

South Carolina Regional Transmission Planning

Stakeholder Meeting

Lake Murray Training Center

Lexington, SC

September 12, 2013

Purpose and Goals of Today's Meeting

- FERC Order 1000 Update
- Review and Discuss Annual TPL Results
 - Additions/Modifications/Cancelations
- Carolinas Off-Shore Wind Study (Economic Study #1)
- Review Assessment and Planning Studies
 - CTCA
 - ERAG
 - SERC
 - Other
- EIPC Stakeholder Group Activities

FERC Order 1000 Transmission Planning and Cost Allocation

Clay Young

- Background

- Oct. 11, 2012: SCE&G filed revised Attachment K for Order 1000 Regional Compliance
- FERC Order issued April 18, 2013
 - Found Att. K compliant in some areas and needing revisions in other areas
- Oct. 15, 2013: revised Attachment K due
- * *SCE&G will post the revised Attachment K for comment on the SCRTP website in advance of the Oct. 15 filing deadline*

Order 1000 Update



- Topics to be addressed in Oct. 15 filing:
 - Order 890 principles
 - SCE&G will clarify in its Att. K that certain Order 890 principles (Transparency, Information Exchange, and Comparability) apply to the Order 1000 process
 - Definition of regional projects
 - FERC instructed SCE&G to justify or remove the minimum criteria for regional projects
 - Intend to justify these as appropriate (*i.e.*, 230kV minimum)
 - Intend to remove requirement that a non-incumbent transmission developer must turn over functional control of the transmission project

Order 1000 Update



- Topics to be addressed in Oct. 15 filing:
 - Scope of region and enrollment process
 - SCE&G will clarify in its Att. K how entities can make the choice to become part of the planning region
 - SCE&G will clarify in its Att. K that SCE&G and Santee Cooper are enrolled transmission providers in the region

Order 1000 Update



- Topics to be addressed in Oct. 15 filing:
 - Transmission needs driven by public policy req.
 - SCE&G will revise Att. K to remove provision that transmission needs driven by public policy are only those needs that are currently unmet.
 - Affirmative obligation to plan
 - SCE&G will revise Att. K to clarify SCE&G's participation in identifying more cost-effective or efficient transmission solutions

Order 1000 Update



- Topics to be addressed in Oct. 15 filing:
 - Who may submit proposals
 - SCE&G will revise Att. K to permit any entity, not only Developers, to propose a regional transmission project
 - Evaluation Criteria
 - SCE&G will revise Att. K to provide greater detail on the method it will use to evaluate and select transmission facilities in the regional plan for purposes of cost allocation

Order 1000 Update



- Topics to be addressed in Oct. 15 filing:
 - Qualification Criteria
 - SCE&G will revise Att. K to emphasize that Developers may remedy any deficiencies with respect to submitted qualification criteria and project proposals
 - SCE&G will post its revised Attachment K for comment and review prior to filing with the Commission.

FERC Order 1000

Stakeholder Input, Comments and Questions

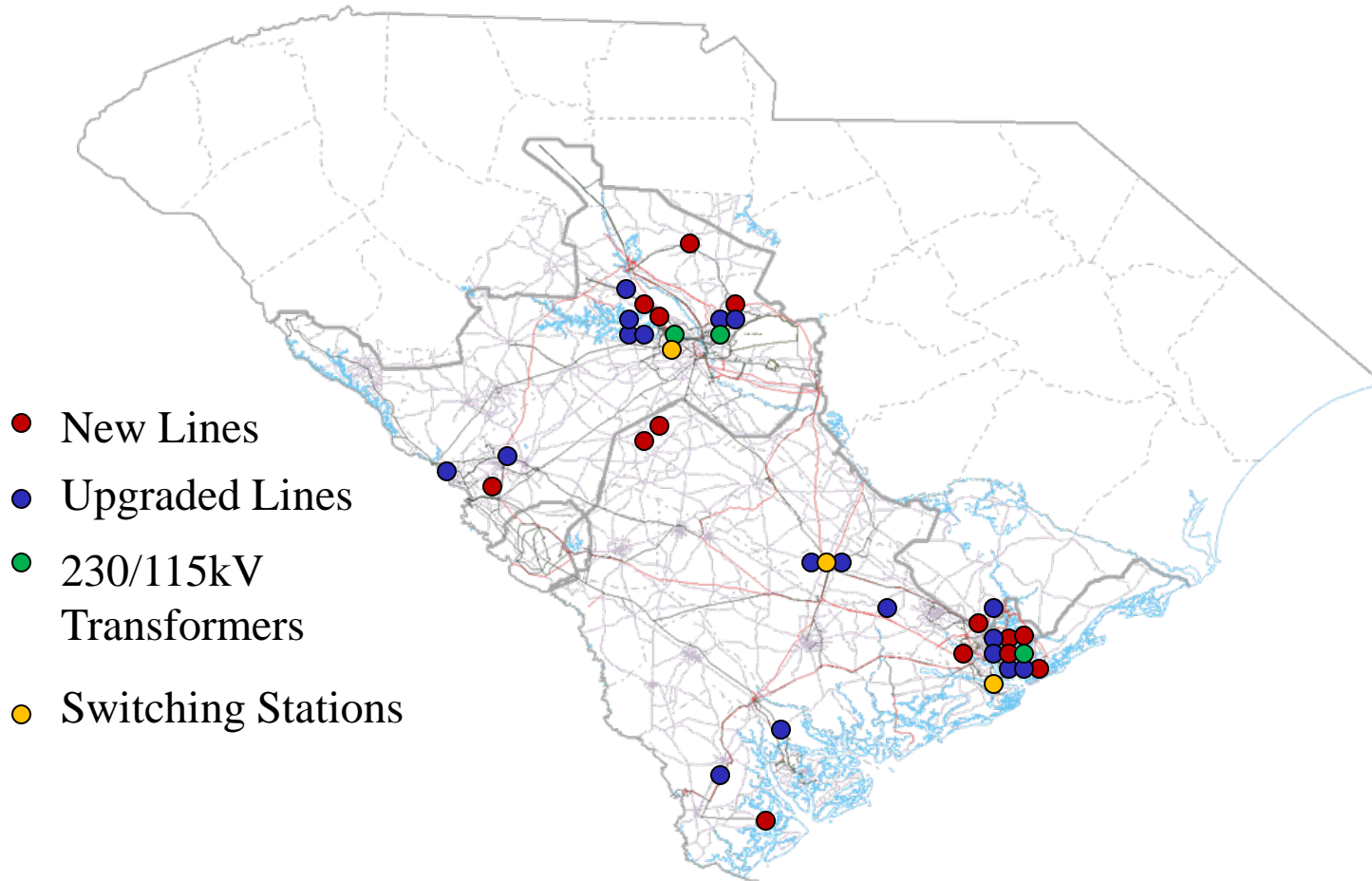
Proposed Transmission Expansion Plan Changes

SCE&G

Phil Kleckley

- 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



SCE&G Planned Projects 2013-2017 (Over \$2 Million)

