# Development of Energy Storage Resources and Distribution Generation Resources in ERCOT

ERCOT is modifying its systems to help address the grid's changing resource mix, including energy storage technologies and distribution level resources. The changes will allow these emerging technologies to expand their participation in ERCOT's wholesale electricity markets.

The grid operator plans to fully integrate battery Energy Storage Resources (ESRs) and Distribution Generation Resources (DGRs) into ERCOT's market design by 2024 (see Passport Program explainer document). In the meantime, developers and investors are already showing interest in these types of resources, and ERCOT is developing rules that can be used to accommodate ESRs and DGRs today and into the future.

## Energy Storage Resources (ESRs)

While ESRs can serve a variety of functions, they are typically limited duration resources that can push power onto the grid or take power off the grid to discharge later. As of October 2020, ERCOT has 163 MW of battery energy storage capacity at 16 locations throughout the ERCOT region.

More than 18,000 MW of new battery energy storage capacity is currently in the ERCOT interconnection queue. ERCOT is also receiving more interconnection requests for battery projects that are co-located with wind and solar facilities since batteries can complement wind and solar resources when needed.

ERCOT is working on several initiatives to incorporate battery energy storage into its systems. Highlights include:

- Developing operational and market design policies for ERCOT's current and future systems, including how to account for these types of resources in seasonal resource adequacy assessments.

- Reclassifying batteries as single model devices versus combination model devices. Currently, ERCOT's Energy Management System (EMS) identifies batteries as two separate devices to account for generation and load. When ERCOT's EMS is upgraded in 2024, batteries will be viewed as a single device to more accurately reflect resource availability on the system.

- Developing market rules that will allow DC-coupling for battery and wind/solar resources. DC-coupling allows resources to share an inverter, which is a device used to convert DC power to AC power before it is pushed onto the grid. This topic will be presented to the ERCOT Board of Directors for approval in December 2020.

## Distribution Generation Resources (DGRs)

Given the significant interest in distributed resources and the increased cost-effectiveness of energy storage, ERCOT is actively working with stakeholders to accommodate DGRs in its system models. DGRs are distribution level resources that are registered with and dispatched by ERCOT and compensated for energy and Ancillary Services. Historically, ERCOT has had limited visibility into resources on the distribution network, making it difficult to account for their availability on the system.

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Although DGRs are not limited to batteries, the majority of existing DGRs in ERCOT are batteries (84 MW at 10 locations). In October 2019, a moratorium was issued on the interconnection of new DGRs in ERCOT, with the exception of a group of DGR projects that were already underway and met certain criteria. This moratorium was designed to give the grid operator time to develop and implement the rules for the full integration of DGRs.

In August 2020, those new market rules were adopted to fully integrate DGRs into ERCOT systems. As soon as the necessary system changes are put in place to implement the new market rules, the DGR interconnection moratorium will be lifted, resulting in increased visibility for grid operators and allowing these resources to be more active participants in ERCOT's energy and Ancillary Services markets.

In the interim, developers are building their sites and registering with ERCOT as Settlement-Only Distributed Generation, which allows them to be compensated for the energy they produce. Once the moratorium is lifted, these resources can choose to follow the new market rules and re-register with ERCOT as DGRs to take advantage of both the energy and Ancillary Services markets.