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PROJECT NO. 55718

RELIABILITY PLAN FOR THE	§	PUBLIC UTILITY COMMISSION
PERMIAN BASIN REGION UNDER	§	OF TEXAS
PURA § 39.167	§	

ERCOT'S JULY 2024 STATUS REPORT

Pursuant to the *Order Directing ERCOT to Develop a Reliability Plan for the Permian Basin Region* issued by the Commission in this Project on December 14, 2023, Electric Reliability Council of Texas, Inc. (ERCOT) hereby submits the attached monthly status report regarding its development of the reliability plan for the Permian Basin.

Respectfully submitted,

/s/ Anna Berlin

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ATTORNEYS FOR ELECTRIC
RELIABILITY COUNCIL OF TEXAS,
INC.

Permian Basin Reliability Plan Study - Monthly Update



Public Utility Commission of Texas
July 1, 2024

Status Update

- ERCOT has had multiple meetings with the TSPs to discuss the transmission projects needed to accommodate the forecasted Permian Basin load.
 - Most recent meetings were held June 3, and June 17, 2024.
- ERCOT presented a status update to the Regional Planning Group (RPG) on June 11, 2024, which addressed:
 - The set of local transmission projects (i.e., those located in the Permian Basin region) needed to serve the Permian Basin region load growth in both 2030 and 2038.
 - The 345-kV import paths needed to transfer power across the ERCOT System to serve the Permian Basin load in both 2030 and 2038.
- ERCOT hosted a Permian Basin Reliability Plan Study workshop on June 28, 2024 for all stakeholders.
- ERCOT reviewed the 69-kV transmission conversion projects provided by the TSPs and included the projects that were determined to be needed in this study.
- ERCOT identified the 500-kV and 765-kV extra high voltage (EHV) import path options for 2038.
- ERCOT conducted a limited dynamic stability analysis utilizing the 2038 case with all identified 345-kV import path projects modeled.
- ERCOT summarized the cost estimates for all the transmission upgrades.

