Permian Basin Reliability Plan Recap & Next Steps

ERCOT Public
June 28, 2024

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 entire Texas grid 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.

Key Takeaway: With the increased load growth forecast for the Permian Basin area, significant local and regional transmission projects will be required.

Permian Basin Reliability Plan – Cost Estimate Summary

- For the 2030 forecasted Permian Basin load growth an estimated $9.1 billion dollars of transmission improvements will be required.
- ERCOT studied various transmission options to serve the 2038 forecasted load. The following estimated transmission investment will be required depending on the type of transmission selected (all options are inclusive of the $9.1 billion):

  - **345-kV Option**: $13.0B
    - 1,676 miles of right of way (ROW) for four 345-kV and one 345-kV additional upgrade

  - **500-kV Double Circuit Option**: $15.3B
    - 1,370 miles of ROW for three 500-kV and one 345-kV additional upgrade.

  - **765-kV Option**: $13.8B
    - 1,255 miles of ROW for three 765-kV import paths.

- Each of the three options will serve the load requirements in the 2038 forecast, but the EHV options offer further benefits that are in the process of being quantified by ERCOT. The Permian Basin EHV options will be part of a system wide EHV study to be completed later in 2024.

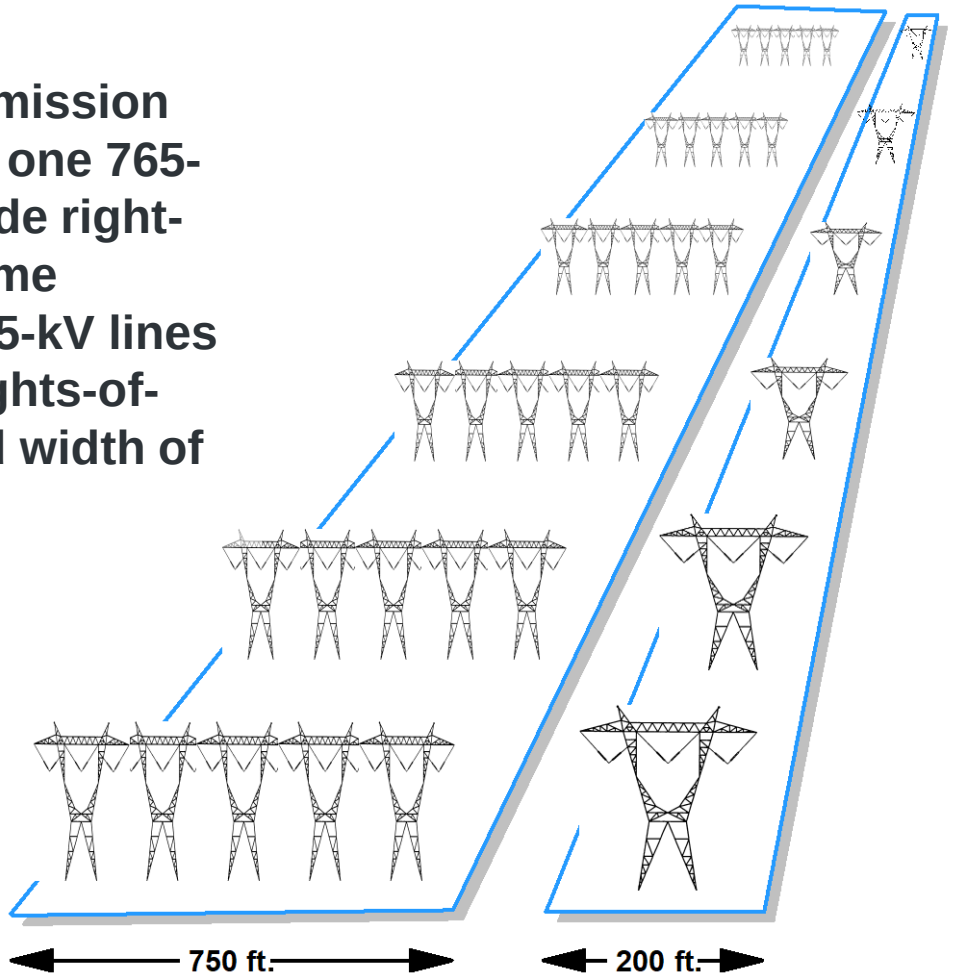
Benefits of Higher Voltage Transmission

- Increased transfer capability to support continued economic development
- Increased outage coordination capacity for both Generation Resources and Transmission equipment
- Reduced ROW impacts to consumers due to fewer new lines being needed
  - See following diagram example
- Reduced line losses while increasing ability to move power over long distances
- Potential to retire existing series compensation devices reducing stability risks for Generation Resources
- Additional flexibility to mitigate Generation Resource siting uncertainty
- Potential exit strategy for some current major Generic Transmission Constraints resulting in more generation available to customers

Key Takeaway: Forecasted load growth coupled with the evolution of generation types and locations have led to EHV infrastructure consideration to reliably and efficiently facilitate large power transfer across the system.

Benefits of Higher Voltage Transmission: ROW Comparison 345-kV vs 765-kV

For long distance transmission (longer than 100 miles), one 765-kV line on a 200-foot-wide right-of-way can carry the same amount of energy as 345-kV lines on five 150-foot-wide rights-of-way, having a combined width of 750 feet



Key Takeaway: Reduced impact to Texas consumers due to less right of way ROW acreage needed to transfer more power longer distances.

What's Ahead?

- 06/28/24 – ERCOT hosting final stakeholder workshop to review Permian Basin study assumptions and recommendation. Initiate final comment period prior to ERCOT filing study with PUC.
- 07/16/24 – Final Regional Planning Group (RPG) meeting to discuss Permian Basin Reliability Plan
- 07/25/24 – ERCOT to file final Permian Basin Reliability Study Plan with PUC which will include alternatives for 345, 500 and 765-kV import paths needed to support the 2038 Permian Basin forecasted load.
- August 2024 – PUC workshop, comment and review period.
- September 2024:
  - No later than early September, ERCOT to provide initial draft of holistic transmission plan including alternatives for 345, 500 and 765-kV to reliably and efficiently serve the entire ERCOT region's forecasted load for 2030. The final plan will be completed no later than December 2024.
  - PUC consideration of the Permian Basin Reliability Study Plan.
- December 2024 – No later than December, ERCOT to publish completed Regional Transmission Plan with 345, 500 and 765-kV alternatives to meet the forecasted 2030 load.