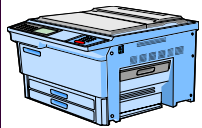


- Plug-in power supplies for laptops generally use 15 watts or less, but cannot be shut off completely. Unplugging the power supply after the laptop battery is charged, or using a power strip with an on/off switch can save energy.
- Use the “hibernate” or “bookmark” feature on PCs where possible. They save active programs and files before shutting off, then restore the same status when the PC is turned on. This added convenience encourages users to shut off their computers when not in use.
- When buying a PC from a commercial source, make sure it has the ENERGY STAR® label.

**COPIERS**



- ENERGY STAR® rated copiers use 40% less energy than standard models. They have duplex features and reduce paper costs by about

\$60 a month.

- The low-power mode feature reduces energy and heat emissions, reducing air-conditioning costs.

**PRINTERS**

- The annual energy usage for a base model printer is typically 370 kWh; however, with a duplex attachment it is 144 kWh.
- The “wait time” should be set as short as possible prior to sleep mode. The power management and duplexing (two-sided printing) feature on the printer should be “enabled” at the printer, and duplexing set as the default within each user’s software.

- Manually turn printers off completely at night and on weekends to save more energy. Use a power strip (surge protector) if it does not have a manual on/off switch. Networked systems that allow several nearby users to share a single (faster) printer generally save time, cost, and energy compared with each computer having a dedicated printer.
- Older printers that do not have an ENERGY STAR® sleep mode can still be power-managed using an external control device. External controls switch the printer off, rather than into sleep mode, after a preset time, and switch it on again when a “print” signal is received.
- When buying a medium- or high-speed laser printer that produces at least 6,000 to 8,000 pages per month, choose a model with duplexing capability. Duplexing is often a standard feature above 40 pages/minute, and it saves on paper costs, as well as provides other benefits such as lower postage and reduce file space. The payback for a printer duplex attachment is usually two years or less.

**FAX MACHINES**

- An ENERGY STAR® qualified fax machine saves you about \$35 on electricity bills over its lifetime.
- ENERGY STAR® fax machines can decrease operation energy costs by almost 40% compared to a standard model.
- The low power-mode feature reduces energy and heat emissions, reducing air-conditioning costs.
- ENERGY STAR® qualified machines can scan double-sided pages, reducing both copying and paper costs.



**Metropolitan Washington  
Council of Governments  
777 North Capitol Street, NE,  
Suite 300  
Washington, DC 20002**

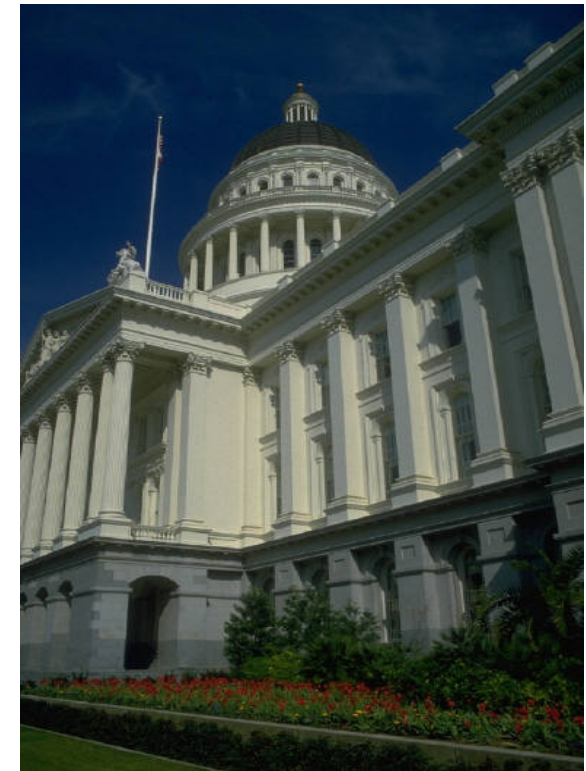
**For More Information,  
contact Leah Boggs:**

Telephone .....202.962.3336  
 Fax: .....202.962.3201  
 Email: ..... lboggs@mwkog.org  
 Internet: ..... http://www.mwkog.org

**This brochure was created under the auspices of the Metropolitan Washington Council of Government’s Energy Policy Advisory Committee.**

# BEST PRACTICES GUIDE

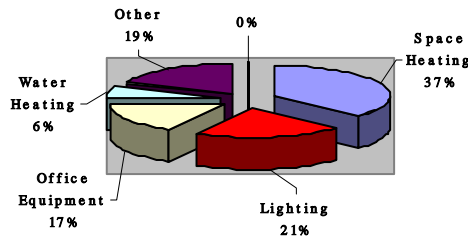
## TIPS FOR SAVING ENERGY IN GOVERNMENT BUILDINGS



## INTRODUCTION

The federal government is the nation's largest single consumer of energy. However, state and local governments spend approximately \$11 billion per year on fixed energy costs. The following pie chart reflects average energy use in federal, state and local government buildings.

