

# State of Efficiency

Efficiency: The productive use of resources; the degree to which something is done well or without wasted energy.

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“We, the public servants of the state of Oklahoma, are hereby committed to the conservation of resources and the protection of future generations through the promotion and implementation of sustainable business practices.”

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## The Most Powerful Lighting Control System

According to the US [Department of Energy](#), commercial buildings made up 36% of US total electricity use in 2008. Lighting is second only to space heating as the leading end-use of energy in US buildings. In 2008, DCS began installing lighting control devices such as timer switches and daylight and occupancy sensors in all DCS-managed facilities. Despite the great benefit and reliability these technologies can provide, they are still not the best option. What if I were to tell you that a revolutionary device exists and, if utilized, could reduce taxpayer dollars spent on energy charges and help dig our state out of debt? Just show you where to sign, right? At the end of each day, look at your hand. Then, clasp your pinky, ring and middle fingers with your thumb on top. Then... wait for it, wait for it...**turn the light switch off!!**

Does one switch control more than one workspace? Get with your supervisor to create a rotating schedule to ensure the lights in your area are turned off overnight and during weekends. Volunteer to contribute to your agency’s responsible use of lighting systems and your agency or division can make a positive contribution to the state’s budget shortfall by doing all it can to reduce the costs of operating state government buildings. Simple? Sure. Does it matter? Absolutely.

Take a typical week with 108 hours of nights (6pm-6am) and weekends. Multiply those 108 hours over 52 weeks and you get 5616 hours of *potential* waste. So let’s assume your area is a typical cubicle bay with 32 light fixtures and two fluorescent lamps each (32 watts per lamp).

- ⇒ 32 fixtures x 64 watts = 2048 watts.
- ⇒ 2048 watts x 5616 hours/1000 = 11,501 kWh.
- ⇒ 11,501 kWh x \$.04 avg. cost per kWh = \$460

If these lights are left on for a year, the state will pay a total of \$460 in waste...**FOR ONE UNOCCUPIED CUBICLE BAY!** There are more than 17,000 fluorescent lamps in DCS-managed buildings. Take a moment to think about how many similar cubicle bays are in each government building and the potential dollars wasted grows exponentially. By committing to be mindful of the resources needed for state government to function and to use only what is necessary, state agencies can minimize the taxpayer’s energy bill for buildings without spending a cent or installing a fancy new gizmo. In the words of a well-known Oklahoman: “*Don’t let yesterday use up too much of today.*” - **Will Rogers**

[Story End]

## Earth Day 2011 Recycling Challenge Results

The Earth Day 2011 Recycling Challenge (3/21 - 4/15) pitted four Capitol Complex buildings against each other in a race to gain the most weight. The employees in the Will Rogers, Sequoyah, Hodge, and Connors buildings didn't stuff their faces with cake and ice cream; they stuffed paper and cardboard into recycling bins and diverted recyclable waste from landfills.

The **Will Rogers** building was the overall winner with 4,659 total pounds recycled during the contest period. The building will soon proudly display the Earth Day Recycling Challenge Award in its lobby, but will have to work hard to keep it there because the traveling trophy will be displayed in the lobby of the next recycling challenge winner.

The Most Valuable Participant (MVP) on the winning team was awarded to the **Office of State Leasing** which recently implemented strategies to decrease their paper use by scanning all documents currently filed and establishing an internal policy to store and send documents electronically, and only printing what is necessary. State Leasing has eliminated four file cabinets, recycling a total of 600 pounds of paper since December 2010, with 141 pounds recycled during the contest period.

According to the [Environmental Protection Agency](#) (EPA), only 33% of municipal waste is recycled, so DCS challenged the state agencies in the four participating buildings to improve their efforts and keep even more waste out of the landfills. The buildings combined to recycle 5,653 lbs of paper and 4,929 lbs of cardboard from January 1 until the challenge began on March 21. Recycling in the four buildings increased by **224%** for the contest period, keeping a total of 8,129 pounds out of the landfill!

