



TAG Meeting

December 12, 2013

ElectriCities Office
Raleigh, North Carolina



TAG Meeting Agenda

- 1. Administrative Items – Rich Wodyka**
- 2. FERC Order No. 1000 - Rule on Transmission Planning and Cost Allocation – Sam Waters**
- 3. 2013 Collaborative Plan Report and Study Results – Mark Byrd**
- 4. 2014 Study Scope Discussion – Orvane Piper**
- 5. Regional Studies Update – Bob Pierce**
- 6. 2013 and 2014 TAG Work Plan Update – Rich Wodyka**
- 7. TAG Open Forum – Rich Wodyka**



**FERC Order No. 1000 Rule on
Transmission Planning and
Cost Allocation
Compliance Update**

**Sam Waters – Duke Energy Carolinas
on behalf of the North Carolina Transmission
Planning Collaborative
*For the 12/12/13 TAG Meeting***



NCTPC Regional Compliance Filings

- Oct 11, 2012 – DEC/DEP submitted regional compliance filing.
- Feb 21, 2013 – FERC issued order rejecting the NCTPC as an Order No. 1000 region.
- Mar 25, 2013 – DEC/DEP filed a request for rehearing/clarification of the order – haven't received any FERC response.



SERTP Filings

- May 22, 2013 – DEC/DEP submitted a revised Order No. 1000 regional compliance filing with FERC, under protest, to join the SERTP – haven't received any FERC response. At this point, DEC/DEP began participating in the SERTP as if the companies were members of the SERTP.
- July 10, 2013 – SERTP Sponsors submitted their interregional compliance filing – haven't received any FERC response.
- July 18, 2013 – FERC order on the SERTP regional compliance filing. Footnote 35 of the order stated that FERC would address DEC/DEP's request to join the SERTP later.



SERTP Filings (cont.)

- Aug 19, 2013 – SERTP Sponsors filed for rehearing of the July 18th order – haven't received any FERC response.
- Sept 30, 2013 – SERTP Sponsors filed with FERC the following:
 1. A request for an extension of time till January 14, 2014 to submit their revised regional compliance filing; and
 2. Requested an effective date of June 1, 2014 to implement the Order No. 1000 regional compliance.
- Oct 17, 2013 – FERC granted the above Sept 30th requests.
- Dec 19, 2013 – SERTP stakeholder webinar on the revised regional compliance proposal.



SERTP Filings (cont.)

- Jan 14, 2014 – SERTP Sponsors will submit their revised regional compliance filing with FERC.
- Jun 1, 2014 – Effective date for the SERTP to begin the Order No. 1000 regional processes.

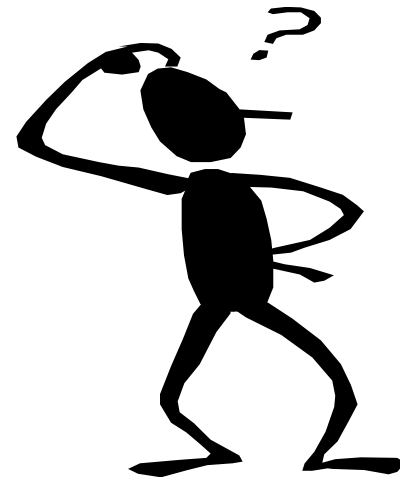


Transmission Planning Stakeholder Participation

- NCTPC – NCTPC will continue to function as the “local” transmission planning venue.
- SERTP – The regional planning process for Order No. 1000 purposes will be through the SERTP (unless FERC reverses their original Order on the NCTPC proposal).
 - SERTP website link: <http://www.southeasternrtp.com>
 - Sign-up for SERTP email updates:
http://www.southeasternrtp.com/email_signup.asp



Questions ?





NCTPC 2013 Collaborative Plan Report and Study Results

Mark Byrd – Duke Energy Progress

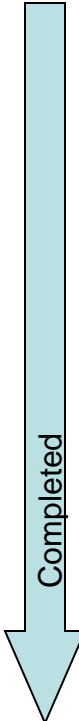


Purpose of Study

- **Assess DEC and DEP transmission systems' reliability and develop a single Collaborative Transmission Plan**



