RWE

National Naval Medical Center

Energy Savings Performance Contract (ESPC)

The National Naval Medical Center (NNMC) is designated by the U.S. Naval Command as a "mission critical" facility. The NNMC's Central Steam Plant and Chilled Water Plant, which are essential in maintaining the successful day-to-day operations of the entire facility, required significant system upgrades. Additionally, the Bethesda, MD facility was rapidly expanding and its aging utility infrastructure was in need of equipment and systems improvements.

The Navy was interested in comprehensive approaches to improve overall lighting efficiency as well as the system reliability of both NNMC central plants, under their current energy requirements and the NNMC's future energy load growth scenarios. There was a strong desire to upgrade the plant's outdated control system and also replace several large (700 GPM - 1,050 GPM) condenser water pumps serving the chilled water system.

PROJECT DATA

LOCATION

Bethesda, MD

CONSTRUCTION DATES

June 2010 to August 2012

CAPITAL COSTS

$4,512,733

ANNUAL SAVINGS

Energy Savings: $551,168
Non-Energy Savings: $8,092
Total Savings: $559,260

ENVIRONMENTAL BENEFITS

3,036 metric tons of harmful greenhouse gas (GHG) emissions reduced annually.

Equivalent to:

- Preserving 30 acres of forest from deforestation* or
- Conserving 7,060 barrels of oil*

*Sources:

- Leonardo Academy's Cleaner & Greener℠ Emissions Reduction Calculator: http://www.cleanerandgreener.org/resources/pollutioncalculator.html
- U.S. Environmental Protection Agency, Greenhouse Gas Equivalencies Calculator: http://www.epa.gov/cleanenergy/energy-resources/calculator.html

RWE

RWE Clean Energy addressed the challenge by developing a comprehensive project that met the Navy's long-term objectives of providing energyefficient, reliable and controlled comfort to the occupants, all within the secure NNMC campus environment.

RWE Clean Energy and the Navy agreed that the project would be implemented utilizing the Department of Defense Energy Savings Performance Contract (Contract No. DACA87-97-D-0072). RWE Clean Energy provided a fixed price ESPC project with guaranteed financing terms for implementing all of the energy conservation measures (ECMs) specified within Buildings #16 (Steam Plant), #252 (Chilled Water Plant) and the NNMC's campus-wide high pressure steam distribution system.

Lighting system upgrades focused on replacing aging inefficient high-bay HID fixtures with energy-efficient T-5 linear fluorescent fixtures while enhancing the light quality and color rendering throughout.

This ESPC project is highlighted by the replacement of three (3) existing condenser water pumps and motors (rated 10,500 GPM, 10,500 GPM, and 7,000 GPM) with three (3) new 9,000 GPM pumps and the associated variable speed drives (VSDs).

A state-of-the-art control system that automatically regulates all major chilled water system components, both new and existing, along with new control valves were installed to allow for proper balancing and control of condenser flows through the chillers.

In addition, 180 steam traps were replaced throughout the high-pressure steam distribution system to improve reliability, reduce condensate line blow-thru, and lower operation and maintenance costs.

The reliability of the plant was significantly increased while achieving a large reduction of the central plant's energy costs.

PROJECT DATA

ENERGY CONSERVATION MEASURES/IMPROVEMENTS (ECMs)

Chilled water plant systems upgrade
- Installed three 9,000 gallons per minute pumps
- Installed associated variable speed drives
- Installed control system and valves

High pressure steam system upgrades
- 180 Steam Trap rep

Lighting System and controls upgrade
- T-5 High Bay lamps and relfectors

Energy Management Control System

RWE Clean Energy
100 Summit Lake Drive Valhalla, NY 10595 914.286.7000