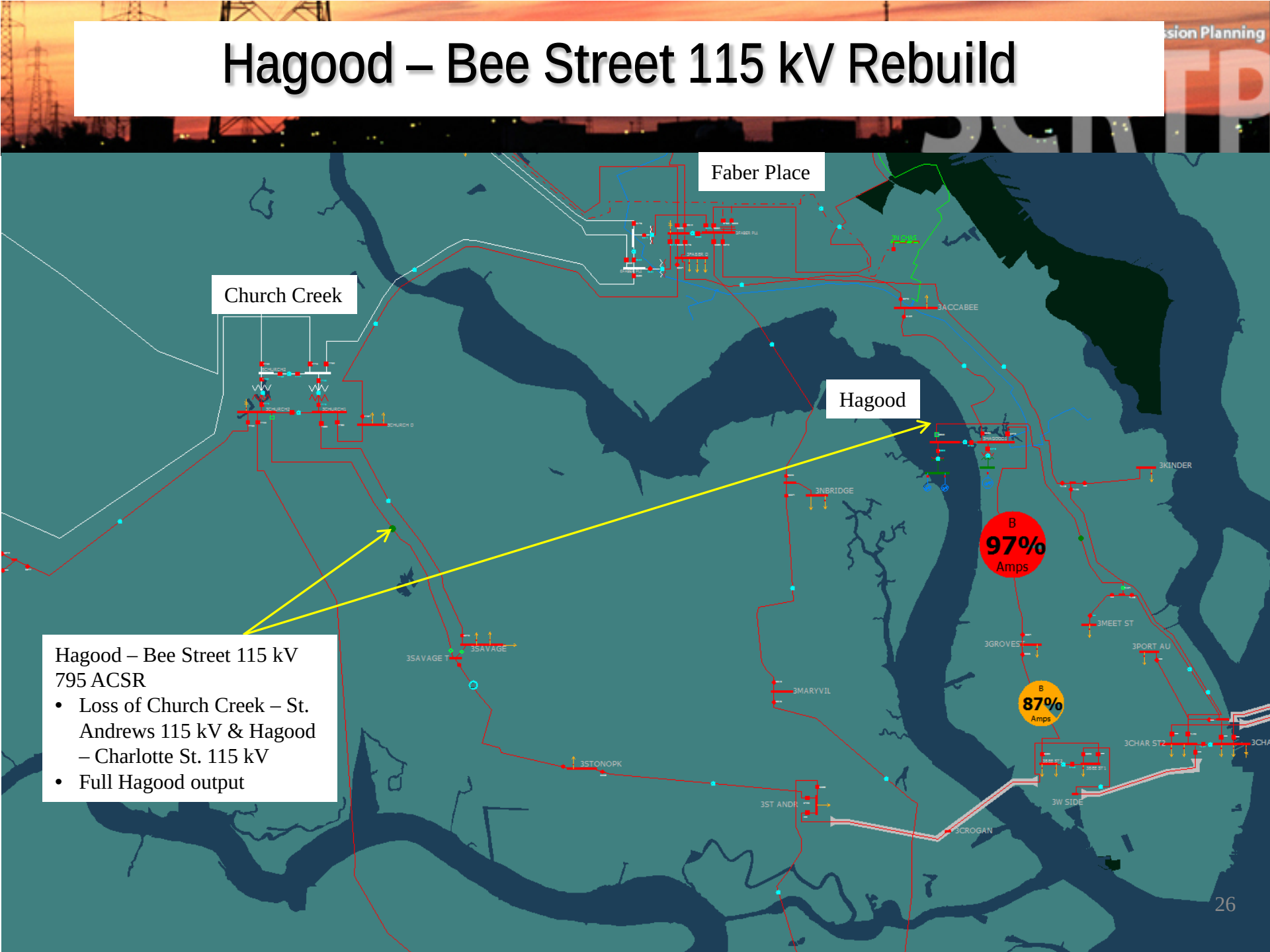
St. George 230 kV Switching Station



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 N-2 contingency in combination with full Hagood ICT's output, and improved reliability of steel pole construction
- Scheduled for completion by December 31, 2015

Hagood – Bee Street 115 kV Rebuild



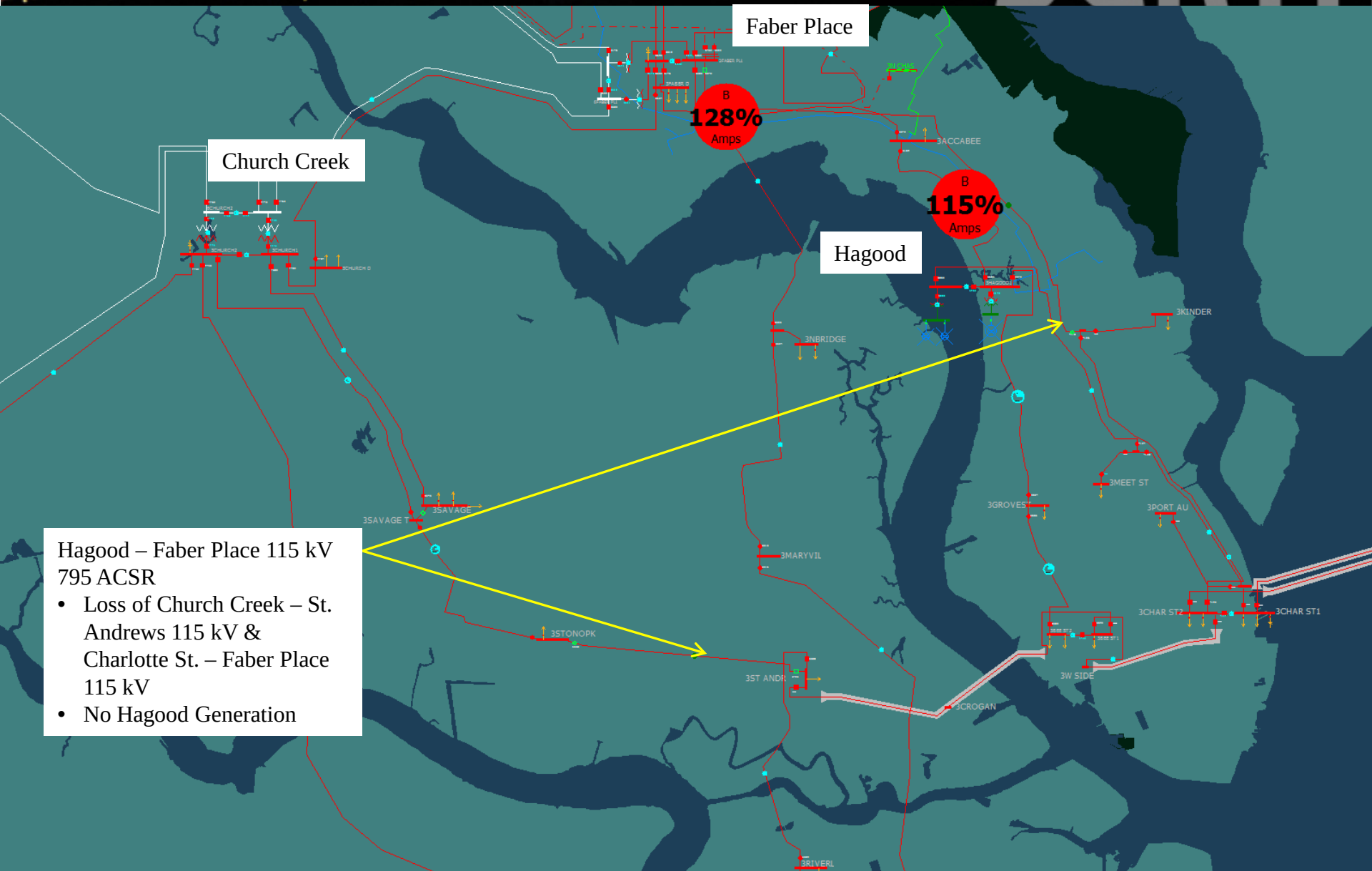
Hagood – Bee Street 115 kV
795 ACSR

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

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 N-2 contingency in combination with Hagood generators offline, and 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



