Lady Liberty

A Case Study: Lighting Upgrade Shines On While Saving Energy

The nearly 120 year-old Statue of Liberty—one of America's most enduring and heart-warming monuments—and the Ellis Island Reception Center in New York Harbor have themselves begun new energy-efficient lives as a result of energy-related upgrades. Encouraged by U.S. Department of Energy (DOE) officials and the National Park Service, the Superintendent of the Monument pursued reduction of the site's $1 million annual electricity bill through the installation of more energy-efficient lighting and HVAC equipment. A request for proposal ultimately led to energy service company Sempra Energy Solutions (with offices near Albany, New York) taking on the job of upgrading the monuments' lighting and HVAC systems. Following a detailed audit of the facility space, the job went forward according to an energy savings performance contract, which guaranteed that the cost of the project would be paid for out of the utility bill savings resulting from the successful upgrade.

In all, over 4,000 lighting fixtures were upgraded or replaced within the museum and surrounding buildings, which cover approximately 350,000 square feet on Liberty and Ellis Islands. Energy-guzzling incandescent bulbs in the museum track lights were replaced with halogen floodlights and outdated fluorescent lamps in office areas were replaced with more energy-efficient T8 fluorescent lamps and electronic ballasts. Wall sconces and incandescent globe fixtures were equipped with compact fluorescent lamps to further save energy. Because the new lighting system generates less heat, it drove the additional benefit of boosting HVAC savings by 5-10% and reducing system wear and maintenance. The installation of highly-efficient variable speed drives further reduced energy consumption within the buildings on Ellis Island.

Orchestrating the lighting and mechanical systems at the monument was made easier and more effective by the installation of an automated energy management system. At the hands of the new system, lighting and air handling equipment that previously ran 24 hours a day is now on a time schedule that turns on and off based on occupancy requirements—and there is more precise control of interior temperatures now that the equipment is no longer operated manually. The management system also sets back temperature at certain times and utilizes "free cooling" by opening and controlling outside air dampers.

Reducing energy consumption by over 2 million kilowatt-hours annually, the upgrade significantly improved the monument's lighting and energy systems and brought its annual energy costs down by nearly 20% within the first year. Said Sempra Energy Solutions of the virtual "electrical facelift" they conducted on this famous landmark, "the Ellis Island monument inspires all people. The chance to contribute to its successful, energy-efficient operation is very rewarding."

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Project Overview

Project Site:
Statue of Liberty and Ellis Island Reception Center (New York City)
Project Scope:
Lighting upgrade (done in conjunction with an HVAC upgrade
Project Size:
4,000 lighting fixtures across over 350,000 square feet of monument space
Project Timeline:
Late 1990's through 2002
Service Provider/ESCO:
Sempra Energy Solutions (Houston, TX)
Product Supplier:
Philips Advance T8 Electronic Fluorescent Ballasts
Annual Electricity Bill:
$1+ million/year (before upgrade)
Estimated Annual Energy Savings:
2+ million kWh
Estimated Annual Energy cost savings:
$175,000 - $200,000/year

Form No. CS-1140-R01 03/09

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