Project	Tentative Completion Date	Expenditures as of December 31, 2012	Projected 2013	Projected 2014	Projected 2015	Projected 2016	Projected 2017	Total
Lake Murray 230/115 kV Sub Add 2nd Autotransformer	May-13	519,043	4,780,957					\$ 5,300,000
Hagood Jct-Charlotte Street 115 kV Rebuild	May-13	7,404,771	2,095,229					\$ 9,500,000
Callawassie Convert from 46 kV to 115 kV	Aug-13	547,937	4,352,063					\$ 4,900,000
Belvedere-Stevens Ck 115 kV Rebuild as Double Circuit	Dec-13	4,142,439	1,557,561					\$ 5,700,000
Faber Place Replace Switch House	Dec-13	2,647,971	552,029					\$ 3,200,000
Graniteville-Replace 2-46 kV PRCBs & add 2-230 kV HS Bank PRCBs	Dec-13	1,766,377	333,623					\$ 2,100,000
Hamlin-Isle of Palms 115 kV Underground Cable Construct	Dec-13	4,190,741	31,404,259					\$ 35,595,000
Eutawville 115 kV Line Construct	Mar-14	423,823	2,250,000	TBD				\$ 2,673,823
Bayview-Charlotte St 115 kV #2 Underground Cable Construct	May-14	427,606	4,672,394	TBD				\$ 5,100,000
Bayview-Mt Pleasant 115 kV Line Rebuild	May-14	213,777		2,500,000				\$ 2,713,777
VCS1-Killian 230 kV Line Construct	Dec-14	46,220,814	4,276,295	787,600				\$ 51,284,709
Faber Place-Hagood 115 kV #1 Line Upgrade	Dec-14	218,353		2,000,000				\$ 2,218,353
Hagood-Bee Street 115 kV Line Upgrade	Dec-14			2,500,000				\$ 2,500,000
Denny Terrace - Lyles 230 kV Line Upgrade	Apr-15	592	363,718	2,680,975	2,538,236			\$ 5,583,521
VCS2 - Lake Murray 230 kV #2 Line Construct	Apr-15	12,515,796	23,025,759	TBD				\$ 35,541,555
Thomas Island - Jack Primus 115 kV Line Construct	May-15	146,180	4,100,000	TBD	TBD			\$ 4,246,180
Aiken - Aiken Hampton 115 kV Line Section Upgrade	May-15	57,403		1,000,000	1,000,000			\$ 2,057,403
Saluda Hydro-Williams St./McMeekin-Coit 115 kV Upgrade	May-15				2,000,000			\$ 2,000,000
Burton - Yemassee 115 kV #2 Line Rebuild as Double Circuit	May-15	642,711		5,000,000	9,400,000			\$ 15,042,711
Saluda River 230/115 kV Sub Construct	May-15		948,876	11,893,521	4,753,039			\$ 17,595,436

SCE&G Planned Projects 2013-2017 (Over \$2 Million) Cont'd

Project	Tentative Completion Date	Expenditures as of December 31, 2012	Projected 2013	Projected 2014	Projected 2015	Projected 2016	Projected 2017	Total
Williams - Cainhoy 115 kV #1 Line Rebuild as Double Circuit	May-15			5,000,000	5,700,000			\$ 10,700,000
McMeekin Replace Switch House	Dec-15			1,000,000	1,500,000			
Saluda Hydro-Bush River (Duke Tie) 115kV #1 & #2 Partial Upgrade	Apr-16					5,000,000		\$ 5,000,000
Urquhart - Graniteville 230 kV #2 Line Construct	May-16				9,000,000	9,500,000		\$ 18,500,000
Summerville upgrade 230/115 kV Autobank	May-16					4,250,000		\$ 4,250,000
Church Creek upgrade 230/115 kV Autobank	May-16					5,400,000		\$ 5,400,000
Mt Pleasant-Osceola Park Tap 115 kV Upgrade	May-16				400,000	2,900,000		\$ 3,300,000
Okatie 230/115 kV Sub Construct and Line Upgrades	May-16					8,650,000		\$ 8,650,000
Denny Terrace-Lyles 115 kV #1 Line Upgrade	May-16					2,500,000		\$ 2,500,000
Urquhart Replace Switch House	Dec-16	2,081,804		200,000	1,000,000	200,000		\$ 3,481,804
Cainhoy - Hamlin/Mt. Pleasant 115 kV Rebuild as Double Circuit	Dec-16					2,000,000		\$ 2,000,000
Queensboro 115 kV Switching Station Construct	Dec-16					4,000,000		\$ 4,000,000
Williams Replace Switch House	Dec-16			500,000	500,000	1,000,000		\$ 2,000,000
St. George 230 kV Switching Station Construct	Feb-17					5,000,000	5,000,000	\$ 10,000,000
Pepperhill - Summerville 230 kV Construct	May-17	202,544			200,000	6,000,000		\$ 6,402,544
Canadys - St. George 230 kV upgrade	May-17			661,804	6,393,133	5,342,362	154,294	\$ 12,551,593
St. George - Summerville 230 kV Rebuild as Double Circuit	May-17		23,241	8,363,592	14,639,422	9,488,189	93,310	\$ 32,607,754
VCS2 - St. George 230 kV #1 & #2 Construct	May-17	1,391,547	18,496,787	24,881,560	42,959,376	52,368,138	1,126,385	\$ 141,223,793
VCS2 - St. George required 115 kV rebuilds	May-17	147,173		1,490,630	14,272,137	30,255,895	7,199,640	\$ 53,365,475
Faber Place-Hagood 115 kV #2 construct	Dec-17						5,450,000	\$ 5,450,000
Lake Murray-Harison 115 kV construct	May-18					4,525,000		
Total:		\$ 85,965,413	\$103,232,791	\$ 71,459,682	\$124,255,343	\$158,379,584	\$ 19,023,629	\$ 555,291,442

SCE&G Planned Project Scope/Date Changes

Bayview-Charlotte St 115 kV #2 Underground Cable Construct

- Date change due to problems encountered during installation
- Installation delayed to May 31, 2014

SCE&G Planned Project Scope/Date Changes

McMeekin Replace Switch House

- Project canceled due to McMeekin 115 kV Switching Station retirement
- Decision was made to retire the switching station when the generation at McMeekin is no longer available

SCE&G Planned Project Scope/Date Changes

Okatie 230/115 kV Sub Construct and Line Upgrades

- Project delayed due to Purrysburg (SC) – McIntosh (SOCO) 230 kV Double Circuit Construct
- Construction delayed to May 31, 2016

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

SCE&G Planned Project Scope/Date Changes

Lake Murray-Harbison 115 kV Construct

- Load growth in the Irmo/Harbison area has slowed
- Project delayed to 05/31/2018

Questions?

Proposed Transmission Expansion Plan Changes

Santee Cooper

Rick Thornton

Transmission Network Completed Projects

- Orangeburg 230-115 kV Substation 06/2013
- Pomaria 230-69 kV Substation 06/2013
- Fold Newberry-VCS 230 kV into Pomaria 06/2013
- Cane Bay Tap-Sangaree Tap 115 kV Line 06/2013

