

Going Green: A Three-Bucket Approach

By Stephen Ashkin

This summer, what has already been referred to as a very impressive, innovative, and state-of-the-art church library facility is scheduled to open in Salt Lake City. The Church of Jesus Christ of Latter-day Saints Church History Library will preserve, among other items, more than 260,000 books, pamphlets, magazines, and manuals; 500,000 historic photographs, posters, and maps; and approximately 150,000 journals, diaries, and other church-related papers.

But, making it more than just a notable and historic venue, the building is being designed and constructed to meet Leadership in Energy and Environmental Design (LEED) certification standards. In order to accomplish LEED certification, among other things, a building must be designed to use less heat and electricity when measured against a comparable building of the same size and scope. In addition, a LEED-certified building must be close to public transportation, use construction materials and products that are recyclable or derived from recycled materials, and incorporate “Green Cleaning.”

“The [church’s] occupants will experience healthier surroundings because many of the materials used in its construction and operation are low in volatile organic compounds,” said Dessa Fountaine with Jacobsen Construction, the building’s contractor. “A center will be located in the building to collect paper, plastics, and other materials that can be recycled, [and] the landscaping designs are all designed to use less water.”

Not only will the facility save energy and water, and be a healthier place for those using the library, but, if statistics hold true, the building will also save a considerable amount of money. According to the U.S. Environmental Protection Agency, church congregations can save as much as 30 percent on their utility bills by cutting back on energy consumption, installing more efficient heating and lighting systems, and incorporating other “green” features into their buildings.

And, these benefits do not only apply to newly constructed facilities, such as the Salt Lake City church library. In 2003, when Hebron Baptist Church in Dacula, Georgia, installed new energy-efficient lighting fixtures, they were able to save 450,000 kilowatt hours of energy, resulting in a savings, at that time, of \$32,000 annually. Most likely, these types of savings have increased and, as a result, have served as intriguing reasons why many of today’s churches—regardless of size—are looking to be greener and conserve energy.

Gray History

As evidence of global warming mounts and becomes less disputable, U.S. religious organizations have been reexamining how they build and operate their facilities with goals of reducing their overall carbon footprint, becoming a healthier environment, and saving a little “green” in the process, as well. However, this has not always been the case,

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and, in some instances, religious facilities have lagged far behind other types of facilities in incorporating greener, more efficient building and operating procedures.

Forging Green Paths

The time and planning involved to “go green” has stymied lots of facilities, not only churches, and this is especially true of existing buildings.

Many existing facilities—especially churches, which often have limited staff and may depend on volunteers to help operate their facilities— want to go green but find the task daunting. However, over the years, ways have been developed to make the process less overwhelming and much more manageable.

Establishing a benchmark starts the process. This is created by conducting a baseline survey of where things stand now—the current status of the church building. The following are considerations during initial stages:

- * How much water and energy the facility is using and where it is being used
- * The age and efficiency of HVAC systems
- * Recycling programs
- * The type of cleaning products currently in use

In many cases, this can be handled by church staff. In other situations, a consultant or building engineer may need to be called in to establish the baseline.

Next Steps

Once the benchmark has been established, church administrators should take the following steps:

Build a green team.

The green team should include church administrators, as well as congregation members to generate support and leadership for the greening process.

Develop a plan.

Based on the baseline survey, the team analyzes the information and determines the best procedures and opportunities for improvement and which areas can be addressed based on costs and potential health and environmental impacts.

Incorporate green operating procedures.

The green team will likely find many ways the facility can become more environmentally responsible and save on operating costs—including transferring to green cleaning, using both sides of typing paper, developing extensive recycling programs, and installing new energy-efficient heating and air conditioning systems.

Overcoming Stumbling Blocks

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It is typically at the green planning stage when churches and other facilities face their greatest stumbling blocks. The problem is as simple as it can be complex; if the benchmark survey has determined a number of changes must be made, which should be tackled first? If, for instance, the HVAC systems are outdated and energy inefficient, should they be replaced now, at considerable cost, or should church administrators make other green changes that cost less and are easier to accomplish?

This is where the three-green-bucket approach to greening a facility comes in. The buckets help organize the greening process, make sure all green items are dealt with in an orderly manner, and determine what should be accomplished when.

