Realtor Contact: _____
E-mail: _____
This Checklist Address: _____
_____
City: _____ Zip: _____

HAWAII STATE Energy Office

Northeast Energy Efficiency Partnerships

Checklist of Home Energy Efficient Attributes for Real Estate Professionals

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 seven categories: 1) Lighting; 2) Fenestration; 3) Building Envelope; 4) Heating, Ventilation, and Air Conditioning; 5) Appliances; 6) Water Usage; and 7) 3rd Party Evaluations and Certifications.

Category	Look For	☐	Description	Worth Calling Out
Lighting	**Bulbs** Compact Fluorescent Lamps (CFLs)	☐	Energy Star certified CFLs typically use 25% of the electricity of an incandescent bulb with the equivalent brightness.	In addition to significant energy savings, **compact fluorescent lamps** (CFL) and **light emitting diodes** (LED) also last much longer and emit far less heat than incandescent or halogen bulbs.
	Light Emitting Diodes (LEDs)	☐	Energy Star LEDs use only about 10% of the electricity of an equivalent incandescent.	
	Day Lighting	☐	Skylights, solar light tubes	**Large overhangs** on west and south facing windows keep the heat out by blocking the sun's rays.
	Shading	☐	Shaded windows, roof overhangs	**Landscaping**, such as hedges and trees help to direct breezes into the home.
	Landscaping	☐	Landscaping, hedges, trees	
Fenestration	**Windows** Energy Star Certified? Y/N	☐	Number of Panes (Circle): Single Double Triple	**U-Factor** is the rate of heat loss of a window assembly. The lower the U-factor, the greater a window's resistance to heat flow and the better its insulating properties. For Hawaii: U-Factor 0.4 or less for windows, 0.60 or less for skylights. –*Efficient Windows Collaborative*, https://www.efficientwindows.org/energystar.php
		☐	U-Factor: _____	
	Skylights Energy Star Certified? Y/N	☐	Low-E Coating? Y/N	**Low-E coating** on double and triple-glazing windows have thin metallic coatings, able to significantly improve their thermal insulating performance.
		☐	Solar Heat Gain Coefficient: _____	**Solar Heat Gain Coefficient** is the fraction of incident solar radiation admitted through a window, both directly transmitted and absorbed and subsequently released inward. A good SHGC for Hawaii is .25. The lower a window's SHGC, the less solar heat it transmits.
	Doors Energy Star Certified? Y/N	☐	Properly weather-stripped? Y/N	

Building Envelope	**Insulation** Common Types: -Blown in -Rolled/Batts -Sprayed(Foam) -Rigid Foam Board **Air Sealing** Foam/Caulk Weather-stripping	☐ ☐ ☐ ☐	Indicate Type and R-Value: -Attic _____ _____ -Exterior Walls_____ _____ -Basement_____ _____ -Crawl spaces _____ ____	Air sealing and properly insulating can cut total home energy costs by up to 30%. Additional benefits include increased comfort year-round and better indoor air quality.
Heating, Ventilation, and Air Conditioning	**Cooling System** Energy Star Certified? Circle Type: -Heat Pump -Central AC -Split AC -Window Units **Heating System** Energy Star Certified? Circle Type: -Furnace -Boiler -Heat Pump -Electric Baseboard -Wood/Pellet Stove Circle Fuel: -Gas -Propane -Electricity -Wood/Pellets	☐ ☐ ☐ ☐ ☐	The yellow EnergyGuide label on the device displays the rated efficiency of the heating system. Annual Fuel Utilization Efficiency (AFUE): _____% Sealed/Insulated duct work? Programmable Thermostat? The rated SEER of AC systems is usually found on a yellow label on the indoor unit. SEER: _____	The EnergyGuide label, which shows the system efficiency, will also show estimated yearly operating costs so the buyer can get an idea of how much the heating and cooling portion of their bill will be. Unsealed/uninsulated ducts can lead to up to 20% energy loss. A properly used programmable thermostat can save around 10% on heating and cooling bills. Higher AFUE/SEER ratings = Higher energy savings.
Appliances	**Refrigerator** Energy Star Certified **Dishwasher** Energy Star Certified **Clothes Washer** Energy Star Certified **Clothes Dryer** Energy Star Certified **Home Electronics** Energy Star Certified -Computer System -Printer -Home Theater	☐ ☐ ☐ ☐ ☐	Energy Star refrigerators are 10% more efficient than federal requirements. Energy Star dishwashers are 10% more energy efficient than federal requirements. Energy Star clothes washers use 20% less energy and 35% less water. Energy Star clothes dryers use 20% less energy. Energy Star home electronics -Computer ___, Monitor ____ -Printer ___ -TV/Large Screen Monitor ___ -AV Receiver ___ -Speakers ___ -Blu-ray or DVD player ___	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. Visit www.energystar.gov for more information.

