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Small Goals Stymie Saving Energy

Designers and Facility Managers Don't Think Big About Saving Energy

by B. Alan Whitson, RPA

Everyday we are told the importance of saving energy. Yet, a recent survey published in the Proceedings of the National Academy of Sciences shows that many Americans have no idea of how to go about it in the most effective way. This study says that more than 40% of Americans think the best way to save energy is through small changes in behavior – driving less, turning lights off, and setting the thermostat a little higher in the summer. **Shahzeen Attari**, the lead author of the Columbia University study, says people put most of their faith into what she calls “curtailment.”

“When people think of themselves, they may tend to think of what they can do that is cheap and easy at the moment,” says Ms. Attari. “But switching to more efficient technologies generally allows you to maintain your behavior and save a great deal more energy.”

Nearly three out of four (72.5%) are concerned that new energy saving technology may not deliver projected performance. A whopping 82.8% think green washing among manufacturers and suppliers is more prevalent than it was two years ago. When asked, “Which of these is an achievable goal for reducing energy use in your facility?”

>73.8% felt a 5% to 20% reduction was achievable

>25.4% aimed at a 20% to 35% reduction in energy use

>one person felt that a 35% to 50% reduction was possible

After my session, that individual approached me and said their numbers were running in the 50% range when compared with peers. As the superintendent of a rapidly growing school district, he felt they only had one-shot at getting it right, after a school was built his ability to get additional money for improvements would be next to impossible.

Thinking Big Gets Big Results

As Chair of the **Model Green Lease Task Force**, it was important that we establish big energy efficiency goals for the **Model Green Lease**. The initial engineering analysis of the Model Green Lease shows that an energy reduction of 30% to 50% is possible. While we

get some push back, such goals are not pie in the sky, or only achievable after a massive investment of capital. Two organizations, the Department of Energy’s National Renewable Energy Laboratory and Southern California Edison’s Design & Engineering Services have shown that major reductions in energy use are achievable.

This month the National Renewable Energy Laboratory released a technical

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report that shows how to attain 50% energy savings in new and existing large office build-

ings. The report, “**Technical Support Document: Strategies for 50% Energy Savings in Large Office Buildings,**” assess how large office buildings can reduce energy use 50%, when compared with a baseline standard (ASHRAE Standard 90.1-2004), across a broad range of U.S. climates.

Southern California Edison (SCE) has taken energy efficiency and advanced lighting control systems (ALCS) to the next level. Using a 20,133 sq.ft. facility on its Irwindale, CA, campus as a test bed, SCE has pushed, prodded, and cajoled major manufacturers (Convia, Lutron, and Universal), distributors, and contractors to improve performance and pricing. The energy savings and demand reductions are impressive (see table).



How Designers and Facility Managers Think?

This brings up an interesting question: Do designers and facility managers think about saving energy in the same limiting manner as the public? At *Facility Decisions 2010* in Las Vegas, I had an opportunity to test this proposition. As the opening speaker, I polled the audience with a brief set of questions. Over half (55%) believe energy costs are going to rise from 4% to 6% next year, 16.8% think the increase will be 7% or higher.

Overhead Lighting	Baseline	Post Retrofit	Savings	Percentage Reduction
Number of Fixtures	309	240	69	22.3%
Number of Lamps	927	480	447	48.2%
Power Density W/ Sq Ft	1.39	0.49	0.90	64.8%
Avg. Weekly Demand W/ Sq Ft	1.27	0.52	0.75	59.2%
Annual KWH/ Sq Ft	7.39	2.59	4.80	64.9%
Task Lighting				
Annual KWH/ Cubical	175.83	30.43	145.40	82.7%

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During the baseline period, weekday overhead lighting ranged from 10.0 kW to 12.1 kW in one of the manufacturers test area (5,150 sq.ft.). After the retrofit, the peak load for overhead lighting ranged from 2.8 kW to 3.0 kW, a saving of 72% to 75%. Task lighting in workstations was reduced from a peak of 0.9 kW to 0.2 kW, a savings of 78%. Due to the design of the building, there was little opportunity for savings from daylighting, which makes these results even more impressive.

In addition to energy efficiency, this SCE project also confirmed the reliability of remote control of a building's lighting load as part of a *Demand Response* program. To ensure that its customers can smoothly implement ALCS into their facilities, SCE established a training center to educate contractors and technicians in installation and commissioning of ALCS. Con-

sidering that California's Title 24 is one of the strictest lighting codes in the nation, the ability of SCE to save energy and reduce demand by these amounts is extraordinary. SCE proves that big energy savings are still possible.

Bottom Line

The message is clear; we are only limited by the goals we set. It is time to think *big* about energy efficiency. ■

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