Fig. 1—Energy Use in Government Buildings



New technology has made it possible to design a new building that saves energy, reduces the environmental impacts, and reduces operation costs by 50% compared to a traditionally-designed building. These buildings incorporate green building construction materials and products, renewable energy systems, energy management systems, water conservation features, and more efficient waste management systems.

Conversely, there are opportunities to reduce energy, improve the environmental performance, and reduce costs in existing government buildings through targeted energy improvements, such as:

- Optimizing the efficiency of heating, ventilation, and cooling (HVAC) systems with more efficient boilers, motors, and variable-speed drives.
- Reducing energy and maintenance costs by installing centralized energy management systems.
- Improving indoor air quality and worker comfort with regular maintenance and cleaning of HVAC systems.

- Increasing use of daylighting to lower electric lighting and cooling loads, and to boost productivity through installing energy-efficient lighting.

## ENERGY-EFFICIENT TIPS AND BEST PRACTICES

### Building Systems

#### BOILERS

- *Replace Inefficient Boilers.* Estimate efficiency of existing units by measuring excess air, flue and boiler room temperatures, and percent of flue-gas oxygen and carbon dioxide. Some utilities will provide this service for free. Boilers are available that have efficiencies greater than 90%.
- *Decentralize Systems.* Strategically position several smaller units around a large facility to reduce distribution losses, as well as to offer flexibility in meeting the demands of differing schedules, steam pressure and heating requirements. Estimate standby losses by monitoring fuel consumption during no-load periods.
- *Downsize.* Lower overall heating demands by using energy conservation measures, such as increased building insulation and improved glazings on windows. Smaller boilers may be staged to meet loads less expensively than large central plants.

**Other Boiler Tips:** (1) Use solar-assisted and biomass-fired boilers as alternatives to conventional boiler systems, and (2) Cogeneration (combined heat and power), including the use of fuel cells and micro-turbines as the heat source.

#### CHILLERS

- Chiller bypass systems can be retrofitted into central plants, enabling waterside economizers to cool spaces with chillers off-line. In these systems, the cooling tower provides chilled water either directly with filtering, or indirectly with a heat exchanger. These systems are applicable

when: *Chilled water is required many hours per year; Outdoor temperatures are below 55°F (13°C); Air economizer cycles cannot be used; Cooling loads below 55°F (13°C) do not exceed 35% - 50% of full design loads.*

### Other conservation measures to consider when looking at the chiller system upgrades include:

(1) Higher-efficiency pumps and motors; (2) Operation with low condenser water temperatures; (3) Low-pressure-drop evaporators and condensers (oversized chiller “barrels”); (4) Interconnecting multiple chillers into a single system; (5) Upgrading cooling towers; and (6) Upgrading control systems (e.g., temperature re-set).

## BUILDING ELECTRIC AND OFFICE EQUIPMENT

According to the U.S. Department of Energy, approximately \$1.8 trillion per year is spent on the energy costs for operating typical office equipment. It is the fastest growing load in the business industry.

### Office Equipment

#### MONITORS

- An ENERGY STAR® qualified monitor, in sleep mode, uses 90% less electricity than monitors without power management features.
- Idle time delay should be set to the shortest period.
- ENERGY STAR® monitors automatically enter two successive low-power modes of less than or equal to 15 watts and 8 watts after a period of inactivity. Monitors with a low-power sleep mode should be shut off completely at night, on weekends, and during long periods (two hours or more) of non-use during the day to save more energy and to extend the lifetime of the monitor.



External control devices are unavailable for older monitors without the ENERGY STAR rating, which shut the monitor off after a preset idle time. The monitor is restarted when the keyboard or mouse is used.

- When purchasing a new monitor, make sure that the power management feature has been enabled, and is compatible with the computer and operating system. Monitors with Display Power Management Signaling (DPMS) or universal power signaling are the best. Some flat-panel liquid crystal display (LC) monitors consume less energy than a comparably-sized cathode ray tube model.
- Buy models with quick recovery time.
- Most screen-savers do not significantly reduce power consumption. Some screen-saver software is compatible with ENERGY STAR® computers and monitors, initiating the sleep mode after displaying the screen-saver for a preset time.

#### COMPUTERS

- Computers with a maximum continuous power supply rating of 400 watts have a 10% or less maximum power supply rating.
- Idle time delay should be set to the shortest period (e.g., switch to sleep mode after ten minutes). Personal computers (PCs) with a low-power sleep mode can save more energy and possibly extend the lifetime of the computer if it is manually shut off completely at night, on weekends and during long periods of non-use during the day;
- Turn off the monitor of networked computers that must stay on. They have timed shutdown features, as well as automatic shut down after file backup, or alternatively, auto-boot-up before backup.

