Home Energy Score

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U.S. Department of Energy

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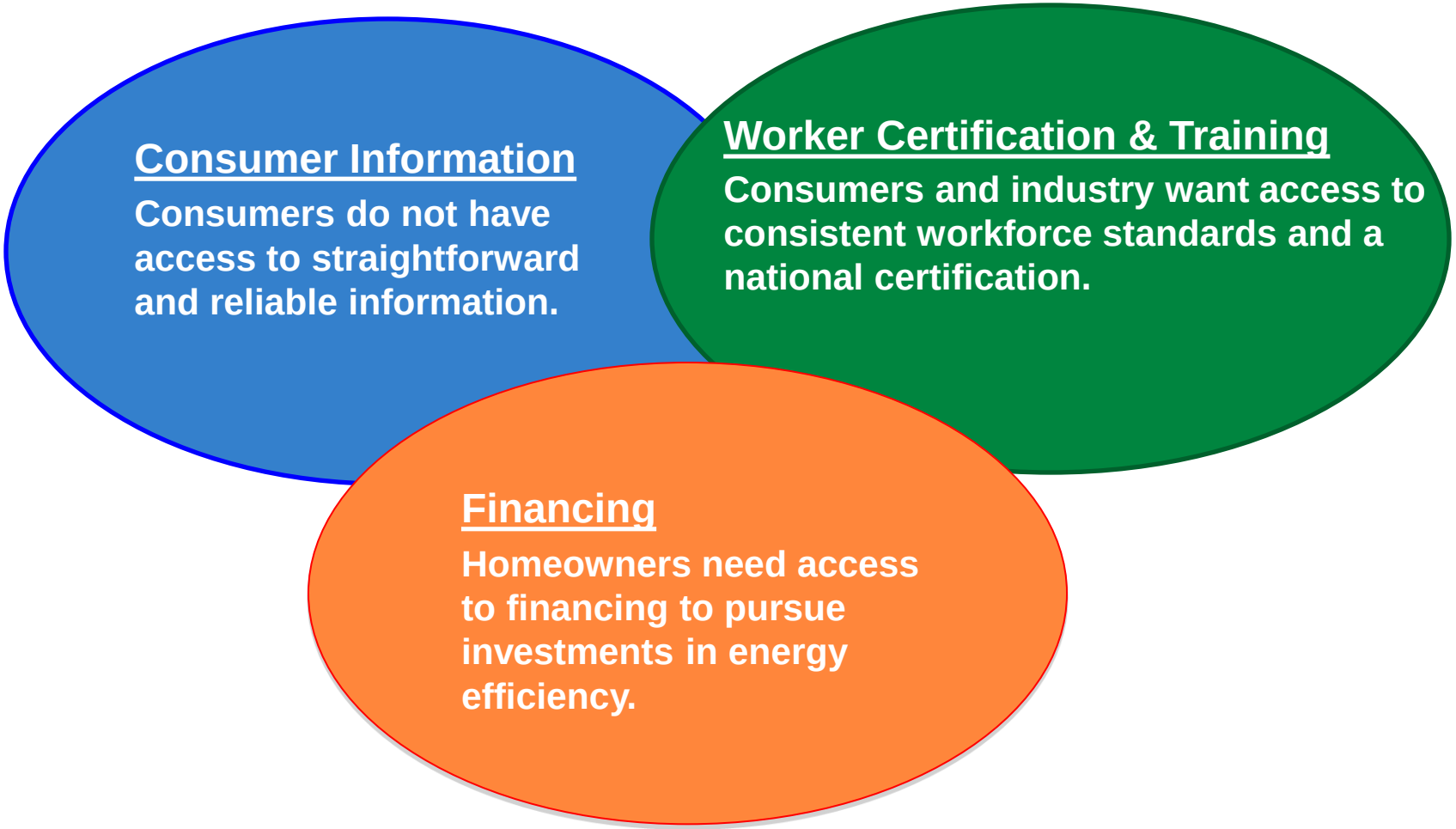
Recovery thru Retrofit: Identified 3 Major Market Barriers



