



Delaware Basin Load Integration Study - Update

ERCOT Transmission Planning

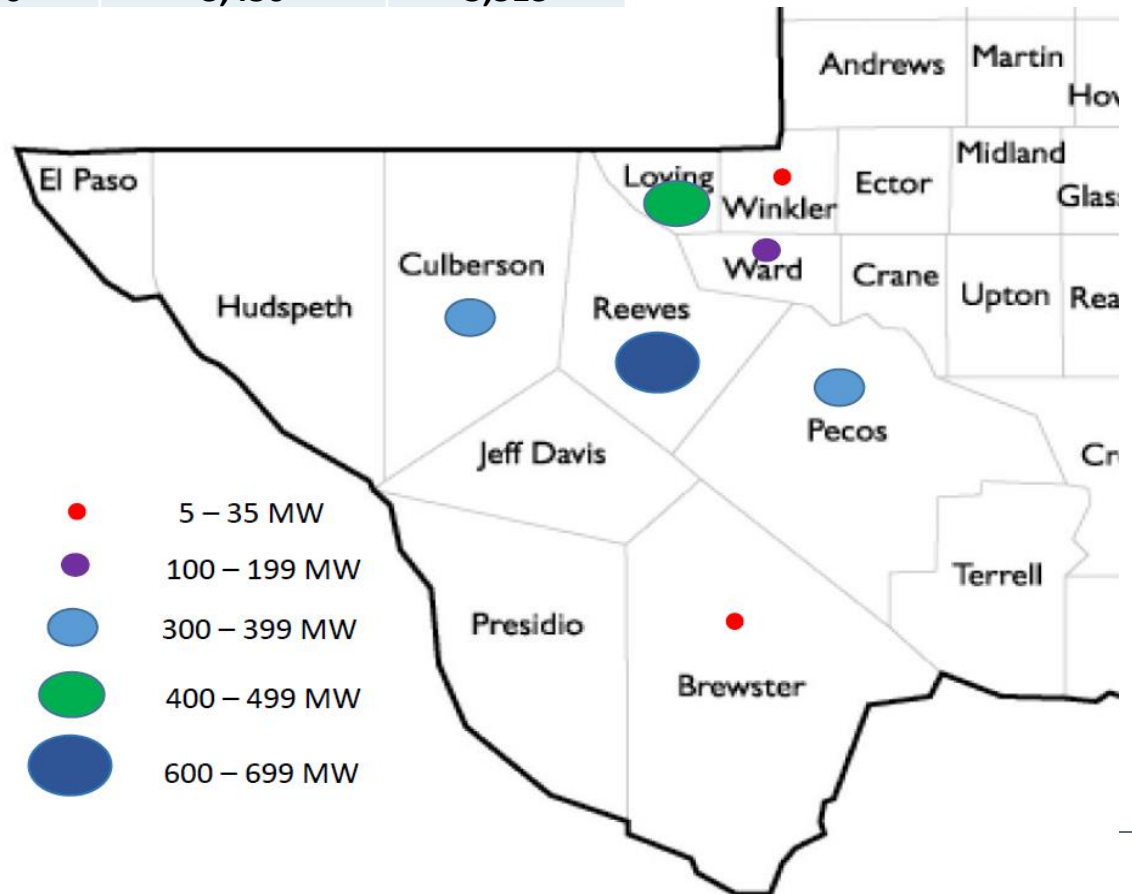
Regional Planning Group
July 16, 2019

Status of Delaware Basin Load Integration Study

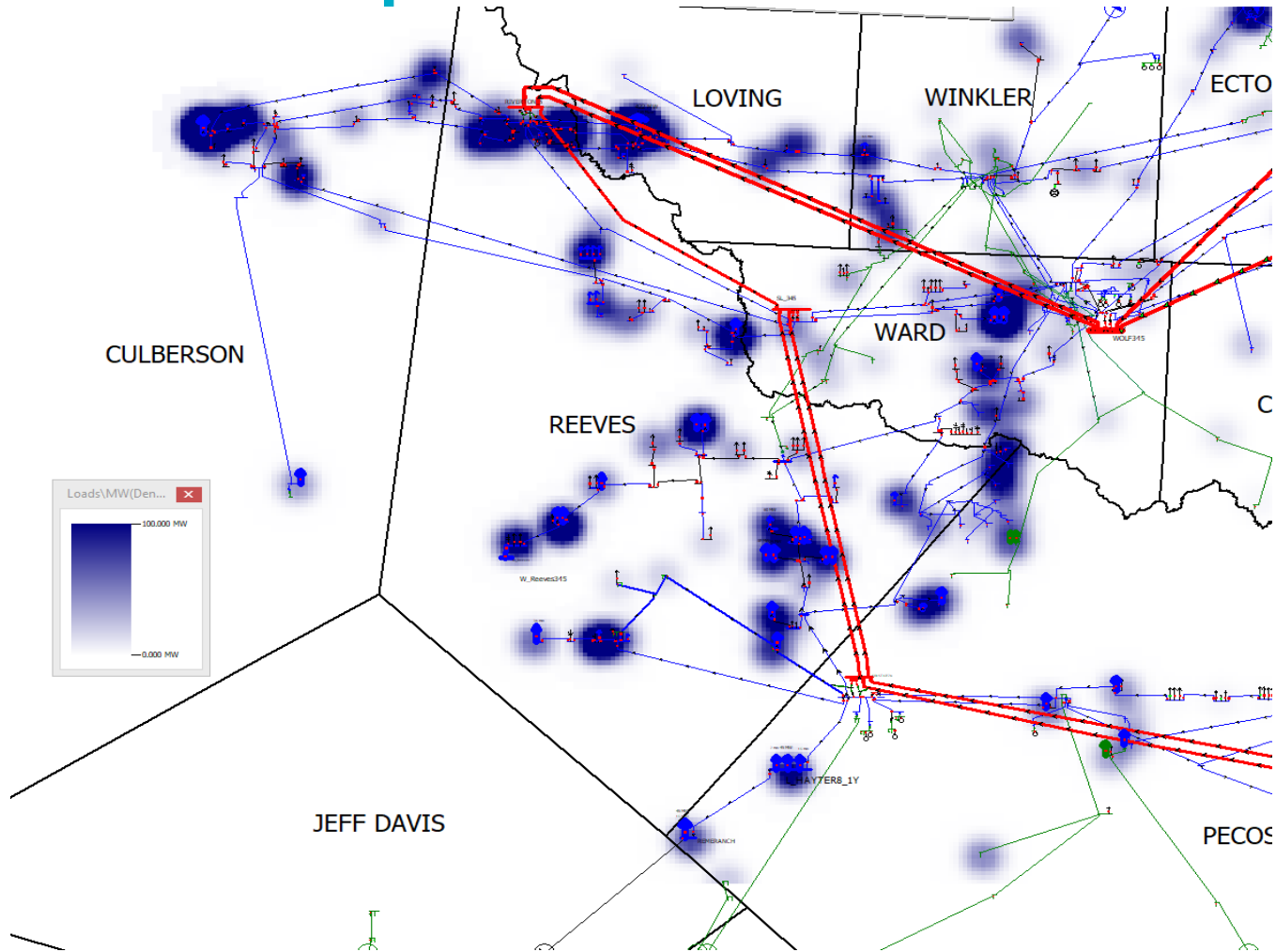
- ❑ ERCOT presented the study scope in the Nov 2018 RPG
http://www.ercot.com/content/wcm/key_documents_lists/138710/Delaware_Basin_Load_Integration_Study_Scope_-_Nov2019_RPG.pdf
- ❑ ERCOT presented a status update in the May 2019 RPG
http://www.ercot.com/content/wcm/key_documents_lists/165286/Delaware_Basin_Load_Integration_Study_Update_-_May2019_RPG.pdf
- ❑ ERCOT worked on implementing the higher-than-expected load provided by TSPs and developing the study base case
- ❑ ERCOT is currently conducting steady-state N-1 contingency analysis

Delaware Basin Area Load Summary

TSP	2018 RTP	2019 RTP	Feb 2019 SSWG	DBA Study
AEP	130	272	330	459
Golden Spread	8	6	7	9
LCRA	6	7	17	210
ONCOR	1,404	1,817	1,841	2,665
TNMP	507	527	1,254	1,969
Grand Total	2,055	2,630	3,450	5,313



Load Contour Map



- ❑ NOTE: Some of these conceptual loads are under further review by TSPs. Therefore, ERCOT may adjust the locations of these loads and system topology based on additional updates from TSPs

