



Rayburn Electric Cooperative Load Integration STUDY UPDATE

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1/24/2017

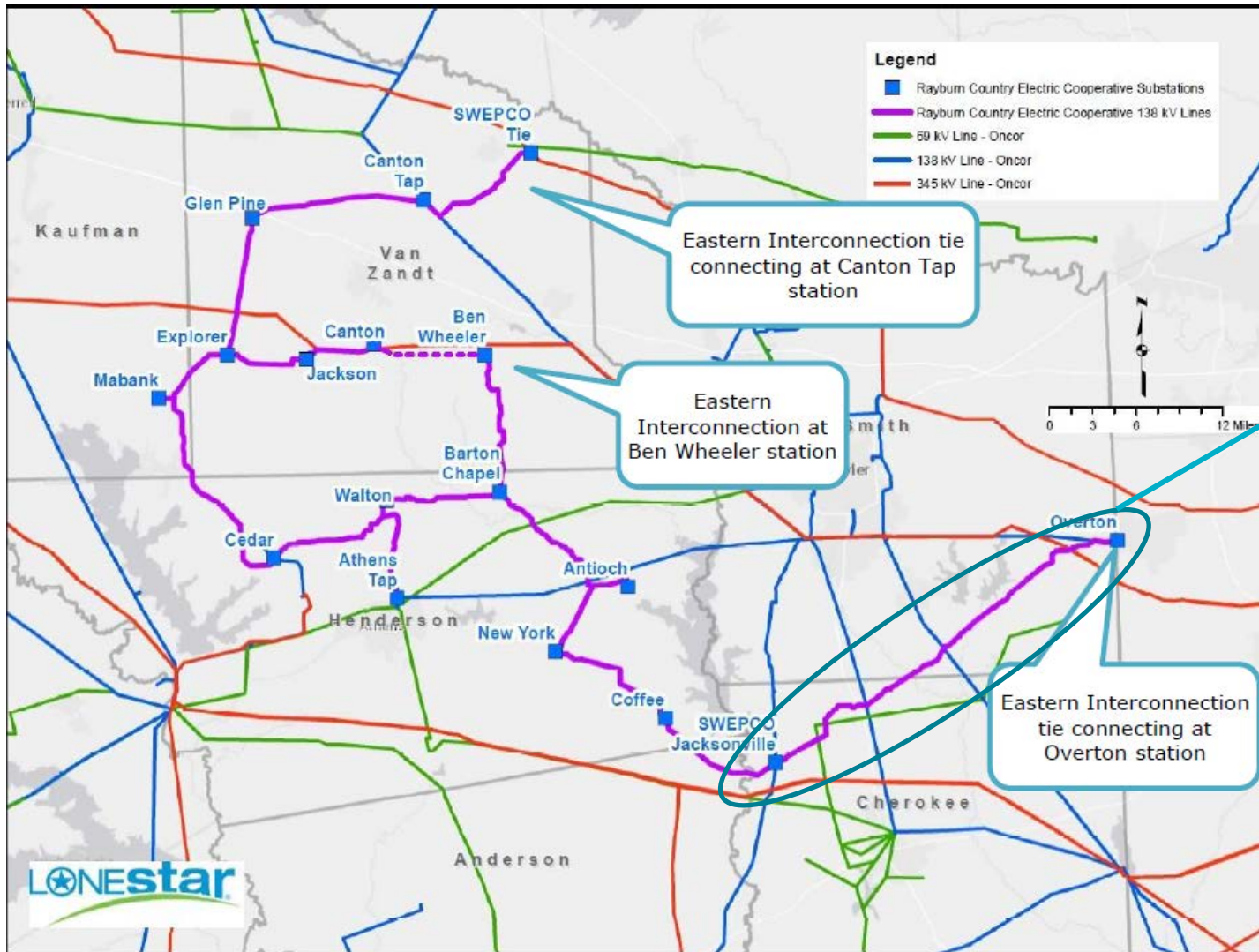
Framework

- Introduction
- Data and Assumptions
- Study Options review
- Preliminary Results – Steady state analysis
- Next steps

Objective

- Integrate RCEC system remaining load into ERCOT
- Analyze the transmission proposals submitted by Lone Star Transmission LLC
- Perform steady state and economic analysis
- Evaluate alternative options if necessary
- Ensure compliance of results with NERC and ERCOT reliability standards
- Scope and Assumptions:
 - <http://www.ercot.com/calendar/2016/9/20/77741-RPG>