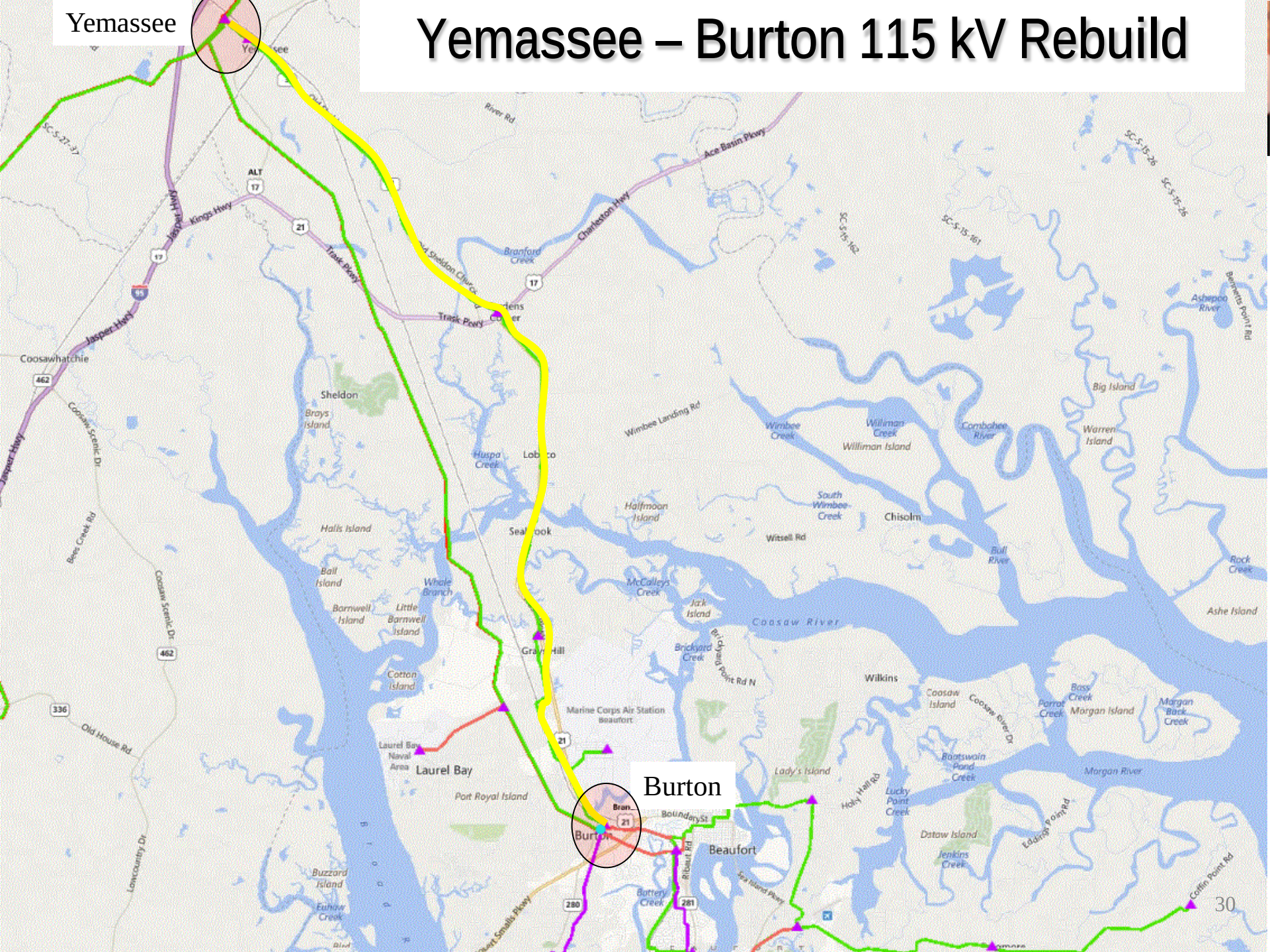
Hagood – Faber Place 115 kV 795 ACSR

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

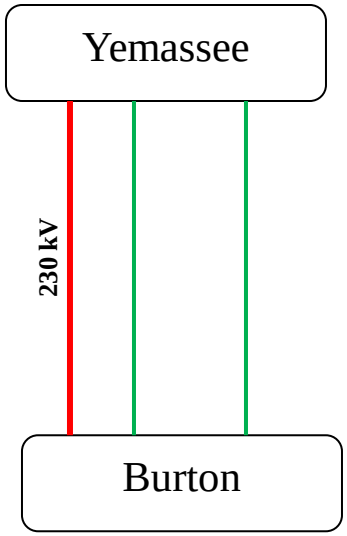
Yemassee – Burton 115 kV #2 Rebuild

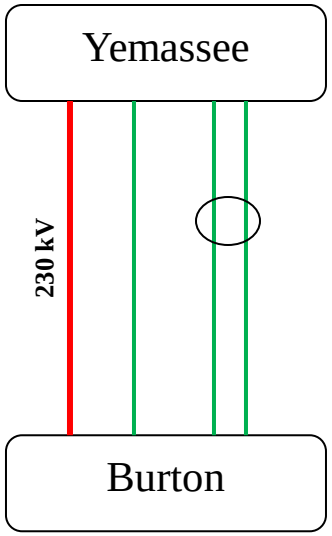
- Remove existing H-Frame 477 ACSR 115 kV line, rebuild approximately 21 miles SPDC B795 ACSR
  - Yemassee – Burton 115 kV #2 upgraded
  - Yemassee – Burton 115 kV #3 created
- Upgrade/Add 115 kV terminals at Yemassee
- Project required to alleviate N-2 contingency overload that requires load shedding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

Yemassee – Burton 115 kV Rebuild



Yemassee – Burton 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

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SCE&G Planned Project Scope/Date Changes

Bayview-Charlotte St 115 kV #2 Underground Cable Construct

- Damage to conduit discovered shortly after initial installation/energization, complete and extensive project overhaul required

- Completion delayed to May 31, 2015

SCE&G Planned Project Scope/Date Changes

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

SCE&G Planned Project Scope/Date Changes

Cainhoy - Hamlin/Mt. Pleasant 115 kV Rebuild as Double Circuit

- This area is winter peaking and it was determined that the project is needed prior to 2017 winter

- Expedited date to 12/01/2016

SCE&G Planned Project Scope/Date Changes

Queensboro 115 kV Switching Station Construct

- 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?

Proposed Transmission Expansion Plan Changes

Santee Cooper

Rick Thornton

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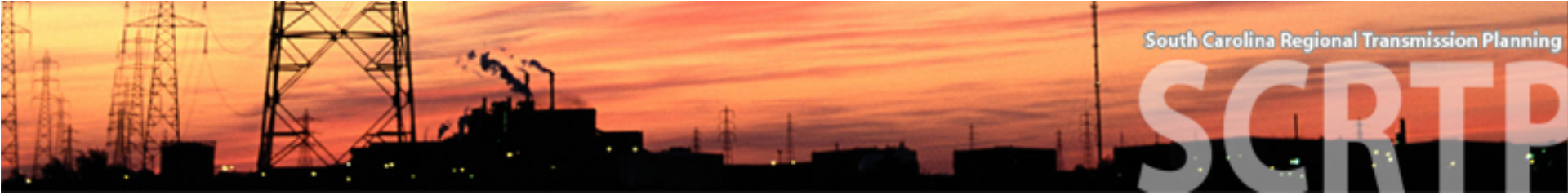

Transmission Network

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

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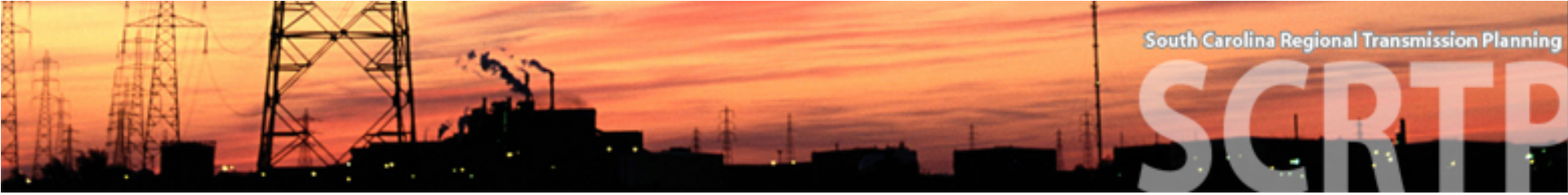

Transmission Network

Active Projects

• Richburg 230-69 kV Substation	03/2015
• 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

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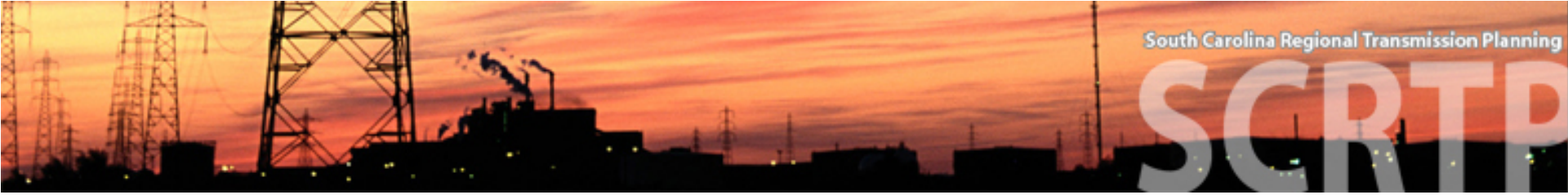

