



SOLAR DECATHLON 2009

Energy Efficiency for the Homeowner

How to Reduce Your Home's
Energy Bills



October 2009

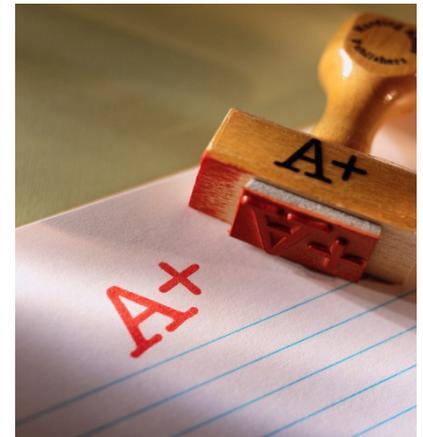
National Mall • Washington, DC



A Quick Test

Using Energy Efficient Products and Practices Can:

- A. Make your home more affordable
- B. Make your home more environmentally friendly – lower your carbon footprint
- C. Increase your comfort





Did You Know...

- A single home adds MORE carbon dioxide to the air than two average cars?
- The average household spends \$2,000/yr on energy?

What do you spend per month?





Today's Discussion



- ENERGY STAR Products
- Energy Efficiency Features
 - Existing Homes
 - New Homes
- Home Energy Raters
- Residential Energy Tax Breaks