Steps and Status of the Study Process

- 
- A large, light blue downward-pointing arrow is positioned to the left of the list. The word "Completed" is written vertically inside the arrow, indicating that all eight steps listed are finished.
- 1. Assumptions Selected**
 - 2. Study Criteria Established**
 - 3. Study Methodologies Selected**
 - 4. Models and Cases Developed**
 - 5. Technical Analysis Performed**
 - 6. Problems Identified and Solutions Developed**
 - 7. Collaborative Plan Projects Selected**
 - 8. Study Report Prepared**



Study Assumptions Selected

- **Study Years for reliability analyses:**
 - Near-term: 2018 Summer, 2018/2019 Winter
 - Longer-term: 2023 Summer
- **LSEs provided:**
 - Input for load forecasts and resource supply assumptions
 - Dispatch order for their resources
- **Interchange coordinated between Participants and neighboring systems**



Study Criteria Established

- **NERC Reliability Standards**
 - **Current standards for base study screening**
 - **Current SERC Requirements**
- **Individual company criteria**



Study Methodologies Selected

- **Thermal Power Flow Analysis**
- **Each system (DEC and DEP) will be tested for impact of other system's contingencies**



Base Case Models Developed

- **Started with 2012 series MMWG cases**
- **Detailed models for DEC and DEP systems**
- **Adjustments were made based on additional coordination with neighboring transmission systems**
- **Planned transmission additions from updated 2012 Plan were included in models**



Resource Supply Options Selected

- **Last year**
 - Hypothetical new base load generation
 - NCTPC-PJM inter-regional wind study
- **This year**
 - Hypothetical import/export scenarios (16 total)
 - Coordination with PJM for modeling transfers (7 of 16 scenarios)



2023 Hypothetical Import / Export

Resource From	Sink	Test Level (MW)
NORTH – PJM	DEC	1,000
SOUTH – SOCO	DEC	1,000
SOUTH – SCEG	DEC	1,000
SOUTH – SCPSA	DEC	1,000
EAST – DEP (CPLE)	DEC	1,000
WEST – TVA	DEC	1,000



2023 Hypothetical Import / Export

Resource From	Sink	Test Level (MW)
NORTH – PJM	DEP (CPLE)	1,000
SOUTH – SCEG	DEP (CPLE)	1,000
SOUTH – SCPSA	DEP (CPLE)	1,000
WEST – DEC	DEP (CPLE)	1,000
WEST – DEC	SOCO	1,000



2023 Hypothetical Import / Export

Resource From	Sink	Test Level (MW)
NORTH – PJM	DEC / DEP (CPLE)	1,000 / 1,000
WEST – DEC / DEP (CPLE)	PJM	1,000 / 1,000
EAST – DEP (CPLE)	PJM	1,000
WEST – DEC	PJM	1,000
SOUTH – SOCO *	PJM	1,000



Technical Analysis

- **Conduct thermal screenings of the 2018 and 2023 base cases**
- **Conduct thermal screenings of the 2023 hypothetical transfer scenarios and coordinate with PJM**



Problems Identified and Solutions Developed

- **Identify limitations and develop potential alternative solutions for further testing and evaluation**
- **Estimate project costs and schedule**



Collaborative Plan Projects Selected

- **Compare all alternatives and select preferred solutions**

Study Report Prepared

- **Prepare draft report and distribute to TAG for review and comment**



Report on 2013 Study Results



Base Case Results - DEC

2018 and 2023 Summer

- No New Issues identified
- 1 Project Removed
 - London Creek 230 kV (Peach Valley – Riverview) - Revised Plan to install reactors in London Creek Line instead of bundle line. Cost is less than \$10 M.



Base Case Results – DEP

2018 and 2023 Summer

- **No New Issues identified in Eastern Service Territory**
- **3 Projects Changed**
 - **Raeford 230 kV Substation - Not replacing 2-230/115kV banks but adding a 3rd bank. This change relieves additional loading concerns on the 115kV network.**
 - **Durham-RTP 230 kV Line, Reconductor - In-service date moved from 6/1/2022 to 6/1/2023. Projected load growth less than anticipated.**
 - **Lilesville-Rockingham 230kV Line #3 – Construct new line - In-service date moved from 6/1/2014 to 12/31/13. Project is progressing faster than anticipated.**



Base Case Results – DEP and DEC

2018-19 Winter

- **No New Issues identified**



Resource Supply Option Results – DEP

Analysis of the sixteen hypothetical transfer scenarios did not require any additional transmission projects for DEP beyond those in the 2013 Collaborative Plan.



