

Hotel/Motel Waste Reduction

FACILITIES MANAGEMENT

This waste reduction fact sheet is one in a series produced by the N.C. Division of Pollution Prevention and Environmental Assistance (DPPEA) to assist the lodging industry and concerned professionals in efforts to reduce waste and enjoy the benefits of cost savings and a public image as environmentally responsible organizations.

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A property with 350 guest rooms can spend \$300,000 per year on electricity, \$50,000 on natural gas, and another \$60,000 annually on water and sewer. Most properties have the potential to significantly reduce energy and water consumption without any impact on guest comfort. Simple management strategies like the ones presented here can reduce your utility bills by 30 percent or more while helping your facility become a better steward of the environment.

Every watt of electricity that your property uses generates air pollution and hazardous waste. Every gallon of water depletes fresh water resources and generates waste water. On the other hand, every watt of electricity or gallon of water conserved saves money and conserves natural resources.

The checklists below identify cost-effective activities that also conserve resources. If your property is not already conducting these activities, plan to incorporate them into your operations in the near future.

In facilities management, conserving resources and saving money often go hand-in-hand. The following examples illustrate typical cost savings.

- Switching from an incandescent to a compact fluorescent lamp can save over \$50 per year.
- Replacing older, water-wasting showerheads with low-flow models can save over \$3,600 per year.
- Installing low-flush toilet devices in older toilets can save over \$5,800 per year.

LIGHTING



Lighting accounts for 30 - 40 percent of commercial electricity consumption. Lighting energy demand can be reduced through a combination of common sense conservation measures and use of energy-efficient lamps and fixtures, such as those described below.

- **Fluorescent Lamps.** Use energy-conserving compact fluorescent lamps (CFLs) instead of incandescent lamps for general lighting that stays lit more than four hours per day.
- **Lighted Exit Signs.** Use low-wattage lamps in exit signs instead of the more common incandescent lamps. Light-emitting diodes (LEDs) are the most energy-efficient option, but CFLs are still an improvement over incandescent lamps. Although LEDs can cost over 50 percent more than low-wattage incandescent lamps, the payback period is less than one year and they last 10 times as long. The biggest savings come from annual energy costs: LEDs cost 85 percent less to operate than incandescent lamps.
- **Motion Sensors or Timers.** Install motion sensors or timers in meeting/conference rooms, linen closets, pantries, freezer units/storage areas and as outdoor lights; such lights can be set to go off after five to seven minutes of inactivity. Some



facilities have saved over 45 percent on annual energy costs using sensors in meetings rooms and storage areas.

- **Task Lighting.** In common areas, direct lighting on areas that need greater illumination to avoid over-lighting whole area.

For additional information on lamps and fixtures, including product-specific recommendations, contact the following organizations:

- EPA's Energy Star Program has technology-specific fact sheets, case studies, and analytical and financial tools. Call (202) 775-6650 or (800) STAR-YES or visit www.energystar.gov.
- The National Lighting Product Information Program publishes technical reports and independent performance tests of brand name lighting products. To purchase these publications, fax the Lighting Research Center at (518) 276-2999 or visit www.lrc.rpi.edu.
- The Electric Power Research Institute (EPRI) also offers technology-specific reports. To order, call the EPRI Publications Distribution Center at (510) 934-4212 or visit www.epri.com.
- **Equipment.** Develop and implement a monthly cleaning and maintenance program for all equipment. This program should include calibrating ovens and checking pipes for leaks.
- **Computerized Energy Management Systems.** Larger facilities should consider installing direct digital control (DDC) systems to manage lighting and HVAC. These systems have three advantages over manual or pneumatic systems: they are more precise, less susceptible to defects in the control system, and more effective in identifying sources of problems. The greatest efficiencies are achieved using fan systems with variable speed drives.

MAINTENANCE AND HVAC

A well-maintained property can save money, increase guest comfort, and even improve indoor air quality. Include the following activities in your maintenance schedule:

- **Filters.** Clean permanent filters every one or two months.
- **Leaks.** Check HVAC (heating, ventilation and air conditioning) system and other equipment yearly for coolant and air leaks, clogs and obstructions of air intake and vents.