Study Base Case Development

□ Preliminary Study Base Case Development

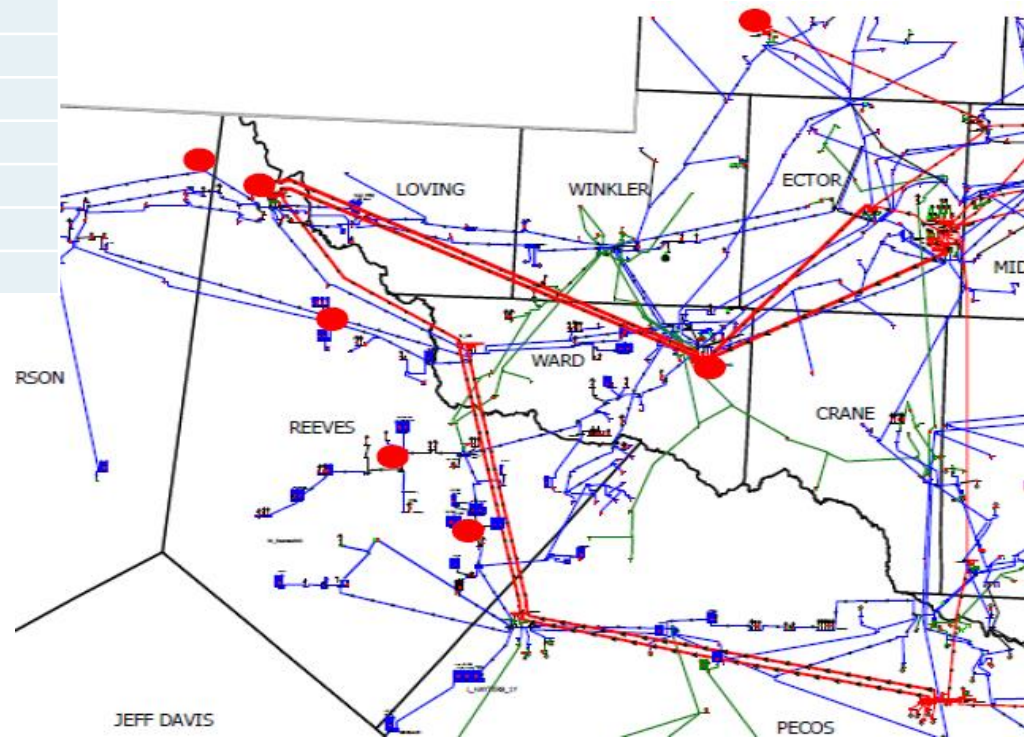
- Step 1: Power flow of the starting case with additional DBA load does not solve even if solar generation in the DB area (~ 1160 MW) is still online. The following updates were applied to just make the case solved:
 - ✓ Tapped the new 345 kV Wolf station to the Odessa/Moss – Riverton 345kV double circuit lines (TPIT 46094, Tier 3, Dec 2020)
 - ✓ ERCOT added 2,100 Mvar reactive devices (See Slide 6 for the list)
- Step 2: Additional transmission upgrades were added to address all of the thermal and most of voltage violations under N – 0 condition in the study base case (still solar generation online)
 - ✓ About 77 miles 138kV and 69kV transmission line base case overloads; Two 345/138kV and one 138/69kV autotransformer base case overloads
- Step 3: One new single circuit 345kV import path was added to address the voltage collapse issue resulting from solar generation offline.

Location of Conceptual Reactive Devices

- ❑ These new reactive devices are placeholder projects inserted just to make the case solvable. As ERCOT evaluates transmission solutions, these reactive devices will be reviewed further.

Bus Number	Bus Name	Status	Capacity (Mvar)
79650	CLEARFRK	Closed	300
11084	RIVERTON_5	Closed	300
11078	COALSNDR_8	Closed	300
38065	TNBRDRFLD_1	Closed	300
11183	TUNSTLL_8	Closed	300
38114	TNREEVSCOT1	Closed	300
21013	WOLF345	Closed	300