Water Usage	**Hot Water System** Energy Star Certified? Circle Fuel: -Solar Water Heater -Photovoltaic-powered -Gas -Propane -Electricity Circle Tank Type: -Freestanding -Gas Tankless -Electric Tankless Low flow: -Showerheads -Faucet Aerators -Toilets	☐ ☐ ☐ ☐ ☐ ☐	The energy use per year will be on a yellow EnergyGuide label on the device. Look for the Energy Star label in the lower right corner. Is insulation present on: -Hot water pipes? Y/N -Hot water tank? Y/N Solar Savings Fraction (SSF) _____ Energy Factor (EF) _____ Low flow faucets use (≤1.5 gpm) Low flow showerheads use (≤1.7 gpm) High efficiency toilets (1.6 gallons per flush)	A solar water heater (SWH) system can help homeowners save about $600 per year, about 40% on electricity costs. A SWH installed on an existing home may be eligible for a rebate from Hawaii Energy; a 35% State income tax credit (which is better than a tax deduction) up to $2,250; and a 30% federal income tax credit. **Solar Savings Fraction** is energy savings from solar water heating. In Hawaii it is 90% in sunny areas. Higher **Energy Factor** = More energy savings. **WaterSense** devices save water and reduce energy used to heat the water. WaterSense-labeled products and services are certified to use at least 20% less water, save energy, and perform as well as or better than regular models. https://www.epa.gov/watersense
3rd Party Evaluations and Certifications	- Home energy audit conducted by a qualified home energy rater (BPI or HERS Certified Building Analyst)? - Energy Star Certified Home? - LEED for Homes Certified? - NGBS Certified?	☐ ☐ ☐ ☐ ☐	Score:_____ (HERS Index) Attach recommendations and improvements made following audit. Energy Star Certification? Y/N LEED Certification? Y/N NGBS Certification? Y/N	**Hawaii Energy** *(www.hawaiienergy.com)* and **Kauai Island Utility Cooperative** *(http://website.kiuc.coop/member-services)* offer rebates on energy efficiency improvements. **LEED** (Leadership in Energy and Environmental Design): the most widely used green building rating system in the world. **NGBS** (National Green Building Standard): The first residential green building standard to undergo the full consensus process and receive approval from ANSI.

Guidance for Real Estate Professionals on Home Energy Efficient Attributes

More and more home buyers have a growing understanding of the importance and value of energy efficiency in the real estate market. The market penetration for high-performance homes in the U.S. reached **$36 Billion** in 2013 and is projected to hit **$72 Billion** by 2016 (Source, McGraw Hill Construction).

A recent survey by the National Association of Home Builders showed that "**nine out of ten** buyers would rather purchase a home with energy-efficient features and permanently lower utility bills than one without those features that costs 2 percent to 3 percent less." As the price of electricity and fuels rise, the demand for homes that are comfortable and affordable to operate and maintain are skyrocketing.

Real estate professionals can capitalize on this rapidly growing market by taking steps to recognize and sell the value of energy efficient homes to their clients.