ENERGY STAR

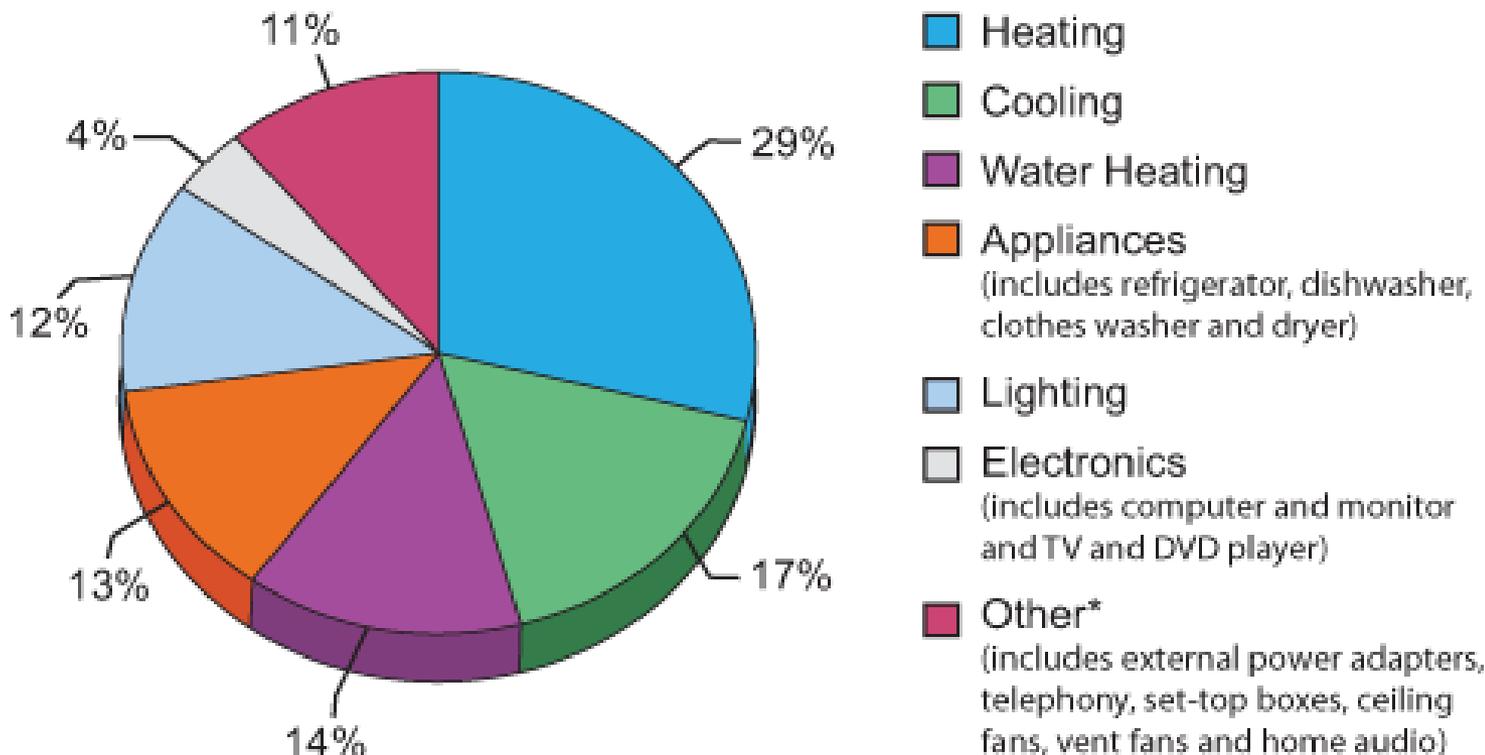




Energy Use by Appliance

Where Does My Money Go?

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





ENERGY STAR Qualified Products:

- Save energy
- Perform as well or better than non-qualified products
- Are cost-effective for consumers (the payback of the price premium is within the lifetime of the product)



Look for the Label

Finding products and services that provide these benefits isn't hard

— just look for the label!





Example: Lighting



- Uses about 12% of energy in average American home.

Choose Compact Fluorescent Lamps (CFLs):



- Over 90% of energy in standard incandescent light bulbs is given off as heat.
- Replacing the bulbs in your five highest use light fixtures with CFLs can save about \$60/yr.
- CFLs last up to 10 times longer than incandescent
- Buy **ENERGY STAR** qualified CFLs!

