Report: Motivating Home Energy Improvements

Focus Groups for the U.S. Department of Energy

ABSTRACT

The U.S. Department of Energy (DOE) conducted focus groups across the U.S. in different climate zones to determine what information is most likely to motivate homebuyers and homeowners to get energy improvements done. The focus groups also assessed how DOE should convey and display this information.

Table of Contents

EXECUTIVE SUMMARY **3**
KEY FINDINGS 4
BACKGROUND **6**
METHOD **7**
DETAILED FINDINGS 8
Awareness of Home Energy Improvements 8
What do you wish you knew before you purchased your home? *9*
What are your priorities for changing or remodeling your current home? *10*
Utility Bills *11*
Resources for Information 11
Motivation to Make Energy Improvements 12
What Would It Take To Get Consumers To Undertake Energy Improvements? 13
Presentation of Information To Encourage Energy Improvements 14
SCALE *16*
BTU-H *18*
KWH *19*
The Carbon Discussion 20
The Square Foot Discussion 21
BTU and BTU-V *22*
GRADES *24*
STARS *26*
Home Energy Saver Report 28
The Carbon Conundrum Again 31
Are There Any Energy Upgrades That You Would Consider Making To Your Home And When Would You Make Those Improvements? 32
What Must A Home Energy Label/Report Have? 32
The Homeowner Vs. The Homebuyer 33
Who Would You Trust To Provide This Information? 34
How Much Would You Be Willing To Pay For This Information? 35
How Would You Pay For The Home Improvements? 35
What Do You Call This Display Of Information? 36
CONCLUSIONS **37**
Appendix A: Screener **41**
Appendix B: Moderator's Guide **45**
Appendix C: Literature Review **51**
Appendix D: Labels Used in Focus Groups **61**

EXECUTIVE SUMMARY

Over the past decade, “green” and “sustainable” have become “hot buttons” in the media and with the general public. Although there may be some confusion as to their exact meanings, most people generally recognize the value of “green” and “sustainable” practices and may recycle, buy organic food or take some other appropriate action.[1]

Knowledge about residential energy efficiency has also increased. There has been a corresponding rise in energy efficiency expectations when consumers purchase a home.[2] Yet, despite very measurable and clearly defined monetary benefits, efforts to encourage homeowners and homebuyers to take action and make energy improvements in their homes have fallen far short of what most observers would consider being a great success. The global implications of this failure are particularly troublesome when one considers that 22% of the total energy consumed in the U.S. annually goes to heat, cool and operate the nation’s 111 million homes and apartment units.

What does it take to turn knowledge into action for the nation’s homeowners and home buyers? What motivates homeowners to make energy improvements to their homes?

Newport Partners, LLC, is a small business specializing in residential research and consulting. Its staff has professionally trained focus group moderators who have conducted qualitative research to develop energy and green builder programs and develop products, marketed and advertised campaigns and brand awareness studies for the Federal Government, local home builders associations and Fortune 500 companies.

[1] Shelton Group, EnergyPulse and EcoPulse Surveys (2004-2009).

[2] Avid Ratings, “Consumer Research: Green Design Picks by Avid Ratings,” Green Builder; June 2010; pp. 24-33.

KEY FINDINGS

What information is most likely to compel homeowners to make energy improvements?

Saving money is the most compelling reason for homeowners to get energy improvements done to their existing homes. Homeowners want to know how much the energy improvements will cost and what they can expect to save on their monthly utility bills. Homeowners understand that costs and savings are estimates, but they feel strongly that they need that information to make wise decisions.

What information would best motivate homebuyers to consider a home's energy performance as part of the buying process (e.g., compare homes, etc.)?

Compared to existing homeowners, homebuyers are much more likely to conduct an independent home energy analysis at point of sale (POS).Between $200-$400 is considered a reasonable amount of money given the overall cost of purchasing a home.

Homebuyers would do energy audits conducted by a home inspectors or third party consultants to negotiate with sellers on the sales price.

What information would best motivate homebuyers to consider financing energy improvements at the time of purchase?

Both homeowners and homebuyers are reluctant to finance energy improvements with long-term loans. Homeowners shy away from refinancing or taking out home equity loans to pay for energy improvements. They are more likely to prioritize items and pay for the improvements out of savings or when they have extra cash. When something breaks or fails (i.e., heating system, roof, major appliance) those items go to the top of the priority list. While some homebuyers might consider including the cost of the improvements in their mortgage, most would try to get the seller to pay for at least a portion of the cost. In all cases, energy improvement decisions are influenced by the availability of tax credits and utility rebates. Consumers expressed interest in bundling the improvements under short-term (one-year) 0% financing.

How should a label and/or supplemental information best convey the information noted in response to the above questions? Do certain displays work better than others in presenting important information? Do certain types of display confuse consumers and possibly lead to incorrect conclusions?

Generally, a "label" or "summary display" with two reference points – "current" and "improved energy" - is not useful on its own without the recommendations on how to achieve the improvements. Participants valued the "report" much more than the stand - alone "labels," but they see value in presenting a quick, clear summary. The research indicates that a report should include:

- Clear, simple, colorful graphics that catch your attention and make sense at a glance.
- A horizontal graphic is most effective when it reads left to right.
- The graphic should have comparative metrics, including readings or ratings for a typical existing home or state average and typical new home, and end point references for clarity.
- Monthly estimated cost savings.
- Square footage and number of bedrooms.
- Break out of electric and gas.
- Customized recommendations with estimates for the cost of the improvements, the expected savings, and the payback period.
- A website for more information.

BACKGROUND

In the fall of 2009, the Vice President's Middle Class Task Force Council on Environmental Quality released its *Recovery Through Retrofit* report. Building on the American Recovery and Reinvestment Act of 2009, the report called for a national energy efficiency improvement market for the residential housing sector – a move that could create tens of thousands of new green jobs. More specifically, the report calls for the development of an energy performance label for existing homes.

"*The Department of Energy and the Environmental Protection Agency are working together to develop an energy performance label for these homes. The end result will be an easily recognizable benchmark that energy auditors, retrofitters, lenders, realtors, and consumers can use to compare home energy performance and identify the most energy efficient homes*." [3]

In 2007, the U.S. Department of Energy worked with the home building industry to develop the EnergySmart Home Scale (E-Scale)[4], which is based on RESNET's HERS Index and its asset rating method.[5] The E-Scale is gaining traction in the new homes market because it allows builders to differentiate themselves from their competitors. It allows homebuyers to compare the energy use of an E-Scale home to the energy use of a comparable home built to a more traditional standard.

The E-Scale program was not considered for existing homes because operational information is available through utility bills and there is a cost barrier. The cost to conduct a HERS rating can typically range between $400-1,000. It involves a certified rater coming to the home to take measurements, conducting the diagnostics (e.g., blower-door and duct blaster tests) and then entering the information into design optimization software.

To reduce this cost barrier and take advantage of operational cost information, DOE has turned to the Lawrence Berkeley National Laboratory's Home Energy Saver program.[6] This program will produce the national energy performance measure called for in the Vice President's report. This current research attempts to gain an understanding of how the energy performance label for existing homes should be displayed to give consumers access to the information they need to understand home performance.

---

[3] Middle Class Task Force, Council on Environmental Quality, "Recovery Through Retrofit," October 2009.

[4] www.buildingamerica.gov/challenge

[5] www.resnet.us

[6] www.hes.lbl.gov

The key questions addressed in this research include:

- What **information** is most likely to compel **homeowners to make energy improvements?**

- What **information** would best motivate **homebuyers** to consider a home's energy performance as part of the **buying process** (e.g., compare homes, etc.)?

- What **information** would best motivate homebuyers to consider **financing energy improvements at the time of purchase**?

- How should a label and/or supplemental information best convey the information noted in response to the above questions? Do certain types of display more readily provide important information? Do certain types of display confuse consumers and possibly lead to incorrect conclusions?

These questions were addressed by conducting a series of focus groups with homeowners in six different climate regions -- Rockville, MD, Albany NY, Phoenix, AZ, Portland, OR, Denver, CO and Fort Lauderdale, FL. In addition to the original research, Newport conducted a literature search on energy-related behavioral research. This is summarized in appendix C.

METHOD

Focus groups are a form of qualitative research designed to develop insights on consumer motivations, perceptions, beliefs, and opinions. Focus groups are flexible, interactive, social and homogenous. Focus groups typically have 8-12 participants who are recruited using a "screener".
In recruiting and selecting the participants, the screener took into account the person's income, education, job experience, age and gender. All participants were homeowners and most were familiar with their utility bills. The racial mixture was intended to match the geographic area. (see attachment A).

Focus groups are held in specially designed facilities with tables for the participants to sit around and a one-way mirror for real time observation and input. Professionally trained focus group moderators facilitate the discussion based on a guide. The moderator's guide provides for timing, flow, topics and probes to gain further insights.

The moderator's guide included introductions, the presentation of labels in homeowner and homebuyer scenarios, questions on motivations for making improvements, and a section on closing (see attachment).

Focus Group Format	
Size	8-12 participants per session
Recruit	14-16 using screener to account for no-shows
Length	2 hours
Stipend	$100
Number of sessions	12 - 2 per climate region; 6 climate/geographical regions
Participants	Similar characteristics by invitation only
Forms of data	Conversation and body language
Data collection	Videotapes and audiotape transcriptions
Data analysis	Qualitative analysis identifying patterns of response and themes
Moderator	Professionally trained; flexible and highly interactive; focused through use of guide
Reporting	Detailed report and top-line briefing presentation

The focus groups were conducted in the following climates and regions of the United States:

Region	Climate	City	Date
Mid-Atlantic	Warm Humid	Rockville, MD	Tues, June 22. 2010
Northeast	Cold / Very Cold	Albany, NY	Tues, June 29, 2010
Southwest	Hot Dry	Phoenix, AZ	Wed, July 7, 2010
Northwest	Marine	Portland, OR	Thursday, July 15, 2010
Midwest	Cold	Denver, CO	Wednesday, July 2010,
South	Hot Humid	Fort Lauderdale, FL	Thurs, July, 29, 2010

DETAILED FINDINGS

Awareness of Home Energy Improvements

Consumers are less aware of energy efficiency than they think they are. Many are misinformed and do not know where to look for reliable information on energy improvements.

However, there was typically one thought leader in each group who helped “educate” the other respondents. In addition, the dialogue during the focus groups and showing of the “information displays” was educational and raised awareness.

What do you wish you knew before you purchased your home?

As a warm-up, participants were asked what they wish they knew about their homes before they made the actual purchase. In every market, someone noted that they would have wanted to know that the value of their home would drop below the actual purchase price. Many also wanted to know more about maintenance and operating costs as well as how much work it would take to maintain the home. Others expressed concerns about the quality of construction, cooling systems, and health and safety issues. They also mentioned orientation, landscaping, wanting information about their neighbors, and knowing in advance about their basements flooding.

"[I wish I knew] that the housing market was going to tank." – Portland

"I wish I knew what the expenses were going to be, like electricity. A lot of expenses I didn't realize that I would incur." – Florida

"There were two things. One, I didn't realize that the houses that were built … my house was built in 1954 and I didn't know that in that time period they didn't have to be insulated. So I found that out the hard way. The other thing was, in 1996 when we had the big snow, it all melted in my basement. And I didn't know at the time that the drain out to my back door actually was connected to the sewer system. The insurance company kept saying no, then four years later when WSSC was lining the pipes, I found out it is connected to the sewer system. So these are little things that I found out the hard way." - Rockville

"Nobody tells you specifically, based on the square footage, how many air conditioners you need." -Phoenix

"*I wish I [would have known] my house was West facing before I bought it. I will never buy a West-facing house again. Because of the sun and the heat, after 1 o'clock in the afternoon, it's just baking my house alive." -Denver*

"We didn't want to have any water problems, which is why we went with a raised ranch. So, we don't have problems with water, but we have a lot of cooling issues. Because of the style of house, it is difficult to cool. We have air conditioners, but because hot air rises, the air doesn't really work." -Albany

"We have ice, because of lack of insulation." -Albany

"How it was built because, if the construction is bad, you have to invest more and more money. You want to buy something that is well constructed. Then you have to invest less at the end." – Florida

"A healthy environment for kids with allergies. And I think energy savings, just to cut the cost of the electric and things."

What are your priorities for changing or remodeling your current home?

Most participants had some experience renovating, remodeling or updating their homes. Their priorities for changing or remodeling their homes included the expected responses: painting, kitchen cabinets, bathrooms, roofing, decking and landscaping. Some participants raised the topic of energy efficiency improvements spontaneously, but it was not a top-of-mind issue for most participants. The energy efficiency improvement mentioned most often was installing new windows and doors.

There were regional differences. For instance, in Florida where hurricanes are more common, participants were more likely to talk about new roofs and cool roof coating as an energy improvement. In hot climates, participants focused on window shades and air conditioners. In Phoenix, participants even discussed solar photovoltaics and solar thermal water heaters. CFLs were mentioned as was insulation, but there was no discussion of how a whole house would operate efficiently.

Priorities for changing or remodeling your current home

"I want to redo the cabinets in the kitchen. I've done just about everything else, but new cabinets were just out of the question. So I'm looking at re-facing. And then redo the deck and patio with some kind of acrylic coating." - Phoenix

"We were getting our full kitchen redone and we changed all the windows to the energy efficiency windows." - Phoenix

"I replaced windows—did a lot of window replacement [because] I had to." - Portland

"Windows, the windows and doors, and insulation." - Portland

"Roof, bathroom, kitchen, basement. Safety, a place without handrails. Sprinkler system, exterior paint, and yard work." - Denver

"Mine is just general energy saving. I'd like to do more so I can pay less every month. Well, first it was windows, than I had them estimate my house, I found that those windows worked, so then I went to blinds. I also heard insulation in your attic is a huge savings; so I'm going to look into that." - Denver

"[Hurricane windows] save you a lot of money on your homeowners insurance. It cuts the rate by about half." – Florida

Utility Bills

All participants agreed that their utility bills were going to continue to rise in the future. There were significant differences of opinion on what were the most appropriate steps to take to reduce energy usage.

Resources for Information

The search for information starts with the Internet. Most consumers will begin with a Google search. They will also go to utility and local government websites. Many also go to Home Depot, Lowes and other retailers for information or visit their websites to compare prices. Government, utility companies, friends, neighbors and family were considered as the most trustworthy sources of information.

Where do you go for information on energy efficiency and what are your most trusted resources?

	Rockville	Albany	Portland	Phoenix	Denver	Fort Lauderdale
Advertising (TV, flyers, coupon books, magazines)				2		
Auditor / Expert						
Consumer Advocate (Washington Checkbook, Consumer Reports)		3			3	
Contractor / Vendors						
Coupons						
Fairs / Home Shows						
Friends, Family & Neighbors	2		3	2	1	1
Internet / Google			2	2	7	2
Government website (local, state, federal)	2	2	2	2	1	3
Home Depot / Lowes / Hardware stores (website, in store)		4		2	3	1
Home Inspector	2					
Homeowners Association						
Insurance						
Marketers						
Product packaging / stickers / appliance					1	

tags in stores						
Utility (bill inserts, website)	4	4	2	2	2	9
Websites (other*)				2		
Most trusted (# votes)		Second	Third	Fourth	Other resources	

*Other websites include: This Old House, DIY, Al Gore's website, Craig's List

Resources continued

Motivation to Make Energy Improvements

Saving money is the primary and overwhelming motivating factor for making energy improvements.

