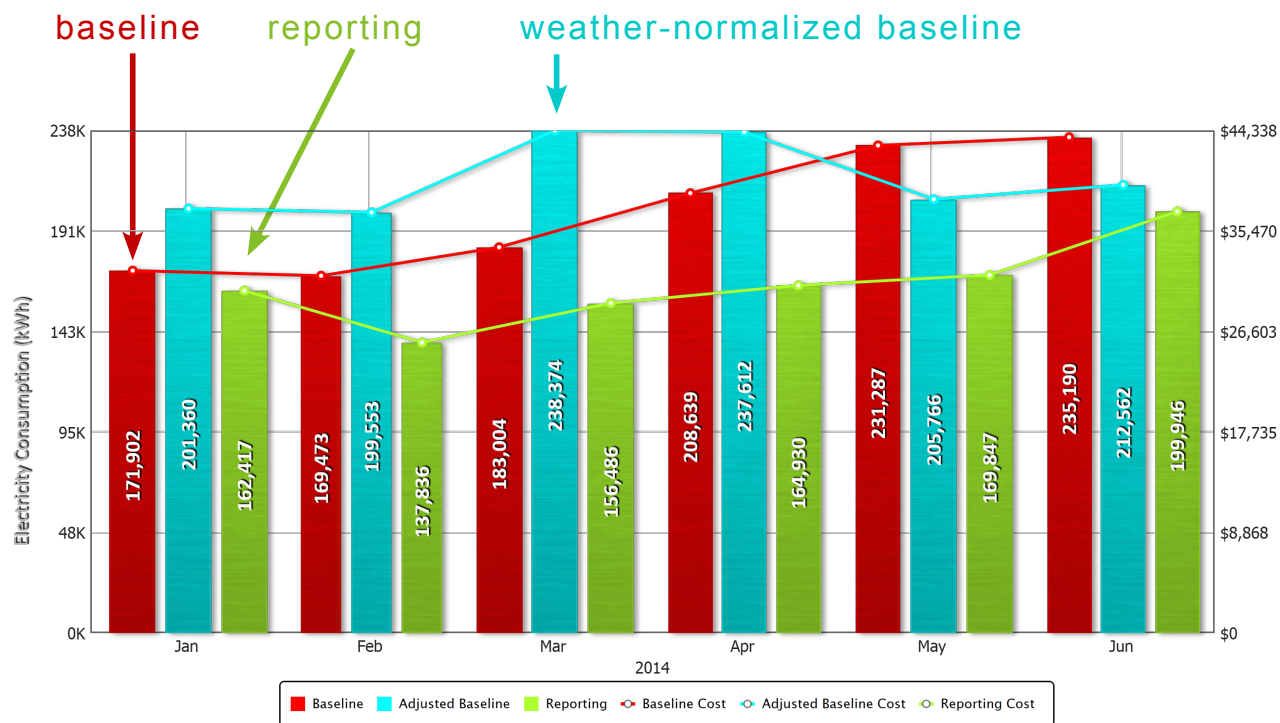




Benefits & Results

The savings are tracked and verified with the Ameresco's Building Dynamics online Measurement & Verification module that tracks the consumption of the building in real time and compares it against its previously computed weather normalized baseline.

During the first 6 months after the implementation of the operational changes (January through June 2014), the total weather-normalized savings exceeded 303,000 kWh (\$56,500). The annual savings for the Adanti Student Center are expected to exceed \$90,000. Besides the operational savings achieved to date, SCSU facility operators are able to constantly monitor the conditions in the building and get notices about potential issues. Additionally, peer buildings on the SCSU campus can be directly compared against the Adanti Student Center to identify additional opportunities.

About Ameresco

Ameresco, Inc. (NYSE:AMRC) is a leading energy efficiency and renewable energy solutions provider serving North America and the United Kingdom. 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. Please visit us at www.ameresco.com.

