Green Workplace Guide

**2010**

Table of Contents

[Lighting 4](#_Toc245641814)

[Heating and Cooling 6](#_Toc245641815)

[Electricity and Phantom Load 7](#_Toc245641816)

[Efficient Indoor Water Usage 8](#_Toc245641817)

[Outdoor Water Usage 9](#_Toc245641818)

[Recycling 10](#_Toc245641819)

**“You can print money to bail out a bank but you can’t print life to bail out a planet.”**

—Paul Hawken, entrepreneur, environmental activist, and author, May 2009

The nation’s small businesses, frequently called the backbone of the economy, spend more than $60 billion each year on energy and water. Mid-size businesses and small and large-size organizations spend several additional billions. Moreover, energy use in commercial and industrial buildings is responsible for 45% of U.S. greenhouse gas emissions that contribute to global warming.

Implementation of environmental measures in the workplace to conserve energy and water is driven both by cost savings and business stewardship of the environment.

It is possible for business and organizational leaders, through collaboration with Certified Green Consultants, to identify strategies to cut energy and water utility costs 10% to 30%, according to EPA Energy Star data, without sacrificing service, quality, style, or comfort. One key approach being used by many businesses is to take all possible actions to create a tight building envelope and then assess whether current systems and appliances, particularly heating and cooling, are appropriately sized to the building. Many times, they are oversized, costing businesses and organizations more in operations, maintenance, and energy consumption than necessary—to no one’s benefit.

Buildings rated as Energy Star facilities have achieved optimal performance for energy efficiency and use an average of 35% less energy than average buildings. They have accomplished this through improvements in the building shell and major building systems: lighting; heating and cooling; better management of electric load and water usage; and more efficient water heating. In addition, environmental approaches to workplace landscaping and maintenance and an enthusiastic implementation of strategies to reduce and recycle materials used in the workplace add the final elements to the profile of today’s green workplace.

A Certified Green Consultant works closely with business and organization leaders and owners in all of these areas to help achieve:

* Reduction in energy and water use and, thus, reduction in energy costs;
* Enhancement of the comfort and productivity of the business or organizational workforce; and
* Progress in averting emissions of carbon dioxide and other greenhouse gases that have been found to contribute to climate change

The following pages will provide valuable energy- and water-efficiency tips for the different workplace systems—and many of these tips cost little or nothing. But, first, from the Energy Star program, here are examples of some big and small investments that businesses and organizations nationwide are making to reduce energy and water costs and reduce carbon emissions:

* A grocery store saved more than $48,000 a year and prevented 850,286 pounds of carbon by installing high-efficiency T-8 lamps/electronic ballasts, a new chiller compressor, and assorted new high-efficiency freezers.
* A veterinary clinic also installed high-efficiency T-8 lamps/electronic ballasts, efficient water heating, LED exist signs, occupancy sensors, and outdoor high-pressure sodium lamps to achieve $540 in annual energy savings and prevent more than 10,000 pounds of carbon emissions annually.
* A bed-and-breakfast inn installed efficient lighting, insulation in all areas, high-efficiency heat pumps, programmable thermostats, and variable speed drives on air circulating fans and saved $2,400 in energy costs annually, while also preventing 47,440 pounds of carbon emissions.

These are just a few. More success stories and resources to help you in your efforts are available on the Energy Star for Small Business web page at:

<http://www.energystar.gov/index.cfm?c=small_business.sb_index>

# Lighting

Businesses and organizations have made very aggressive efforts to install more efficient lighting in workplaces over the last several years. However, new technologies and efficient practices emerge on a virtually continuous basis, making a Green Workplace Survey a very beneficial assessment, even if some new lighting has already been installed. Also, re-emphasizing efficient lighting use practices serves as a good reminder for long-time employees and possibly new information for more recent employees.

It’s long been said that the most efficient light is the light not used. The Certified Green Consultant can discuss de-lamping opportunities in those situations where more lighting than necessary is installed, possibly to the disadvantage of staff performance and certainly at higher cost. If lighting fixtures exist in the right number and brightness, then staff needs to be aware of efficient practices. Some inexpensive technologies that can help in this regard are:

**Bi-level Switching:** Controls that allow partial, instead of just full, illumination of offices, conference rooms, auditoriums, and more.