Everything else is secondary. Some participants expressed concern about protecting the environment and say that motivates them to take action. They want to "be responsible," "feel less guilt," "help the government," and "do their part" since it's a "small planet with depleting resources."

Others are motivated by necessity – something breaks or leaks and they need to fix it. Other reasons for making energy improvements include improving the value of their home, reducing maintenance, increasing comfort, improving health (e.g., allergies) and safety (carbon monoxide poisoning). "Quietness" or less noise resulting from an energy improvement is also perceived as a comfort benefit. Some are even motivated by the desired to improve the appearance of their home or by peer pressure – "keeping up with the Joneses."

Why do people do home energy improvements?

	Rockville	Albany	Phoenix	Portland	Denver	Fort Lauderdale
Save money / energy	14	14	13	16	11	15
Environment / sustainability	8	2		3	2	1
Improve value / more marketable / investment		1	2		7	3
Comfort / reduce noise	2	2		1	1	5
Necessity / replacement	2	3	1	2		
Health			1			
Safety						4
Avoid utility gray-outs						
Trend / appearance			1		2	1
Other*			3			
Maintenance		2			3	
Top personal motivator (# votes)		Second	Third	Fourth	Other improvements	

**Other – Need a new project, convenience, an intelligent thing to do, improve quality of life, have the money.*

Home Improvements Continued

"Save the world…Save the environment…Conscience." – Portland

"Maybe I'm a tree hugger. I feel if I can do something to help the environment, while helping my pocket too, then the environment and I both benefit." -Phoenix

"I'm seeing a shift in people's outlook on the environment. My parents have recycled for more than 20 years. I think people are just becoming more aware of it." -Phoenix

"If you have to, code inspector told you, you have to, or, if the dishwasher breaks or something breaks." -Albany

"The fact that I may have paid a little more for the improvements I've done -- it was definitely worth the money. The windows and appliances, I'll pay more for better quality because it does pay." – Fort Lauderdale

"Like Denise remarked about half her house is too cold and the other half is not cold enough. That precipitates the cost of the improvement for quality of life."- Phoenix

"Lifestyle. Having something that runs cleaner and uses less energy contributes to a healthier lifestyle." - Phoenix

"I like new appliances, I like the way they look. Cosmetic." -Albany

"If I lived in a VanPatten neighborhood, and my neighbor replaced his windows, and then they put a brochure in my mailbox and said "Your neighbor is saving $3000 by buying new windows, would you like an audit?" That would be an incentive." -Albany

"Long-term ownership. They're going to stay there for a long time and they want to invest in the long term." – Florida

"Self esteem. You feel better about your home. Proud about the reduced effect on the environment" - Florida

"My safety issues stems from personal experience. I replaced my roof shortly before Wilma and my new roof held up fine in the storm. My neighbor had the same roof pattern, he didn't replace his roof and their whole roof blew off in the storm. They ended up with mold issues and had to move out for a year. So that's safety and energy and savings." - Florida

What Would It Take To Get Consumers To Undertake Energy Improvements?

1) Consumers want very clear, easy-to-understand information on the cost benefits of energy improvements to their home.

2) To get them to look at the information, they need to learn about it from a friend, family member or neighbor.

3) The information needs to come from a trusted professional,a utility or a government source. They are wary of information coming from a contractor or sales person.

Presentation of Information To Encourage Energy Improvements

In order to test different presentations of easy-to-understand information designed to increase awareness on energy efficiency, Newport asked participants to react to six different labels. With the exception of the "BTU" and "Stars" displays, all of the displays are based on labels that currently exist in the marketplace.

Number	Name	Based On
1	BTU or BTU -V	This label shows a vertical comparison index. It is original and based on the information available through LBNL's Home Energy Saver program (www.hes.lbl.gov).
2	BTU-H	This is the same information but with a horizontal scale.
3	Scale	This label is a modification of the E-Scale, but includes a broader range to accommodate for existing homes.
4	kWh	This label is a modification of the Earth Advantage's Energy Performance Score (EPS) and includes carbon (http://www.earthadvantage.org/eps.php).
5	Grades	The Grades label is based on a simplified version of the European Label.
6	Stars	This label was created to test the value of presenting the information in very simple and basic terms.

The participants were given the six labels and instructed to circle what they liked; cross-out anything they found confusing or didn't like; and write in anything they felt was missing. In addition, they were asked to rank the labels from 1 to 5(6), with one being their favorite and 5(6) being their least favorite. When the research began, the labels included recommendations for improvements, but initial reactions indicated that they were too simplistic. Subsequently, DOE developed a more thorough list of recommendations that was tested as a separate item.

When looking at the average weighted ranking of the six display labels, as shown below, it clearly shows that the "Scale" received the highest ratings and overall did very well. The BTU-H, kWh, and BTU-V came in second, third and fourth, respectively. The Grades and the Stars failed to impress the participants and finished in a dead heat for last place. Beyond examining the ratings, there were a few valuable lessons learned in this exercise. The two highest ranked labels had horizontal comparison graphics, which would seem to indicate a strong preference for a horizontal graphic. Following the table below is a detailed review of each of the display labels.

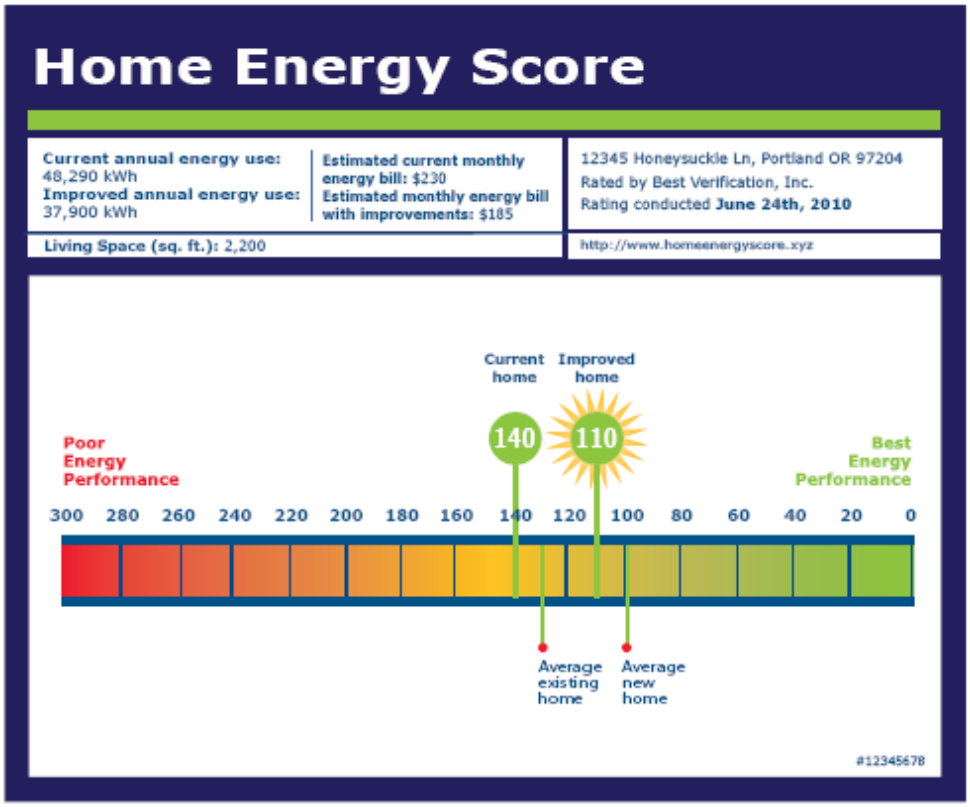
Weighted Ranking Of Labels

Using point method (1st place vote – 4 pts; 2nd – 3 pts; 3rd – 2 pts; 4th – 1 pt; 5th – 0 pts)

RANK	1 - favorite	2	3	4	5 – least favorite
Rockville 1	Scale (36)	Stars (21)	BTU (21)		
		Grades (21)	kWh (21)		
Rockville 2	Scale (36)	Stars (28)	BTU (23)	Grades (20)	
			kWh (23)		
Albany 1	Scale (30)	kWh (29)	Grades(22)	BTU (19)	Stars (10)
Albany 2	Scale (34)	kWh(22)	Grades (17)	Stars (4)	
			BTU (17)		
Portland 1	BTU-V (26)	Scale (24)	kWh (17)	Stars (6)	Grades (1)
	BTU-H (26)				
Portland 2	kWh (22)	Scale (20)	BTU-V (19)	Stars (11)	Grades (10)
			BTU-H (17)		
Phoenix 1	BTU-H (44)	Scale (43)	BTU-V (30)	Grades (25)	Stars (14)
				KWH (25)	
Phoenix 2	KWH (44)	BTU-V (39)	Grades (34)	BTU-H (30)	Scale (24)
					Stars (9)
Denver 1	Scale (40)	KWH (38)	BTU-V (37)	BTU-H(31)	Grades (11)
					Stars (6)
Denver 2	KHW (38)	BTU-H (25)	Scale (24)	Stars (23)	BTU-V (23)
					Grades (16)
KEY (average points)	Scale (31)	BTU-H (29)	kWh (28)	BTU and BTU-V (25)	Grades (18)
	Stars (13)				

In Fort Lauderdale, rather than ranking the labels, participants were asked to use what they reviewed to create their own labels. In both groups, they focused on the content, not graphics, in designing their labels.

SCALE



With the exception of the second Phoenix group, the Scale was well received because it was “simple,” and “easy to read.” Participants liked the clean and clear graphic and felt it was easy to understand. The “sun” was appealing because it highlighted an important part of the label. The label dropped in “popularity” when the sunburst was removed.

Participants liked viewing the monetary values on the top of the page regarding current and potential energy bills and the recommendations accompanied by the estimated costs, which was included in the earlier versions. The area showing the estimated monthly energy bill with improvements was also well received. Participants liked the comparison graphics showing the average existing home and average new home as well as the current and improved graphics. Participants were, however, confused by the significance of the numbers in the Scale.

Scale continued

"People only see the graphic. Then they read the words. But at first you look and see, and the graphic tells everything." -Rockville

"It was very simple. For a person who doesn't like to read too much, they can go to the Scale, I think it is very simple." – Albany

"It's a nice layout, and the color coding is very nice. …it helps you to follow along. [Scale] I think that whole scale is really clean. It imparts good information." - Portland

"And I like how there's no confusing terms. Like BTU per square footage. And the scores, I don't know what they mean … Like the finance score, I don't know what the 720 means. I just know that it's good. And especially when there are indicators with labels at the end of spectrum, indicating that 300 is a poor energy performance. I think that you can just gauge the performance by looking at the ends of the spectrum so I think that's enough for me." – Rockville

"I think the graphic did a very good job dividing your current home, improved, and a typical new home." –Rockville

"I think it pops out at you with the sun. It heightens your senses so to speak." – Rockville

"I thought [the sunburst] was cute, but it kind of reminds me of BP now." - Florida

"The star around the 110 just grabs your eye." - Denver

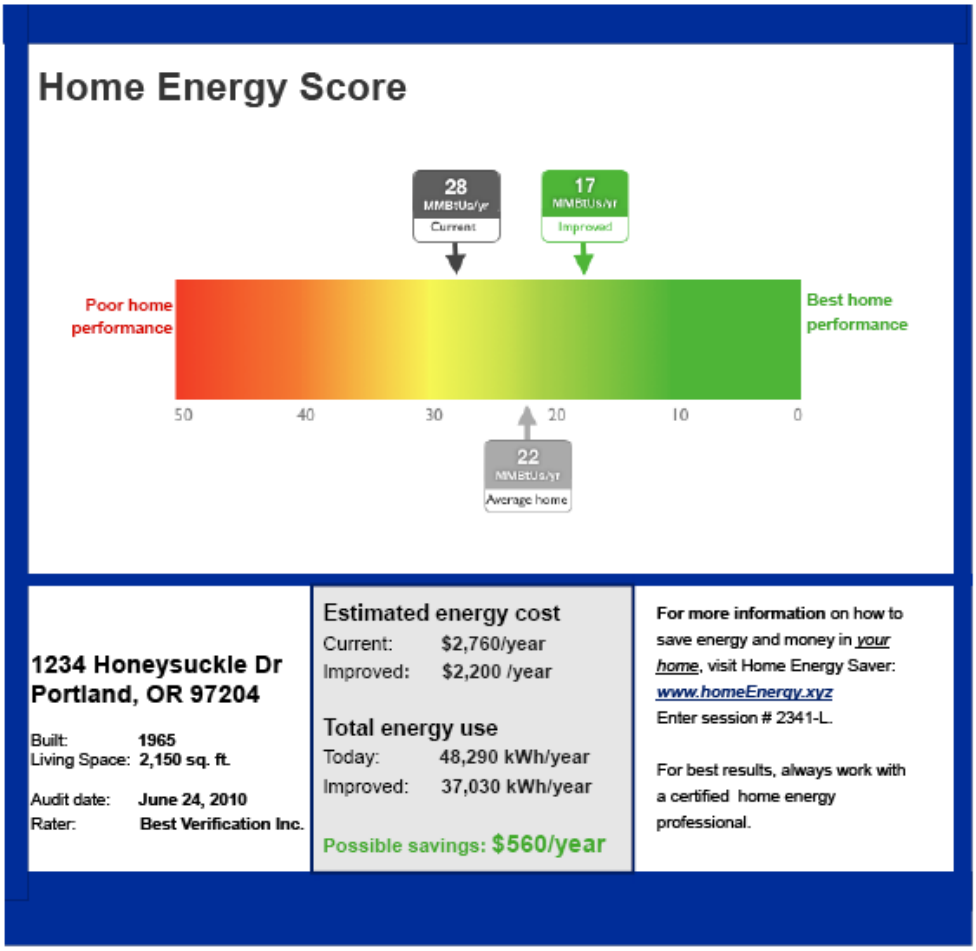
"It reads left to right, it just has more intuitive ways for us to grasp more quickly." – Rockville

"It's easy to understand. One scale."- Albany

"It's nice that they show you the worst performance and best performance, where the average is, and where it's going to take your home." Phoenix

"Because I don't know enough about everything else I'm more interested in the money and so the other one didn't tell me how much money I would save. And that's important to me. And they set the monthly rate out, which is how I budget myself. By month where some of the others had it yearly, I mean yearly savings, it looks bigger, but It doesn't translate to me as much as monthly savings does." - Denver