Transmission Network

Active Projects

• Richburg-Flat Creek 230 kV Line	06/2016
• Bucksville-Garden City 115 kV Line	06/2016
• Sandy Run 230-115 kV Substation	05/2017
• Pomaria-Sandy Run 230 kV Line	05/2017
• Sandy Run-Orangeburg 230 kV Line	11/2017

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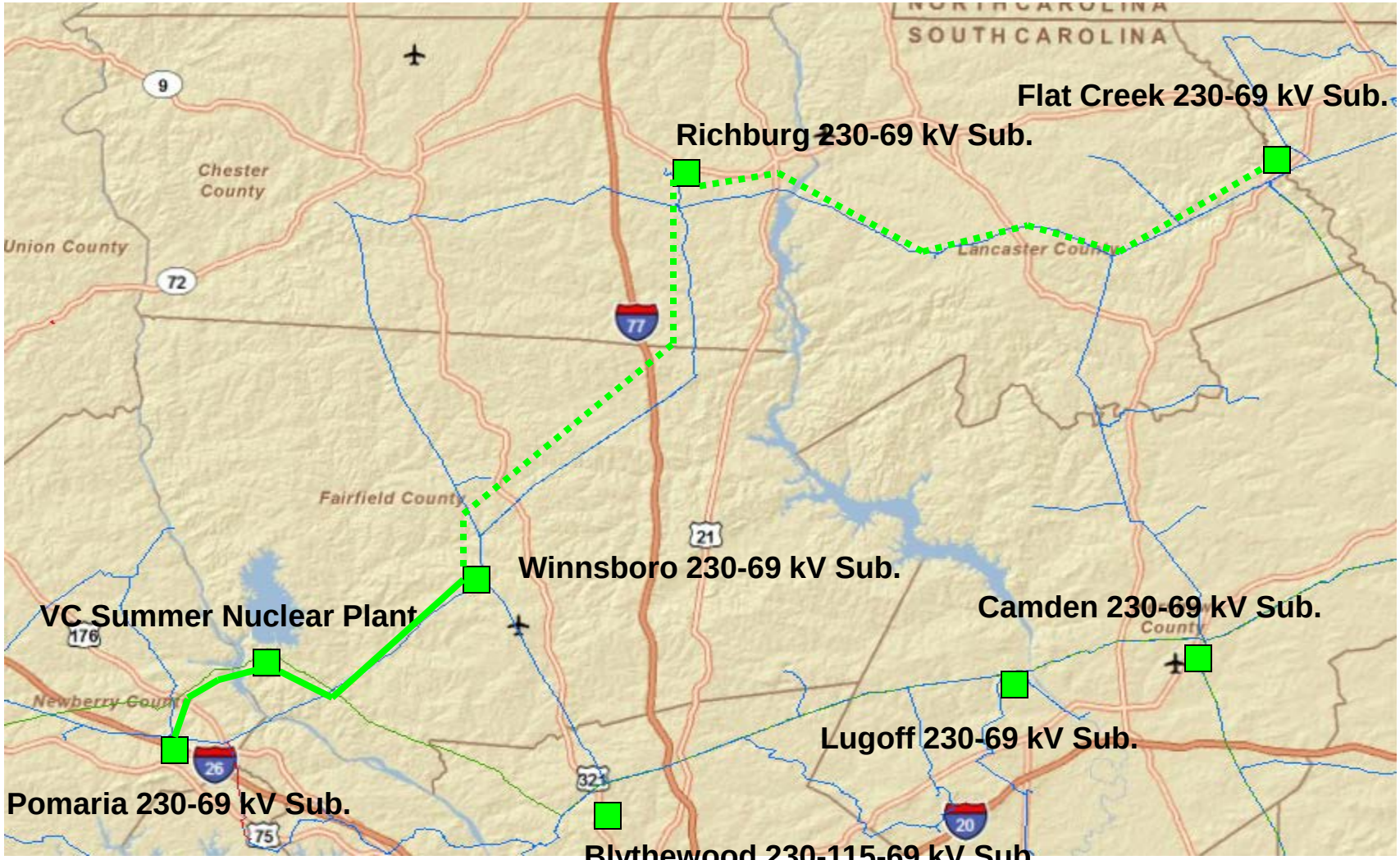

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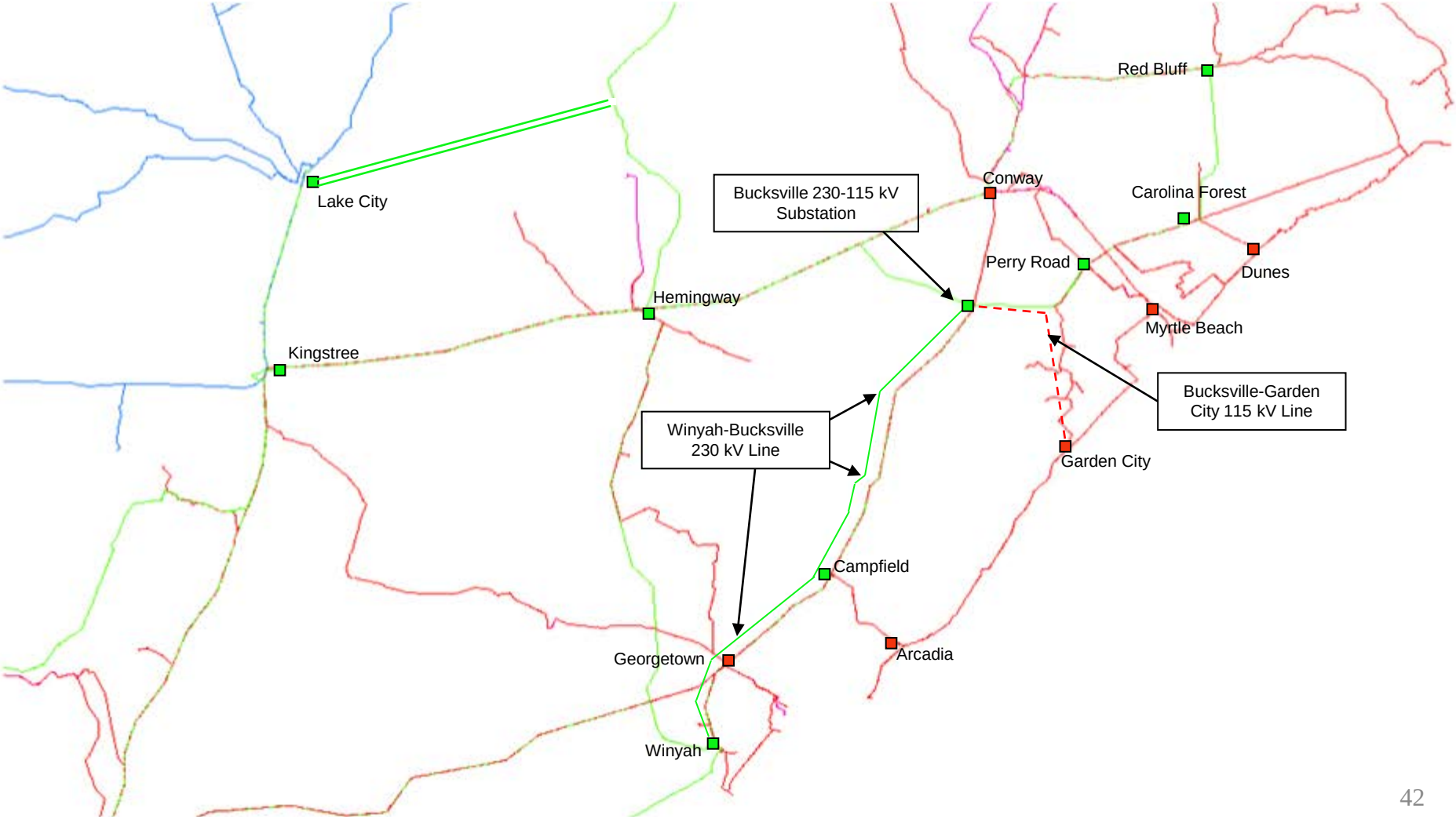
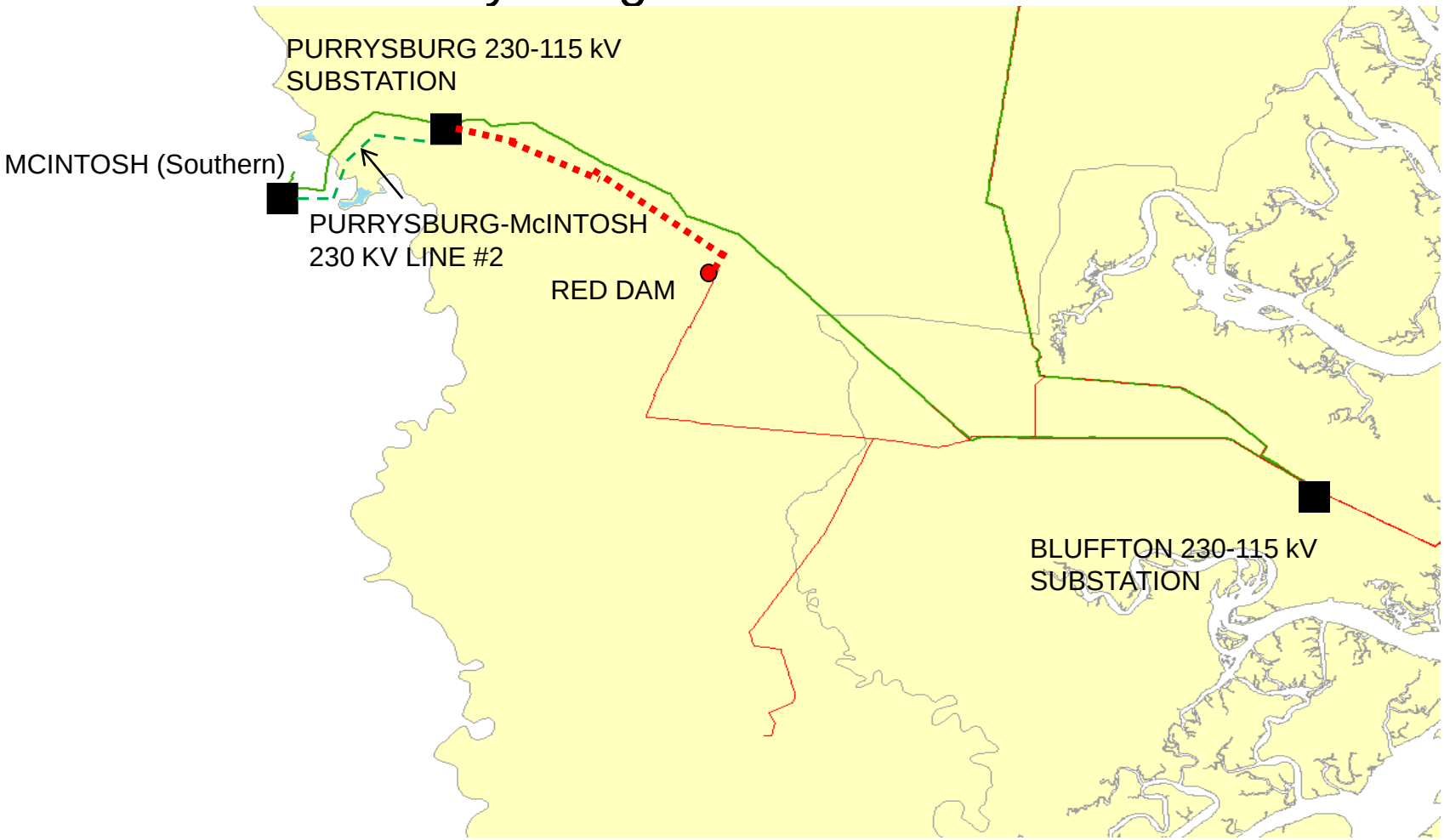
Bucksville Transmission Projects



