

# South Carolina Regional Transmission Planning

## Stakeholder Meeting

### Web Conference

September 15, 2017 2:00 – 3:00 PM

## Purpose and Goals for Today's Meeting

- Review and Discuss the Initial Results of the Stakeholder Selected Economic Power Transfer Sensitivities
- Update on Regional Planning Process
- Discussion on Multi-Party Studies
- EIPC Update

# Economic Transmission Planning Studies

Wade Richards/Jeff Neal  
Weijian Cong

# Study Methodology

- Linear transfer analysis using PowerGem's TARA Software. Analysis includes single contingencies of SERC while monitoring the SCE&G's and Santee Cooper's internal Transmission Systems.
- A Thermal and Voltage analysis using PTI's PSS/E and/or PowerWorld Simulator Software. This analysis of SCE&G's and Santee Cooper's internal transmission systems included single contingencies, double contingencies and selected bus outages with and without the simulated transfer in effect. However, 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 2017 for 2017W case).
- All transmission additions previously required for VCS2 and VCS3 NND (New Nuclear Development) were also included. VCS2 and/or VCS3 generators were replaced with generation from available plants within SCE&G's and SCPSA's balancing areas, when required.

## 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.

# 2017 Economic Planning Scenarios

## *Selected by Stakeholders During the April 18, 2017 Meeting*

#	Source	Sink	Amount (MW)	Year	Study Conditions	Study Request
1	SC	DEC	300	2020	Summer	SCPSA PM
2	SC	DEP	300	2020	Summer	SCPSA PM
3	SOCO	SCE&G	300	2020	Summer	SCE&G PM
4	SOCO	SCE&G	300	2021	Winter	SCE&G PM
5	DEC	SCE&G	300	2021	Summer	SCE&G PM

**\*\*Scenarios withdrawn by SCPSA PM in light of VCS 2&3 decision-7/31/17**



# Power Flow Base Cases

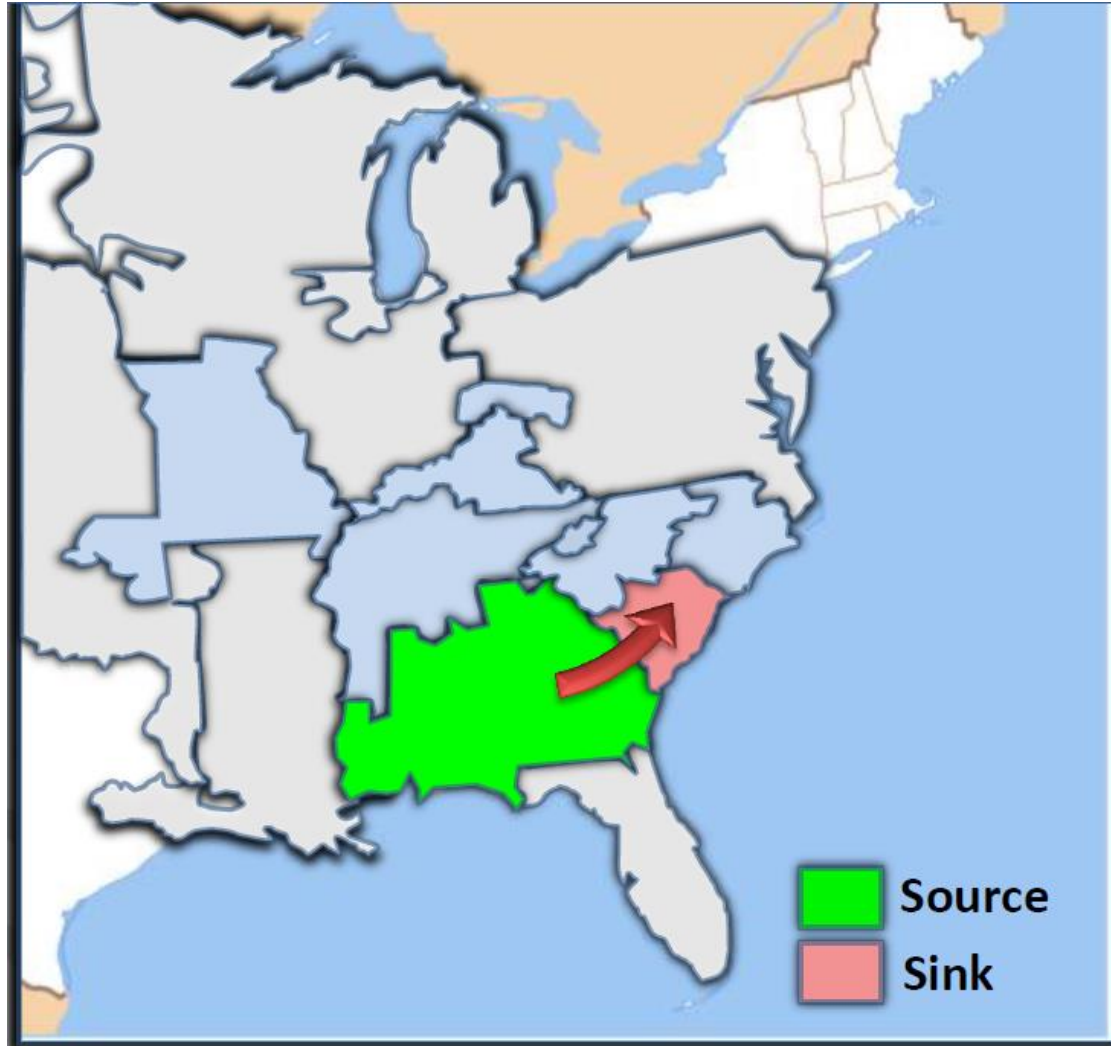
- 2016 MMWG Series PSSE Models with SCE&G and SCPSA 2017 Internal Model Updates
  - 2020 Summer
  - 2021 Winter
  - 2021 Summer