Transmission Network

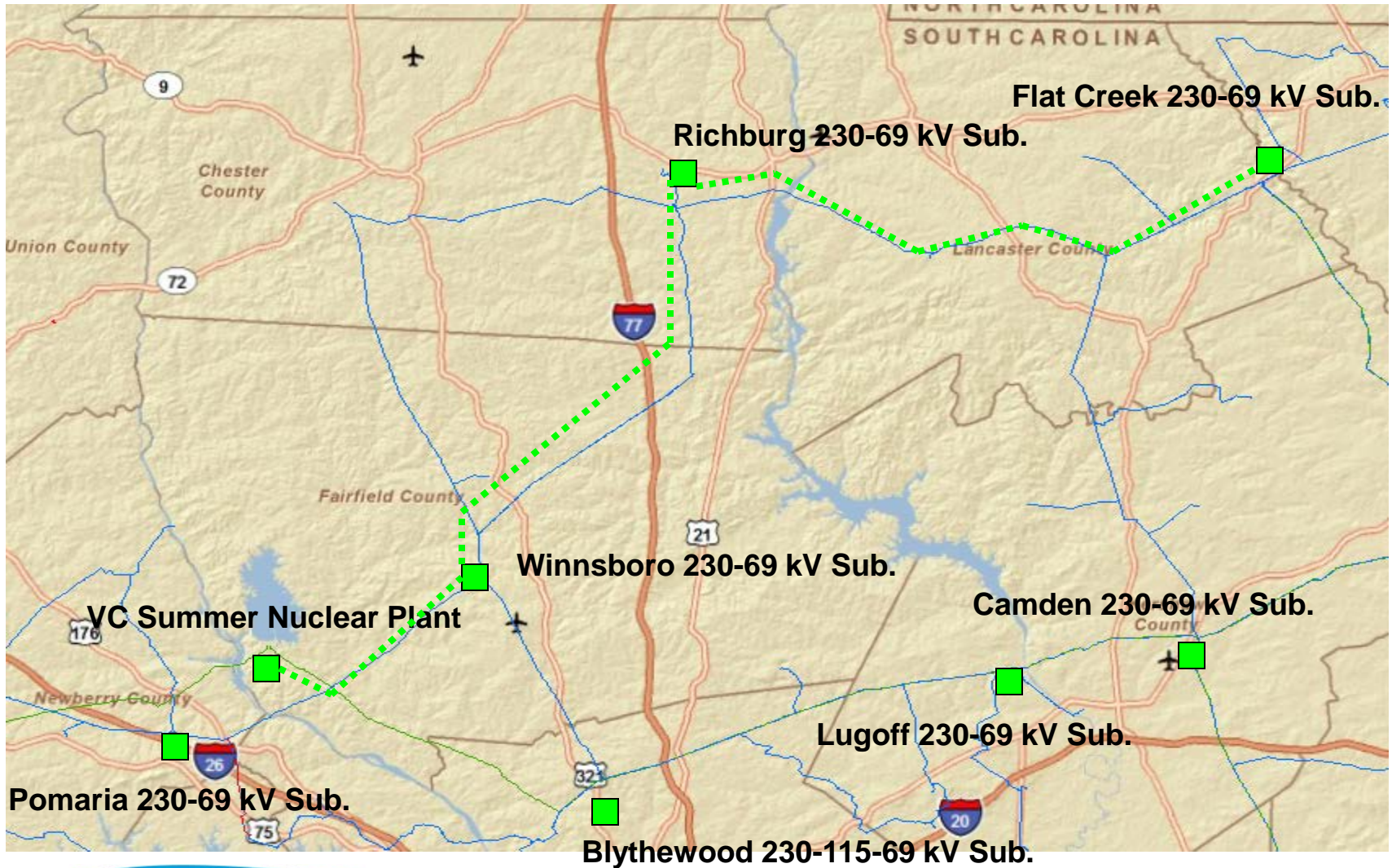
Active Projects

- Winnsboro 230-69 kV Substation 11/2013
- VCS-Winnsboro 230 kV Line 12/2013
- VCS-Pomaria #2 230 kV Line 05/2014
- Richburg 230-69 kV Substation 06/2014
- Bucksville 230-115 kV Substation 06/2014
- Winnsboro-Richburg 230 kV Line 08/2014
- Purrysburg 230-115 kV Substation 06/2015
- Purrysburg-McIntosh 230 kV Line #2 06/2015
- Winyah-Bucksville 230 kV Line 06/2015

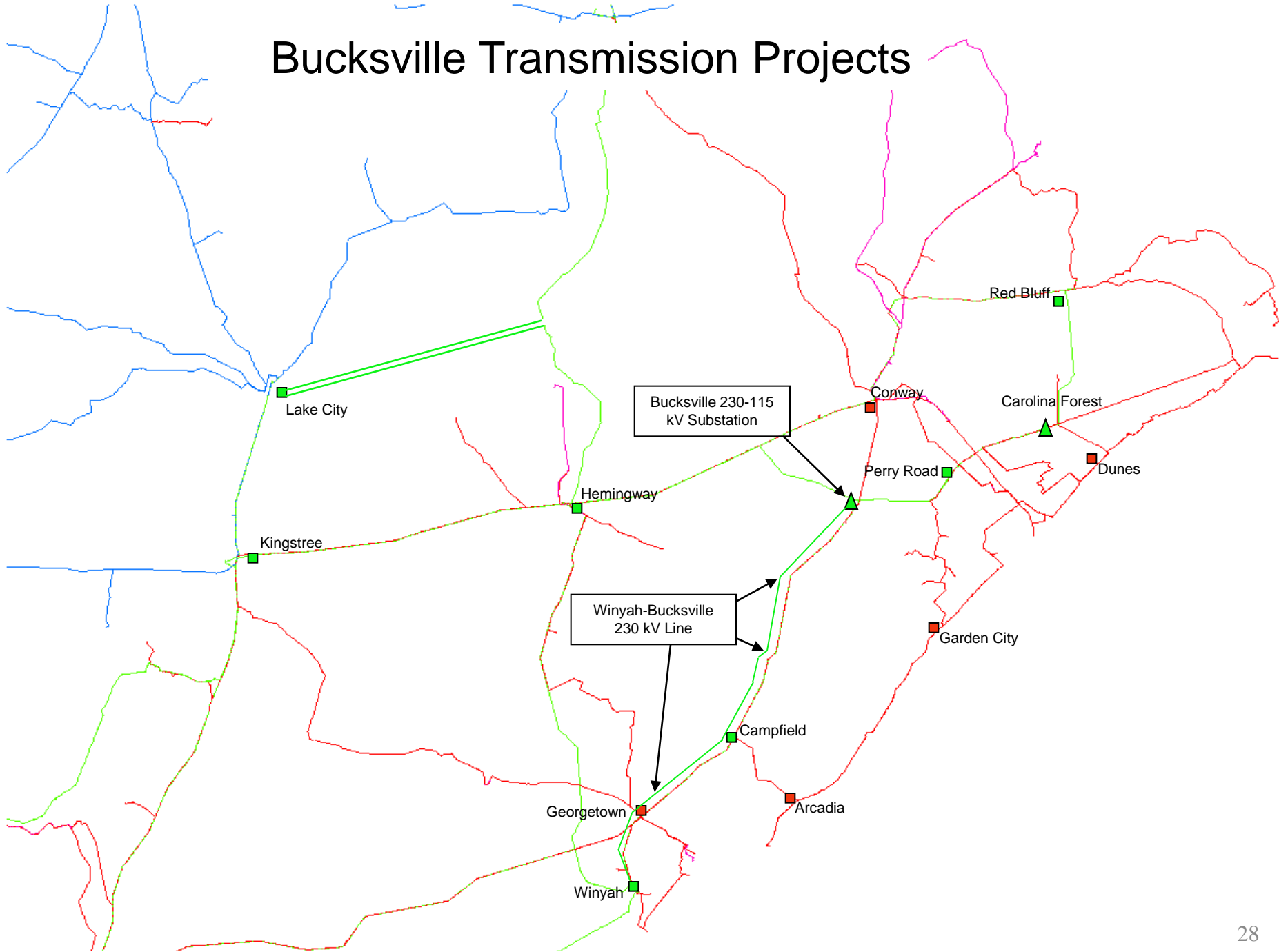
Transmission Network

Active Projects

- Richburg-Flat Creek 230 kV Line 10/2015
- Sandy Run 230-115 kV Substation 04/2016
- Pomaria-Sandy Run 230 kV Line 05/2016
- Sandy Run-Orangeburg 230 kV Line 05/2017



