

ENERGY TO CARE *SUCCESS STORY*

Sustainability Case Study:
Carl T. Hayden VA Medical Center,
Phoenix

By Ed Avis

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Carl T. Hayden VA Medical Center, Phoenix

Square footage: 875,000

Beds: 250

Buildings: 25

ENERGY STAR rating: 99

To achieve maximum results, focus on the critical few and not the non-trivial many, says James Larson, sustainability officer of Carl T. Hayden VA Medical Center in Phoenix.

What Larson means is that some parts of a hospital, such as the chiller system, consume such a large percentage of a hospital's energy that maximizing the effectiveness of that system is a far better use of time and resources than focusing on less influential elements.

At his facility, one effort in that regard has been to convert the heating and domestic hot water from steam to condensing hot water boilers. The hot water boilers as a system operate at about 70 percent to 80 percent overall efficiency, compared to an estimated 10 to 20 percent efficiency for steam.

"Using steam is a waste of energy," Larson says. "We've converted about half of our steam system so far. We require steam for sterilization, but otherwise almost everything else could be hot water."

That steam conversion project, combined with other efforts, has reduced the hospital's annual utility bill to about \$2.8 million from more than \$3 million nine years ago, despite an almost 40 percent increase in the cost of electricity during that same period. "So we're spending \$1 million less per year than we would be if we hadn't done these things," Larson says.

Another way Larson describes his efforts is to follow the "theory of constraints." This involves identifying the factor or factors that stand in the way of the goal (the constraints), and removing those factors.

When Larson started at Carl T. Hayden VA Medical Center in 2008, he was tasked with meeting a government mandate to reduce energy consumption from the 2003 level by 30 percent and water usage by 16 percent by 2015. With those goals in mind, he sought the constraints and identified one of the major problems to be adherence to program requirements. For example, Larson learned that an outside designer neglected to undertake a required chilled water design study prior to tying a new building into the chilled water loop. That missed step added a significant amount of unnecessary utility expenses because of the added load on the central plant that occurred when the plant operators reduced the chilled water temperature to make up for the reduced chilled water flow to the buildings from which this new building was taking water. After a year-long analysis as to what needed to occur to meet the federal mandates, they determined that "we can achieve our goals if we fix what's not working properly and make sure employees follow," says Larson.

Using renewable energy sources has also been part of Larson's effort to reduce fossil fuel generated energy. The facility installed solar panel canopies in the parking lot that serve a dual purpose: They generate about 4.4 megawatts of electricity, and they protect patient and employee cars from the blazing Arizona sun.

"When you park your car outside in the summer in Phoenix, your dash cracks and your steering wheel practically cracks, so having covered parking is a big benefit for our veterans," he says.

The solar panels have a long payback period: 40 years, Larson calculates. When the federal government encouraged facilities to install solar panels, a stated additional benefit was to stimulate the economy and the solar industry and reduce fossil fuel consumption, so every installation helped that goal.

Larson has focused his efforts on meeting the 30 percent energy reduction mandate, not achieving ENERGY STAR® certification. Nevertheless, the hospital has achieved a remarkable 99 rating. That success is a byproduct of focusing on the true goal.

"You have to focus on energy consumption, not just on sub-optimizing the parts," he says. "Start with the system view in mind, find the constraint, and manage the constraint."

The Energy to Care program, sponsored by Johnson Controls, encourages hospitals across the country to reduce their energy consumption by 10 percent or more over their baseline energy consumption. Since 2009, hospitals participating in the Energy to Care program have tracked more than \$67 million in energy savings. This free program includes a robust energy-benchmarking tool in addition to the awards. ASHE congratulates these hospitals for their leadership in reducing energy consumption.



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