BTU-H



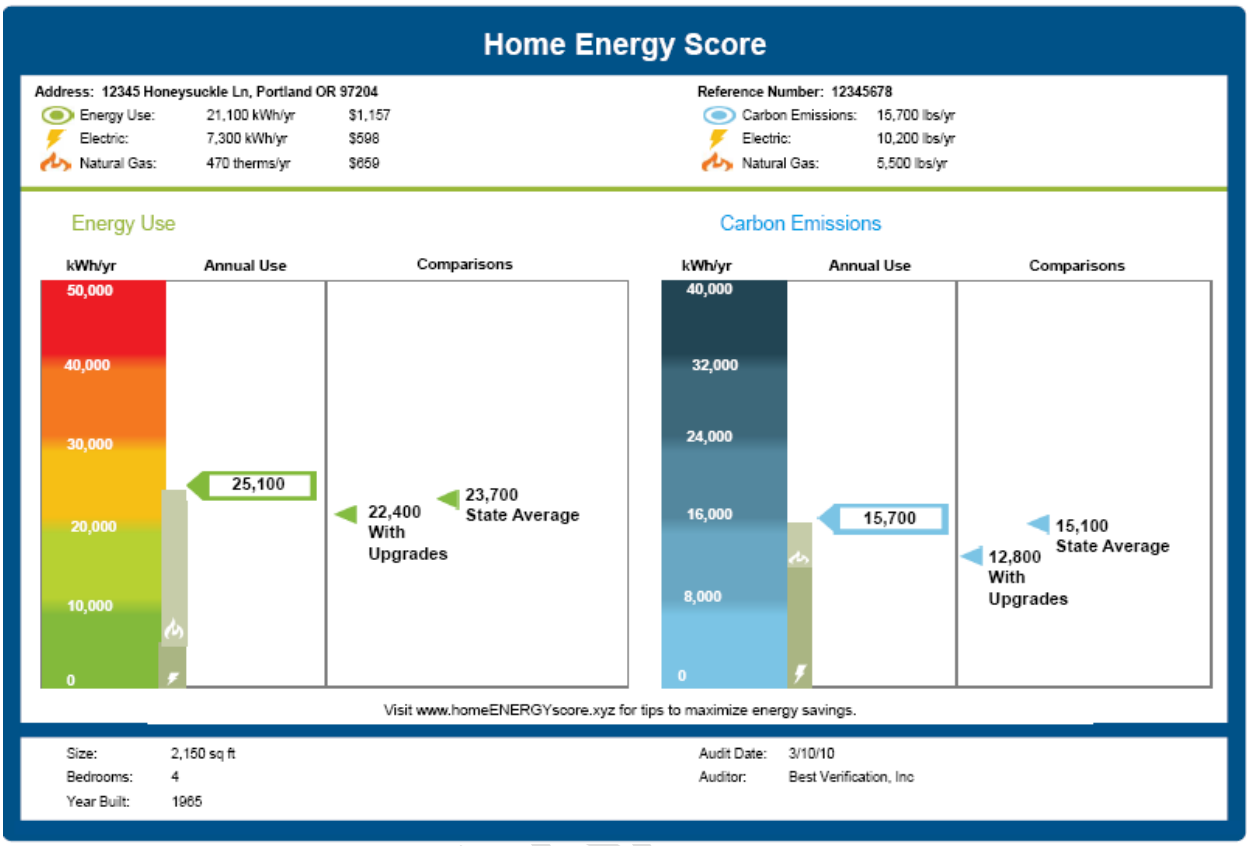
This label was added in Portland, after the Scale did well in the first two series of focus groups. It features the same information as the BTU and BTU-V, but has a horizontal scale. With the horizontal scale, it was slightly better received.

Participants liked the possible savings in energy cost per year and the comparison between current and improved energy use in both dollars and kWh. There was some confusion over the terminology used in the presentation and a few participants thought the graphic was confusing.

"Just the savings. I want to save money any way I can. Seems like the improvements save money." - Phoenix

"I didn't like the metrics the MMBTUS…that confused everything for me. But if I take that out, then it's very clear. But that metric alone wasn't explained anywhere." - Denver

KWH



In almost every group, participants commented that they liked the information on the top of the page that breaks down gas and electric utility costs. People from all groups circled the square footage and bedroom as important factors because they could "relate to that." Participants seemed to like the data comparing current, improved, and the state average of energy use within the graphic, but were concerned with earlier versions that showed two state averages. Some found this label too cluttered and busy with too much information, particularly with the addition of the carbon index.

KWH Continued

"I thought it was great how you break everything down, how much electric, how much natural gas". – Rockville

"I felt the graphics were really user friendly. You know the little flame and the lightning bolt. Yeah as the key. Yeah that helped a lot." - Denver

"I like it because it has a lot of information and because it is rated according to the size, to the bedrooms and you can relate…I like that it has the information at the top. It makes sense to me. It's like something you can relate to, like on your utility bill." –Albany

"It tells you the energy use, the cost of it, cost of electric and natural gas. It also gives you the carbon footprint. And it's really easy to read, where the state average is, where you are now, where it would be with upgrades. It just gives you lots of data and it's easy to read instantly." - Denver

"I thought it gave a little too much information." - Phoenix

"I love the amount of—the quality of information on the KWH. But, it was just too busy. I couldn't rate it higher because it was just too busy." – Portland

THE CARBON DISCUSSION

Since the KWH has a carbon index, the carbon discussion came up in each group. A carbon index was also included in early Grades labels.

Overall, participants found the carbon index confusing and didn't really know what it meant. Some understood that a home's carbon footprint could be lowered by making energy improvements. In each group, a couple of participants thought it was good information to have on the label, but, in Arizona, carbon was divisive, with one male participant stating that it was an effort to make people feel guilty and they don't like feeling guilty.

"I made it number 1 because of the amount of carbon being released into the air. I think it's important." -Rockville

"I crossed out carbon emissions. It's really useless information." – Phoenix

"It also gave the environmental impact. The CO2 admissions, I mean what is the point? So, I wasn't sure if that was at all useful for helping people with their energy use." – Albany

"Energy efficiency is a relevant bit of information, but in terms of the carbon impact of my house, I don't think that—it just was irrelevant information." - Phoenix

The Square Foot Discussion

Participants recognize the importance of square footage. They understand that a larger home will require more energy to heat, cool and operate. They also realize that newly built homes are generally more efficient than homes built decades ago. They want information on square footage and number of bedrooms readily available when they are shopping for a home so that they can make the appropriate comparisons.

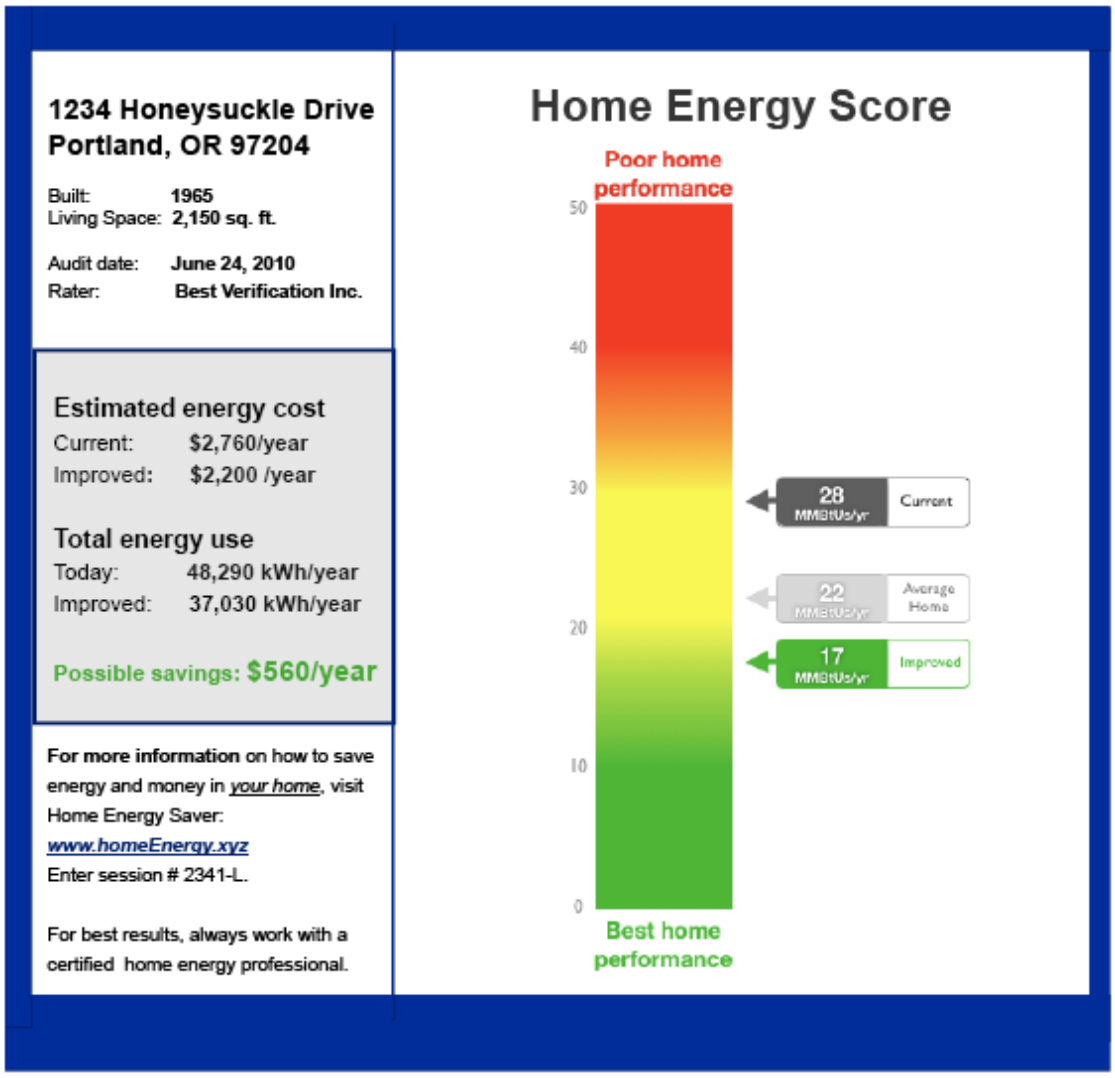
"I thought it gave a lot of useful information. It gave the square footage…" – Albany

"The bigger the house, the more energy you're going to spend." – Florida

"You can have a new home that's larger and more energy efficient. An you could have an older home that costs more, it could be drafty or windows could be leaking." - Florida

"Square feet is what appraisers use as a standard in determining and comparing house to house in terms of the value. It's the closest thing to perfection that exists in terms of making a comparison to comparison." - Rockville

BTU and BTU-V



Most participants were confused by technical terms such as BTU and mmBTU. Also, most participants felt the arrow (which was removed) or the index should be reversed, with the higher number reflecting the better energy score being placed at the top of the scale instead of the bottom. At a glance, this scale was made little sense to many of the participants.

As the graphic evolved, and some of the early issues were clarified, participants began to rank it higher. As with the other labels, participants liked the information presented on the current, average, and potential energy usage as well as the energy savings. They also like having the website listed to go to for more information. Others noted that the numbers were placed so close together on the index, making them wonder whether studying the index was really worth the effort.

BTU and BTU-V Continued

"I thought BTUs was completely counterintuitive. So I had to study it longer than I would have liked." - Rockville
"I don't even know what BTU is so it didn't make sense to me." – Albany

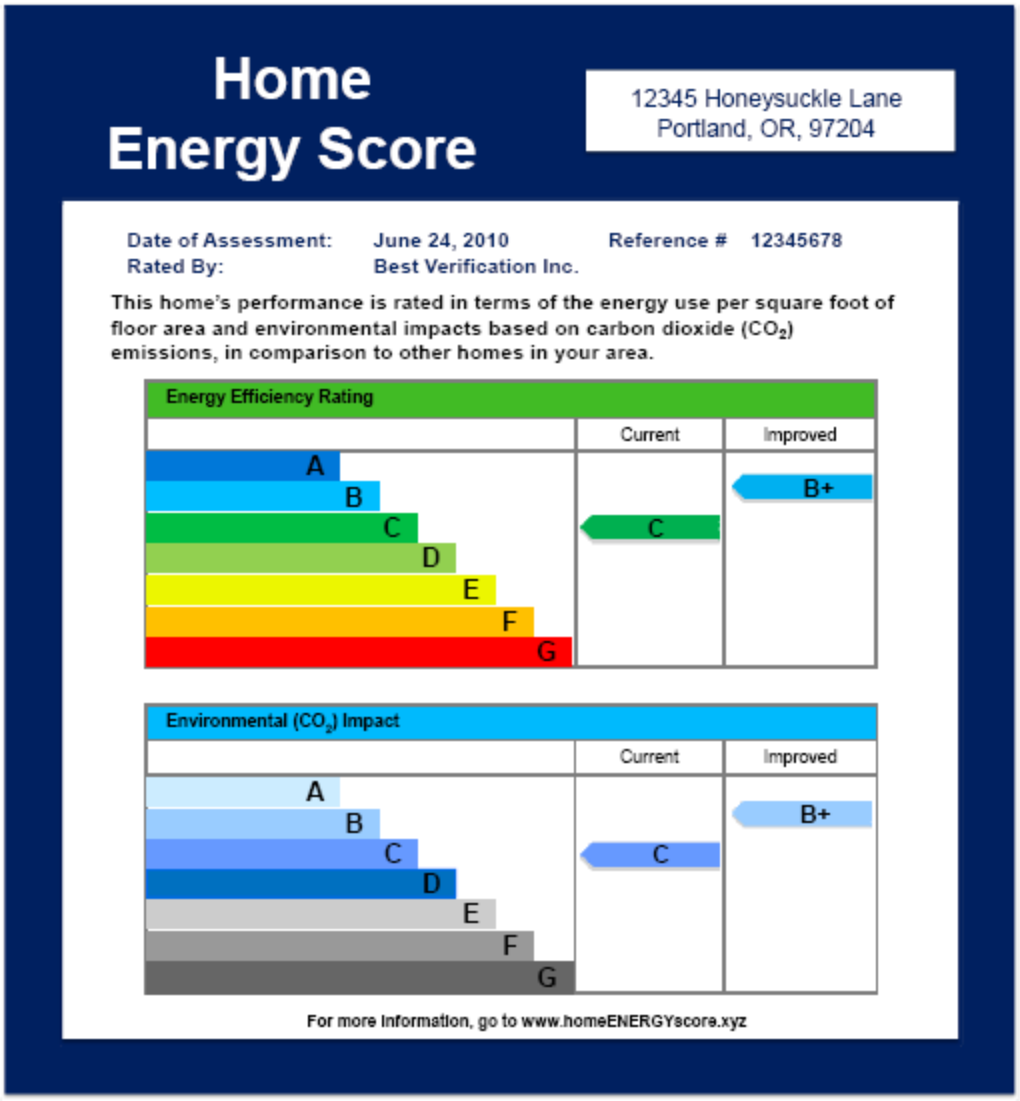
"And it doesn't make it look like it's that much of a jump, the way it's set up. I don't look at it and say, wow, I want to do that. I look at it and say it might not be worth it." - Phoenix

"To me, if it goes down, it's negative, like numbers." - Rockville

"The reason I didn't like the vertical is because when I look at something that's vertical, I see—I correlate the good being on top with the bad on the bottom. This was the opposite." - Portland

"I felt like, the top is bad, so the core home performance is at the top, 'cause the best is at the bottom. I felt like it should be reversed." - Portland

GRADES



Although people understand grades, for the most part, participants found this label too busy and confusing. It was simplified for later groups and, without numbers, was considered too simplistic. Most participants preferred a number score over a letter grade. They did like the Grades explanation of how the home was rated. Similar to the KWH responses, participants liked the breakout between the per month dollar cost of electric and gas and they had mixed feelings about the carbon footprint.