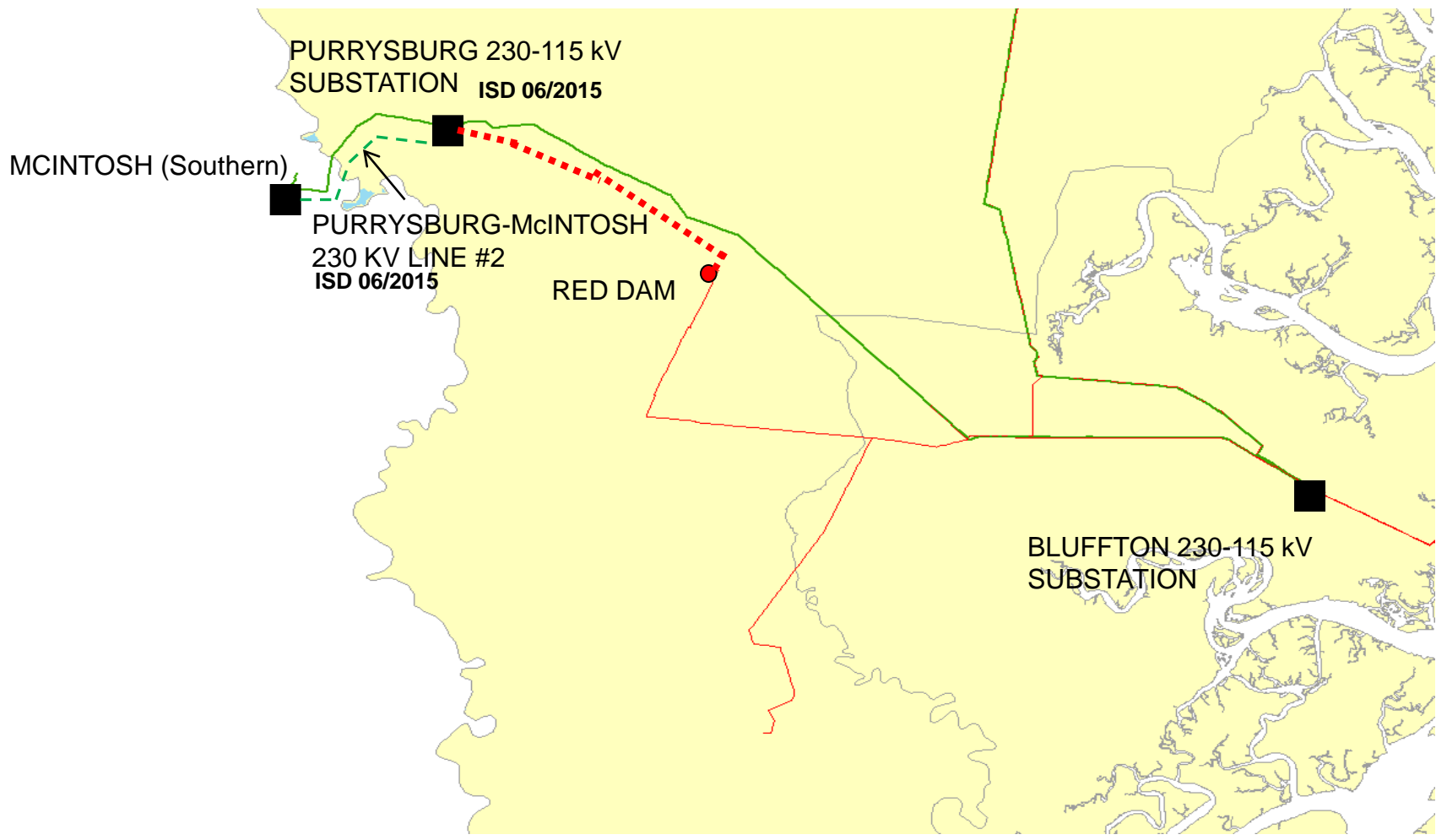
Bucksville Transmission Projects



VCS-Pomaria 230 kV Line #2



Purrysburg 230-115 kV Substation

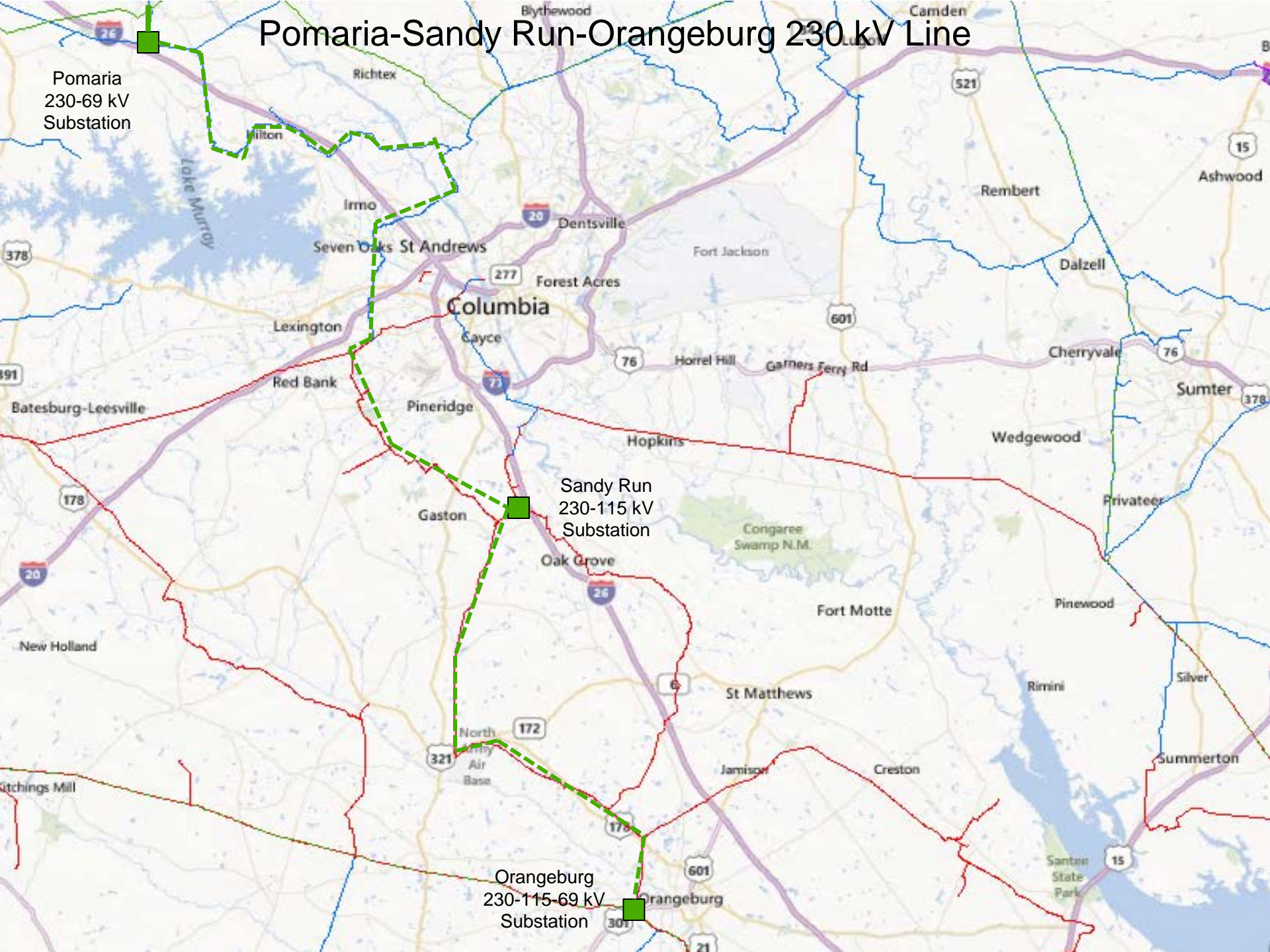


Pomaria-Sandy Run-Orangeburg 230 kV Line

Pomaria
230-69 kV
Substation

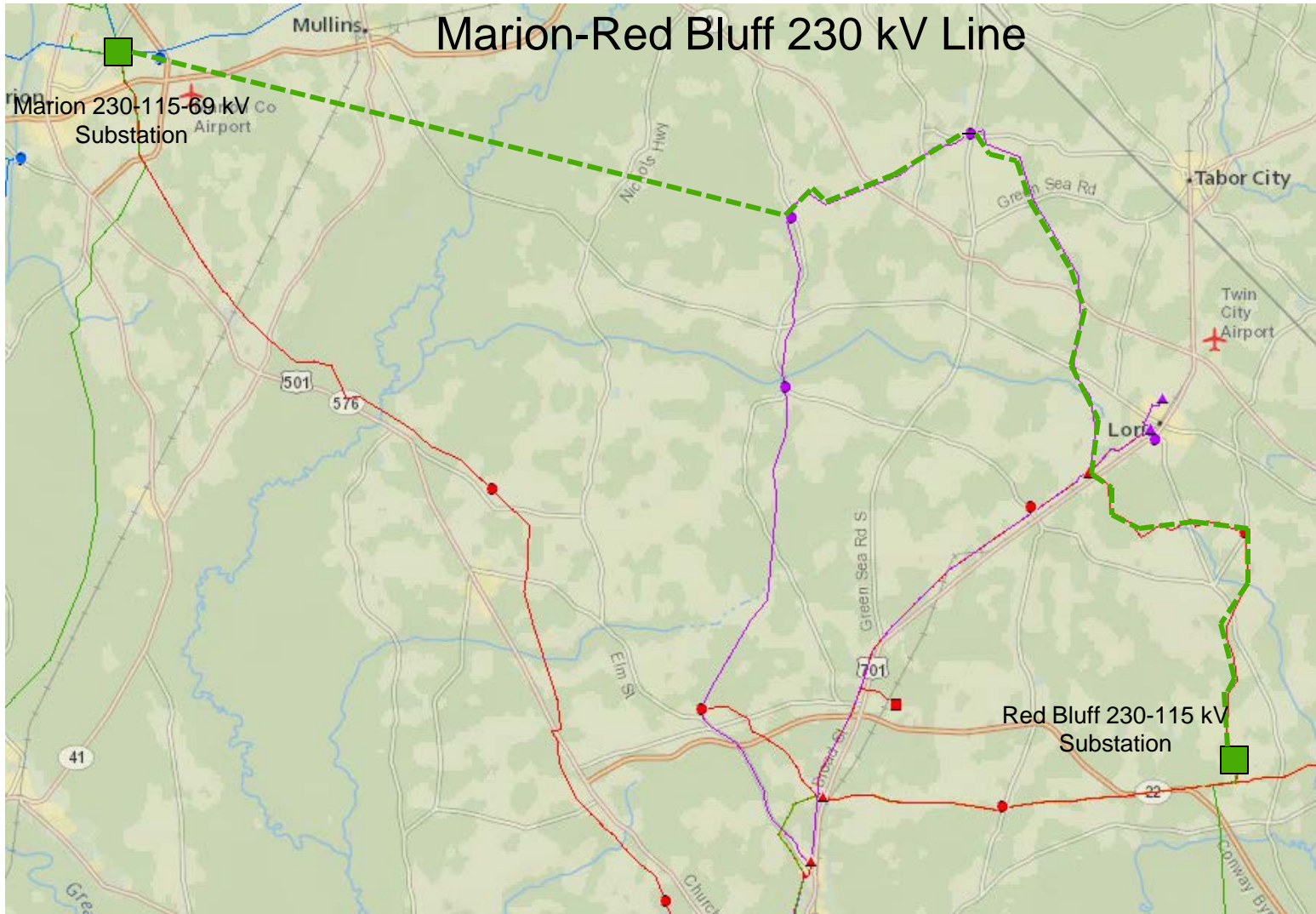
Sandy Run
