



TAG Meeting December 13, 2017

**NCEMC Office
Raleigh, NC
DRAFT**



TAG Meeting Agenda

- 1. Administrative Items – Rich Wodyka**
- 2. 2017 Collaborative Transmission Plan Study Report – Orvane Piper and Mark Byrd**
- 3. 2018 Study Scope Discussion – Mark Byrd**
- 4. Regional Studies Update – Bob Pierce**
- 5. 2017 TAG Work Plan Update and 2018 TAG Work Plan Preview – Rich Wodyka**
- 6. TAG Open Forum – Rich Wodyka**

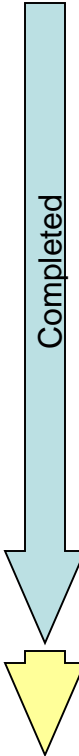


2017 Study Activities Update

Orvane Piper - DEC
Mark Byrd - DEP



Steps and Status of the Study Process

- 
- A vertical arrow on the left side of the list. The top portion is light blue and labeled 'Completed' vertically. The bottom portion is yellow. The arrow points downwards, indicating the sequence of steps.
- 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**



Studies for 2017

- **Annual Reliability Study**
 - **Assess DEC and DEP transmission systems' reliability and develop a single Collaborative Transmission Plan**
- **Resource Supply Scenarios**
 - **Assess DEC and DEP interface with neighboring systems by modeling hypothetical transfers**



Annual Reliability Studies

- **2022 Summer: near term**
- **2022/2023 Winter: near-term**
- **2027/2028 Winter: long-term**



Major Projects in 2017 Plan

Reliability Project	TO	Planned I/S Date
Rural Hall 100 kV, Install SVC	DEC	6/20
Harley 100 kV Lines (Tiger - Campobello) Reconductor	DEC	12/20
230/100 kV Tie Station, Catawba County NC	DEC	12/21



Major Projects in 2017 Plan (continued)

Reliability Project	TO	Planned I/S Date
Reidsville 100 kV Lines (Dan River-Sadler) Reconductor	DEC	TBD
Wolf Creek 100 kV Lines (Dan River-Sadler) Reconductor	DEC	TBD



Major Projects in 2017 Plan (continued)

Reliability Project	TO	Planned I/S Date
Fort Bragg Woodruff St 230 kV Sub, Replace 150 MVA 230/115 kV Transformer with Two 300 MVA Banks & Reconductor Manchester 115 kV Feeder	DEP	2/17
Raeford 230 kV Substation, Loop-in Richmond - Ft Bragg Woodruff St 230 kV Line and Add 3rd Bank	DEP	6/18
Sutton - Castle Hayne 115 kV North Line - Rebuild	DEP	6/19



Major Projects in 2017 Plan (Continued)

Reliability Project	TO	Planned I/S Date
Asheboro-Asheboro East 115kV North Line Reconductor	DEP	6/19
Delco 230kV Substation, Convert to Double Breaker	DEP	6/19
Castle Hayne 230kV Substation, Convert to Double Breaker	DEP	6/19



Major Projects in 2017 Plan (Continued)

Reliability Project	TO	Planned I/S Date
Asheville Plant, Replace 2-300 MVA 230/115 kV Banks with 2-400 MVA Banks, Reconductor 115 kV Ties to Switchyard, Upgrade Breakers, and Add 230 kV Capacitor Bank	DEP	12/19
Cane River 230 kV Substation, Construct 150 MVAR SVC	DEP	12/19
Jacksonville - Grants Creek 230 kV Line and Grants Creek 230/115 kV Substation	DEP	6/20



Major Projects in 2017 Plan (Continued)

Reliability Project	TO	Planned I/S Date
Newport - Harlowe 230 kV Line, Newport SS and Harlowe 230/115 kV Substation	DEP	6/20
Brunswick #1 – Jacksonville 230 kV Line, Loop into Folkstone 230 kV Substation	DEP	6/24
Durham - RTP 230 kV Line, Reconductor	DEP	TBD



Comparison to Previous Collaborative Transmission Plan

	2016 Plan	2017 Plan
Number of projects with an estimated cost of \$10 million or more each	10	17
Total estimated cost of Plan	\$214 M	\$426 M



2027 Hypothetical Import / Export

- **No major issues were identified for the hypothetical transfers. Any issues identified were either previously identified for the base reliability studies or can be mitigated with ancillary equipment upgrades.**



Study Report Prepared

- TAG is requested to provide any input to the OSC on the 2017 Collaborative Transmission Plan Study Report.
- Provide input by **January 5, 2018** to Rich Wodyka (rawodyka@aol.com)



Questions ?





