TAG Meeting
June 20, 2019

Webinar

TAG Meeting Agenda

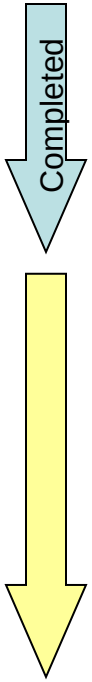
1. Administrative Items – Rich Wodyka
2. 2019 Study Activities Update – Orvane Piper
3. NCTPC 2018 Collaborative Transmission Plan Mid-year Update – Mark Byrd
4. Regional Studies Update – Bob Pierce
5. 2019 TAG Work Plan – Rich Wodyka
6. TAG Open Forum – Rich Wodyka

2019 Study Activities and Study Scope

Orvane Piper

Duke Energy Carolinas

Study Process 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

Assumptions Selected

- **Study Year's for reliability analyses:**
  - **Near-term: 2024 Summer, 2024/2025 Winter**
  - **Longer-term: 2029 Summer**
- **LSEs provided:**
  - **Input for load forecasts and resource supply assumptions**
  - **Dispatch order for their resources**
- **Adjustments may be made based on additional coordination with neighboring transmission systems**

Assumptions Selected

Company	Generation Facility	2024S	2024/2025W	2029S
DEC	Lincoln County CT (402 MW)	Yes	Yes	Yes
DEC	Reidsville Energy Center (477 MW)	Yes	Yes	Yes
DEC	Retired Allen 1-3 (617 MW)	No	Yes	Yes
DEC	Retired Allen 4-5 (564 MW)	No	No	Yes
DEC	High Shoals PV (16 MW)	Yes	Yes	Yes
DEC	Ruff PV (22 MW)	Yes	Yes	Yes
DEC	Gaston PV (25 MW)	Yes	Yes	Yes
DEC	Simmental PV (69.3 MW)	Yes	Yes	Yes
DEC	Lancaster PV (10 MW)	Yes	Yes	Yes

Assumptions Selected

Company	Generation Facility	2024S	2024/2025W	2029S
DEP	Retired Asheville 1-2 (384 MW)	Yes	Yes	Yes
DEP	Asheville CC (560 MW)	Yes	Yes	Yes
DEP	Retired Darlington Co 1,2,3,4,6,7,8,10 (514 MW)	Yes	Yes	Yes
DEP	Crooked Run Solar (70.1 MW)	Yes	Yes	Yes
DEP	Bay Tree Solar (70.1 MW)	Yes	Yes	Yes
DEP	Retired Blewett CTs 1-4 and Weatherspoon CTs 1-4 (232 MW)	No	Yes	Yes
DEP	Retired Roxboro Units 1-2 (1053 MW)	No	No	Yes

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**

Models and Cases Developed

- **Annual Reliability Study**
- **Resource Supply Options**
  - **Assess two hypothetical generation sites in DEC**
  - **Assess DEC and DEP interfaces with neighboring systems by modeling hypothetical transfers**
- **Local Economic Studies**
  - **No Local Economic Studies or Public Policy Studies submitted for 2019**

Technical Analysis

- Conduct thermal screenings of the 2024S, 2024/25W and 2029S base cases
- Conduct thermal screenings for hypothetical import / export scenarios
- Conduct thermal screenings for two sites with hypothetical generation

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

Questions ?

NCTPC 2018 Collaborative Transmission Plan Update

Mark Byrd

Duke Progress

2019 Mid-Year Update to the 2018 Collaborative Transmission Plan

- **Two DEP projects were completed: one in late 2018 (Raeford) and another in spring of 2019 (Delco)**
- **Four DEP project cost estimates increased**
- **Two DEP projects were removed (completed in 2018)**
- **Two DEP projects and one DEC were delayed**
- **Total Reliability Project Cost estimates changed from $657M to $618M**

Reliability Projects in 2018 Plan		
Reliability Project	**TO**	**Planned I/S Date**
Durham-RTP 230kV Line, Reconductor	DEP	TBD
Brunswick #1 – Jacksonville 230 kV Line, Loop-In to Folkstone 230 kV Substation	DEP	June 2024
Raeford 230 kV Substation, Loop-in Richmond-Ft Bragg Woodruff St 230 kV Line and add 3rd bank	DEP	Completed December 2018
Jacksonville-Grant's Creek 230 kV Line and Grant's Creek 230/115 kV Substation, Construct	DEP	June 2020

Reliability Projects in 2018 Plan (continued)		
Reliability Project	**TO**	**Planned I/S Date**
Newport-Harlowe 230 kV Line, Newport SS and Harlowe 230/115 kV Substation, Construct	**DEP**	**June 2020**
Sutton-Castle Hayne 115 kV North line, Rebuild	**DEP**	**December 2020**
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**	**Completed November 2018 Removed**