Energy efficient characteristics in new and existing homes lead to:

For Customers:

- Lower energy costs
- Increased comfort year-round
- Higher home resale value potential
- Mortgage savings
- Enhanced air quality

For Real Estate Professionals:

- Increased customer satisfaction and loyalty
- Higher referral rates
- Higher commission rates due to increased home value
- Opportunities to demonstrate a deep understanding of all home systems to customers
- Saved deals by knowing solutions to overcome roadblocks

Knowledge of energy efficient home characteristics is a valuable tool for any real estate professional. With the increasing number of energy efficiency rating systems and new technology coming to market, it can be a challenge to keep on top of all the energy efficient attributes in a home. The checklist above can be used to keep track of all the high performance aspects of a house that can be integrated into the sales process and value proposition for real estate professionals.

Glossary of Home Energy Efficient Attributes

Air Sealing – Air sealing reduces air flow between the inside and outside of a building. Caulking/foaming and weather-stripping are common methods. Air sealing reduces drafts and energy costs. A blower door test is commonly used to determine the amount of air flow between the inside and outside of the house.

(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. 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

(ANSI) American National Standards Institute: A U.S. standards and conformity assessment system that helps to assure the safety and health of consumers and the protection of the environment. https://webstore.ansi.org/

(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 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 measures 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. http://www.businessdictionary.com/definition/coefficient-of-performance-COP.html

Energy Audit - 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

(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

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/

(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

(LEED) Leadership in Energy and Environmental Design: The most widely used green building rating system in the world. https://new.usgbc.org/leed

Low-E Glass - Low-emittance 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, flooring, window coverings, etc., from fading. See www.efficientwindows.org for more information.

(NGBS) National Green Building Standard: The first residential green building standard to undergo the full consensus process and receive approval from ANSI. https://www.nahb.org/research/sustainability/green-building-for-consumers/intro-to-green-building-for-consumers.aspx

(PV) Photovoltaic devices generate electricity directly from sunlight via an electronic process that occurs naturally in certain types of material, called semiconductors. Electrons in these materials are freed by solar energy and can be induced to travel through an electrical circuit, powering electrical devices or sending electricity to the grid. https://www.seia.org/initiatives/photovoltaics

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

(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.

(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 ≤ 0.25 is desirable in Hawaii). 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

(SSF) Solar Savings Fraction - SSF 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. In sunny areas in Hawaii, the SSF is 90 percent.

Tax credits: Income tax credits for renewable energy systems in Hawaii. Always check with the state tax office (808-587-4242, 800-222-3229) and U.S. Internal Revenue Service (844-545-5460) for updated information and details. Generally, a tax credit is always better than a tax deduction because a tax credit lowers your tax bill directly.

For **solar water heating** systems in Hawaii, the maximum allowable credits are:

- Single family residential property is eligible for a credit of 35% of the actual cost or $2,250, whichever is less;
- Multi-family residential property is eligible for a credit of 35% of the actual cost or $350 per unit, whichever is less;
- Commercial property is eligible for a credit of 35% of the actual cost or $250,000, whichever is less.

For **photovoltaic (PV)** systems, the maximum allowable credits are:

- Single family residential property is eligible for a credit of 35% of the actual cost or $5,000, whichever is less; if all or part of the system is used as a substitute renewable energy technology for the solar water heating requirement for new residential construction, the credit shall be reduced by 35% of the actual system cost or $2,250, whichever is less;
- Multi-family residential property is eligible for a credit of 35% of the actual cost or $350 per unit, whichever is less;
- Commercial property is eligible for a credit of 35% of the actual cost or $500,000, whichever is less.