Objectives

- Strengthen the home energy retrofit market
- Provide an affordable and credible means for --
  - Homeowners to understand their home's energy performance, how they compare to others in their area and how to take action to improve its efficiency
- Build on and complement existing home energy improvement efforts
- Facilitate the ability of trained workers to enter the private sector retrofit market as Weatherization work funded by the Recovery Act ramps down

Phase 1: Developing the Home Energy Score

December 2009 thru October 2010

- Analyzed other rating programs – both domestic and international
- Analyzed various software tools
- Significant outreach (webinars, discussions with interest groups, Request for Information)
- Conducted 12 focus groups in 6 cities
- Reviewed social science research on consumer behavior and ability to process information
- Assessed how different home characteristics affect overall energy use (2 million+ model runs)

Go to www.homeenergyscore.gov for more information on findings from these analyses.

DOE Established Guiding Principles

- Information must be credible, reliable, and replicable.
- Information must be transparent and easy to understand.
- Implementation costs must be affordable.
- Program must include effective quality assurance.

Key Findings from Focus Groups and Social Science Review

- Homeowners appreciate straightforward, simple information…at least initially
  - Clear, simple, colorful graphics that make sense at a glance
- As supplemental information, they want customized recommendations with information on costs and savings
- People are influenced by how they compare to their peers, neighbors
- Reference points matter
  - If you a homeowner how they compare to the average home, they will be satisfied with being anywhere above average
  - If you give them a motivational point of comparison (top X percent), they are likely to be motivated to do more

Home Energy Score: What is it?

- Standard method for quickly assessing a home's major energy systems and envelope
  - About 45 data points required
- Produces an asset rating
  - Incorporates standard behavioral assumptions
- Allows comparison between homes regardless of location in U.S.
  - Compares homes of similar size
  - Takes into account local climate

Home Energy Score: Who provides it?

- Qualified assessors
- Must be a HERS rater working under a RESNET-certified provider or a BPI Building Analyst or Home Energy Survey Professional
  - Currently, only raters/analysts working as part of a pilot are being certified as qualified assessor
- Must also take DOE on-line training and test (80% grade needed to pass and gain access to tool)

Home Energy Score: How do you generate it?

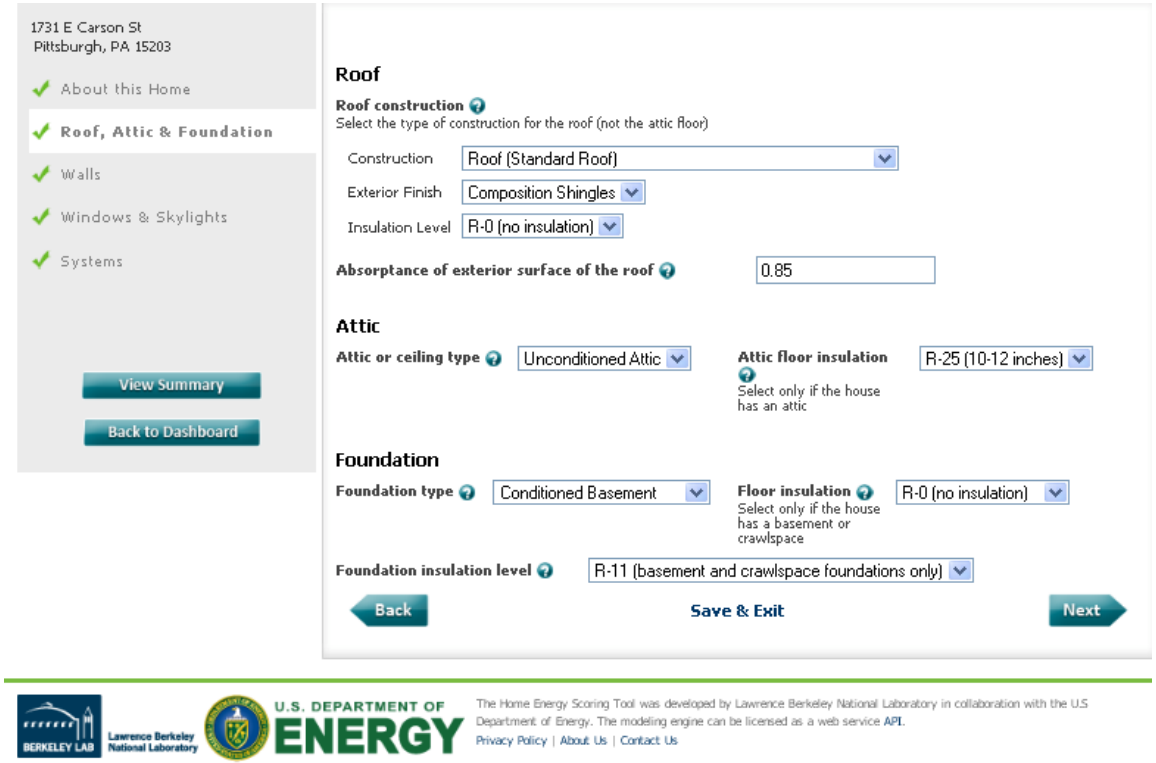
- Simplified software tool allows the assessor to --
  - Collect and input information about the house, and
  - Produce a score and upgrade recommendations…