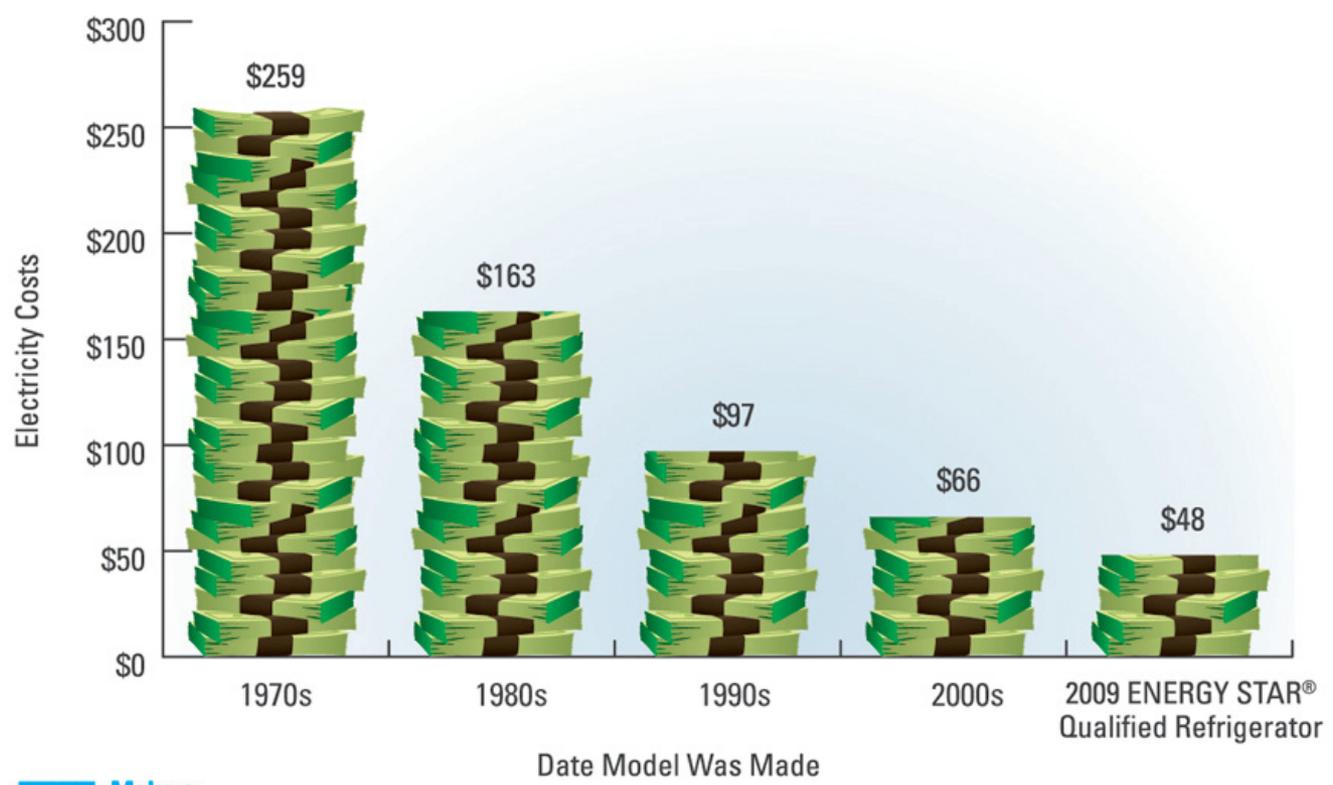




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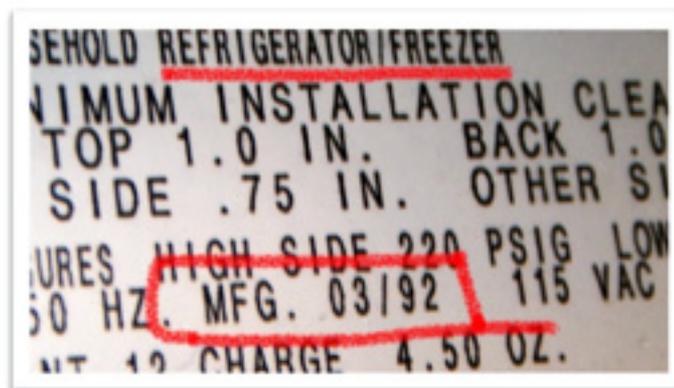
How much does it cost to run your refrigerator each year?



 **Make a COOL CHANGE.**
Recycle Your Old Fridge.



Older Styles & Colors



Product Name Plate



Calculator at energystar.gov/recycle



Where to Find Energy Star Products

Manufacturers



Retailers





How To Find Out More

For answers to your questions, to find out how much you can save, or just to find a store near you, just go to:

