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## **Transmission Development for Renewable Energy**

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# **Report on Existing and Potential Electric System Constraints and Needs**

**December 2015**

## Executive Summary

The annual Electric System Constraints and Needs report is provided by the Electric Reliability Council of Texas, Inc. (ERCOT) to identify and analyze existing and potential constraints in the transmission system that pose reliability concerns or may increase costs to the electric power market and, ultimately, to Texas consumers. This report satisfies the annual reporting requirements of Public Utility Regulatory Act (PURA) Section 39.155(b) and a portion of the requirements of Public Utility Commission Substantive Rules 25.362(i)(2)(I) and 25.505(c).

In 2015, the most significant constraint on the ERCOT System was related to the import of power into the Houston area from the north. From October 2014 through September 2015 this area has experienced over \$39 million in congestion rent. Congestion in this area has been high for several years. In addition to the observed congestion, reliability studies have identified possible overloads in the next several years on transmission lines along this path. As shown in Figure ES.1, the Coast weather zone, which is primarily comprised of the Houston area, is the only zone in the ERCOT System to see a net decrease in generation since 2004. This means that the area has required increasing amounts of power to be imported from elsewhere in the ERCOT System. ERCOT has reviewed and endorsed a reliability-driven project to increase the import capability into the Houston area. The project, primarily consisting of new 345 kV transmission lines, is expected to be in-service by the summer of 2018.

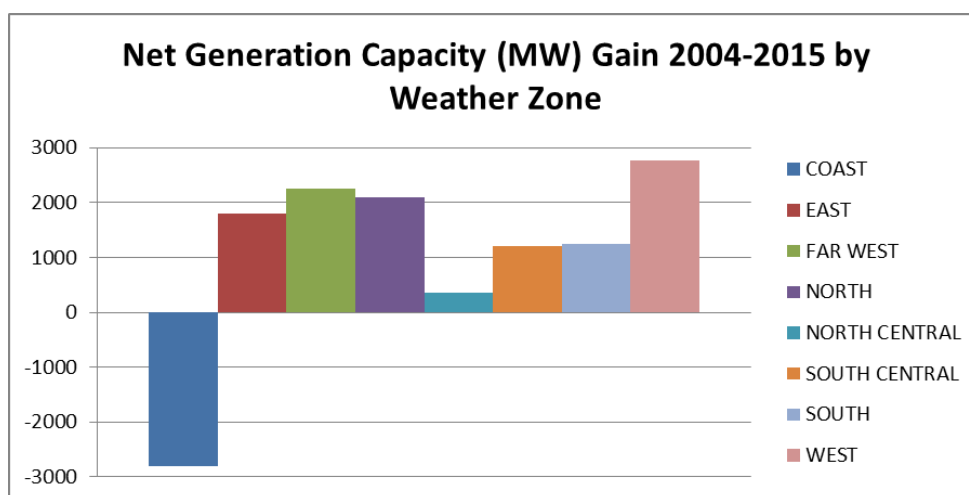


Figure ES.1: Net Change in Generation Capacity by Weather Zone (2004-2015)

The San Angelo area experienced high amounts of congestion in 2015 due to the outage of a transformer during an upgrade. This upgrade, which includes a new transformer, will improve the reliability of the system in the area moving forward.

Congestion due to oil- and gas-related activities in the Permian Basin in West Texas has been significantly reduced over the last several years due to the transmission improvements that have been implemented in the area. Permian Basin-related congestion accounted for only one of the top 15 constraints on the ERCOT System in 2015 compared to six in 2013 and three in 2014. Figure ES.2 shows the cost of transmission improvements (excluding Competitive Renewable Energy Zone projects) by weather zone in ERCOT since 2007. The Far West weather zone, which encompasses most of the Permian Basin's oil- and gas-related load, has seen a substantial increase in transmission investment over that time.

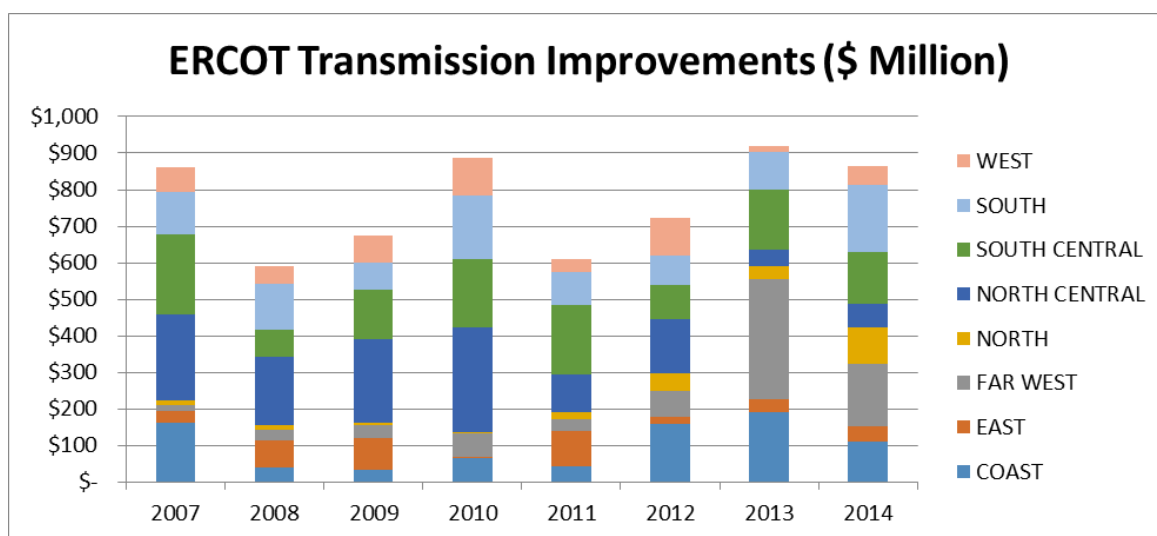


Figure ES.2: ERCOT (Non-CREZ) Transmission Improvements by Weather Zone and Year

In the Lower Rio Grande Valley (LRGV), a new 345 kV import line and the upgrade of the two existing 345 kV import lines are part of a project under construction to increase the overall import capability into the area by 2016. Additionally, a new 345 kV line that runs east-west across the LRGV is planned to meet reliability needs in and around the Brownsville area. ERCOT is currently evaluating the need for additional system improvements after 2016. This assessment is being driven by the recent announcement that one generation unit in the LRGV will be switched from

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