Some buildings generally produce little to no paper recycling for the DCS program because the bulk of their waste paper includes sensitive documents that go to a contract vendor for proper destruction. However, agencies in these buildings asked for extra bins, brought recyclables from home, and rallied their coworkers to recycle their newspapers, magazines, non-sensitive waste paper, and junk mail instead of adding these items to the garbage.

Each year DCS celebrates Earth Day with a sustainability-related event. In 2009, the 'Earth Day CFL Exchange' offered tenants energy-saving compact fluorescent light (CFL) bulbs to replace incandescent bulbs in desktop lamps. Through the cooperation of building occupants, over 2,268 bulbs were traded over 3 days resulting in average annual savings of 102,675.84 kWh.

On Earth Day 2010, DCS implemented the [Re-Invent Your Print!](#) recycling program at the State Capitol and Governor's Mansion. The program has since grown to include 15 other DCS-managed buildings.

[Story End]

First Place: **Will Rogers**; Total Pounds: **4,695 lbs**; Percent Increase: **216%**

Second Place: **Sequoyah**; Total Pounds: **1,792 lbs**; Percent Increase: **356%**

Capitol complex recycling totals July 2010 through April 15, 2011:

Paper: 135,515 pounds which is the equivalent of 1,825 trees saved

Cardboard: 27,329 pounds which is the equivalent of 182 cubic yards of landfill space

Help control indoor insect populations; remember to RINSE containers before recycling!

## Plasticulture Brings Fresh Food to the Governor's Table

The Department of Central Services (DCS) grounds crew installed a new gardening system this growing season at the Governor's mansion. The new strategy consists of a layer of plastic and a drip irrigation system to not only conserve water, but also to extend the growing season and production with minimal weeding requirements.

Tomatoes, onions, cabbage, cilantro, broccoli, and various other fruits, veggies, and herbs have already made their way to the Governor's table. The lush harvests are expected to continue throughout the summer.

Larry Miller, DCS Mansion Grounds Administrator, said the watering requirements have significantly decreased. During previous growing seasons, the garden needed water every 2-3 days. With the new system installed, there's an average of 12 days between water applications.

The system was provided by the Oklahoma Department of Agriculture, Food and Forestry's (ODAFF) *Plasticulture* program. ODAFF's program was designed in 2005 to assist small farmers.

The program provides equipment needed to install a drip tape irrigation system on prepared land no less than 1/4 acre in size and no greater than one (1) acre.

For more information about the ODAFF Plasticulture program or about installing Plasticulture at your home or local garden, visit the [program webpage](#) or [FAQ page](#). [Story End]

## **Energy Savings & Renewable Energy Update**

### Energy Generated

(Numbers updated 5/6/2011)

Total Wind = 39,714 kWh, CO2 Equivalent = 68,308 lbs.

Total Solar = 97,279 kWh, CO2 Equivalent = 167,320 lbs

### Energy Savings/Increase

(March FY08 through March FY11)

Total Energy (kBtu) reduction of 34,101,527 kilo British thermal units.

Electricity (kWh) reduction of 7,587,249 kilo Watt-hours.

Natural Gas (Dth) increase of 9,400 Dekatherms.

Water (Gallons) reduction of 15,015,000 Gallons.

For a complete listing of energy savings please visit: [OFM Energy Management Page.](#)

For information on renewable energy projects in the Capitol Complex,  
visit: [Renewable Energy Projects.](#)

## Beyond the Thermostat

The approach to cooling a commercial building may require a combination of strategies depending on original system design and outdoor conditions. This article is intended to explain four different cooling tactics and the benefits of each as it relates to the efficiency of building operations.

### What's Cooler Than Cool? Free Cooling.

Free cooling is the production of chilled water without the use of a chiller, and can be used generally in the late fall, winter and early spring. A heat exchanger will transfer heat directly from the chilled water loop to the cooling tower loop. The heat exchanger keeps the cooling tower water separate from the coolant flowing through the cooling coils in the air handler. Air is then blown over the coil and the heat and moisture are removed from the air.

PROS: Saves energy by reducing the chiller operation and has a wider range of operation than Economizer because it is not directly affected by humidity.

CONS: Seasonal use only. Pumps are required to circulate cooled fluid.

### Economizer = Common Sense Cooling

When the outside temperature and humidity are right the outside air is brought into the building and filtered before it is distributed throughout. The process cools the building by removing heat.

