



TAG Meeting September 19, 2017

Webinar Presentations



TAG Meeting Agenda

- 1. Administrative Items – Rich Wodyka**
- 2. 2017 Study Activities Update – Orvane Piper and Mark Byrd**
- 3. Regional Studies Update – Edgar Bell**
- 4. 2017 TAG Work Plan – Rich Wodyka**
- 5. TAG Open Forum – Rich Wodyka**



2017 Study Activities Update

Orvane Piper - DEC
Mark Byrd - DEP



Steps and Status of the Study Process

- 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**

Completed



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**



Preliminary Results

Red	Transmission Upgrade Required (>\$10 M)
Yellow	Transmission Upgrade Required (<\$10 M)
Orange	Operating Guide/Procedure/Solution
Green	Ancillary Equipment Upgrade



Preliminary Results - DEC

% Loading		SOLUTION	NAME	BRANCH TYPE
22S	22W			
96.8	106	New Tie Station (≈\$45M)	BOGER CITY BL	100 kV Line
---	97.6	New Tie Station (≈\$45M)	BOGER CITY WH	100 kV Line
100.1	---	Tarrant Rd SS (<\$10 M)	DEEP RIVER BL	100 kV Line
97.5	---	Upgrade 5.4 miles	ECHO BL	100 kV Line
98.3	---	Upgrade 5.4 miles	ECHO WH	100 kV Line
---	94.8	Upgrade 11.8 miles	HARLEY WH	100 kV Line
98.1	---	Operating Guide	KERNERSVILLE WH	100 kV Line
116.3	96.7	block swapover	LOCUST WH	100 kV Line
94.4	---	AEU	MAULDIN BL	100 kV Line
100.5	---	Upgrade 3 miles (≈\$4.5M)	MAULDIN BL	100 kV Line
101.1	---	AEU	MAULDIN WH	100 kV Line
104.1	---	Upgrade 23.8 miles (≈\$36M)	MONROE WH	100 kV Line
104.1	---	Upgrade 23.8 miles	MONROE WH	100 kV Line
120.1	104.5	New Tie Station (≈\$45M)	MULL BL	100 kV Line
95	---	AEU	OAKVALE BL	100 kV Line
95	---	AEU	OAKVALE WH	100 kV Line
110.6	---	AEU	PERRY BL	100 kV Line
113.1	94.7	AEU	PERRY WH	100 kV Line
95.4	---	Upgrade 12.7 miles	PIEDMONT BL	100 kV Line
95.2	---	Upgrade 1.08 miles	PINEWOOD BL	100 kV Line



North Carolina Transmission Planning Collaborative

Preliminary Results - DEC

% Loading		SOLUTION	NAME	BRANCH TYPE
22S	22W			
95.2	---	Upgrade 1.08 miles	PINEWOOD BL	100 kV Line
97.5	---	Upgrade 2.7 miles	TAYLORS WH	100 kV Line
115.7	---	Operating Guide	WATEREE BL	100 kV Line
115.7	---	Operating Guide	WATEREE WH	100 kV Line
102.8	---	Upgrade 1.5 miles	WEDDINGTON BL	100 kV Line
98.7	---	Upgrade 1.5 miles	WEDDINGTON WH	100 kV Line
94.9	---	Upgrade 3.8 miles	WYLIE WH	100 kV Line
---	117.5	Upgrade (DEP Generation Project)	PISGAH TIE 09	115/100 kV Transformer
---	118.1	Upgrade (DEP Generation Project)	PISGAH TIE 10	115/100 kV Transformer
102.3	---	add second 230 kV circuit (<\$10 M)	SANDY RIDGE BL	230 kV Line
94.6	---	AEU	STEELBERRY BL	230 kV Line
94.6	---	AEU	STEELBERRY WH	230 kV Line
95.7	---	Replace Transformer	ALLEN STEAM PL 06	230/100 kV Transformer
---	108.3	AEU	PISGAH TIE 01	230/100/44 kV Transformer
---	---	AEU	PISGAH TIE 01	230/100/44 kV Transformer
---	105.7	AEU	PISGAH TIE 02	230/100/44 kV Transformer
100.7	---	AEU	SADLER TIE 03	230/100/44 kV Transformer
105.3	---	add transformer (<\$10 M)	SADLER TIE 04	230/100/44 kV Transformer
105.9	99.8	AEU	KATOMA	500 kV Line