Reliability Projects in 2018 Plan (continued)		
Reliability Project	**TO**	**Planned I/S Date**
Cane River 230 kV Substation, Construct 150 MVAR SVC and 4 CB 230 kV Ring Bus	DEP	September 2019
Harley 100 kV Line, Reconductor	DEC	TBD
Asheboro-Asheboro East 115 kV North Line, Reconductor	DEP	June 2021
Delco 230 kV Substation, Convert to Double Breaker	DEP	Completed March 2019
Castle Hayne 230 kV Substation, Convert to Double Breaker	DEP	Completed June 2018 Removed

Reliability Projects in 2018 Plan (continued)		
Reliability Project	**TO**	**Planned I/S Date**
Rural Hall 100 kV, Install SVC	**DEC**	**April 2020**
Orchard Tie 230/100 kV Tie Station, Construct	**DEC**	**December 2020**
Windmere 100 kV Line, (Dan River-Sadler), Construct	**DEC**	**December 2021**
NTE II, Generator Interconnection	**DEC**	**December 2021**

Reliability Projects in 2018 Plan (continued)		
Reliability Project	**TO**	**Planned I/S Date**
Wilkes 230/100 kV Tie Station, Construct	**DEC**	**December 2023**
Ballantyne 100 kV Switching Station, Construct	**DEC**	**December 2019**
Craggy-Enka 230 kV Line, Construct	**DEP**	**December 2025**

Questions ?

Regional Studies Reports

Bob Pierce

Duke Energy Carolinas

SERC Long Term Working Group Update

SERC Long Term Working Group

- Completed work on 2019 series of LTWG cases
- Beginning 2020 Summer Study
- Building 2019 series MMWG cases
- FRCC integration continuing

SERTP

SERTP

- 1st Quarter Meeting held on March 20th
- 2nd Quarter Meeting will be June 27th
- 2019 Economic Planning Studies

SERTP

1) Southern Company BAA to Santee Cooper Border – 500 MW

Year: 2020

- Load Level: Summer Peak
- Type of Transfer: Generation to Generation
- Source: Generation within Southern Company BAA
- Sink: Generation within Santee Cooper

SERTP

2) Duke Energy Carolinas to Santee Cooper Border – 500 MW

Year: 2020

- Load Level: Summer Peak
- Type of Transfer: Generation to Generation
- Source: Generation within Duke Energy Carolinas
- Sink: Generation within Santee Cooper

SERTP

3) Southern Company BAA to Santee Cooper Border – 800 MW

Year: 2020

- Load Level: Summer Peak
- Type of Transfer: Generation to Generation
- Source: Generation within Southern Company BAA
- Sink: Generation within Santee Cooper

SERTP

4) Duke Energy Carolinas to Santee Cooper Border – 500 MW

Year: 2024

- Load Level: Winter Peak
- Type of Transfer: Generation to Generation
- Source: Generation within Duke Energy Carolinas
- Sink: Generation within Santee Cooper