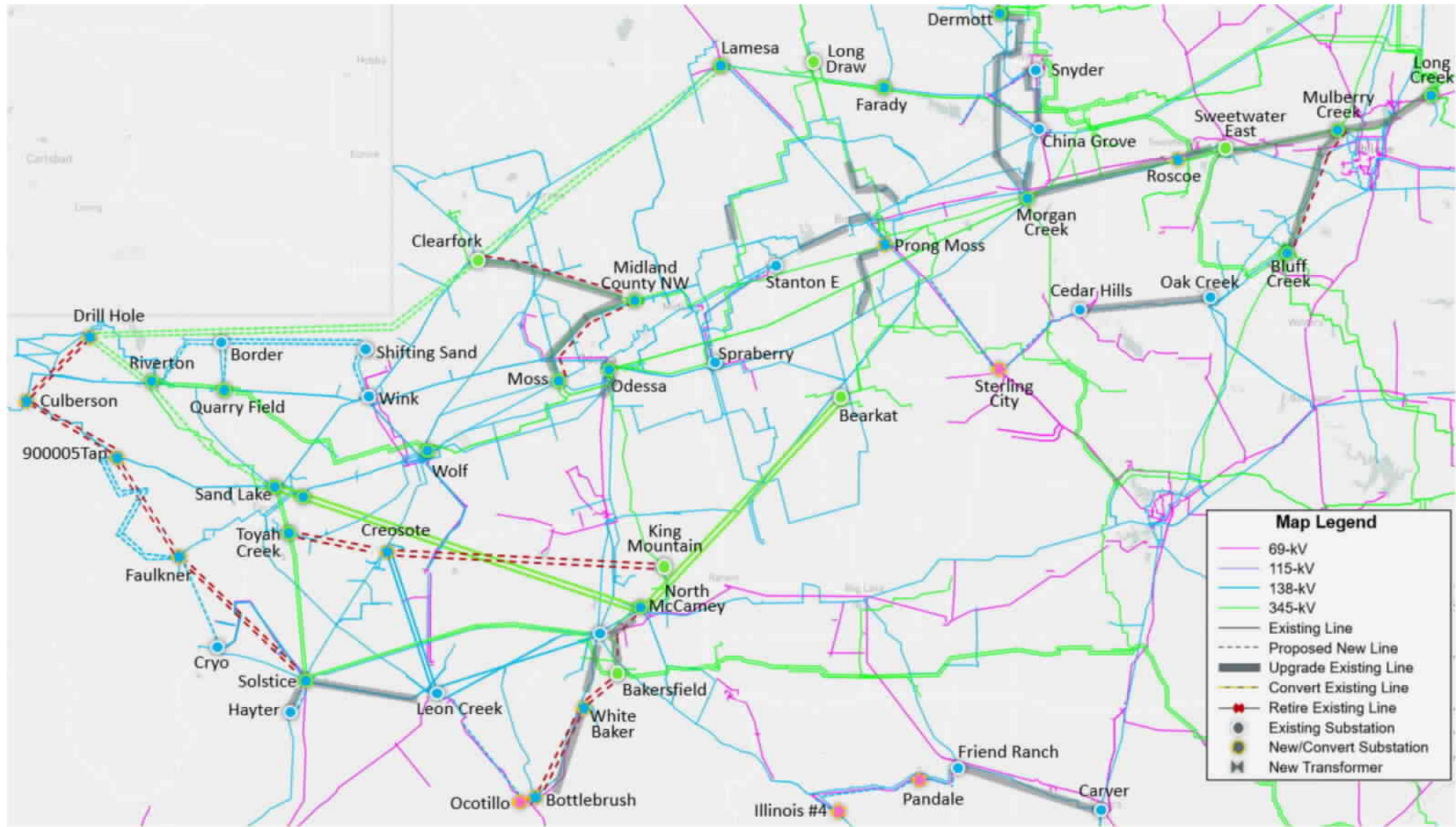
Permian Basin Reliability Plan – Recap

- The study indicated local improvements to the existing Permian Basin transmission system will be needed for load growth forecasted in 2030 & 2038.
- In addition, significant regional transmission upgrades (new import paths) will be needed to transfer power into the Permian Basin in 2038.
- Significant load growth across the state resulted in ERCOT expanding its study process for the Permian Basin to consider Extra High Voltage (EHV) transmission additions.
