



Contract Details

Contract Type:

Energy Savings Performance Contract;
Guaranteed Savings

Technology Type:

Lighting and lighting controls improvements; boiler decentralization; building automated system (BAS)/direct digital control (DDC) system upgrades; geothermal heat pumps

Facility:

901,807 million square feet

Energy Savings:

\$1.6 million annually

Capital Project Investment:

\$26.8 Million

Summary

In 2009, Ameresco was awarded an Energy Savings Performance Contract (ESPC) task order to design and implement multiple energy conservation measures for NASA at the Wallops Flight Facility on Wallops Island, Virginia. In 2012, NASA modified their existing ESPC to include an additional phase of work to build upon the successful implementation of the first phase of the project. Combined, these improvements have reduced energy consumption at the Facility by 35 percent.



NASA Wallops Flight Facility

Customer Benefits

NASA's Wallops Flight Facility, located on Virginia's Eastern Shore, was established in 1945 by the National Advisory Committee for Aeronautics, as a center for aeronautic research. The mission critical facility requires extensive planning for any equipment, building, or utility outages. In collaboration with NASA, Ameresco implemented the energy savings project around critical mission requirements (shuttle and rocket launches), providing temporary heating and cooling to minimize disruptions to critical facilities during construction. The project produced comprehensive site-wide energy efficiency upgrades with the installation of improved lighting systems and lighting controls, boiler decentralization, upgrades to the BAS/DDC system, and geothermal heat pumps.

Accolades

"The energy savings performance contract with Ameresco brought major improvements to Wallops Flight Facility... This effort will single-handedly satisfy Wallops' federal energy reduction requirements beyond the horizon of all existing legislation and it contributes significantly to help to refresh aging infrastructure."

*- Phillip Smith
Energy Manager
Wallops Flight Facility*

Environmental Benefits

Through NASA's partnership with Ameresco, the Wallops Flight Facility is expected to save the equivalent of 9,738 metric tons of CO₂ per year. The environmental benefit from this carbon reduction is equal to, approximately:

- ▶ 2,076 acres of pine forest absorbing carbon
- ▶ 1,910 cars taken off the road for one year
- ▶ 1,214 households powered for one year

Services Provided

The primary energy conservation measures (ECMs) included in the first phase of the project were the improvement of lighting systems, boiler decentralization, and upgrades to the building automated system (BAS)/direct digital control (DDC) system.

The existing lighting fixtures were retrofitted with high-efficiency lamps, ballasts, and reflectors. In areas that were overlit, Ameresco de-lamped selected fixtures and in limited areas, new lighting controls were installed in order to reduce lighting use during periods when spaces are unoccupied. Approximately 340 outdoor fixtures were retrofitted with newer induction lighting technology, which is extremely efficient and nearly maintenance-free, and provides excellent color perception.

The boiler and steam distribution system at Wallops Island was used to provide heating steam to 25 buildings. Efficiency of this system suffered



About [Customer Name]

The research and responsibilities of NASA's Wallops Flight Facility are centered around the philosophy of providing fast, low cost, highly flexible, and safe response to meet the needs of the United States' aerospace technology interests and science research. The 1,000 full-time Civil Service and contractor NASA Wallops employees act as a team to accomplish their mission in the spirit of this philosophy.

Learn more at www.nasa.gov.

About Ameresco

Ameresco, Inc. (NYSE:AMRC) is one of the leading energy efficiency and renewable energy services providers. Our energy experts deliver long-term customer value, environmental stewardship, and sustainability through energy efficiency services, alternative energy, supply management, and innovative facility renewal all with practical financial solutions. Ameresco and its predecessors have constructed billions in projects throughout North America.

For more information about Ameresco and our full-range of energy efficiency and renewable energy solutions, please visit www.ameresco.com.



Propane Distribution Plant

Services Provided (cont.)

from numerous sources, as well as from inherent operation losses that required the boilers to operate year-round. The system was expensive to operate and maintain and the existing distribution system did not comply with current pressure vessel codes. As a solution, Ameresco installed high-efficiency and low-maintenance hot water boilers at the facilities currently served by the existing central boiler plant and steam distribution system. The boilers are now fueled with a new propane distribution system and a centralized storage facility. Propane offers increased savings, lower maintenance cost, fewer environmental concerns, higher efficiency and less-costly fuel.

The existing BAS and DDC systems were being underutilized and did not extend to every building at the facility. As a solution, Ameresco improved the existing capability of the current BAS system and extended its capacity to serve additional buildings on site. The new control of the facility allowed for several different types of ECMs to be implemented. These ECMs included unoccupied thermostat setback, unoccupied outdoor air elimination, equipment scheduling and demand control ventilation. Several of these ECMs take advantage of the savings that can be achieved during an unoccupied mode. For example, when the unoccupied period begins, the space temperature setpoints change to 80°F during the cooling season and to 60/55°F during the heating season

requiring less heating or cooling of the space. Warm-up and cool-down sequences were also programmed into the ECMS. This allows the AHUs to quickly warm-up or cool-down, depending on the season, to the occupied space temperature setpoints without using outdoor air. Control ventilation uses carbon dioxide sensors that sample the return air to determine the appropriate level of outdoor-air ventilation required to match the actual occupancy of the space. Using these sensors allows the occupants to take advantage of ventilation provided by natural infiltration and ex-filtration.

During the second phase of the ESPC, Ameresco installed approximately 500 tons of geothermal heat pumps at facilities at the Visitor's Center and the Wallops Island Launch Range. Implementation of this measure provides a valuable renewable energy resource and reduces extensive maintenance requirements for the existing HVAC equipment due to the corrosive environment. Additionally, a 300-ton packaged air-cooled chiller was installed on the main base to complete the decentralization of the Building N-159 Chiller Plant and the Building E-106 control center had a 75-ton air-cooled chiller installed to provide dedicated backup cooling to this mission critical facility.



Drilling of Geothermal Wells