Grades continued

"I found the Grades really confusing. I did not like them at all because I didn't even register that these were grades. It just didn't mean anything to me. And the numbers meant something…" - Rockville

"There's no number. What's the difference between F and G?" - Phoenix

"Too much information. Too busy. But Grades looks like it's all over the place so you have to read in detail every single thing. It looks like solving a math problem." - Rockville

"It's too busy. Complicated and overwhelming. Too many categories. " - Albany

"It doesn't say anything. I mean, there are just colors of things, but… Yeah, numbers are more useful. Lots of graphic but very little information." - Phoenix

"Like you said, there's not a lot of information in it. But I think that a grading system kind of like the Stars is relatable for people to see it and understand, obviously you went to school, that grading system makes sense, and I also like the little definitions…. Just that little bit of extra information helped." - Denver

STARS

With the exception of Florida, where Stars ranked very high, this was the *least* favorite label because it was so simplistic. The first iterations of Stars label had very little information. As additional information was added to all labels for later focus groups, views on the Stars label improved.

Generally, however, most participants found the Stars label too basic and lacking in necessary information to make it relevant and useful. Nonetheless, some participants appreciated its simplicity and noted their familiarity with the use of star ratings on *Amazon* and for movies. These participants suggested that the stars grab your attention, which then triggers the search for additional information and more meaningful data.

Stars continued

"I don't even like the stars. I used to give my kids stars when they did something well. I'm not in kindergarten anymore." - Rockville

"It doesn't make any sense, too basic. Lack of details." - Albany

"It was so basic. It just wasn't credible because it was so basic. It really doesn't say anything." - Phoenix

"I think the stars are just how we consume a lot of information…ratings and rankings. - Rockville

"The stars just seem to stand out and catch your attention." - Albany

"It was simple and straight-forward. And the information that I'm concerned about is stated on, underneath the stars." – Portland

"A combination of money savings and what needs to be fixed. And I want to see this star rating. Out of all the visuals, this is the most powerful image a person can see. You see this and you don't need the words. We look at references we always see ratings with stars. We're shopping on line … if you see something with one star you're just going to skip by it.*" - Florida*

Home Energy Saver Report

In the Rockville focus groups, the recommendations were part of the labels. The participants preferred those displays because it included information on what improvements would be required to receive better scores. Separating the labels from the report created the desire to know more from what was presented on the label.

In Albany, participants were shown two different types of "reports". See Report A and Report B below. A majority of the Albany participants liked the added detail provided in Report B because they felt it gave them more options and was less overwhelming than Report A. Report B was used in all of the remaining focus groups.

Recommended Energy Improvement for this House	Estimated Annual Energy Savings	Estimated Payback
Air seal your home to reduce drafts	$425	5 years
Insulate the attic to R-50	$600	4 years
Replace the furnace with 95% efficient unit	$325	11 years
Install a water heater wrap	$20	2 years
Install 30' of water heater pipe insulation	$10	3 years
Replace the 20 year old refrigerator with an Energy Star model	$80	1 year
Air seal the duct leaks in the attic	$200	Less than a year
Replace the clothes washer with High Efficiency (HE) type	$90	3 years
Install a programmable setback thermostat	$225	Less than a year
Replace 15 single paned windows with storms with dual paned, low-e, argon filled	$300	25 years

Home Energy Saver Report A. Used in Albanyonly.

Home Energy Saver Report

	Estimated Annual Savings on Your Utility Bill **	Estimated Payback Period (years)	Estimated Reduction in Greenhouse Gas Emissions (lbs of CO2) ***
Recommended Today			
• Air seal the duct leaks in the attic*	$200	0.5	2089
• Install a programmable setback thermostat	$225	0.6	2351
• Install a water heater wrap	$20	2	167
• Install 30' of water heater pipe insulation	$10	3	83
• Insulate the attic to R-50*	$600	4.1	6267
• Air seal your home to reduce drafts*	$425	5.2	4434
Total Estimated Savings	**$1,480**		**15391**
Recommended When You're Ready to Replace Equipment			
While not necessary at this time, these following steps can save energy and money when you are ready to replace specific items in this home. Savings and payback calculations reflect the amount that you would save by purchasing a higher efficiency model rather than a lower efficiency model. In some cases, you might find it cost effective to replace older appliances even before they break.			
• Replace the 20 year old refrigerator with an Energy Star model	$80	1	647
• Replace the furnace with 95% efficient unit*	$325	2.5	3393
• Replace the clothes washer with High Efficiency (HE) type	$91	3	737
• Replace 15 single paned windows with storms with dual paned, low e, argon filled	$300	5	3123
Total Estimated Savings	**$796**		**7900**

Other Useful Tips on How to Save Energy

• Replace incandescent lightbulbs with compact fluorescent bulbs wherever the lights are used more than 2 hours per day.
• Buy Energy Star appliances.
• Clean the refrigerator and/or freezer coils every 4-6 months using an appliance brush. Clean more often if you have pets.
• Change the furnace filter regularly.
• Clean the dryer vent hose regularly. Lint that collects in the hose will increase energy use and is a potential fire hazard.

* Consult a certified energy professional to ensure that improvements are made properly and take into account other potential needs, including your health, comfort, and safety (e.g., sufficient air flow, combustion safety).
** This report's estimates are based on standard energy usage patterns of 2 adults and 1 child. Actual energy bills and projected savings will vary according to the number of occupants and their behavior
*** Reducing CO2 emissions by 11,500 lbs is equivalent to taking 1 car off the road.

Home Energy Saver Report B. Used in Albany, Portland, Phoenix, Denver and Ft. Lauderdale.

The Home Energy Saver Report was very well received because it provided most of the necessary details lacking on the labels. A majority of participants liked the energy savings and payback information but suggested that the report should include the price of the improvements to be really useful. They generally appreciated the breakdown of "recommended today," "when you are ready to replace equipment," and "other useful tips."

Recommendation Reports

"This one tells all kinds of information. I like that it says everything. How much you'll save a year, how long until the appliance pays for itself, and how much emissions are given. This is a good piece of paper." -Denver

"I think it should have the price of how much its going to cost to do these things, versus how much you're going to be paying." -Albany 2

"I like that they give you the savings, but they don't give you the cost to do these things." -Ft. Lauderdale

"The biggest deficiency that I see with this is it doesn't tell us the outlay. Once we have that, and this house specific, then it becomes very specific to your own pocketbook." - Ft. Lauderdale

"I think don't run out if your refrigerator is working, but if you have to buy one get the better made more efficient one." - Ft. Lauderdale

Participants thought some of the tips were useful However, the tips also generated some negative comments – with a few participants complaining that the tips were just plain common sense or too simple. Others had an adverse reaction to the tips on CFLs.

"The incandescent light versus the fluorescent, boy oh boy. First of all, they are the worst light to have because it shows every flaw. These you turn them on and you have to wait for them to warm up and then everything looks bad." -Albany

In some the focus groups, particularly Albany and Ft. Lauderdale, the participants thought the report was a bit too cluttered and the carbon information was confusing.

"*It goes along with saving money. If I am burning more efficiently, it is going to have less emissions, so it goes back to dollars. And, I don't know what that scale means. I know 15,000 is a lot of power, but I don't know if it is a lot of CO2." -Albany*

"I think it's too busy for me. I'm too busy to take the time to figure this out. Unless somebody sat with me, maybe somebody did an inspection for me and printed this out and then walked through it with me. If I got this in the mail, I wouldn't take the time. With two kids at home I'm too busy to decipher all this." -Ft. Lauderdale

A majority of the focus group participants would like to have a "home energy saver" report available at time of sale. A few suggested that it could be made part of the home inspection process. Participants generally felt that this type of information would help them avoid "surprises" and could be used as leverage in the sales process. The benefit to the seller was not as clear.

"I like this because you can bargain with the seller…" -Fort Lauderdale

"And I feel like it would benefit the people trying to sell the house to offer this information. And it would be nice if it became a standard, like the list the school districts and things like that. Then it becomes part of the expectation to understand where this house is with energy consumption so that you know going into it." -Denver

"I think it would make a good marketing tool. Like if you're buying a cheaper house the furnace might be a little old. You could give them this to see what could be improved. But at the same time, your pointing out the negatives." -Denver

"It's a good bargaining chip. If you're looking at three house reports and one of them is clearly worse than the other two then you can use it to bargain the price." -Denver

The Carbon Conundrum Again

In each focus group, there was at least one person who liked the presentation on carbon emissions, and many who did not understand it. Among those who felt it was important, many believed it was a way to educate people and increase awareness on the importance of reducing carbon emissions.

"The column on the right hand side, it would be the equivalent of someone talking to me in metrics. I know what the metric system is but I can't relate to it. So I don't want to walk two kilometers, I want to walk half a mile. I can relate to that." -Ft. Lauderdale

"I like having the carbon emissions separate. Because I like saving money but I'm also interested in knowing what I can do to have a smaller carbon footprint. The number up there carbon emissions pounds per year and I'm wondering how that compares to my car, my office, other things. How it compares, I think that's a good number to have." - Denver

"You can choose to ignore it. If it's not relevant to you and your decisions then you just ignore it." - Phoenix

"Six months ago I went to a panel where it was all people that were going to buy solar or already had it. Almost all those people were not interested in carbons and things. They were all interested in savings." - Phoenix

Are There Any Energy Upgrades That You Would Consider Making To Your Home And When Would You Make Those Improvements?

Participants would consider doing the least costly of the improvements right away. There was general agreement across all focus groups that the pay back information gave them a way to create a prioritized list of easy things to do. A majority of participants would work their way through the list of improvements as cash became available. They would use the report as a planning tool - a guideline of how to upgrade their home over time. They might consider a package of improvements at one time if the right incentives were offered. Larger and more expensive items (heating and cooling systems, major appliances) would be replaced when the product or system failed.

Which upgrades would you make to your house and when?
It'd be four or five things that if you hadn't done them already—You'd knock them off the list right away." –Portland

"It depends on how much money you have. And, your priorities. You know I can do this now, and then the second. It'd be a nice little "Honey-do" list." -Albany

"Some of the utilities have a package where if you do five of these they'll give you rebates. That's one incentive method and you can use different contractors for the different pieces." - Denver

"*I put in new windows because mine were rotting."* -Albany

"If these are prioritized. I think I'd be willing to jump on the first one. which would be the R50 insulation. Then. a year or two later, you go to the next one, which appears to be to air seal your home." -Denver

What Must A Home Energy Label/Report Have?

Overall, the major items participants would ***like*** to see on any energy display are:

- A clean, clear and simple **graphic** that grabs attention and is easy-to-understand at a glance. It must also have enough detailed information to back it up. Although many preferred the vertical to horizontal comparison graphic, placing the best performance on bottom of the scale was considered counterintuitive. Most preferred having the best performance at the top.

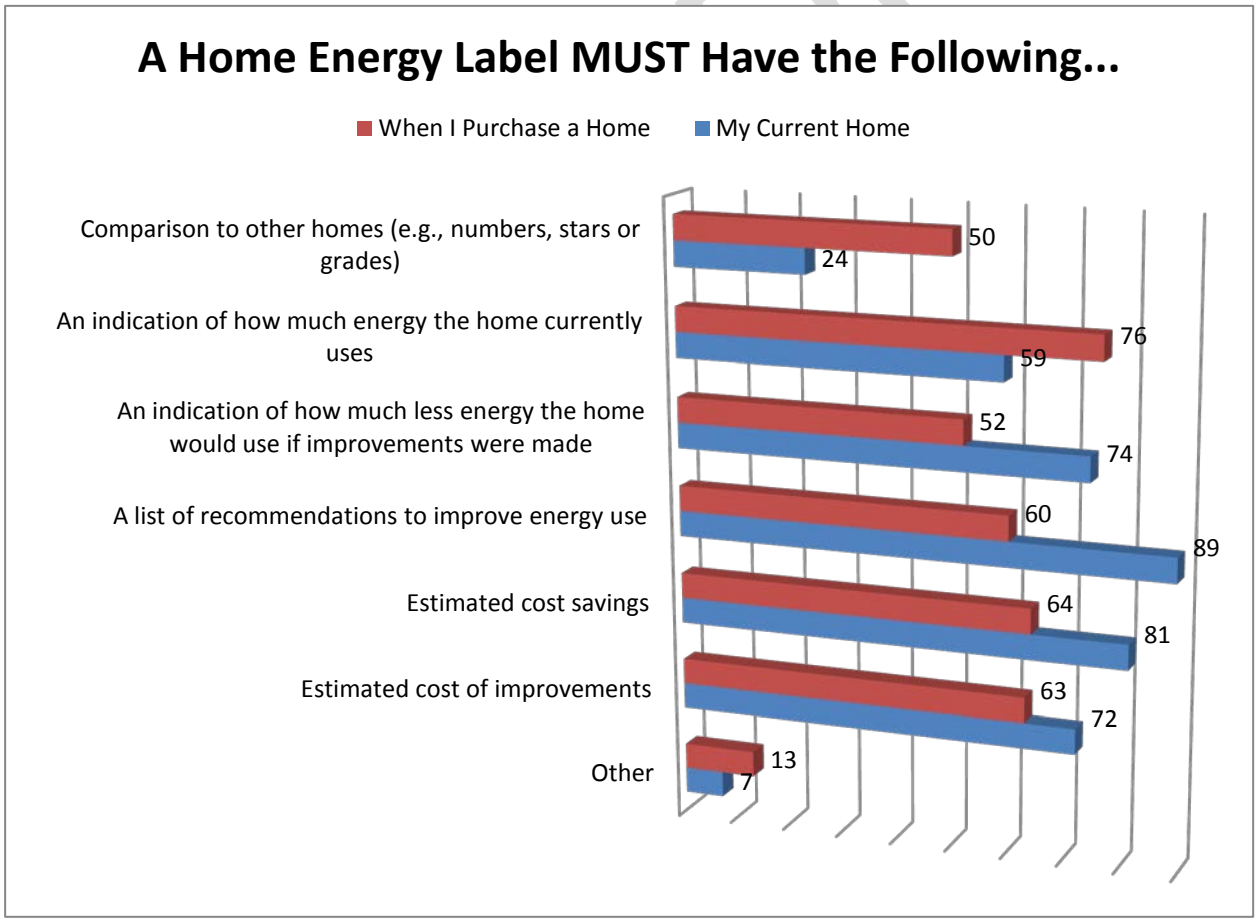
- **Comparatives scores or measures** for the current home, the home with improvements and scores for the typical new home and typical existing home. If technical terms such as MMBTU are used, include definitions.

