



**AMERESCO**

## UNITED STATES MARINE CORPS RECRUIT DEPOT COMPREHENSIVE ENERGY RESILIENCY PROJECT

The United States Marine Corps Recruit Depot (MCRD) on Parris Island in South Carolina tapped energy company Ameresco in 2015 for a comprehensive energy infrastructure project to optimize energy resiliency. The 8,095-acre MCRD Parris Island campus trains more than 20,000 recruits annually and its operations are mission-critical for national security, Ameresco said.

Financed by an energy savings performance contract, Ameresco deployed combined heat and power (CHP) and solar photovoltaic generation, installed an advanced battery energy storage system and automated microgrid control system, and implemented energy conservation measures to optimize efficiency and reduce reliance on the main utility grid.

To secure the energy savings performance contract to cover the cost of the \$91 million project, Ameresco led the application process and worked with Parris Island officials as well as their financier. Ameresco's lead engineer organized multiple site visits and worked through several question-and-answer rounds to secure

approval of the contract, and to brief its progress during implementation. This approach enabled the project to move forward in a budget-neutral manner, Ameresco said. Parris Island is also in a hurricane prone area of South Carolina so the engineering team had to account for extreme weather in their design.

After six months of evaluation, design, and procurement, the project team broke ground in December 2016. The project's microgrid control system (MCS) can monitor and coordinate the dispatch of electricity across the campus from the CHP plant, solar PV assets, battery energy storage system, and plant back-up generators. The MCS allows for nearly instant separation from utility power so that MCRD Parris Island can literally "island" itself from the utility grid during an extreme weather event or service disruption, Ameresco said. This was demonstrated during a live test where the customer "flipped the switch," disconnecting the site from utility power. The site seamlessly transitioned to its own solar and CHP systems, augmented by the battery, according to the company. These resources were re-synchronized and connected back to the utility at the

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### WHAT THE JUDGES SAID...



The project successfully provided sustainability benefits and mission continuity at a critical training location. This is clearly the model that should be followed in the future.”

end of the test with no effects on the facility occupants.

Ameresco replaced the existing end-of-life steam plant with a fully automated multi-fueled CHP plant capable of producing 3.5 MW of electricity in addition to the site’s full steam requirements. Solar PV arrays added 6.7 MW of onsite generation capacity, bringing the site’s overall capacity to more than 10 MW. A 4-MW (8.1MWh) lithium-ion battery energy storage system captures excess PV energy generation – more than 1,120,000 kWh – and stores this electricity for later use. An automated MCS capable of fast-load shedding

distributes energy across the campus. In addition, Ameresco retrofitted more than 29,000 lighting fixtures with LEDs, upgraded aging chillers, deployed new HVAC control schemes, and updated the commercial laundry system. These measures ensure an always-on power supply and reduce 37,165 metric tons of CO<sub>2</sub>.

MCRD Parris Island now has more than 10 MW of onsite renewable energy and will save \$6.9 million annually in operations and utility costs. Ameresco reported that there has been a 75% reduction in energy demand and a 25% reduction in water consumption on campus. 🌱