  …in an hour or less

- While designed to be minimally demanding, the assessment requires an understanding of home characterization.
  - Some input choices don't exactly match the homes so judgment is required.
  - Example: Attic type – only one choice is possible so UA calculations may be required.

Home Energy Scoring Tool

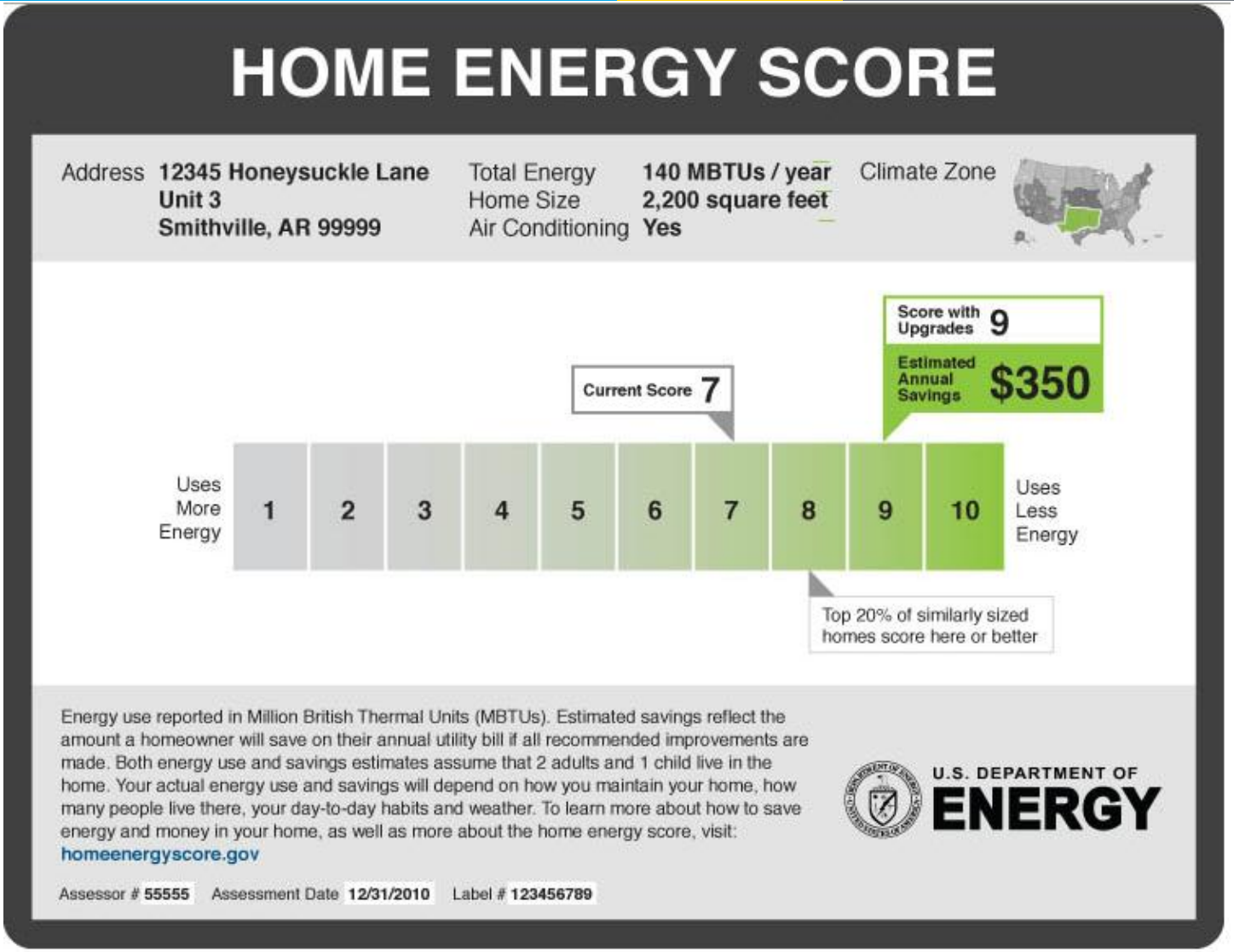
- Features pull-down menus
- Includes guidance information for most inputs
- APIs (Application Programming Interface) available to link to other software tools