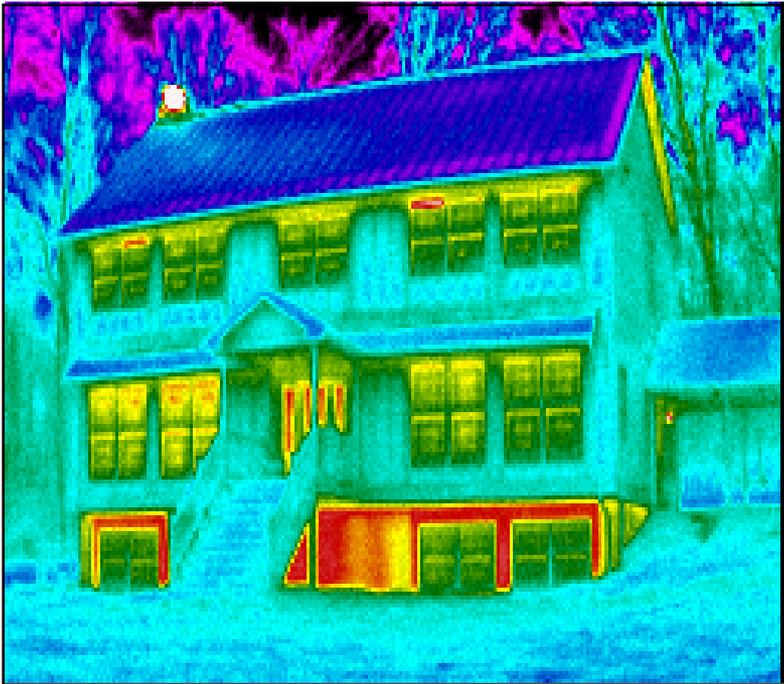
www.energystar.gov

Or call 888-STAR-YES





Residential Energy Use



Your House is a SYSTEM



Improving Existing Homes

- **Air Seal & Insulate** to reduce heating & cooling bills by 20%
- **Replace filters monthly** on your furnace, air conditioner, and heat pump
- **Insulate hot water pipes**
- **Use a programmable thermostat**
- **Upgrade to ENERGY STAR products** for lighting, appliances, windows, heating and cooling equipment, water heating...





Step 1: Air Seal





Can I make my house “too tight”?

- Not really...
- If you are worried, talk to a professional
- You can always add ventilation



Step 2: Insulate





How much insulation should I add?

- Dependant on location, other factors
- Rule of thumb: at least cover your joists
- Calculator:

<http://www.ornl.gov/~roofs/Zip/ZipHome.html>

- Can be found through www.energysavers.gov, or by typing “insulation calculator” into your favorite search engine!



More Information on Air Sealing and Insulating

- www.energystar.gov
- www.energysavers.gov



Energy Saving Tips



Other things to remember to do!!!



- **Insulate your water heater (payback in about 1 year!!)***
 - Or, if it's older than 10 years, think about replacing it with a new **ENERGY STAR** qualified unit.
- **Turn down temperature in water heater to 120° F**
- **Use energy-saving settings** on refrigerators, dishwashers, washing machines & clothes dryers
- **Set back thermostat temperatures** or use a programmable thermostat to have them set back automatically (unless you have a heat pump!)
- **Close doors, windows and chimney damper when heating and cooling**
- **Room Air Conditioners:** Take them out off season or at least use Room AC covers

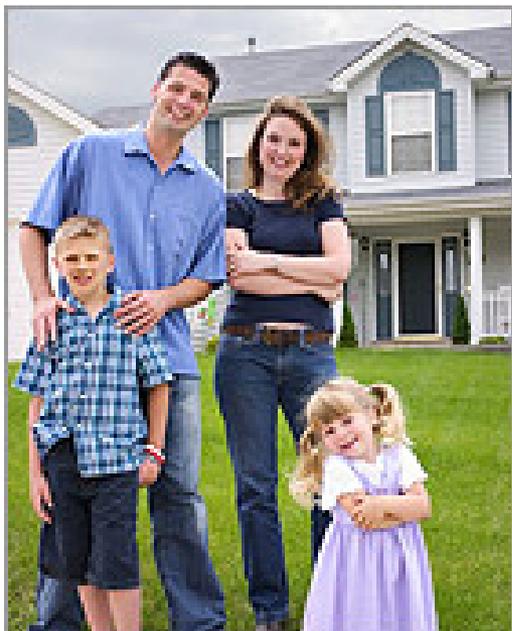


Energy Features in New Homes

We're buying a new house,
what features should we seek?



Energy Star Homes



Very Cost Effective

- Saves 15% of whole house utility bills
- About 10% of all homes built today are Energy Star Homes
- 20-40% market share in some cities



Energy Saving Features *New Homes*

Space Heating accounts for 40-50% of energy bill

- **Properly-Sized ENERGY STAR** qualified equipment
 - Ask contractors to use Manual J calculations to size system
 - Gas furnaces - at least 90 AFUE
 - Air conditioners/heat pumps – 8.0 HSPF or higher
 - Geothermal heat pumps (most qualify)
- **Home insulation**
 - Zip Code Insulation Calculator
 - Be sure it is properly installed
- **Sealed and tested for air leakage**
- **Tight ductwork**