Resource Supply Option Results – DEC

Projects Identified

- **Bush River-Georgia Pacific (SCEG) 115 kV and Bush River-White Rock (SCEG) 115 kV, Upgrade**

For These Transfers

- **SCEG – DEC 1000 MW**
- **SCPSA – DEC 1000 MW**
- **SCEG – DEP(CPLE) 1000 MW**



Major Projects in 2013 Plan		
Project	TO	Planned I/S Date
Brunswick 1-Castle Hayne 230kV Line, Construct New Cape Fear River Crossing	DEP	In-Service
Jacksonville Static VAR Compensator	DEP	In-Service
Folkstone 230/115kV Substation	DEP	In-Service
Harris-RTP 230 kV line	DEP	June 2014



Major Projects in 2013 Plan (Continued)		
Project	TO	Planned I/S Date
Brunswick 1 - Jacksonville 230 kV Line Loop - in to Folkstone 230 kV substation	DEP	June 2020
Greenville-Kinston Dupont 230 kV line	DEP	June 2014
Raeford 230 kV Substation, Loop-In Richmond – Ft Bragg Woodruff St 230 kV Line and add 3 rd banks	DEP	June 2018
Durham-RTP 230kV Line, Reconductor	DEP	June 2023



Major Projects in 2013 Plan (Continued)		
Project	TO	Planned I/S Date
Lilesville-Rockingham 230KV Line #3 – Construct new line	DEP	December 2013
Person-(DVP) Halifax 230kV Line - Reconductor DVP Section (DVP work)	DEP/ Dominion	June 2014
Antioch 500/230kV Substation: Replace Two Transformer Banks	DEC	June 2014



Major Projects in 2013 Plan (Continued)		
Project	TO	Planned I/S Date
Reconductor Caesar 230 kV Lines (Pisgah Tie-Shiloh Switching Station)	DEC	December 2013
Reconductor London Creek 230 kV Lines (Peach Valley Tie-Riverview Switching Station)	DEC	Removed



Comparison to Previous Collaborative Transmission Plan

	2012 Plan	2013 Plan
Number of projects with an estimated cost of \$10 million or more each	14	12
Total estimated cost of Plan	\$377 M	\$290 M



Questions ?





2014 Study Scope Discussion

Orvane Piper – Duke Energy Carolinas



Study Process Steps

- 1. Assumptions Selected**
- 2. Study Criteria Established**
- 3. Study Methodologies Selected**
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Collaborative Study Assumptions

➤ Study years

- Short term (5 yr) and long term (10 yr) base reliability analysis
- Alternate model scenarios

➤ Thermal power flow analysis

- DEP and DEC contingencies
- DEP and DEC monitored elements
 - Internal lines
 - Tie lines



Study Inputs

- **LSEs provide:**
 - **Inputs for load forecasts and resource supply assumptions**
 - **Dispatch order for their resources**
- **Area interchange coordinated between Participants and neighboring systems**



Enhanced Transmission Access Requests

- **TAG request to be distributed in early February, 2014**
- **Requests can include in, out and through transmission service**



2014 Study

- **Base reliability case analysis – 2019 summer and winter and 2024 summer**
 - An “All Firm Transmission” Case(s) will be developed which will include all confirmed long term firm transmission reservations with roll-over rights applicable to the study year(s)
 - DEC and DEP generation down cases will be created from the common Base Case

- **Alternate scenarios/sensitivities – 2019 / 2024 summer**



Past Studies' Alternate Scenarios

- **Hypothetical Imports/Exports re-evaluated every other year**
 - Increased from 600 MW to 1000 MW
- **Hypothetical NC Generation**
 - Fossil Fuel
 - Wind Energy
 - Off-shore – NCTPC only and NCTPC-PJM Joint Study
- **Retirement of Coal Units**



TAG Input Request

- TAG is requested to provide any additional input to the OSC on the proposed 2014 Study Scope and any additional suggested study scenarios
- Provide input by **January 6, 2014** to Rich Wodyka – ITP (rawodyka@aol.com)



Questions ?