Home Energy Score: What does the consumer get?

- Asset Score (on 10 point scale)
- Tailored recommendations for improvements
- Standard operational tips
- List of data inputs used by the assessor

Home Energy Score



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HOME UPGRADE RECOMMENDATIONS Home Energy Score | Session # 000062465 | Page 3

Address **555 Park Lane | Pittsburgh, PA 99999**

Improvements recommended now These upgrades can help you save energy right away.	**Estimated Utility Bill Savings** ($/year)	**Simple Payback Period** (years)	**Greenhouse Gas Reductions** (lbs CO_2/year)
Basement: Add insulation to walls to R-11.	$230	2	1,680
Air tightness: Have a professional seal the gaps and cracks that leak air into your home.	$130	6	970
Attic: Increase attic floor insulation to R-38.	$120	6	890
Recommendations for when you need to replace equipment These recommendations will help you save energy when it's time to replace or upgrade.			
Furnace: Pick one with an ENERGY STAR label.	$160	3	1,150

It is important to consult a certified energy professional to ensure improvements are made properly and take into account health, comfort, and safety. Proper installation, including details such as complete coverage of rigid insulation and taping the seams, is critical to achieving energy savings. As with any major purchase, you should seek more than one cost estimate before making a buying decision.

How are savings calculated?
These estimates are based on standard energy use patterns of 2 adults and 1 child. Actual energy bills and projected savings will vary according to the number and type of appliances, the number of occupants and their behavior, and weather.

What do lbs of CO_2 mean in my everyday life?
On average, a car generates about 11,000 lbs of CO_2 each year.

What does payback period mean?
For improvements recommended now, simple payback reflects the number of years it will take to cover your upfront costs. For recommendations concerning future equipment replacement, payback time is the number of years it will take for your savings to add up to your upfront cost if you buy an Energy Star, or high-efficiency unit, instead of a lower-efficiency one. Payback periods will vary depending upon local energy costs and the costs of improvements in your area. Only measures with paybacks of 10 years or less are included. If you take into account the opportunity cost of money, the payback time is longer.

