



Permian Basin Load Interconnection Study - Status Update

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Recap

- Purpose of the Study
 - Identify local transmission upgrades that may be necessary to connect potential local oil and gas loads in the Permian Basin area
- ERCOT provided status updates at the previous RPG meetings
 - Permian Basin Area Improvement Updates at the December 2020 RPG meeting
http://www.ercot.com/content/wcm/key_documents_lists/189757/Permian_Basin_Area_Improvement_Updates_-_Dec2020RPG.PDF
 - Permian Basin Load Interconnection Study Scope at the January 2021 RPG meeting
http://www.ercot.com/content/wcm/key_documents_lists/213837/Permian_Basin_Load_Interconnection_Study_Scope_-_Jan2021RPG.pdf
 - Permian Basin Load Interconnection Study Status Update at the April 2021 RPG meeting
http://www.ercot.com/content/wcm/key_documents_lists/213851/Permian_Basin_Load_Interconnection_Status_Update_-_April2021RPG.pdf

Case Updates

- **Load**

- IHS existing substation loads
- IHS new loads not connecting to the existing transmission grid

Permian Basin Area	IHS Load Forecast (MW)	
	2025 Load	2030 Load
Existing Substation Load	6,601	7,402
New Load	1,850	2,568
Total Load	8,450	9,970

