

Navy Ratchets Up Resilience Through Agency/Utility Collaboration

Collaboration among federal agencies and utility companies is increasing energy reliability, resilience, and efficiency for the government and general public. One such effort is the ongoing collaboration between the Naval Construction Battalion Center (NCBC) in Gulfport, Mississippi, and Mississippi Power Company (MPC). By integrating a 15-acre solar photovoltaic (PV) array, battery storage, and backup generation with an innovative microgrid, the Navy and utility teams are helping ensure mission readiness at NCBC while increasing renewable energy generation on the grid in MPC's service area.

A Hub for Mission Readiness and Recovery

NCBC Gulfport is the base of operations for the Atlantic Fleet Seabees and supports the operation and mobilization of Naval Construction Force units. Located on the Gulf Coast



Figure 1. Solar array at the Naval Construction Battalion Center in Gulfport, Mississippi. *Photo courtesy of the U.S. Navy.*

approximately 80 miles east of New Orleans, NCBC was a hub of response activity after Hurricanes Katrina and Rita in 2005. It continues to be a critical disaster recovery base, as illustrated by the Seabees' deployment to the Florida Panhandle in October 2018 after Hurricane Michael made landfall. The NCBC/MPC resilience effort will allow the base to more effectively deploy such recovery activities in the event of a grid outage.

Project Phase 1: Deploy Solar

In Phase 1 of the project in early 2016, the Navy signed an enhanced use lease agreement with MPC to build a solar array on brownfield land at NCBC Gulfport (Figure 1). Solar developer Hannah Solar installed nearly 13,000 solar PV modules, totaling 3.5 megawatts AC—enough to power 450 homes. Through a 25-year power purchase agreement, WGL Energy, which owns and operates the solar array, sells the solar-generated electricity to MPC for distribution to

its customers. The solar facility began sending electrons to the grid in early 2017 (Figure 2).

Project Phase 2: Integrate Microgrid

Under the lease agreement, NCBC receives electrical infrastructure improvements in exchange for providing the land for the solar farm. This is taking shape in Phase 2 of the project, in which MPC is working with Southern Company affiliate PowerSecure to design, manufacture, and install the microgrid system. It will incorporate approximately 1 megawatt of solar power from the new array, lithium-ion battery storage, and a state-of-the-art U.S. Environmental Protection Agency Tier 4 diesel generator system to provide around-the-clock power backup for many of the most important functional areas supporting the Seabees' mission, for no less than 48 hours before refueling.

“NCBC Gulfport plays a critical role in keeping our Seabees trained and deployable at a moment’s notice. This project, coupled with our existing energy programs, will increase the energy security of the installation, which will allow us to operate more effectively during times of crisis.”

—Capt. Cheryl Hansen, NCBC Gulfport

Although the area served by the microgrid comprises just 17% of the base’s total land area, it accounts for more than one-third of NCBC’s overall electrical load.

Targeted for completion in late 2020, the microgrid will use advanced controls to optimize solar and battery

storage use—minimizing the use of costly diesel fuel, eliminating the need for multiple less-efficient building backup generators, and reducing the base’s carbon footprint.

Scalable for the Future

The system is also designed with future expansion in mind: Its modular configuration will allow for up to a tripling of capacity, which could support the entire load of NCBC Gulfport during a disaster. The microgrid will be able to support not only additional batteries and backup generators, but also more solar power from the WGL-owned array and from two Navy-owned rooftop solar PV systems already in operation on the base. Other generation assets can be integrated as they become available, making this microgrid system a truly adaptable model for Navy facilities around the globe.

A Model for Resilience Planning

This project exemplifies the concepts of enhanced energy resilience and mission assurance that can be accomplished

through long-standing collaboration and dedication. Deploying a microgrid that optimizes solar PV, battery storage, and backup generation bolsters the base’s ability to carry out its essential mission. Beyond this, future resilience projects at other Navy sites will be able to refer to the standards and plans being developed in Gulfport.

Learn More

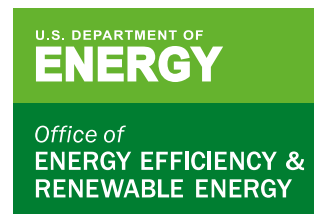
The U.S. Department of Energy’s Federal Energy Management Program provides information about how federal agencies can work with their serving utilities to execute energy projects, including through utility energy service contracts (UESCs), at energy.gov/eere/femp/utility-energy-service-contracts-federal-agencies.

To learn about the Federal Utility Partnership Working Group (FUPWG), which establishes partnerships and facilitates communications among federal agencies, utilities, and energy service companies, visit energy.gov/eere/femp/federal-utility-partnership-working-group.

For questions about UESC technical assistance, contact Tracy Niro at 202-431-7601 or Tracy.Niro@ee.doe.gov. ■



Figure 2. The ribbon-cutting ceremony for NCBC Gulfport’s 13,000-module solar facility, which began sending electrons to the grid in early 2017. *Photo courtesy of Mississippi Power Company.*



For more information, visit:
energy.gov/eere/femp