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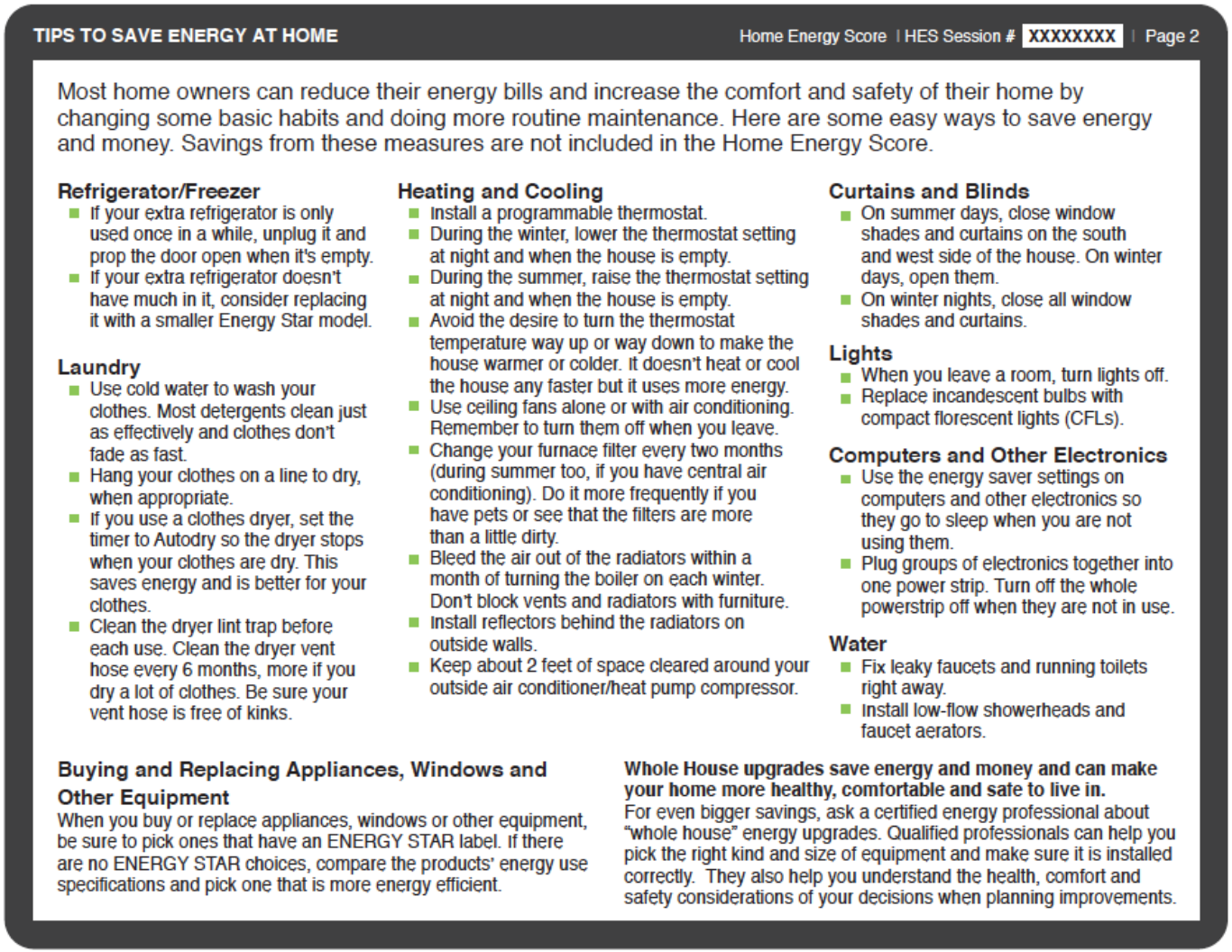

TIPS TO SAVE ENERGY AT HOME

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Most home owners can reduce their energy bills and increase the comfort and safety of their home by changing some basic habits and doing more routine maintenance. Here are some easy ways to save energy and money. Savings from these measures are not included in the Home Energy Score.

