

Building Analytics Success Story

Emory University

Emory University has long been committed to sustainability. Having implemented retrocommissioning (RCx) to improve building operations Emory was ready to go deeper with their energy efficiency efforts. The 2013 Sustainable Performance Program (SPP) introduced Monitoring-Based Commissioning (MBCx) to 2.7 million sq.ft. of the campus.

RCx captures a snapshot of building performance to establish a set of improvement recommendations that can save 5-15% of whole building energy use. Depending on budget, RCx will focus on the high priority building systems to uncover opportunities. MBCx incorporates automated analysis, enabling a deeper more comprehensive approach across all building system components. MBCx also helps avoid savings degradation over time through continuous monitoring.

What is FDD?

Fault Detection and Diagnostic (FDD) software identifies building systems with suboptimal performance. FDD is a type of energy management and information system (EMIS) that analyzes BAS data.

Fault detection & diagnostics (FDD) is a key tool for Emory's MBCx program. With investment of in-house staff time to add FDD programming into their building automation systems (BAS), the facilities team continuously monitors and finds areas for optimization across all building systems, including 3,000 HVAC terminal units. The results of Emory's MBCx process are sizable - Emory has cut energy costs by \$2.6 million annually (from a 2011 baseline year).

Adding FDD programming to their BAS enabled Emory to tailor their MBCx approach to their needs. They are now piloting off-the-shelf FDD software to support long term goals and streamline reporting processes.



I thought MBCx would be focusing on big systems for big savings, but much of our success has been facilitated by finding the broken parts and pieces in the smaller systems that allow the larger systems to run well

- Mike Robbins, Commissioning Specialist

Quick Facts

Location: Atlanta, Georgia

Building type: Higher Education

Gross floor area: 2.7 million square feet

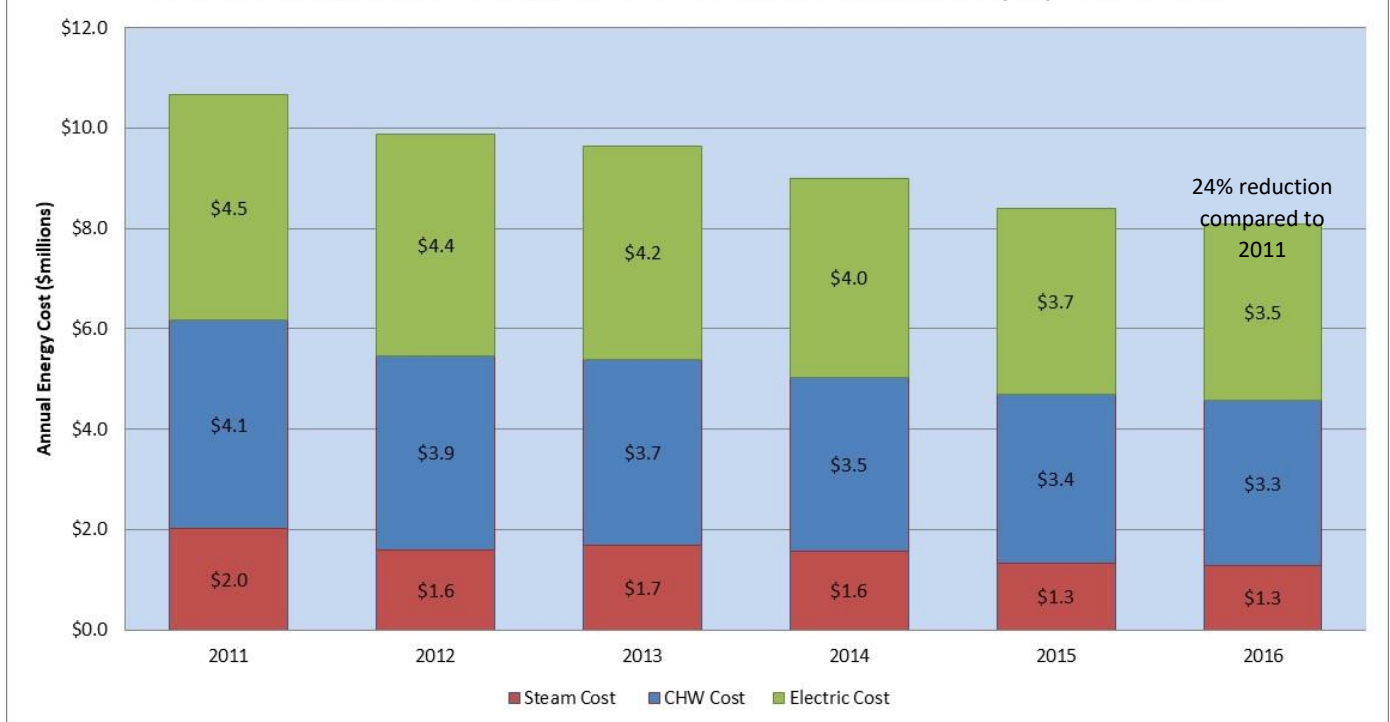
EMIS Tools: FDD rules programmed into BAS; recently initiated pilot with Coppertree FDD

Energy Savings: 2016 saw 24% annual energy cost reduction, compared to 2011 baseline year

Smart Energy Analytics Campaign: Recognition for Energy Performance in a Portfolio

Emory University received national recognition from the U.S. Department of Energy's Smart Energy Analytics Campaign in 2017, acknowledging their exemplary work to save energy through the use of EMIS.

EMORY UNIVERSITY - ENERGY COST FOR SPP BUILDINGS (20) - 2011-2016



Emory University has seen 24% energy cost savings in buildings with FDD installed, compared to 2011 (Source: Emory University)

Improving Occupant Comfort

Ensuring occupant comfort is the primary goal of HVAC system operation. One common metric for occupant comfort is the number of times occupants call to say they're too hot or too cold. The Emory facilities team strives to maximize comfort of occupants, but this can be challenging without support in quickly catching terminal unit and zone controller problems. Using their FDD system, Emory is able to check over 3,000 terminal units automatically to detect problems before they become complaint calls.

In one building, Emory's facility staff used to get more than 70 hot/cold calls per year. That has now dropped to just four calls following MBCx. Building mechanics have seen their workload decrease steadily in the buildings with FDD installed.

Making the Business Case

In another building, Emory documented how energy use drifted upward after new building commissioning and

then again after RCx. Through continuous FDD monitoring the building saw energy use slashed by 51% and has had stable energy use for the last 4 years.

Having built in-house expertise developing and managing FDD rules Emory is piloting a new FDD software that provides a more user-friendly dashboard and easier creation of new rules.

As the building starts to work better with fewer broken items, our staff can devote their skills to optimizing systems rather than fighting fires
- Mike Robbins, Commissioning Specialist

With the outstanding results of Emory's MBCx efforts, the energy management team has seen steady support from management in continuing the program and safeguarding their investment in improved building operations.

The Smart Energy Analytics Campaign is led by the U.S. Department of Energy to support commercial building owners in adopting energy management and information systems (EMIS). The program provides technical assistance, recognition opportunities, and a chance to network with industry-leading peers. Whether you have an established EMIS or are in the early stage of considering EMIS, the Smart Energy Analytics Campaign will support your move to the next level. [Learn more at smart-energy-analytics.org](http://smart-energy-analytics.org)