

# South Carolina Regional Transmission Planning

## Stakeholder Meeting

Pine Island Club – Lake Murray

150 Pine Island Road

Columbia, SC 29212

September 10, 2015

## Purpose and Goals of Today's Meeting

- FERC Order 1000 Update
  - Regional
  - Interregional
- Discuss initial findings of the 2015 Economic Planning Studies (Transfer Sensitivities)
- Review and Discuss Assessment and Planning Studies
  - CTCA
  - ERAG
  - SERC
  - Other

# FERC Order 1000 Transmission Planning and Cost Allocation

Clay Young

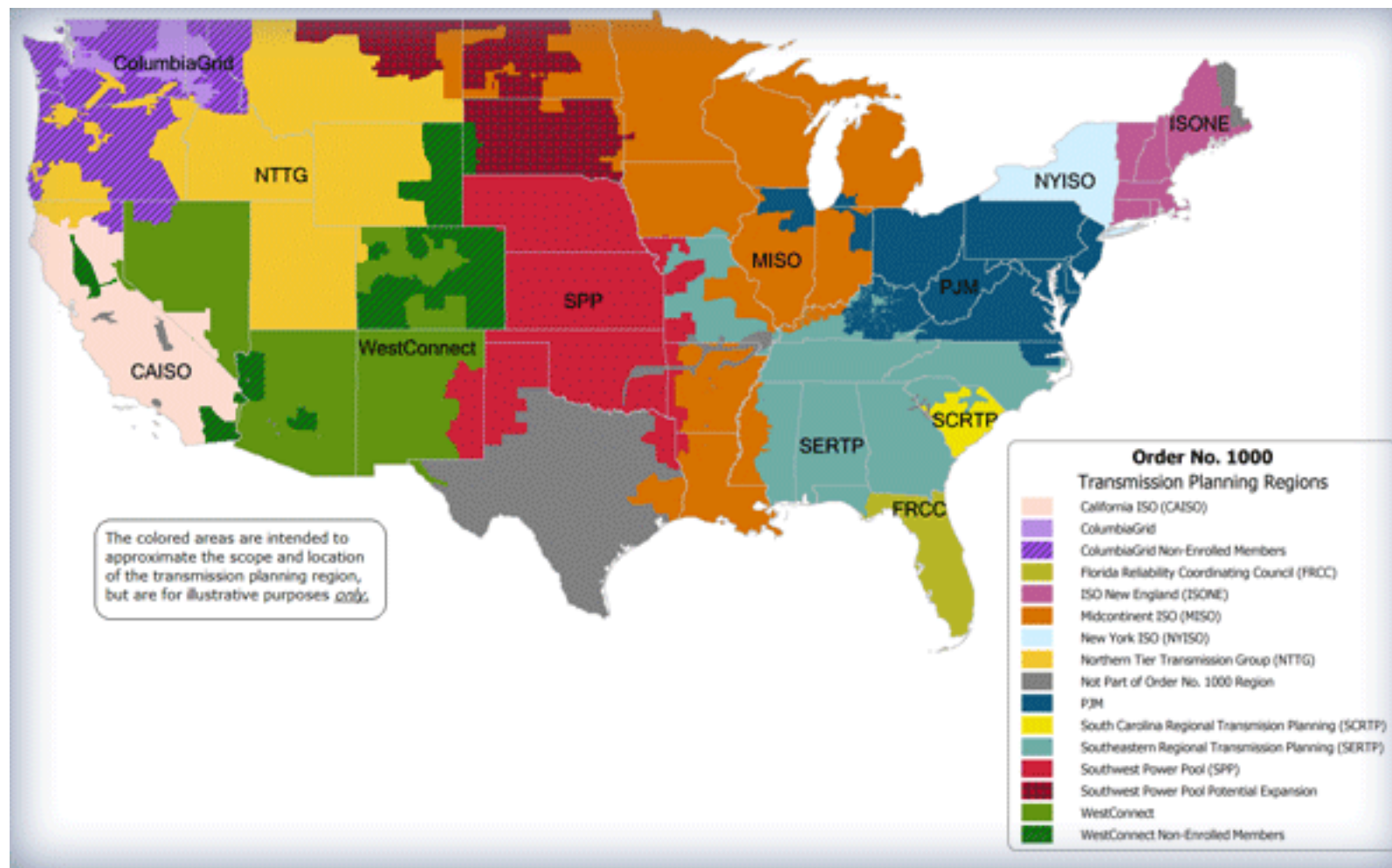
# FERC Order 1000

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

# FERC Order 1000 Summary

## The Planning Region

- SCRTP will serve as the “Planning Region” for Order 1000 compliance purposes
- SCE&G and Santee Cooper will utilize the SCRTP process and the SCRTP Stakeholder Group to involve stakeholders in the Order 1000 process
- Current enrolled Transmission Providers are SCE&G and Santee Cooper



## Recent Regional Milestones

- June 3, 2015 FERC issued Order Accepting SCE&G filing but requiring revisions
- July 6, 2015 SCE&G filed a revised Attachment K including proposed additional revisions
- Aug 3, 2015 FERC issued Order Accepting SCE&G filing

# FERC Order 1000 Summary

## Regional Requirements

- Transmission Providers (TPs) must participate in a regional process that produces a Regional Transmission Plan
- Open and transparent procedures by which TPs identify and evaluate solutions that may be more efficient or cost-effective than current plans developed through Local Planning and IRP processes
- Any entity can submit transmission proposals that they believe are more efficient or cost-effective than current planned projects
- TPs will evaluate proposals in consultation with stakeholders to determine whether the proposed project is more efficient or cost-effective for the region.



# FERC Order 1000 Summary

## Transmission Needs Driven by Public Policy Requirements

- Regions must develop procedures to identify transmission needs driven by applicable public policy requirements
- Allows stakeholders to, also, identify transmission needs driven by applicable public policy requirements
- TPs will determine which proposed needs will be evaluated for solutions
- Public Policy transmission solutions may be proposed at the local or regional level

# FERC Order 1000 Summary

## Non-incumbent Transmission Developers

- Process must allow for Non-incumbent Transmission Developers to participate in the process including constructing and owning transmission projects
- Non-incumbents can submit transmission proposals that they believe are more efficient or cost-effective than current planned projects
- Open and transparent process will evaluate the proposals

# FERC Order 1000 Summary

## Regional Cost Allocation

- Costs allocated “roughly commensurate” with estimated benefits
- Those who do not benefit from transmission do not have to pay for it
- No allocation of costs outside a region unless other region agrees
- Cost allocation methods and identification of beneficiaries must be transparent

## FERC Order 1000 Summary

- SCRTP Regional Transmission Plan will include:
  - New transmission solutions that are determined to be more efficient or cost-effective than currently planned transmission solutions
  - New transmission solutions driven by applicable Public Policy Requirements not already addressed through the IRP process that are determined to be more efficient or cost-effective than currently planned transmission solutions

## Recent Interregional Milestones

- Jan 22, 2015 FERC issued Order Accepting SCE&G filing but requiring revisions
- Mar 24, 2015 SCE&G filed a revised Attachment K including proposed additional revisions
- July 30, 2015 FERC issued Order Accepting SCE&G filing

# FERC Order 1000 Summary

## Interregional Requirements

Enhance Regional transmission planning process

- Establish coordination procedures with neighboring Regions
  - Southeastern Regional Transmission Planning (SERTP)
- Share transmission needs and potential solutions
- Annual exchange of planning data and information

# FERC Order 1000 Summary

## Interregional Requirements

- Identify and jointly evaluate proposed projects to be located in adjacent planning regions that may be more efficient or cost-effective than separate regional plans
- Maintain Regional website or email distribution list for interregional communication
- Establish a Cost Allocation Methodology for Interregional Projects

Questions?