**Dimmers:** These devises provide greater control of the amount of light used and that means energy cost reductions. There are even daylight dimmers that automatically reduce electric lights when natural light is abundant.

**Occupancy Sensors:** A significant misuse of lighting is when employees leave a room and don’t turn out the lights, a problem room sensors overcome by turning off lights in unoccupied spaces and turning the back on when movement is detected. Outdoors, photocell sensors eliminate the situation when exterior lights are burning brightly during the day to provide an extra level of lighting efficiency that even timers cannot provide.

Other lighting tips for the workplace include:

* Replace incandescent light bulbs with Energy Star qualified compact fluorescent light (CFL) bulbs, which reduce energy use from 70% to 75% and last up to 10 times longer.
* Substitute T8 fluorescent lamps and electronic ballasts for T12 lamps and magnetic ballasts
* Install fluorescent lighting systems instead of incandescent lighting systems, if CFLs are not feasible
* Use purpose-driven lighting. If a small task light is all that’s needed, this lighting strategy can eliminate the higher cost of using an ambient light that provides excessive lighting. Pendulum lighting, track lighting and more should be considered.

In addition, always make sure to look for the Energy Star label when purchasing new lighting.

# Heating and Cooling

Heating and cooling expenses can represent the lion’s share of the annual energy bill for many businesses and organizations. The Certified Green Consultant can assess the age, condition, maintenance, and performance of the existing heating and cooling systems and provide a comprehensive review of other efficient systems that can serve workplace needs.

Here are some useful tips:

* The first step in consideration of heating and cooling efficiency is to conduct proper maintenance and that means at least an annual, if not a twice a year (with heavy use) inspection of the heating, cooling, and ventilation system.
* The business or organizational leader should ensure that the building shell is well sealed through insulation, caulking, weatherstripping and repairs to windows and doors, high efficiency windows and thermal window coverings, and techniques to maximize use of sunlight to reduce cooling needs and fans to reduce heating needs.
* Wherever possible, install Energy Star programmable thermostats.
* Upgrading lighting also will help reduce cooling needs because efficient lighting emits less heat.
* Buildings with older heating and cooling systems may realize significant cost savings with a new, high-efficiency system. Modern air conditioners use 30% to 50% less energy than air conditioners manufactured in the 1970s.
* Before installing a new system, or selecting the same size as the current system, have a professional make a size determination; a smaller unit may be just as efficient, but use much less energy.
* Assess exterior roofing materials. New Energy Star “cool roof” materials can produce energy savings due to superior reflective capabilities.
* Wherever economically feasible—or at the end of current windows’ useful life—replace single-pane windows with double- or triple-pane windows.
* An often neglected area for insulation is between the slab and foundation—therefore, check insulation levels throughout the building shell.
* Use a vapor retarder between the slab and the foundation or the slab and the ground.

# Electricity and Phantom Load

In the workplace, the two best tips for reducing electricity use are:

* Turn off lights and business equipment when not in use
* Purchase Energy Star products and office equipment

Energy Star certified products and office equipment include:

* Computers
* Copiers and fax machines
* Digital duplicators
* External power adaptors
* Mailing machines
* Monitors
* Printers, scanners, and all-in-ones and
* Water coolers

Many workplaces today also have kitchen appliances—refrigerators, dishwashers, trash compactors, and coffee makers. These need maintenance for optimal performance and if they are not already Energy Star products, make sure the eventual replacement model is an Energy Star.

An additional issue is something called “phantom load” or “phantom electricity use.” Phantom electricity use is becoming a larger concern with the proliferation of business equipment, computers, and other electronic devices in the workplace. Phantom load involves electricity consumption when an electronic device is still plugged in or on standby power but not in full, active use mode.

Businesses and organizations with substantial volumes of business equipment and electronics are potentially losing hundreds of dollars on each one—totaling perhaps thousands of wasted dollars each month—with no real productive benefit. It is a relatively easy matter to turn these devices off when not in use.

The Certified Green Consultant will help the business owner or organizational manager to identify those appliances, pieces of equipment, and electronic devices that involve significant phantom electricity load. An inexpensive electricity gauge can be used to determine precisely how much each device consumes in electricity.

