

NREL Finds Value in Energy Storage to the Grid

Understanding the Drivers of Operational Value

The National Renewable Energy Laboratory (NREL) is dedicated to research, development, commercialization and deployment of renewable energy and energy efficiency technologies.



Situation

The NREL was preparing a report, “The Value of Energy Storage for Grid Applications,” as part of the US Department of Energy’s Demand Response and Energy Storage Integration Study. The report needed to address the issue that electricity storage technologies to date had limited deployment in the United States power grid, despite the multiple benefits they could provide.

The report addressed to what extent demand response and energy storage provides cost-effective benefits to the grid.

Solution

The organization chose PLEXOS to simulate the operation of a power system that co-optimizes provision of energy and ancillary services.

The project’s goal was to evaluate storage in a system that was large enough to represent a “real world” scenario yet small enough to allow reasonable run times given the large number of sensitivities it needed to analyze. It also had to be able to isolate changes associated with the different sensitivity cases.

Results

NREL successfully performed the simulations in a test system and evaluated the sensitivity of reserve prices to a variety of operational constraints, fuel prices and other factors. In addition, they examined the value of energy storage devices as the sum of their operational and capacity values.

Their findings were that, overall, the value of energy storage is largely dependent on it obtaining a capacity value, even if the device is providing higher-value reserve services.

A full copy of the report is available [here](#).

To learn more about PLEXOS and energy storage, visit: energyexemplar.com or contact us at info@energyexemplar.com.