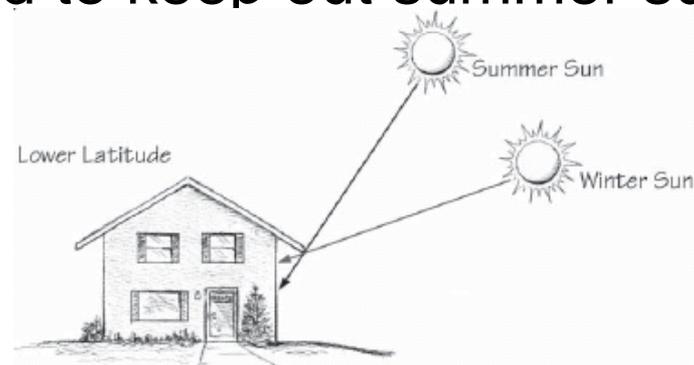
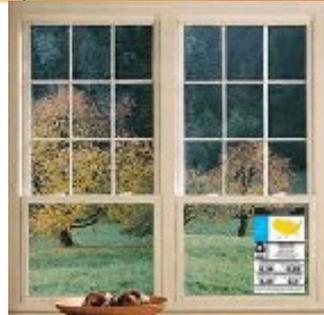




Saving Energy in New Homes

Windows designed for your climate

- Hot climates - seek a low solar heat gain coefficient (SHGC)
- Cold climate - seek low u-factor
- Western windows and doors: major heat gains in the summer
- Overhangs often needed to keep out summer sun





Where does it qualify?



National Fenestration Rating Council
CERTIFIED

Sky Windows, Inc.
DHOX Double Hung Window
 CPD#999-N-000
 Vinyl Frame • Dual Glazed
 Low E

ENERGY Performance

- Energy Savings will depend on your specific climate, house and lifestyle
- For more information, call Sky Windows, Inc. 1-800-555-1511 or visit NFRC's web site at www.nfrc.org.

Technical Information

Residential Products			
U-Factor	Solar Heat Gain Coefficient	Visible Transmittance	Air Leakage CFM/ft
0.37	0.32	0.53	.2
Nonresidential Products			
U-Factor	Solar Heat Gain Coefficient	Visible Transmittance	Air Leakage CFM/ft
0.32	0.33	0.54	.2

Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product energy performance. NFRC ratings are determined for a fixed set of environmental conditions and specific product sizes.





Energy Saving Features *New Homes*

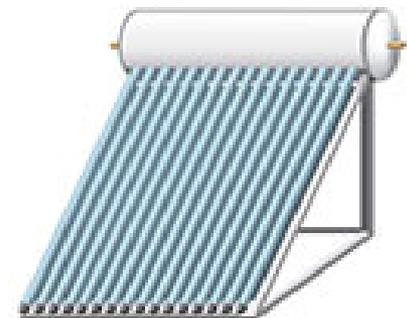
Water Heating accounts for 15-20% of energy bills

- **ENERGY STAR** qualified water heaters now available.

Cut your water heating bills by 7% to more than 50%!