- **Cooling and Heating.** Don't cool or heat more than necessary, especially in unoccupied areas.
- **Condensers.** Clean air conditioner and refrigerator condensers at least every two years.
- **Sunlight.** Cover west and south facing windows during the summer, and let sunlight in during the winter.
- **Fugitive Heat.** Position heat-producing appliances (such as TVs and lamps) away from room thermostats. One watt of air conditioning is required to offset the heat of one watt of light. Thus, energy-saving lamps reduce air conditioning costs watt-for-watt.

WATER CONSERVATION



- **Low-Flow Faucets.** Retrofit or replace shower heads with low-flow devices, and install faucet aerators on faucets. Low-flow shower heads can save a hotel 10 gallons of water for every five minute shower. That means saving over \$3,600 annually if 100 people shower each day, and water and sewer costs are 1¢ per gallon.
- **Low-Flow Toilet Devices.** Install water conservation devices, such as toilet dams or flapper balls, in older, water-guzzling toilets. These devices can save four gallons or more per flush, translating into annual savings of over \$5,800 if 100 guests flush four times per day.
- **Full Loads.** Operate clothes and dish washers only with full loads, and promptly repair all leaks.
- **Wash Water.** Wash clothes and linens in the coldest water that will do the job; hot water is usually only necessary for heavily soiled loads.
- **Lawns.** Restrict lawn watering to mornings, evenings or nights to decrease water loss from evaporation and maximize effectiveness. Use sensors that turn off water systems when it is raining. Better yet, use soaker hoses which "sweat" water from the hose and deliver it directly to plant roots.
- **Ground Cover.** Plant ground cover that requires minimum maintenance and water.

Calculate Your Energy Savings from Fluorescent Lighting

Replacing a 75 watt incandescent bulb with a 15 watt fluorescent saves over \$50 per year. The example below illustrates how to calculate lighting energy savings in your facility.

To calculate cost of a single light bulb:

$$\begin{aligned} & (\text{wattage of bulb}) \div (1,000) \times \\ & (\text{hours per days in use}) \times \\ & (365 \text{ days/year}) \times \\ & (\text{cost per kilowatt hour}) \end{aligned}$$



For example, the cost of a 75 watt bulb that burns 24 hours per day and cost 10 cents per kWh (kilowatt-hour) would be calculated as follows:

$$(75 \text{ watts}) \div (1,000) \times (24 \text{ hours/day}) \times (365 \text{ days/year}) \times (\$.10/\text{kWh}) = \mathbf{\$65.70 \text{ per year}}$$

A 15 watt bulb used for the same purpose would cost over \$50 less:

$$(15 \text{ watts}) \div (1,000) \times (24 \text{ hours/day}) \times (365 \text{ days/year}) \times (\$.10/\text{kWh}) = \mathbf{\$13.14 \text{ per year}}$$

To calculate cost savings, simply subtract the cost of the 15 watt bulb from the cost of the 75 watt bulb.

$$\mathbf{\$65.70 - \$13.14 = \$52.56 \text{ per year}}$$

CASE STUDIES

Conservation of energy and water can offer savings to properties of all sizes. The following examples illustrate cost-effective measures taken by small and large properties to benefit the environment.

The Budget Host Inn in Kill Devil Hills, N.C., has 12 employees, 40 rooms, and has made a concerted effort to address environmental issues. Motivated by potential cost savings and a desire “to help the community to protect the environment,” Marion Peterson, manager, led the effort to manage her facility more efficiently. Starting in 1993, The Budget Host Inn began replacing incandescent lights with compact fluorescent lamps in guestrooms and common areas of the inn. The hotel also installed motion sensors in some public areas and low-flush toilets, faucet aerators and low-flow shower heads.



On a larger scale, a California Radisson hotel reported a 6.5 percent decrease in monthly bills from installing water-saving shower heads, turning the hot water down slightly, and installing fluorescent lights. The facility saved \$3,500 per month with minimal initial costs: \$15 per shower head and a slight increase in light bulb expenditures. Similarly, the Grand Westin Hotel in Seattle, Wash., began saving \$30,000 per month once it adopted an aggressive energy conservation program.



The N.C. Division of Pollution Prevention and Environmental Assistance (DPPEA) provides free, non-regulatory technical assistance and training on methods to eliminate, reduce or recycle wastes before they become pollutants or require disposal. Telephone DPPEA at (919) 715-6500 or (800) 763-0136 or e-mail at nowaste@p2pays.org for further information about the issues discussed in this fact sheet or to discuss any of your waste reduction concerns.

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