SERTP

5) Southern Company BAA to Santee Cooper Border – 1000 MW

Year: 2024

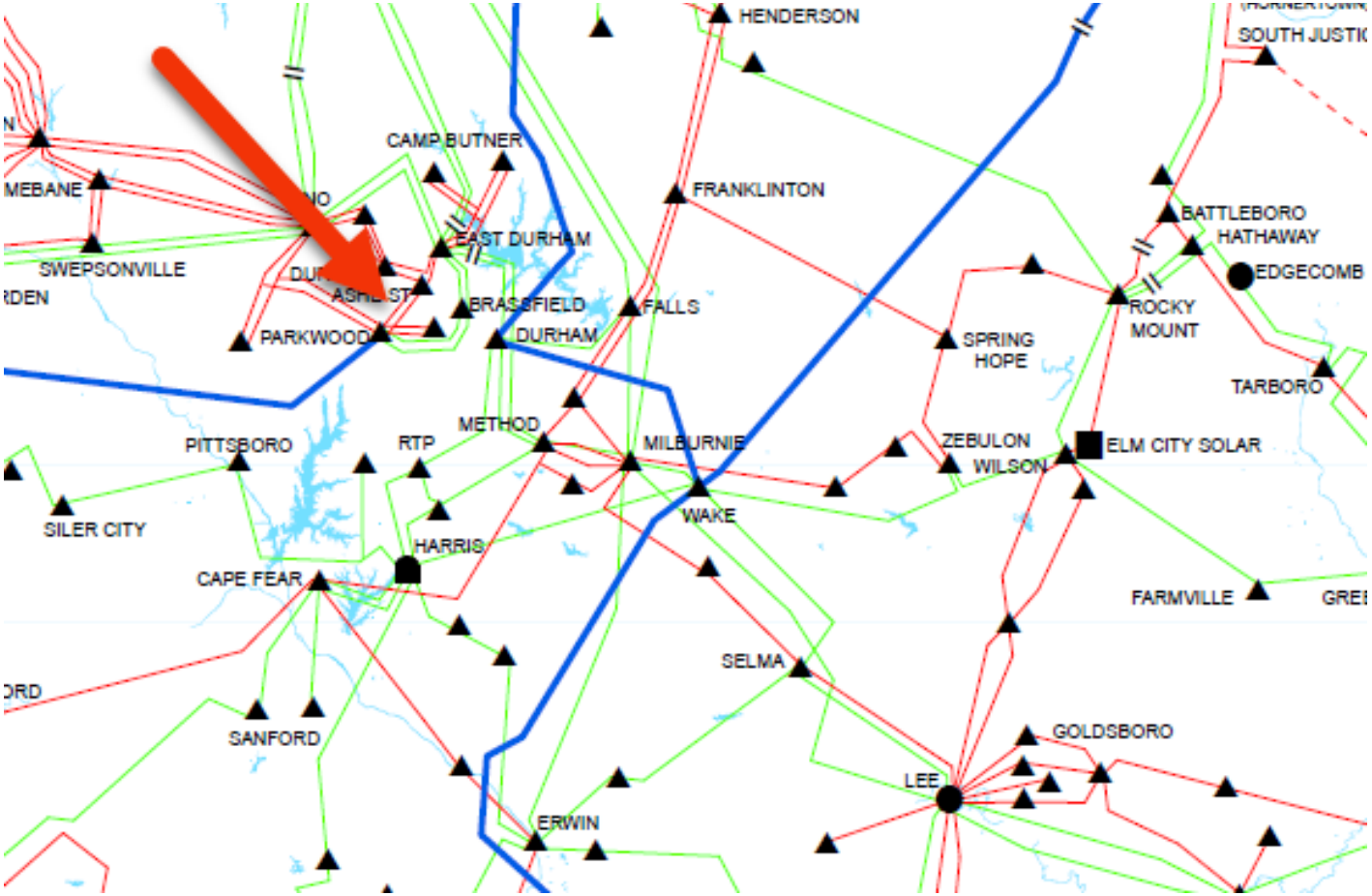
- Load Level: Winter Peak
- Type of Transfer: Generation to Generation
- Source: Generation within Southern Company BAA
- Sink: Generation within Santee Cooper

