Facilitating utility incentives

Monitoring and verification at a multi-tenant office tower

CUSTOMER BENEFITS

- Assurance that system maintenance achieves the desired objectives
- Investment protection to secure and track investments over the long term
- A digital history of building performance
- An information front-end to consolidate building data and make it accessible to all vendors

PROJECT AT A GLANCE

Location
Massachusetts

Facility
Office building (17-floor tower)

Monitored Systems
Hot water (HW) primary loop, chilled water (CW) primary loop, and large air handlers (all currently ongoing)

Setup Costs
$65,000

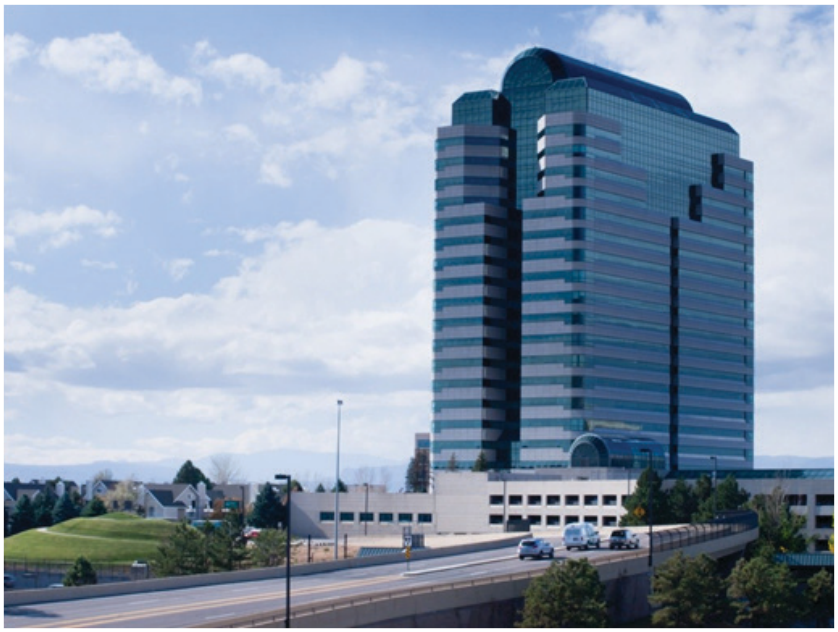
Maintenance Cost (annual)
$2,316

Expected Incentive Award
Between $32,000 and $44,000

Projected Annual Savings
Between $60,000 and $75,000

Equipment Installed
The following work was done at the laboratory as a result of the Building Analytics findings:

- Static pressure setpoints decreased gradually.
- Night setback programming initiated.
- Setpoints for HW loop, CW loop, air handlers, and economizer lockout changed.
- Fan was taken off forced speed override.
- Two dampers fixed.



Overview

This multi-tenant office building deployed Building Analytics diagnostics and reporting to help discover efficiency opportunities, and to facilitate participation in the Massachusetts Pay for Performance (P4P) utility incentive program.

Building Analytics diagnostics were used on the central air handlers, chilled water loop, and hot water loop. The building's management committed to six low-cost energy conservation measures (ECM) for pre-ECM and post-ECM monitoring in order to prove the energy savings targeted in their P4P project application. Other equipment issues found by Building Analytics diagnostics are being corrected as they occur.

The Challenges and Solutions

Energy Conservation Measures (ECM)

At the beginning of this project, the office building was assessed by an independent engineering firm, which made several ECM suggestions:

1) Decrease the static pressure setpoint on four of the largest air handlers.
2) Implement a winter night setback in all zones.
3) Lower the minimum HW supply temperature (for low heating loads and VAV reheat).
4) Increase the economizer lockout temperature.
5) Increase the summer supply air temperature on two air handlers.
6) Increase the minimum chilled water supply temperature (for high cooling loads).

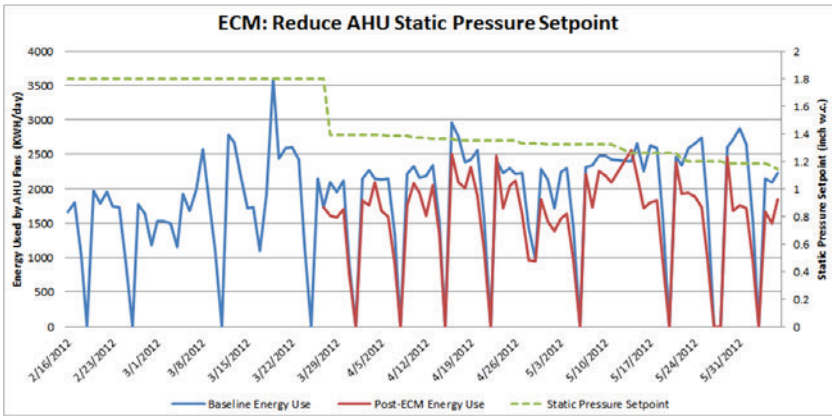
Monitoring and Verification

Fan Savings from ECM 1:

The graph to the right shows the daily fan energy use for all major air handlers and return fans. The blue line represents what the fan energy would have been with no change in static pressure, and the red line represents the actual fan energy. The dotted green line indicates the decrease in static pressure setpoint as the operations staff became comfortable with lower static pressures over time. The calculated fan savings for the initial 5.5-week period was approximately $3,700.

Other Identified Faults:

One fan stuck in override and two oscillating dampers were identified by Building Analytics and fixed, providing decreased return fan energy, increased control over the supply air temperature, and eliminating unnecessary chilled water use. The diagnostics also showed that the primary hot water pumps were always running at 100 percent speed due to a high differential pressure setpoint, which has since been lowered. The calculated savings for this pump speed correction within the first 15 weeks was approximately $1,430.



The Bottom Line

At the start of the P4P incentive project, the building's management committed to six of the suggested ECM. The heating system and air handler fans were baselined, with the first three outlined ECM implemented. Through monitoring, ongoing savings for ECM 1 have been proven, however more time is needed to begin verifying the savings for ECM 2 and 3. The baseline and implementation of ECM 4–6 are being prepared.

Schneider Electric One High Street, North Andover, MA 01845 USA Telephone: +1 978 975 9600 Fax: +1 978 975 9698 www.schneider-electric.com/buildings

PP-BO-UTILITYINCENTIVE-US.BU.N.EN.6.2013.0.00.CC June 2013 gg