



Hospitals Operating in Harder Times

After years in a relatively stable economic environment, the current financial crisis has everyone being hit by tightening budgets. Hospitals and healthcare facilities have a particularly tough outlook when trying to address the various pressures particular to their industry. Scientific advances have increased the number of treatment options so that many more people are availing themselves of these treatments while the ranks of the uninsured continue to grow. How many people do you know that have new

knees or hips? As the boomer generation ages, demand for this type of surgery and its recuperative aftermath will only increase and joint replacements are only a part of the overall increase in treatment options, many of which can be energy-intensive.

As demand increases, it follows that more healthcare facilities – hospitals, rehabilitation centers, clinics – will be needed. As noted in the March 2008 issue of *Facilities.net*, “So many hospitals and medical centers are being built that capital investing for health care construction is expected nearly to double in the next few years, from about \$18 billion in 2006 to about \$35 billion in 2010.” (Energy Efficiency Prescriptions for Health Care Facilities by Rita Tatum)

While energy costs have been on a rollercoaster over the past several months and current prices are down, the overall trend is certainly heading higher and healthcare facilities will have to adjust. Control of energy costs is vital to an industry in which most facilities run 24/7, have demanding HVAC and air quality requirements and, with so many more treatment options now available, are looking to see a boom in procedures over the next several years. Just the sheer increase in the number of electricity-demanding devices in patient rooms is an obvious sign of inevitable usage increases.

So what are healthcare facilities and, more particularly, hospitals, doing to offset this triple-whammy of costs increasing, reimbursement rates declining and demand for services rising?

An article in the winter 2008 edition of *Green.org* highlights the efforts of the Department of Energy's new program for increasing energy efficiency in hospital by rolling out its EnergySmart Hospitals program last summer. The article notes, “Hospitals are probably the largest consumers of energy in the health care field. According to a



Main Entrance Cedars-Sinai Medical Center in Los Angeles, CA.

statement released on July 23, 2008 by the US Department of Energy (DOE), in 2007 hospitals spent more than \$5 billion on energy costs alone. Hospitals use 836 trillion BTUs of energy annually and produce more than 30 pounds of CO₂ per square foot of space — an energy intensity that is more than two and a half times higher than the consumption and CO₂ emissions of commercial office buildings.

“Even within the current structure of health care,

the DOE has demonstrated that it is possible for existing hospitals to lower their energy consumption by 20–30 percent. Most of the solutions for this modest (but significant) reduction are simple. In a typical hospital, lighting, heating and hot water account for more than 60 percent of total energy use.” (Reducing Energy Use in Hospitals by Abbe Sudvarg)

And this is just what BOC participants focus on: low-cost, practical fixes to tame energy usage and contain costs. For hospitals though, the reality of 24/7 operation, more stringent codes of air quality and heavier-than-normal water usage make energy-efficiency that much more challenging. Nevertheless, as BOC participants know, there are ways to cut back.

Search for Savings a Daily Routine

Cedars-Sinai Medical Center in Los Angeles is a complex of approximately 4.5 million square feet, with clinics, research labs, doctors' offices and the main hospital building, which takes of 2.3 million square feet of the total space.

Manager of Plant Operations Mark Rojas works with seven maintenance supervisors to brainstorm on ways to reduce energy needs and it is an ongoing process. Says Rojas, “We have some pretty sophisticated control systems, but they still have to be evaluated almost on a daily basis. Weather patterns have changed significantly in recent years and we can have temperature swings of 40-50 degrees in a single day, so it's often possible to use outside air to cool things at night rather than running the AC.

“By the same token, recent patterns of higher temperatures and humidity levels have placed greater demands on the system which, at only five years old, is very much state-of-the-art. Controls are

great, but you have to be vigilant in monitoring that they are set up for the situations at hand."

For one energy savings project, the maintenance team observed that a 200-ton chiller was being used in one three story clinic building, but for a good 40 percent of the year, the need was only about 20 percent of the chiller's capacity. They are in the process of purchasing a 20-ton chiller that will give them an alternative to running the oversized chiller for a good chunk of the year, and will also be available as an "add-on" during periods where temperatures are hotter than usual for many days at a time and more cooling capacity as needed.

