

# Partners in Efficiency

**For facility managers looking to save energy and money, four projects with ESCOs offer useful lessons**

BY SUSAN BLOOM

**T**here are plenty of facilities with outdated chillers, boilers, lighting systems and the like. The reason usually comes down to one word: money. To circumvent that obstacle, facility managers can turn to ESCOs, or energy service companies, to provide financing as well as project planning, management and other services.

Those upgrade projects bring heavy-duty engineering challenges. But successful upgrades also require close attention to the softer side of the project.

Effective communication was one of the keys to success of a project in the city of Marshall, Texas. In the face of rising energy costs and outdated HVAC components in its buildings, the city brought in an ESCO to conduct comprehensive energy audits on facility equipment in many city buildings.

Upgrades included lighting retrofits, installation of a building automation system to control HVAC across multiple facilities, and installation of a new chiller and boiler at City Hall. The work was done under a performance contract.

Of course, the project had engineering challenges. Existing energy compo-

nents such as air handlers in the library and City Hall weren't delivering the airflow they were designed to distribute, and City Hall zones didn't match room configurations. To address these challenges, the air handler coils were cleaned, fan sheaves were changed in two handler units and ductwork was re-zoned to match room configurations.

"When working on buildings that contain outdated equipment and are decades old, design teams should anticipate unexpected issues, costs, and delays," says Chuck Lewis, project manager for Schneider Electric, the ESCO on the project. "Sometimes by just having existing equipment cleaned and recommissioned as part of the project, you can bring new life to these systems."

The project also yielded insights on technical matters. "When retrofitting the City Hall, replacing the pneumatic actuators on the double duct boxes with electronic actuators proved to be very labor intensive," Lewis says. "As an alternative, we could have taken a second look at replacing the boxes with separate variable air boxes to reduce time spent on this aspect of the project."

But those sorts of engineering issues were only half of the battle. Because the work was being done in buildings such as convention centers that were in con-

**Communication with occupants was crucial to success for energy upgrades in municipal buildings in Marshall, Texas, including City Hall.**



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## Steps to Lower Energy Bills

In most organizations, there is a range of opportunities to minimize energy costs. In fact, one challenge for facility managers can be the difficulty of deciding what to address first.

One way to tackle that problem is to divide energy reduction efforts into three phases — energy efficiency, renewable energy, and supply management, says David Anderson, executive vice president, Ameresco.

"Understand your usage and reduce your energy load first," says Anderson. "Energy efficiency measures are the most effective means of doing this." Next up is the question of renewable energy. Renewables will not only reduce the consumption of fossil fuels — reducing the facility's carbon footprint and supporting sustainability initiatives — but also provide some price certainty. The big question: Is it financially viable for an organization?

A third step is to bid your commodity energy requirements. "Good supply management will help ensure that you're purchasing whatever remaining energy you need as cost-effectively as possible, which is particularly important in the current economic climate," says Anderson.

It's important to keep the basics in mind as the process of working with an ESCO unfolds. Good communication should be a priority from the very start of the project, as the project is being developed and before the final contract is signed. The facility manager should have clear expectations and know "exactly what's being delivered in terms of costs and savings." As the project proceeds, having a schedule for update meetings helps ensure that everyone is on the same page.

The market for products and services that can reduce energy costs is expanding every day, and facility managers should keep their eyes peeled for opportunities. "Be open to innovative solutions and generate as much competition as possible when seeking out vendors, services, and technology," Anderson says. "This will help ensure that you have the greatest flexibility and the broadest spectrum of opportunities from which to choose."

— Susan Bloom

stant use, the project team had to ensure that there was no interruption in service or inconveniences to the city. But that didn't mean a leisurely approach could be taken: A chiller had to be installed quickly before the summer heat arrived. Close collaboration between the engineering and construction teams was essential. So was effective communication with occupants.

## Two Levels of Communication

Communication has also been important in the 12-year, \$4.5-million energy savings performance contract that the city of Tallahassee, Fla., is using to improve building operations, boost reliability and comfort, and increase energy efficiency across 45 city facilities.