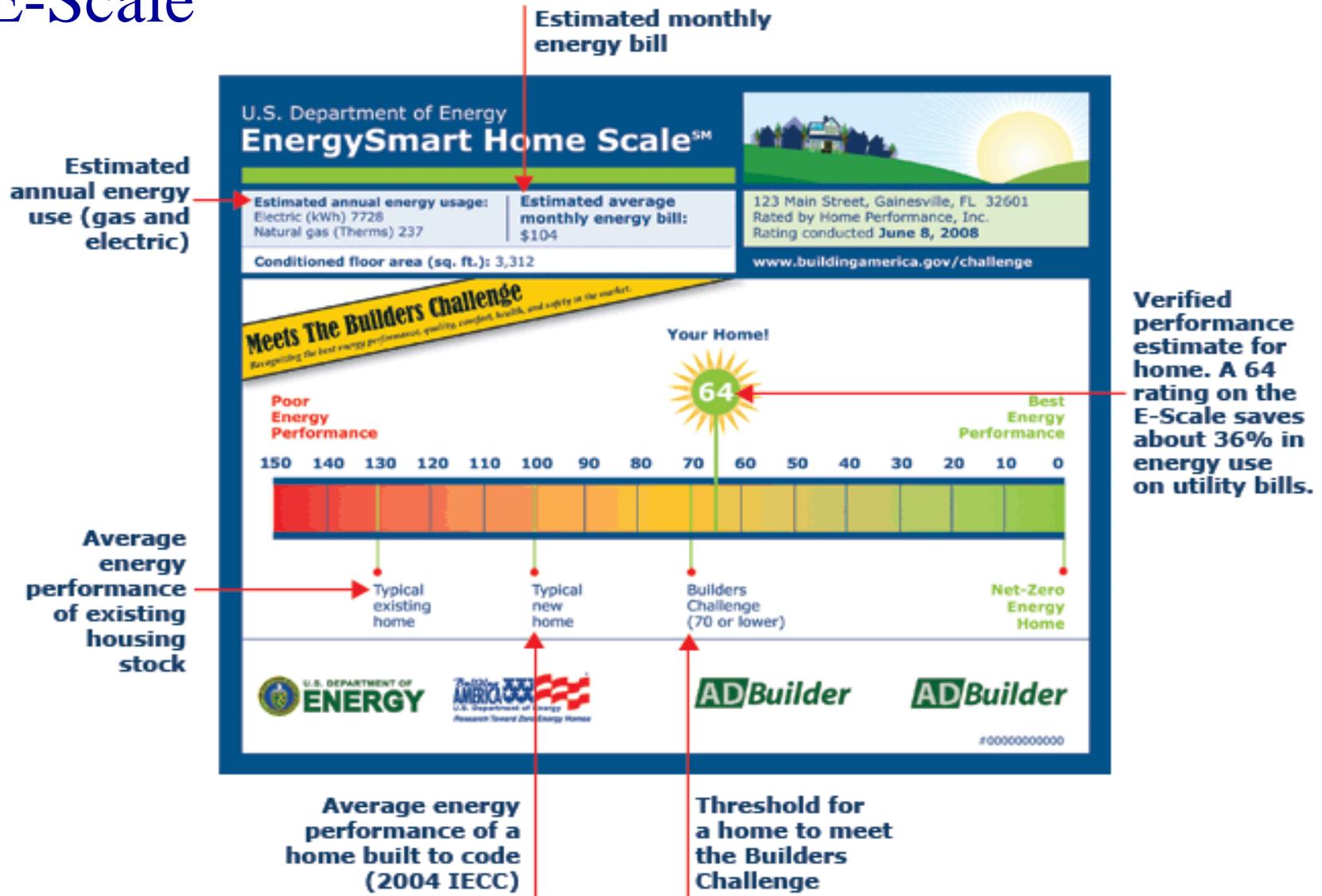
- Types of Energy Star Qualified Water Heaters

- High Efficiency (Gas-Fired) Storage: save +/- 7%
- (Gas-Fired) Tankless: save +/- 30%
- Heat Pump Water Heater: save +/- 50%
- Solar: save a lot – varies more with climate





The E-Scale



Verified performance estimate for home. A 64 rating on the E-Scale saves about 36% in energy use on utility bills.



Energy Raters

How can they help?



Saving Energy in Homes

You can make some improvements, but... to achieve the best performance you need a professional, a **certified home energy rater.**

Following the recommendations of a properly done home energy rating...

- leads to a much more comfortable home
- is very cost effective

In the third-floor studio, gaps between the ceiling drywall and the cinder-block gable wall result in air leaks between conditioned and unconditioned space





Energy Rater

- Performs an evaluation and suggests how to improve your home's performance

- On-site energy inspection
- Air leakage test (blower door test)
- Computer analysis-estimated savings

