

## About Distributed Energy Resources (DERs) in ERCOT

### *Reliability Impacts and Recommended Changes*

In anticipation of the continued growth of Distributed Energy Resources (DERs), ERCOT is working with Transmission and Distribution Service Providers (TDSPs) and other stakeholders to develop processes related to the growing role of DERs in the ERCOT region.

ERCOT in March 2017 released a [report](#) highlighting potential future reliability challenges that could occur with a significant increase in DERs on the bulk electric system. While there is an upward trend of these resources in the ERCOT region, they currently do not pose an immediate reliability concern for the transmission grid.

As these resources grow, deployment of DERs with capacity greater than 1 MW could result in some reliability concerns, depending on their location and level of concentration on the grid. Currently, DERs are not compensated based on their location and therefore may not respond accordingly to transmission constraints. ERCOT believes localized pricing signals would support system reliability.

### What are DERs?

Characteristics of DERs:

- Generation, energy storage technology or a combination of the two
- Interconnected at or below 60 kV
- Operates in parallel with the distribution system



Currently, the ERCOT region has an estimated 900 megawatts (MW) of DERs in areas with retail competitive choice (as of Dec. 31, 2015) and more than 200 MW of DERs in areas that do not participate in the competitive retail market (municipally owned systems and cooperatives).

### Visibility into DERs for reliability

ERCOT seeks more visibility into these types of resources to help with its understanding of the potential impacts of DERs and how to prevent and address any reliability challenges.

To help with this visibility, ERCOT in 2017 will work with market participants to develop a standard approach for providing and collecting data to map current and future registered DER units to their appropriate transmission loads.

Associating DER resources with their appropriate transmission loads will improve situational awareness of DER activity for ERCOT grid operations and allow for stakeholder consideration of localized pricing signals to support future reliability.

## Operating concerns associated with DERs

Currently, the level of DER development in the ERCOT region does not pose reliability concerns. However, ERCOT has been evaluating the potential reliability impacts related to increasing DER activity.

A significant increase in DERs could result in more flow of energy from the distribution system into the grid. As higher levels of DERs begin to impact the power grid, it will become increasingly important for them to be able to respond to system needs.

The March 2017 report focuses on the reliability impacts that DER resources could pose to the operation of the ERCOT grid if current software, systems, regulations and market rules are not modified to help address the concerns.

Potential impacts are as follows:

- Inaccuracies in forecasting net load (system load excluding variable generation and DERs)
- A need to change reserve requirements to support added uncertainty
- Inaccuracies for key inputs used for operational studies and managing the electric system
- Reduced or limited reactive power, voltage control and dynamic response to faults
- Lack of coordination during system restoration

Adding more visibility into DER resources will not change who models and operates the distribution system. Distribution providers would continue to manage local integration of these resources.

## What are DER registration requirements?

Any generator greater than 1 MW that is connected at distribution voltage and injects into the grid is required to register with ERCOT. Backup generators that do not inject power into the grid are not required to register with ERCOT. The next step is to work with stakeholders to monitor the accumulation of clusters of unregistered (<1 MW) DER units.

As of March 2017, there were about 90 registered DER units in ERCOT. These units primarily include diesel generators, with some rooftop solar.

## Additional background on DER and ERCOT

During 2015, a special ERCOT stakeholder engagement group — the Distributed Resource Energy and Ancillaries Market, or DREAM, task force — explored many potential policy and technical issues associated with introducing DERs to the ERCOT competitive wholesale market.

A [concept paper](#) published in August 2015 laid out the potential framework for wholesale market participation by DERs, including the idea of enabling larger DERs to receive localized price signals. The paper also revealed a high level of reliability concerns resulting from a large deployment of DERs and the need to map these DER resources.