Purrysburg 230-115 kV Substation



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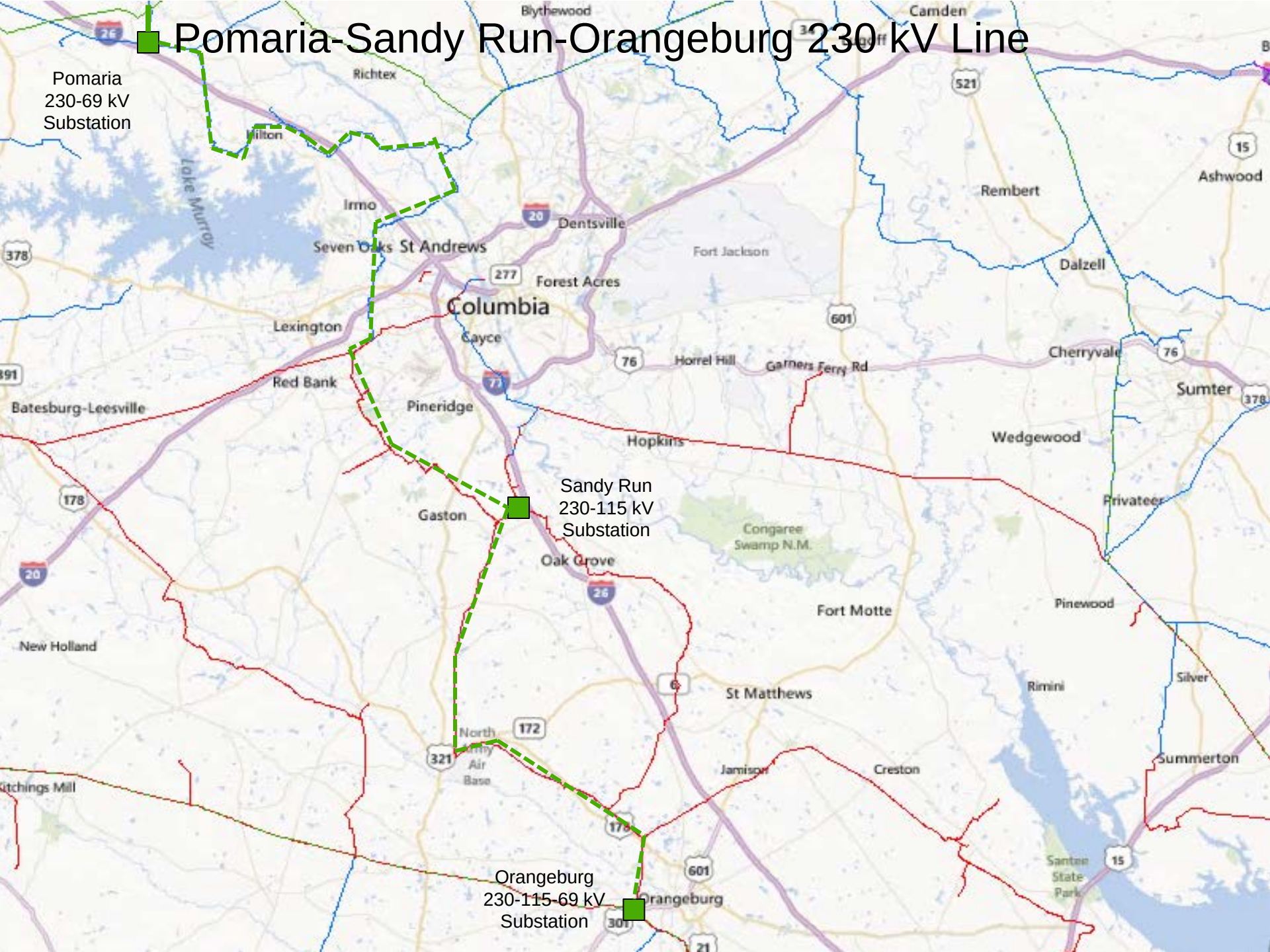
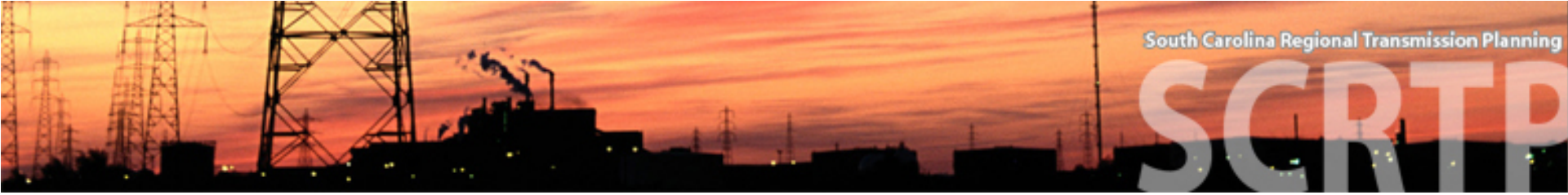

Pomaria-Sandy Run-Orangeburg 230 kV Line
Pomaria
230-69 kV
Substation
Sandy Run
230-115 kV
Substation
Orangeburg
230-115-69 kV
Substation
Blythewood
Camden
Richtex
Hilton
Lake Murray
Irmo
Seven Oaks
St Andrews
Dentsville
Fort Jackson
Rembert
Ashwood
Dalzell
Forest Acres
Columbia
Lexington
Cayce
Horrel Hill
Garners Ferry Rd
Cherryvale
Sumter
Red Bank
Batesburg-Leesville
Pineridge
Hopkins
Wedgewood
Gaston
Congaree
Swamp N.M.
Oak Grove
Privateer
Fort Motte
Pinewood
New Holland
St Matthews
Rimini
Silver
Summerton
Jamison
Creston
Santee
State
Park
Orangeburg



Transmission Network
Planned Projects

• Bucksville-Myrtle Beach 115 kV Line	12/2016
• 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