On this project, communication has been important on two levels. One is traditional person-to-person communication. A working relationship with an ESCO should leave ample opportunities for input to ensure the customer is involved with all decisions.

The city and the ESCO held interactive verification meetings so that Tallahassee officials could see the different project options they had to choose from and how each option would directly affect the overall program.

"They were able to better understand outcomes like payback and savings in order to help prioritize their needs, and this helped get them thoroughly invested in the project," says Ron Blagus, energy market director for Honeywell Building Solutions, the ESCO for the project.

The Tallahassee project involved another form of communication: the transmission of data about building operations. Integration of facility systems is giving Tallahassee visibility into en-



**The Virginia Department of Corrections used performance contracting to tackle water issues at facilities like the Greenville Correctional Center.**

ergy use at multiple buildings through a single platform. In addition, meters run though an advanced metering infrastructure system provide near real-time information on a building system level.

## Corrections Environment

The Virginia Department of Corrections has been using performance contracting to tackle water conservation and solar energy initiatives. Conventional toilet fixtures and lavatory valves have been upgraded to low-volume models. Since the program started in July 2007, more than half a billion gallons of potable water have been saved. Solar thermal energy is being used to displace the use of propane to heat water — one of the most effective applications of solar technology. More than 300 solar thermal collectors will be installed at St. Brides Correctional Center.

"Technically, it was important to work hand-in-hand with the customer in the development and implementation of solutions," says Richard Barrett, account executive for Johnson Controls

state government energy solutions, ESCO for the project. "When working in corrections, it's essential to have the customer's total verification to make sure that all expectations are met."

In the corrections environment, communication and other aspects of project management take on a new level of importance.

"Any energy services provider that works in the correctional environment must understand the importance of stringent time lines, uncompromising safety standards, and smooth project implementation," says John Poggi, account executive, Johnson Controls.

Although few environments are as sensitive as a correctional facility, almost any group of building occupants brings special considerations of one sort or another. A case in point is a multi-phased, \$11.5 million energy performance contract let by the Metropolitan Development and Housing Agency of Nashville, Tenn. The project began in 1997 and was later extended in 2009. The ESCO is Siemens Industry Inc.

Projects have included use of more energy-efficient lighting technology (replacing 100- and 150-watt incandescent bulbs with 13-watt CFLs), water-saving measures (low-flow fixtures), improved HVAC systems, and renewable methods such as geothermal design and photovoltaic arrays.

The schedule was a big challenge in getting projects completed. "Time was short trying to get work done in occupied units; it was often difficult to manage logistics with the residents," says Ed Shewmaker, modernization coordinator and staff architect for the agency. "Also, based on the performance contract itself, we found ourselves with only six

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months to design almost \$12 million worth of work, so we had to research different types of equipment, review the way they interfaced in our buildings, and bid out contractors all at the same time."

### Value of Mock-ups

The agency's experience has yielded useful lessons for other facility managers. One is the value of mockups.

"During our first round of lighting upgrades in 1997, we installed lower temperature (2,000 K) CFLs in frosted-lens fixtures throughout the units, only to hear a lot of residents, particularly elderly ones, complaining that the light output wasn't sufficient," says Shewmaker. "At a cost of \$3 per fixture, we ended up changing those bulbs out to higher temperature (4,100 K) CFLs in fixtures with clear glass coatings which offered a whiter light closer to daylighting."

Another important lesson is to keep building occupants in mind when selecting products. Shewmaker says that the agency removed more complex thermostats that they'd installed



**The Metropolitan Development and Housing Agency of Nashville, Tenn., used an ESCO for a long-term energy performance project.**

upon learning that they were too difficult for residents to use. "If things aren't simple, people won't use them and you're undermining the benefit," Shewmaker says.

It's not just energy data that makes projects like these a success. That's important, of course, but so is information about technology options and operations as well as occupant needs and behaviors.

"We'd advise owners to always stay involved and on top of maintenance, design, energy usage patterns and new technologies," Shewmaker says. "And make sure you keep people on staff who are willing to learn and engage in training and education." **BOM**

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