Regional Studies Reports

Bob Pierce – Duke Energy Carolinas



Carolinas Offshore Wind Integration Case Study (COWICS)



COWICS Activities

- **PHASE II under way**
- **Developing stability models**
- **Developing production cost models**
- **Evaluating operating issues – capacity value, contingency reserves**



SERC Long Term Study Group Update



SERC Long Term Study Group

- Finished report on 2017 Summer Study - available with 2014 FERC 715 filings
- **Critical facilities**
 - Parkwood 500/230 kV Transformers
 - Riverview-Peach Valley 230 kV 1-2
 - Wateree-Great Falls 100 kV 1-2
- **2013 MMWG powerflow model building is complete**



Carolinas Transmission Collaborative Arrangement (CTCA)



CTCA Activities

- In addition to Order 1000 activities, continue CTCA effort to ensure assessment of joint reliability occurs, especially impact across borders
- Stability study has been delayed due to personnel changes, workload and Order 754 work
- Discussed impact of model fidelity/development on operations activities and AFC calculations with AFC working group



Eastern Interconnection Planning Collaborative (EIPC)



EIPC 2018 and 2023 analysis

- Created 2018 and 2023 summer peak steady-state load-flow models
- Performed base case & transfer analyses
- 5000 MW transfers - Non-PJM VACAR to and from FRCC, MISO, PJM, SPP
- No DEC or DEP issues identified
- Will perform stakeholder scenario analyses in 2014



EIPC 2018 and 2023 analysis

Stakeholder webinar tomorrow (12/13/13) to:

- Present the report and answer questions about the models and the process used to create them.
- Discuss how the models will be used in the scenario analysis to be performed in 2014 and get stakeholder input on scenarios to study.



<http://www.eipconline.com/>




Southeast Inter-Regional Participation Process (SIRPP)



SIRPP

➤ Finalize 2014 economic studies scope

No.	Requestor	Source	Sink	Amount (MW)	Step 2?	Year
1	Deral Danis, Clean Line Energy	Shelby	TVA/SOCO	3500	Yes	2018
2	Deral Danis, Clean Line Energy	Sullivan	PJM/VACAR	3500	Yes	2018
3	Wayne Van Liere, LG&E/KU	TVA	LG&E/KU	700	No	2016
4	Bob Carbonaro, Santee Cooper	Duke	Santee Cooper	500	No	2015
5	Bob Carbonaro, Santee Cooper	SOCO	FRCC	500	No	2015

 To be studied
 Not to be studied



SIRPP

Step 1 Evaluation

- High level screen of the requested transfer to identify transfer constraints and likely transmission enhancements on elements of 161 kV and higher; and where warranted by the TO, elements operating at lower voltage levels.
- TO's will provide approximate costs and timelines associated with the identified transmission enhancements.



SIRPP

Step 2 Evaluation

- Detailed evaluation of the requested transfer to identify the final proposal of transmission enhancements to resolve the identified constraints.
- Report on all elements within each of the TO's service areas.
- Detailed cost estimates and timelines associated with the identified transmission enhancements.



SIRPP

- **Sullivan 765kV Substation (HVDC) to PJM/VACAR – 3500 MW (2018, Step 2 Evaluation)**
 - Type of Transfer: Generation to Load/Generation
 - Source: A new generator interconnection to the existing Sullivan 765kV Substation (PJM)
 - Sink: Load within PJM & Generation within VACAR
 - 2000 MW's – PJM
 - 1500 MW's – VACAR

Table 1: VACAR – Sink Allocation

Participating Transmission Owners	Participation Factor (%)	MW Allocation
Progress Energy Carolinas	31.0%	465
Duke Energy	47.5%	712.5
South Carolina Electric & Gas	10.8%	162
Santee Cooper	10.7%	160.5
Total	100.00%	1500



SIRPP

- **Duke to Santee Cooper – 500 MW (2015, Step 1 Evaluation)**
 - Type of Transfer: Generation to Generation
 - Source: Generation within Duke
 - Sink: Generation within Santee Cooper



<http://www.southeastirpp.com/>



South-eastern Regional Transmission Planning (SERTP)



Planning Activities

- Mainly working on FERC Order 1000 requirements that impact planning such as;
 - length of lines to be considered regional projects
 - how to calculate cost/benefit from change in losses
 - schedule for performing studies

- Proposed library of cases for use by stakeholders was very large – may reduce significantly and possibly share “local” cases that drive specific projects



<http://www.southeasternrtp.com/>



NERC Reliability Standards Update



- TPL-001-4 approved by FERC decision but required additional requirements for study of known planned outages in NTPH
- BES definition – approved by industry
- 5 year review teams – NUC, MOD, VAR, FAC...



Questions ?