Preliminary Results - DEC

<u>% Loading</u>	<u>SOLUTION</u>	<u>NAME</u>	<u>BRANCH TYPE</u>
116.8	New Tie Station (≈\$45M)	BOGER CITY BL	100 kV Line
---	New Tie Station (≈\$45M)	BOGER CITY BL	100 kV Line
---	New Tie Station (≈\$45M)	BOGER CITY WH	100 kV Line
107.3	New Tie Station (≈\$45M)	BOGER CITY WH	100 kV Line
---	AEU	BRUSHY MOUNTAIN WH	100 kV Line
100.8	Upgrade 11.8 miles (≈18M)	HARLEY BL	100 kV Line
102.1	Upgrade 11.8 miles (≈18M)	HARLEY WH	100 kV Line
101.3	AEU	LOCUST WH	100 kV Line
114.4	New Tie Station (≈\$45M)	MULL BL	100 kV Line
101.5	AEU	PINNACLE WH	100 kV Line
105.2	AEU	YADKIN WH	100 kV Line



Preliminary Results - DEC

<u>% Loading</u>	<u>SOLUTION</u>	<u>NAME</u>	<u>BRANCH TYPE</u>
27W			
138.2	Upgrade (DEP Generation Project)	PISGAH TIE 09	115/100 kV Transformer
138.8	Upgrade (DEP Generation Project)	PISGAH TIE 10	115/100 kV Transformer
---	AEU	BLACKBURN BL	230 kV Line
---	AEU	BLACKBURN WH	230 kV Line
---	AEU	INTERSTATE BL	230 kV Line
---	AEU	INTERSTATE BL	230 kV Line
---	AEU	INTERSTATE WH	230 kV Line
---	AEU	INTERSTATE WH	230 kV Line
116.5	AEU	PISGAH TIE 01	230/100/44 kV Transformer
113.8	AEU	PISGAH TIE 02	230/100/44 kV Transformer
---	AEU	KATOMA	500 kV Line
---	AEU	PLEASANT GARDEN TIE 05	500/230 kV Transformer



New Projects in 2017 Plan

Reliability Project	TO	I/S Date
Upgrade Union 100 kV (N. Greenville-Tiger)	DEC	12/1/18
Install Rural Hall SVC (100 kV)	DEC	6/1/19
Construct New Tie Station in Catawba County, NC (230/100 kV)	DEC	6/1/20
Construct 5 th 100 kV Circuit Between Dan River and Sadler	DEC	6/1/21



North Carolina Transmission Planning Collaborative

Preliminary Results - DEP

%Loading (22S)					<u>Solution</u>	<u>Monitored Facility</u>
<u>Base</u>	<u>AshvCC1Dn</u> TRM	<u>Br1Dn</u> TRM	<u>HarDn</u> TRM	<u>Rob2Dn</u> TRM		
88.85	88.53	98.51	97.75	110.39	Operating Procedure	CAMDEN-CAMDEN TAP 115 KV LINE
87.38	87.08	96.52	95.8	107.8	Operating Procedure	CAMDEN-INDUSTRIAL CUSTOMER 115 KV LINE
---	---	---	---	96.43	Operating Procedure	CAMDEN TAP-CAMDEN CITY 115 KV LINE
---	---	---	---	93.85	AEU	SUMTER-WATEREE 230 KV LINE
---	---	92.14	---	---	2022 Project (reconductor) <\$10M	PILKINGTON LOF-BUTLER TAP 115 KV LINE
---	---	90.81	---	---	2022 Project (reconductor) <\$10M	MAXTON-BUTLER TAP 115 KV LINE

