



Guidance for Real Estate Professionals on Home Energy Efficient Attributes

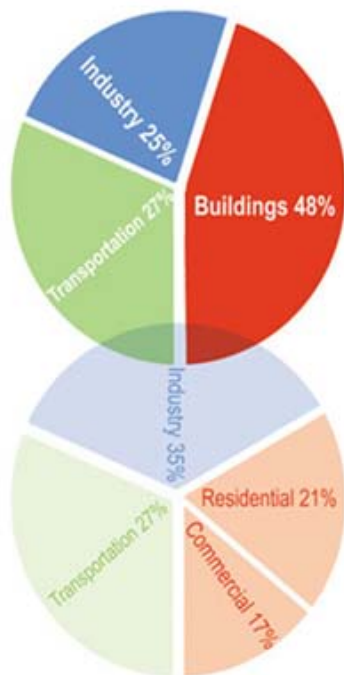
Did you know that homes consume 21% of the nation's energy and produce 17% of greenhouse gas emissions? With the cost of energy on the rise, an energy efficient home can help to significantly reduce a homeowner's energy bills, improve comfort year-round, and help to protect the environment by reducing greenhouse gas emissions. Having a more energy efficient home offers a host of benefits such as:

- Lower energy costs
- Superior quality of construction
- Improved comfort year-round
- Enhanced air quality
- Mortgage savings
- Higher home resale value potential

Energy efficient homes use substantially less energy for heating, cooling and water-heating and properly installed energy-efficient improvements deliver better protection against cold, heat, drafts, moisture, pollution, and noise. This means homeowners stay warmer in the winter and cooler in the summer, but spend less money on utility bills, adding up to greater home durability, comfort and affordability for many years to come.

More and more consumers have a growing understanding of the importance and value of energy efficiency in the real estate market. Special financing opportunities are becoming increasingly available for qualifying energy efficient homes, such as energy efficient/ENERGY STAR® mortgages. The awareness of the value of energy efficient homes goes up each year and over one million ENERGY STAR qualified homes have now been built nationwide. As this supply and demand for sustainable homes continues to increase, so does the potential for an energy efficient home's resale value. Real estate professionals can capitalize on this market transition by taking steps to recognize and sell the value of energy efficient homes to their clients.

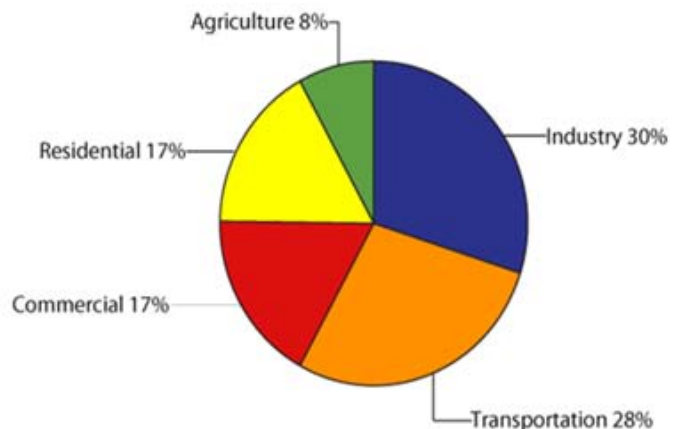
US Energy Consumption by Sector



Source: US Energy Information Administration statistics

Greenhouse Gas Emissions by Sector

United States, 2004



Source: US EPA Inventory of Greenhouse Gas Emissions and Sinks, 2006.

Your customers may not realize that buildings account for 48% of US energy consumption and the residential sector is responsible for 17% of the US GHG emissions.



Checklist of Home Energy Efficient Attributes for Real Estate Professionals

In order to effectively communicate the energy efficiency attributes of a home, it is important to have an organized inventory of features that affect a home's efficiency. The checklist below is meant to enable a real estate professional to make a relatively quick assessment of a home's efficiency. The checklist is organized by twelve categories:

1) Lighting, 2) Appliances, 3) Space Heating, 4) Space Cooling, 5) Distribution System/ Ducting, 6) Water Heating, 7) Fenestration, 8) Envelope/Shell, 9) Insulation, 10) Energy Management Systems, 11) Water Management Features, and 12) 3rd Party Evaluation/Home Energy Audit.