2013 TAG Work Plan

Rich Wodyka
ITP



2013 NCTPC Overview Schedule

Reliability Planning Process

- Evaluate current reliability problems and transmission upgrade plans
 - Perform analysis, identify problems, and develop solutions
 - Review Reliability Study Results

Enhanced Access Planning Process

- Propose and select enhanced access scenarios and interface
 - Perform analysis, identify problems, and develop solutions
 - Review Enhanced Access Study Results

Coordinated Plan Development

- Combine Reliability and Enhanced Results
 - OSC publishes DRAFT Plan
 - TAG review and comment

FERC Order 1000 Updates

TAG Meetings





2013 TAG Work Plan

January – February – March

- **2013 Study – Finalize Study Scope of Work**
 - ✓ **Receive final 2013 Reliability Study Scope for comment**
 - ✓ **Review and provide comments to the OSC on the final 2013 Study Scope**
 - ✓ **Receive request from OSC to provide input on proposed Enhanced Transmission Access scenarios and interfaces for study**
 - ✓ **Provide input to the OSC on proposed Enhanced Transmission Access scenarios and interfaces for study**



March 14th changed to *April 16th*

TAG Meeting

➤ **2013 Study Update**

- ✓ **Receive a progress report on the Reliability Planning study activities and preliminary results**

➤ **Order 1000 Update**

- ✓ **Receive report on the direction that the NCTPC is heading on the Order 1000 regional compliance**
- ✓ **Receive an update on the overall Compliance Timeline highlighting when continued stakeholder involvement in the process will occur**



April - May - June

- **2013 Study - Technical Analysis, Problem Identification, and Solution Development**
 - **TAG will be requested to provide input to the OSC and PWG on the technical analysis performed, the problems identified as well as proposing alternative solutions to the problems identified**
 - **TAG will be requested to provide input to the OSC and PWG on any proposed alternative solutions to the problems identified through the technical analysis**



April - May - June

TAG Meeting scheduled for June 10th - Teleconference

➤ 2013 Study Update

- ✓ Receive a progress report on the Reliability Planning study activities

➤ Order 1000 Update

- ✓ Receive an update on the Order 1000 regional compliance work and the discuss changes that will be coming in the regional compliance documents
- ✓ Receive an update on the overall Compliance Timeline highlighting when continued stakeholder involvement in the process will occur



July - August - September

- **2013 Study - Technical Analysis, Problem Identification, and Solution Development**
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July - August - September

TAG Meeting

➤ 2013 Study Update

- ✓ **Receive a progress report on the Reliability Planning study activities and preliminary results**
- ✓ **Receive update status of the upgrades in the 2012 Collaborative Plan**

➤ Order 1000 Update

- ✓ **Receive an update on the Order 1000 regional compliance work and discuss the proposed changes that will be coming in the regional compliance documents**
- ✓ **Receive an update on the overall Compliance Timeline highlighting when continued stakeholder involvement in the process will occur**



October - November - December

➤ 2013 Selection of Solutions

- ✓ **TAG will receive feedback from the OSC on any alternative solutions that were proposed by TAG members**

➤ 2013 Study Update

- ✓ **Receive and comment on final draft of the 2013 Collaborative Transmission Plan report**
- ✓ **Discuss potential study scope for 2014 studies**



October - November - December

TAG Meeting

➤ 2013 Study Update

- ✓ **Receive presentation on the draft report of 2013 Collaborative Transmission Plan**
- ✓ **Discuss potential study scope for 2014 studies**

➤ Order 1000 Update

- ✓ **Receive an update on the Order 1000 regional compliance work**



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ITP



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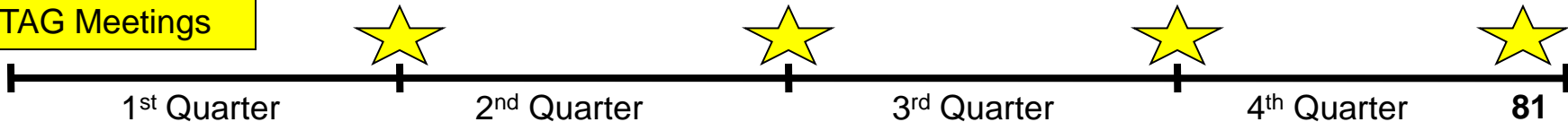
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March

TAG Meeting

➤ 2014 Study Update

- Receive a progress report on the Reliability Planning study activities and preliminary results

➤ Order 1000 Update

- Receive an update on the NCTPC activities as they relate to Order 1000 compliance



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Questions ?





TAG
Open Forum Discussion

Comments or Questions?