



## NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

Ameresco implemented an Energy Savings Performance contract (ESPC) at the National Archives and Records Administration (NARA) Archives II facility in College Park, Maryland. Energy Conservation Measures (ECMs) included a facility wide energy management control system (EMCS) upgrade; lighting upgrade; water conservation; chiller optimization; air handling unit (AHU) re-balancing; and heating optimization.



The National Archives in College Park, Maryland, opened for research on January 3, 1994. Records held there include the cartographic and architectural holdings; the Nixon Presidential Materials; electronic records; motion picture, sound, and video records; the John F. Kennedy Assassination Records Collection; still pictures; the Berlin Documents Center microfilm; and textual records from most civilian agencies and military records dating from World War II.

### Contract Details

Facility:	National Archives - II facility in College Park, MD
Project:	Design/build, measurement/verification under the constraints of the energy savings performance contract program.
Technologies:	New energy management and control system, HVAC system re-commissioning, oxygen trimming system for boilers and flow meter, low-flow plumbing retrofits, lighting upgrades and occupancy sensors.
Timeline:	June 2006 to January 2008
Project Cost:	\$5,704,704
Savings:	\$897,971 (first year)

### Project Details

Ameresco performed an in-depth review of the facility's systems to identify measures that can reduce energy and operating costs. The recommended program significantly upgraded the infrastructure, reduced energy use, addressed specific building operational issues, and reduced operation and maintenance (O&M) costs. Ameresco developed and implemented seven energy conservation measures (ECMs) in order to accomplish our goals for the facility.

The first measure involved a significant energy management control system (EMCS) upgrade derived from the implementation of eight recommended strategies. These upgrades/strategies included upgrading existing outdated processors and software, new front-ends with the latest graphics, upgrading associated HVAC controls, replacing a limited number of pneumatic actuators with electronic actuators, converting constant-volume air distribution systems to variable-air-volume systems in most non-archival space areas, adding mixed air sensors, replacing defective humidity sensors and thermostats, re-commissioning, and

establishing preventive and predictive diagnostic procedures on the EMCS. Miscellaneous controls measures included the resetting of the condenser water temperature entering the chiller and the reduction of bathroom exhaust fan runtime.

Ameresco's implementation of the EMCS upgrade supported the mission of the Archives by extending the life of the records by increasing the Time Weighted Preservation Index (TWPI) by exposing the records to colder temperatures. The endpoint of the life span of the records was increased by the decrease in temperature in the areas of the facility where the records are kept.

The lighting retrofit measure followed North American Free Trade Agreement (NAFTA) guidelines for equipment purchase with lighting levels meeting or exceeding existing light levels, with the exception of over-lit spaces. This measure addressed lighting types that included fluorescent, metal halide, exit lights, incandescent, occupancy sensors, and timer switches, and affected most spaces throughout the facility and parking garage.

The Heating System Optimization measure included the installation of an Oxygen Control System and the reduction of steam distribution system losses, which both affected the efficiency of the heating system at Archives II. The savings resulted from minimizing the quantity of excess air and by maintaining a tighter air-fuel ration under all normal operating conditions.

Ameresco installed new high efficiency motors, adjusted inlet guide vanes, and rebalanced the existing air handlers to compensate for the decreased pressure drop from the installation of the new filters installed by the maintenance staff. The fan speeds were optimized for operating cost savings and fan life was extended.

Archives II used water at the cooling tower, for irrigation, for boiler make-up water, and for domestic purposes. To reduce consumption, Ameresco installed low flow aerators, toilets, showerheads, some kitchen sprayers, and changed valves on urinals.