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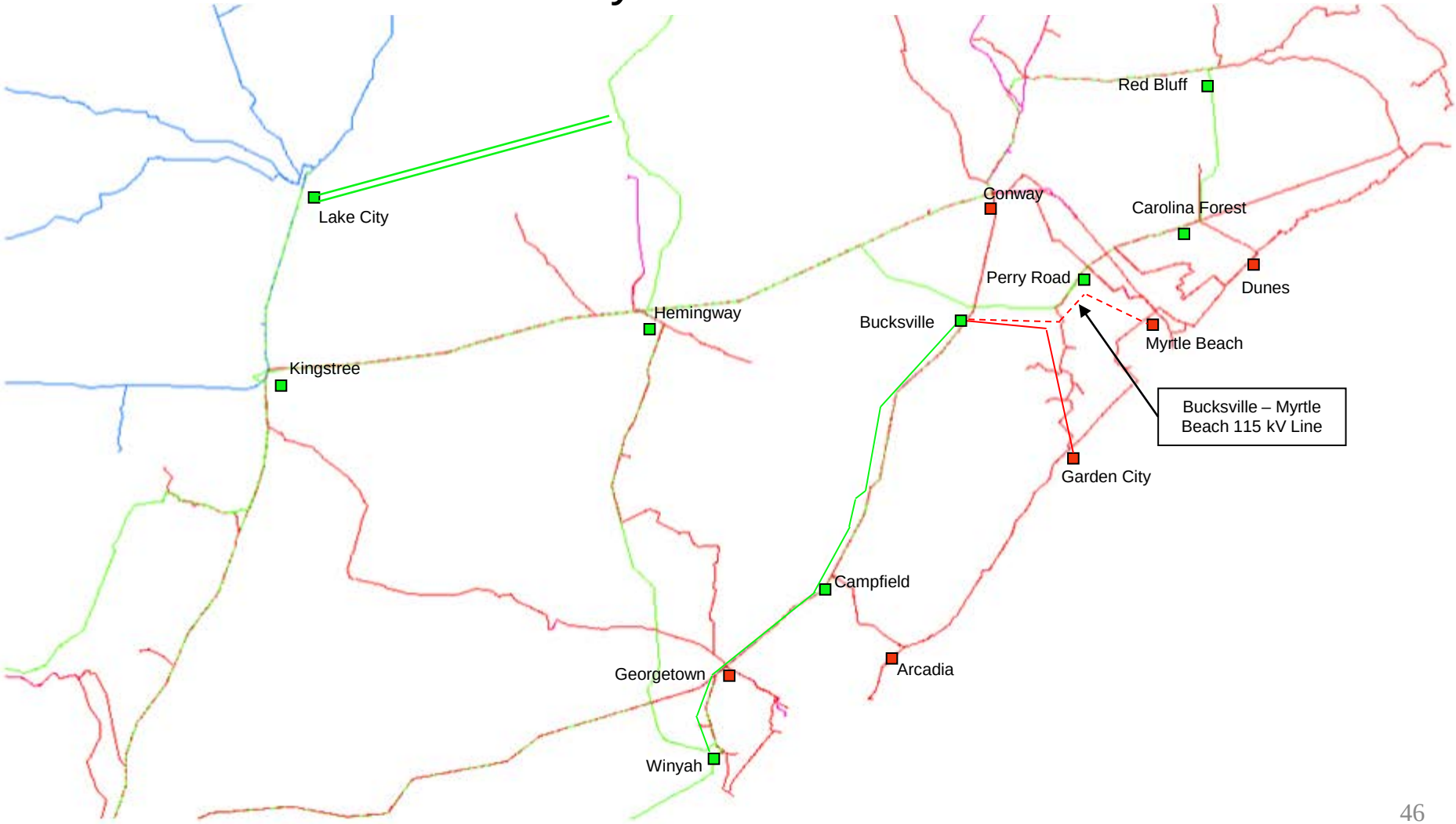
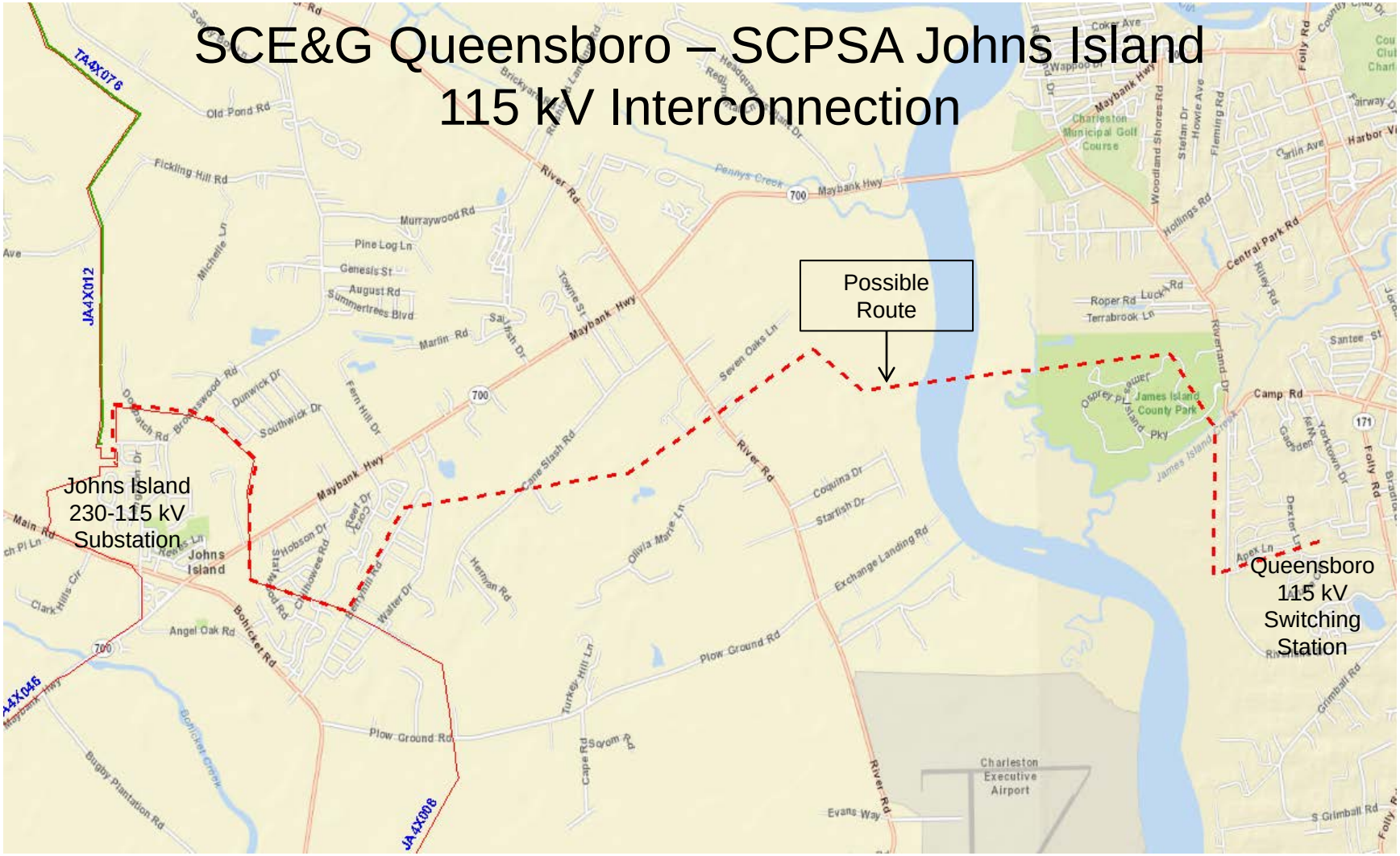
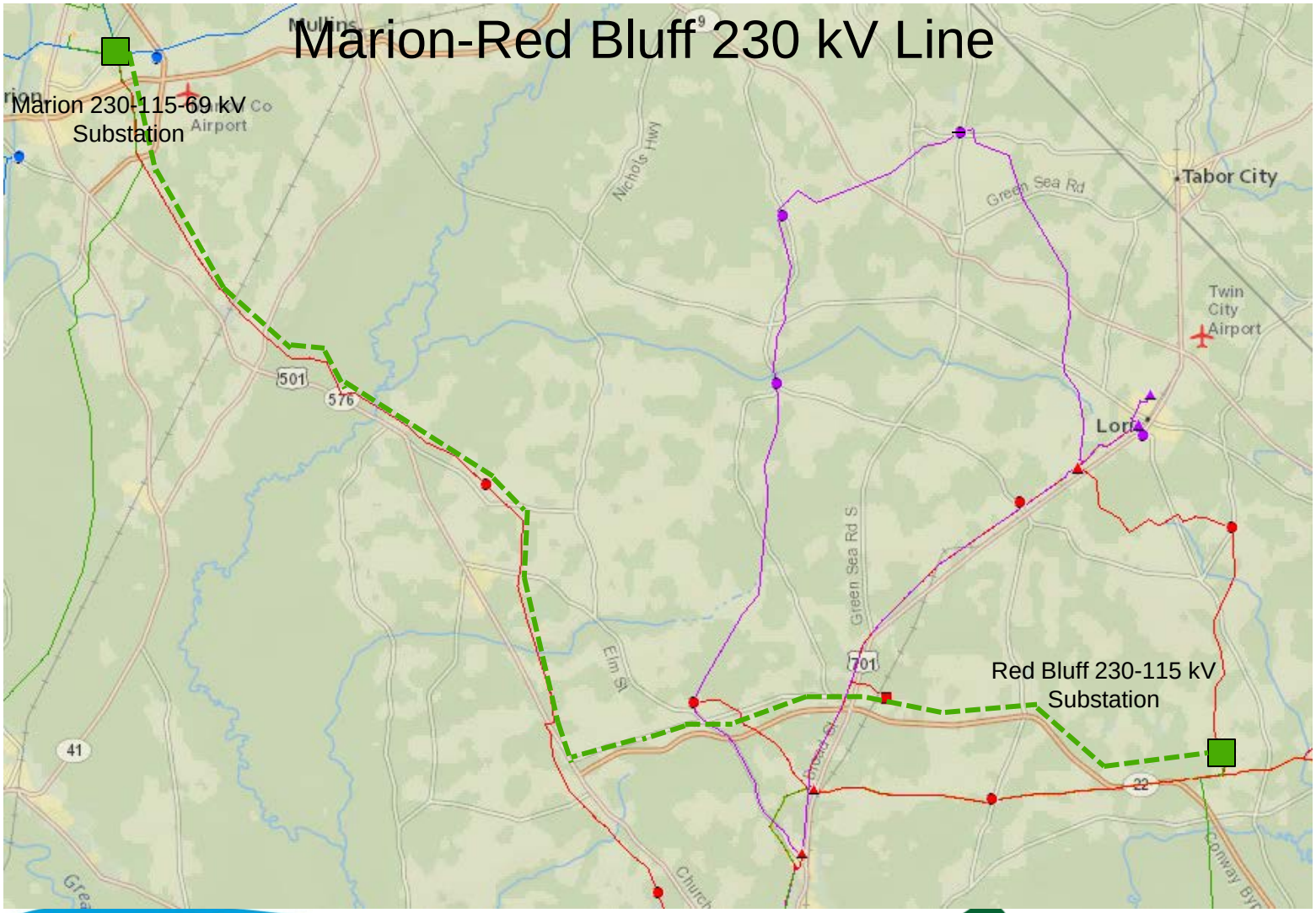
Bucksville – Myrtle Beach 115 kV Line