2018 Study Scope Discussion

Mark Byrd - DEP



2018 Study

- **Base reliability case analysis – 2023 summer and 2023-2024 winter and 2028-2029 winter**
 - **An “All Firm Transmission” Case(s) will be developed which will consider 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 – 2028-2029 winter**



Past Studies' Alternate Scenarios

- **Hypothetical Imports/Exports re-evaluated every other year (last performed in 2017)**
 - 1000 MW transfers
- **Hypothetical NC Generation**
 - Fossil Fuel
 - Wind Energy
 - Off-shore – NCTPC only and NCTPC-PJM Joint Study
- **Retirement of Coal Units**



Local Economic Study Requests

- **Propose economic hypothetical scenarios to be studied as part of the transmission planning process**
- **Requests can include in, out and through transmission service**
- **Official TAG request to be distributed in January 2018**



Public Policy Study Requests

- **Provide input on public policies that are driving the need for local transmission for study**
- **Official TAG request to be distributed in January 2018**



TAG Input Request

- **TAG is requested to provide any additional input to the OSC on the 2017 Study Scope, any additional suggested study scenarios, as well as input on Local Economic Study Requests and Public Policy Study Requests.**
- **Stakeholder feedback is needed!**
- **Provide input by **February 7, 2018** to Rich Wodyka – Administrator (rawodyka@aol.com)**



Questions ?





Regional Studies Reports

Bob Pierce
Duke Energy Carolinas



SERC Long Term Study Group Update



SERC Long Term Study Group

- Completed work on 2017 series of MMWG cases
 - Cases completed on time for first time since ~ 1997.
- 2022 Summer Study Report showed acceptable levels of transfer capability and no unanticipated projects being required in DEC/DEP
 - Report will be publicly available in April 2018



SERTP



SERTP

- 2017 SERTP Annual Transmission Planning Summit and Assumptions Input Meeting, yesterday in Atlanta
- Discussed the regional transmission plan, economic study results and assumptions to be used in next year's transmission plan.



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



NERC Reliability Standards Update



IRPTF Performance Guideline

- California Blue Cut fire and South Australia blackout
- NERC and WECC created an ad hoc task force to quickly investigate the causes of the solar PV tripping, develop a disturbance report on the event, help instigate any immediate remedial actions to avoid these events in the future, and provide recommendations on future work.
- Upon completion of the initial work performed by the NERC/WECC task force, NERC formed the **Inverter-Based Resource Performance Task Force (IRPTF)** to continue focusing on inverter-based resource performance during steady-state conditions and during contingency events such as faults or generator trips.
- The IRPTF developed this guideline to capture reference material related to inverter-based resources as well as provide guidance around how inverter-based resources should respond to grid conditions.
- One of the major goals of the IRPTF is to bring GOs, GOPs, TPs, TOs, RC, and BAs together to engage with the inverter manufacturing community, inverter-based resource performance experts, and other applicable standards bodies to cooperatively develop recommended practices moving forward.



IRPTF Performance Guideline

- Momentary Cessation
- Active Power Frequency Control
- Reactive Power/Voltage Control
- Coordination and Timing (transient response)
- Dispatchability
- Protective relaying
- IEEE 1547 and UL 1741
- Data and Performance Monitoring



TPL-001-5 vote

- Known outages coordinated with RC in NTPH
- Long lead time item unavailability – stability
- P5 event – single phase fault with delayed clearing due to failure of a non-redundant protection scheme. CAP required
- Extreme event - 3 phase fault with delayed clearing due to failure of a non-redundant protection scheme. CAP required but doesn't have to be implemented



- Clearing due to failure of a non-redundant component of a Protection System
- Definition of “non-redundant component of a Protection System” is a major issue.
- Footnote 13



Footnote 13

13. For purposes of this standard, non-redundant components of a Protection System to consider are as follows:

1. A single protective relay which responds to electrical quantities, without an alternative that provides comparable Normal Clearing times, e.g. sudden pressure relaying;
2. A single communications system, necessary for correct operation of a communication-aid protection scheme required for Normal Clearing, which is not monitored or not reported;
3. A single dc supply associated with protective functions, and that single station dc supply is not monitored or not reported for both low voltage and open circuit;
4. A single control circuitry associated with protective functions including the trip coil(s) of the circuit breakers or other interrupting devices.~~Applies to the following relay functions or types: pilot (#85), distance (#21), differential (#87), current (#50, 51, and 67), voltage (#27 & 59), directional (#32, & 67), and tripping (#86, & 94).~~



Questions ?