- Indicates the location of Reactive Device

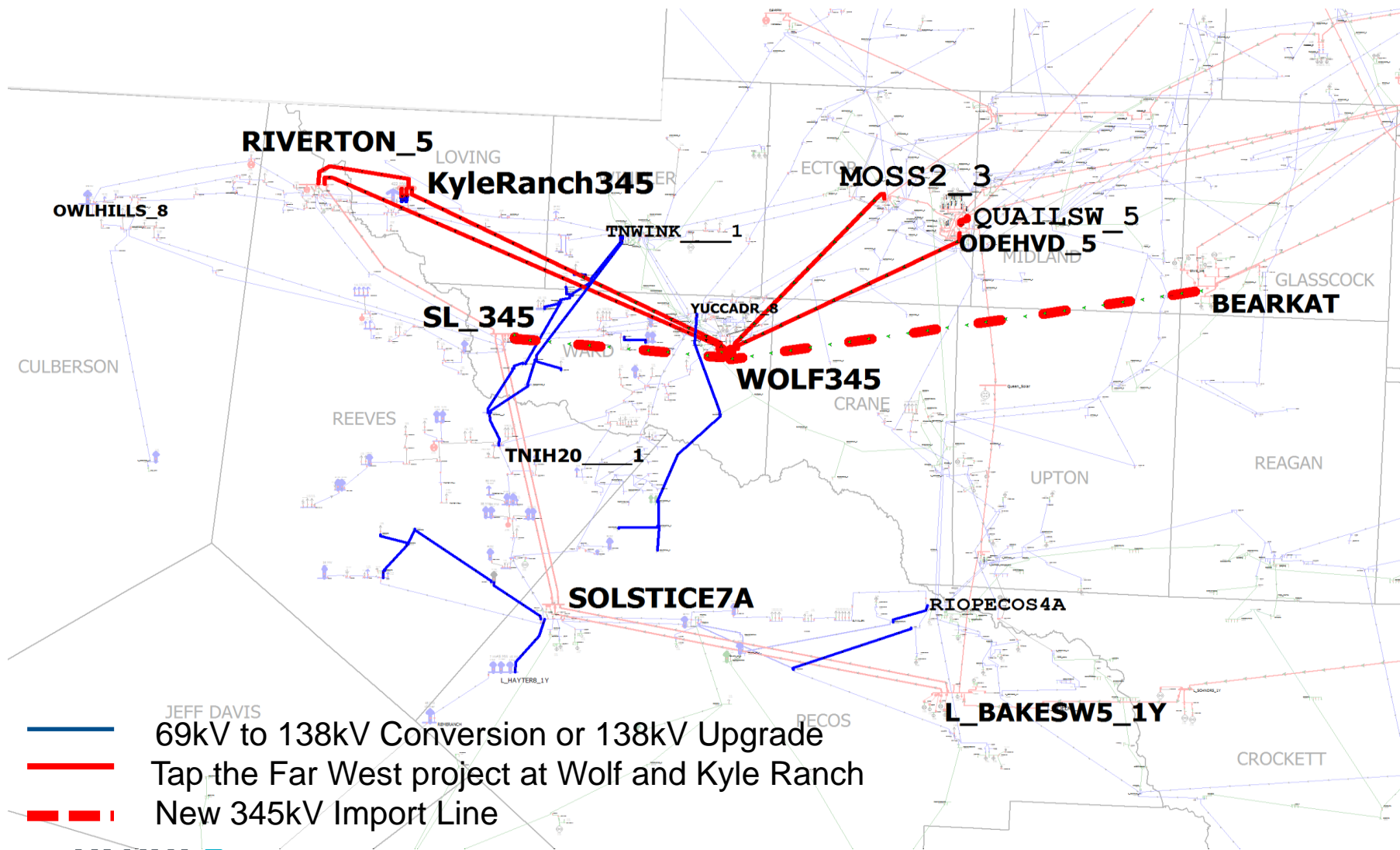


Transmission Upgrades in the Step 2 and Step 3 Case Development

- ❑ Additional transmission upgrades associated with Step 2
 - Convert the following 69 kV lines to 138 kV lines
 - ✓ AEP Barrilla - Hoefs Road - Verhalen - Saragosa 69 kV line to 138kV
 - ✓ TNMP 69 kV system from Winks to IH20 to 138 kV
 - ✓ ONCOR 69 kV line Yucca - Royalty - Coyanosa - Wolfcamp to 138 kV
 - Upgrade the Gemsbok - Gemsbok Autonomous Crypto 138 kV line
 - Tap the Wolf - Riverton 345 kV circuit 1 at Kyle Ranch, and install two new 345/138 kV transformers at Kyle Ranch
 - Upgrade the Quail Switch - Odessa 345 kV line

- ❑ Additional transmission upgrades associated with Step 3
 - Add a new Bearkat - Wolf - Sandlake single-circuit 345 kV line
 - Upgrade the Solstice - Hayter 138 kV line
 - Upgrade the Rio Pecos - Woodward 2 138 kV line
 - Upgrade the Tombstone - Lynx 138 kV

Transmission Upgrades in the Steps 1 to 3 Case Development



- 69kV to 138kV Conversion or 138kV Upgrade
- Tap the Far West project at Wolf and Kyle Ranch
- - - New 345kV Import Line



Next Step

- ❑ ERCOT is currently conducting steady-state N-1 contingency analysis.
- ❑ Tentative Timeline

Deliverables	Tentative Schedule
Load Update by TSPs	April, 2019
Review the Data Provided by TSPs	May, 2019
Develop Study Base Case, Conduct Reliability Analysis	June, 2019
Study Potential Transmission Solutions	September, 2019
Study Report to Inform Stakeholders	November, 2019

Questions

Stakeholder Comments Also Welcomed to

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