

Appliances

Selection and Operating Tips on Energy Efficient Appliances

In a typical Montana home, appliances make up about the 25% of the total home energy consumption. A household energy bill could be lowered by 10 to 20% if consumers choose and operate their appliances wisely. A recent Department of Energy study (SWEEP) states, "Based on our estimates, a typical family with a home more than a decade old could save \$200.00 per year in electricity and water bills and 18,600 gallons of water, by switching to highly energy and water efficient appliances."

Link to SWEEP report:

http://www.energy.gov/HQPress/release01/pr01127_v.htm

This publication contains information on appliance operating costs, recommendations when buying new appliances, information on the most efficient operation of appliances. Appliances use electrical energy and it is measured in Kilowatts.

What is a Kilowatt (kWh)?

Consumers purchase wattage and electrical appliances consume electricity in wattage. Most appliances list the wattage they will consume if operated for one hour. A 100-watt light bulb operating for one hour will consume 100 watts; if operated for 10 hours it consumes 1000 watts or one kilowatt (1 kWh). Currently in Montana, kWh prices range from about 5 to 9 cents with an average of 7 cents. A typical Montana household consumes about 10,000 kWh of electricity per year costing about \$700.00.

Following is a list of appliances with approximate kWh appliance wattage (usage) and monthly costs to operate; cost is based on Montana average of \$0.07 kWh. These examples are average wattages, times of operation and costs.

Appliance	Wattage (kWh)	Typical Daily Operation (hours)	Typical Monthly Cost
Older refrigerator 15 yrs. old/18 cubic ft.	520	-	\$12.00
New refrigerator 18 cubic ft./ Energy Star Rated	130	-	\$3.00
Dishwasher *	-	1	\$5.40
Clothes Washer *	-	½	\$4.60
Clothes Washer Energy Star Rated	-	½	\$2.50
Clothes Dryer	5600	1	\$11.75
Window air conditioner	4000	4	\$33.60
Microwave	1600	1/3	\$1.10
Television 19-inch	200	6	\$2.50
Hot tub heater	3000	5	\$32.00
Hot tub ¾ hp pump	560	2	\$2.35
Waterbed	400	12	\$10.00
Vehicle block heater	650	8	\$10.92
Computer	275	4	\$2.30
Oscillating fan	88	6	\$1.10
Window fan	200	6	\$2.52

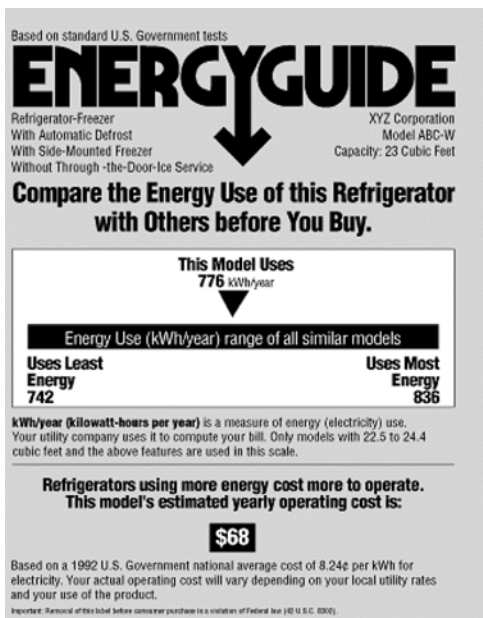
*Washing machine and dishwasher include cost to heat water.

Energy Guide Labels Make It Easy To Find Energy Efficient Appliances

Appliances are not built the same; some have higher insulation levels; motors that are more efficient and better controls which make the appliances more efficient. However, these features usually add to the cost.

How do consumers know if the appliance is energy efficient? Fortunately, most new appliances have an Energy Guide label that shows the estimated annual energy cost based on national average energy costs. Currently, the national average cost of electricity is \$0.085 kWh. Consumers should consult their utility bill or supplier for their cost of energy for comparisons of appliances.

A consumer can calculate their estimated yearly operating costs by multiplying the estimated energy consumption on the scale by their kWh cost. In the example below for a typical Montana consumer, the calculation would be 776 kWh/year times \$0.07 per kWh – for an estimated yearly operating cost of \$54.00. For the model below over a 15-year life and \$0.7 kWh the most efficient model on the left side of the scale will save about \$99.00 in operating cost over the least efficient –right- side model.



How to Read the EnergyGuide Label

The EnergyGuide label gives you two important pieces of information you can use for comparison of different brands and models when shopping for a new refrigerator:

- Estimated energy consumption on a scale showing a range for similar models
- Estimated yearly operating cost based on the national average cost of electricity.

Using the Energy Guide Label

In 1980, the Federal Trade Commission produced the Energy Guide Label for all new major appliances; refrigerators, freezers, water heaters, dishwashers clothes washers, room air conditioners, heat pumps, furnaces, and boilers. The labels will tell consumers the annual energy consumption and operating cost of the appliance. The label lists the estimated annual electric consumption in operating the product along with a scale for comparison of similar products. The comparison in operating the products along with a scale for comparison of similar products. The comparison scale shows the least and most energy used by similar models. An arrow pointing to its relative position on the scale represents the labeled model. Because technologies change faster than label standards the appliance may be off the scale. Labels are not required on kitchen ranges, microwave ovens, on demand water heaters, clothes dryers, portable space heaters, and lights.

