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**Everything You Need to Know About:**

**Appliances**

* Quick facts
	+ Appliances may account for 38% (or more) of your home’s energy usage[[1]](#footnote--1)
	+ Up to 20% of your home’s electricity is being consumed while your appliances are “off”
	+ Tax rebates/incentives are common for consumers who purchase energy efficient appliances
	+ 4 million pounds of ozone-depleting chemicals escape from appliances at disposal, annually
		- These gases may survive up to 150 years in the stratosphere
	+ The United States throws away about 8 million refrigerators and freezers every year
	+ Americans discard 100 million electronic devices every year = 274,000 devices a *day*
		- Approximately 1 billion computers will be potential scrap by 2010[[2]](#footnote-0)
	+ Colorado is among the “most improved” states for energy efficiency, having climbed at least 8 spots in ranking since 2008[[3]](#footnote-1)
* Labels to look for
	+ EnergyGuide (washers, dryers, refrigerators, freezers, dishwashers, and HVAC equipment)
		- Implemented in 1980 by the U.S. Department of Energy
		- Yellow and black informational label
		- Comparison of energy efficiency between brands and models
			* Estimated operating cost and energy use
			* No special designation for appliances with best rankings
			* Does not include non-energy factors, such as water usage
	+ ENERGY STAR (HVAC, major home appliances, lighting, electronics, office equipment)
		- Partnership developed in 1992 between the industry and U.S. government through the Environmental Protection Agency
		- Blue star logo awarded to appliances and buildings that excel in energy efficiency
* Refrigerators and Freezers
	+ Greatest energy consumers in the home
		- Specialty features (ice makers, filtered water, electronic screens, etc.) increase energy usage
	+ Give off the most CO2 of any appliance
	+ Most difficult appliance to recycle
		- Since 1992, law requires that ozone-depleting coolants must be extracted by a certified agency for any service, maintenance, or disposal
	+ Freezer-on-top models offer the most space with the least energy consumed
		- Side-by-sides use 10% more electricity[[4]](#footnote-2)
		- One larger refrigerator is more efficient than two smaller ones
		- Chest freezers are more efficient than uprights
	+ Tips for saving energy
		- Cover all foods – retains food quality and limits the load on the defroster
		- Keep the freezer as full as possible – reduces cold air lost when door is opened
		- Keep away from heat ducts, direct sunlight, and warm appliances (stoves and dishwashers)
		- Vacuum/clean the condenser coils at least twice a year
		- Replace broken seals to maximize thermal efficiency
* Ranges, Cooktops, and Ovens
	+ No minimum efficiency standards in the U.S.
		- Not labeled or rated by EnergyGuide or ENERGY STAR
	+ Gas (natural or propane)
		- Uses less energy overall
		- Home must be equipped with natural gas hookups
		- Adequate ventilation to outside is necessary
	+ Electric
		- Heat up slower, but ovens cook more evenly than gas
		- Good for homes equipped with alternative energy sources (solar, wind)
	+ Other options (may be more expensive up front, less familiar to consumers)
		- Hybrid range is a good compromise (gas range, electric oven)
		- Halogen-bulb cooktops with glass ceramic surfaces (80% more energy efficient)
		- Magnetic induction (70% more energy efficient)
			* Generate heat through electromagnetic field activated by iron or steel pans (required for use)
	+ Convection ovens speed up cooking process by circulating air, uses 33-50% less energy
	+ Considerations
		- Large oven spaces are especially unefficient, seals can be leaky
		- More efficient alternatives
			* Pressure cookers (50-75% reduced energy usage)
			* Slow cookers, toaster ovens, and microwaves
	+ Tips for saving energy
		- Use the smallest pan, smallest, burner, smallest and most energy-efficient appliance
			* Flat-bottomed pans work better on smooth surfaces and electric elements
		- Turn off oven or stovetop a few minutes before cooking is complete
			* Radiant heat will continue to cook the food
		- Defrosted food uses 33% less cooking time than frozen food (better for food safety!)
		- Minimize preheating – 10 minutes MAXIMUM
		- The oven loses 25° every time the door is opened
			* Use oven light to check for doneness
			* Replace broken seals to maximize thermal efficiency
		- Bake several items at once, then freeze for later use
		- Use self-cleaning feature while oven is still hot from cooking
* Range Hoods and Downdraft Ventilation
	+ Required by building codes
	+ Charcoal filter (poorer indoor air quality) and exterior ventilation (better IAQ) options
	+ Should be proportional to the range size
	+ Updraft vents are more efficient than downdraft
* Microwaves and Small Appliances
	+ More efficient for small meal preparation
	+ Consider frequency of use before purchasing small appliances
* Dishwashers
	+ Accounts for 1-2% of total home energy usage
	+ Newer models can save 50% more water than hand washing
	+ Features to look for
		- Booster heaters
			* Allow for lower water heater temperature settings while maintaining a sanitizing rinse
		- Reduced wash and dry time, air drying option (cuts out heater)
	+ Tips for saving energy
		- Avoid unnecessarily rinsing dishes
		- Run full loads using shortest dry cycle or hand-dry dishes
* Garbage disposals
	+ Some regions require garbage disposals by code
	+ Water propelled units are slightly better than electrically powered units, but don’t decrease organic waste
	+ Composting is a better (greener) solution
	+ Tips for saving energy
		- Use cold water to solidify fatty and greasy waste
* Washing machines
	+ Largest water user in your home
	+ 95% of energy used by the washing machine is to heat the water
	+ ENERGY STAR
		- New standards for Modified Energy Factor (MEF) increased in 2007
			* Evaluates capacity and energy consumption for washers and dryers
			* Higher MEF = more efficient
		- Washers also evaluated for Water Factor (WF) since 2007
			* Lower WF = less water consumption
	+ Front loading (or horizontal axis) washers
		- More expensive, but use 33-50% less water, less energy per load than top-loading
			* Savings of 7000 gallons of water every year[[5]](#footnote-3)
			* Study of 204 families resulted in 56% lower energy usage[[6]](#footnote-4)
		- Better ability to remove water during spin cycle = less time in the dryer
		- Since 2007, California requires all new washing machines to be horizontal axis types[[7]](#footnote-5)
	+ Tips for saving energy
		- Wash only full loads using coolest and lowest water setting possible
		- Use maximum spin cycle to lessen energy used by dryer
* Dryers
	+ Not required to display Energy Guide labels, not certified by ENERGY STAR
	+ Most dryers use similar amounts of energy, but gas is slightly more efficient
		- Alternative power may give electric the advantage
	+ Consider client preference, cost, system already in place (220-outlet or gas hookup?)