230-115 kV
Substation

Orangeburg
230-115-69 kV
Substation

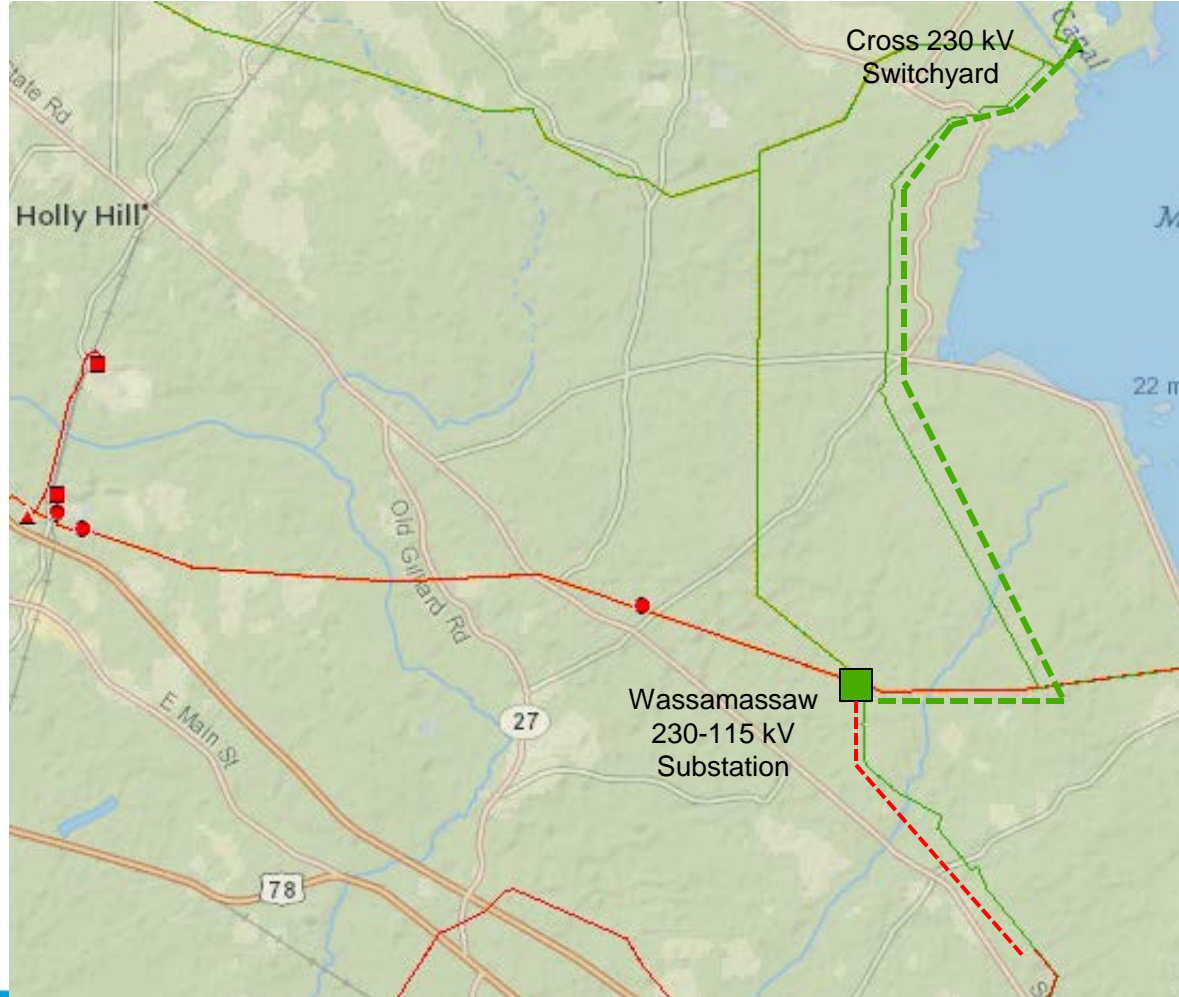


Transmission Network Planned Projects

- Marion-Red Bluff 230 kV Line 12/2015
- Bucksville-Garden City 115 kV Line 06/2016
- Wassamassaw 230-115 kV Substation 06/2019
- Cross-Wassamassaw #2 230 kV Line 06/2020