U-Factor - Rate of heat transfer through a building component (e.g. windows) or assembly (e.g. walls, roofs). The lower the U-Factor, the better the component is at slowing heat transfer. The nationally recognized rating method by the National Fenestration Rating Council (NFRC) is for the whole window, including glazing, frame and spacers. Center-of-glass U-factor is also sometimes referenced and describes the performance of the glazing alone without the effects of the frame. For Hawaii, recommended U-factor for windows is .40 or lower; for skylights, .60 or lower.
https://www.efficientwindows.org/ufactor.php

WaterSense devices save water and reduce energy used to heat the water. WaterSense is a voluntary partnership program of the U.S. Environmental Protection Agency (EPA). It is both a label for water-efficient products and a resource for helping you save water. The WaterSense label makes it simple to find water-efficient products, new homes, and programs that meet EPA's criteria for efficiency and performance. WaterSense-labeled products and services are certified to use at least 20% less water, save energy, and perform as well as or better than regular models.
https://www.epa.gov/watersense

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

Resources

Appraisal Institute: "Residential Green and Energy Efficient Addendum"
https://www.appraisalinstitute.org/assets/1/7/ResidentialGreenandEnergyEfficientAddendum.pdf

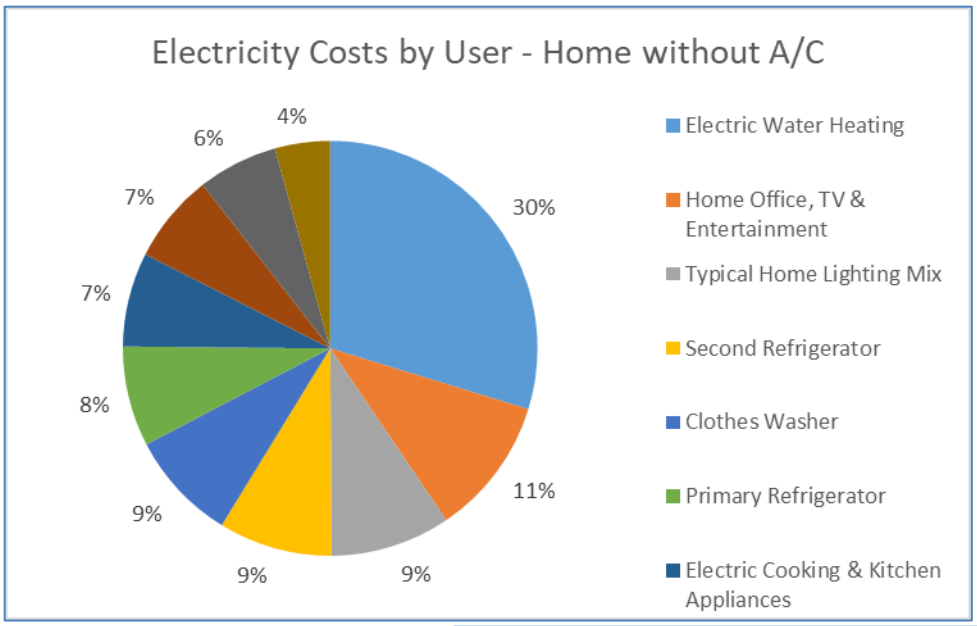
Department of Energy (DOE) Home Energy Savings - https://www.energy.gov/energysaver/energy-saver

ENERGY STAR:
Working with Energy Star as a Real Estate Agent --
https://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/Best_Practices_Selling_ES_Qualified_Homes.pdf
Fact Sheets on the features of Energy Star Certified Homes -
https://www.energystar.gov/newhomes/explore_features_benefits?s=mega
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

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

Homeowners Guide to Energy Efficiency - *http://energy.hawaii.gov/wp-content/uploads/2011/10/Hawaii-Homeowners-Guide.pdf*

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



Electricity Costs by User in Hawaii:

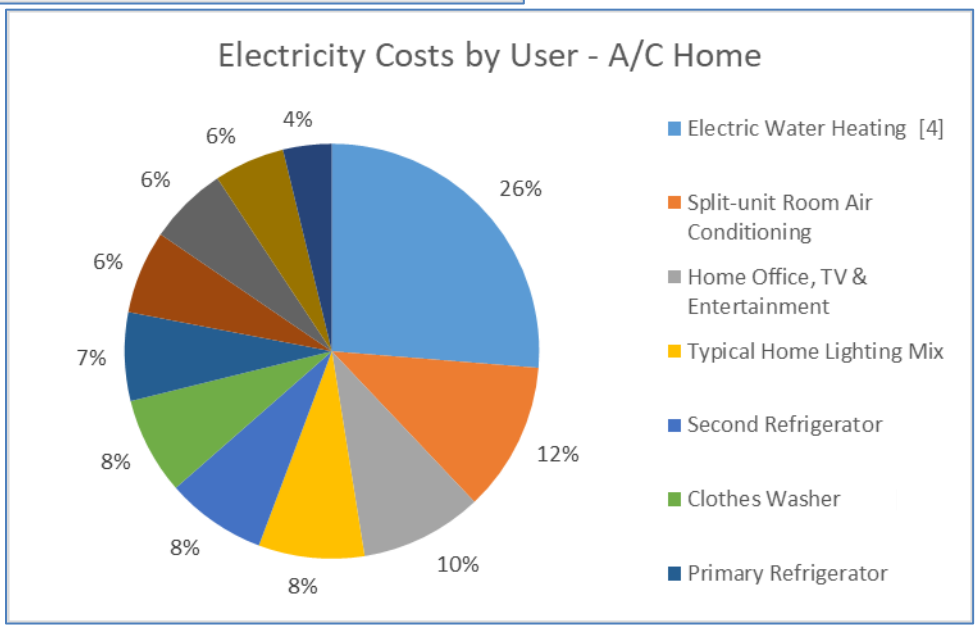
With and Without Air Conditioning

Data provided by Hawaii Energy (www.hawaiienergy.com)

For more information on energy efficient homes, please see these Hawaii State Energy Office publications:

Hawaii Homeowners Guide to Energy, Comfort & Value
http://energy.hawaii.gov/wp-content/uploads/2011/10/Hawaii-Homeowners-Guide.pdf

Field Guide for Energy Performance, Comfort, and Value in Hawaii Homes
http://energy.hawaii.gov/wp-content/uploads/2011/10/Field-Guide-2.pdf