Refrigerator/Freezer

- If your extra refrigerator is only used once in a while, unplug it and prop the door open when it's empty.
- If your extra refrigerator doesn't have much in it, consider replacing it with a smaller Energy Star model.

Laundry

- Use cold water to wash your clothes. Most detergents clean just as effectively and clothes don't fade as fast.
- Hang your clothes on a line to dry, when appropriate.
- If you use a clothes dryer, set the timer to Autodry so the dryer stops when your clothes are dry. This saves energy and is better for your clothes.
- Clean the dryer lint trap before each use. Clean the dryer vent hose every 6 months, more if you dry a lot of clothes. Be sure your vent hose is free of kinks.

Heating and Cooling

- Install a programmable thermostat.
- During the winter, lower the thermostat setting at night and when the house is empty.
- During the summer, raise the thermostat setting at night and when the house is empty.
- Avoid the desire to turn the thermostat temperature way up or way down to make the house warmer or colder. It doesn't heat or cool the house any faster but it uses more energy.
- Use ceiling fans alone or with air conditioning. Remember to turn them off when you leave.
- Change your furnace filter every two months (during summer too, if you have central air conditioning). Do it more frequently if you have pets or see that the filters are more than a little dirty.
- Bleed the air out of the radiators within a month of turning the boiler on each winter. Don't block vents and radiators with furniture.
- Install reflectors behind the radiators on outside walls.
- Keep about 2 feet of space cleared around your outside air conditioner/heat pump compressor.

Curtains and Blinds

- On summer days, close window shades and curtains on the south and west side of the house. On winter days, open them.
- On winter nights, close all window shades and curtains.

Lights

- When you leave a room, turn lights off.
- Replace incandescent bulbs with compact florescent lights (CFLs).

Computers and Other Electronics

- Use the energy saver settings on computers and other electronics so they go to sleep when you are not using them.
- Plug groups of electronics together into one power strip. Turn off the whole powerstrip off when they are not in use.

Water

- Fix leaky faucets and running toilets right away.
- Install low-flow showerheads and faucet aerators.

Buying and Replacing Appliances, Windows and Other Equipment

When you buy or replace appliances, windows or other equipment, be sure to pick ones that have an ENERGY STAR label. If there are no ENERGY STAR choices, compare the products' energy use specifications and pick one that is more energy efficient.