Using the checklist, a real estate professional should be able to walk through a home and take note of a home's energy efficiency features. There are checkboxes to use and spaces to fill out, with the hope that a real estate professional will record as much information as possible based upon observations made throughout the home. The columns describe the types of equipment that might be encountered and their associated efficiency factors, as well as some expected savings and benefits worth calling out to a prospective buyer or seller.

	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Lighting	Light Fixtures	# ENERGY STAR Qualified Light fixtures _____ Replacing the five most frequently used light fixtures in a home with ENERGY STAR qualified lighting can save about \$65 each year in energy costs.	<input type="checkbox"/>	ENERGY STAR Qualified Light Fixtures	Use 1/4 the energy of traditional lighting and carry a two year warranty; double the industry standard.
			<input type="checkbox"/>	ENERGY STAR Qualified CFLs	ENERGY STAR qualified CFLs generate about 75% less heat. Meaning they are cool to the touch, help reduce home cooling costs, and keep homes more comfortable.
	Lighting controls	Occupancy sensors? How many? _____	<input type="checkbox"/>	Occupancy sensors	Occupancy sensors are used most effectively in spaces that are often unoccupied, and can reduce lighting energy consumption by 50%.
	Daylighting	Strong day lighting/natural light	<input type="checkbox"/>	Ample natural light	Electric lights generate significant heat and by turning off or dimming the lights when not needed, 10% to 20% of the energy used to cool a building can be saved.
	Shading		<input type="checkbox"/>	Deciduous trees, roof overhangs, window shades and building orientation can improve a home's lighting and comfort factors.	

	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Appliances	Refrigerator	ENERGY STAR Qualified Age of unit; _____ yrs	<input type="checkbox"/>	ENERGY STAR Qualified Refrigerator Replace a fridge from the 1980s with an ENERGY STAR qualified model and save over \$100 each year on utility bills. Replace a fridge from the 1970s and save more than \$200 each year.	ENERGY STAR qualified refrigerators are required to use 20% less energy than models not labeled with the ENERGY STAR logo and save \$165 over the lifetime of fridge.
	Dishwasher	ENERGY STAR Qualified Age of unit; _____ yrs	<input type="checkbox"/>	ENERGY STAR Qualified Dishwasher A dishwasher built before 1994 wastes more than 10 gallons of water per cycle and costs an extra \$40 a year on utility bills compared to an ENERGY STAR qualified model.	ENERGY STAR qualified dishwashers are 10% more efficient than non-qualified models
	Clothes Washer	ENERGY STAR Qualified Age of unit; _____ yrs	<input type="checkbox"/>	ENERGY STAR Qualified Clothes Washer Replace a washer over 10 years old with a new ENERGY STAR qualified washer and save up to \$135 each year on utility bills.	Clothes washers that have earned the ENERGY STAR are 37% more efficient than non-qualified models.
	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Space Heating	Circle Type: -Furnace (Gas) -Furnace (Oil) -Boiler (Gas) -Boiler (Oil) -Heat Pump (electric) -Baseboard(elect) -Wood/Pellet Stove	Efficiency Rating: AFUE_____		Higher Rating = Higher Energy Savings AFUE ≥ 90%	The more efficient a furnace, the lower the home's energy bill for heating. Technology Note: Furnaces heat air and distribute the heated air through the house using ducts; boilers heat water, providing either hot water or steam for heating.
		SEER/HSPF_____		SEER ≥ 14 HSPF ≥ 8	
		N/A			
		ENERGY STAR Qualified	<input type="checkbox"/>	ENERGY STAR Qualified Heating Equipment	ENERGY STAR qualified furnaces have higher Annual Fuel Utilization Efficiency (AFUE) ratings and higher efficiency blower motors, making them about 15% more efficient than non-qualified models.