Rayburn System Map



Data and Assumptions

- Interconnection timeline of Rayburn into ERCOT is expected to be summer 2021
- Weather zones of study are North, North Central and East
- 16RTP_2021_SUM_NNC steady state case prepared by ERCOT was used (East load at 2602 MW)
- There were no Planning Guide 6.9 generation in the vicinity of integration in East and North Central
- Rayburn integration data from Lone Star with business as usual load scenario (190 MW)
- ERCOT RTP P1 through P7 contingencies and RCEC contingency data set

Preliminary Results – Steady state analysis

- ERCOT evaluated several options identified in the Lone Star study report
- Based on the evaluation - Four Rayburn options were selected for initial review
 - No post contingency constraints or bus voltage deviations in the vicinity of the Rayburn system under P1, P3 and P7 contingencies
 - 345 kV connection is necessary for reactive support in the integration under steady state conditions
 - Further analysis will be performed to confirm this observation

Next steps

- Complete steady state analysis
 - Evaluate other interconnecting options in the south and east side of Rayburn system
 - Scenario with load variations in East Weather zone
- Perform economic analysis to Identify any congestion for preferred options
- Tentative Timeline
 - Complete the study review – March RPG



Questions?

Appendix (Details on the Four options)

Option 1 and 2

Option 1:

Extend Bus Work & add 138kV jumper (<0.1 mile) to connect Canton Switch Station to Canton Tap

New 345kV Substation (6 breaker ring bus) on one circuit of Martin Lake – Tricorner line app. 83 miles from Martin Lake (Galileo_345 Sub)

New 138kV Switching Station on the 138kV Teaselville - Palestine line app. 30 miles from Palestine (Apollo_138)

345/138kV, 650 MVA auto at Galileo

New 0.5 mile single circuit 138kV line from Galileo to Canton Sub

Expand Canton sub to accommodate the connections from Galileo_345 Sub

Extend the 138kV Coffee - Jacksonville single circuit line into the new Apollo_138kV switching station (0.5 miles)

Option 2:

Extend Bus Work & add 138kV jumper (<0.1 mile) to connect Canton Switch Station to Canton Tap

New 345kV Substation (6 breaker ring bus) on one circuit of Martin Lake – Tricorner line app. 83 miles from Martin Lake (Aristotle_345 Sub)

New 138kV Switching Station on the 138kV Teaselville - Palestine line app. 30 miles from Palestine (Apollo_138)

345/138kV, 650 MVA auto at Aristotle

New 0.9 mile single circuit 138kV line from Aristotle to Ben Wheeler

Expand Ben Wheeler sub to accommodate Aristotle_345 Sub & Canton Sub connection

Extend the 138kV Coffee - Jacksonville single circuit line into the new Apollo_138kV switching station (0.5 miles)

Options 3 and 4

- Option 3:

Extend Bus Work & add 138kV jumper (<0.1 mile) to connect Canton Switch Station to Canton Tap

New 345kV Substation (6 breaker ring bus) on one circuit of Martin Lake – Tricorner line app. 83 miles from Martin Lake (Galileo_345 Sub)

New 138kV Switching Station on the 138kV Jacksonville - Flint line app. 5 miles from Jacksonville (Maxwell_138)

345/138kV, 650 MVA auto at Galileo

New 0.5 mile single circuit 138kV line from Galileo to Canton Sub

Expand Canton sub to accommodate the connections from Galileo_345 Sub

Extend the 138kV Coffee - Jacksonville single circuit line into the new Maxwell_138kV switching station (8.4 miles)

Option 4:

Extend Bus Work & add 138kV jumper (<0.1 mile) to connect Canton Switch Station to Canton Tap

New 345kV Substation (6 breaker ring bus) on one circuit of Martin Lake – Tricorner line app. 83 miles from Martin Lake (Aristotle_345 Sub)

New 138kV Switching Station on the 138kV Jacksonville - Flint line app. 5 miles from Jacksonville (Maxwell_138)

345/138kV, 650 MVA auto at Aristotle

New 0.9 mile single circuit 138kV line from Aristotle to Ben Wheeler

Expand Ben Wheeler sub to accommodate Aristotle_345 Sub & Canton Sub connection

Extend the 138kV Coffee - Jacksonville single circuit line into the new Maxwell_138kV switching station (8.4 miles)