Wassamassaw 230-115 kV Substation



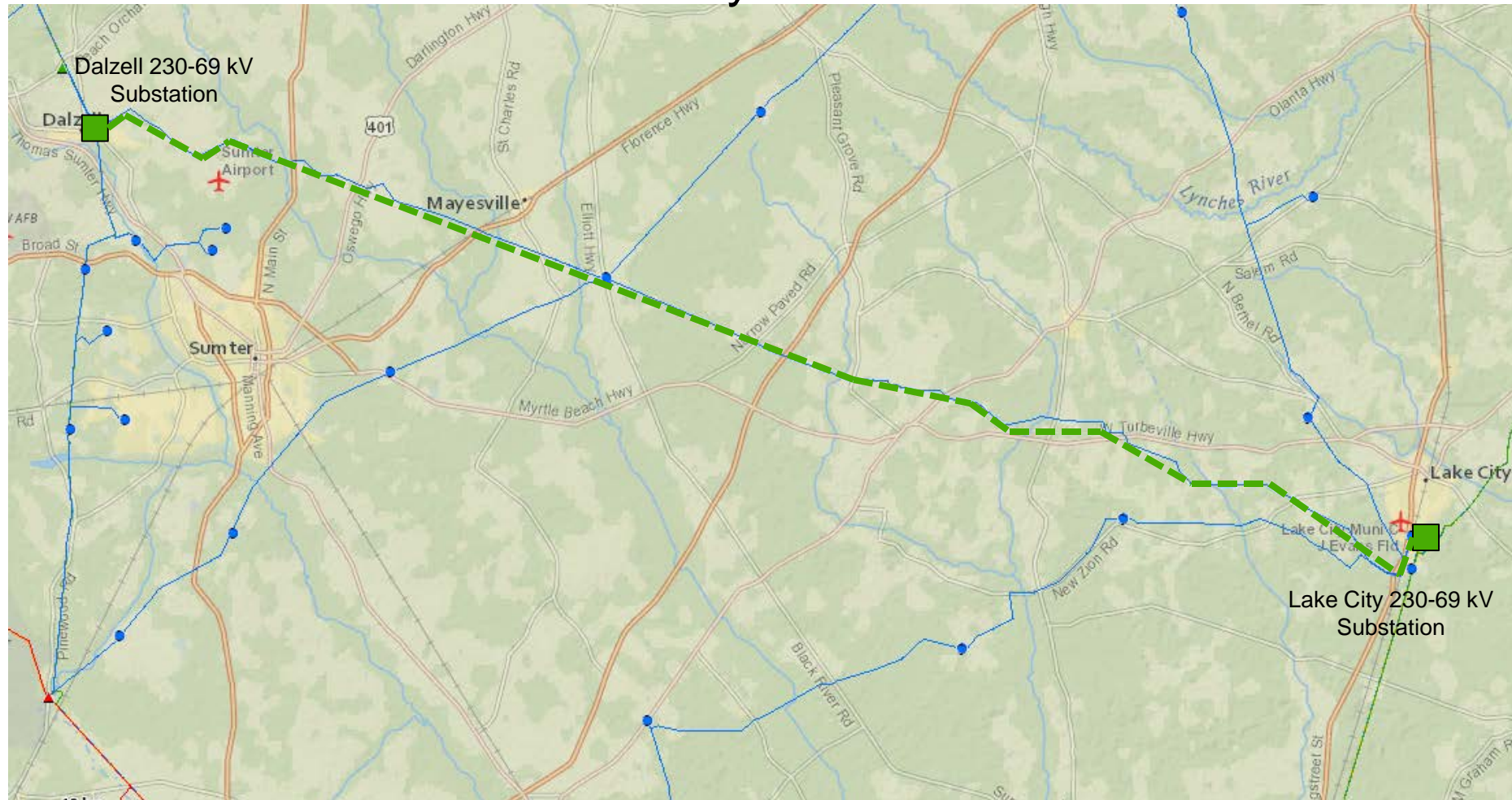
Reduced generation in the eastern region including:

- Grainger Units 1 & 2 Retirement 12/2012
- Jefferies Units 3 & 4 Retirement 12/2012
- Unavailability of Myrtle Beach GTs

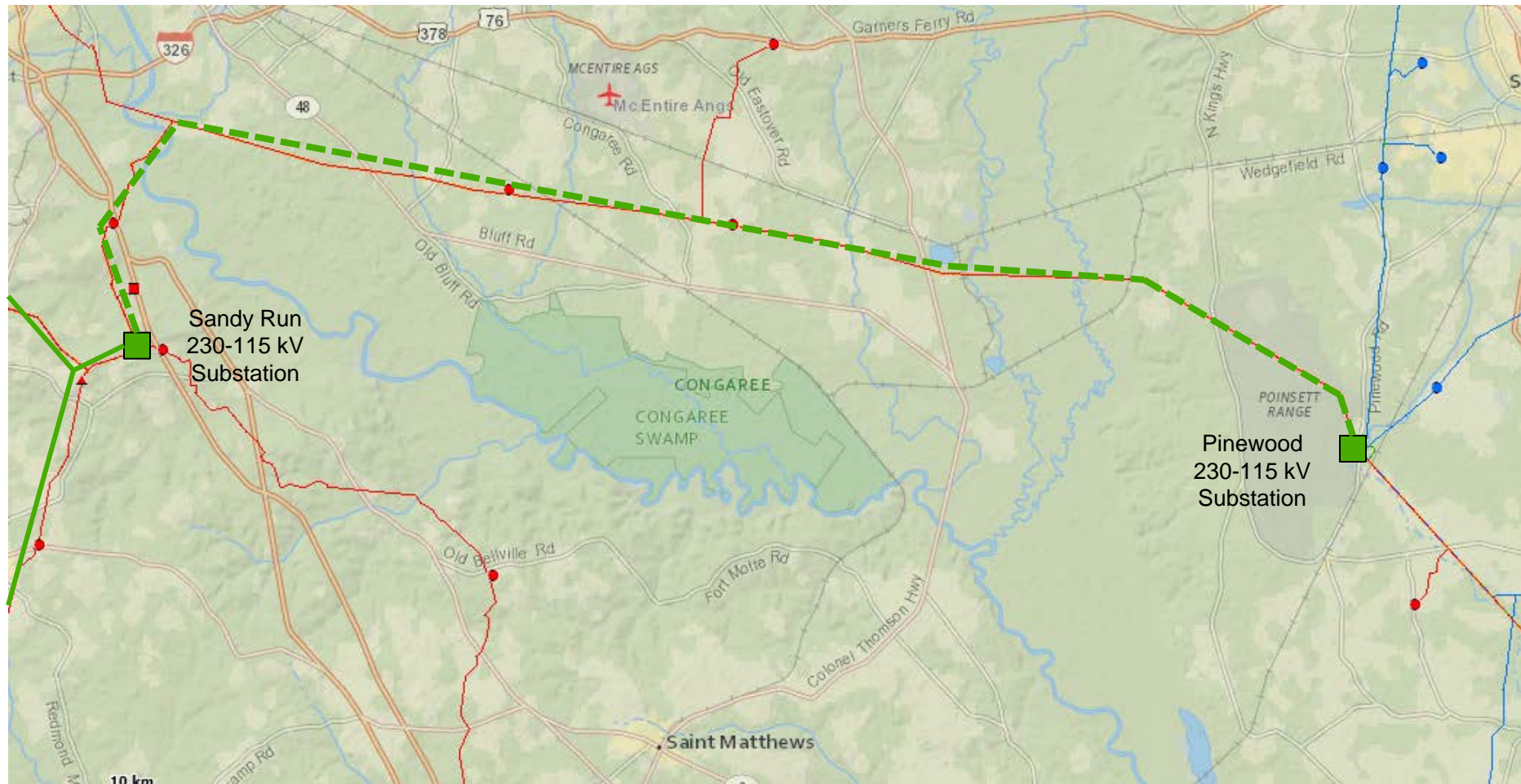
Drives the need for additional transmission facilities to move power from west to east

- Dalzell-Lake City 230 kV Line 05/2017
- Sandy Run-Pinewood 230 kV Line 05/2018

Dalzell-Lake City 230 kV Line



Sandy Run-Pinewood 230 kV Line



Proposed Transmission Expansion Plan Changes

Stakeholder Input, Comments and Questions

Carolinas Offshore Wind Transmission Study

Rick Thornton

2000 MW injected into NC and SC

- NC: Progress Sutton North 230 kV Bus
- SC: SCPSA Red Bluff 230 kV Bus

Three study cases

- 2024 Summer
- 2024 Winter
- 2024 Shoulder

Three wind scenarios per case

- WS1: 1000 MW into NC, 1000 MW into SC
- WS2: 2000 MW into NC, 0 into SC
- WS3: 0 MW into NC, 2000 into SC

