



Transmission Planning in ERCOT

Warren Lasher

Senior Director, System Planning

PUC Workshop

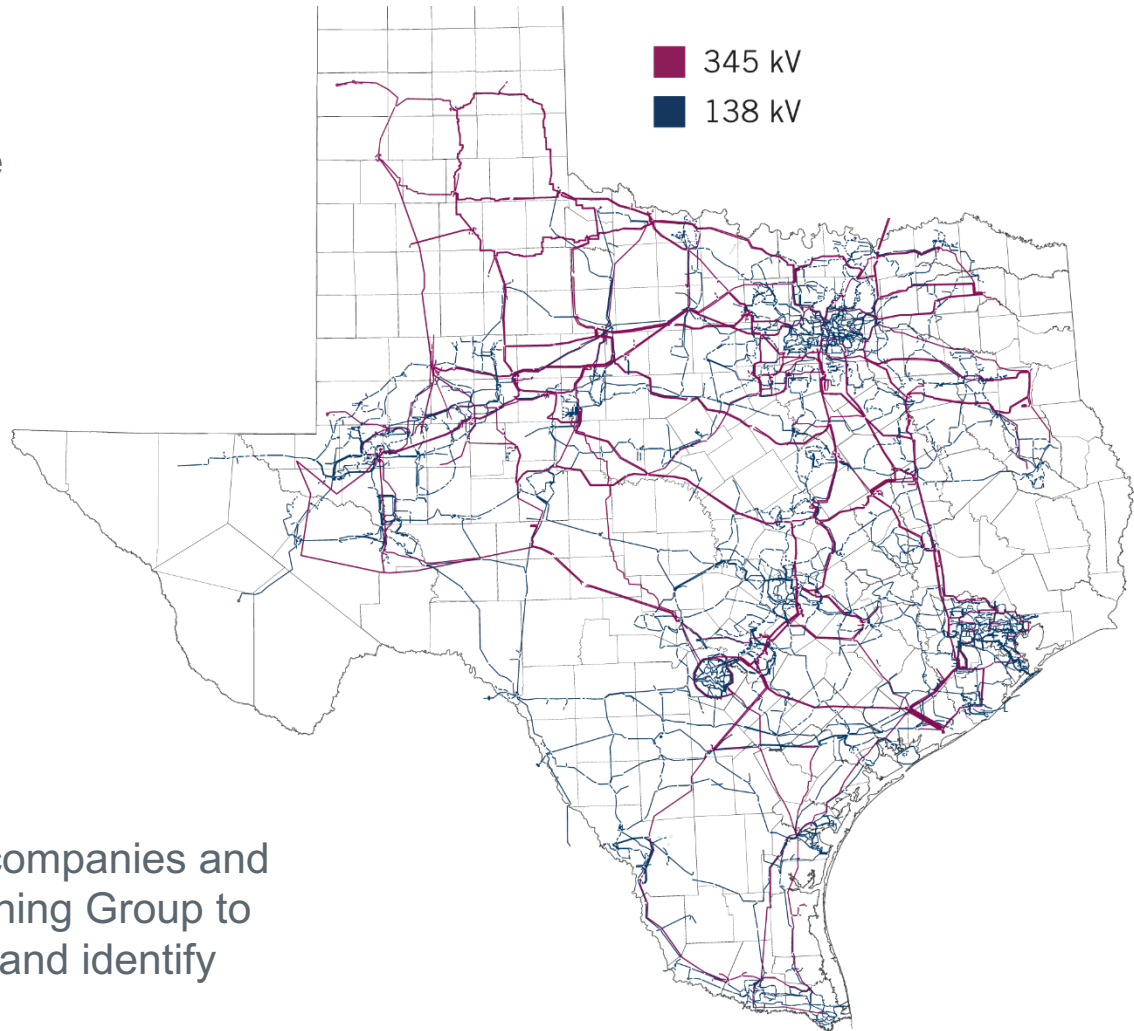
July 26, 2021

The ERCOT Transmission System

The ERCOT transmission system connects 700+ generating units to consumers throughout most of the state of Texas.

The growing economy and increasing population are driving growth in electricity demand, causing a need for increased transmission capacity. In addition, the changing generation fleet is causing shifts in how power flows across the transmission system, resulting in new constraints.