		Original Unit Age of System; _____ years	<input type="checkbox"/>		Whether gas or oil, ENERGY STAR qualified boilers use about 6% less energy than a standard boiler.
	Types of Equipment	Efficiency Factors	<input checked="" type="checkbox"/>	Worth Calling Out	Expected Savings/Benefits
Space Cooling	Circle Type: -No Central System -Central Split System -Central Packaged System -Heat Pump Split System -Heat Pump Packaged System -Ductless Mini-split System	Efficiency rating: N/A SEER _____ SEER _____ SEER/HSPF _____ SEER/HSPF _____ SEER/COP _____		Higher Rating = Higher Energy Savings SEER ≥ 14 HSPF ≥ 8 COP ≥ 3.43	High efficiency space cooling equipment enhances home comfort while saving energy and money.
		ENERGY STAR Qualified	<input type="checkbox"/>	ENERGY STAR Qualified Cooling Equipment	ENERGY STAR qualified central air conditioners have higher seasonal energy efficiency ratio (SEER) and energy efficiency ratio (EER) ratings, making them about 14% more efficient than standard models.
		Original Unit Age of System; _____ years	<input type="checkbox"/>		
	Ceiling Fan(s)	How many? _____	<input type="checkbox"/>		By raising the thermostat by only two degrees and using a ceiling fan, air conditioning costs can be lowered by up to 14% over the course of the cooling season.
	Types of Equipment	Efficiency Factors	<input checked="" type="checkbox"/>	Worth Calling Out	Expected Savings/Benefits
Distribution System/ Ducting	Air ducts	Air sealed ducts Insulated ducts	<input type="checkbox"/> <input type="checkbox"/>	Mastic	Leaky ducts can reduce heating and cooling system efficiency by as much as 20%.
	Hot water/steam piping	Insulated pipes	<input type="checkbox"/>		Reduces heat loss and allows for a lower water temperature setting (by 2°F-4°F), and a shorter waiting time for hot water, which helps conserve water.

	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Water Heating	Circle Type: -Storage (Gas) -Storage (Electric) -Storage(HeatPump) -Storage (Oil) -Tankless/Instant (Gas) -Tankless/Instant (Electric) -Indirect -Solar Heating System	Efficiency Rating: EF _____ CAE _____ SF _____		Higher Rating = Higher Energy Savings EF (gas) ≥ 0.67 EF (electric) ≥ 0.93 EF (oil) ≥ 0.85 EF (gas/tankless) ≥ 0.82 CAE ≥ 0.85 SF ≥ 0.5	Heating water accounts for approximately 15% of a home's energy use. High efficiency water heaters use 10-50% less energy than standard models, saving homeowners money on their utility bills.
		ENERGY STAR Qualified	<input type="checkbox"/>	ENERGY STAR Qualified Water Heater	Choosing an ENERGY STAR qualified gas condensing water heater instead of a standard model can save over \$100 a year. That's over \$1000 over the expected lifetime of the water heater. Larger families can save even more.
		Original Unit Age of System; _____years	<input type="checkbox"/>		Some water heaters are designed to serve as the central heating system in highly efficient homes.
	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Fenestration	Windows Doors Skylights	ENERGY STAR Qualified	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	ENERGY STAR Qualified	ENERGY STAR qualified windows, doors, and skylights can reduce your energy bills up to 15%.
		SHGC _____ U-Factor _____		SHGC ≤ 0.40 U-Factor ≤ 0.32	The lower the SHGC, the better a window is at blocking unwanted heat gain; great in the warm months. The lower the U-Factor, the better a window is at keeping heat in; especially good during the cold months.
	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Envelope/ Shell	Building shell (walls, floors, ceilings, roofs)	Anecdotal measure of draftiness: Heavy Draft Minimal Draft No Draft	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Formal measurement of home's air leakage was low or has been air sealed: Test Score _____ (i.e. results from Blower Door Test)	Heating and cooling account for 50-70% of the energy used in the average American home. Inadequate insulation and air leakage are leading causes of energy waste in most homes, as well as cause moisture and mold problems.