- EHV additions are an effective option for moving power over long distances, reducing congestion, increasing grid stability, and addressing the uncertainty of future generation changes and location.
- Based on the reliability plan developed, ERCOT obtained cost estimates from the respective TSPs responsible for building transmission as well as referenced publicly available data sources.

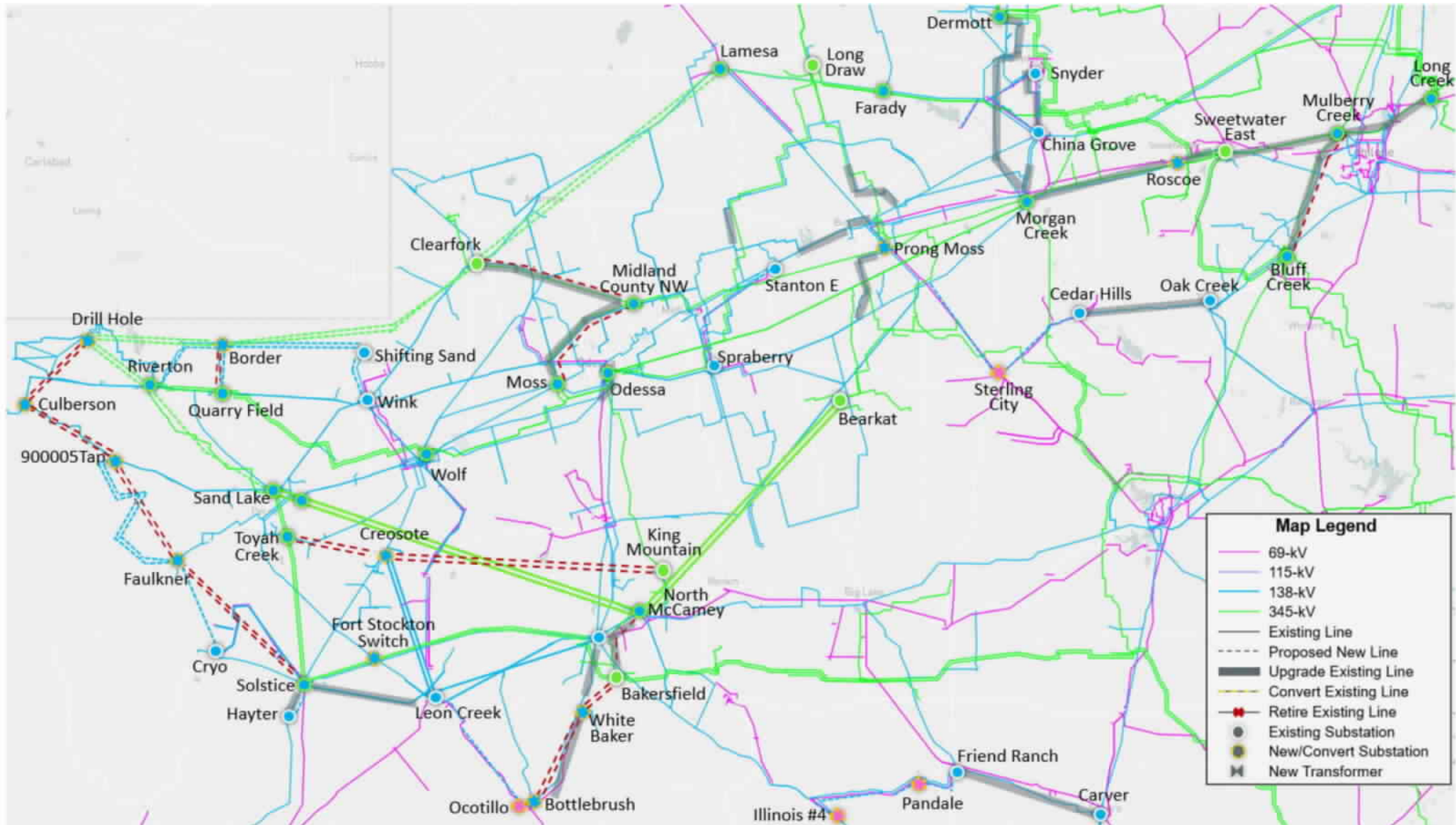
Reliability Need Analysis – 2030 and 2038