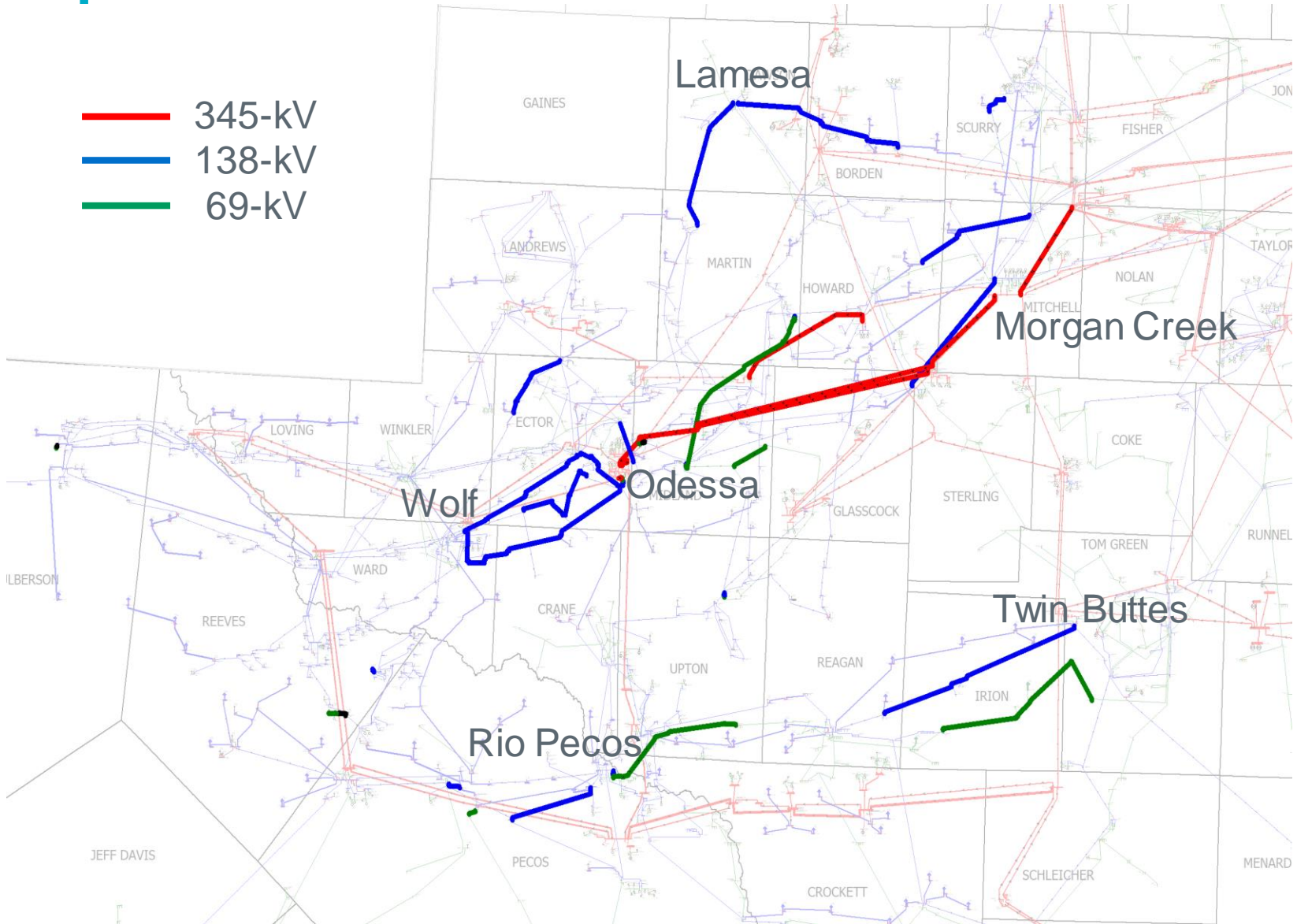
- **Transmission**

- RPG Approved Project
 - ✓ Oncor Midland East 2nd 345/138-kV transformer
- Conceptual/Placeholder Projects Provided by TSPs
 - ✓ Oncor Flat Iron - Barr Ranch - Pegasus South 138-kV Line Project (recently submitted for RPG Review)
 - ✓ Oncor Royalty - Coyanosa - Wolfcamp 69-kV Conversion
 - ✓ AEP Barrila Loop Conversion to 138-kV
- Placeholder Projects from Delaware Basin Study
 - ✓ Stage 1 Upgrade (currently under ERCOT Independent Review)
 - ✓ Stage 2 Upgrade (placeholder project only for 2030)

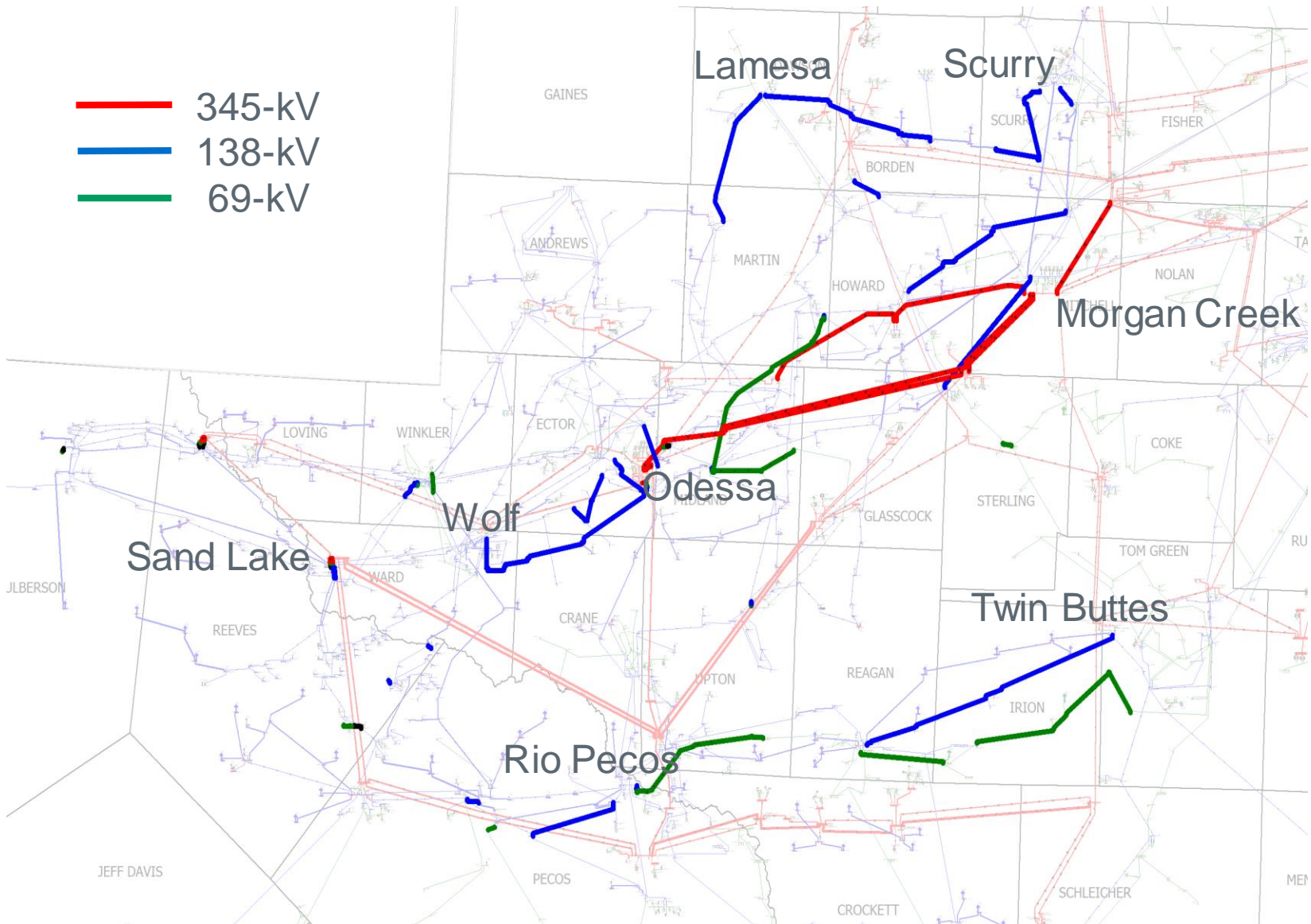
Preliminary Reliability Analysis Results under N-0, N-1, G1+N1, and X1+N1