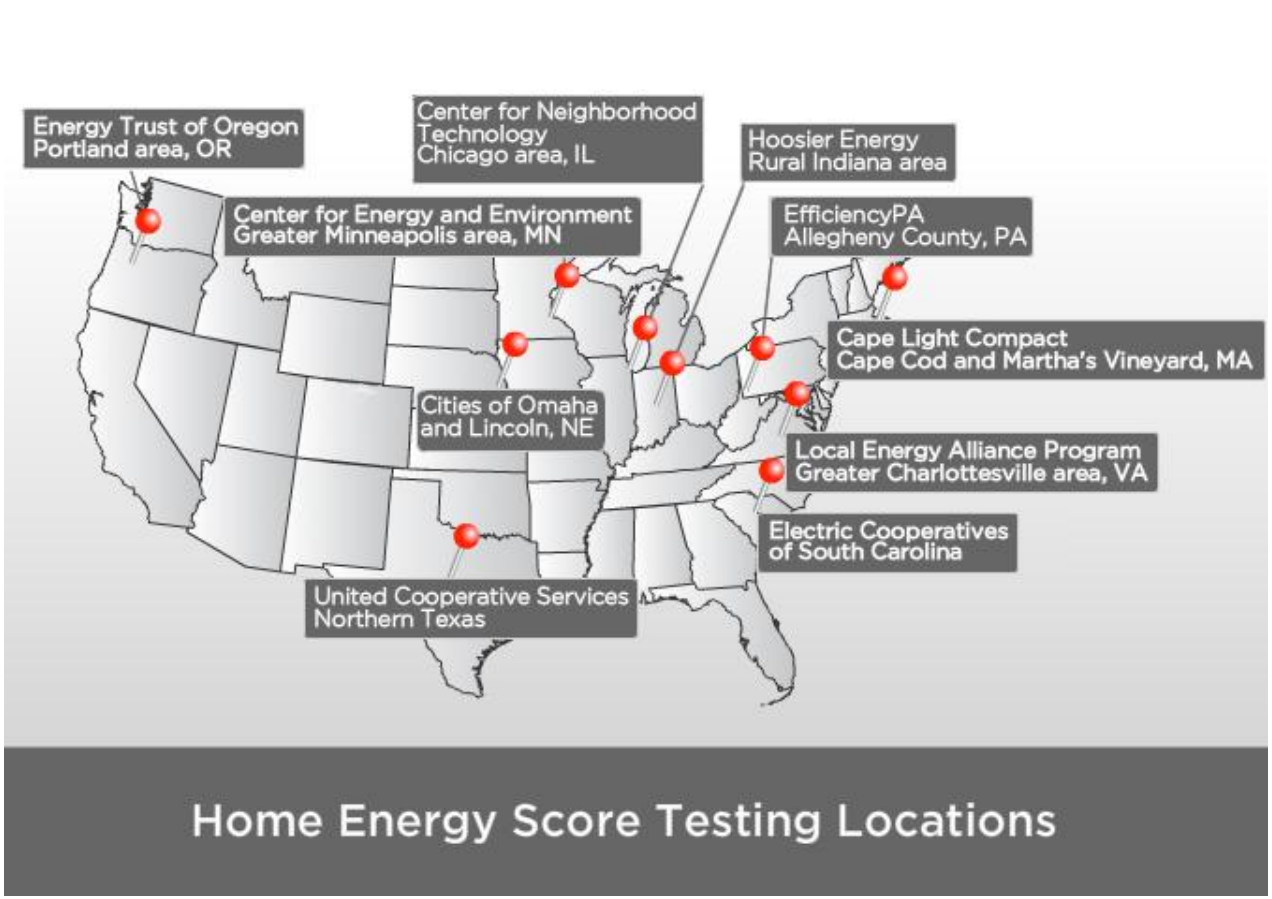
Whole House upgrades save energy and money and can make your home more healthy, comfortable and safe to live in.
For even bigger savings, ask a certified energy professional about "whole house" energy upgrades. Qualified professionals can help you pick the right kind and size of equipment and make sure it is installed correctly. They also help you understand the health, comfort and safety considerations of your decisions when planning improvements.

A few important points about the score & report…

- Shows MBTU (allows linkages to other tools, etc.), but convert the metric to easily understood scale
- Accounts for climate
- Shows square footage, but doesn't normalize for size
- Uses average state energy costs and average national costs for energy improvements
  - Does not show cost of improvement; only payback
- Allows partners to provide their own recommendations based on more accurate information where available
- Shows greenhouse gas savings, but not on front page

Phase 2: Pilots in 10 States

- Virginia
- Massachusetts
- Minnesota
- Indiana
- South Carolina
- Nebraska
- Texas
- Oregon
- Pennsylvania
- Illinois