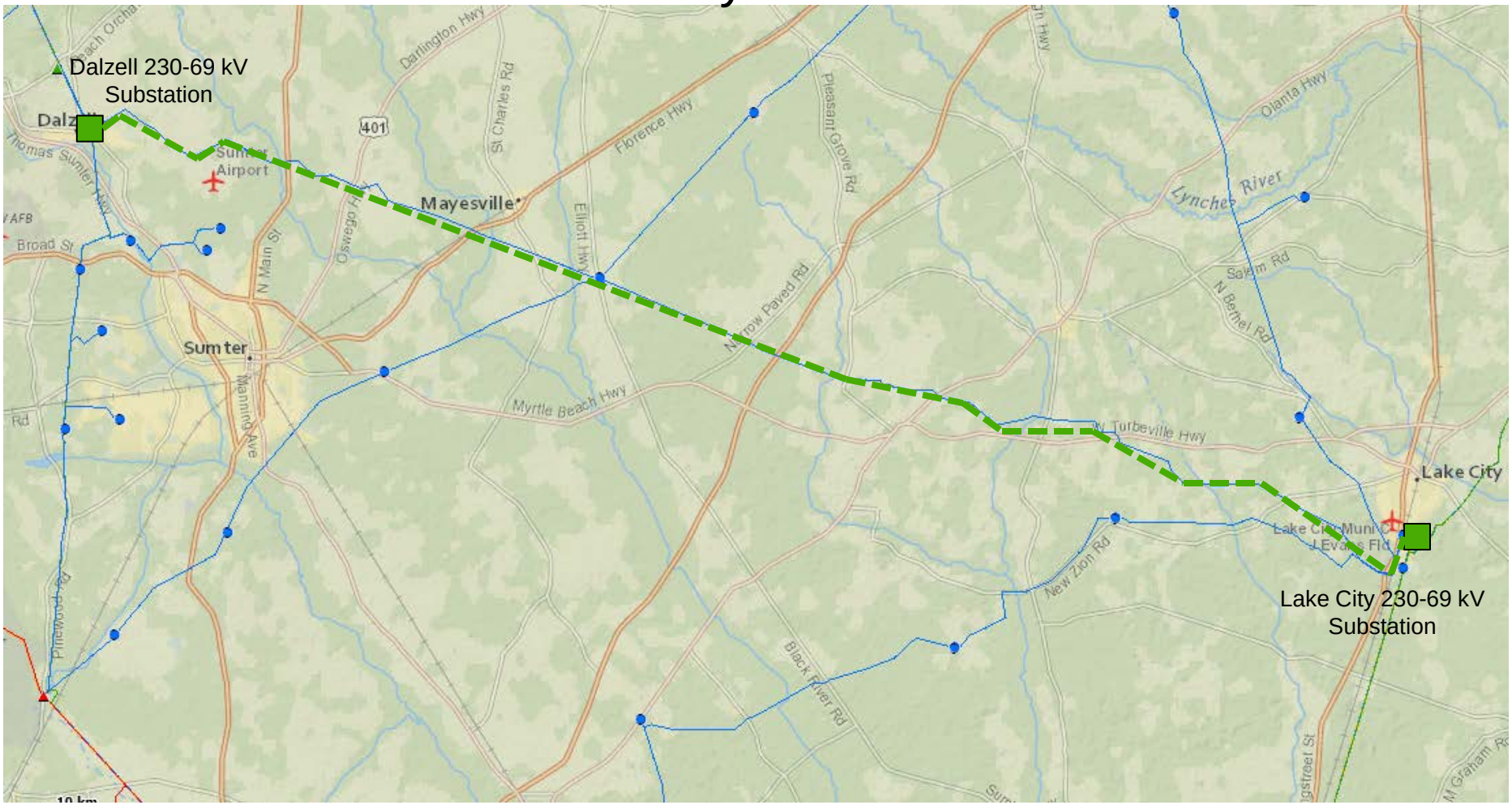
SCE&G Queensboro – SCPSA Johns Island 115 kV Interconnection