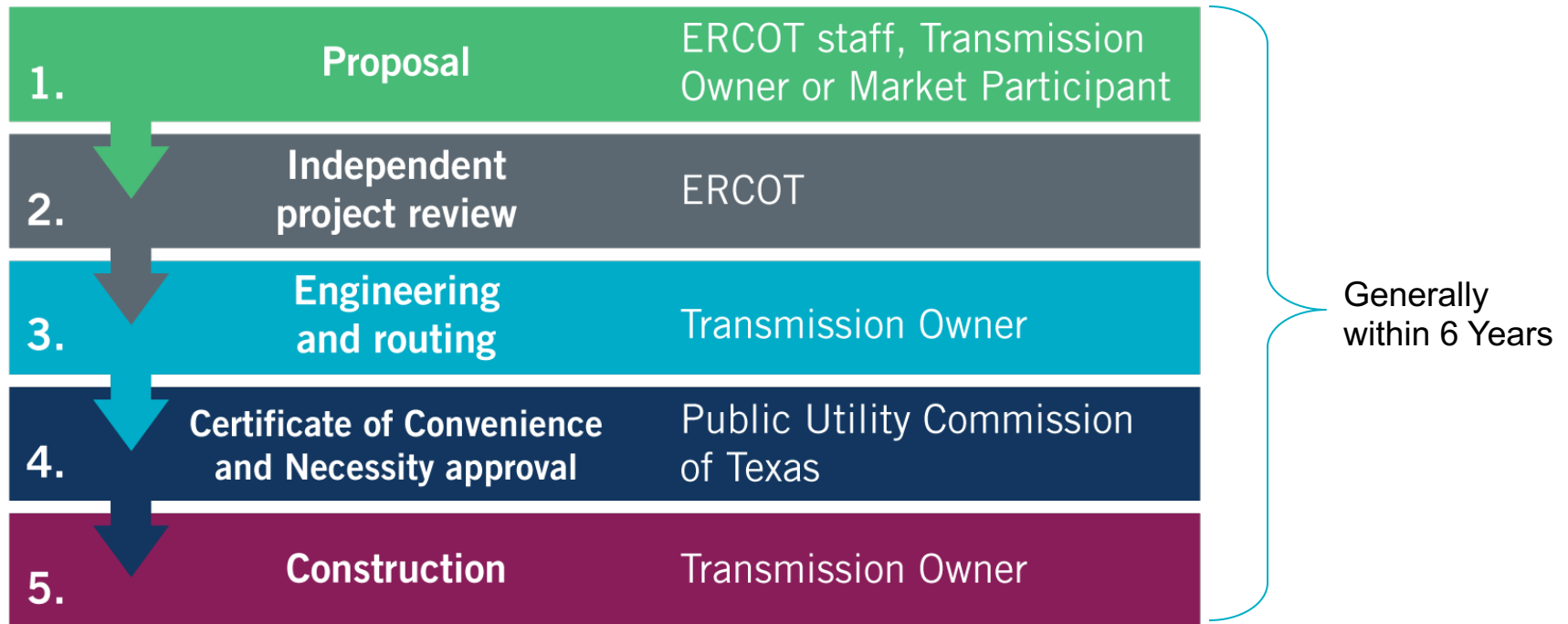
ERCOT works with transmission companies and stakeholders in the Regional Planning Group to assess these transmission needs and identify suitable project solutions.



