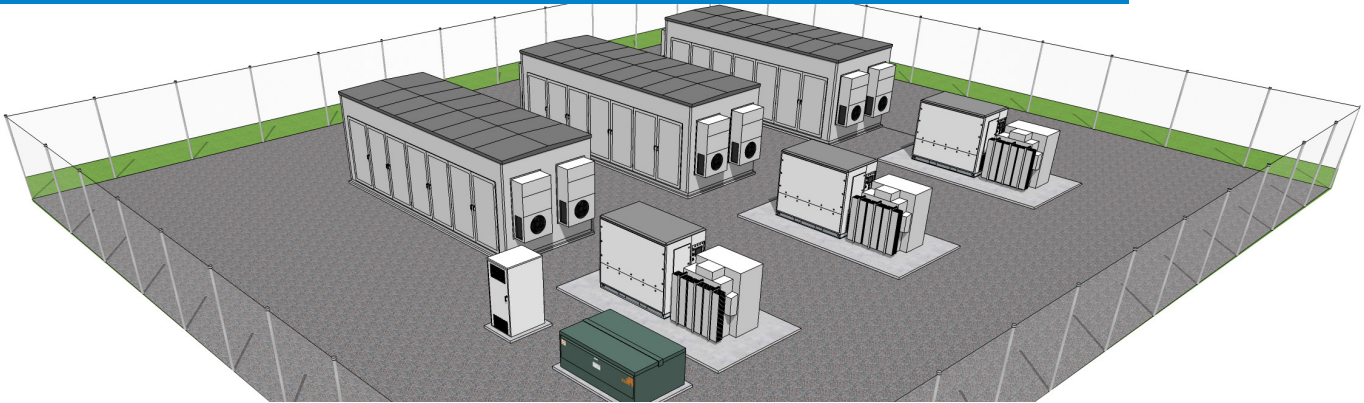


PROJECT PROFILE

Atterbury - 5MW / 5MWh ESS + 2MW PV

Nabb - 5MW / 5MWh ESS

**Outcomes:**

1. Improve customer reliability and ensure power supply to mission critical military operations
2. Access the fast frequency regulation market
3. Integrate with distribution operations to provide grid support services as needed

Challenge

As part of a commitment to advance cleaner energy for its customers and provide a stable and resilient grid, Duke Energy commissioned a storage + solar system to operate as a microgrid at the Indiana National Guard's Camp Atterbury training operation center in Johnson County. A separate battery storage project at its Nabb substation in Clark County was also commissioned.

Both installations will dispatch energy during times of peak demand, provide frequency regulation services to the Midcontinent Independent System Operator (MISO), and provide energy security and back-up power. Providing backup power to Camp Atterbury is especially paramount, so the camp can continue its mission-critical operations in the unlikely event of a large grid outage.

Doosan GridTech performed as the EPC contractor and systems integrator for both the Camp Atterbury and Nabb substation projects. The systems are expected to come online in late 2019.

Doosan GridTech Solution

The self-contained Atterbury microgrid will include a 5MW BESS that is AC-coupled to the 2MW-DC photovoltaic solar installation. In the unlikely event of a major grid failure, the microgrid would continue to meet customer power needs. The microgrid would interconnect to Duke Energy Indiana's 12.47 kV distribution substation located at the national guard base.

At the Nabb substation, a similar 5 MW battery will be installed near and interconnect with an existing 34.5 kV distribution substation. As with Atterbury, it is designed to provide grid benefits during normal operations as well as back-up customer power in the event of an outage.

It is anticipated that both systems will provide services to MISO, in addition to improving system and customer reliability. Doosan GridTech worked very closely with Duke Energy and the battery vendor Samsung SDI to right-size the battery to account for the demanding duty cycle associated with such services. Through this collaborative effort, Doosan GridTech developed a battery storage system that it guarantees will meet Duke Energy's needs over a 12-year life.

Doosan's battery energy storage control system, the DG-Intelligent Controller®, will be embedded in both systems to manage the transition between the grid and island, and control the DERs to maximize the uptime of the island.