- Estimated monthly **cost** savings.
- **Current and potential energy use** broken down by electric and gas.
- Square footage and number of bedrooms.
- **Recommendations** with estimated cost of the improvements and the associated savings. When the recommendations were left off the labels, there were far fewer positive reactions. Participants did not really understand the labels without the recommendations.

Commonly noted ***dislikes*** among participants include: carbon, confusing terms without explanations, and lower numbers on bottom.

The Homeowner Vs. The Homebuyer

In many cases, there are differences between a homeowner making improvements to their home, and a homebuyer who is purchasing a home. Some of these differences are captured below.



Who Would You Trust To Provide This Information?

Homeowners noted that that they generally get this type of information from sales people, whom they don't trust. They are skeptical of anything coming from a contractor or a manufacturer. They would prefer to get this information on energy improvements from their utility and/or a third-party auditor.

At the point of sale, homebuyers want to obtain this information from an independent home inspector or energy auditor. In most of the focus groups, participants were aware of third-party energy analysts. In two groups, however, they thought they had invented the concept.

"I would prefer to pay somebody that has nothing in it for them. I want to know what's wrong with the home and I feel that if you pay somebody you're going to get a better professional licensed person with a ton of experience. You have to pay for the expertise." - Florida

"*You're always skeptical about someone if you know they are trying to sell you something, because they are going to tell you whatever is going to benefit them." –Albany*

"I just wouldn't want to have the person doing the work that did the inspection. It's like those people who come to your door trying to sell you vinyl windows." -Portland

"I could see the companies that sell these products could come out to do it. I don't know how much I'd trust them because they're trying to sell you something. I might trust Home Depot or Sears, but other companies I don't know that I'd trust." Denver

"*I would prefer to pay somebody that has nothing in it for them. I want to know what's wrong with the home and I feel that if you pay somebody you're going to get a better professional licensed person with a ton of experience. You have to pay for the expertise." -Ft. Lauderdale*

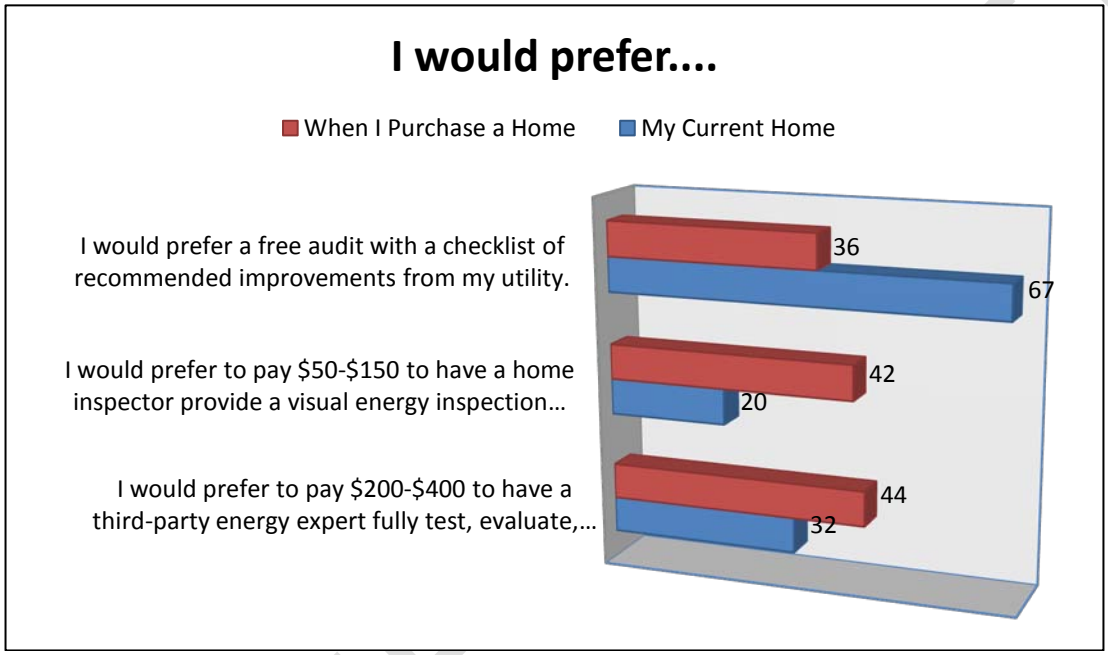
"Speaking personally, I don't have any of that knowledge. So I need to rely on an expert. The energy company could do it for free, but I don't know I'd take it for gospel. Granted, the expert could tell me all kinds of things, and he's in cahoots with somebody else. I'd rather have an expert take a look at it, for a big investment like that. And I can decide what to do after." – Phoenix

"Everybody I know who's bought a home has had a home inspection. I think this is something that could be added to it. Bundling – an extra $100 to get the energy audit…That might be the best way. Not actually require it, but make it part of the home inspection process. I could see that…You have to inform the buyers they have the right to do that." - Denver

How Much Would You Be Willing To Pay For This Information?

Most homeowners prefer a free energy audit for their home, but are willing to pay to $150. A few participants in each group mentioned that their utility offered a free or low cost audit, which created a baseline for expectations.

But, when purchasing another home, participants say they are willing to pay much more ($200 to $400) to have a thorough energy analysis. They would use this information to negotiate with sellers to either make improvements or lower the cost.



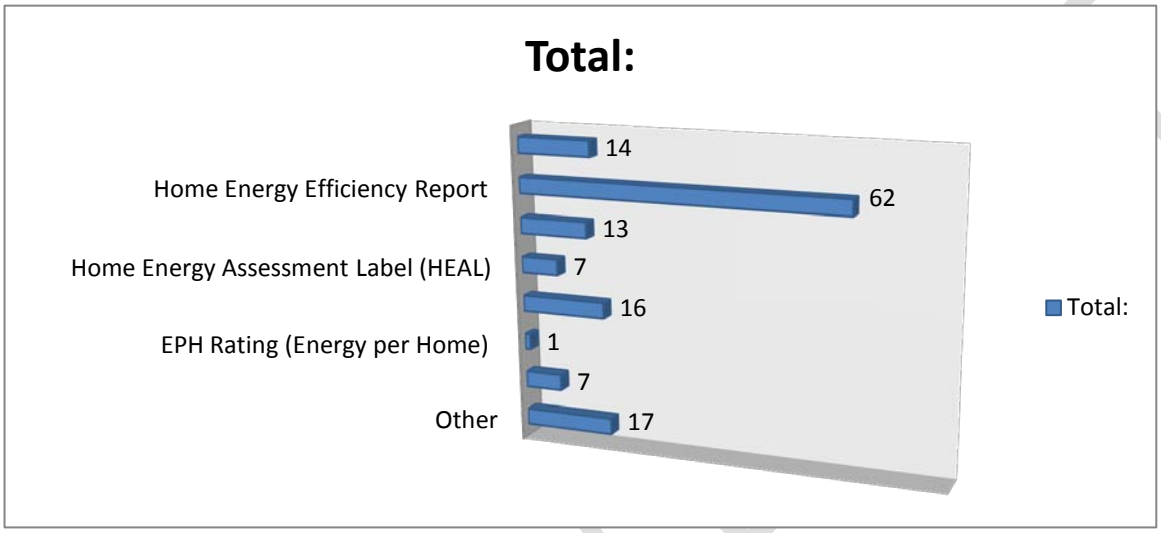
How Would You Pay For The Home Improvements?

Most participants were reluctant to finance the improvements given the current depressed state of the housing market and difficultly in accessing home equity loans. They said they were more likely to prioritize the recommendations and undertake the improvements as cash became available. Tax credits, rebates and other incentives are meaningful, but participants did not elaborate on their specific value. In several groups, homeowners said they would consider completing all or most of the improvements immediately if they were offered special deals such as tax incentives, a “zero interest rate loan” for one year or a free improvement when you purchased a bundle of other improvements.

A few home buyers said they would consider including the costs of making the improvements in their long-term mortgage, but this was a small minority. Most stated that they would not want to pay the interest on the improvements over 30 years.

What Do You Call This Display Of Information?

The focus group participants want a good title that clearly tells you what you are getting. Home Energy Efficiency Report was the most commonly chosen name. Some participants enjoyed playing with acronyms such as HEAL, or turned Home Energy Efficiency Report into HEAR – Home Energy Assessment Report.



CONCLUSIONS

What information is most likely to compel a homeowner to make energy improvements?

Saving money is the most compelling reason to make energy improvements. Homeowners want to know what the energy improvements will cost and how much they will save by making the improvements. While homeowners understand that costs and savings are only estimates, they feel strongly that they need that information to make wise decisions.

Since energy improvements are not top-of-mind issues for most homeowners, information should presented in a way that captures a person's attention, raises their awareness and then helps them to make an educated decision.

Beyond saving money, messages should also appeal to secondary and underlying forces motivating homeowners and the other benefits of making energy improvements. This includes a broad array of items, some of which appeal to different audiences or have more appeal in one region than another. These include messages on protecting the environment and improving the value and/or appearance of their homes.

When homeowners need to replace or repair energy-related items, they may look beyond just cost savings and consider other benefits such as quality, comfort, noise reduction, health and safety.

There is a big difference in how much money homeowners and homebuyers are willing to pay for an energy audit. As a result of free or low-cost utility audits, which are becoming more of a standard practice in the utility industry, homeowners are reluctant to pay much more than $150 for an energy audit on their current home. Homebuyers, on the other hand, are willing to pay much more (up to $400) for an independent and unbiased audit that can be used in negotiating the price of the home they are considering buying.

Not surprisingly, the Internet is critical to the search for information. Homeowners generally begin with a Google search and end viewing individual websites. Regardless of where the information is found, it must be convenient find and reliable. When possible, homeowners prefer information that is specific to their house or their climate region. They would prefer to have a third-party energy professional or a utility representative, not a contractor or sales person, sit down with them and go through the information.

Homeowners are likely to prioritize a list of recommended improvements and then chip away at the list from the top down as funds become available. They are reluctant to finance or use home equity loans to pay for the improvements in the current economic

climate. However, some would consider bundling the improvements if they received a discount (i.e., free item if they purchase the others) or "0%" financing for a year. Tax credits and utility incentives are meaningful, but should be further explored in future research.

What information would best motivate a homebuyer to consider a home's energy performance as part of the buying process (e.g., compare homes, etc.)?

Homebuyers are most likely to pay for a home energy analysis at point of sale (POS). According to the focus groups, $200-$400 is considered a reasonable amount of money to pay for an independent audit given the overall cost of the transaction. Homebuyers generally use energy audits, conducted by a home inspector or third party consultant, to negotiate the sales price. The report should have a concise, easy-to-understand summary to enable buyers to quickly take the energy factors into consideration and then move on to the many other decisions involved in the home buying process. A few participants would try to finance the improvements as part of their mortgage; others would try to split the costs with sellers; and still others would use the audit information to negotiate a lower sales price.

Homebuyer Insight

There is interest in a point of sale score to help homebuyers make good decisions when they purchase existing homes. The current overall score or asset rating would allow the potential buyer to learn more about the home as opposed to how the occupants use the home and would be a useful point of information on the MLS, similar to a "walk score" that you find on some real estate search engines.

A full report by a home inspector or auditor would provide more information to the buyer to understand the house, negotiate the sales price and improve the comfort of the home.

One issue is that people are staying in their homes longer and sales are stagnant, so not only could this be perceived as a barrier to selling a home, but this may have very little impact on an overall reduction in residential energy consumption.

What information would best motivate a homebuyer to consider financing energy improvements at the time of purchase?

Both homeowners and homebuyers are reluctant to finance energy improvements. Homeowners are not interested in refinancing or taking out home equity loans. Instead, they tend to prioritize energy improvement items and make the improvements as cash becomes available. When something breaks or needs replacing, it goes to the top of

the priority list. Homebuyers generally try to get sellers to split or cover a portion of the costs of energy improvement suggested in energy audits. There is no doubt energy improvement decisions are influenced by government tax credits and utility rebates. While reluctant to finance improvements, homeowners expressed some interest in bundling the improvements and financing the job with a short-term zero interest rate loan.

FINANCING INSIGHT

To entice homeowners to make bundles of improvements that achieve energy reduction goals, it makes sense to work with home improvement retailers to provide "home improvement" bundles installed by their contractors and financed with short-term loans. Include the cost of a third party auditor in the financing. The auditor could also ensure that the money is spent appropriately.

How should a label and/or supplemental information best convey the information noted in response to the above questions? Do certain types of display more readily provide important information? Do certain types of display confuse consumers and possibly encourage incorrect conclusions?

Generally, a "label" or "summary display" with two reference points – "current" and "improved energy" - is not useful on its own without the recommendations on how to achieve the improvements. Participants valued the "report" much more than the stand alone "labels," but they see value in a clear summary that is easy-to-understand at a glance. The research indicates that a report should include:

- Clear, simple, colorful graphics that catch your attention and make sense at a glance.
- A horizontal graphic is easier to understand if it reads left to right.
- The graphic should have comparative metrics including numbers for the typical existing home or state average and typical new home, and end point references for clarity.
- Estimated monthly utility bill.
- Square footage of living space and number of bedrooms.
- Break out of electric and gas usage.
- Customized recommendations with estimates for the cost of the improvements, the expected savings, and the payback period.
- A website for more information.

LABELING INSIGHT

This is an opportunity to raise awareness and build on DOE's positive brand as a trusted government agency.

There is already confusion in the market place, so consider how you build on what is in the market place.

Include the carbon, but don't make a graphic for it. This will appeal to those interested in climate change, while not alienating, cluttering the space or confusing most homeowners.

To impact energy efficiency in occupied homes – among homeowners - focus on behavior change. Work with utilities to provide audit reports that outline asset changes, but also include opportunities for behavior change that they can witness in their utility bills. Consider some innovative programs where energy detectors give live feedback or contests are held on social media networks. This could also impact renters and others who might not otherwise have incentives to reduce energy consumption.

Appendix A: Screener

Specifications for participants:

- Local homeowners;
- Have not been in a focus group for at least a year, preferably more
- Do not work for a local utility, home product manufacturer or retail store (Home Depot), or in market research;
- Have not been in foreclosure proceedings;
- Ranging family income (maybe half under 100k and half over). (None below 85% of median income for the area);
- High school degree mandatory and at least 50% with college degree or above;
- A diversity of years that they have owned a home (not all first time home owners, maybe three categories 0-5 years, 5-10 years, and 10 plus);
- At least 3 participants with recent experience (within the last 5 years) renovating their home;
- Have a split between male and female home owners; and,
- Some ethnic diversity that mirrors the local homeowner population

INTRO – OUTBOUND
Hello, my name is _____. I am calling on behalf of (insert name of company in X location). We are currently recruiting participants for a discussion group regarding energy efficiency, and I am calling to see if you are interested in participating. If you are interested, we will be paying $100 for a one and a half hour discussion group.

Would you be interested in helping with this project?