## 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 implies 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.

**Scenario 1**  
**2020 Summer**  
**SOCO – SCE&G 300 MW**

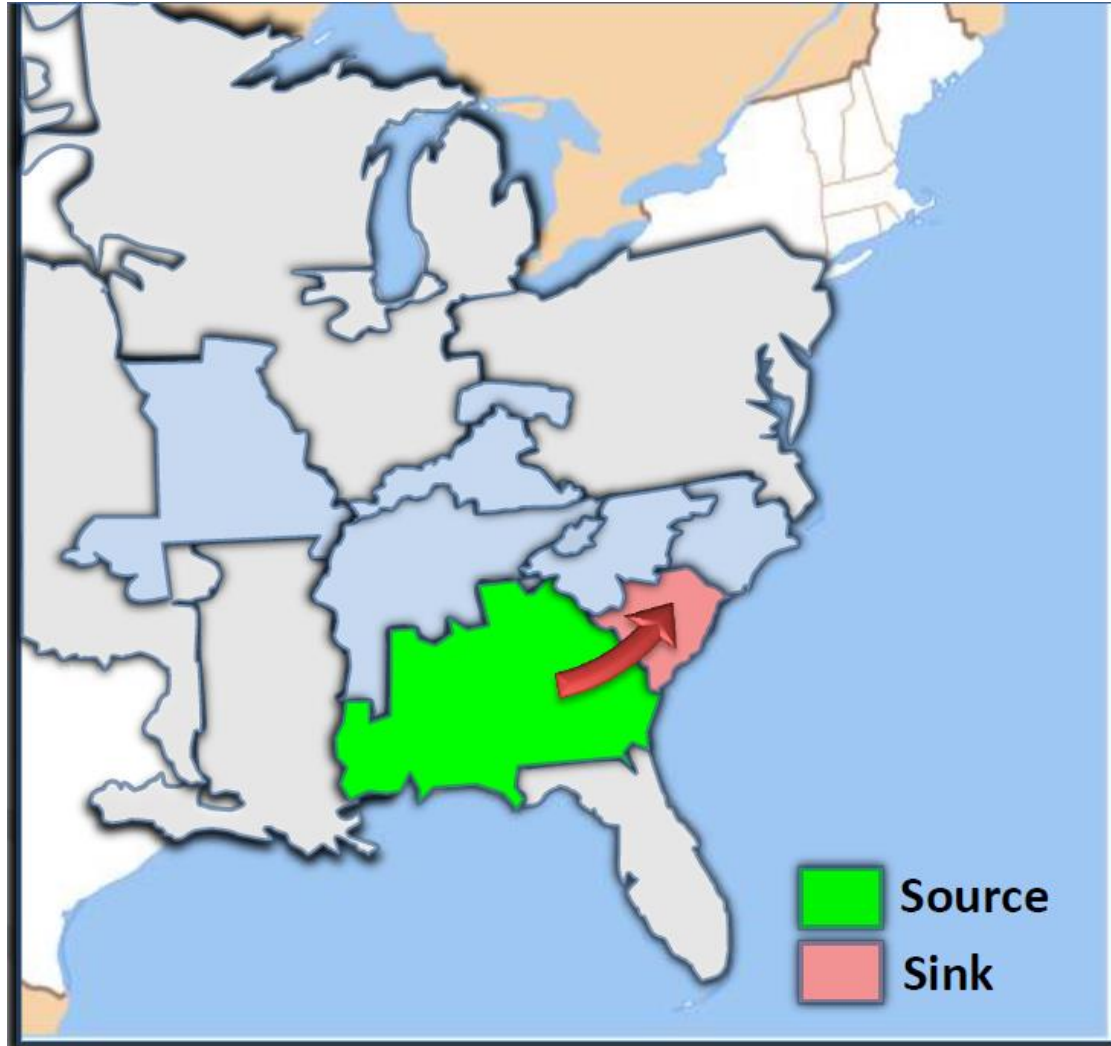
# 2020 Summer Study SOCO – SCE&G 300 MW



**Scenario 2**  
**2020/21 Winter**  
**SOCO – SCE&G 300 MW**



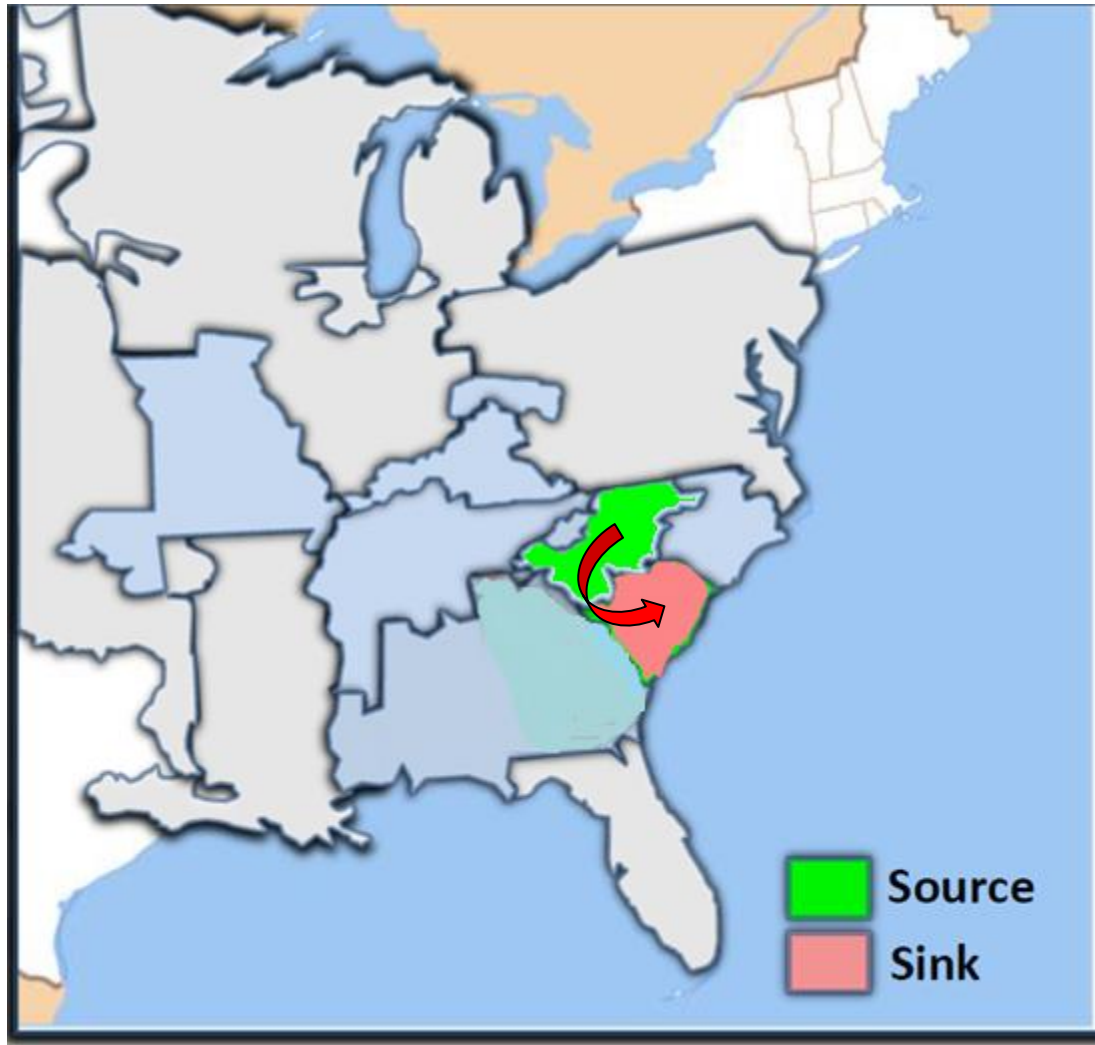
# 2021 Winter Study SOCO – SCE&G 300 MW





**Scenario 3**  
**2021 Summer**  
**DEC – SCE&G 300 MW**

# 2021 Summer Study DEC – SCE&G 300 MW



# 2017 Economic Planning Scenarios

## Preliminary Results - SCPSA

#	Source	Sink	MW	Year	FCITC LIMIT	LIMIT/CONTINGENCY
1	SOCO	SCEG	300	2020S	No Limit found	N/A
2	SOCO	SCEG	300	2021W	No Limit found	N/A
3	DEC	SCEG	300	2021S	No Limit found	N/A
4						
5						

# 2017 Economic Planning Scenarios

## Preliminary Results – SCE&G

#	Source	Sink	MW	Year	FCITC LIMIT	LIMIT/CONTINGENCY
1	SOCO	SCEG	300	2020S	No Limit found	N/A