# Efficient Indoor Water Usage

Suggestions for efficient water use in the workplace mirror suggestions for the home. Here are some of the best opportunities for reducing water use and energy use as well when it’s hot water that’s being conserved:

* Install low-flush or dual-flush toilets. New toilets are not inexpensive but, for many businesses and organizations, replacing at least one or two toilets may be within the operational budget. Short of installing new toilet fixtures, toilet inserts can help reduce the amount of water required by each flush.
* Repair leaky faucets and water pipes. Thoroughly examine the workplace for any signs of standing water.
* Install low-flow devices on all faucets. In addition, installing automatic turnoff devices on bathroom faucets can keep water from running continuously when employees forget to turn off the faucets.
* Insulate or re-insulate water pipes. Many older commercial buildings suffer from either inadequate or deteriorating water pipe insulation. Properly insulating water pipes usually requires the service of a professional, but the money spent is likely to be well worth it, not only in terms of water and money saved, but convenience as well.
* Wrap the water heater in a high-efficiency insulation blanket if the current water heating system is not the Energy Star type with sufficient insulation already built in.

# Outdoor Water Usage

Some techniques for reducing outside water usage in the workplace environment include:

* Reduce the dimensions of the property’s grass cover. Much of the water used outside commercial buildings is dedicated to maintaining green grass cover. However, businesses and organizations can create beautiful landscapes without requiring as much water by reducing the proportion of the lawn covered by green, water-thirsty grass. Choose plants and shrubs that have minimal watering requirements and make sure mulch is used to retain moisture longer.
* Mow the lawn prudently. Lawns that are cut too short retain water less well and are more at risk of “burning” from excessive sun and heat. Cutting grass higher may necessitate more frequent mowing, but it also will help to create a more lush and beautiful lawn even while reducing the need for watering.
* Adjust sprinklers or install different types of sprinkler heads so that the water is reaching only the grassy areas. Grass cover should not be watered during the daytime hours, when the sun and heat quickly evaporate the moisture.
* Don’t water too frequently. If the grass’s root zone is still moist two inches beneath the ground’s surface, than watering can wait. Relatively inexpensive rain sensors can be purchased f that will turn off the sprinklers automatically when raining.
* If landscaping is provided by a subcontractor, discuss these water saving ideas.
* Wash vehicles wisely. Oftentimes, taking vehicles to a car or truck wash that recycles its water can be just as efficient as business-based vehicle washing—and, sometimes, even more so.

# Recycling

Businesses and organizations can contribute substantial amounts of paper, shipping materials, cardboard, spent ink and toner cartridges, and other miscellaneous materials to the nation’s waste stream. Reducing the volume of these materials used and reccycling those whose use is essential not only is an example of good stewardship of resources, but also reduces small business costs of purchasing all these materials in the first place and then the costs of handling their disposal.

Here are some simple steps to “reduce and recycle”:

* Downsize paper files. Carry out as much communication electronically as possible. When documents are printed, use both sides of the paper.
* Remove your company or organization from mailing lists. A significant proportion of the paper tossed into trash bins comes from catalogs and other mailers soliciting companies to purchase various products, like awards for employees, holiday cards for customers, or a variety of computer software programs. While it is a great idea to toss these unwanted paper items into the recycling bin, it is an even more beneficial to stop them at their source so that the paper is not wasted in the first place.
* Minimize your company’s mailings and ensure that mailing lists are updated.
* Place paper-recycling bins or boxes near every central printer, every central photocopier and fax machine, and every desk; ask employees to recycle every piece of paper that they use or receive and no longer need.
* Recycle printer and toner cartridges. On February 1, 2009, Staples, the world’s largest office products company, announced implementation of a comprehensive ink and toner cartridge program to serve everyone. In 2009, Staples is expected to recycle 30 million ink and toner cartridges. Other companies, such as Office Depot and OfficeMax, also provide ink and toner recycling programs.
* Avoid using plastic in the kitchen. Instead of grabbing a plastic spoon or paper bowl to eat their lunch, employees should be encouraged to use (or bring in) items that can be washed and reused.
* Buy recycled products. Purchasing paper and other products made from recycled materials is an often overlooked means of reducing environmental degradation of the planet. According to the U.S. EPA, recycled paper creates 74% less air pollution and 35% less water pollution than paper production directly from trees. While some workplace uses of paper may not be suited to recycled products, in the vast majority of cases, these products are likely to serve just fine.

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