Transmission Planning Criteria

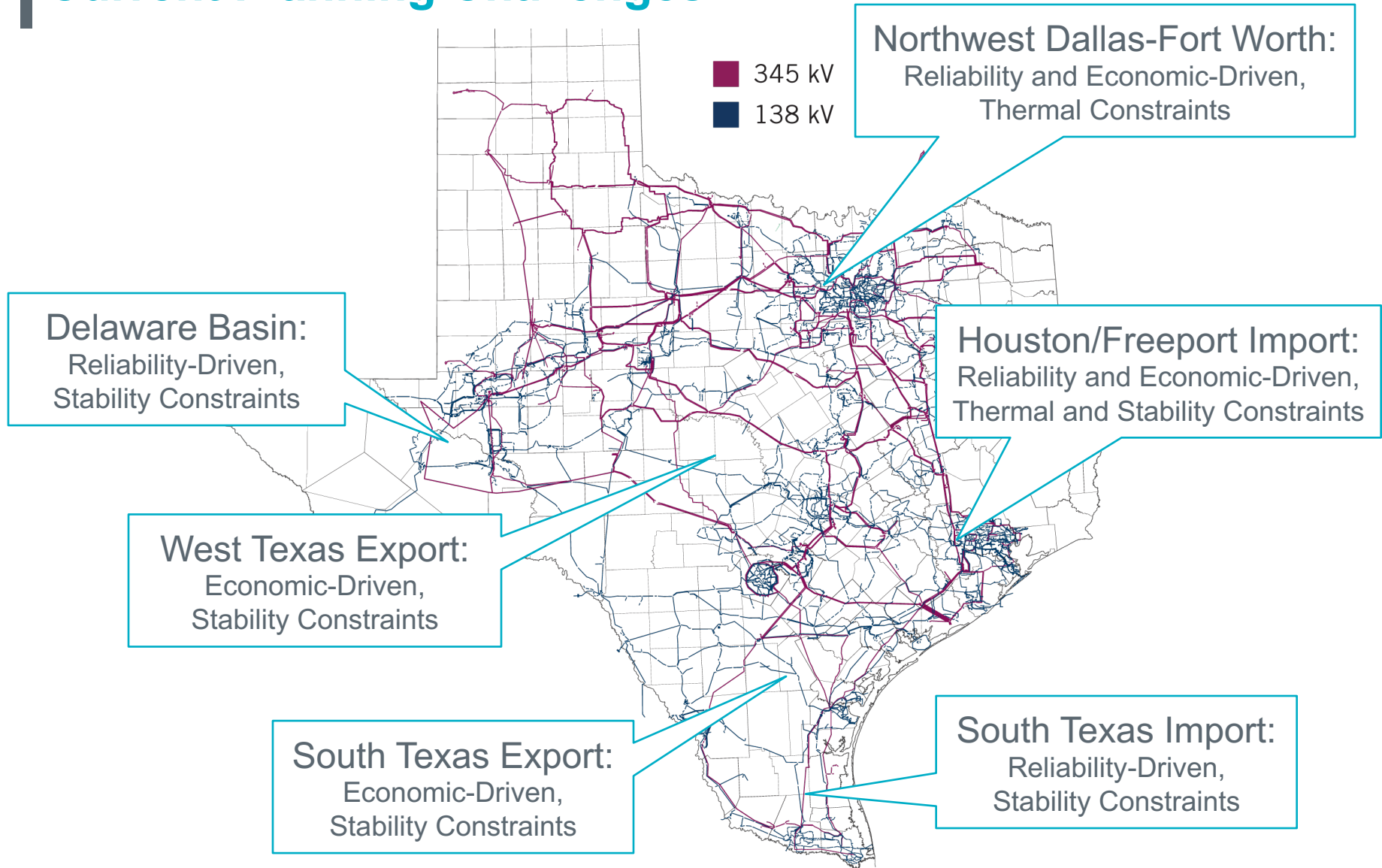
- Transmission projects are evaluated based on reliability need and economic benefit.
 - **Reliability Projects**
 - Projects that are required to reliably serve load (as per NERC standards and ERCOT protocols).
 - These projects are evaluated based on effectiveness and estimated cost.
 - **Economic Projects**
 - ERCOT currently evaluates projects based on production cost savings (fuel costs and other variable costs) as per Subst. Rule 25.101.
 - If expected annual production cost savings resulting from a project are greater than the incremental annual revenue requirements charged to consumers, the project meets the economic criteria.
- Both criteria reflect an inadequacy of the transmission system to deliver power from the generators to load.
 - Reliability projects resolve situations where there are no possible generation alternatives to reliably serve load.
 - Economic projects resolve situations where there are possible generation solutions, but only from higher-cost units.