	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Insulation	Circle Type (Attic Insulation):	Insulation R-value? _____	<input type="checkbox"/>	Base layer attic insulation: R-value > 49 OR Supplemental layer attic insulation: R-value > 38	Heating and cooling account for 50-70% of the energy used in the average American home. Inadequate insulation and air leakage are leading causes of energy waste in most homes, as well as cause moisture and mold problems.
	-Batt/Rolled Insulation	Original/base insulation	<input type="checkbox"/>		
	-Blown-In Insulation	Original/base insulation was replaced	<input type="checkbox"/>		
	-Sprayed/Injected Foam Product	Insulation has been added to original/base insulation	<input type="checkbox"/>		
	-Rigid Insulation				
	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Energy Management Systems	Ventilation fan		<input type="checkbox"/>	ENERGY STAR Qualified	ENERGY STAR qualified ventilation fans that include lighting use 60% less energy on average than standard models.
	Programmable thermostat		<input type="checkbox"/>	Programmable thermostat	Through proper use of pre-programmed settings, a programmable thermostat can save you about \$180 every year in energy costs.
	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
Water Management Features	Shower heads	Reduced flow shower heads (≤ 1.5 gpm)	<input type="checkbox"/>	Reduced flow shower heads	Saves water by using ≤ 1.5 gallons per minute.
	Sinks	Reduced flow sink fixtures/aerators (≤ 1.5 gpm)	<input type="checkbox"/>	Reduced flow sink fixtures	Saves water by using ≤ 1.5 gallons per minute.
	Toilets	High efficiency toilets (≤ 1.28 gpf)	<input type="checkbox"/>	Reduced flow toilets	Saves water by using ≤ 1.28 gallons per flush.
	Types of Equipment	Efficiency Factors	✓	Worth Calling Out	Expected Savings/Benefits
3 rd Party Evaluation/ Home Energy Audit		ENERGY STAR Qualified Home	<input type="checkbox"/>	Improvements made following audit: _____ _____ _____ _____	Score _____ (i.e. HERS Index)
		Home was evaluated by a qualified home energy rater (i.e. BPI certified professional)	<input type="checkbox"/>		Score _____ (i.e. blower door test)
					Score _____ (i.e. duct air leakage test)



NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS
Accelerating Energy Efficiency

Glossary of Home Energy Efficient Attributes

(AFUE) Annual Fuel Utilization Efficiency - AFUE measures the amount of fuel converted to space heat in proportion to the amount of fuel entering the furnace. This is commonly expressed as a percentage and the higher the percentage, the more energy efficient the furnace. Today, the lowest efficiency allowed by law for new gas furnaces is 78%. The most efficient models on the market have an AFUE of 90% or higher (some go as high as 97%).

<http://www.consumerreports.org/cro/appliances/heating-cooling-and-air/gas-furnaces-703/efficiency-matters/efficiency-matters.htm>

(BPI) Building Performance Institute, Inc. - BPI is a national standards development and credentialing organization for residential energy efficiency retrofit work. BPI certified professionals are experts on the front-lines of the home performance industry. <http://www.bpi.org/>

(BTU) British Thermal Unit - A BTU is the amount of heat energy needed to raise the temperature of one pound of water by one degree F. This is the standard measurement used to state the amount of energy that a fuel has as well as the amount of output of any heat generating device.

(CAE) Combined Appliance Efficiency - The efficiency of a combination water and space heating system is indicated by its combined appliance efficiency (CAE) rating. CAE ratings vary from 0.59 to 0.90 (the higher the number, the more energy efficient.)

(COP) Coefficient of Performance - The coefficient of performance is used generally as a measure of the energy-efficiency of air conditioners, space heaters and other cooling and heating devices. COP equals heat delivered (output) in British thermal units (Btu) per hour divided by the heat equivalent of the electric energy input (one watt = 3.413 Btu/hour). The higher the COP, the higher the efficiency of the equipment is.

<http://www.businessdictionary.com/definition/coefficient-of-performance-COP.html>

Energy Audit - An energy audit is an assessment of how much energy a home consumes and the development of a plan to make the home more energy efficient.

(EF) Energy Factor - EF is the ratio of useful energy output from a water heater to the total amount of energy delivered to the water heater. The higher the EF is, the more efficient the water heater.

<http://www.aceee.org/consumer/water-heating>

EnergyGuide Label - Manufacturers must use standard test procedures developed by DOE to prove the energy use and efficiency of their products. Test results are printed on yellow EnergyGuide labels, which manufacturers are required to display on many appliances. The EnergyGuide label gives you two important pieces of information you can use to evaluate the energy efficiency of an appliance: 1) Estimated energy consumption on a scale showing a range for similar models and 2) Estimated yearly operating cost based on the national average cost of electricity.

ENERGY STAR - ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) helping consumers save money and protect the environment through energy efficient products and practices. ENERGY STAR labels help consumers differentiate the most energy efficient units in a particular product category. Visit www.energystar.gov for more information.

