



CASE STUDY

Real world simulation enables the National Renewable Energy Laboratory to uncover the value of energy storage to the United States power grid.

Using PLEXOS, the NREL was able to evaluate 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.

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 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.

Successfully performing the simulations using PLEXOS, the NREL found 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.

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