# Economic Transmission Planning Studies

Jeff Neal

# Study Methodology

- Thermal and Voltage analysis using PTI's PSS/E and/or PowerWorld Simulator Software
- Analysis of SCE&G and Santee Cooper's internal transmission systems to include:
  - Single contingencies, double contingencies and selected bus outages with and without the simulated transfer in effect
- This analysis is not a complete testing of NERC TPL standards

## Case Development

- The most current MMWG models were used for the systems external to SCE&G and SCPSA as a starting point for the study case
- The study case(s) include the detailed internal models for SCE&G and SCPSA. The study case(s) include new transmission additions currently planned to be in-service for the given year (i.e. in-service by winter 2016-2017 for 2016W case)

## Case Development

- SCE&G and SCPSA have coordinated interchange which includes all confirmed long term firm transmission reservations with roll-over rights applicable to the study year
- The coordinated cases were used to build base cases
- Base cases were used to build transfer cases

## Study Results

- SCE&G and SCPSA have reported results based on thermal loading greater than 90% and voltage violations in accordance with their planning criteria
- Overloaded facilities that had a low response to the requested transfer were excluded and problems or issues identified that are local area in nature were also excluded

# 2015 Economic Planning Studies

Source	Sink	Study Year	Transfer
Southern Company	SCE&G	2016 Winter	300 MW
Duke	SCE&G	2018 Summer	200 MW
Southern Company	SCE&G	2018 Summer	300 MW
Duke	SCE&G	2018 Winter	250 MW
Southern Company	SCE&G	2018 Winter	350 MW

# Power Flow Base Cases

- 2014 Series Internal PSSE Models
  - 2016 Winter
  - 2017 Summer (Proxy for 2018 Summer)
  - 2017 Winter (Proxy for 2018 Winter)

## Preliminary Result Components

- The following information is preliminary and subject to change pursuant to additional analyses
- The following information does not represent a commitment to proceed with the recommended enhancements nor imply that the recommended enhancements could be implemented by the study dates
- These potential solutions only address constraints identified within the respective areas that comprise the SCRTP. Balancing Areas external to the SCRTP were not monitored, which could result in additional limitations and required system enhancements



# Preliminary Results

## Southern Company-SCE&G 300 MW 2016 Winter Study

Constrained Facility	Loading %	Increase %	Contingency	Project
Canadys – Church Creek 230 kV	94%	6%	AM Williams 230kV Bus 1 (Includes AM Williams Generation Unit)	OG1

# Preliminary Results

**Southern-SCE&G 300 MW**

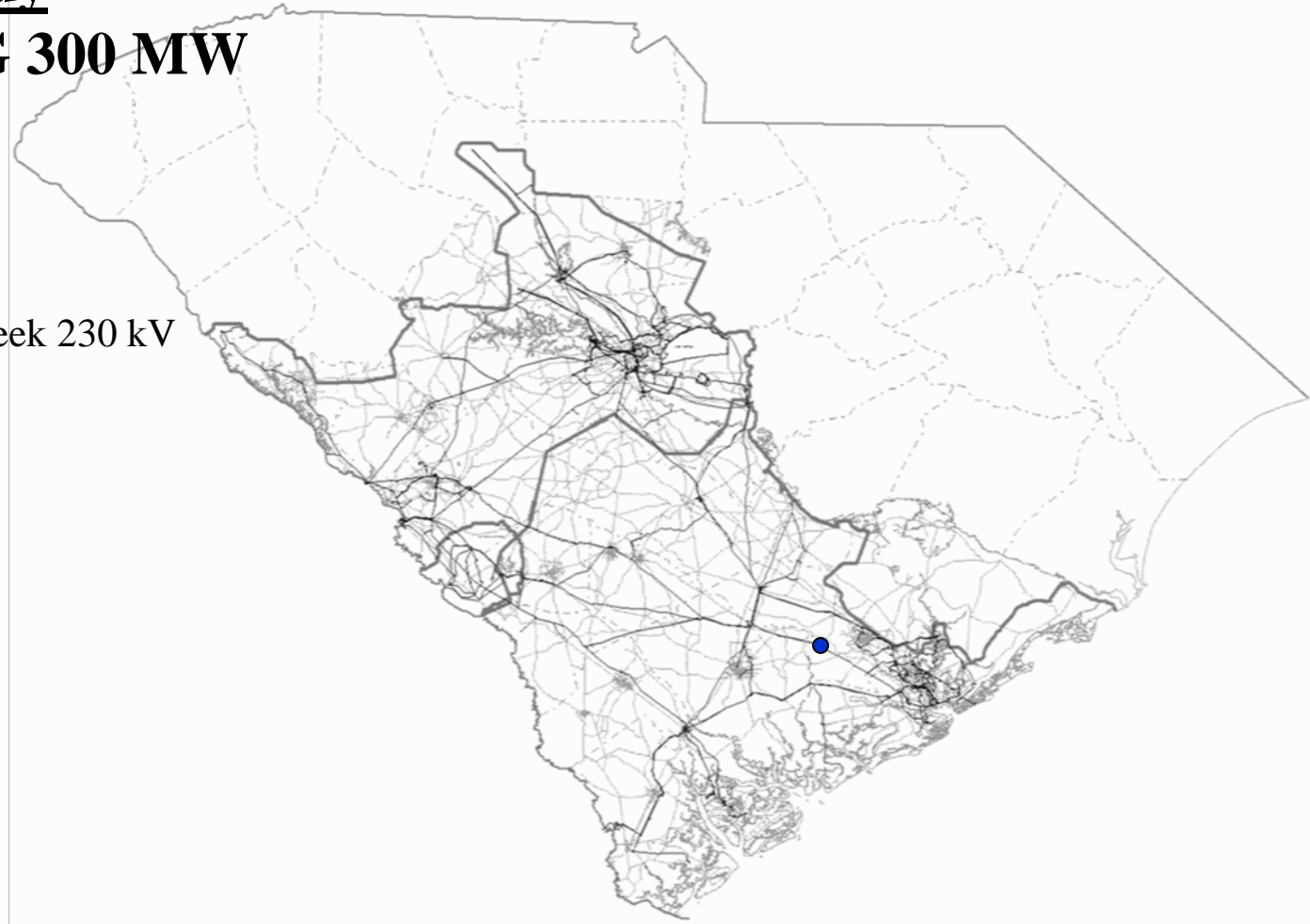
**2016 Winter Study**

<b>Project</b>	<b>Description</b>	<b>Cost (2015\$)</b>	<b>Duration (Months)</b>
OG1	Operating Guide to crank Hagood CTs	N/A	N/A
TOTAL (2015\$)		\$0	