- The steady-state reliability study results showed that both local transmission upgrades and additional import paths to the Permian Basin region are needed.
- Local transmission upgrades include:
 - Add new 345-kV substations with 345/138-kV transformers
 - Add new 345-kV double-circuit transmission lines
 - Form a new 345-kV double-circuit loop in the Delaware Basin area
 - Add new 138-kV transmission lines
 - Rebuild the existing 345-kV and 138-kV transmission lines
 - Convert the existing 69-kV transmission lines to 138-kV
 - Add new reactive support devices
- Import paths include:
 - Add new 345-kV double-circuit transmission lines
 - Alternatively, add new 500-kV or 765-kV extra high voltage (EHV) transmission lines

Local Transmission Projects Needed to Serve All Loads in Permian Basin Region in 2030



Local Transmission Projects Needed to Serve All Loads in Permian Basin Region in 2038



Import Paths to Permian Basin Region

Two new 345-kV import paths will be required to serve the 2030 Permian Basin Load.

- One 345-kV import path is from Central Texas and one 345-kV import path is from South Texas
- Approximately 847 miles of new 345-kV double-circuit transmission lines in total
- Additional new dynamic reactive devices required

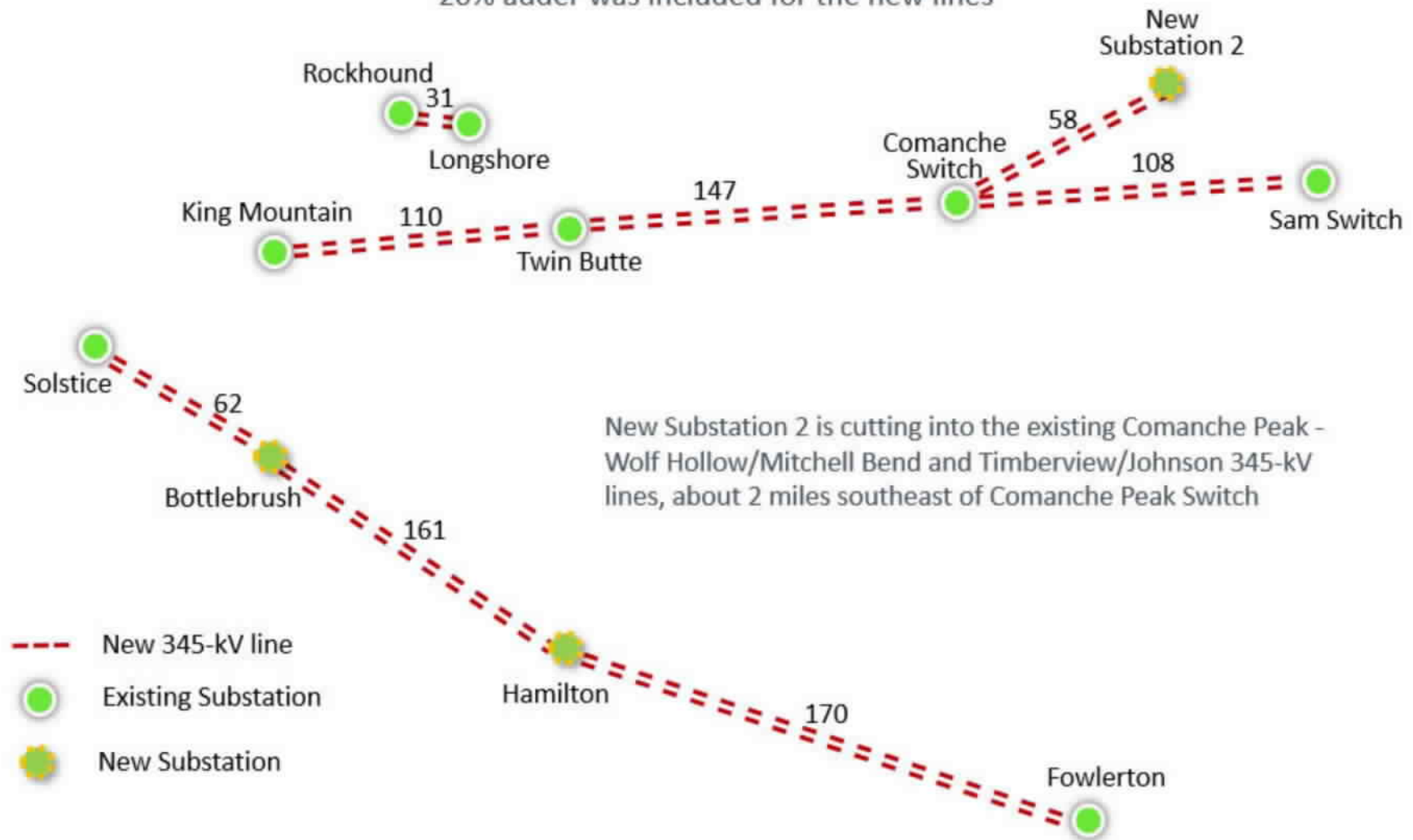
For the 2038 Permian Basin Load, ERCOT evaluated three import path alternatives: 345 kV, 500 kV, and 765 kV. The two EHV options will be part of a systemwide EHV study to be completed later in 2024.

- **345-kV Option:** Four new 345-kV double-circuit import paths, plus a short path from the Panhandle would be needed
 - Three 345-kV import paths are from Central Texas and one 345-kV import path is from South Texas
 - Approximately 1,676 miles of new 345-kV double-circuit transmission lines in total
 - Additional new dynamic reactive devices required
- **765-kV EHV Option:**
 - Three new 765-kV EHV import paths approximately 1,255 miles
 - Additional new dynamic reactive devices required
- **500-kV EHV Option:**
 - Three new 500-kV EHV import paths approximately 1,255 miles and 115 miles of new 345-kV (total new right of way [ROW] 1,370 miles)
 - Additional new dynamic reactive devices required