2017 TAG Work Plan

Rich Wodyka
Administrator



2017 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

Local Economic Planning Process

- Propose and select Local Economic Studies and Public Policy Study scenarios
 - Perform analysis, identify problems, and develop solutions
 - Review Local Economic Study and Public Policy Results

Coordinated Plan Development

- Combine Reliability and Local Economic Study and Public Policy Results
 - OSC publishes DRAFT Plan
 - TAG review and comment

TAG Meetings



1st Quarter

2nd Quarter

3rd Quarter

4th Quarter

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2017 TAG Work Plan

January - February - March

- **2017 Study – Finalize Study Scope of Work**
 - ✓ **Receive final 2017 Reliability Study Scope for comment**
 - *Review and provide comments to the OSC on the final 2017 Study Scope – **Provide Comments by March 31st***
 - ✓ **Receive request from OSC to provide input on proposed Local Economic Study scenarios and interfaces for study**
 - *Provide input to the OSC on proposed Local Economic Study scenarios and interfaces for study – **No Requests***
 - ✓ **Receive request from OSC to provide input in identifying any public policies that are driving the need for local transmission**
 - *Provide input to the OSC in identifying any public policies that are driving the need for local transmission for study – **No Requests***



January - February - March

First Quarter TAG Meeting – March 17th

➤ 2017 Study Update

- ✓ Receive a progress report on the Reliability Planning study activities and 2017 Study Scope
 - *Provide comments on the final 2017 Study Scope to Rich Wodyka at rawodyka@aol.com by March 31st.*
- ✓ Receive a report on the Local Economic Study scope and any public policy scenarios that are driving the need for local transmission for study- **No Requests**



April - May - June

Second Quarter TAG Meeting – delayed until July 13th

- **2017 Study Update**
 - ✓ **Receive a progress report on study activities**
 - ✓ **Receive update status of the upgrades in the 2016 Collaborative Plan**



July - August - September

➤ 2017 Study Update

- ✓ **Receive a progress report on the study activities and preliminary results**
- ✓ **TAG is requested to provide feedback to the OSC on the technical analysis performed, the problems identified as well as proposing alternative solutions to the problems identified – **Input by October 16, 2017****



July - August - September

Third Quarter TAG Meeting – September 19th

➤ 2017 Study Update

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



October - November - December

➤ 2017 Selection of Solutions

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

➤ 2017 Study Update

- ✓ **Receive and discuss final draft of the 2017 Collaborative Transmission Plan Report**
- ✓ **Discuss potential study scope for 2018 studies**



October - November - December

Fourth Quarter TAG Meeting – *December 13th*

➤ 2017 Study Update

- ✓ Receive presentation on the final draft report of 2017 Collaborative Transmission Plan
- ✓ Discuss potential study scope for 2018 studies
- TAG is requested to provide feedback to the OSC on the 2017 Collaborative Transmission Plan Report
 - *Provide comments and questions on the DRAFT report to Rich Wodyka at rawodyka@aol.com by January 5th.*



Questions ?





2018 TAG Work Plan

Rich Wodyka
Administrator



2018 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

Local Economic Planning Process

- Propose and select Local Economic Studies and Public Policy Study scenarios
 - Perform analysis, identify problems, and develop solutions
 - Review Local Economic Study and Public Policy Results

Coordinated Plan Development

- Combine Reliability and Local Economic Study and Public Policy Results
 - OSC publishes DRAFT Plan
 - TAG review and comment

TAG Meetings





January - February – March

- **2018 Study – Finalize Study Scope of Work**
 - **Receive request from OSC to provide input on proposed Local Economic Study scenarios and interfaces for study**
 - *TAG provide input to the OSC on proposed Local Economic Study scenarios and interfaces for study*
 - **Receive request from OSC to provide input in identifying any public policies that are driving the need for local transmission**
 - *TAG provide input to the OSC in identifying any public policies that are driving the need for local transmission for study*
 - **Receive final 2018 Reliability Study Scope for comment**
 - *TAG review and provide comments to the OSC on the final 2018 Study Scope*



January - February – March

First Quarter TAG Meeting – *March 27th*

➤ 2018 Study Update

- **Receive a report on the Local Economic Study scope and any public policy scenarios that are driving the need for local transmission for study**
- **Receive a progress report on the Reliability Planning study activities and the final 2018 Study Scope**



April - May – June

Second Quarter TAG Meeting – TBD

- **2018 Study Update**
 - **Receive a progress report on study activities**
 - **Receive update status of the upgrades in the 2017 Collaborative Plan**



July - August – September

Third Quarter TAG Meeting – TBD

➤ 2018 Study Update

- **Receive a progress report on the study activities and preliminary results**
- **TAG is requested to provide feedback to the OSC on the technical analysis performed, the problems identified as well as proposing alternative solutions to the problems identified**



October - November - December

Fourth Quarter TAG Meeting – TBD

➤ 2018 Selection of Solutions

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

➤ 2018 Study Update

- Receive and discuss final draft of the 2018 Collaborative Transmission Plan Report
- Discuss potential study scope for 2019 studies



Questions ?





TAG

Open Forum Discussion

Comments or Questions?