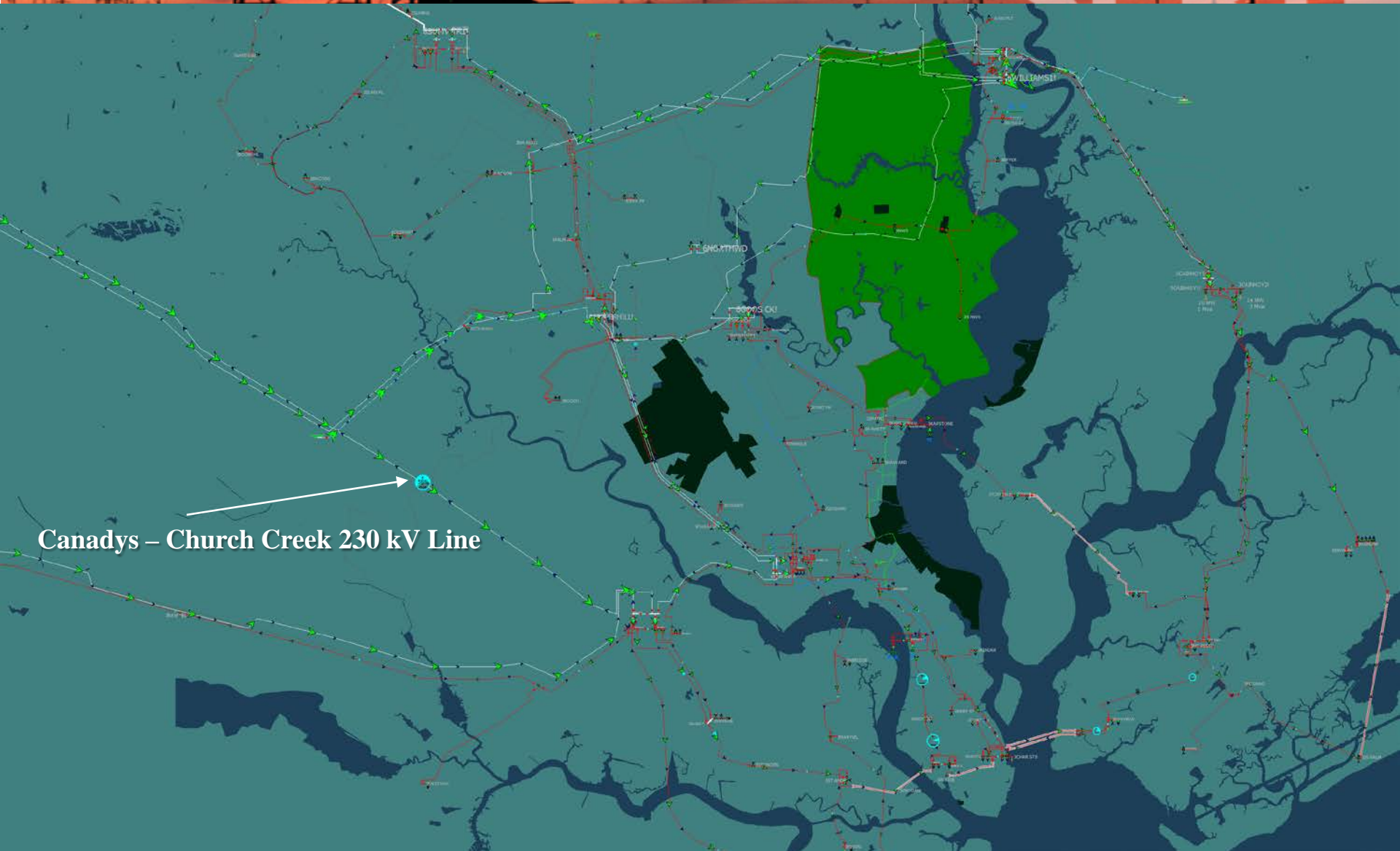
## 2016 Winter Study

### SOCO – SCE&G 300 MW

- Canadys – Church Creek 230 kV

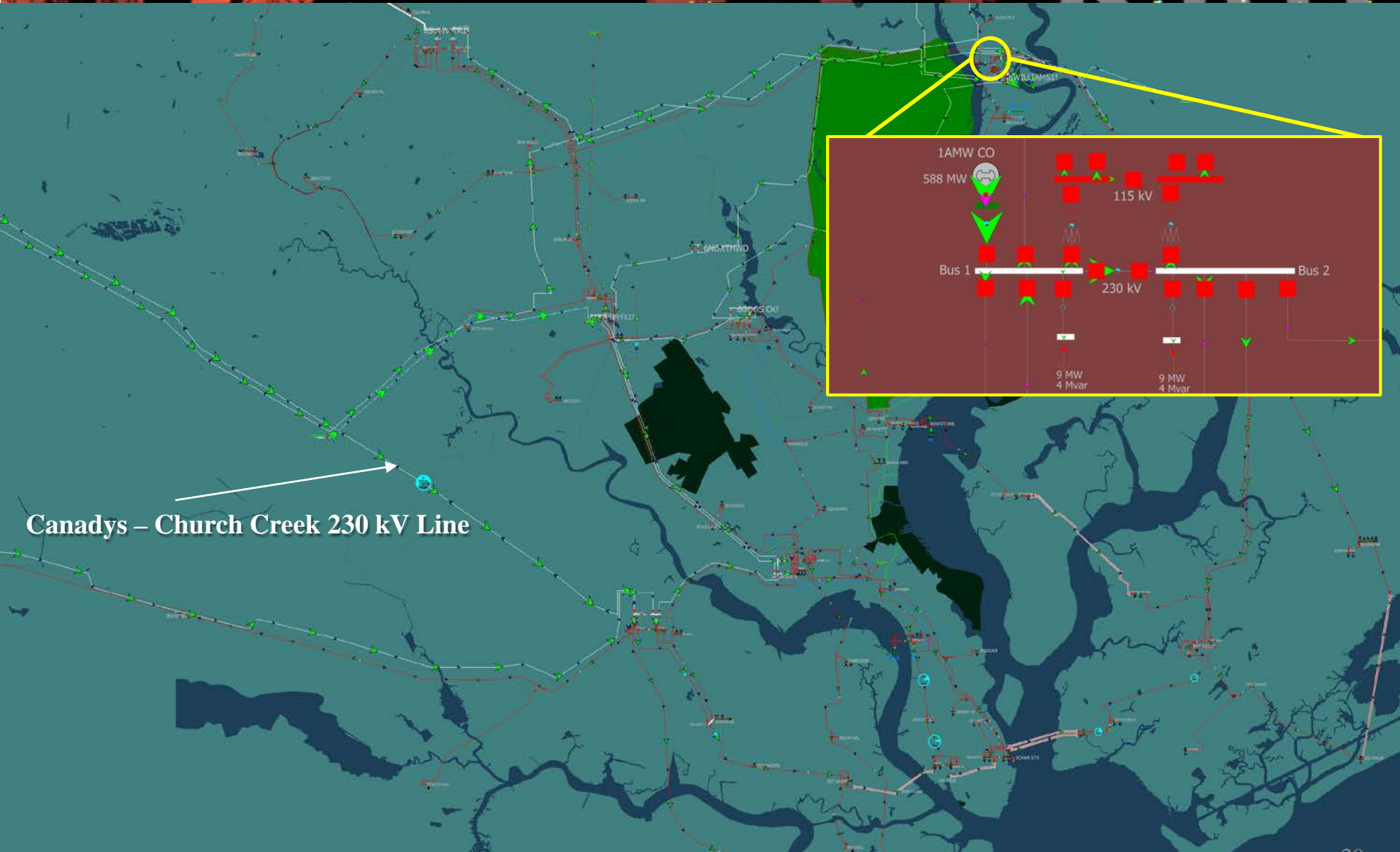


# 2016 Winter Study SOCO – SCE&G 300 MW



Canadys – Church Creek 230 kV Line

# 2016 Winter Study SOCO – SCE&G 300 MW



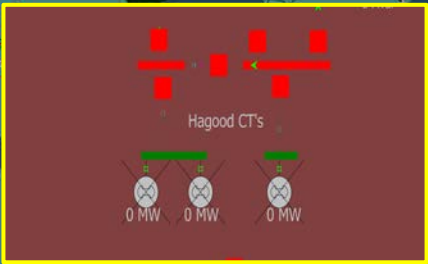
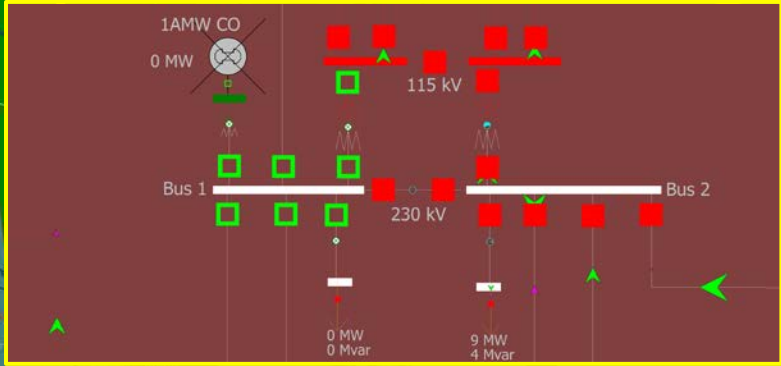
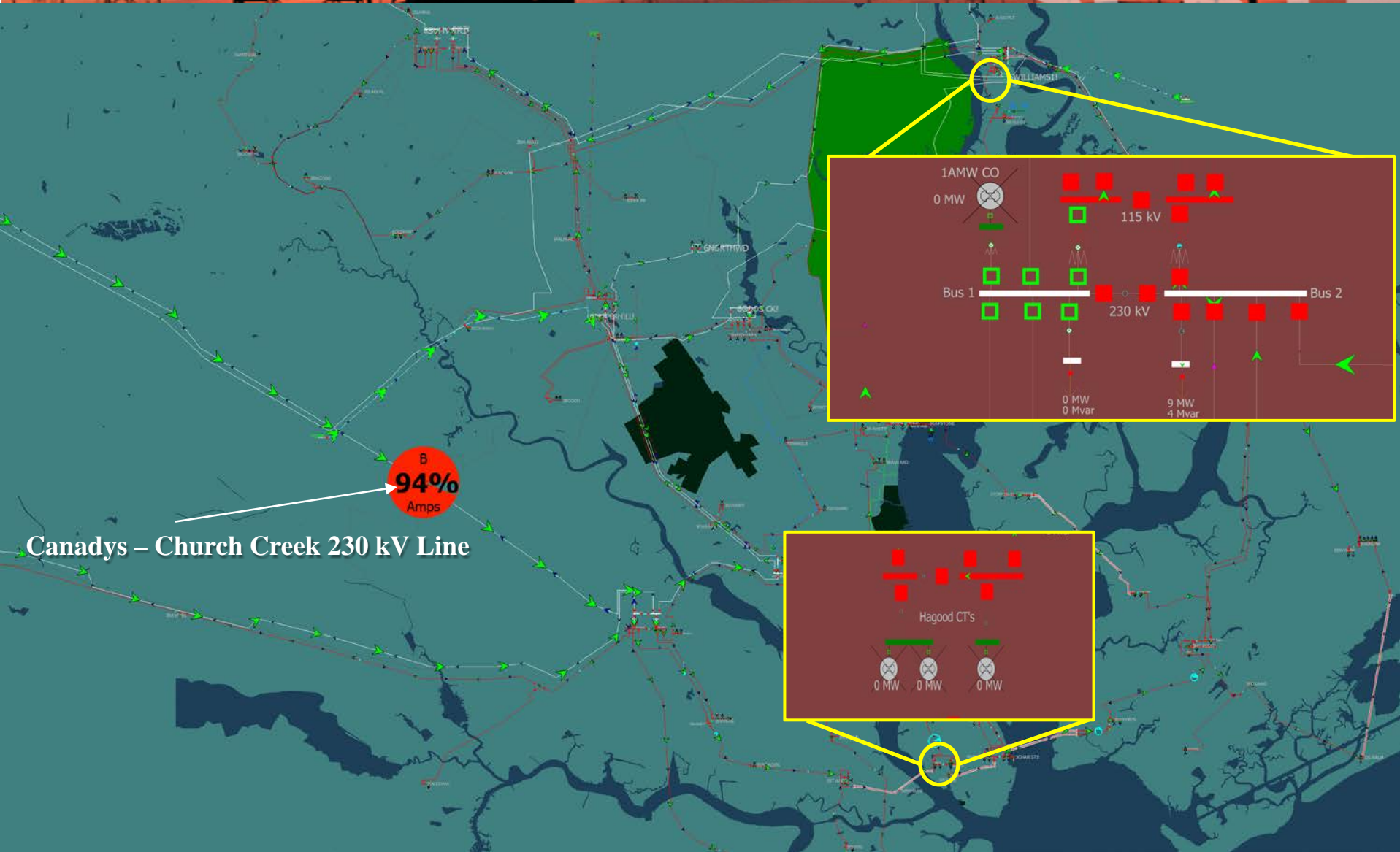
Canadys – Church Creek 230 kV Line



Canadys – Church Creek 230 kV Line

B  
94%  
Amps

# 2016 Winter Study SOCO – SCE&G 300 MW

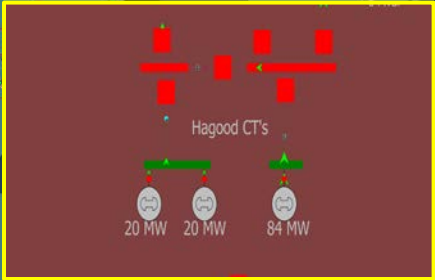


# 2016 Winter Study SOCO – SCE&G 300 MW



Canadys – Church Creek 230 kV Line

B  
88%  
Amps





# Preliminary Results

## Duke-SCE&G 200 MW 2018 Summer Study

Constrained Facility	Loading %	Increase %	Contingency	Project
*None				

\*No significant changes to contingencies/constraints already seen in 2018S Base case

# Preliminary Results

**Southern-SCE&G 300 MW**

**2018 Summer Study**

Constrained Facility	Loading %	Increase %	Contingency	Project
*None				

\*No significant changes to contingencies/constraints already seen in 2018S Base case

# Preliminary Results

## Southern-SCE&G 300 MW 2018 Summer Study

<b>Project</b>	<b>Description</b>	<b>Cost (2015\$)</b>	<b>Duration (Months)</b>
N/A			
		TOTAL (2015\$)	\$0

# Preliminary Results

## Duke-SCE&G 250 MW 2018 Winter Study

<b>Constrained Facility</b>	<b>Loading %</b>	<b>Increase %</b>	<b>Contingency</b>	<b>Project</b>
Stevens Creek – Thurmond 115 kV (SCE&G/SEPA)	106%	5%	Thurmond – Briggs Road 115 kV (SCPSA)	OG2
Saluda Hydro – Bush River 115 kV #2 (SCE&G/DEC)	104%	10%	VCS2 – Bush River 230 kV (SCE&G/DEC) & VC Summer #1 Generator	OG3