%Loading (22W)					<u>Solution</u>	<u>Monitored Facility</u>
<u>Base</u>	<u>AshvCC1Dn</u> TRM	<u>Br1Dn</u> TRM	<u>HarDn</u> TRM	<u>Rob2Dn</u> TRM		
---	106.68	---	85.08	---	2020 Project (Generation Project) >\$10M	PISGAH-HEMC CRADLE 115 KV LINE
---	---	106.18	---	---	2022 Project (reconductor) <\$10M	MAXTON-BUTLER TAP 115 KV LINE
---	---	---	---	97.22	AEU	SUMTER-WATEREE 230 KV LINE
---	---	94.38	---	---	2022 Project (reconductor) <\$10M	PILKINGTON LOF-BUTLER TAP 115 KV LINE
91.82	91.81	92.99	92.43	92.02	Evaluating Future Project	WEATHERSPOON-LREMC WEST LUMBERTON 115 KV LINE
91.39	---	91.75	91.95	91.18	AEU	ENKA-WEST ASHEVILLE 115 KV LINE
90.04	91.94	90.04	90.04	90.03	2020 Project (Generation Project) >\$10M	CRAGGY-WEAVERVILLE 115 KV LINE



North Carolina Transmission Planning Collaborative

Preliminary Results - DEP

%Loading (27W)					Solution	Monitored Facility
Base	AshvCC1Dn TRM	Br1Dn TRM	HarDn TRM	Rob2Dn TRM		
105.5	129.42	107.14	107.56	105.6	2020 Project (Generation Project) >\$10M	PISGAH-HEMC CRADLE 115 KV LINE
101.28	101.28	113.45	101.59	101.61	2022 Project (reconductor) <\$10M	MAXTON-BUTLER TAP 115 KV LINE
88.16	108.18	89.53	89.88	88.25	2020 Project (Generation Project) >\$10M	CANTON-HEMC CRADLE 115 KV LINE
98.55	105.15	98.56	98.57	98.44	2020 Project (Generation Project) >\$10M	CRAGGY-WEAVERVILLE 115 KV LINE
---	102.35	---	---	---	AEU	ASHEVILLE-MILLS RIVER 115 KV LINE
100.76	94.59	101.43	101.61	100.86	AEU	ENKA-WEST ASHEVILLE 115 KV LINE
100.12	100.11	101.5	100.73	100.37	Evaluating Future Project	WEATHERSPOON-LREMC WEST LUMBERTON 115 KV LINE
---	101.58	---	---	---	Pursuing emergency rating	ENKA 230/115 KV TRANSFORMER
89.96	89.96	100.84	90.23	90.25	2022 Project (reconductor) <\$10M	PILKINGTON LOF-BUTLER TAP 115 kv LINE



2027 Hypothetical Import / Export

Resource From	Sink	Test Level (MW)
PJM	DUK ¹	1,000
SOCO	DUK	1,000
SCEG	DUK	1,000
SCPSA	DUK	1,000
CPL ²	DUK	1,000
TVA	DUK	1,000

1 – DUK is the Balancing Authority Area for DEC

2 – CPL is the eastern Balancing Authority Area for DEP



2027 Hypothetical Import / Export

Resource From	Sink	Test Level (MW)
PJM	CPLE	1,000
SCEG	CPLE	1,000
SCPSA	CPLE	1,000
DUK	CPLE	1,000
SOCO ³	CPLE	1,000

3 – This hypothetical transfer is intended to evaluate the impact of a 1000 MW Southern Co transaction through the DEC transmission system into CPLE.



2027 Hypothetical Import / Export

Resource From	Sink	Test Level (MW)
PJM	DUK / CPLE	1,000 / 1,000
DUK / CPLE	PJM	1,000 / 1,000
CPLE	PJM	1,000
DUK	PJM	1,000
DUK	SOCO	1,000



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.**



Problems Identified and Solutions Developed

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



TAG Input Request

- **TAG is requested to provide any feedback and/or propose alternative solutions to the OSC on the 2017 Preliminary Study Results.**
- **Provide input by **October 16, 2017** to Rich Wodyka (rawodyka@aol.com)**



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 ?





Regional Studies Reports

Edgar Bell

Duke Energy Carolinas



SERTP

- DEC Hosting 3rd Quarter Stakeholders Meeting
– September 21st

- Preliminary Results of Economic Planning Studies
 - Santee Cooper Border to PJM Border – 300 MW
 - Southern Company to Santee Cooper Border – 500 MW
 - TVA to FRCC Border – 500 MW
 - TVA to PJM Border – 500 MW
 - TVA to Duke Energy Carolinas – 300 MW



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



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





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 comment on 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



Questions ?





TAG
Open Forum Discussion

Comments or Questions?