Fenestration - Fenestration is any opening in a building's envelope including windows, doors and skylights.

<http://www.nfrc.org/fenestrationfacts.aspx>

(HSPF) Heating Seasonal Performance Factor - This is a measure of a heat pump's energy efficiency over one heating season. It represents the total heating output of a heat pump (including supplementary electric heat) during the normal heating season (in BTUs) as compared to the total electricity consumed (in watt-hours) during the same period. The higher the number, the greater the efficiency and cost-savings; the most efficient heat pumps have an HSPF of between 8 and 10. http://www.energysavers.gov/your_home/space_heating_cooling/index.cfm/mytopic=12620

Home Energy Score - The Home Energy Score is a program of the U.S. Department of Energy (DOE) that allows a homeowner to compare his or her home's energy consumption to that of other homes on a scale of 1-10, similar to a vehicle's mile-per-gallon rating. For more information visit <http://www1.eere.energy.gov/buildings/homeenergyscore/>

(HERS) Home Energy Rating Index - The HERS Index is a nationally recognized evaluation of efficiency for homes, established by the Residential Energy Services Network (RESNET), featuring a 1-100 scoring system. The lower a home's HERS Index, the more energy efficient it is in comparison to a HERS Reference Home (i.e. standard home scores 100, ENERGY STAR home scores < 85, net zero home scores a zero). <http://www.resnet.us/home-energy-ratings>

Low-E Glass - Low-emittance (low-E) glass is coated with microscopically thin, virtually invisible, metallic layers that suppress radiative heat flow. Low-E coatings can be detected with hand-held low-E detectors. A typical low-E coating is transparent to visible light but reflective of infrared radiation. Low-E glass also reduces UV transmission and may thus protect furniture from fading. See www.efficientwindows.org for more information.

R-Value - Resistance value (R-Value) measures how well insulation prevents heat from escaping; a higher R-Value insulates more efficiently.

(SHGC) Solar Heat Gain Coefficient - SHGC measures how well a window or skylight blocks heat from the sun and is expressed as a fractional number between 0.0 and 1.0 (i.e. $SHGC \leq 0.40$ is desirable in the Northeast). The lower the SHGC, the better a window is at blocking unwanted heat gain. Blocking solar heat gain is particularly important during the summer cooling season. <http://www.nfrc.org/documents/newwindows.pdf>

(SEER) Seasonal Energy Efficiency Ratio - This is a measure of equipment energy efficiency over the cooling season. It represents the total cooling of a central air conditioner or heat pump (in BTUs) during the normal cooling season as compared to the total electric energy input (in watt-hours) consumed during the same period. The higher the SEER rating of your unit, the more energy-efficient and cost effective it will be to operate. The minimum SEER rating allowed by government standards is 13, but units with SEER ratings of 18 or higher are available.

(SF) Solar Fraction - SF is the portion of the total conventional hot water heating load (delivered energy and tank standby losses) provided by solar energy. The higher the SF is, the more efficient the solar water heater.

U-Factor - Rate of heat transfer through a building component (e.g. windows) or assembly (e.g. walls, roofs). U-Factor ratings generally fall between 0.20 and 1.20. The lower the U-Factor, the better a window is at keeping heat in. U-Factor is particularly important during the winter heating season.

Weatherstripping - Weatherstripping uses a strip of resilient material for covering the joints between window sash and frame in order to reduce air leaks and prevent water from entering the structure.

Resources

ENERGY STAR:

Working with ENERGY STAR as a Real Estate Agent - http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_benefits_realtors

Fact Sheets on the features of ENERGY STAR Qualified Homes - http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_factsheets

ENERGY STAR 101 for Realtors - http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.ResESMktgSalesPresentation

Energy Efficient Mortgages - http://www.energystar.gov/index.cfm?c=mortgages.energy_efficient_mortgages

Department of Energy (DOE) Home Energy Savings - http://www.energysavers.gov/your_home/

Homeowners Guide to Energy Efficiency - <http://www.homeloans.org/>

Institute for Market Transformation (IMT):