# Preliminary Results

## Southern-SCE&G 350 MW 2018 Winter Study

<b>Constrained Facility</b>	<b>Loading %</b>	<b>Increase %</b>	<b>Contingency</b>	<b>Project</b>
Stevens Creek – Thurmond 115 kV (SCE&G/SEPA)	104%	5%	Thurmond – Briggs Rd 115 kV (SCPSA/SEPA)	OG2
Saluda Hydro – Bush River 115 kV #2 (SCE&G/DEC)	104%	10%	VCS2 – Bush River 230 kV (SCE&G/DEC) and VC Summer #1 Generator	OG3

# Preliminary Results

## Southern-SCE&G 300 MW 2018 Winter Study

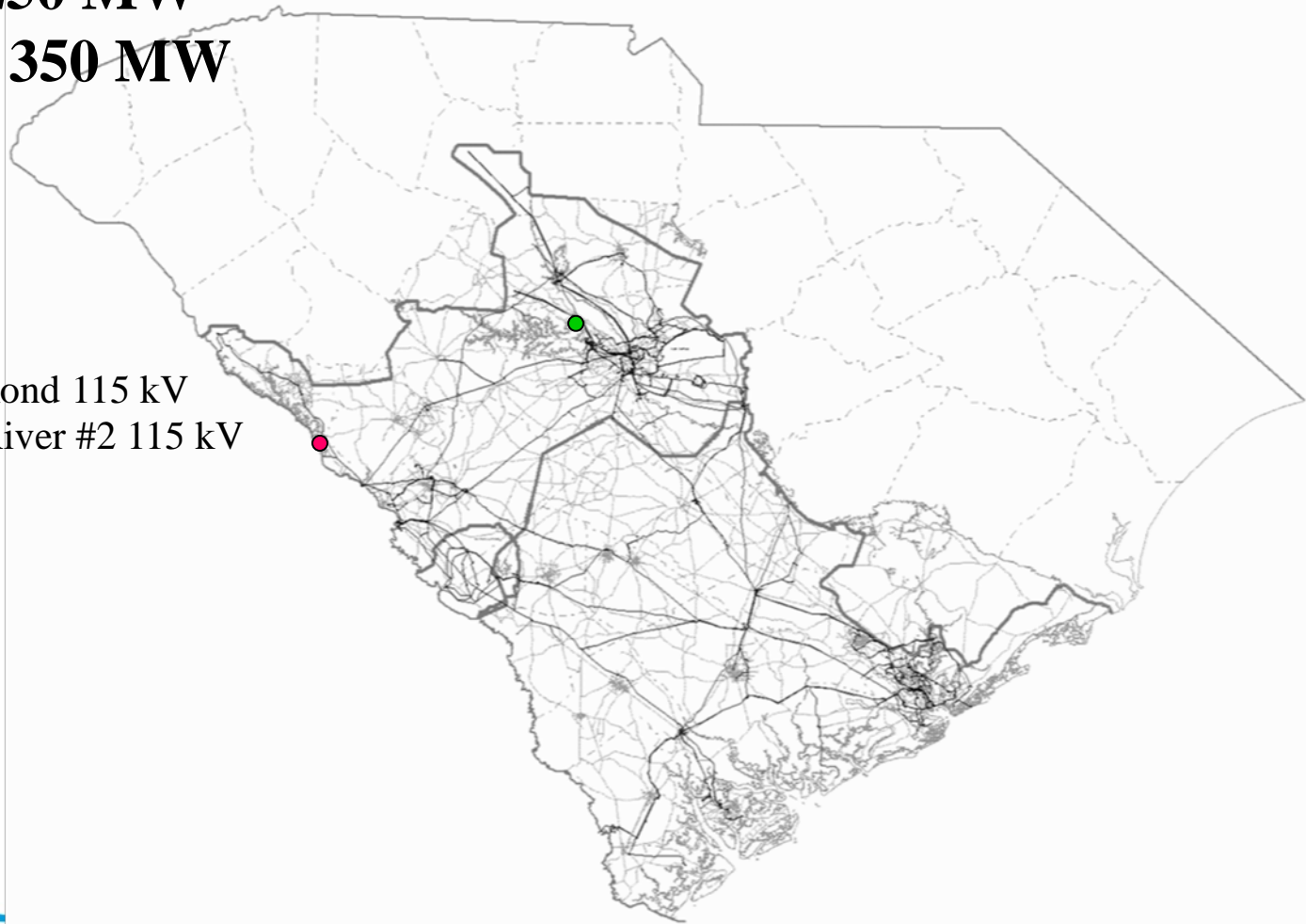
<b>Project</b>	<b>Description</b>	<b>Cost (2015\$)</b>	<b>Duration (Months)</b>
OG2	Increase generation at Urquhart plant or decrease generation at Thurmond plant	N/A	N/A
OG3	Increase generation at Saluda Hydro	N/A	N/A
TOTAL (2015\$)		\$0	

## 2018 Winter Study

**Duke – SCE&G 250 MW**

**SOCO – SCE&G 350 MW**

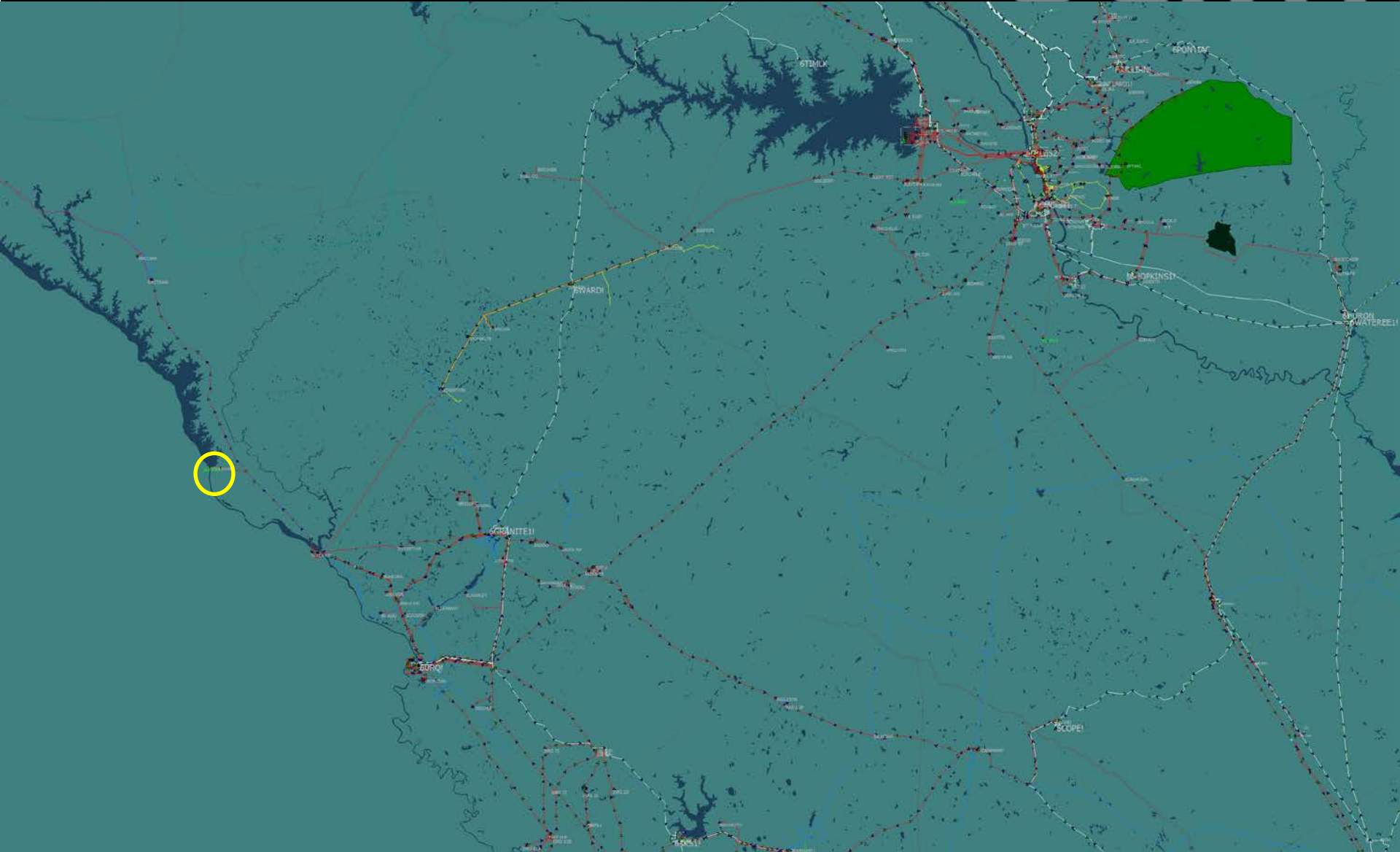
- Stevens Creek – Thurmond 115 kV
- Saluda Hydro – Bush River #2 115 kV