No – TERMINATE AND THANK *("Thank you anyway for your time today, and have a great day.")*

Yes – Great, thank you. Now I just need to make sure that you meet the requirements of the study, so I need to ask you some questions.

INTRO – INBOUND
Screener for the DoE focus groups

NAME_____
PHONE_____

RESPONDENT NUMBER _____

I have to ask you some questions to determine whether you are eligible for our study. It will only take a few minutes.

Add 2 screeners: We don't want participants who have participated in a focus group within the last 3 years; and we don't want participants who have been threatened by foreclosure or have missed mortgage payments. Reason: We want to make sure they could afford energy improvements to their home.

Q1. ASK ONLY IF NOT OBVIOUS: Are you male or female?

a. Male
b. Female

INTERVIEWER: RECRUIT 50% MALE AND 50% FEMALE FOR EACH GROUP.

Q2. What is your current age?

a. Under 18 – TERMINATE AND THANK ("*Based on the requirements of this study, it looks like we can't include you at this time. It is possible we will be calling you in the future for other studies.")*

_____ (RECORD AGE)

Q3. What is the highest level of education you have completed? (

a. Less than high school degree *("Based on the requirements of this study, it looks like we can't include you at this time.)*
b. High school graduate (diploma)
c. Some college or technical school
d. College or technical school graduate
e. Post-graduate

INTERVIEWER: RECRUIT AT LEAST 50% OF EACH GROUP WITH COLLEGE DEGREE OR HIGHER

Q4. These interviews will be taking place at Put in name and address of facility **Are you within driving or commuting distance of our location?**

PROVIDE MORE INFO IF NEEDED:

a. Yes
b. No – TERMINATE AND THANK (*Based on the study design, our interviews are going to be conducted at EurekaFacts, so it looks like we can't include you at this time.)*

Q5. Are you or any member of your household work for:

a. A marketing or market research firm - TERMINATE AND THANK
b. Home improvement company (HVAC, window/door replacement, etc.) - TERMINATE AND THANK
c. Home construction company - TERMINATE AND THANK
d. A utility company (PEPCo, BGE)
e. None of the above

Q6. Do you currently own a home in Montgomery County?

f. Yes
g. No– TERMINATE AND THANK *(Based on the requirements of this study, it looks like we can't include you at this time.)*

Q7. What is your total annual household income?

a. Less than $115,000
b. More than $115,000

INTERVIEWER: RECRUIT 50% LESS THAN 115K AND 50% MORE THAN 115K FOR EACH GROUP .

Q8. For how long have you owned your home in Montgomery County?

a. Less than 5 years
b. 5 – 10 years
c. Over 10 years

INTERVIEWER: RECRUIT A MIX

Q9. Have you had any home renovations done within the last 5 years?

a. Yes

b. No

INTERVIEWER: RECRUIT AT LEAST 3 PARTICIPANTS WHO RESPOND "YES"

Q10. Are you the person in the household that pays the utility bill?

a. Yes

b. No

INTERVIEWER: RECRUIT AT LEAST 50% WHO PAY THE UTILITY BILL

Q11. Are you of Hispanic or Latino Origin?

a. Yes

b. No

Q12. Are you…READ OPTIONS ALOUD

a. White

b. Black or African American

c. Asian/Pacific Islander

d. American Indian or Alaskan Native

e. Other? _____

INTERVIEWER: RECRUIT A MIX OF RACES.

END

You are eligible to help with this research project. As I mentioned earlier, we are conducting focus groups with homeowners in Montgomery County. The focus group is scheduled for June 22nd at (6:00 PM or 8:00 PM) and lasts approximate one and a half hours. Are you interested in participating?

YES — Thank you so much for your willingness to help us. For taking part you will receive $100 cash upon completion of the focus group.

NO — Thank you for taking the time to talk with me today and have a great (day/evening).

Appendix B: Moderator's Guide

Goal: Determine what information is most likely to motivate homebuyers and homeowners to undertake energy improvements; and, how this information can best be conveyed to consumers (e.g., evaluate labeling options).

Principle Questions to be Answered:

- What **information** is most likely to compel a **homeowner to do energy improvements?**

- What **information** would best motivate a homebuyer to consider a home's energy performance as part of the **buying process** (e.g., compare homes, etc.)?

- What **information** would best motivate a homebuyer to consider **financing energy improvements at the time of purchase**? (Simplify – do not include per 7/2/10 conversation)

- How should a label and/or supplemental information best convey the information noted in response to the above questions? Do certain types of display more readily provide important information? Do certain types of display confuse consumers and possibly encourage incorrect conclusions?

I. Introduction (10 minutes)

Objective: To create a comfortable environment, gain trust and familiarize participants with the format

Outcome: More participation, information and a deeper understanding of the issues.

Thank you for taking the time to meet with us today. My name is _____. I work for Newport Partners, a consulting firm that conducts research for the housing industry. We are here today to discuss your home.

Before we begin, let's go over a few "**ground rules**."

- Turn off your cell phones / no texting
- Work for equal air time
- One at a time, loud clear voice
- Urge to talk
- No right or wrong answers
- May ask to move on
- Video recorded and people watching

How many of you have participated in a focus group before?

Do you have any **questions** before we begin?

Introductions around the room. Tell us your:

- Name
- Profession
- How long you've owned your home
- Favorite magazines, websites or blogs

II. Presentation of Labels in Homeowner / Buyer Scenario (50 minutes)

Objective: Explore the types of information that most influence/educate a homeowner with regard to energy efficiency.
Outcome: Understanding of important elements of a label.

- What did you wish you knew about your home **before you purchased** it?
- What are your **priorities for changing/remodeling** your current home?
- What **improvements** would you make to improve the energy efficiency of your home?
- What is going to happen to the cost of energy / your utility bills?

EXERCISE 1: Distribute labels to each participant.

Please take some time to review each of these labels. Circle what you like about each one; cross-out anything you don't like or that doesn't make sense to you; write-in / add anything you think is missing; and finally, place them in order from favorite to least favorite with favorite on top. *1=favorite; 6=least favorite*

Summarize and discuss each one.

- What did you **circle/like**?
- What did you **cross out/not like or find confusing/unhelpful**?

- What did you **add/what was missing**? (PROBE: Is this enough information? Would you go to the URL for more?)

- **What are these labels** telling you?
  - **Who** /what are they for? (PROBE: a homeowner or a homebuyer?)
  - What do you **understand about this home's energy use**?
  - How would this information impact your decision to **purchase this home**?
  - **Where** would you want to see this information if you were purchasing a home? (PROBE: MLS listing; what should it look like on an MLS listing?)
  - Which of these would work best for you to tell you **about your current home**? (PROBE: What else would you **want to know about your home after seeing this**? What would you do with this information?)
    - What would you do with this information? (PROBE: hard copy on utility panel, in drawer, in file v. electronic copy)

- Tell me about **square footage/living space**? How does that relate to energy efficiency? (PROBE: small v. big home)

EXERCISE 2. *Distribute list of improvements*. Let's discuss the **list of improvements**.

- If you were given this list for your **current home**, which improvements would you make?
  - How would you pay for them?
- Would you want to see this list before **purchasing** a home?

        - **When** would you make the improvements (PROBE: before moving-in, after moving-in? over a period of time?)

        - **How would you pay** for the improvements? *(PROBE: roll into mortgage? Wait until I have enough cash? Take advantage of tax and utility rebates?)*

    - Where would you want to see the list of improvements? (PROBE: direct or URL, where would you put it?)

EXERCISE 3 A & B: Mark your preference

- A: What would be your preference for your current home?
    - If you were purchasing a home?

- B: What are the MUST haves regarding information on your current home?
    - If you were purchasing a home?

III. Additional Questions / Interest in Energy Improvements (15 minutes)

Objective: Explore influencers and resources for educating homeowners.
Outcome: Understanding of resources and messages to inform/educate homeowners on making smart decisions with regard to their homes.

- **Why do people make energy improvements** to their home? *(PROBE: for emotional factors/motivations: increased comfort, lower utility bills, preserve natural resources, reduce fossil fuel use, climate change, legacy)* LIST ON FLIP CHART

    - What about you personally – which of these we just listed is **most important to you**? GO AROUND ROOM AND TALLY ON FLIP CHART

- **What would it take to get you** to undertake energy improvements? *(PROBE: influencers: information about potential cost savings,*

financing/refinancing opportunities, a friend or neighbor's testimonial, knowing there are trusted contractors, a government-issued label, etc.)

- **How many of you currently seek out information** on home energy efficiency? (RAISE HAND AND COUNT)
    - If yes, **where** do you go for this information? And, **how frequently**? (*PROBE: Government websites, Internet searching, product manufacturers, real estate agents, utility, etc.*) LIST ON FLIP CHART
    - Have you ever looked at real estate websites? Which ones?
    - Website on energy efficiency? Which ones?
    - For those of you who did not raise your hand, **what resources would you consider** using for information on home energy efficiency? (*PROBE: on your utility bills, electronically, home improvement web sites; govt web sites*). CHECK OR ADD TO LIST ON FLIP CHART
    - Which of these would be the most **trusted resource**? STAR ON FLIP CHART.

I. CONCLUSION (15 minutes)

Objective: Identify themes or items that need further exploration and close session.
Outcome: Happy client and happy participants.

I need to step out for a moment. While I'm gone, I want you to think the information on a home that you saw today and write down what you think would be a good **name** for it. Also, please write down who should **sponsor** the label. You can make the sponsor specific – an actual name – or the type of organization. And I'll be right back.

Check in with client and return with final questions:
1.
2.
3.

GO AROUND ROOM AND ASK EACH PARTICIPANT TO GIVE THEIR label name and sponsor.

Exercise 4: Mark your favorite name.

- Home Energy Score
- Home Energy Efficiency Report
- Home Energy Guide
- Home Energy Assessment Label (HEAL)
- Home Energy Performance Score
- EPH Rating (Energy Per Home)
- Home Performance Guide (HPG)
- Other_____

Thank you for your time.

Appendix C: Literature Review

Lowering one's household energy demand can pay dividends in the form of savings on the monthly utility bill or having a reduced impact on the environment. Consuming less energy can be the result of using an appliance less, or using it more efficiently. However, problems confound each of these two avenues to savings. Using something less often means changing long established usage habits or routines, which can prove difficult. On the other hand, using something more efficiently usually requires upgrading to a new appliance, and that costs money. The investment might be even less attractive if the appliance to be replaced is believed to have several years of productive use remaining.

The review of existing literature on the topic of consumer attitudes toward saving energy covers both these approaches to energy savings – using less and using more efficiently. Some studies aim to determine the most effective method of offering the homeowners feedback of their monthly usage in an effort to enable them to change their usage habits while another might examine their knowledge of the potential for energy efficient upgrades to their home. Others tend to be broader and may simply examine a consumer's motivation for saving energy in general.

Many of the sources obtained and included in this review contain a range of information that often overlaps from one category into another. As such, the sources are not presented in any sort of prearranged structure. Instead, they are listed alphabetically, by title. In addition, the description of literature below is not meant to be exhaustive, but to provide major examples of resources as it pertains to the three areas noted above.

"*A Review of Intervention Studies Aimed at Household Energy Conservation*"
Wokje Abrahamse, Linda Steg, Charles Vlek, and Talib Rothengatter

The purpose of this article was to review a series of studies that examined different types of interventions to encourage households to reduce energy consumption. Each of the studies was concerned with either promoting more efficient energy usage or reducing its overall use. Studies were broken down between those that were antecedent and consequence interventions. The goal was to identify consistent findings as to what the most effective intervention strategies were.

Antecedent interventions included commitment, goal setting, and information. Information was broken down further into workshops, mass media campaigns, home audits, and modeling. Consequence interventions included feedback and

rewards with feedback being broken down further into continuous feedback, daily feedback, weekly and monthly feedback, and comparative feedback.

The authors noted that feedback appeared to be one of the more successful approaches to getting households to reduce their energy usage. Furthermore, it was noted that the more frequent the feedback was, the more effective it seemed to be. However, in certain cases, households who had a historically lower energy usage actually increased their energy consumption in light of the feedback they received. Using an antecedent intervention alongside a consequence intervention, such as combining goal setting with feedback, also proved successful at helping to realize energy savings in the short-term.

In its conclusion, the article provides several recommendations to increase the effectiveness of future efforts to get homeowners to reduce their energy consumption. While several of these recommendations related to design and evaluation of future studies, it noted that problem diagnosis is an important first step. For instance, if cost is the problem, then financial incentives might serve as the best solution. If consumers are unsure about how to be more energy efficient, then information and education could be the answer.

"*Affecting Consumer Behavior on Energy Demand*"
Mari Martiskainen, Sussex Energy Group, SPRU, and University of Sussex

This report is actually a review of literature of household energy use behaviors. It noted that certain studies involving the use of feedback have typically resulted in short-term energy savings of between five to fifteen percent. It also mentioned the concept of Eco-teams. These are community-based groups that get together on a monthly basis to discuss their energy use. It also remarked that the most effective feedback is the type that equates usage with cost and environmental impact.

The authors observed that feedback has the potential to change one's energy use behaviors. It stated that feedback has the greatest chance at changing one's behavior toward energy usage if the feedback demonstrates to them that their consumption is not compatible with their values and beliefs. This piece also highlighted the difficulties of changing energy consumption behaviors since they are largely based on habits and routine. *Such habits can be broken down by providing awareness on how to establish new behaviors*.

"*Behavioral Science and Energy Policy*"
Hunt Alcott and Sendhil Mullainathan

This paper makes brief mention of consumer attitudes toward home energy conservation. It does so in its mention of a company called OPOWER. OPOWER partnered with utilities in several states and sent energy reports to their electricity and natural gas customers. The report contained information that

showed a home's usage over time and compared this usage to similar households. It would then offer suggestions on how to conserve energy.

The basis for this approach to change energy consumption behavior was specific research that showed conforming to social norms could provide a more compelling reason for change than social responsibility pressures. An analysis of the results of the study showed that households reduced energy use by around *two percent*.

"***Consumers' Attitudes Toward Energy Conservation and Energy Efficiency: The Role of Electric Rates***"
Lynne Holt and Carol Jacobson Larson

This paper attempts to uncover consumer attitudes toward energy conservation and energy efficiency as a way to help Florida address the burden of future energy demand. According to the research, most people seemed to believe that the best way to address future demand for energy in Florida is to expand the supply to meet the demand. Few respondents believed that a change in consumer behavior was the answer. An equally small amount saw increased building efficiency standards as the solution. The authors felt that the reason for this was that for so long Americans have not had to make changes regarding their energy consumption habits since the price was cheap, and expanding supply, instead of placing the burden of change on the consumer, was typically a viable option.

The paper noted that the factor most likely to motivate a household to use energy more efficiently or to reduce their overall use would be an increase in the price. This answer was selected more than a noted energy shortage, government financial incentives, and environmental awareness. The authors were quick to note that simply raising the price is not a good solution since low-income households may live in poorly insulated homes with outdated appliances and have little means with which to invest in energy efficient upgrades. In other words, some households lack the ability to reduce their consumption habits, leaving their demand rather inelastic. Furthermore, many households are renters and do not own the appliances present in their dwellings.

