Duke Energy has a wide variety of energy storage projects around the nation. These projects have allowed the company to better understand how energy storage fits as grid modernization and distributed energy resources – like wind and solar – become a bigger part of the energy industry.

**Commercial Businesses**

**Texas**  
Duke Energy's Notrees Battery Storage Project is one of the largest battery installations in North America. It was developed in partnership with the Department of Energy and commissioned in late 2012. It is located at the Notrees Wind Power Project in West Texas. The 36-megawatt (MW) battery provides frequency regulation for the ERCOT market.

**Ohio**  
Duke Energy installed a 2-MW battery storage system designed to regulate frequency and increase stability within the power grid. The system, commissioned in 2015, is located at the retired W.C. Beckjord Station in New Richmond, Ohio. The project uses Toshiba's lithium-ion battery system, with 2-MW output and 0.8-megawatt-hour capacity.

Duke Energy, LG Chem and Greensmith teamed up for a 2-MW storage project that assists in regulating electric grid frequency for PJM, the transmission organization that powers much of the eastern United States. The system is at the W.C. Beckjord Station in New Richmond, Ohio. It was commissioned in late 2015.

**Regulated Businesses**

**North Carolina**  
The Rankin Battery Storage Project, located at the Rankin Substation in Gaston County, was commissioned in early 2012. The battery is linked with a commercial solar installation located 3 miles from the substation. The Rankin Battery Storage Project was named Project of the Year at the 2013 DistribuTECH Conference and Exhibition for integrating renewable energy into the grid. The site was recommissioned in 2016 as a hybrid energy storage system using ultracapacitors from Maxwell Technologies.
North Carolina (continued)

The McAlpine Substation Energy Storage and Microgrid Project in Charlotte was commissioned in late 2012. The 200-kW BYD lithium iron phosphate battery is interconnected with a 50-kW solar facility. The battery provides energy shifting and solar smoothing applications. This project is part of a microgrid that is being used to maintain power to a fire station during a grid outage event.

The Mt. Holly Microgrid Project is located in Gaston County at a Duke Energy research center. In 2017, this project will include a Saft 650-kW lithium-ion battery and a 250-kW Alevo lithium-ion battery. The battery storage is integrated into a microgrid, with more than 115 kW of solar panels. In addition, residential energy storage systems from Tesla and Enphase are being tested as “behind-the-meter” battery projects at the center.

The Mt. Sterling Microgrid in the Great Smokey Mountains National Park in Hayward County will include the first use of a zinc-air battery as a utility asset in the nation. The 95-kilowatt-hour (kWh) Fluidic battery will combine with 10 kW of solar to form an off-grid microgrid to serve a communications tower on top of the mountain. The project should be commissioned in 2017.

Indiana

The Clay Terrace Project combines a solar canopy, battery storage and electric vehicle (EV) charging at a shopping mall in Carmel, Ind. The project uses Toshiba lithium titanate technology. The battery’s output is 75 kW/48 kWh. It was commissioned in 2013.

Other Investments

Florida

A $1 million grant from Duke Energy to the University of South Florida St. Petersburg helped fund a solar project on top of one of the university’s parking garages that also includes 50-kW DC electric vehicle charging. A 200-kW/400-kWh battery from Tesla is used to help manage the solar output and the EV charging to optimize local peak demand and minimize grid impacts.

Indiana

Duke Energy is funding $1.5 million in research at the Battery Innovation Center to study how battery storage can maximize renewable power sources, such as private solar panels and small wind turbines, and integrate them into the electric grid. Duke Energy and the Indiana Office of Utility Consumer Counselor (OUCC) are partnering with the Battery Innovation Center to advance energy storage research, particularly as it applies to homes and communities.