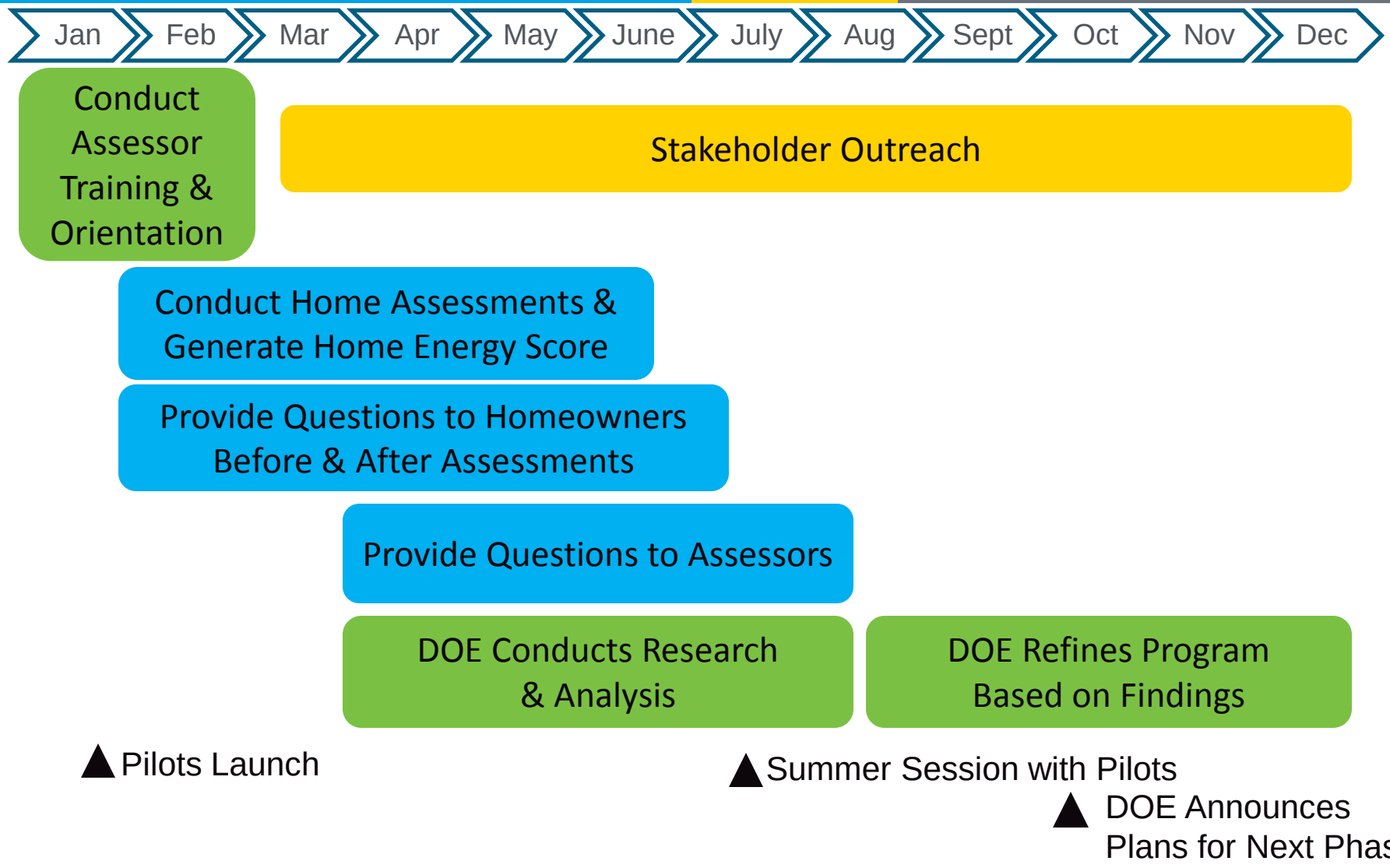


As a complement to the pilots, DOE is conducting additional research with states, non-profits, national labs, & others

What are we testing?

- Scoring tool
  - Inputs: are there additional data points we should collect?
  - Diagnostic information: to what degree does it affect calculations?
  - Comparison to other tools (energy calculations, recommendations)
- Scoring methodology
  - Bins: do BTU values accurately reflect homes in each climate zone?
- Assessor understanding and reaction
  - Does level of certification or training make a difference?
  - How long does it take to collect and input the data?
- Homeowner understanding and reaction
  - Do they understand the information and find it useful
  - Other issues (e.g., should we break out energy types (electricity, natural gas, other))

Home Energy Score Timeline



Questions and Comments Welcome

More information available at
www.homeenergyscore.gov

Send comments and questions to
homeenergyscore@ee.doe.gov