



SHOWCASE PROJECT: PLACER COUNTY: HISTORIC AUBURN COURTHOUSE

SOLUTION OVERVIEW

The Placer County Historic Courthouse, also known as the Auburn Courthouse, was built in 1898 and is listed on the National Register of Historic Places. This grand, three-story Classic Revival structure is topped by a bracketed cornice and simple Renaissance Revival-inspired dome. Over the years, the County made improvements, adding water fountains, fire escapes, and an elevator, which was installed in 1948. In 1990, the building underwent an extensive restoration effort. Since 2010 Placer County has implemented an energy efficiency retrofit to the Courthouse to reduce energy costs and improve occupant comfort.

This building is one of the four surviving 19th century courthouses in northern and central California which retain most of their architectural ornamentation and magnificent domes. Most of the building materials come from the local area: granite from Rocklin, and bricks and terra-cotta trim from Gladding McBean in Lincoln. The lime and lumber came from various other areas in Placer County, and the slate for the roof is from El Dorado County. The Courthouse bell came around Cape Horn and was originally used to summon officials to court.

SECTOR TYPE

Local Government

LOCATION

Auburn, California

PROJECT SIZE

25,000 Sq. Ft.

SOLUTIONS

Energy efficiency upgrades to the historic brick and stone building presented unique challenges due to the complex electrical wiring and the need to integrate new and old energy system components. Further complicating the process was the importance of completing the work while minimizing disruption to Court and museum operations, which continued throughout the upgrades.

From 2010 to 2016, the County upgraded major energy components at the Courthouse. The most significant energy savings retrofit measures, prioritized by energy saved, included:

- Lighting retrofits: Aging and inefficient T-12 fluorescent linear systems were changed out to more efficient T-8 fluorescents, incandescent lamps in historic fixtures were changed to CFL, and interior sconce high-intensity discharge (HID) systems in courtrooms were retrofitted to CFL.
- Central plant retrofits: An antiquated, 80-ton dual-reciprocating compressor chiller (Trane CGWC806RDNJJ432P, located in a separate building adjacent to the Courthouse) was replaced with an 80-ton high-efficiency scroll compressor chiller (York YCWL0084HE). The plant's chilled water and condenser water pumps (and their associated motors) as well as the cooling tower fan motor were replaced. Variable speed drives were installed on the chilled water pump motors, condenser water pump motors, and the cooling tower fan motor. A water-side economizer was also installed to provide free cooling during periods when the ambient temperature drops below 65 F.
- New high-efficiency boiler: The space-heating boiler at the Courthouse was replaced with a 92 percent efficient boiler. The old boiler was well beyond its remaining useful life. The pumping equipment (motors included) was also replaced and variable speed pump controls were implemented.
- Window sashes, casings, and sills were updated and glazing was replaced with glass/polycarbonate laminate.

Placer County examined the following parameters when prioritizing the energy savings measures to use in the project. These factors also helped the County evaluate what improvements to include in the first phase of the work and those that might make more sense in the long run. The most heavily weighted factors are at the top of the list below:

- expected energy savings measured in units of kilowatt hour/year
- simple payback period, measured in years
- funding availability, including incentives, grants, low/no-cost loans, etc.
- ability to implement, including administrative logistics, required changes to municipal code, and other local planning priorities
- GHG reduction potential, measured in metric tons CO₂e/year
- replicable by other communities

Equipment for the lighting projects was provided by the local Energy Watch Program, which is funded through electric rate public goods charges. Placer County used its own Facility Services employees for the installation.

OTHER BENEFITS

Since the mid-1990s, Placer County has been working actively to increase County building efficiency and reduce energy costs. With participation in PG&E's Local Government Energy Efficiency Partnerships, the California Energy Commission's Energy Partnership Program, and significant contribution and commitment to the Energy Efficiency Conservation Block Grant Program, Placer County continues to make notable progress towards reducing the energy costs and carbon footprint of county facilities. These energy conservation measures, implemented in many Placer County buildings, save Placer County approximately \$1 million in annual energy costs and support the County's commitment to sustainability, responsible building management, and accountability to

taxpayers.

Annual Energy Use

(Source EUI)

Baseline(2009)



Actual(2016)



Energy Savings

30%

Annual Energy Cost

Baseline(2009)



Actual(2016)



Cost Savings

\$13,000



Auburn Courthouse



Auburn Courthouse aerial