



## Project Highlight

# U.S. Marine Corps Recruit Depot Parris Island, SC

AMERESCO 

## Comprehensive Resiliency Project Assures Continuity of Mission-Critical Operations at MCRD Parris Island

### Technology Types:

Microgrid Controls | Battery Storage System |  
Combined Heat & Power | Renewable Energy Systems |  
Boiler Plant Improvements | Chiller Improvements |  
Energy Management Controls | Hot Water/Steam  
Distribution Systems | HVAC | Lighting Upgrades  
and Controls | Water System Upgrades

### Facility Size

**3.9M** square feet  
(over 8,095 acres)

### ESPC Energy Project Size

**\$91.1M**

### On-Site Energy Generation

**10** MW (including 6.7 MW Solar PV Capacity  
and 3.5 MW of CHP Capacity)

### Annual Utility Cost Savings

**\$6.9M**



### Summary

In 2015, the U.S. Marine Corps Recruit Depot (MCRD) Parris Island selected Ameresco to complete a comprehensive energy project with the overarching goal of modernizing the infrastructure and enhancing the resiliency of the installation. The depot is responsible for training more than 20,000 recruits annually, playing an integral role in the readiness of the USMC to deploy troops globally at a moment's notice.

This \$91M energy savings performance contract (ESPC) has reduced lifecycle energy and water costs across 120 facilities and delivered energy security through over 10MW of onsite renewable energy production. As a result, Parris Island will save \$6.9M annually in utility costs, reduce utility energy demand by 75% and water consumption by 25% on campus.



## Solution

Ameresco deployed combined heat and power (CHP) and solar photovoltaic (PV) generation assets, installed an advanced battery energy storage system and automated microgrid controls, and implemented a variety of energy conservation measures to optimize efficiency and reduce reliance on the main utility grid.

The project was designed to enhance the site's resilience, giving the installation the capacity to sustain its critical training operations of the 20,000 annual recruits when the local grid goes down.

Financed by a Department of Energy ESPC, Ameresco developed and implemented this project with the

support of the NAVFAC Engineering and Expeditionary Warfare Center (EXWC). As a third-party financed contract vehicle, the ESPC required no upfront capital from MCRD Parris Island. Annual energy and water cost savings generated by the improvements over the ESPC's performance period will repay the third-party financing that funded project implementation.

In addition to designing, engineering, and constructing, Ameresco is responsible for the operation and maintenance (O&M) of the project's energy assets for the duration of the 22-year performance period.

**Energy and Water Efficiency:** 29,000 LED lighting upgrades; improved building controls; heating, ventilation and air conditioning improvements; chillers, cooling towers, water fixture, commercial laundry, and pool system upgrades; and thermal insulation and steam traps help reduce the Depot's energy footprint.

**On-site Energy Generation - Power Plant and Solar PV:** End-of-life steam plant replaced with a new fully automated, natural gas fueled CHP plant capable of producing 3.5 MW of electricity. Solar PV installations consist of a 1.5 MW PV carport system that provides 500+ sheltered and shaded parking spaces, and a 4 MW ground mount system – totalling nearly 20,000 solar modules across the campus.

**Energy Storage Systems:** 4MW/8.1MWh lithium-ion Battery Energy Storage System (BESS) – the equivalent to 2,200,000 AA batteries – has capacity to store over 1,120,000 kWh of annual excess, on-site PV generation.

**Microgrid Control System:** High speed, intelligent microgrid capable of fast load shedding, provides dispatch of generators, BESS, and PV to optimize both on and off grid operation. It instantly adapts to multiple contingencies, including communications, generation, and utility failures and is secured against unauthorized access.



“This ESPC project is probably the most comprehensive ESPC ever entered into by the Navy, involving 121 buildings (3.1 million square feet total) and 20 energy conservation measures (ECMs). This will result in MCRD Parris Island reducing their energy consumption by 384,962 million BTUs (79%) and water consumption by 74.6 million gallons (27%) annually. I think the team at Parris Island, with this ESPC, may have just redefined a ‘deep energy retrofit!’”

Daniel T. Magro  
NAVFAC EXWC ESPC Program Lead



## Benefits

Combining the strengths of new on-site distributed generation, cogeneration, energy storage, and high-speed, secure microgrid controls, Ameresco's solution delivers a layered defence against threats to the power supply, and sustain training operations during periods of uncertain supply. This state-of-the-art infrastructure will provide Parris Island the capability to “island” and maintain reliable operations in the event of loss of utility services.

Paired with investments in efficiency and infrastructure to extend the endurance of critical generation, and supported with O&M services, Ameresco's comprehensive solution delivers energy efficiency and security supporting the Parris Island's mission for decades to come. This comprehensive resiliency project results in:

- 75% reduction in utility energy demand and 25% reduction in campus water consumption
- \$6.9 million annual savings in utility costs with optimized utility consumption across Depot facilities
- 10+ MW onsite renewable energy generation for reduced utility costs when the grid is healthy, and reliable steam and power to the mission when the grid is down
- Maximize onsite production, stabilize output and support Depot grid during contingencies with BESS
- Sustain mission-critical activities with automated generation dispatch via microgrid controls
- Combined annual carbon reduction of 37,165 metric tons of CO<sub>2</sub>

Ameresco's team of energy experts can assist you in identifying the solution that fits your needs.

For more information about Ameresco and our full-range of energy efficiency and renewable energy solutions, please call **1-866-AMERESCO** or visit **ameresco.com**.

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