2	SOCO	SCEG	300	2021W	No Limit found	N/A
3	DEC	SCEG	300	2021S	No Limit found	N/A
4						
5						

## Report and Power Flow Case Access

- Draft reports will be provided to stakeholders
- Power Flow Starting Point Cases available as of **September 1, 2016**





<https://www.SCRTP.com/home>

Available Power Flow Base Cases

To apply for access to base cases you must complete the [CEI and Non-disclosure Agreement](#) and follow the instructions included in the form.

The following is a list of available Power Flow Base Cases:

**2015 Base Cases**

1. 2016 Spring Light Load
2. 2016 Summer Peak
3. 2016/17 Winter Peak
4. 2017 Spring Light Load
5. 2017 Summer Shoulder
6. 2017 Summer Peak
7. 2017/18 Winter Peak
8. 2021 Spring Light Load
9. 2021 Summer Peak
10. 2021/22 Winter Peak
11. 2026 Summer Peak
12. 2026/27 Winter Peak

### User Sign In

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## 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." The SCRTP process was expanded to meet the transmission planning requirements of [FERC Order No. 1000](#), [1000-A](#), and [1000-B](#), orders that reform the Commission's electric transmission planning and cost allocation requirements for public utility transmission providers.

SCRTP provides information on:

- Activities of the SCRTP process
- Order No. 890 (including subsequent rulings associated with Order No. 890)
- Documents related to our compliance with Order No. 890

### FERC Order No. 890

On March 15, 2007 the Federal Energy Regulatory Commission (FERC) published in the Federal Register a final rule reforming the 1996 open-access transmission regulatory framework rules in Orders No. 888 and 889. This final rule, called FERC Order No. 890, was adopted

## Events

The next meeting of the SCRTP Stakeholder Group will be held October 13, 2016. This meeting will be by WebEx Conference Only.