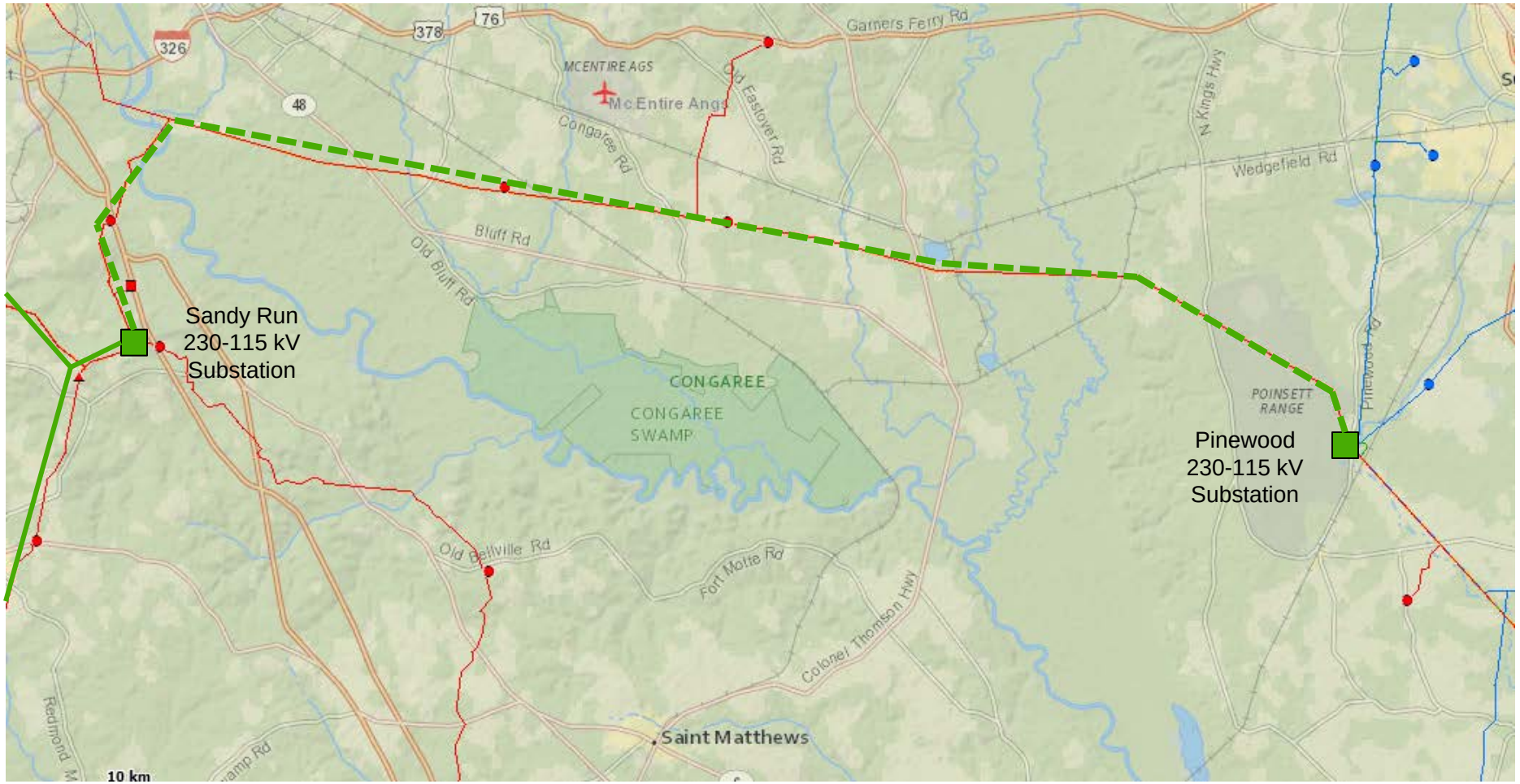
Marion-Red Bluff 230 kV Line



Dalzell-Lake City 230 kV Line



Sandy Run-Pinewood 230 kV Line



Proposed Transmission Expansion Plan Changes

Stakeholder Input, Comments and Questions

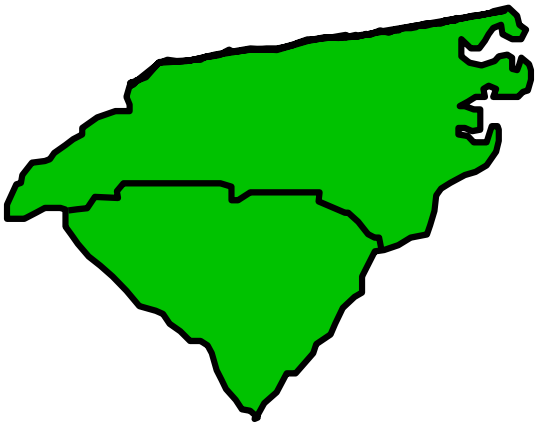
Reliability Assessment Studies

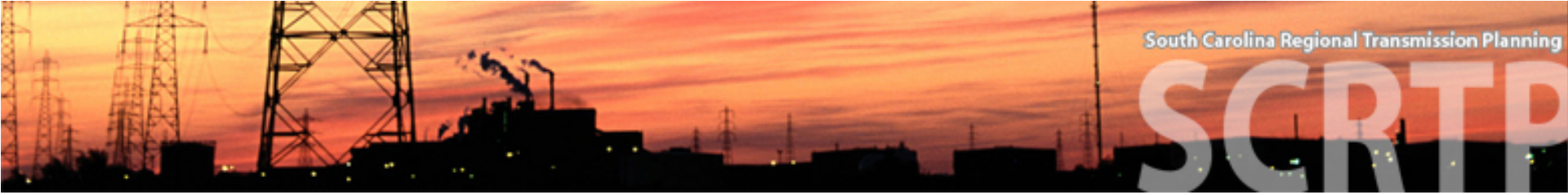
Rick Thornton

Multi-Party Assessments

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

CTCA Future Year Assessments





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

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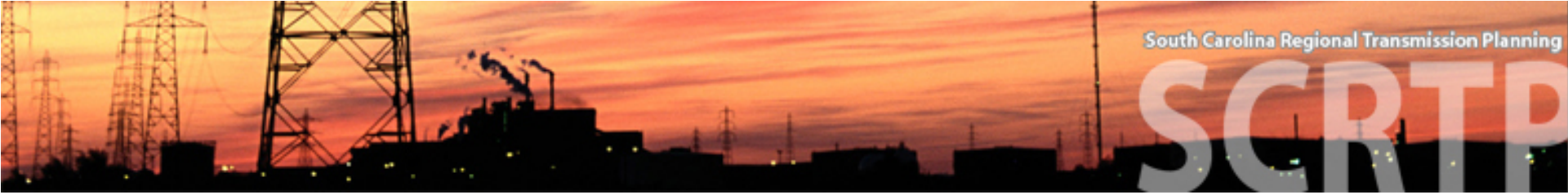

CTCA Purpose

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")

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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

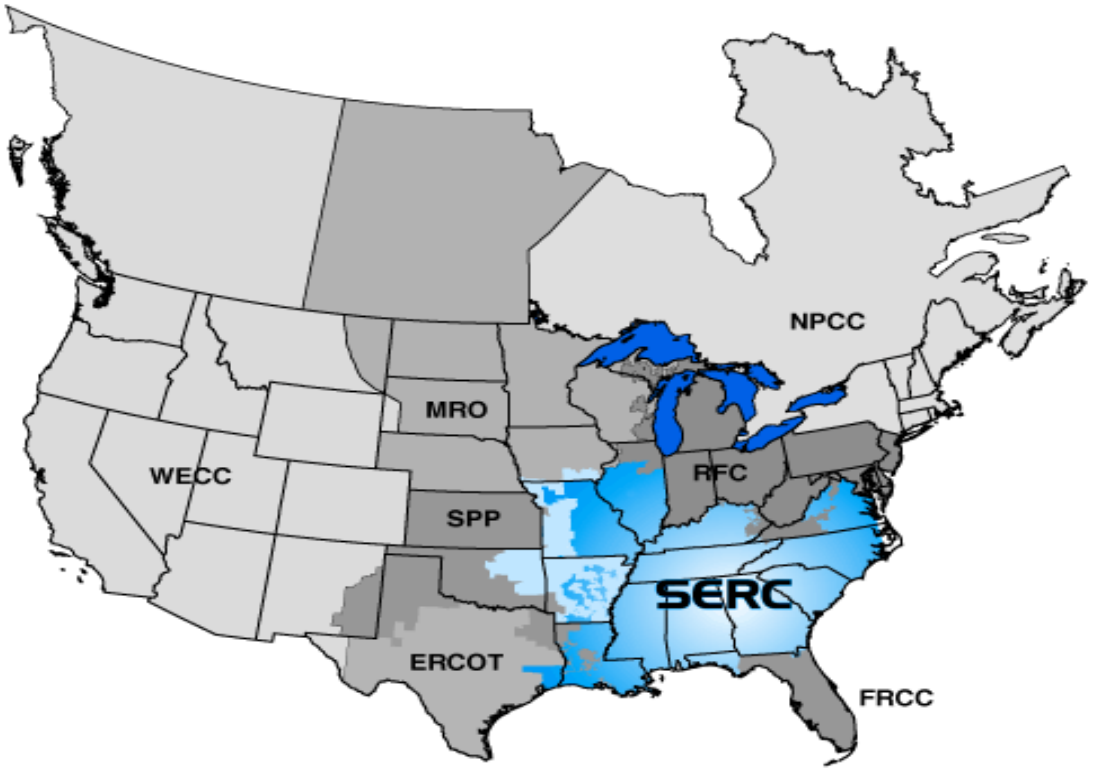
- Assess the existing transmission expansion plans of Duke, Progress, SCEG, and SCPSA to ensure that the plans are simultaneously feasible.
- Identify any potential joint solutions that are more efficient or cost-effective than individual company plans, which also improve the simultaneous feasibility 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").

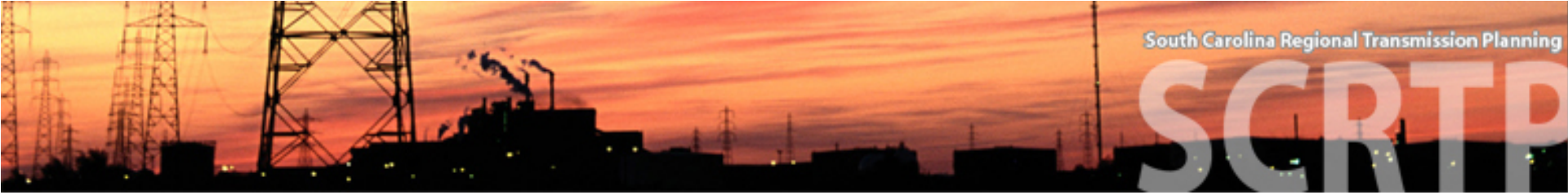
CTCA Studies
2014 Study

- 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 released later this year

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.