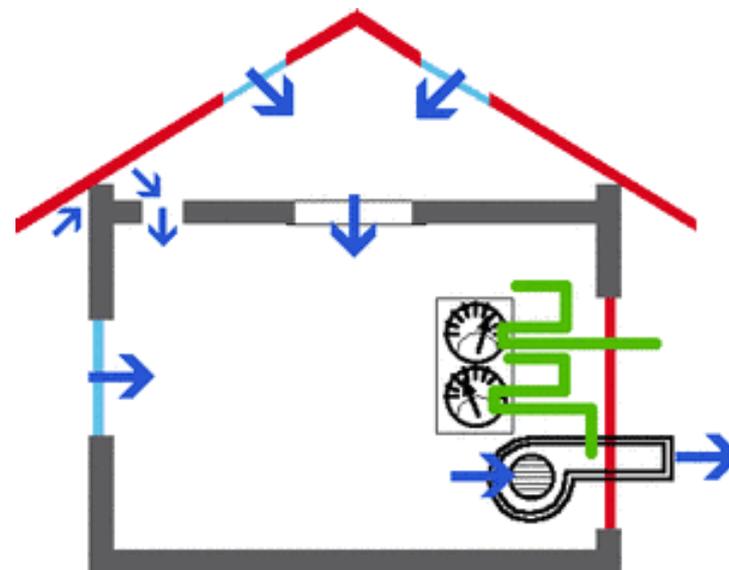
- May include Infrared camera scan
- Pinpoints cost-effective improvements





Blower Door Test

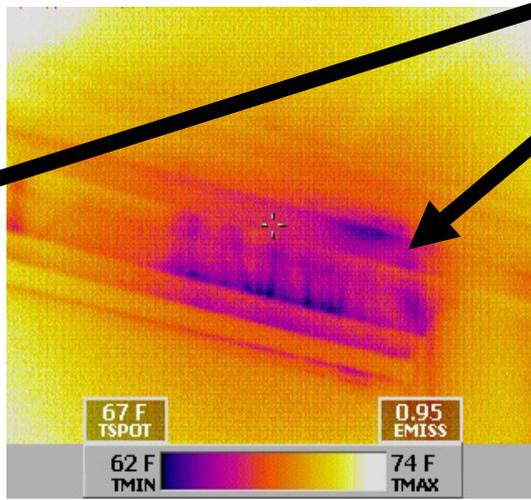
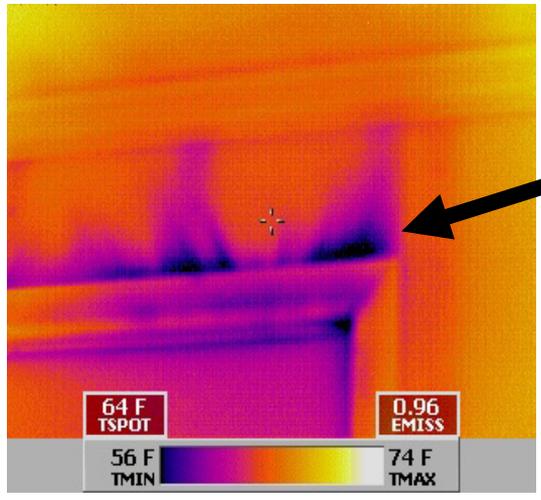
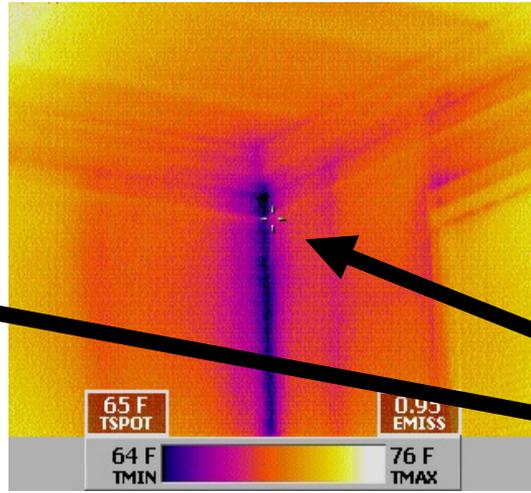
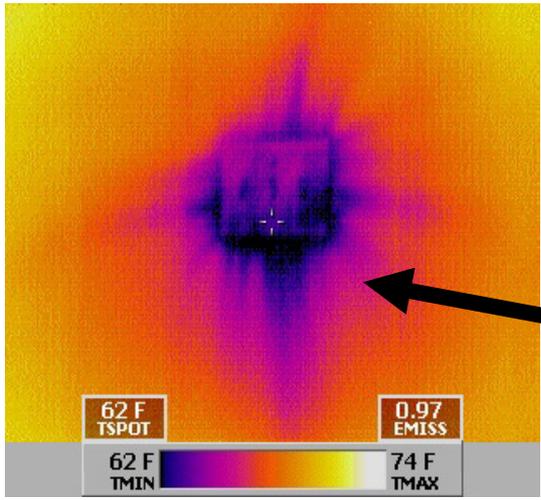
- Conduct air leakage test using a blower door