Building Dynamics' Energy Management Software specializes in Information driven energy efficiency through wireless sensing and online analytics. Building Dynamics is currently used in commercial buildings, university campuses, and industrial facilities.



Project Overview

- 2,490,455 kWh average annual electricity consumption with a cost of \$463,234
- 4 month payback

Building Overview

- 125,000 square feet
- Construction completed in 2006
- Building used 24/7 for different activities: restaurants, computer rooms, gym, radio station, classrooms, offices, ballroom, theater, and recreational spaces
- State-of-the-art Automated Logic BAS

Project Results

- Operational changes implemented in January 2014
- Consumption reduced by 208,035 kWh (17.3%) or \$38,695 from baseline during the first 6 months of the project
- When accounting for weather, consumption has dropped by more than 303,766 kWh (23.5%) or \$56,500



About SCSU

Southern Connecticut State University (SCSU) is one of the four state universities in Connecticut. Established in 1893, SCSU currently serves 8,496 undergraduate and 3,273 graduate students. The campus is located in New Haven and consists of more than 30 academic buildings and residence halls. The university is committed in sustainability and has pledged to become Carbon Neutral by 2050. It was also featured in *The Princeton Review's Guide to 332 Green Colleges* in 2014.

Learn more details inside about how SCSU and Ameresco were able to save energy with no-cost/low operational changes.

Environmental & Sustainability Impact (weather normalized, 6 months)



44.1 Passenger vehicles



28.8 Homes' electricity use for one year



487 Barrels of oil consumed



5,371 Tree seedlings grown for 10 years



Contact us today.

Let us help you reach your energy saving goals.

For more information, please call 866-263-7372 or email info@ameresco.com.



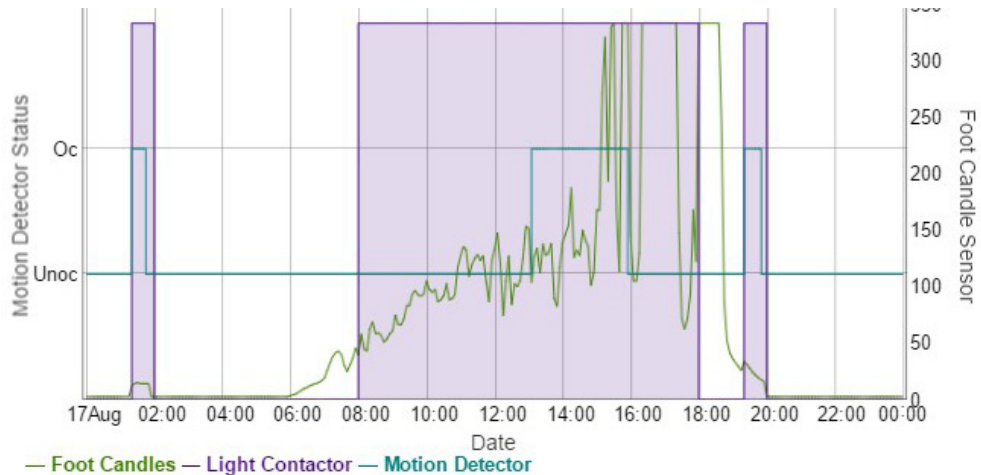
Adanti Student Center Challenge & Solution

Challenge

The Adanti Student Center is a 125,000 sq. ft. multi-purpose building used 24/7 for different activities. It includes restaurants, computer rooms, exercise spaces, a radio station, classrooms, offices, a ballroom, a theater, and various recreational areas. Construction was completed in 2006 and the building is equipped with a modern Building Automation System (BAS).