Lighting retrofits are always a good place to save and a couple of years ago, Rojas worked with Philips Lighting on a solution to replace all parking lot 32-watt 4-foot fluorescent lights with 25-watt ones, with the 7-watt differential saving 12,000 kilowatts per month in just one parking lot – close to a 22 percent decrease in usage. Cedars-Sinai also received rebates for the retrofits from the Los Angeles Department of Water and Power, \$19,000 for the first lot and \$24,000 for the second. Rojas intends to do three more lots and anticipates rebates totaling approximately \$35,000.

Additionally, any building that isn't 24/7 is on timers for HVAC and lighting. Step by step, the team works to cut energy usage with the result that when the most recent budget report came out, it showed that Cedars-Sinai was paying less in energy costs this year than last, despite rising energy costs and a larger client service base.

As the largest medical facility and currently one of the few with a stage one trauma unit in the area, Rojas says that Cedars-Sinai "has kind of set the bar for energy efficiency in medical complexes. People look to see what we are doing." With electrical costs for the facility at about \$750,000 per month on average, the incentive to control usage is strong indeed.

Providence Health & Services, which operates across five states in the western part of the country: Alaska, Washington, Montana, Oregon and California, also has a history of promoting energy efficiency in its facilities. With such a wide range of operation, some solutions come in very different packages.

At the Providence St. Peter Hospital in Olympia, Washington, Director of Facility & Technology Services Geoffrey W. Glass PE, CHFM has been working steadily with the facilities plant operators – all of whom are BOC level I certified – to increase energy and operating efficiency at the site.

"Providence is taking a conservative course, suspending construction activity for six months or so in the face of the current economic conditions," Glass notes. Tighter financial constraints make conservation measures even more necessary.



Main lobby at Providence St. Peter Hospital in Olympia, WA.

Glass has worked with the local utilities to support a variety of conservation projects. The local water utility, LOTT Alliance, is underwriting almost 75 percent of the funding for installation of low-flow toilets and shower heads. "Utilities are getting more proactive about energy efficiency and policies are changing to that rebates and co-funding options are much more available. The technologies are becoming more and more proven and are designed so well that you can't even tell the difference in efficiency," he observes.

From local utility Puget Sound Energy, the hospital can expect a

grant of \$20,000 to help fund a position for a resource conservation manager (RCM), once requisite milestones have been fulfilled. "The first thing we will have the new person do is to perform walk-throughs to see how usage varies at different times of the day and night. Typically, they would see about a 5 percent improvement in energy conservation when this position is in place, but it will likely be more like 3 percent in our case, since we have already instituted a number of good practices," says Glass. The 900,000 square foot campus has earned Energy Star labeling since 2003, starting at 75 and improving to a 90 rating in 2007.

Lori Moen, the PSE's supervising engineer working with Providence St. Peter's on grants and rebates, notes, "I have met with Keith Edgerton, St. Peter's new RCM, and was impressed by his knowledge and enthusiasm...he is a good choice for this challenge and I have confidence that he will be able to identify opportunities for increased energy savings. I am anxious to see where Providence can take this program."

Like Cedars-Sinai's Mark Rojas, Glass also worked with Philips to replace old fluorescent lighting with the newer 25-watt version where appropriate throughout the facility. Occupancy sensors are currently used in about 35 percent of the facility and the 480 exit lights are all LED. The hospital is also moving towards using more LED lighting as the technology becomes cost-competitive with compact fluorescent lighting. LED is also more beneficial for lighting color rendition requirements, with ratings in the low 90's versus fluorescents which come in at the high-70-low-80's level. The lights can also now be dimmed and do not strobe the way fluorescent lights have been prone to do.

"We need to grow at 2.5 percent to keep up with our community's need for health services," says Glass, "Energy conservation is cost conservation and that contributes to our ability to meet the needs of our growing community for patient care services."

The Energy Star site on healthcare estimates that, "Every dollar a non-profit healthcare organization saves on energy is equivalent to generating new revenues of \$20 for hospitals or \$10 for medical offices." The cost savings translate to more being spent on care and that is what healthcare facilities are about – in good economic times and bad.