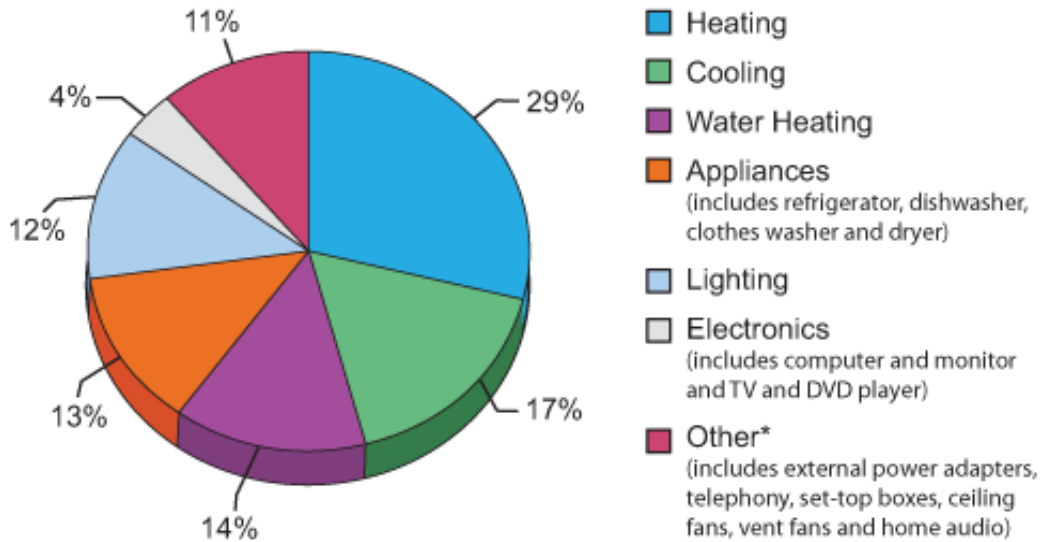
Resources for Real Estate Professionals - <http://www.imt.org/property-valuation-background.html>

Seminars on Residential Property Valuation - <http://www.imt.org/seminars.html>

Federal Trade Commission - <http://www.ftc.gov/bcp/edu/pubs/consumer/homes/rea14.pdf>

Where Does My Money Go?

Annual Energy Bill for a typical Single Family Home is approximately \$2,200.



Source: Typical House memo, Lawrence Berkeley National Laboratory, 2009 and Typical house_2009_Reference.xls spreadsheet.

Average price of electricity is 11.3 cents per kilo-watt hour. Average price of natural gas is \$13.29 per million Btu.

* "Other" represents an array of household products, including stoves, ovens, microwaves, and small appliances like coffee makers and dehumidifiers.

Questions: Contact NEEP - Northeast Energy Efficiency Partnerships

91 Hartwell Avenue Lexington, MA 02421

www.neep.org

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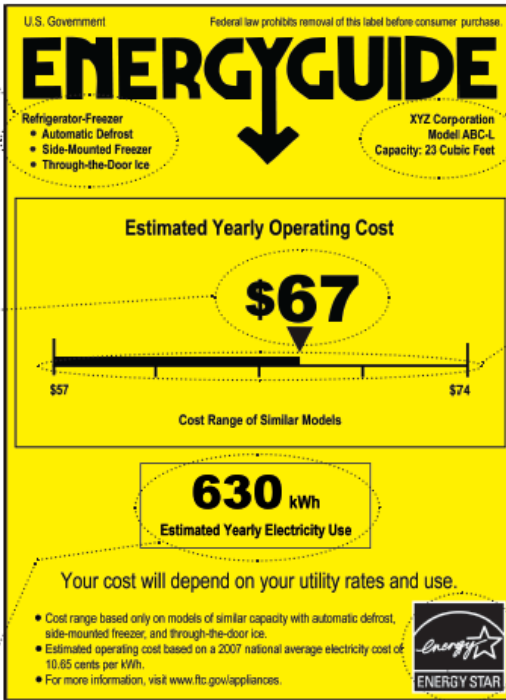
Energy Efficiency Labels

How to Use the EnergyGuide Label

Lists key features of the appliance you're looking at and the similar models that make up the cost range below.

What you might pay to run the appliance for a year, based on its electricity use and the national average cost of energy. The cost appears on labels for all models and brands, so you can compare energy use just like you would price or other features.

An estimate of how much electricity the appliance uses in a year based on typical use. Multiply this by your local electricity rate on your utility bill to better judge what your actual operating cost might be.