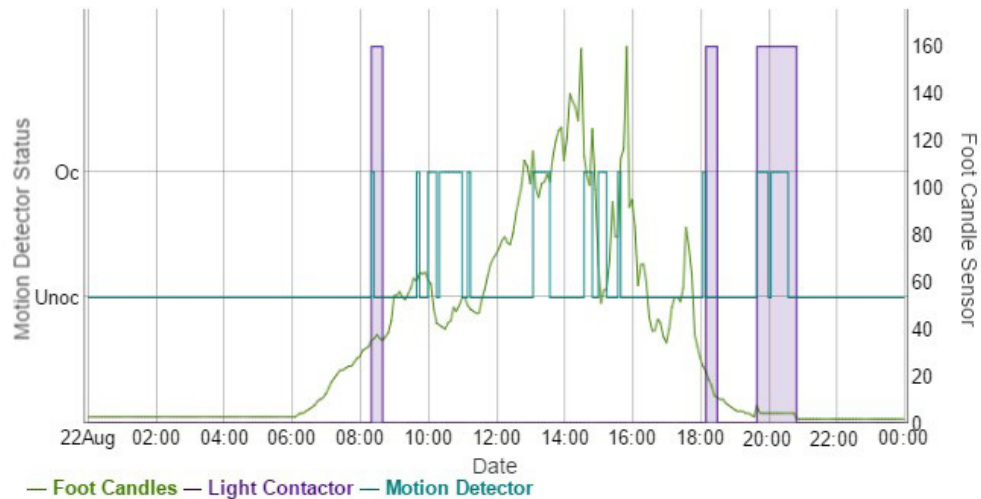
The building was recognized to have high energy consumption, but configuring the BAS for changes in occupancy and other factors are sometimes too complex to handle, even by experienced operators. Optimizing the BMS settings to a student services building is a particularly challenging task because of the large number of variable and frequent changes in building usage patterns during the year.

Before



Detected Symptoms:
overridden motion detectors
and foot candle sensors
in several lighting zones

After



Diagnosis & Solution:
configured lights to turn
ON/OFF based on existing
foot candle sensor and
motion detectors

Solution

Ameresco's Building Dynamics was used to analyze the behavior of the building and optimize the BAS configuration. The software was connected to the BAS system to record and analyze key points, including the state of controllers and sensors in all the major mechanical systems of the building.

- Some of the points monitored:**
- Electricity consumption
 - All 115 VAV boxes
 - All 9 Air Handler Units (AHUs) & one Makeup Air Unit
 - 2 chillers and the cooling tower
 - Heat exchangers
 - 19 lighting zones in the building, most of them equipped with motion detectors and foot-candle sensors

The data for more than 1,000 BAS points were used to automatically check the correct operation of equipment, based on a number of preconfigured strategies.

Every strategy is a test for checking the correct operation of the BAS, similar to the tests that a car mechanic or a doctor would use to diagnose a problem. During the setup phase of the project, Ameresco's engineers customized the strategies that were relevant for the Adanti Student Center. Once the setup was complete, Building Dynamics started automatically checking the strategies on a daily basis to identify problems. Detected problems are reported to Ameresco's energy analysts, who can then diagnose the problem by checking the configuration of the BAS and visiting the Adanti Student Center, when required. Identified problems are communicated to the BAS operator for review and implementation.

In addition to the BAS points, Ameresco installed its wireless sensing audit kit to monitor some of the dynamic conditions in the building, such as occupancy in areas not covered by the BAS. Additional wireless sensors monitoring the ON/OFF status of mechanical systems and the temperature and humidity in different areas were used to complement and verify the accuracy of the BAS data.

Operational Savings Opportunities

Within one month of the installation of Ameresco's Building Dynamics, a number of faults and configuration issues were identified in the BAS, including:

- Equipment schedules that did not match actual occupancy patterns
- Disabled foot-candle sensors and motion detectors in some of the lighting zones
- Chilled water system did not lock out when outside temperature allows for free cooling
- AHUs ran outside of occupied schedule
- MAU ran 24/7
- Simultaneous heating and cooling
- Temperature set points were outside of typical ranges

The identified changes were discussed and implemented in collaboration with SCSU facilities management.