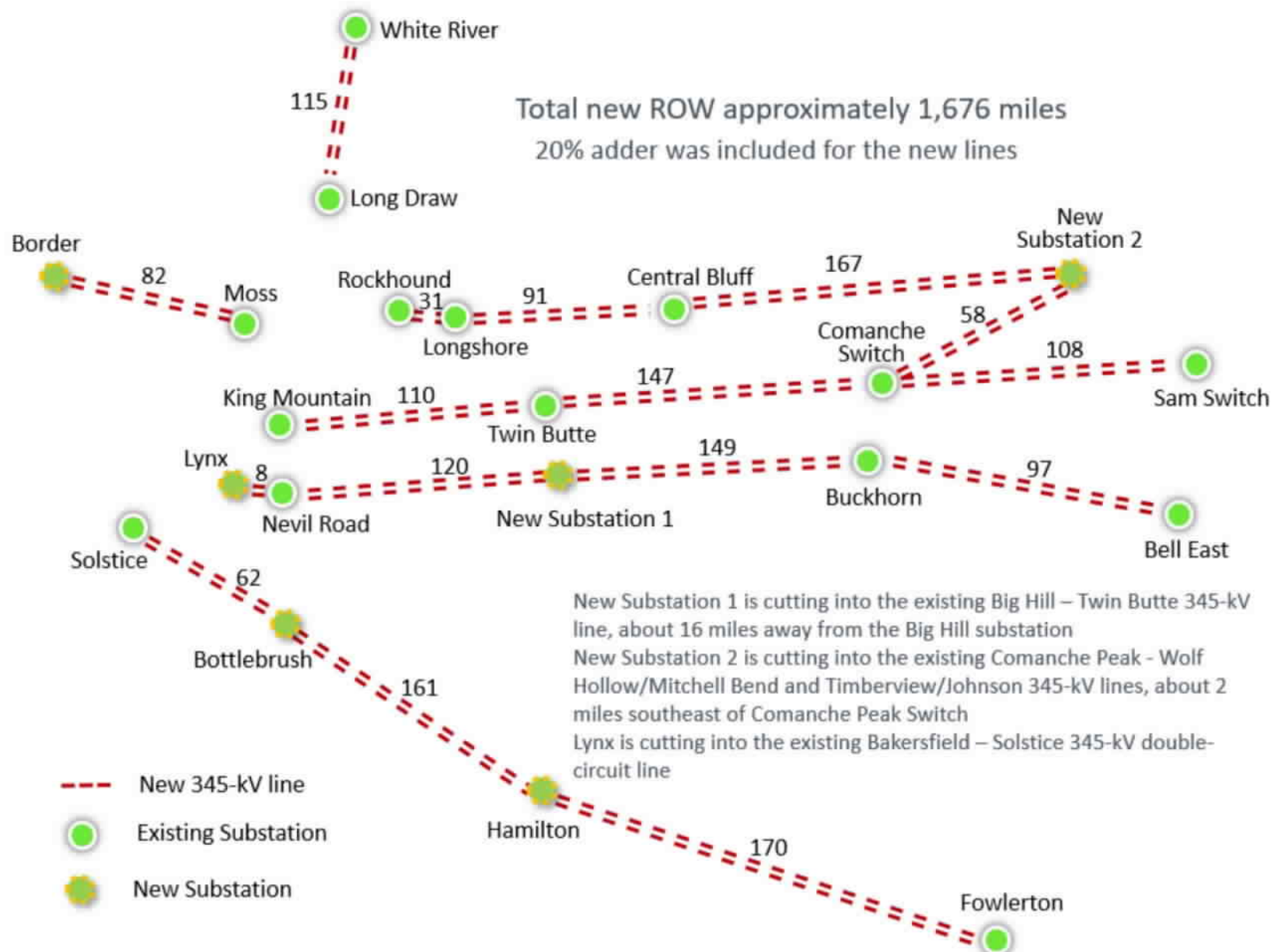
345-kV Import Paths to Permian Basin Region for 2030

Total new ROW approximately 847 miles

20% adder was included for the new lines



345-kV Import Paths to Permian Basin Region for 2038



500-kV Import Paths Option for 2038



765-kV Import Paths Option for 2038

Total new ROW approximately 1255 miles
20% adder was included for the new lines



Cost Estimates

- Capital-cost estimates for each transmission upgrade at 345-kV level or lower were provided by the TSP responsible for each upgrade.
 - ERCOT used the cost estimates provided by the TSPs to calculate total project-cost estimates for various transmission upgrades
- For EHV (500-kV and 765-kV) options, ERCOT used a general-cost estimate to calculate the total project-cost estimates
 - Referenced the MISO 2024 Transmission Cost Estimation Guide
 - Link: [20240131_PSC_Item_05_Transmission_Cost_Estimation_Guide_for_MTEP24_-_Redline631529.pdf \(misoenergy.org\)](#)
 - General cost estimates for EHV options

	T-Line \$/mile	Substation	Transformer
500-kV double-circuit	\$6.9M*	\$94.8M	\$15.9M
765-kV single-circuit	\$6.1M	\$97.3M	\$27.2M

*A ratio of 1.4 was used to estimate the cost for a 500-kV double-circuit line based on the cost of a 500-kV single-circuit line

Cost Estimates Summary

- Cost estimates in \$ Millions

	2030	2038		
		345-kV	500-kV	765-kV
Local Upgrades	5,054	5,255	4,712	4,712
Import Paths	3,991	7,694	10,605	9,059
Total	9,045	12,949	15,317	13,771

- The cost estimates for the local upgrades include the 345-kV and 138-kV transmission upgrades, 69-kV transmission conversions, and placeholder reactive devices (capacitor banks).
- The difference in the cost estimates for the local upgrades under the 345-kV and EHV options are due to certain transmission upgrades not needed in the EHV options.
- The cost estimates of the import paths include the 345-kV and EHV transmission lines and dynamic reactive devices.

Next Steps

- Complete a limited dynamic stability analysis utilizing a case that includes all identified projects.
- Complete the report in July 2024.
- ERCOT will provide the final update to stakeholders at the July 16, 2024 RPG meeting.