http://www.southeasternrtp.com/

Duke Energy IBR Event

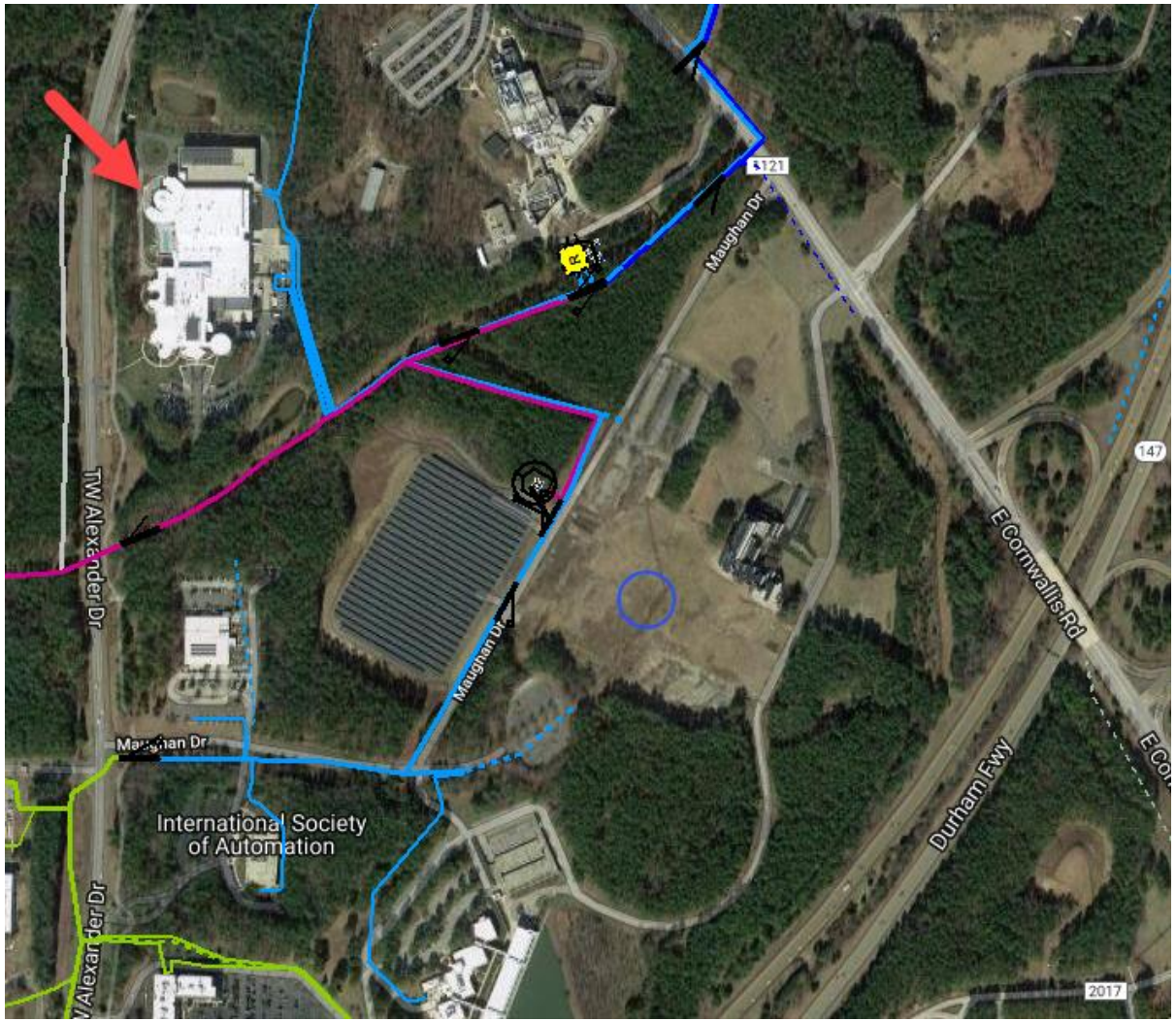

HENDERSON
SOUTH JUSTIC
CAMP BUTNER
MEBANE
ENO
FRANKLINTON
BATTLEBORO
HATHAWAY
EAST DURHAM
SWEPSONVILLE
DURHAM
ASHE ST
EDGECOMB
BRASSFIELD
FALLS
ROCKY
MOUNT
PARKWOOD
DURHAM
SPRING
HOPE
TARBORO
METHOD
PITTSBORO
RTP
MILBURNIE
ZEBULON
ELM CITY SOLAR
WILSON
SILER CITY
WAKE
HARRIS
CAPE FEAR
FARMVILLE
SELMA
SANFORD
GOLDSBORO
LEE
ERWIN

United Therapeutics fed from Parkwood – Ashe Street 100 kV line



United Therapeutics 3 MW Distribution Connected Facility

United Therapeutics 3 MW Distribution Connected Facility



DEP Distribution and Transmission Connected PV

Questions ?

2019 TAG Work Plan

Rich Wodyka
Administrator

2019 NCTPC Overview Schedule

Reliability Planning Process

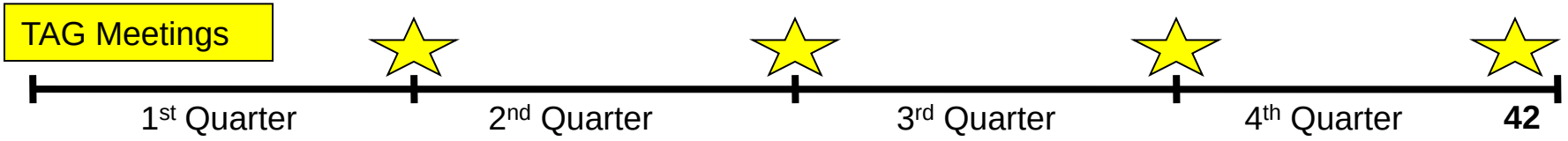
- Evaluate current reliability problems and transmission upgrade plans
- Perform analysis, identify problems, and develop solutions
- Review Reliability Study Results

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



January - February – March

- **2019 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 – No TAG requests received*
  - ✓ **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 - No TAG requests received*
  - ✓ **Receive final 2019 Reliability Study Scope for comment**
    - *TAG review and provide comments to the OSC on the final 2019 Study Scope – Sent out on March 18th – No additional comments*

January - February – March

First Quarter TAG Meeting – March 13th

- **2019 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 draft of the 2019 Study Scope**

April - May – June

Second Quarter TAG Meeting – June 20th

- **2019 Study Update**
  - ✓ **Receive a progress report on study activities**
  - ✓ **Receive update status of the upgrades in the 2018 Collaborative Plan**

July - August – September

Third Quarter TAG Meeting – TBD

- **2019 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

- **2019 Selection of Solutions**
  - **TAG will receive feedback from the OSC on any alternative solutions that were proposed by TAG members**
- **2019 Study Update**
  - **Receive and discuss final draft of the 2019 Collaborative Transmission Plan Report**
  - **Discuss potential study scope for 2020 studies**

Questions ?

TAG
Open Forum Discussion

Comments or Questions ?