[Meeting Announcement](#)

[register now](#)

[Meeting Archives](#)

### Order 1000 Filing:

- [Order 1000 Transmittal Letter](#) - 7/14/2014
- [Attachment K Clean Order 1000 Revision](#) - 7/14/2014

### Planned Facilities

- [2016-2020 above \\$2M Project Descriptions \(PDF\)](#)



# Economic Transmission Planning Studies Initial Findings



## Stakeholder Input, Comments and Questions

# SCRTP Regional and Inter-regional Processes

Clay Young

# SCRTP Regional and Public Policy Planning

- Biennial Process (currently in year 1, Meeting #4)
- Restarts in 4<sup>th</sup> quarter of even years
- Regional Projects – Proposed, Evaluation and Selection
  - **Must be submitted by January 15 of odd years**
  - None received in current Regional Planning cycle

## During this meeting:

- Transmission Providers and Stakeholders may discuss proposed Regional Projects and Stakeholder comments

## Interregional Activities

- SCRTP and SERTP Sponsors meeting
- Shared Local and Regional Plans

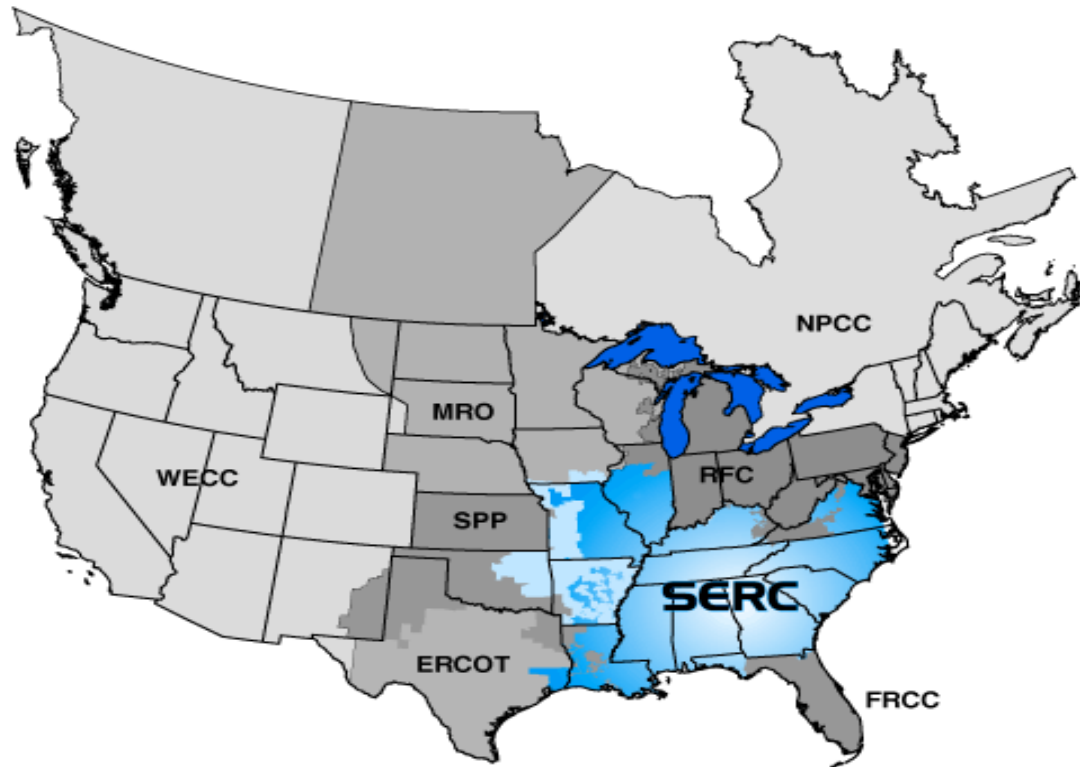
# Reliability Assessment Studies

Weijian Cong

## Multi-Party Assessments

- **Southeastern Electric Reliability Corporation (SERC) Assessments**
- **Eastern Interconnection Reliability Assessment Group (ERAG)**
- **Carolinas Transmission Coordination Arrangement (CTCA) Assessments**

