

# Two-Phase Strategy to Energy Reduction and Cost Savings



## Summary

- Cheshire Medical Center/Dartmouth-Hitchcock Keene (medical center) is committed to energy conservation and had a practical need to reduce energy usage and costs.
- The medical center took a two-phase approach by first decreasing energy consumption over a period of time and then seeking out alternative fueling methods.
- The medical center was able to save a total of \$1,895,855 between 2010 and 2014. The facility decreased its energy usage by 30 percent and carbon dioxide emissions by 20 percent.

## The Problem

Cheshire Medical Center/Dartmouth-Hitchcock Keene understands and highly values the importance of energy conservation. Not only because such conservation is the right thing to do for its patients and community, but also because of the energy and financial needs of the hospital. Prior to implementing changes, the medical center was utilizing more energy than it could sustain while seeking areas to save financially.

## The Strategy Selected

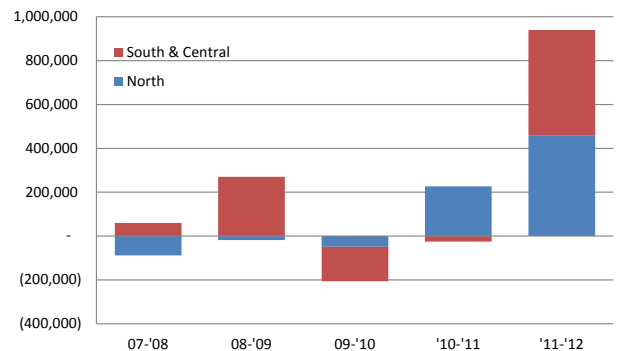
The Vice President of Clinical and Support Services, Paul Pezone, began his endeavor to improve energy usage and costs at the medical center upon obtaining his position. He realized the need to completely comprehend the facility’s systems and operations. There were existing concerns about whether the chiller plants were undersized and if there was a need for more equipment. Paul teamed up with an empowered group of facility staff including his Director of Engineering, Dennis Secore, and Power Plant Coordinator & Engineering Supervisor, Larry Milliron, to accomplish change. The team obtained a variety of engineers’ opinions to determine the best plan going forward. The hospital took on a two-part strategy in which it first dealt with mechanical systems and then electricity.

Once prepared, Paul approached the Board of Trustees with the team’s plans to decrease energy use and increase cost savings. The team earned the trust and respect of the Board enabling them to move forward with the project. The hospital financed the endeavor in-house overtime as well as within larger capital projects. This method was undertaken so as to not spend too much at one moment and reap the rewards of the payback from each project. Additionally, some capital projects that had to be completed allowed for added energy savings. For example, the roofs and windows needed to be replaced allowing for improved insulation.

## Implementation Process

Cheshire Medical Center/Dartmouth-Hitchcock Keene worked to decrease energy usage and costs in two phases. In the first phase (2010-2013), they focused on reducing energy consumption looking at the mechanical end of both heating and cooling. With this came the realization that the current system piping design was inefficient. Remembering to stay focused on the bigger picture, the facilities team set aside the cooling system chiller needs and focused on redesigning piping, air handlers, and other mechanical components. This reduced the amount of energy used, saved in capital expenses (a total of 14 percent savings), and created a 15 percent excess in cooling capacity. By looking broadly, they were able to solve two problems at once. Other savings were met by enhancing set back programs and lighting upgrades.

Campus Change in Usage (KwH)



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Following these changes, the team continued to exercise patience and recognize the broader picture by ensuring the changes continued to elicit the desired responses. They wanted to confirm that it was not just one season of strong numbers but consistently their plan worked over time. Once validated, the second phase began. The first phase of the project allowed for the right sizing of potential new services and implementation of the second phase in 2014. Phase II involved looking at alternative fueling methods and included converting to natural gas as opposed to burning fuel oil.

## Benefits

### Phase I (2010-2013)

- 14% (1,665,620) decrease in kWh
- 14% (10,560) decrease in MMBTUs
- 76,000 gallons of heating fuel saved per year; depending upon cost of fuel, this equates to \$285,000 in savings per year

### Phase II:

- \$400,000 saved a year
- 20% reduction in hospital carbon dioxide emissions

### Overall

- \$1,895,855 saved between 2010 and 2014
- 30% reduction in energy usage

## Challenges and Lessons Learned

Cheshire Medical Center/Dartmouth-Hitchcock Keene and the facilities team understood the importance of looking at their system as a whole and not just settling on the easiest solution. They took the time to examine the system overall as well as each component, prioritizing based upon efficiency. Remembering to look at the whole was a critical part of their success.

A supportive leadership including a strong board of trustees, some of whom were part of the building facility committees, was also extremely important. The leaders supported and had faith in the department and its work. The facility team increased leadership's trust by continuing to show them the decrease in costs and usage in the hospital's utility bills

## Demographic Information

Cheshire Medical Center/Dartmouth Hitchcock Keene

169 bed acute-care community hospital and clinic

Vice President – Paul Pezone

Director of Engineering – Dennis Secore

Power Plant Coordinator & Engineering Supervisor – Larry Milliron.