

Vancouver hospital at center of study for energy reduction

POSTED: Friday, October 7, 2011 at 01:53 PM PT

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Tags: Affiliated Engineers, energy efficiency, hospitals, Legacy Health, Michael Hatten, SOLARC, ZGF Architects



Steve Matherly, an engineer at the Legacy Salmon Creek Medical Center in Vancouver, Wash., stands in front of a pair of natural gas-powered water heaters used to warm recirculated air. Matherly was a member of the team that participated in a study aiming to help decrease energy use in hospitals. (Photo by Sam Tenney/DJC)

The Legacy Salmon Creek Medical Center in Vancouver, Wash., is at the heart of the latest research aimed at helping hospitals rein in their power consumption.

A federally funded study released recently provides a rigorous analysis of how and when Salmon Creek uses energy. Researchers from the University of Washington and Eugene-based SOLARC Architecture and Engineering conducted an advanced energy modeling study of the hospital's energy use throughout January 2011. The data provides a new spectrum of information to people working in hospital design and construction, and could help officials hit energy reduction targets.

“There are lots of opinions about how hospitals use energy, but not much actual data to confirm whether that opinion is correct or not,” said Michael Hatten, a SOLARC principal who worked on this study and several related efforts. “This is one of the very first rigorous pieces of objective information available to anyone who wants it.”

The study is part of a larger program aimed at evaluating how to radically reduce energy consumption in hospitals nationwide. The program covers six cities – one for each climate region in the U.S. – and has \$1.3 million in funding, primarily from the U.S. Department of Energy and in part from the Northwest Energy Efficiency Alliance's BetterBricks initiative.

The broader goals for the program are to implement drastic energy-saving strategies in hospitals based on scientific, climate-specific data. But the Salmon Creek study is unique within the program – it was selected for the most in-depth analysis.

The 220-bed hospital, which opened in two phases in 2005 and 2009, already performs better than a typical hospital in the U.S. The facility, designed by ZGF Architects and Affiliated Engineers Inc., was selected for the study in part because it had some advanced infrastructure that made the analyses possible.

Several unexpected findings will help direct future energy reduction efforts. Hot water, elevators and imaging equipment such as MRIs all accounted for very small percentages of the hospital's total energy use.

The biggest energy drain was air-reheating equipment, which accounted for 42.3 percent of the total.



A submeter in the electrical room at the Legacy Salmon Creek Medical Center monitors how energy is consumed throughout the building. The submeters were instrumental in providing data for an energy modeling study of the hospital's energy use. (Photo by Sam Tenney/DJC)

Energy reduction measures were in place already, but Pat Lydon, coordinator of strategic resources for the six hospitals in the Legacy Health system, expects to use the new data to aid its own strategic resource management plans.

“First we get insight into that particular hospital, and then we can extrapolate and assume similarities in other hospitals,” Lydon said. “Once we understand where we are, we can understand which site has (energy reduction) opportunities and then tailor our goals to each site.”

While the data is specific to Legacy's Salmon Creek clinic, it is expected to have a national

impact on the design and construction of hospitals, and retrofits of existing facilities.

The National Renewable Energy Laboratory is using the study to develop guidelines on how to design and build a hospital that uses less than half the amount of energy consumed by most existing hospitals, according to Hatten.

“Our study makes sure that energy reduction efforts are not going off in the wrong direction based on assumptions that we proved weren't true,” he said. “The results of this study have really helped tune the larger research to make it relevant.”

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