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





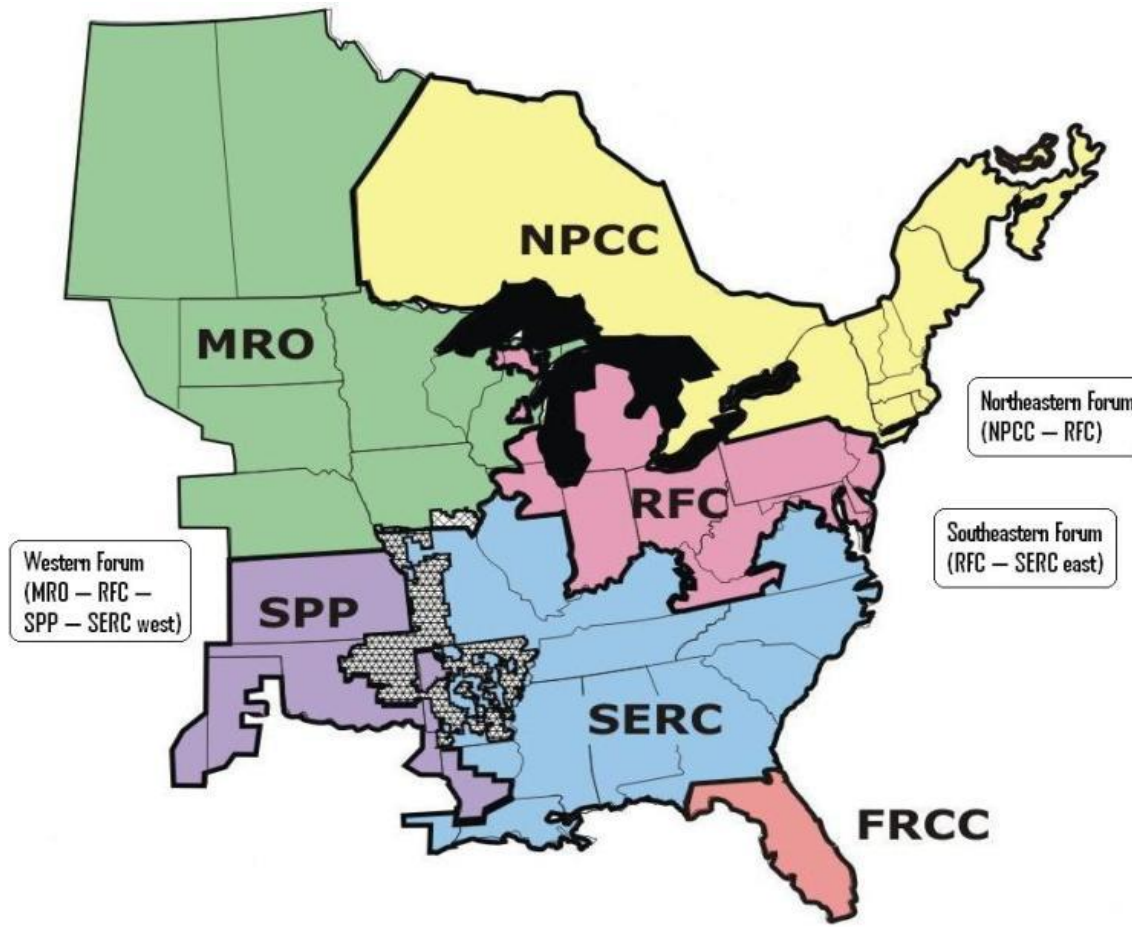
# SERC LTSG Study Purpose

- 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 2017 Work Schedule

- Power flow cases finalized on June 14, 2017
  - Revised power flow cases based on V.C. Summer update (8/10)
- Future Study Year Case: 2022 Summer Peak Load
- Study and report to be completed by LTSG June thru October
- Steering Committee reviews report
- Final Report Complete December 4, 2017

# Eastern Interconnection Reliability Assessment Group (ERAG) Assessments



- ReliabilityFirst Corporation (RF)
- Midwest Reliability Organization (MRO)
- Florida Reliability Coordinating Council (FRCC)
- Northeast Power Coordinating Council (NPCC)
- Southeastern Electric Reliability Council (SERC)
- Southwest Power Pool Regional Entity (SPP RE)

# ERAG Assessments

- **The purpose of the Eastern Interconnection Reliability Assessment Group (ERAG) is to further augment the reliability of the bulk-power system in the Eastern Interconnection through periodic studies of seasonal and longer-term forecasted transmission system conditions.**
- **No Long Term Study Performed in 2017**



# ERAG MMWG

**The Multiregional Modeling Working Group (MMWG) is responsible for developing a library of solved power flow models and associated dynamics simulation models of the Eastern Interconnection.**