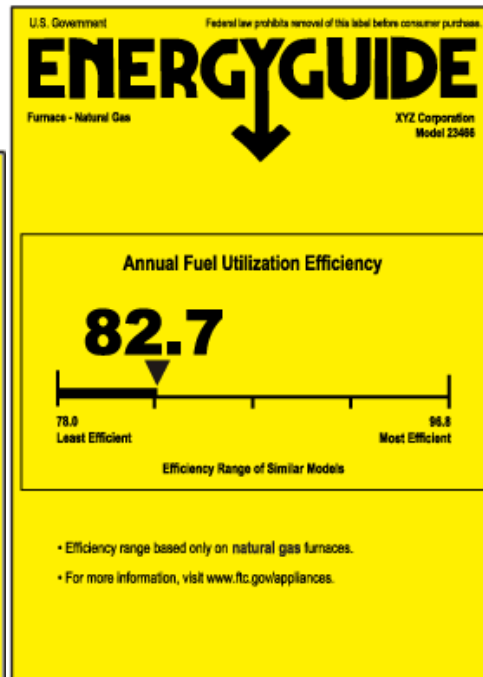
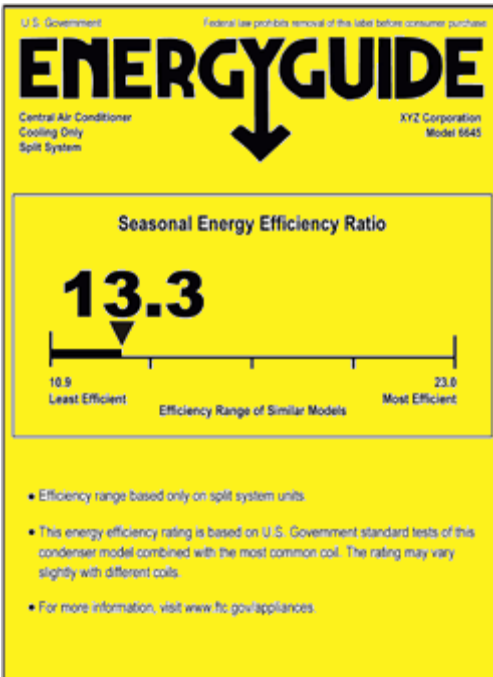
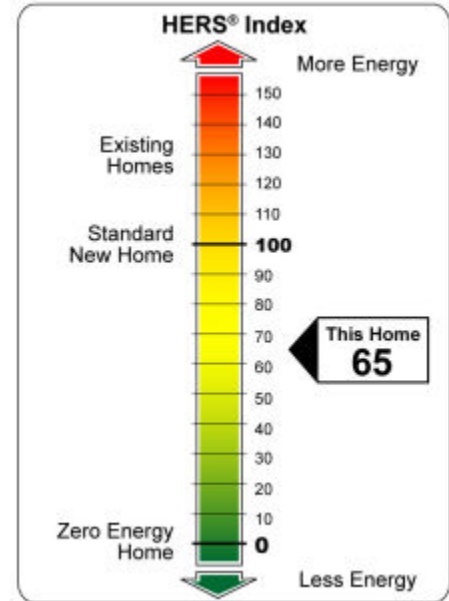


The maker, model, and size tell you exactly what product this label describes.

The cost range helps you compare the energy use of different models by showing you the range of operating costs for models with similar features.

If you see the ENERGY STAR logo, it means the product is better for the environment because it uses less energy than standard models.

Home Energy Rating Index



Source: U.S. Federal Trade Commission

ENERGY STAR® Qualified in All 50 States

ENERGY STAR

World's Best Window Co.
 Millennium 2000+
 Vinyl-Clad Wood Frame
 Double Glazing • Argon Fill • Low E
 Product Type: Vertical Slider
 (per NFRC 100-97)

NFRC
 National Fenestration Rating Council
 CERTIFIED

ENERGY PERFORMANCE RATINGS	
U-Factor (U.S./I-P)	Solar Heat Gain Coefficient
0.30	0.27
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Air Leakage (U.S./I-P)
0.51	0.2

Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. Consult manufacturer's literature for other product performance information.
www.nfrc.org

One of the official ENERGY STAR labels (and the NFRC Label) for a window qualifying in all four climate zones (Northern, North-Central, South-Central, and Southern).