Potential SC Projects Identified

WS1

- SCEG – None
- SCPSA – Red Bluff – Carolina Forest 230 kV Line #2 \$15,200,000

WS2

- SCEG – None
- SCPSA – Kingstree – Hemingway 230 kV Line #2 \$33,000,000

WS3

- SCEG – None
- SCPSA - Red Bluff – Carolina Forest 230 kV Line #2 \$15,200,000

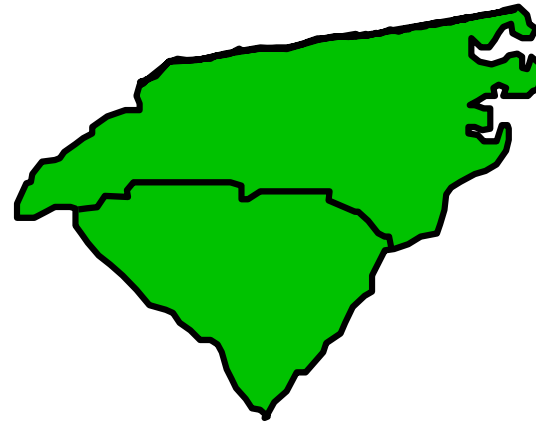
Reliability Assessment Studies

Glenn Stephens

Multi-Party Assessments

- Carolina Transmission Coordination Arrangement (CTCA) Assessments
- SERC Assessments
- ERAG Assessments
- Two Party or Multi-Party Assessments

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

CTCA Purpose

Interchange Agreements associated with the CTPCA

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”)

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

Purpose

- 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

2013 Scope

- NERC Reliability Standards, SERC Requirements, and individual company study criteria.
- Cases are developed with detailed internal models with current transmission expansion plans from each participating company.
- Generation down cases are developed from starting point cases with internal generation redispatch and Transmission Reserve Margin (TRM) import(s) implemented.

CTCA Studies

2013 Scope (continued)

- Study results are obtained by use of PTI's MUST and Siemens PSS/E programs.
- Report on thermal loading(s) above 90% and voltage(s) violating individual company criteria.
- Study year will be 2019 Summer peak (2019S).

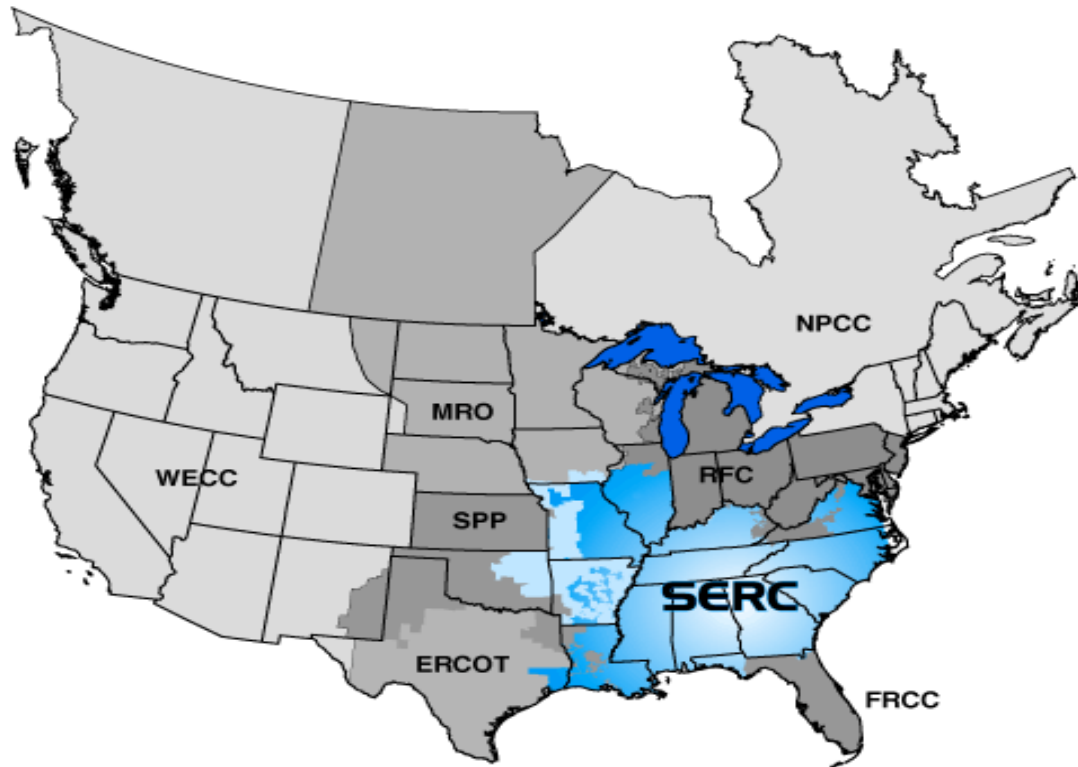
CTCA Studies 2013 Schedule

- Planning Committee approved Scope document –June 2013.
- Base Case development and revisions- June-July 2013.
- Individual companies run thermal and voltage assessments—August and early September 2013
- Draft report completed by September 2013.
- Final Report Published mid October 2013.

CTCA Studies

Questions?

SERC Future Year Assessments Long Term Study Group (LTSG)



SERC LTSG 2017 Summer Study Purpose

- Analysis of the performance of the members' transmission systems that identifies limits to power transfers occurring non-simultaneously among the SERC members.
- Analysis of the performance of the members' transmission systems under normal conditions and loss of a single element.

SERC LTSG 2017 Summer Study Scope

- Assess the strength of the SERC interconnected network by determining its ability to support power transfers.
- NERC Reliability Standards and SERC Requirements.
- Case is developed by the SERC LTSG Modeling Group.

SERC LTSG 2017 Summer Study Scope (continued)

- Study results are obtained by use of PTI's MUST and Siemens PSS/E programs.
- Identify Significant Facilities under transfer analysis.
- Study scheduled to be completed and report published December 2013.

SERC LTSG 2017 Summer Study

Significant Facilities

- If the facility is a hard limit to a transfer
- The level at which it limits a transfer compared to the test level
- The response of the facility to the transfer
- The number of different transfers/companies impacted

SERC LTSG 2017 Summer Study Significant Facilities (continued)

- If the facility requires the use of an operating guide
- If the outage of the facility results in the overload of numerous major transmission elements
- If an actual TLR has been called on the facility

SERC LTSG 2017 Summer Study Variable Factors

- Load forecasts and generation availability
- Anticipated drought conditions in the SERC area
- Geographic distribution of load and generation

SERC LTSG 2017 Summer Study Variable Factors (continued)