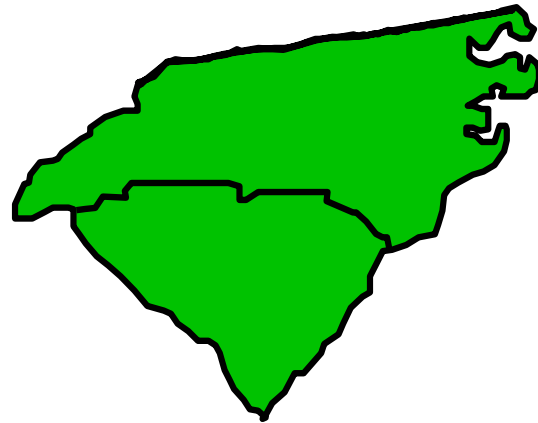
**The models are for use by the Regions and their member systems in planning future performance and evaluating current operating conditions of the interconnected bulk electric systems.**



## ERAG MMWG 2017 activity

- Model update from August – September 2017
- MMWG power flow cases finalized October 2017

# CTCA Future Year Assessments



- No study chosen for 2017
- Study files coordinated for TPL analysis

# Questions?

# **Eastern Interconnection Planning Collaborative Update**

Phil Kleckley

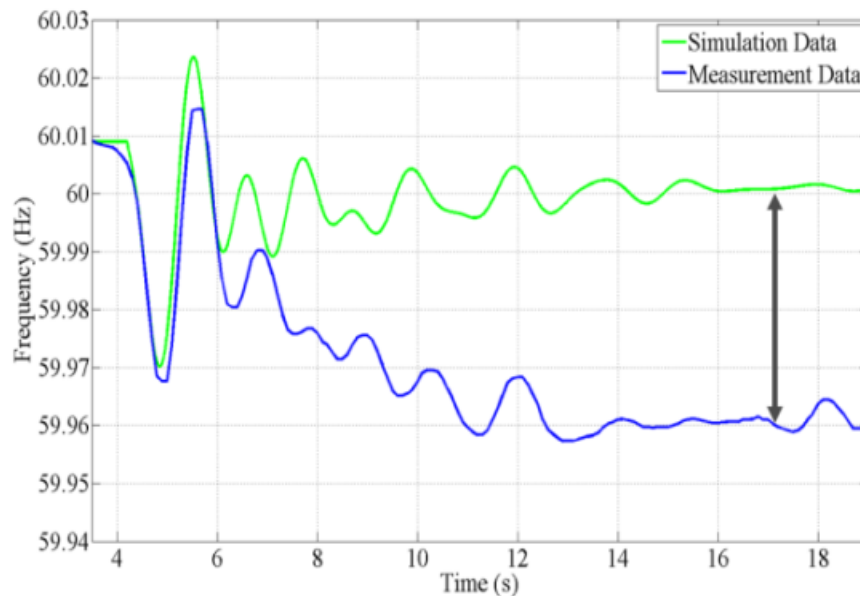
SCRTP Regional Stakeholder Meeting

September 15, 2017

# EIPC

## Frequency Response Task Force

Eastern Interconnection frequency response simulations results not correlating closely with measurements



**Mismatch  
between  
frequency  
response.**



# EIPC

## Frequency Response Task Force

- Difficult to predict frequency response impacts of photovoltaic generation
- Approached by NERC Essential Reliability Services Working Group (ERSWG)
- Facilitate forward looking frequency response analysis

# EIPC

## Frequency Response Issue

- Generation sources need to provide frequency response to maintain synchronous and stable system operation
- Variable energy resources (VERs) do not provide frequency support comparable to high inertia fossil/nuclear sources
- Simulation of frequency response of VERs needs further development

# EIPC

## Frequency Response Task Force

- Build on work by University of Tennessee – Knoxville and Lawrence Berkeley National Laboratory
- Create base case(s) for future frequency response studies and identify data improvements
- Perform/commission frequency response simulation tests
- Provide results to NERC ERSWG, NERC MMWG, other interconnections for future base case improvements

**Questions?**

**Contact Phil Kleckley**

**[pkleckley@scana.com](mailto:pkleckley@scana.com)**

## Next SCRTP Meeting

- SCRTP will review and discuss with Stakeholders the key assumptions and data used for internal models development in the RTP process
- SCRTP will review all major projects included in its current Local Transmission Plans
- Review and discuss Multi-Party Assessment Studies
- SCRTP Email Distribution List will be notified
- Register online



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