Transmission Project Review Process



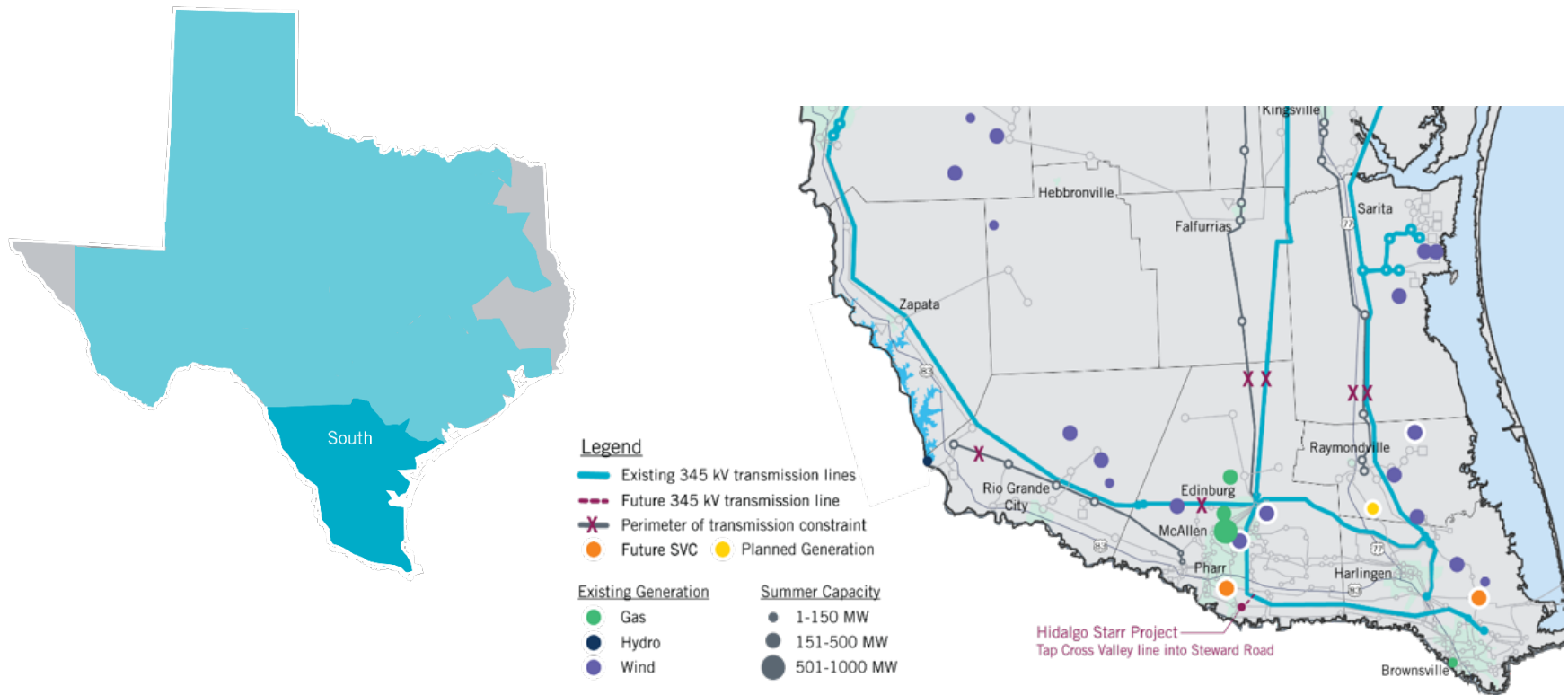
Annual studies are conducted to determine system needs within a six-year planning horizon. Longer-term studies are conducted every other year to ensure that near-term planning decisions are informed by long-term system trends.