Almost half of all respondents had purchased an appliance in the past two years and nine out of ten of them stated that the energy efficiency of the appliance played a key role in their purchase decision.

"***Discussion of Consumer Perspectives on Regulation of Energy Efficiency Investments***"
National Action Plan for Energy Efficiency

The paper cites a 2009 study by McKinsey and Company that determined there remains a large amount of potential for consumers to increase their efficient use

of energy. The authors note a lack of awareness, information, and responsibility in addition to shortfalls of cash, problems with long-term cash flow, and perceptions of personal value as reasons for the significant amount of potential that still remains.

A lack of awareness might be present in both homeowners and builders. Homeowners might simply not have the time to think about energy efficient features or upgrades whereas builders might not recognize market demand for homes with energy efficient features. A lack of information may inhibit a builder from properly communicating and selling the benefits of an energy efficient home. Furthermore, a lack of personal value leads customers to expect short payback periods. They may have limited discretionary funds, and prefer to use them on other purchase options.

"***GE Smart Grid Consumer Survey*"**
GE Energy

GE Energy Services assembled a series of questions to gain a better understanding of how the public perceives smart meters and smart grids. To begin, an overwhelming amount of respondents said that they are willing use a smart device, such as a meter, thermostat, or appliance to help better manage their energy usage. Most willing were respondents age 18-34. The most popular reason was to gain better control over their energy bills. Meanwhile, almost three quarters of respondents felt that the rate at which energy is consumed in America could harm future economic growth.

The study uncovered the need to reinvigorate efforts to provide education. About half of all respondents stated that beyond turning off lights and keeping the A/C at a moderate temperature, there is little they can do to support 'green' or 'sustainable' energy platforms. Respondents over the age of 65 or classified as nonparents tended to hold this belief more strongly.

"Greendex 2010: Consumer Choice and the Environment – A Worldwide Tracking Survey"
National Geographic

The purpose of the Greendex is to gather and analyze consumer behavior as it relates to the environment. One of the categories contained in the index is housing. Under the housing section provided in the summary document to the Greendex report, it was stated that over a three-year period, more than half of the respondents in fourteen out of seventeen countries polled engage in energy saving activities in their home. This included moderating their home's temperature.

In most of the participating countries, respondents stated that they had decreased their energy usage over the past twelve months. Having

environmental concerns was noted to be one of the key reasons for reducing their consumption. Overall, the United States scored last amongst the seventeen countries surveyed.

"*Saving Energy at Home and On the Road: A survey of Americans' energy saving behaviors, intentions, motivations, and barriers*"
Anthony Leiserowitz, Edward Maibach, and Connie Roser-Renouf

In 2008, researchers at Yale and George Mason Universities conducted a survey to uncover what actions Americans have already taken and what actions they intend to take when it comes to energy efficiency. It also attempts to determine the source of their motivations to conserve while identifying barriers that prevent them from saving energy.

Several observations were made from the data obtained. First, the results showed that a large percentage of Americans intend to undertake energy efficiency improvements in the next year. Also, there was a substantial amount of respondents who answered that they would if they could afford it. The study noted that government subsidies or price discounts could serve to address the latter of the two responses.

The most popular barrier to saving more energy was found to be that the respondent couldn't afford it. Similarly, it was also observed that there were relatively few respondents who were unwilling to spend the money as only a few respondents stated that they could afford certain energy efficient actions, but just didn't want to spend the money. A lack of information also appeared to be a problem. A relatively simple energy efficient action was given, and around 20 percent of respondents said they didn't know how to do it themselves. An almost equal amount stated that they knew how but didn't have time.

Barriers to larger investments, such as appliances, were also uncovered in the survey. In addition to issues with affordability, many respondents stated that they simply didn't need a new one yet. For respondents who said they would be undertaking energy efficient measures, the vast majority said they would do so to save money. Although, a third or so said that reducing global warming has led them to want to conserve. One-quarter of respondents said conserving energy is moral, while a significant amount said that doing so makes them feel good about themselves.

Perhaps by default, it is assumed that saving energy would typically mean having to make-do with less. However, survey data showed that for every one person that believed this, there were two that believed it would actually improve the quality of their lives. *The authors concluded that conserving energy and being more efficient with its use can be promoted as a measure that results in benefits for the person doing it.*

"*The 2009 Energy Efficiency Tax Credits Survey"*
Johns Manville

Johns Manville (JM) commissioned Opinion Research Corp. to conduct a survey to determine consumer reactions to the federal government's home efficiency tax credits that were to be made available through 2010. The results were found to be quite favorable, most Americans, or almost two-thirds of the respondents, said they were aware of the tax credits and over half had either taken advantage of them or said they intended to.

The most popular response for taking advantage of the tax credits was to save money on their utility bills. But respondents also cited improved comfort in their home and having less of a negative impact on the environment as other major reasons.

The survey also addressed how large the tax credit would need to be in order to adequately offset the cost of an investment in energy efficiency. The survey found that most people felt it should offset forty percent of the cost while others noted that reducing about a third of the price would suffice.

"*The Business Case for Energy Efficiency*"
Advanced Energy

This study made note of Guaranteed Performance Homes (GP Homes). GP Homes sell with a specific guarantee regarding energy usage and comfort. They use much less energy than a typical new home and are built according to more strict construction techniques. Also, participating builders are required to complete training.

The Phoenix Homeowner Satisfaction Survey found that a greater percentage of GP Homes homeowners were more satisfied with each aspect of the HVAC system than their Energy Star Home counterparts. Respondents noted that to them performance includes not only energy efficiency, but also comfort, reliability, and healthiness.

These surveys also noted that many homeowners are still unaware of any special energy programs when purchasing a new home. Yet, overall the results of both surveys proved that energy efficient homes have the ability to compete with other less energy conscious homes. In other words, the studies have demonstrated that consumers would be likely to purchase energy efficient homes simply because they prefer it.

"The Effect of Goal-Setting and Daily Electronic Feedback on In-Home Energy Use"
Jeannet H. Van Houwelingen and W. Fred Van Raaij

This study endeavored to compare the effects of daily electronic feedback with monthly external feedback and self-monitoring. It proved that setting a goal combined with active monitoring of feedback can result in a meaningful amount of energy savings. More specifically, the study proved that households that set a usage goal and received cumulative usage data on a daily basis (using some sort of energy indicator) in working toward achieving the goal were saving more energy than households that set a goal and received monthly external feedback or used only self-monitoring. Households receiving external feedback or those using only self-monitoring did reduce energy consumption, just not as much.

The savings in energy consumption was only noted for households that received daily feedback with an indicator when the indicator was present. In what the authors termed the post experimental period, the energy use of these same households increased from what was observed during the study. This proved that there had been no real change in habits or attitudes toward energy usage and its more efficient or more conservative use.

"The Effects of Information on Residential Demand for Electricity"
Isamu Matsukawa

This is an article where the author set out to determine how making a continuous-display, electricity use monitoring device available to households would affect the elasticity of demand for home energy. Information on energy use was provided on an hourly basis in the form of charts and graphs. For households using the device more than a certain number of days per month, demand was more elastic than for households using the device only once per month. In other words, households actively using the device curbed their energy usage more in response to a price increase than households who only used the device once a month.

"Understanding Consumer Preferences in Energy Efficiency"
Accenture end-consumer observatory on electricity management 2010

The Accenture Study was designed to gain a better understanding of consumer opinions and preferences toward electricity management programs. Perhaps the most important observation that came about as a result of this report was how it concluded that what consumers claim to know about energy efficiency is significantly out of balance with how much they actually do know.

The report showed that less than half of all respondents believed that electricity consumption by individuals has a negative impact on the environment. Furthermore, many believe that simply recycling and being prudent with their water usage means they are doing enough. In turn, consumers recognize reducing electricity as a lower priority.

Three quarters of respondents claimed to understand how they can optimize their electricity consumption, yet significantly less admitted to actually hearing about programs that help one to optimize their electricity consumption. Most respondents had heard of them but didn't know what they were, while others had never heard about them at all.

Many respondents admitted to feeling social pressure to become more energy efficient. The report decomposed its base of respondents into six consumer segments, each representing a different layer of acceptance to enrolling in an electricity management program. Anywhere from one-half to two-thirds of respondents from the seven segments reported feeling social pressure to perform actions that were more environmentally conscious, including reduced electricity consumption. Similarly, individuals from most of the consumer segments stated that they would hold a more positive view of someone who is enrolled in an electricity management program.

"*What Changes Energy Consumption? Prices and Public Pressure*"
Peter C. Reiss and Matthew W. White

This paper compares how sharp price increases and appeals for conservation each affect energy consumption. It uses data from California's energy crisis during 2000 and 2001. An analysis of the data seemed to show that calls for conservation coupled with information programs can yield long-term reductions in energy demand.

Data was obtained for households in the San Diego region during the state's energy crisis in 2000. This area in particular experienced sharp price increases. It was determined that households reduced their energy consumption by about thirteen percent in sixty days. The authors state that in order to realize a reduction as significant as this, households must make investments in energy efficient appliances or make major changes in how existing appliances are used. The effectiveness of public appeals for energy conservation is then evaluated. It was stated that after a price cap had been applied in California, the state began a media campaign to promote conservation on a purely voluntary basis. In the San Diego region analyzed previously, consumption decreased seven percent over a six-month period. The amount of the reduction here was deemed substantial and proved that a public appeal for voluntary conservation efforts can be successful. There was no further analysis that attempted to see if long-term consumption patterns could be altered through this method.

"What Psychology Knows About Energy Conservation"
Paul C. Stern

This article, by Paul Stern, summarizes past research on psychology's contribution to the field of energy conservation. It includes a section on energy use in homes and begins by noting prior research on the importance of the

source of the information one receives. In this case, the trustworthiness of the information was found to be crucial, highlighting the potential for friends or family members to influence behavior. In another example the author cited, a county government had contracted with a private firm to insulate homes at no cost in return for a portion of the household's energy savings. As a test, households were provided notice of the program on the private firm's letterhead with no mention of county involvement, on that same letterhead with mention of the county's involvement, or on county letterhead signed by the chairman of the County Board of Commissioners. It was the letter from the county communicating the same exact program details that was trusted the most, implying that information from a local government source is more trustworthy than information from a private, for-profit firm.

The author cited research noting that consumers often equate energy usage with a monthly cost rather than certain energy units like kilowatt hours or therms per degree day. In addition, the author cites research implying that people often overestimate the cost to power lights and other visible appliances and underestimate the cost to power other, less visible appliances.

Pertaining to the research on how to change household energy use, the article noted certain types of feedback. Specifically, it was noted that feedback on meter readings received on a daily basis tends to be more valuable than if that same information is provided on a monthly basis. The author states that increasing the frequency of this information provides the household with the effects of their change in behavior soon after. Consumer preferences are also understood to play a role in what type of investment a homeowner might make toward energy efficiency. The author noted that storm windows are usually preferred over insulation, despite the fact that insulation would result in more savings. Group membership was cited as being important and as a reason why consumers are likely to follow their friends' advice or behaviors.

The author also cites the importance of simplification. He notes that consumers tend to favor programs that offer a single location for information, incentives, and contractor services over those that leave those functions separate.

"*What We Don't Know Can Cost Us: Survey Reveals Homeowners Want to Save Energy This Summer, But Don't Know How*"
Lowes Home Improvement Warehouse

The Lowe's survey showed that while most Americans are interested in saving energy to help the environment and save money, most of them do not understand what actions they need to take. A significant amount of energy usage in the home is attributable to appliances. Over half of the survey respondents stated that energy efficiency is important when purchasing a home appliance. Yet, only twenty percent said that their current appliances are energy efficient. Perhaps more troubling was the fact that it is older Americans that

seem to be most concerned about saving energy, but they are the least likely to own Energy Star or other energy efficient appliances.

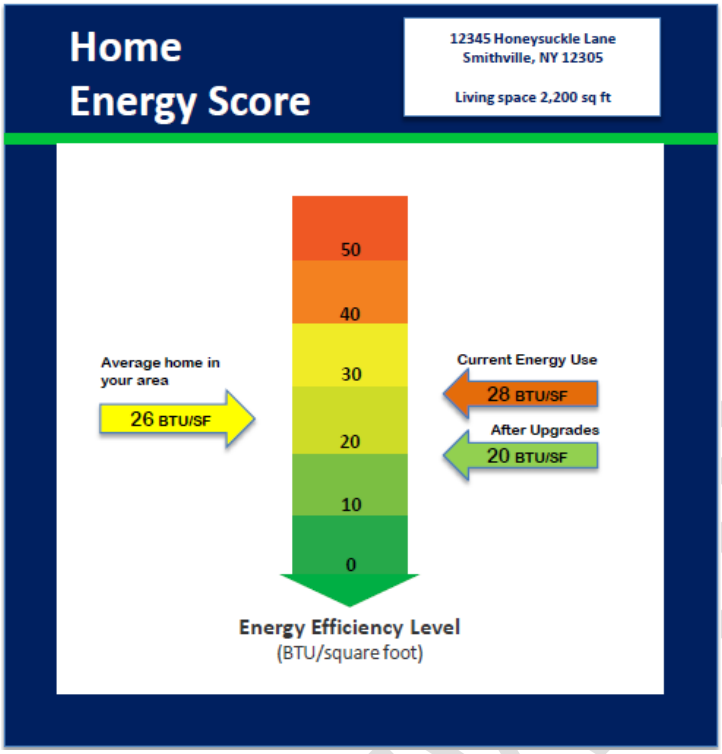
People were also much more likely to select 'turn down air-conditioning' or 'turn-off lights' as a means to reduce energy consumption during the summer months rather than make use of energy efficient appliances. One other interesting bit of data from the survey is that homeowners in the West, Midwest, South, and East do not show any real differences in how they view energy efficiency. Each of the four geographic areas showed approximately the same percentage of respondents viewing energy efficiency as 'very important.'

The literature and resource list above is meant to identify major examples of topics and findings in research on consumer attitudes toward saving energy.

