

Become Energy Efficient

Save money & reduce pollution!

In the Pacific Northwest, we have cleaner forms of energy compared to other parts of the U.S. Most electricity is generated from hydro-power or natural gas turbines. And we are able to use natural gas to run equipment such as boilers. But, creating and using energy does add pollution into our air. It may not seem like much, but looking at how your business uses energy, and finding ways to conserve energy can save you money and reduce air pollution. Below is a variety of ways to conserve energy, as well as success stories of businesses that have saved money by becoming energy efficient.

Lighting Tips

- Replace incandescent bulbs with compact fluorescent lamps. They last ten times longer and use up to 75% less energy.
- Replace your 40-watt fluorescent lamps to 34-watt compact fluorescent lamps. They produce just as much light without using as much electricity.
- When fluorescent T-12 lamps burn out, consider retrofitting fixtures with T-8 or T-5 lamps and changing from magnetic ballast to electronic.
- Install occupancy sensors. These inexpensive devices can reduce lighting costs by up to 40% by turning lights off in unoccupied areas. This works best in areas that are not used often, such as storage areas, conference rooms, and restrooms or near windows can be left off when room is not used or daylight is sufficient.
- Reduce lighting where possible and take advantage of natural daylight. Turn lights off or dim during the day for lower energy costs. Also, remove excess lighting and turn off signs and other lights not necessary for security and safety.
- Install timers or photocells to ensure that interior and exterior lights are turned off at the appropriate time.
- Replace incandescent lights in exit signs with LED fixtures, which can reduce costs by 95%.



Heating & Cooling

- Adjust the thermostat down in the winter (68°F or colder) and up in the summer (78°F or warmer). Even a few degrees can significantly reduce heating and air conditioning costs.
- Install programmable thermostats to automatically control temperature settings on heating/air conditioning equipment. This will keep the room at a comfortable temperature when in use, and save energy by reducing heating/cooling of the room when not in use.
- On hot days, close doors and draw the shades to keep the sun out. During the heating season, open shades to let sun in, but close them at night to retain heat.
- Establish a preventative maintenance program for heating, venting and air conditioning equipment.
 1. Change or clean all air filters, preferably monthly.
 2. Clean all heat exchanger surfaces, water and refrigerant coils, condensers and evaporators.
 3. Repair leaks in piping, air ducts, coils, fittings.
- Weatherize. Check for air leaks around windows, doors and places where plumbing or ductwork penetrates the building. Seal-off unused areas to reduce or eliminate heating or cooling in these spaces (i.e. storage rooms, warehouses.)
- Install variable speed drives (VSDs) on large motor loads, to further reduce energy usage.

Success Story

Sacred Heart Medical Center established night setback protocols for areas unoccupied in the evening, saving \$25,000 in energy costs. By turning off a large fan in the radiology area at night, they were able to save another \$15,000 in energy costs.

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Water Heating

- Lower the thermostat on your water heater. 120°F is sufficient for many common uses. A 10°F reduction can save up to 5 percent on water heating costs.
- Install water flow restrictors and aerators, especially in sink faucets. In addition to saving on water-heating costs, these measure can save money by reducing water usage.
- Insulate tanks and pipes. This simple measure will reduce standby heat loss.
- Perform maintenance. Remove scale and deposits (boiler blow down). Measure stack temperature and flue gas composition combustion (flame) efficiency.
- Install times on electric water heaters. Timers can turn your water heaters off an night and on in the morning. This will reduce energy loss during the periods when hot water is not required.

Equipment

- Turn off or set office equipment to power down when not in use. Turning off one computer and monitor nightly and on weekends can save up to \$80 per year. And setting PCs, monitors and copiers to use sleep mode when not in use can help cut energy costs by up to 50%.
- Invest in energy-efficient equipment. When upgrading or adding new equipment, look for the ENERGY STAR symbol, which indicates the equipment meets federal standards for energy efficiency. Energy saving of 50% or more is possible.
- Look at using laptop computers instead of a desktop system. It can save 80-90% in electrical costs (according to E-Source.)
- Specify ENERGY STAR equipment when purchasing or negotiating a contract for new vending machines. It can save 30-50% over older equipment.

Success Story

Boeing was able to cut energy use with supply and exhaust fans used to control room temperature in industrial tank lines for printed circuit board manufacturing that had been removed from service in one of Boeing's Renton facilities. They transferred loads from one supply-exhaust fan system to another. This allowed the decommissioning of a 20-horsepower (hp) make-up air fan and a 40-hp scrubber exhaust fan, both of which were operational 365 days a year. And speed reduction of the remaining two fans provided additional savings. The modifications were expected to decrease energy usage by 336,820 kWh/yr (an estimated \$19,272 annually).

Process heating

- Inspect boilers for scale deposits, accumulation of sediment on waterside surfaces.
- Pre-heat feed water with a flue gas heat exchanger.
- Inspect stacks to ensure visible emissions are below opacity limits. If not, it probably indicates that a burning adjustment is necessary.
- Check boiler stack temperature. If it is too high (more than 150°F above steam or water temperature), clean tubs and adjust fuel burner.
- Clean mineral/corrosion build-up on gas burners.
- Check that burners are clean and operating at an optimum ratio of air-to-fuel.

Employee Involvement

- Educate and encourage employees to be energy-conscious and to offer ideas about how energy can be saved. Employee buy-in and involvement can make or break your company's efforts to conserve energy.

Perform an Energy Audit

1. Conduct an audit or review of facility(s) to identify the most cost-effective/energy-saving opportunities.
2. Devise a plan and define the targets, objectives and goals based on the careful review or research gathered.
3. Implement programs, operations, conversion and efficiency.
4. Monitor and measure the results, evaluate regularly and make needed adjustments.

For industrial case studies visit www.fypower.org/ind/bpg/.

Tips and success story courtesy of Puget Sound Energy, San Diego Gas & Electric, ENERGY STAR, Flex Your Power, and SRP.



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