

# Saving Energy While Simultaneously Reducing Costs



## Summary

- Concord Hospital suffered from a lack of steam capacity, aged equipment, inefficient energy and operations, and increased energy costs.
- Concord realized \$678,976 in guaranteed annual energy savings and reduced its energy usage from 284.2 kBtu/ft<sup>2</sup>/year to 211.8 kBtu/ft<sup>2</sup>/year.

## The Problem

In 2009, Concord Hospital's current facilities director came on board and realized a lack of steam capacity during an extreme set of cold days. The hospital was consuming all that it had the ability to handle. There was very little room for error. Concord's equipment had aged, the hospital had outgrown its plan capacity, its energy and operations use were inefficient, and energy prices were increasing. Although Concord Hospital had made several improvements, efficient equipment needed to be addressed and lighting technology had changed.

## The Strategy Selected

Once the facilities director realized the capacity issues within his hospital, his Plant Operations Manager and Boiler Manager set to work collecting and analyzing data as well as looking for opportunities to reduce energy. This data was the exact information he needed to bring to his leadership and secure approval. Concord was fortunate enough to be able to finance the project itself using capital dollars. This was now the opportunity to look at the entire energy consumption, both electric and steam. Through data collection, presentations to leadership, adding new equipment, and utilizing an energy performance contract, Concord Hospital was able to significantly increase capacity, reduce energy usage, and realize substantial savings.

## Implementation Process

Concord Hospital chose to use an energy performance contract. A detailed energy audit was conducted allowing for the scope of the project to be formed. The energy performance contract agreement terms were finalized and agreed upon; and the project began. The project included: lighting retrofits and lighting controls, energy management system optimization, chiller plant optimization, and building envelop improvements. Through automation upgrades, the team identified where they had dummy loads (loads that had been manually inputted to override the automation to get something to work through the winter). They removed these dummy loads and corrected the original problems. The team converted many constant air volume systems to variable air volume through renovations and other initiatives. Concord implemented a new plate and frame "free cooling" within its winter loads that had paid great dividends. Finally, the hospital created a new central plant that included three new steam boilers at 600 HP and boiler stack economizers; the building also accommodated all chillers as well as the plate and frame heat exchanger.

Today continued monitoring and verification still takes place to ensure energy savings, ongoing energy and sustainability management, planning and support.

# Saving Energy While Simultaneously Reducing Costs

## Benefits

- \$678,976 in guaranteed annual energy savings for the performance contract only.
- \$154,620 in positive annual cash flow.
- Reduction in energy usage from 284.2 kBtu/ft<sup>2</sup>/year to northeast (211.8 kBtu/ft<sup>2</sup>/year).
- Over \$1.4 million in energy rebates between the new boiler plant, steam trap repairs and all of the electrical energy improvements were seen through the last five years of energy reduction improvements. Some of these were in conjunction with renovations.



Concord Hospital was very fortunate to have leadership that was not only understanding of the needs of making these improvements along the way, but was also excited about it. Leadership embraced these changes as they not only realized the need, but also wanted to act in the best interest of their patients, staff and community by reducing its energy profile and being good stewards of energy use.

## Challenges and Lessons Learned

From the beginning, Concord Hospital partnered with its utility company. The two groups were a team and this was key. It is invaluable for a hospital to sit down with its utility company before commencing a project to find out how what kind of rebates may be available.

## Demographic Information

Concord Hospital is a charitable organization, which exists to meet the health needs of individuals within the communities it serves. Concord Hospital is an acute-care hospital with 295 licensed beds and 238 staffed beds.