# 2018 Winter Study

## DUK – SCE&G 250 MW

## SOCO – SCE&G 350 MW

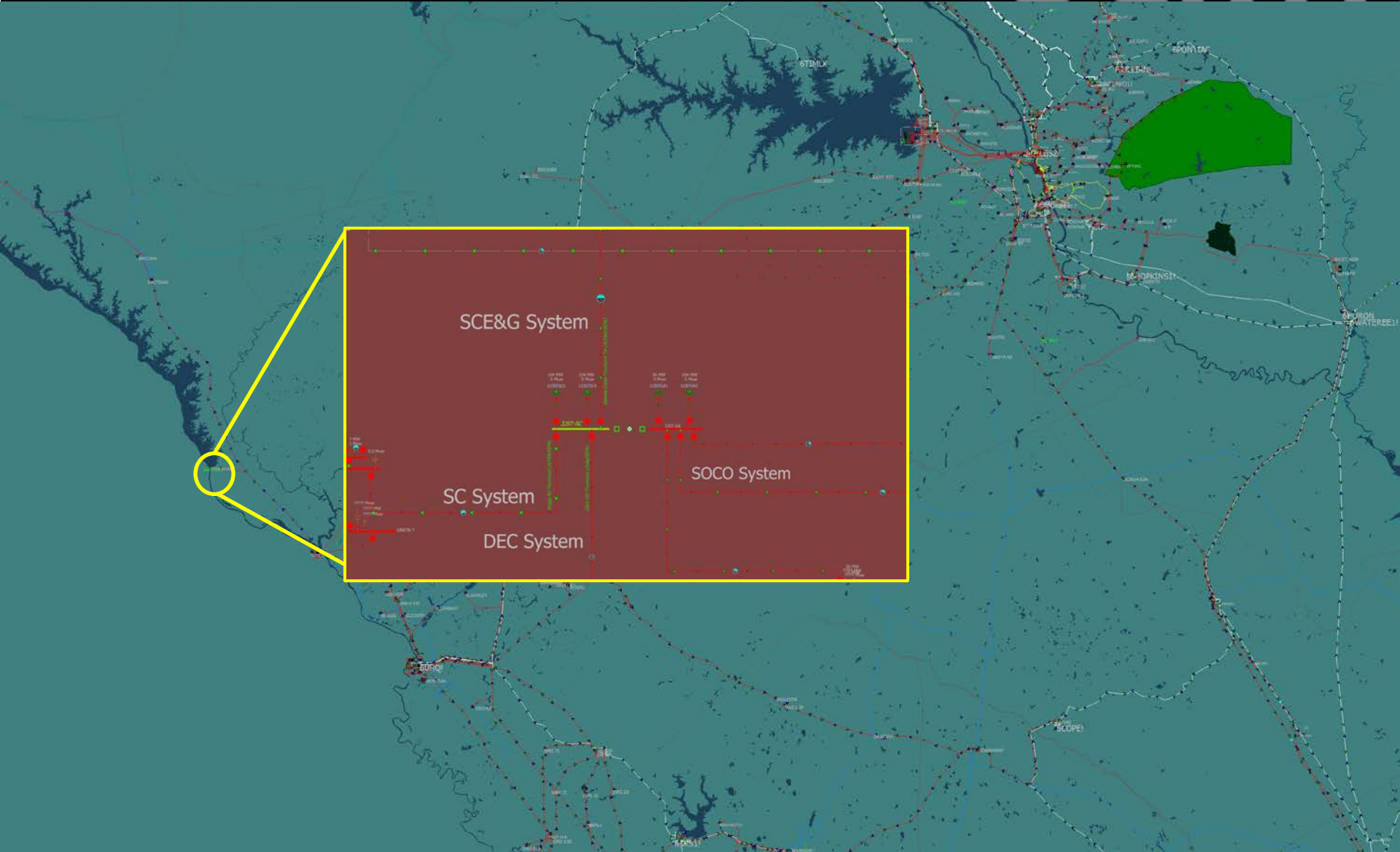




# 2018 Winter Study

## DUK – SCE&G 250 MW

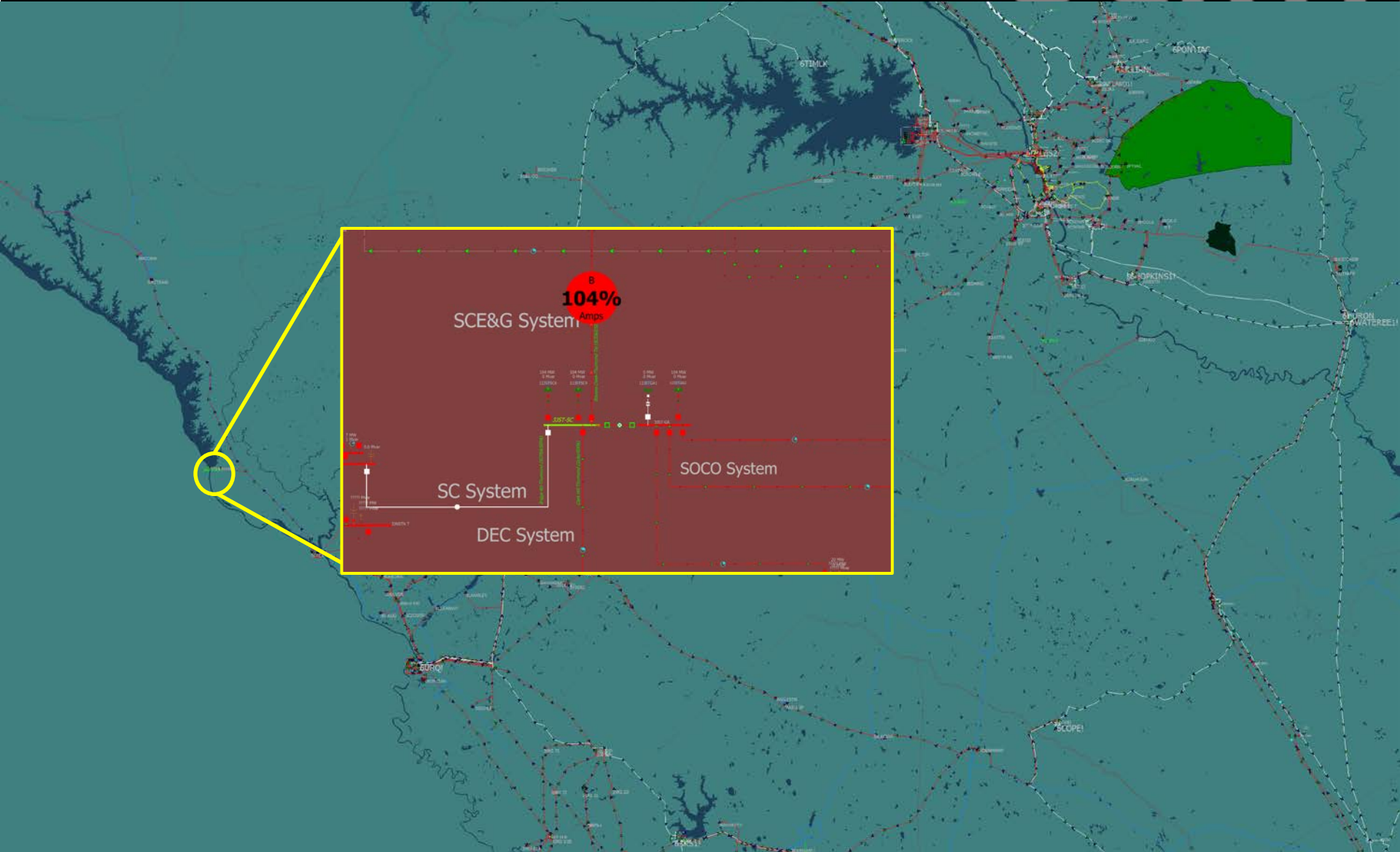
## SOCO – SCE&G 350 MW



# 2018 Winter Study

## DUK – SCE&G 250 MW

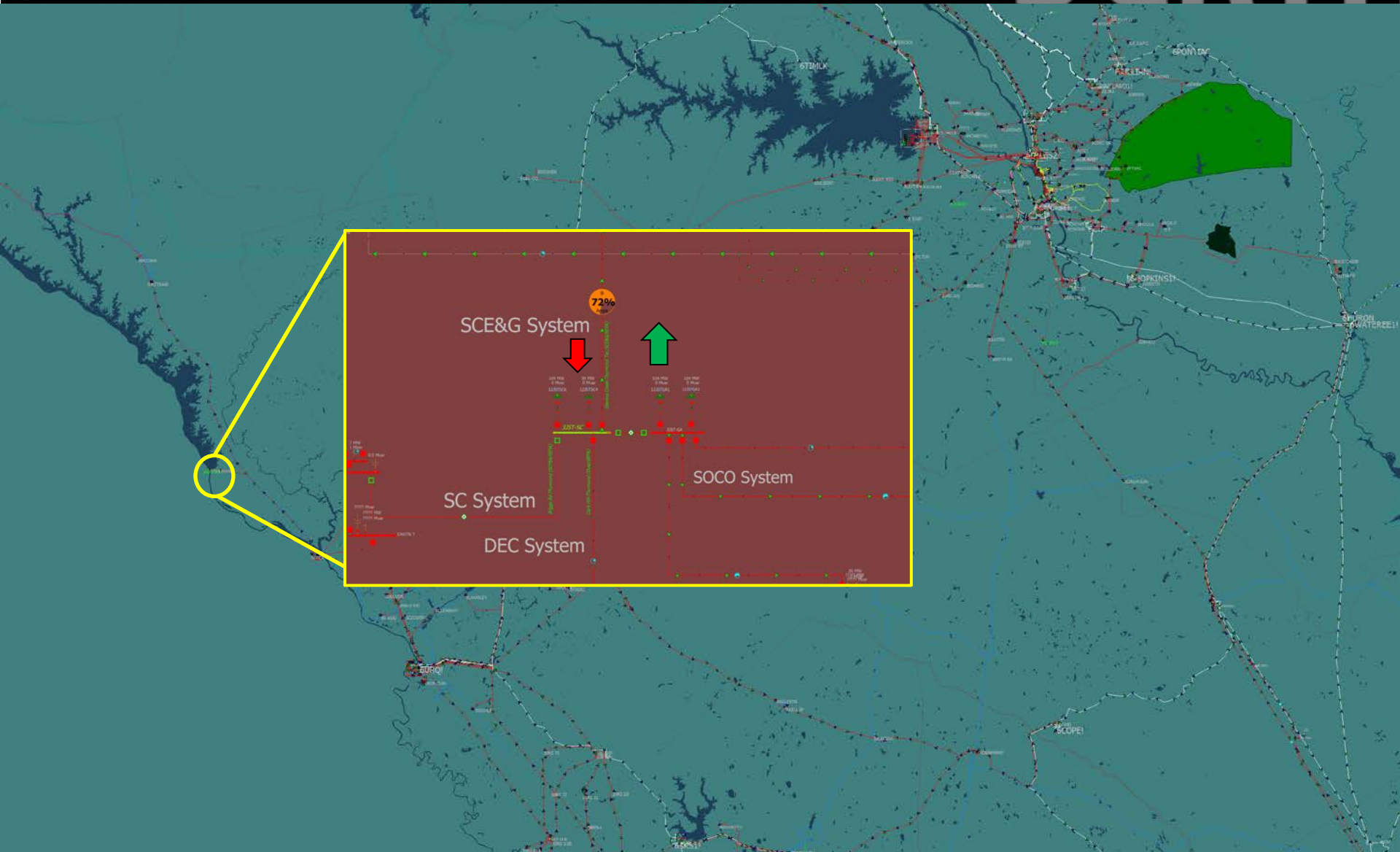
## SOCO – SCE&G 350 MW



# 2018 Winter Study

## DUK – SCE&G 250 MW

## SOCO – SCE&G 350 MW



## Report and Power Flow Case Access

- Draft reports will be provided to stakeholders
- Power Flow Starting Point Cases available as of **September 1, 2015**

# Economic Transmission Planning Studies Initial Findings



## Stakeholder Input, Comments and Questions

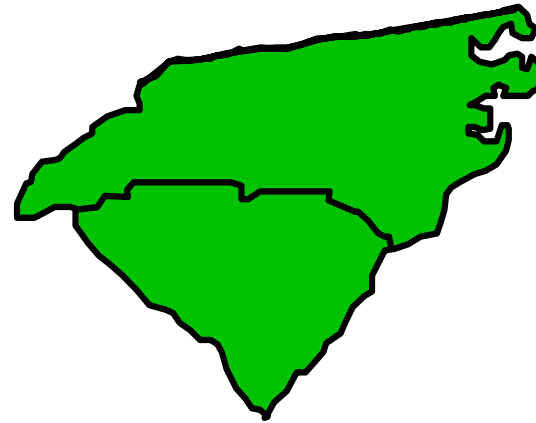
# Reliability Assessment Studies

Diana Scott

# Multi-Party Assessments

- Carolina Transmission Coordination Arrangement (CTCA) Assessments
- Southeastern Electric Reliability Corporation (SERC) Assessments
- Eastern Interconnection Planning Collaboration (EIPC)

