

Case Study: Energy Reduction through Lighting Improvement

The Captain James A. Lovell Federal Health Care Center (Departments of Veterans Affairs and Navy) in North Chicago, Illinois, reduced its energy consumption by 15 percent in one year. One key project was replacing fluorescent lighting in many areas of the health care campus with more efficient light emitting diode, or LED, bulbs. This energy consumption reduction initiative alone resulted in an anticipated savings of \$500,000 over 10 years.

Lovell FHCC's Green Environmental Management Systems Committee was inspired to reduce its facility's overall energy consumption after completing successful sustainability projects in energy-efficient transportation and waste diversion. It chose to begin reducing building energy use with lighting improvements that led to the facility's recognition for overall achievement by the Federal Green Challenge program. A separate project helped make more efficient use of the steam generated by the facility's combined heat and power plant.

The Department of Veterans Affairs has been allotting money for energy conservation measures for the last several years as part of its general policy. But even with this funding, Lovell FHCC found the



The Captain James A. Lovell Federal Health Care Center.

cost of purchasing and installing all of the new LED bulbs at one time a budgetary challenge. Lovell FHCC obtained project funds from the department's set-aside fund to accomplish the project and looked for other ways to reduce project costs.

Key Topics

- Lighting retrofits.
- Energy efficiency.

Results

- 15 percent electricity use reduction saved 7.4 million pounds of CO₂ emissions.
- Anticipated savings of \$500,000 over 10 years.
- \$13,000 annual savings from reduced maintenance.

Facility at a Glance

- 120-acre campus with numerous buildings including a full hospital, residences and power plant.
- Serves sailors at Naval Station Great Lakes and veterans from northern Illinois and southern Wisconsin.
- Participant since 2011 in the FGC categories of energy, transportation and waste.
- Recipient of EPA National FGC Award: Transportation.
- Recipient of EPA Region 5 FGC Award: Overall Achievement and Innovation.

Sustainable Materials Management

Federal Green Challenge



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Energy Use Reduced

It was able to use in-house staff to install the new LEDs instead of hiring a contractor, saving around \$250,000 and increasing the return on investment. This re-lamping project reduced the facility power demand by 52,000 watts and 424,000 kilowatt hours per year. Additional cost savings are expected to be about \$13,000 per year from reduced maintenance and labor costs.

In addition to the cost savings, Lovell FHCC employees have had positive comments on the overall lighting quality of the LED bulbs. In the future the health care center hopes to integrate enhanced lighting controls, such as installing more occupancy sensors and dimmers throughout the facility, to provide additional energy and cost savings.

After seeing the lighting quality, energy savings, cost benefits and reliability of LED lighting, the facility has started to examine replacing other traditional lights with LED lighting, beginning with areas in the hospital complex where there have been complaints about lighting quality. LEDs are

being considered for an indoor/outdoor area where lights are always on to illuminate darker indoor areas. Because of LEDs' longevity, it is hoped lighting levels will be maintained and that pedestrians will be better able to see hazards.

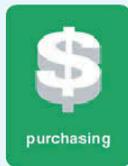
In another efficiency project, Lovell FHCC uses a combined heat and power plant on its campus to provide all its energy needs. With a cogeneration system, heat created by the process of electricity production is reused for space heating, water heating and other energy needs. Some of this energy is provided to the Naval Station Great Lakes facility. Excess energy is sold back to the local utility company, which provides additional savings.

In 2012, improved steam utilization and heat recovery from the combined heat and power system, plus favorable weather and lower natural gas prices, meant the facility had excess electric capacity. This allowed Lovell FHCC to sell about three million kilowatt hours of electricity from the cogeneration system back to the utility company.

About the Federal Green Challenge

The Federal Green Challenge, part of EPA's Sustainable Materials Management Program, is designed to challenge federal agencies throughout the country to lead by example in reducing the federal government's environmental impact. It helps agencies meet obligations under Executive Orders 13514 and 13423.

In 2012, nearly 300 federal agencies, representing more than 500,000 employees participated in the Federal Green Challenge. Their combined efforts resulted in an estimated cost savings of more than \$31 million to U.S. taxpayers.



For More Information

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Federal Green Challenge:

<http://epa.gov/fgc>