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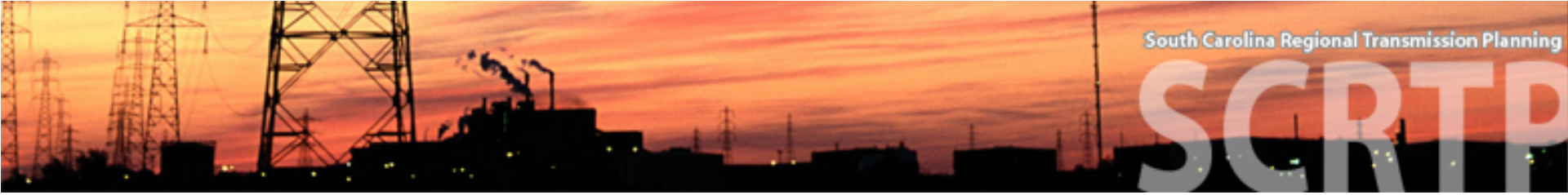

SERC Long Term Study Group
2014 Work Schedule

- LTSG Data Bank Update –May 20-22 Hosted by TVA
- Study Case: 2016 Summer Peak Load
- Work completed by LTSG August thru October
- Report issued late November 2014.

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SERC Assessments

Questions?

SIRPP Assessments

SIRPP
2013/14 Economic Sensitivity Study

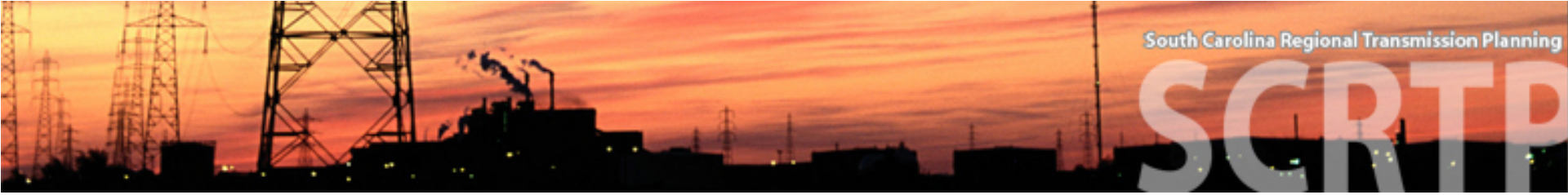
- 2015, 2016, and 2018 Summer Peak Models evaluated
- Each study participant provided updated internal model data
- Scenarios Evaluated
  - Shelby 500 kV (HVDC) to TVA/Southern 3,500 MW
  - Sullivan 765 kV (HVDC) to PJM/VACAR 3,500 MW
  - TVA to LG&E/KU 700 MW
  - Duke to Santee Cooper 500 MW
  - SOCO to FRCC 500 MW

SIRPP
2013/14 Economic Sensitivity Study

- Final Report Issued August, 2014
  - No SCE&G Facilities Impacted
  - No Santee Cooper Facilities Impacted

SIRPP Assessments

Questions?



Eastern Interconnection

Planning Collaborative Update

Phil Kleckley

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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

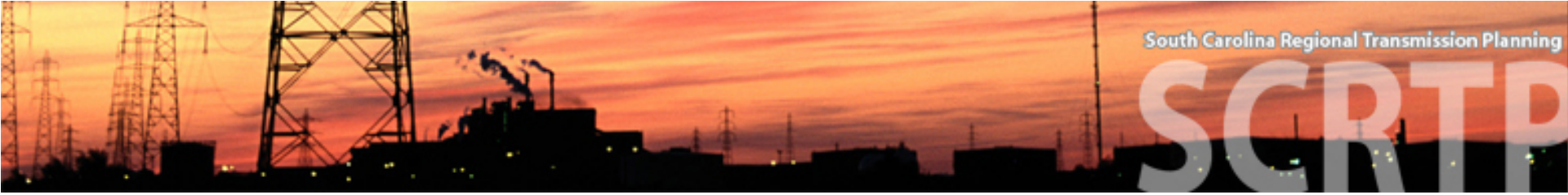
EIPC 2013 Effort

- 2018 and 2023 summer peak models created
  - Model assembled utilizing most up to date information
- Steady-state load-flow model analysis performed
  - Transmission "Gap" Analysis
  - Linear Transfer Analysis
- Report assembled and posted to EIPC website
  http://www.eipconline.com/Non-DOE_Documents.html

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

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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

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

			Previous		New	
Source	Sink		FCITC (MW)	Lim. PA	FCITC (MW)	Lim. PA
FRCC	E	SERC	1600	DEF	1700	DEF
MISO	C	NPCC	3400	PENELEC-PJM	3100	PENELEC-PJM
MISO	D	PJM	>5000	N/A	>5000	N/A
MISO	E	SERC	>5000	N/A	>5000	N/A
MISO	F	SPP	650	EES	650	EES
NPCC	B	MISO	1800	NYISO	1350	NYISO
NPCC	D	PJM	1500	NYISO	1150	NYISO
PJM	B	MISO	1600	ALTW-MISO	1650	ALTW-MISO
PJM	C	NPCC	2100	PENELEC-PJM	2750	NYISO
PJM	E	SERC	>5000	N/A	>5000	N/A
SERC	A	FRCC	1900	SBA/FRCC	1900	SBA/FRCC
SERC	B	MISO	>5000	N/A	>5000	N/A
SERC	D	PJM	1900	BREC-MISO	4800	DVP-PJM
SERC	F	SPP	550	SWPA-SPP	500	SWPA-SPP
SPP	B	MISO	850	WERE-SPP	800	WERE-SPP
SPP	E	SERC	950	WERE-SPP	950	WERE-SPP

EIPC 2014 Study

Heat Wave and Drought Scenario Assumptions

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

EIPC 2014 Study

Heat Wave and Drought Scenario Assumptions

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

EIPC 2014 Study

Heat Wave and Drought Scenario

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

2014 Scenario Analysis Timeline

- 9/19/2014 Update 2023 Study Case for Heat Wave & Drought Scenario
- 9/30/2014 Complete Heat Wave & Drought analysis
- 10/31/2014 Produce draft report for 2023 Summer Roll-up case transfer analysis and Heat Wave & Drought Analysis
- 11/??/2014 Web Conference to present draft report to stakeholders – week of Nov. 17th

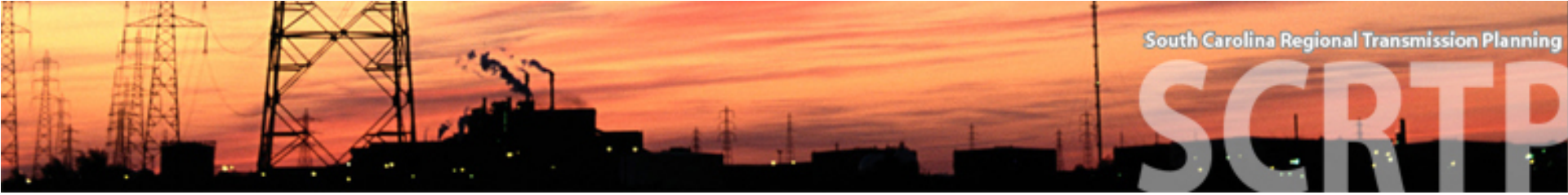
2014 Scenario Analysis Timeline

- 12/5/2014 Receive stakeholder written comments on draft report
- 12/??/2014 Possible interconnection-wide stakeholder meeting to review study report

Questions?

Contact Phil Kleckley

pkleckley@scana.com



Next SCRTP Meeting

- Update on FERC Order 1000
- Elect Voting Members
- Review and discuss Key Data and Assumptions for the next Planning Cycle
- Update on Transmission Expansion Plans
- SCRTP Email Distribution List will be notified
- Register online

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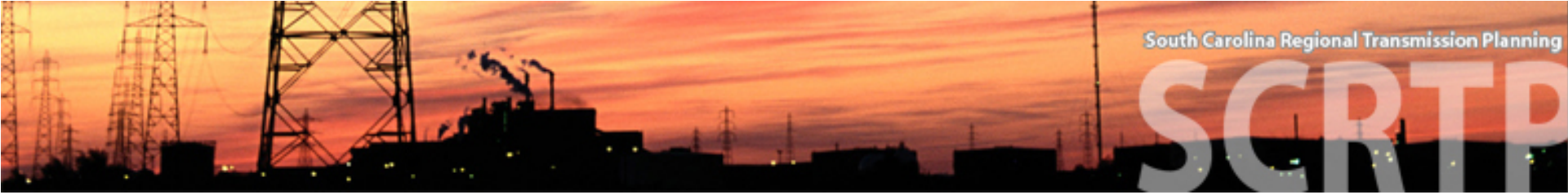

South Carolina Regional Transmission Planning

Stakeholder Meeting

Hilton Garden Inn

North Charleston, SC

September 12, 2014

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