The wise consumer knows that new appliances will use energy for 10 years and longer so they will use the estimated annual operating costs when making their decision. Often the annual saving will pay the additional cost in a few years. The Energy Guide Label will not tell you what is the most efficient appliance. That information is available from the American Council for Energy Efficient Economy (ACEEE).

How To Find The Most Efficient Appliances

The ACEEE is a non-profit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection. Support for their work comes from a wide range of foundations, government organizations, research institutes, utilities, and corporations. The ACEEE publishes a listing of the most energy efficient appliances. Link to www.aceee.org.

Energy Star Appliances

The U.S. Department of Energy sets federal standards for certain appliances, reflecting the latest in appliance innovation and efficiencies. Energy star qualifications exceed federal standards, ensuring that only the most efficient products are labeled *Energy Star*. Energy Star moves with new technologies.

Consumers can calculate savings, learn about energy saving features, find a current list of available products and Montana retailers carrying them in their area by visiting www.energystar.gov or by calling 1-888-373-2283.

What Does It Take To Earn the Energy Star Label?

- Clothes washers must use 50% less water and 40% less energy than federal requirements.
- Refrigerators must be at least 10% more efficient than the federal standard.
- Dishwashers must be at least 25% more efficient than the federal standard.
- Room air conditioners must be at least 10% more efficient than the federal standard.

Appliance Purchasing, Operating and Maintenance Tips

When shopping for new appliances look for the *Energy Star* label, use the Energy Guides, and ACEEE listing of most energy efficient appliances and consider the future cost of energy.

Refrigerator/Freezer

- Refrigerators are usually the single greatest appliance power consumers in your home and usually account for up to 20% of your electricity bill. A new Energy Star refrigerator will save around \$90 a year over a typical 12-year-old model.
- Buy only as large of an appliance as needed and be careful with features. Automatic ice makers and through the door water and ice can add 10-25% to operating cost.
- Chest freezers are 10-25% more efficient than uprights because they are usually better insulated and will not spill out cold air when the door is opened.
- Unplug a second refrigerator or freezer if unneeded and save \$7 to \$20 per month.
- Check the temperature and set refrigerators to 38° to 40°F, freezers 0° to 5°F. Each degree colder adds about 2.5% to the operating cost. To check refrigerator temperature, place an appliance thermometer in a glass of water in the center of the refrigerator. Read after 24 hours. To check freezer temperatures, place a thermometer between frozen packages. Read after 24 hours.
- If applicable, set the power saver or the winter/summer switch to energy saver or winter setting. If you see condensation around the door gasket in summer, set the switch on to summer. The switch operates a heater in the door gasket to reduce condensation.
- Provide at least 1 inch of clearance around top and sides for good airflow and reduces operating cost.
- If possible, locate refrigerators/freezers away from heat sources such as direct sunlight, ovens, dishwashers, and heat registers.
- Installation in an attached garage or basement will increase energy performance in winter months and reduce cooling loads in summer. Check with manufacturer before placing refrigerator/freezer in an unheated location.

- Keep it full, it performs better.
- Keep it organized, which should keep the door closed longer, and promote efficient food storage, preventing freezer burn.
- Defrost manual-defrost refrigerators/freezers if the frost buildup is ¼ inch or more.
- Make sure the door seals are tight. If loose, adjust the latch or replace the seal.
- Clean the heat dissipating coils on the back or bottom at least every 6 months, sooner if you have pets.
- Send your old appliances to a proper recycling center (not to be used again).

Clothes Washers

- Wash clothes in a resource efficient (Energy Star) clothes washer because the high spin cycle results in dryer finished loads.
- Clean the lint filter after each use.
- Avoid over drying, it wastes energy and shortens the life of the clothes. Some dryers have moisture sensors that automatically stop the machine.
- Hang clothes outside in nice weather. (If you are allergic to pollen, this option may not work.)

Dishwashers

- Wash only full loads of dishes. Most of the energy is used for heating the water and the same amount is used no matter how full the washer.
- Air-drying or energy saver drying option will save about 10% of the energy use for dishwashing.

Other Energy Saving Tips for Montana Consumers

Vehicle Heaters (block heater):

- A typical vehicle heater consumes about 650 watts every hour of operation. If left on overnight (10 hours), it will cost \$0.45 cents a day or \$13.50 a month. A timer set for one hour before starting should work fine and will save about \$12.30 a month.

Waterbed Heaters:

- A waterbed heater can cost about \$10.00 a month. In some homes, it uses more energy than the refrigerator. For more efficient operation, install a timer and heat only when needed; insulate sides and bottom and keep the bed covered with extra blankets.

When You Go On Vacation:

- Turn water heater off or to the lowest setting. When you return most water heaters will heat a full tank in less than one hour.
- Consider unplugging some “leaking” appliances, those that use electricity even when they are turned off.
 - Below are examples of electricity usage even when appliances are off. Please keep in mind that some VCRs and TVs may require programming if they are turned off.

Appliance	Watts	Monthly Cost
TV (1993 model) 19-inch color	13	\$0.50
Personal Computer	3.4	\$0.18
Rechargeable flashlight	10.6	\$0.53
Battery Charger – without batteries	1.7	\$0.08