Current Planning Challenges



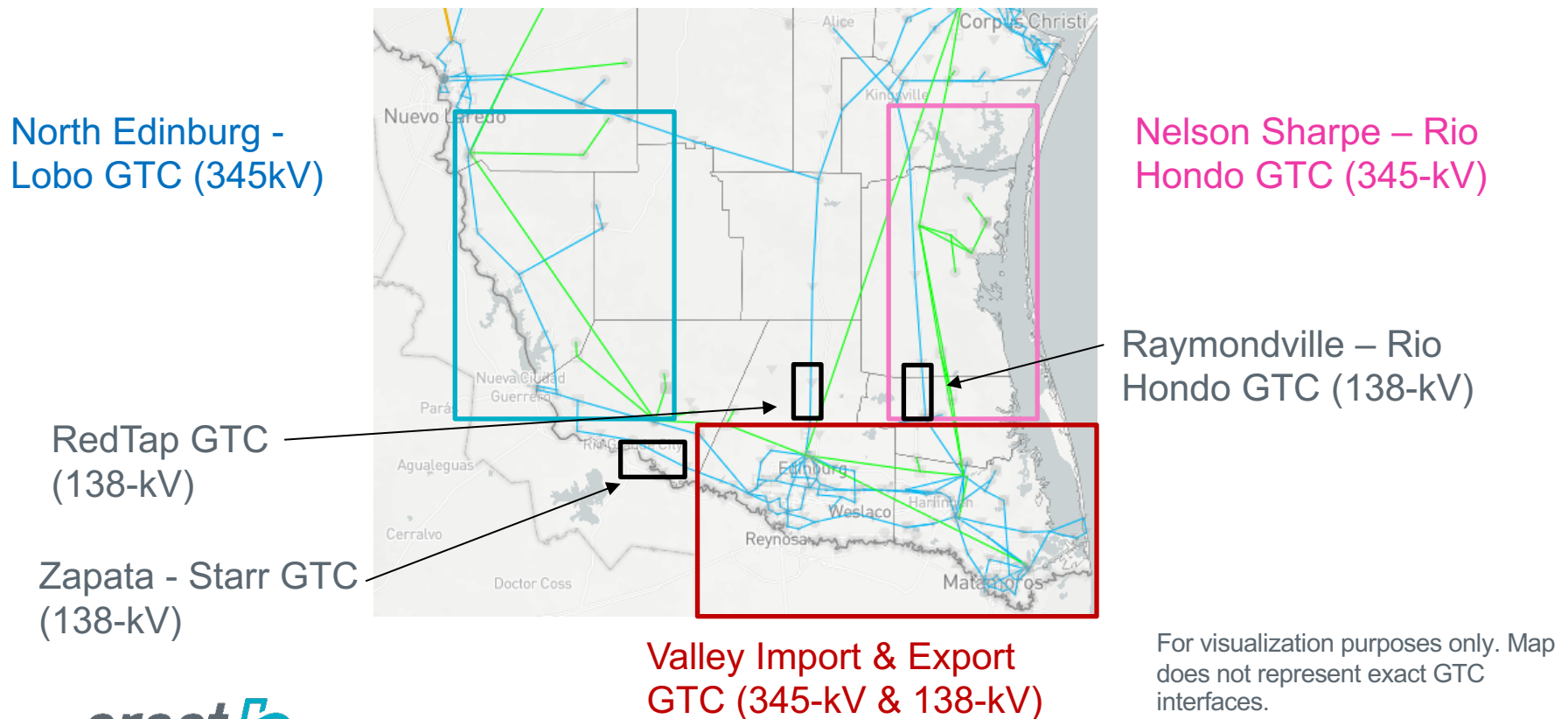
South Texas & the Lower Rio Grande Valley

- ERCOT continues to work closely with transmission providers in the Lower Rio Grande Valley to help keep up with the growing region's electricity needs.
- Although the region meets transmission planning reliability criteria, operational challenges are still a concern.



Import and Export Limitations in South Texas

- Multi-circuit transfer limits (often caused by complex grid stability issues) are modeled as “Generic Transmission Constraints.” Seven of the 16 ERCOT Generic Transmission Constraints are in South Texas and add to the complexity of reliably operating the grid.



Lower Rio Grande Valley Area

- ERCOT intends to work with the local transmission owners to complete a review of project options for the Valley by the end of 2021.
- This review will be informed by planning studies conducted for the Permian Basin Region:
 - Both regions are on the edge of the ERCOT system.
 - Both regions have unique operational challenges.
 - ERCOT has adapted some of its planning assumptions to account for the operational challenges in the Permian Basin. Some of these adaptations are appropriate for the ongoing studies of the Valley region.
- Transmission circuits serving the Valley region are also subject to the threat of tropical storms. Recently passed Senate Bill 1281 (87R) directs ERCOT “...to assess the grid’s reliability in extreme weather scenarios,” and to “...recommend transmission projects that may increase the grid’s reliability in extreme weather scenarios.”