PROS: Fans are the only mechanical equipment required making it the cheapest way to cool a building.

CONS: Ability to utilize is directly related to temperature and humidity.

### Natural Born Chiller

This method of cooling uses mechanical equipment (chiller) to remove heat from the chilled water loop and the fluid is pumped to the cooling coils in the air handler. Air is then blown over the coil, moisture and heat are removed and the air is distributed in the building.

PROS: Better temperature & humidity control.

CONS: Most expensive method.

### Thermal Storage: Similar to What Squirrels Do

Like the chiller method, mechanical equipment (chiller) is used to remove the heat from the chilled water loop. The fluid is then pumped to the coils in the thermal storage tanks creating large blocks of ice or cold water. The ice tank saves the ice or cold water for later use when kWh rates are high. So not exactly what squirrels do, but in a sense, we are saving something to use it later when it benefits us most.

PROS: Ability to make ice or cold water at night when other equipment such as computers, lights and HVAC are shut off. The chiller doesn't drive up electrical demand & doesn't run when electrical rates are higher. During 'peak months' utility companies charge \$0.16/kWh (vs. about \$0.04/kWh during off-peak) from 2pm-7pm.

CONS: More equipment to maintain (chiller wear and tear).

[Story End]

# Energy Star Update

## DCS-OFM Energy Star Portfolio

Current Average Rating: 80; Facilities Included: 12; Energy Star Certified Buildings: 4

- Kerr-Edmondson Building -Tulsa, OK; Current Rating: 91 (Energy Star Certified)
- Attorney General Building - Oklahoma City, OK; Current Rating: 76 (Energy Star Certified)
- Jim Thorpe Building - Oklahoma City, OK; Current Rating: 82 (Energy Star Certified)
- State Capitol Building - Oklahoma City, OK; Current Rating: 89 (Energy Star Certified)
- Connors and Hodge Buildings - Oklahoma City, OK; Current Rating: 73
- Sequoyah and Will Rogers Buildings - Oklahoma City, OK; Current Rating: 86
- DHS-CAP Building - Oklahoma City, OK; Current Rating: 90
- Department of Libraries Building - Oklahoma City, OK; Current Rating: 91
- Agriculture Building - Oklahoma City, OK; Current Rating: 88
- Department of Transportation Building - Oklahoma City, OK; Current Rating 70
- Banking Building - Oklahoma City, OK; Current Rating: 54
- Denver Davison Courts Building - Oklahoma City, OK; Current Rating: 46

[Story End]

## Get to Know Your Facilities Professionals!

### The Facts

**Name:** Chris Robinson; **Occupation:** Construction Maintenance Technician II; **Years with DCS:** 2; **Specialized Skills:** Gas Turbine Engine Maintenance; **Hometown:** Mustang, OK

Chris Robinson has worked for DCS for two years. Prior to his employment with DCS, Chris worked in the construction industry, was in the US Navy where he worked on gas turbine engines, and gained varied experience in large property maintenance and operation. Chris is responsible for repair and maintenance in Capitol Complex buildings, namely major pump overhauls. Chris likes the variety of tasks and that every day presents fresh challenges and opportunities. Chris enjoys that he and the other central maintenance crewmembers get to help with the sustainability efforts by retrofitting lights and water fixtures, and operate/maintain the LEED Gold-certified DHS-CAP building. Chris lives with his wife and four children in Mustang, OK and enjoys woodworking in his spare time.

[Email Chris Robinson](#) [Story End]

### July is Smart Irrigation Month

To raise awareness of the value of water-use efficiency, the [Irrigation Association](#), a program of the Irrigation Foundation, has named July '[Smart Irrigation Month](#).' The campaign is designed to educate homeowners, encourage industry firms and professionals to promote smart irrigation practices and technologies, and to help water providers minimize peak use and demand on infrastructure.

For industry, consumer, and provider resources, visit:

<http://www.smartirrigationmonth.org>.

[Story End]

Next Issue: Fiscal Year Review including updates of Energy Star Ratings, Energy Usage, Major Projects Completed, Recycling totals and more!

[Story End]

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