Here is the gist of the approach:

1. First bucket

In most cases, the first bucket will contain items that can easily be instituted now at very little or no additional cost, but still have a significant benefit. A good example of this would be the transfer to healthier green cleaning products and systems. In most cases, green cleaning chemicals cost about the same as conventional cleaning chemicals, and green cleaning equipment (such as vacuum cleaners, extractors, and floor machines) tend to be of higher quality, so cost of ownership is less than conventional equipment.

2. Second bucket

This would involve items that do cost some money to implement, but can still be quickly and easily implemented and most likely will have a relatively quick return on investment. A good example of this is the transfer to more economical lighting fixtures. The Hebron church referenced earlier saved more than \$30,000 by installing more energy-efficient lighting.

3. Third bucket

This is where more costly items or items that may take some time to accomplish are placed. For instance, installing a new HVAC system can be costly, financing may need to be arranged, and, in some cases, mechanical upgrades to the building may be required to accommodate the new equipment.

Having all of the items placed in the three buckets makes it very clear what has to be accomplished to green the facility and presents it in an orderly manner so that making decisions is much easier. There is no rule saying the “first bucket” items must be attended to first. In some cases, attending to the more costly or involved “third bucket” items first make the most sense and have the greatest environmental and financial returns.

Church administrators should also realize that greening a facility is not a one-time process. Instead, it should be viewed as a journey and an ongoing process that evolves and grows.

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Sidebar

Controlling HVAC Costs Affordably

Getting a new HVAC management system to achieve a 90-day payback seems impossible, but that's exactly what happened for Colonial Baptist Church in Cary, North Carolina.

The church's administrators had a problem common to most facilities with widely varying schedules and last-minute events and changes. Energy costs were continuing to escalate, and trying to manage the HVAC equipment in multiple buildings had become an expensive nuisance and a frustration. They knew they had to find a way to permanently and affordably control their runaway HVAC energy costs. With a combination of standard and programmable thermostats (most with the ever-so-magical "hold" feature), the problems were nearly daily in occurrence. Well-intentioned members of the congregation thought they were helping the facility engineer, Justin Barrett, by modifying schedules or adjusting the temperatures. Unfortunately, it was also common for them to press the "hold" buttons or forget to set back the thermostat(s) when their event was concluded. This resulted in unruly energy bills due to unneeded conditioning when the space was unoccupied.

The church is composed of five multipurpose buildings. Due to the nature of the buildings, this concern dealt with three buildings. The Administration building is 25,500 square feet and has eight HVAC units and thermostats. The Family Center, also 25,500 square feet, has four units. The most unique is the 34,500-square-foot Worship Center. It houses seven thermostats and hosts 1,000 attendees in each of three Sunday morning services. During the summer months, cooling a congregation of that size was a real challenge, but placing the Worship Center into an energy savings setback condition at the end of the third service was often overlooked. Conditioning 34,500 square feet when it wasn't needed was extraordinarily expensive.

Barrett had even tried commercial setback thermostats, but that didn't allow enough programs per day for the variety of activities at the multi-building campus. He contacted Building Automation System (BAS) companies that quoted prices between \$60,000 and \$70,000. Being completely out of his budget, these costly estimates made him continue the search for something more affordable.

The church wanted a simple-to-use system that would give them complete control and multiple schedules to program for each day. Barrett saw an ad for NetworkThermostat's

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Net/X system, www.networkthermostat.com. The company offers both wired and wireless choices. They could even be combined in the same system.

Barrett initially selected the traditional “wired” network thermostat system, later moving to wireless as needs changed. Since a large portion of the buildings had drop-in ceiling tiles, pulling the communications cable wasn’t cumbersome, even though the buildings are almost 1,000 feet long. The system was completed and running in late summer of 2008, making a dramatic reduction in the HVAC energy consumption. The church saved their 2007 electric utility bills and compared them to the same period after the networked thermostat system was installed in 2008, taking into account degree days and energy rates.

“Over \$10,300 is a lot to save for our church in just the first four months. Considering the system cost, we got an almost immediate payback, and we’ll continue to save on energy costs for years to come,” Barrett said.

The thermostat schedules were set through the downloaded command center software, which can be loaded into any PC-based computer. No additional computer hardware investment was required. They were able to easily set up to six different schedules per day and have drag-and-drop capabilities to copy schedules to any other thermostats on the network. Schedules are quickly modified with just a few keystrokes and mouse clicks at any time, allowing both comfort and savings to be maintained as the buildings’ activities varied.