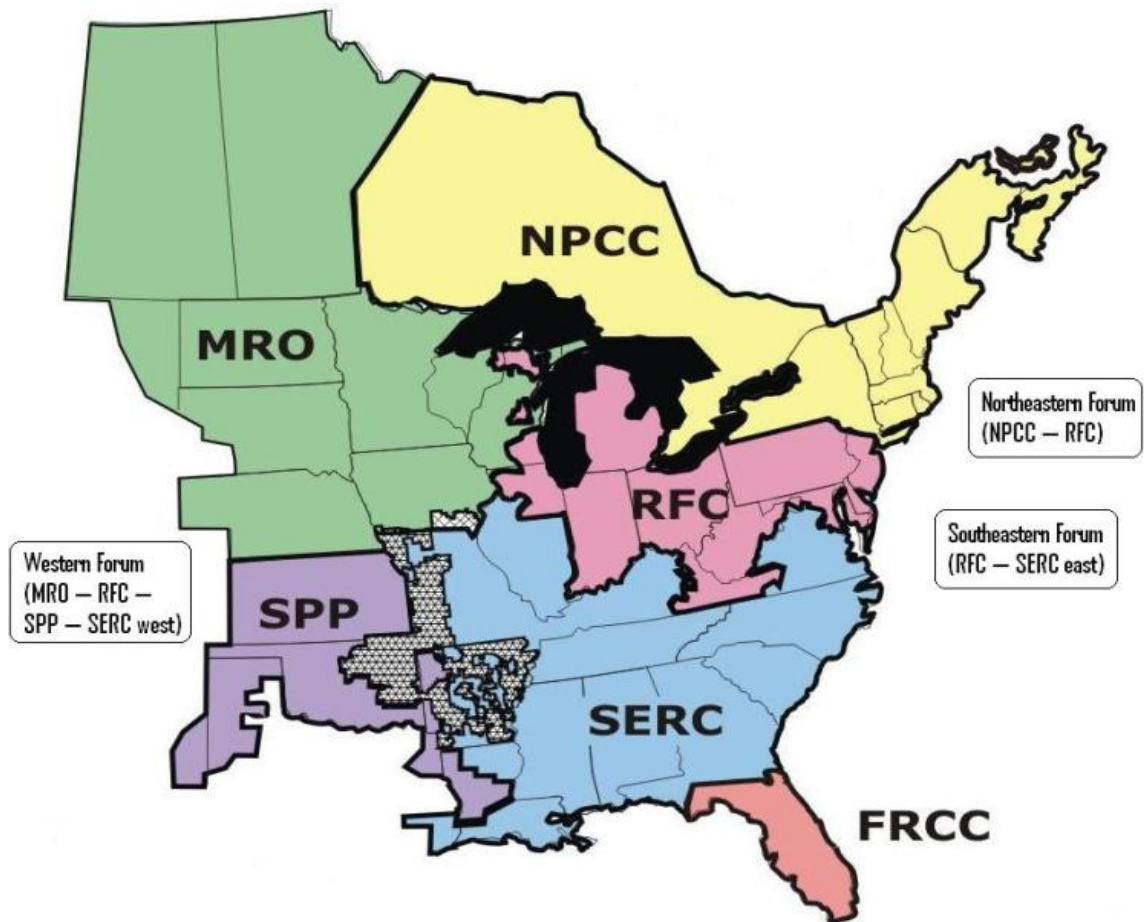
- Transmission system configuration
- Simultaneous inter-system power transfers
- Operation based on regional requirements to respect additional contingencies

SERC Assessments

Questions?

ERAG Assessments

Glenn Stephens



SERC East-RFC-NPCC

- SERC East
 - ✓ VACAR (Duke, DVP, Progress, SCE&G, SCPSA)
 - ✓ Central (TVA, EON U.S., EKPC, BREC)
- Reliability First Corporation
 - ✓ PJM (Pennsylvania, New Jersey, Maryland)
 - ✓ MISO (Midwest Independent System Operator)

SERC East-RFC-NPCC (CONT.)

- Northeast Power Coordinating Council
 - ✓ Northeast United States
 - ✓ Southeast Canada

SERC East-RFC-NPCC Studies

- Seasonal and Near Term/Long Term Studies are to be prepared on a 4-year rotation.
- Rotation will consist of two assessments being performed each year.

SERC East-RFC-NPCC Studies

- Year A Summer Year A Winter/ Year A/Year B
- Year B Summer Year B Summer - Near Term
- 2013 2013 Summer Near Term
- Year C Summer Year C Winter Year C/Year D
- Year D Summer Year D Summer - Long Term
- 2013 2018 Summer Long Term

SERC East-RFC-NPCC

2013 Summer Transmission System Assessment Scope

- Develop 2013 summer base case with all scheduled firm capacity backed transactions
- Determine thermal regional and sub-regional FCITCs
- Determine FCITCs for regional and sub-regional transfers
- Study work completed Jan-March 2013
- Final Report issued May 2013

SERC East-RFC-NPCC

2013 Summer Final Results

- No SCE&G facilities were identified to limit transfers in the 2013 Summer Assessment
- No Santee Cooper facilities were identified to limit transfers in the 2013 Summer Assessment.

SERC East-RFC-NPCC

2018 Summer Transmission System Assessment Scope

- Develop 2018 summer base case with all scheduled firm capacity backed transactions
- Determine thermal regional and sub-regional FCITCs
- Determine FCITCs for regional and sub-regional transfers
- Study work completed July-October 2013
- Final Report issued November 2013

ERAG Reliability Assessments

Questions?

Eastern Interconnection Planning Collaborative Stakeholder Update

Phil Kleckley

EIPC Non-Grant Studies 2013-2014

EIPC is requesting stakeholder input
for 2018 and 2023 studies and
process

EIPC Non-Grant Studies 2013-2014

Schedule

Guidelines and Principles Document

- EIPC to post any changes to Guidelines and Principles document by September 25, 2013
- Request Guidelines and Principles document stakeholder clarifying questions by October 18, 2013
- EIPC to post revisions to Guidelines and Principles document by November 29, 2013

EIPC Non-Grant Studies 2013-2014

Schedule

Roll Up Cases and Study Scenarios

- EIPC to distribute list of possible study scenarios by September 25, 2013
- EIPC to distribute report on roll-up cases, contingency results, transfer testing, and make cases available to those with CEI clearance by October 25, 2013
- EIPC Webinar on possible scenarios and roll-up case report on November 12, 2013 at 2:00 pm Eastern time

EIPC Non-Grant Studies 2013-2014

Schedule

Roll Up Cases and Study Scenarios

- SCRTP to discuss stakeholder feedback on possible scenarios at next SCRTP meeting
- EIPC Webinar to discuss stakeholder feedback on possible scenarios on February 26, 2014
- Stakeholder final comments on scenarios due March 7, 2014

EIPC Non-Grant Studies 2013-2014

Schedule

Roll Up Cases and Study Scenarios

- EIPC to post final scenario descriptions and 2014 schedule by March 28, 2014
- EIPC Steady State Modeling Load Flow Working Group (SSMLFWG) to begin work on scenarios by March 31, 2014

EIPC Website

Website: www.eipconline.com

Or go to www.scrtp.com

From SCRTP Website



South Carolina Regional Transmission Planning

SCRTP

- ▶ contact us
- ▶ meetings
- ▶ reports
- ▶ base cases
- ▶ FERC orders
- ▶ sign up for e-mail alerts
- ▶ industry links

Welcome

The South Carolina Regional Transmission Planning (SCRTP) process was established by South Carolina Electric & Gas Company (SCE&G) and the South Carolina Public Service Authority (Santee Cooper) to meet the transmission planning requirements of [FERC Order No. 890](#), [890-A](#) and [890-B](#), orders designed to "prevent undue discrimination and preference in transmission service."

SCRTP provides information on:

Events

The next meeting of the SCRTP Stakeholder Group will be held on Thursday, Sept. 12, 2013 at the Lake Murray Training Center, Lexington, SC

[register now](#)



From SCRTP Website



The screenshot shows the SCRTP website header with a sunset background and power lines. The main content area is titled "South Carolina Regional Transmission Planning" and "SCRTP". A left sidebar contains a navigation menu and a user sign-in form. The main content area features an "Industry Links" section with several hyperlinks.

South Carolina Regional Transmission Planning
SCRTP

- ▶ home
- ▶ contact us
- ▶ meetings
- ▶ reports
- ▶ base cases
- ▶ FERC orders
- ▶ sign up for e-mail alerts
- ▼ industry links

User Sign In

Username

Password

[sign in](#)

Industry Links

- [SCE&G](#)
 - [OASIS Electronic Bulletin Board \(EBB\)](#)
- [Santee Cooper](#)
 - [OATI webOASIS](#)
- [Southeast Inter-Regional Participation Process \(SIRPP\)](#)
- [Federal Energy Regulatory Commission \(FERC\)](#)
- [Eastern Interconnection Planning Collaborative \(EIPC\)](#)

EIPC Non-Grant Studies 2013-2014

Stakeholder Input

Send comments or questions to SCRTP mailbox,
attention:

Philip Kleckley
EIPC Stakeholder Subcommittee

Questions?

Next SCRTP Meeting Activities

Clay Young

Next SCRTP Meeting

- Update on Order 1000 (Regional and/or Interregional Requirements)
- Selection of Next Series of Economic Planning Studies (studies #2 through #5)
- Not Scheduled
- SCRTP Email Distribution List will be notified
- Register online

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