

## **Energy Initiatives: Short-Term Steps, Long-Term Benefits**

By Lawrence Norve

President Barack Obama's American Recovery and Reinvestment Bill of 2009 has brought new attention to the variety of greening products and programs available in the United States today. As the largest energy consumer in the world, the nation is finally taking significant pro-active steps to not only double renewable energy production, but to renovate buildings to make them more energy efficient.

In recent years, fluctuating energy costs have forced many organizations to redirect money from planned building repairs or improvements. Many have implemented energy efficiency programs to help reduce long-term energy consumption and cost, ranging from the installation of automated lighting controls and lighting replacements designed to reduce energy consumption to the installation of more energy-efficient HVAC equipment.

Retrocommissioning of existing building HVAC systems, although it is a time-consuming and costly process, has been gaining popularity among maintenance and engineering managers who find the resulting reduction in energy use, improvements in the building environment and enhancements in system reliability and maintainability far outweigh the associated costs. This process addresses deficiencies in systems that have evolved over time since initial installation, which may result in a variety of issues ranging from unnecessarily elevated energy use to compromised indoor air quality. According to the California Department of General Services, for an existing building, retrocommissioning typically results in a simple payback of two years. (see <http://www.documents.dgs.ca.gov/green/eeproject/retrocommfactsheet.doc>).

For organizations unwilling or unable to make a large up-front investment in replacing or commissioning inefficient building systems, small changes to building temperature settings can have a surprisingly big impact. According to the Department of Energy, lowering the temperature a few degrees during the heating season, for example, can reduce heating costs by up to four percent per degree. Lighting retrofits are relatively easy to accomplish and do not have to be done all at one time (see [http://www.eia.doe.gov/emeu/consumptionbriefs/recs/thermostat\\_settings/thermostat.html](http://www.eia.doe.gov/emeu/consumptionbriefs/recs/thermostat_settings/thermostat.html)).

Since energy represents the largest operational expense for most facilities, an assessment of current energy usage and efficiency is a starting point for many organizations on the road to enhancing building sustainability. The results of such an assessment can lead to the identification of a variety of potential programs in both the short and long-term to reduce energy consumption. These programs may range from the installation of less power-hungry fluorescent lamps to the retrofitting of equipment that takes advantage of new technologies to heat or cool facilities more efficiently.

Aside from recent incentives to "go green," organizations have relied on assorted programs to help with overall sustainability. The Energy Policy Act of 2005 promotes adoption of such programs by offering consumers and businesses federal tax credits for purchasing energy efficient appliances and products. Often times, organizations can take advantage of significant rebates from their local utility provider when installing such equipment. These rebates are not only limited to HVAC

equipment, however. Some utilities providers also offer rebates for companies replacing computer servers with newer models that employ more power-efficient processors.

By implementing practices and systems that help reduce energy costs, organizations can also take advantage of tax savings. For example, Energy Star programs under the Energy Policy Act currently enable owners or designers of new or existing commercial buildings to receive a tax deduction of up to \$1.80 per square foot if they save at least 50 percent of the heating and cooling energy of a building that meets ASHRAE standards for energy-efficient design (see [www.energystar.gov/index.cfm?c=tax\\_credits.tx\\_comm\\_buildings](http://www.energystar.gov/index.cfm?c=tax_credits.tx_comm_buildings)). Partial deductions can be obtained for measures affecting the building envelope, lighting or heating and cooling systems.

For those who have already taken extensive steps to reduce carbon emissions through fossil fuel conservation, carbon trading programs, which assign a dollar value to carbon dioxide emissions, are available in some regions to help curb the growth in greenhouse gases. States such as California have rolled out programs for trading emission credits to promote “carbon neutrality.”

While these types of programs will have a slow but steady impact over time, organizations need to see the return on investment for sustainability practices to become prevalent in the United States—and the stimulus plan may help to do just that. The American Recovery and Reinvestment Bill provides:

- \$6.7 billion for renovations and repairs to federal buildings, including at least \$6 billion focused on increasing energy efficiency and conservation;
- \$6.9 billion to help state and local governments make investments that make them more energy efficient and reduce carbon emissions; and
- \$1.5 billion for energy sustainability and efficiency grants and loans to help school districts, institutes of higher education, local governments and municipal utilities implement projects that will make them more energy efficient or sustainable.

There are many short-term and low-cost initiatives that can be used during renovations to deliver greater building sustainability. On the other end of the spectrum, there are also significant system upgrades and replacements that deliver returns over the long term. The balance of short- and long-term initiatives is important in implementing sustainability programs that deliver results today and continue to provide benefits to a building and its occupants in the future.

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