# 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 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”)

# 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

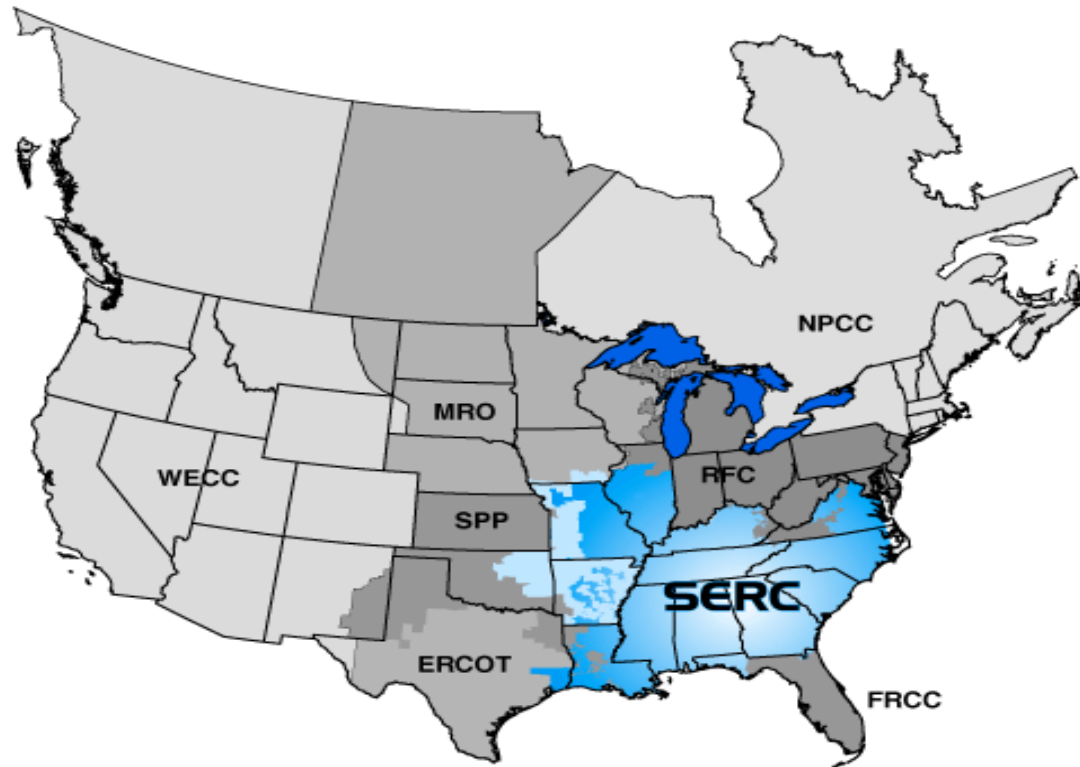
- Assess the existing transmission expansion plans of Duke, Progress, SCEG, and SCPSA to ensure that the plans are simultaneously feasible.
- Identify any potential joint solutions that are more efficient or cost-effective than individual company plans, which also improve the simultaneous feasibility 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 2015 Study

- 2020 Summer
- 2026 Summer
- Draft report completed
- Final report will be released Q4 2015

# SERC LTSG Assessments

## SERC Future Year Assessments Long Term Study Group (LTSG)



# SERC LTSG Study Purpose

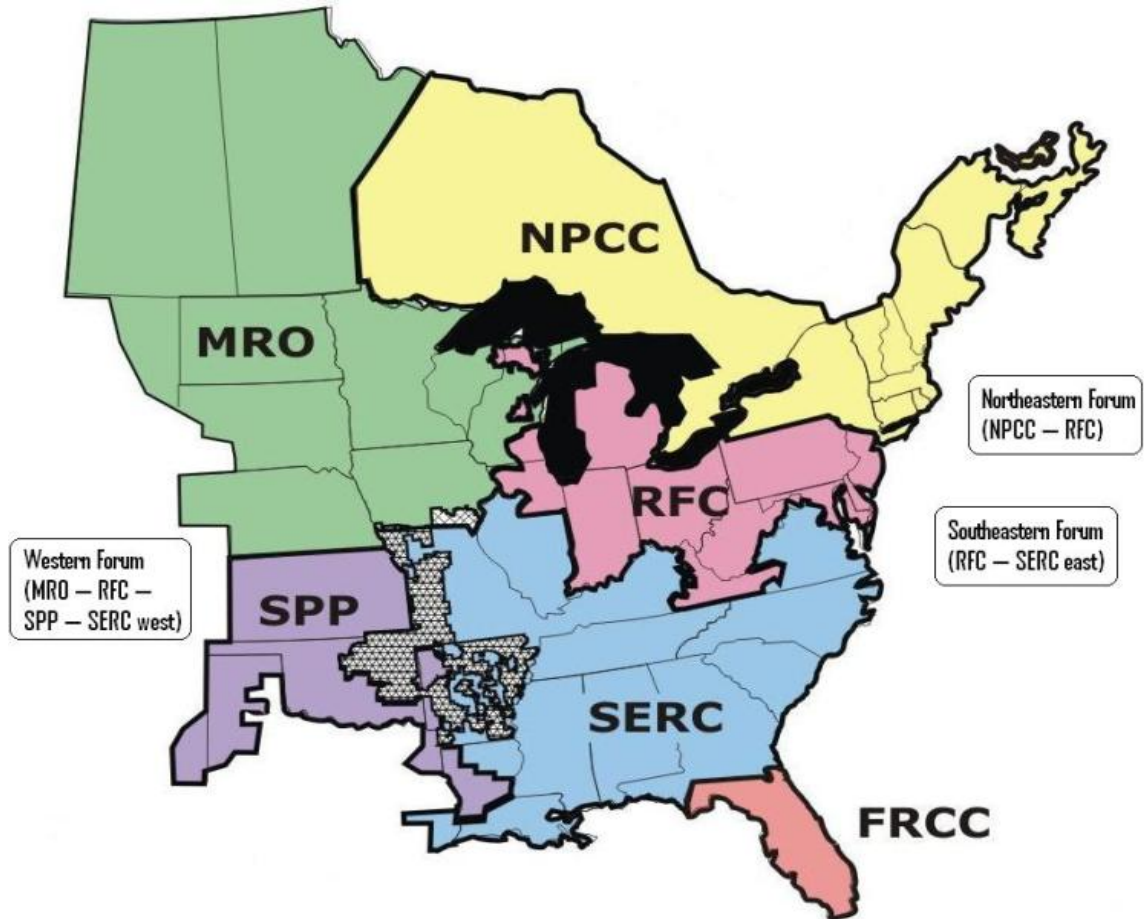
- Analyze the performance of the members' transmission systems and identify limits to power transfers occurring non-simultaneously among the SERC members.
- Evaluate the performance of bulk power supply facilities under both normal and contingency conditions for future years.
- Focus on the evaluation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



# SERC Long Term Study Group 2015 Work Schedule

- LTSG Data Bank Update –May 12-14 Hosted by Southern
- Study Case: 2020 Summer Peak Load
- Study has been completed.
- Draft 1 of the report completed
- Final Report December, 2015

# ERAG Assessments



# ERAG Assessments

- No Long Term Study Performed

# EIPC Assessments

## Model Development and Evaluation

- Study Cases: 2025 Summer and 2025 Winter
- Perform contingency and transfer analysis
- Identify gaps and develop enhancements as appropriate
- Study completion is end of October
- Provide feedback to regional planning processes

# Reliability Assessment Studies

## Questions?

## Next SCRTP Meeting

- Present and discuss key assumptions and data for the upcoming planning cycle
- Review major projects in the current Local and Regional Plans
- Assessment and Planning Study Update
- EIPC Update
- SCRTP Email Distribution List will be notified
- Register online



# South Carolina Regional Transmission Planning

## Stakeholder Meeting

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