	2025 Case	2030 Case
Number of Unsolvable Contingencies	2	17
Transmission Line Overloads	196 miles of 345-kV 350 miles of 138-kV 121 miles of 69-kV	269 miles of 345-kV 369 miles of 138-kV 151 miles of 69-kV
Transformer Overloads	Two 345/138-kV Four 138/69-kV	Six 345/138-kV Six 138/69-kV

Map of Overloaded Elements - 2025



Map of Overloaded Elements - 2030



Next Step and Tentative Timeline

- Develop transmission upgrades to address the reliability issues
 - ERCOT may consider adding placeholder capacity banks if base case voltage, particularly at the new load buses, is below 0.95pu
 - ERCOT may apply the common projects (i.e. reactive devices and the transmission upgrades) identified in the Delaware Basin Study if necessary
- Complete the study in July 2021



Stakeholder Comments Also Welcomed to Sun Wook Kang:
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Appendix - List of Overloaded Elements - 2025

Morgan Creek - Tonkawa 345-kV line
Midland East - Falcon Seaboard 345-kV line
Morgan Creek - Longshore - Midessa - Odessa 345-kV line
Longshore - Newswitch 345-kV line
Quail Switch - Odessa 345-kV line
Scurry - Kndrsacrc - Knapp 138-kV line
Lamesa - Key Sub - Gail Sub - Willow Valley Switch 138-kV line
Lamesa - Jim Payne - Dawson - AlkaLi Lake 138-kV line
China Grove - Getty Tap 138-kV line
Morgan Creek - McDonald 138-kV line
Odessa North - Odessa 138-kV line
Odessa - Big Three Odessa Tap - Odessa South - Moss 138-kV line
Moss - Wolf 138-kV line
Rexall - General Tire Switch - Edwards Tap - Judkins - Sand Hills Tap 138-kV line
Odessa - Yarbrough Sub - Wolf 138-kV line
Holt Switch - Scharbauer POI 138-kV line
Lynx - Tombstone and Fort Stockton - Leon Creek 138-kV line
Twin Buttes - Hargrove - Pumpjack - Jerry 138-kV line
Stanton East - Sprabery 69-kV line
Rio Pecos - Mccamey - Rankin4 69-kV line
Cassava - San Angelo Mathis Field 69-kV line
16th Street - Fort Stockton TNP 69-kV line
Midessa and Odessa 2 345/138-kV transformers
Stanton East, Sprabery, Midkiff, and Rio Pecos 138/69-kV transformers

Appendix - List of Overloaded Elements - 2030

Morgan Creek - Tonkawa 345-kV line
Midland East - Falcon Seaboard 345-kV line
Morgan Creek - Falcon Seaboard 345-kV line
Morgan Creek - Longshore - Midessa - Odessa 345-kV line
Morgan Creek - Longshore - Newswitch 345-kV circuit
Quail Switch - Odessa 345-kV line
Deep Creek Sub - Sacroc 138-kV line
Scurry - Kndrsacrc - Knapp - Bluff Creek Switch - Exxon Sharon Ridge 138-kV line
Lamesa - Key Sub - Gail Sub - Willow Valley Switch 138-kV line
Lamesa - Jim Payne - Dawson - AlkaLi Lake 138-kV line
Howard Switch - Vealmoor 138-kV line
China Grove - Getty Tap - Big Spring 138-kV line
Morgan Creek - McDonald 138-kV line
Odessa North - Odessa 138-kV line
Odessa - Big Three Odessa Tap - Odessa South 138-kV line
General Tire Switch - Edwards Tap - Judkins 138-kV line
Odessa - Yarbrough Sub - Wolf 138-kV line
Caymus TNP - Gas Pad 138-kV line
Lynx - Tombstone and Fort Stockton - Leon Creek 138-kV line
Twin Buttes - Hargrove - Pumpjack - Big Lake 138-kV line
Sand Lake - Cochise TNP 138-kV line
Stanton East - Sprabery 69-kV line
Wink - California Tnp 69-kV line
Rio Pecos - Mccamey - Rankin4 69-kV line
Big Lake - Barnhart - San Angelo Mathis Field 69-kV line
Sterling City - Sterling County 69-kV line
16th Street - Fort Stockton TNP 69-kV line
Riverton 1& 2, Odessa 2, Midessa, and Sand Lake 1 & 2 345/138-kV transformers
Stanton East, Sprabery, Midkiff, Wink 1 & 2, and Rio Pecos 138/69-kV transformers