- Helps identify air infiltration areas in your house



Infrared Cameras Show Air Leaks



Identified Leaks



Home Energy Rater

Locate a certified Home Energy Rater via
Residential Energy Services Network
(RESNET)

Visit: www.natresnet.org





SOLAR DECATHLON



Form 88XX	Draft - Energy Efficient New Home Credit	OMB No. 1545-0048
Department of the Treasury Internal Revenue Service	4See the Instructions for Form 88XX. 4Attach to Form 1040.	
		1999
Name(s) shown on Form 1040		Attachment Signature No. XXX Your social security number
General Information		
A Address of home qualifying for the credit (if different from the address shown on Form 1040)		
B County	C Region (see Ap	
Energy Efficient New H		
1 Enter the purchase price of the ho		
2 Multiply line 1 by 0.01		
3 Enter the smaller of line 2 or \$2,000 measures have been completed (see i		
Required Energy Conser		
The Required Energy Conservation Meas		

Energy Tax Credits



- BEAUTIFY YOUR EXTERIOR
- ADD VALUE TO YOUR HOME
- BE COMFORTABLE
- CONSERVE ENERGY
- GET A TAX CREDIT

It makes so much cents!

I WANT YOU TO SAVE ENERGY AND TAX DOLLARS TOO!

THE ENERGY TAX BILL WAS SIGNED INTO LAW IN AUGUST OF 2005. FOR HOME OWNERS, INSTALLING NEW ENERGY-EFFICIENT NORANDEX/REYNOLDS BUILDING PRODUCTS NOT ONLY ADDS COMFORT, VALUE AND BEAUTY TO YOUR HOME, IT NOW MAY GET YOU A BREAK ON YOUR TAXES TOO!



Energy Tax Credits available through 2016 New or Existing Homes



A credit of up to 30% of the cost (no upper limit) for:

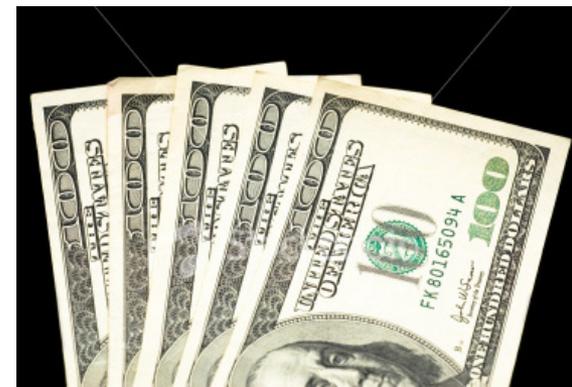
- Solar-powered hot water systems
- Solar-powered PV systems
- Geothermal Heat Pumps
- Small wind-power systems
- Fuel cell systems



Existing Homes

Consumer tax credits of 30% up to a total of \$1,500 in 2009 and 2010:

- Windows & Doors
- Insulation
- Reflective Roofs
- HVAC: Central AC, furnaces, boilers, heat pumps, main air circulating fans
- Water Heaters (non-solar)
- Biomass Stoves





Energy Tax Benefits

More Information

- Congressional interest in extending or increasing the residential tax benefits—stay tuned
- Also, check for local state energy efficiency or solar tax benefits or sales tax holidays
 - Contact your State Energy Office for details
 - Or, visit: www.dsireusa.org



Federal Agency Information

- www.energysavers.gov
 - (877) EERE-INF
- www.energystar.gov
 - (888) STAR-YES





*Thank
You!*

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