	+ Features to look for
		- Automatic shutoffs and moisture sensors (15% better than timers)[[8]](#footnote-6)
	+ Tips for saving energy
		- Consider using a clothes line instead
			* Americans could save 30 million tons of coal yearly if we used clotheslines
		- Keep your lint filter clean
* Computers, Printers, Office Equipment
	+ Computers were the original ENERGY STAR appliance
		- ENERGY STAR considers “sleep”, “hibernation”, “idle”, and “off” modes
			* “Sleep” mode saves 70-90% more energy than office equipment without it
		- Laptops are more energy efficient than desktops but may not last as long
		- Some greener, more recyclable options are being developed
		- May contain toxic levels of lead, cadmium, mercury, etc.
	+ Equipment quickly becomes obsolete and replacement parts can be difficult to find
		- Consider upgrading software or purchasing a used or refurbished model
		- Some states require retailers and manufacturers provide recycling for electronics
	+ Tips for saving energy
		- Use power strips for easy shut-off (eliminates stand-by power usage)
		- Activate power-saving features on devices
		- Rechargeable batteries are more eco-friendly than disposable ones
* Things to consider when replacing an appliance
	+ Is the appliance wasting resources unnecessarily? Can order replacement parts?
	+ What size appliance do I really need?
		- 12 cubic feet of refrigeration space for 2 people, 13-15 for a family of four, add 2 cubic feet for each additional person[[9]](#footnote-7)
	+ Things to specify
		- ENERGY STAR appliances with best efficiency ratings (check EnergyGuide labels)
		- Maximum water-conserving features
		- Recyclable materials for new appliances, recycling of old appliances
		- Avoid unneeded luxury features and unnecessary small appliances
	+ Installation
		- Maintain proper clearances (suggested by manufacturer) for air circulation
		- Adequate ventilation and secure hookups
	+ Maintenance
		- Keep appliances clean and dust-free
		- Use biodegradable, eco-friendly and safe detergents and cleansers
			* Less corrosive and abrasive
			* Don’t contain toxic fumes
			* Don’t destroy the environment
* Resources
	+ American Council for an Energy-Efficient Economy
		- A non-profit organization that researches, analyzes, and educates on energy policies
		- www.aceee.org
	+ American Water Works Association
		- An organization that funds research and provides information for the advancement of water treatment
		- www.awwa.org
	+ Earth911.com
		- A source for sustainability news, links, and local resources
	+ EnergyGuide
		- Provides information and links regarding the EnergyGuide label
		- www.eere.energy.gov/consumer/tips/energyguide.html
	+ ENERGY STAR
		- Provides information and links regarding the ENERGY STAR label
		- www.energystar.gov
	+ EPA, Water Efficiency Measures for Residences
		- Government program responsible for maintaining potable water systems
		- www.epa.gov/owm/water-efficiency/resitips.htm
	+ Green Remodeling by David Johnston and Kim Master, LEED AP
		- Good overview of general guidelines for residential greening processes
	+ H2ouse.org
		- Maintains and sets standards for best usage of water in urban areas in California
	+ National Kitchen and Bath Association
		- Professional organization that sets standards for good kitchen and bath design
		- www.nkba.org
	+ Project Laundry List
		- Promotes and offers advice and tips for cold water clothes washing and line drying
		- www.laundrylist.org
	+ Rocky Mountain Institute
		- A think-tank organization promoting education and integration of green materials
		- www.rmi.org
	+ U.S. Department of Energy, Energy Efficiency and Renewable Energy
		- Governmental website promoting the study of U.S. energy policies and practices
		- www.eere.energy.gov
1. U.S. Department of Energy website <http://www1.eere.energy.gov/consumer/tips/home\_energy.html> [↑](#footnote-ref--1)
2. Consumer Reports Greener Choices <www.eco-labels.org> [↑](#footnote-ref-0)
3. American Council for an Energy-Efficient Economy website < http://www.aceee.org/pubs/e097.htm> [↑](#footnote-ref-1)
4. Rocky Mountain Institute website <www.rmi.org> [↑](#footnote-ref-2)
5. Consumer Energy Center <www.consumerenergycenter.org> [↑](#footnote-ref-3)
6. Department of Energy <www.energy.gov> [↑](#footnote-ref-4)
7. California Energy Commission <www.energy.ca.gov> [↑](#footnote-ref-5)
8. ACEEE <www.aceee.org> [↑](#footnote-ref-6)
9. ENERGY STAR website <www.energystar.gov> [↑](#footnote-ref-7)