Questions

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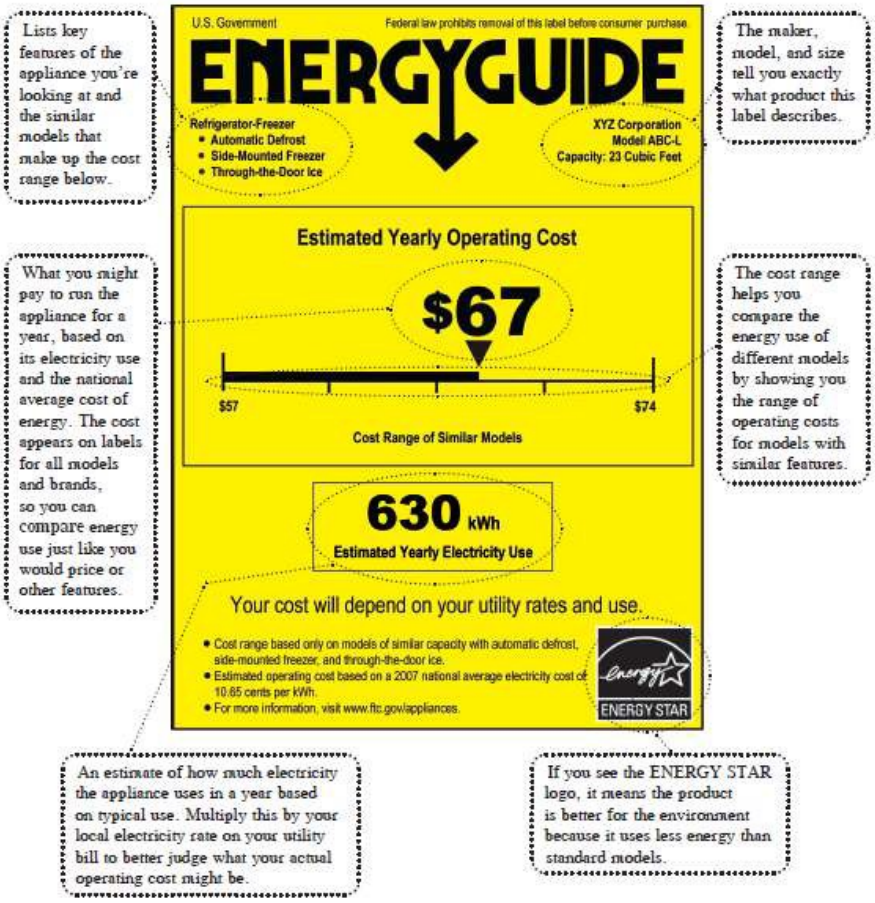
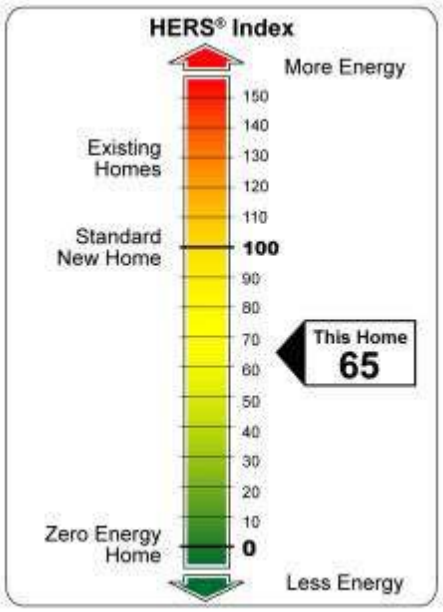
Energy Efficiency Labels

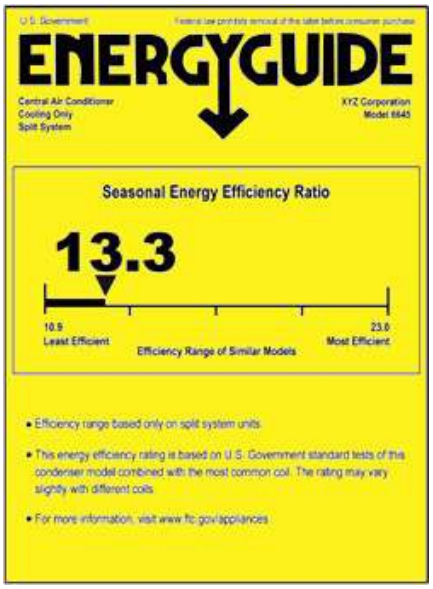
How to Use the EnergyGuide Label

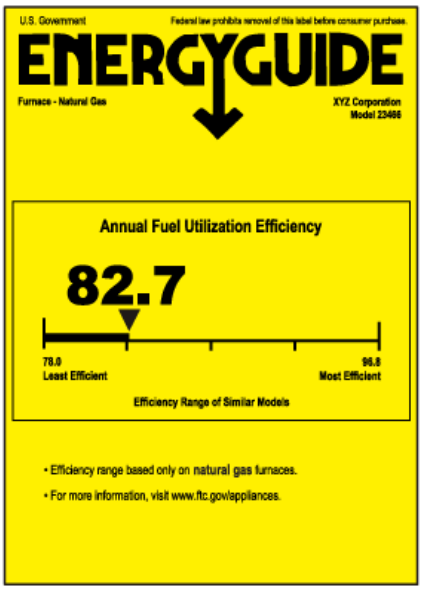


Home Energy Rating Index



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).





Source: U.S. Federal Trade Commission