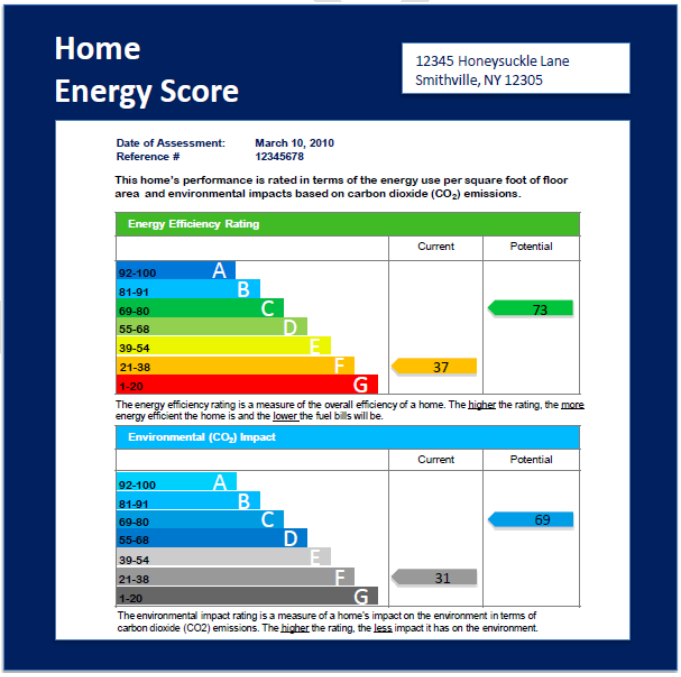
Appendix D: Labels Used in Focus Groups

LOCATION: ALBANY

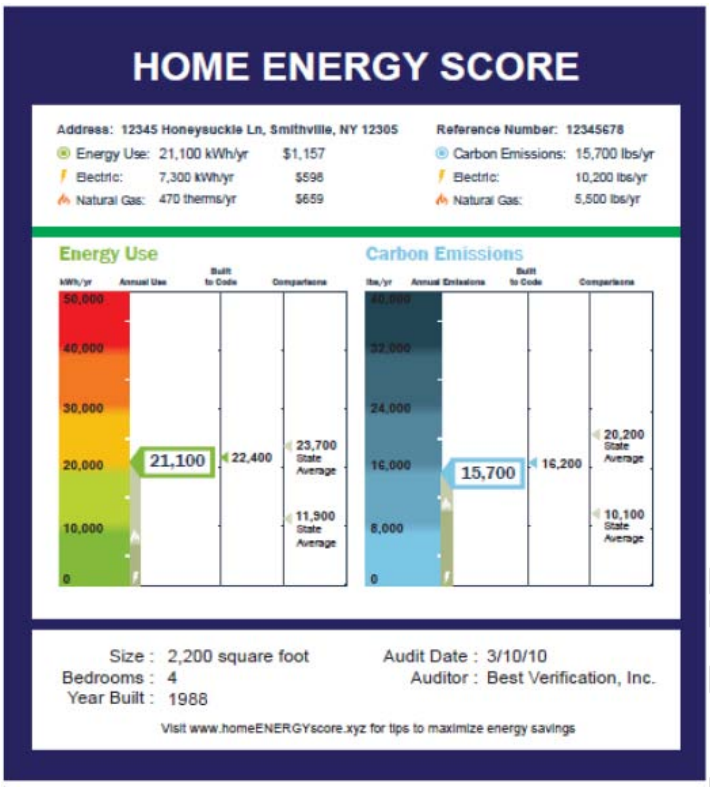
BTU



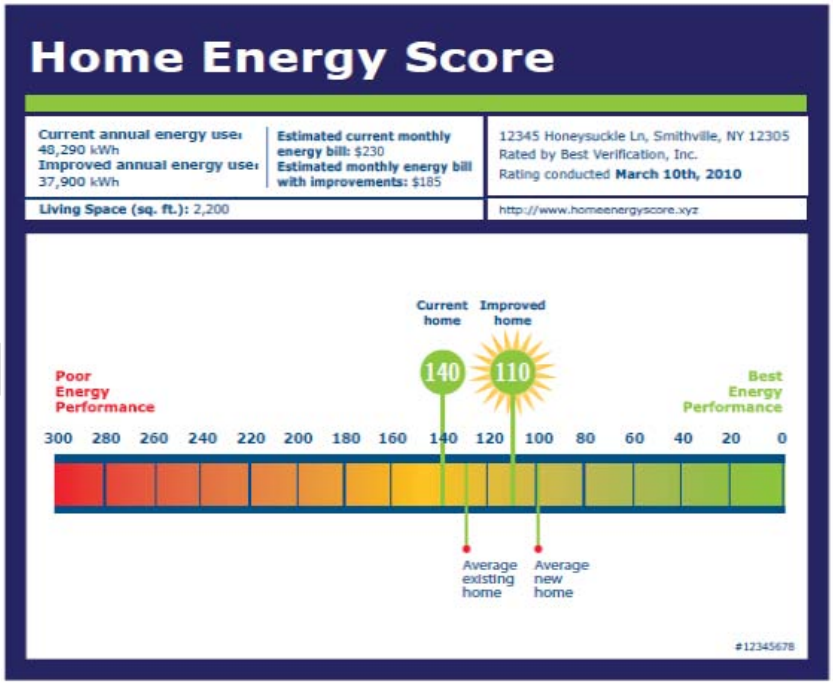
GRADES



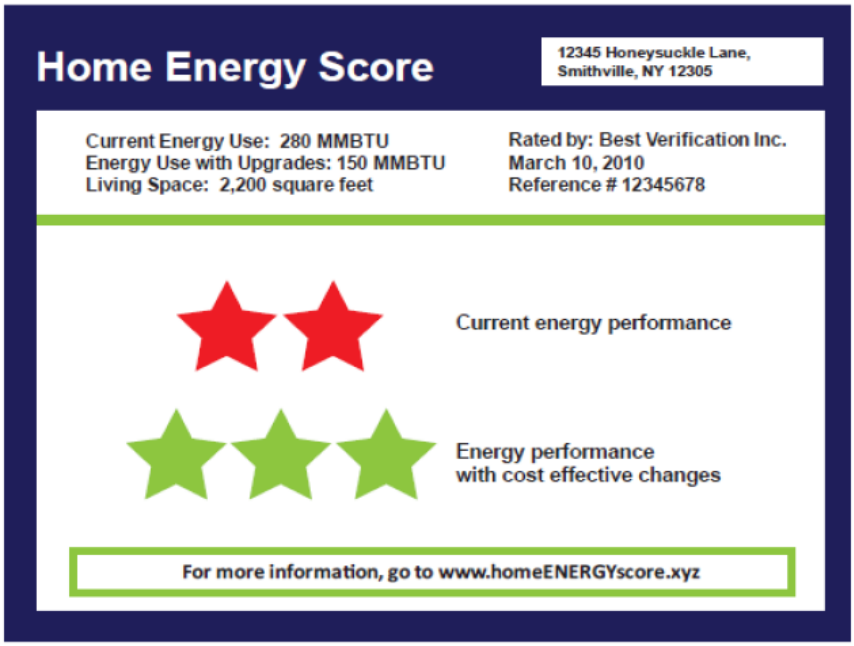
KWH



SCALE

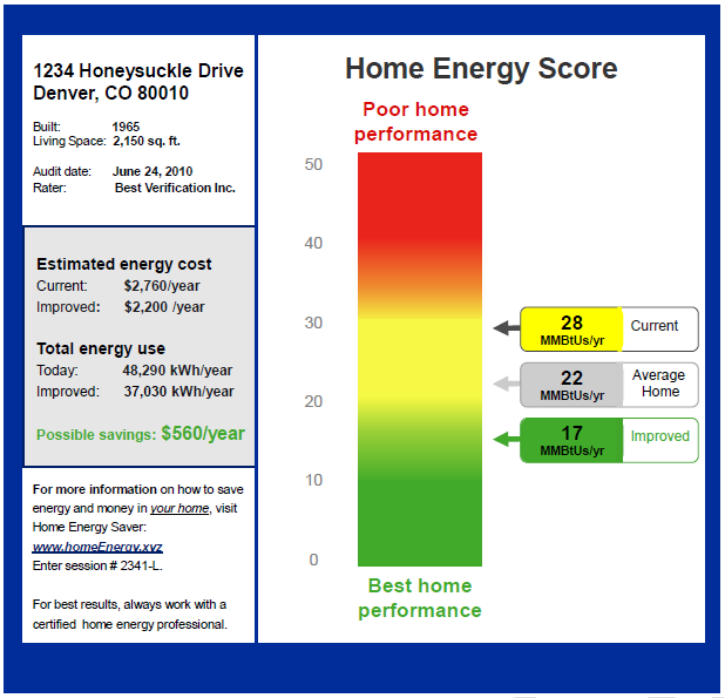


STARS

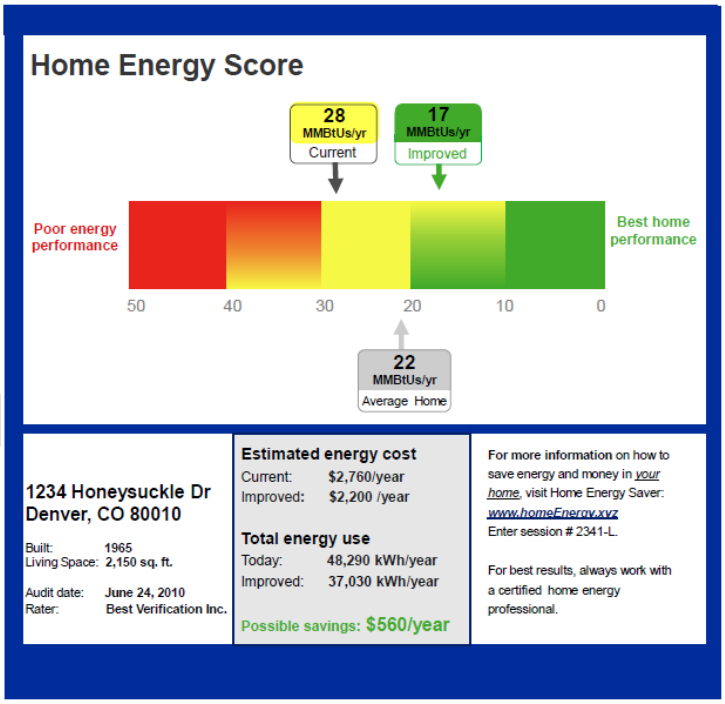


LOCATION: DENVER, CO

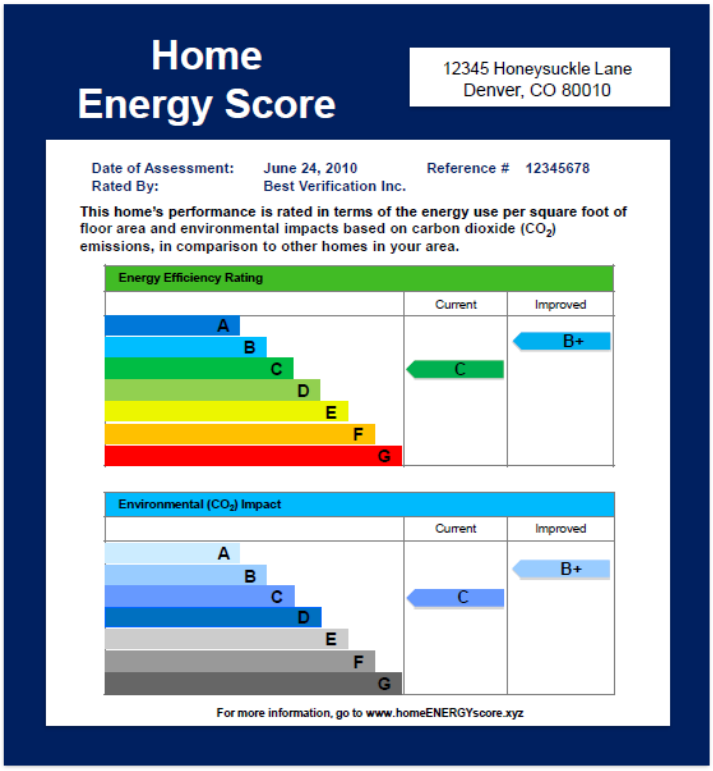
BTU-V



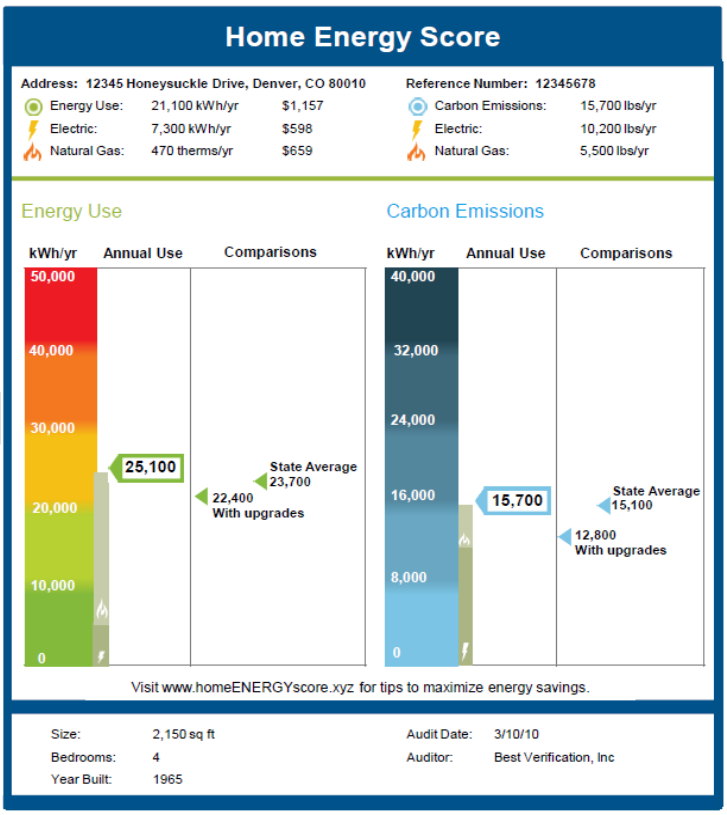
BTU-H



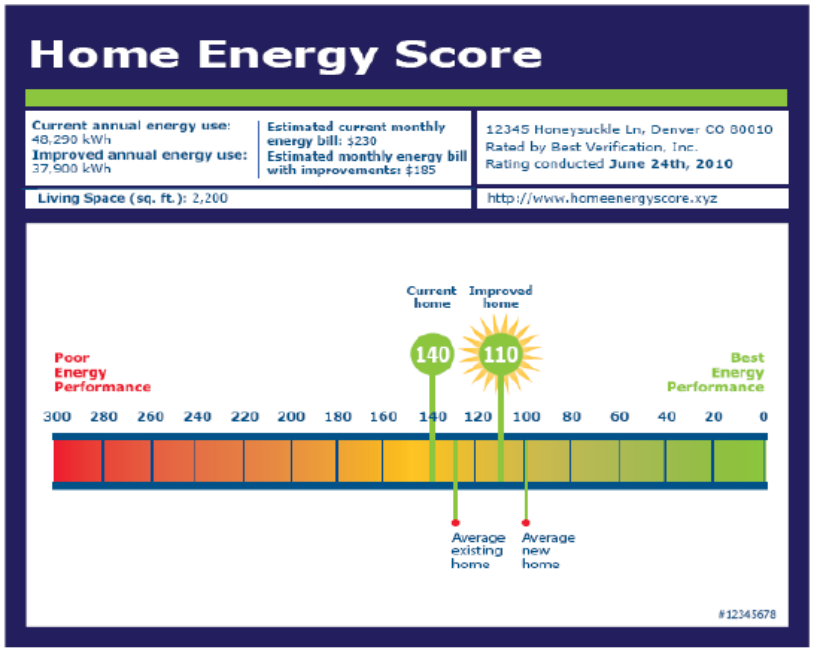
GRADES



KWH



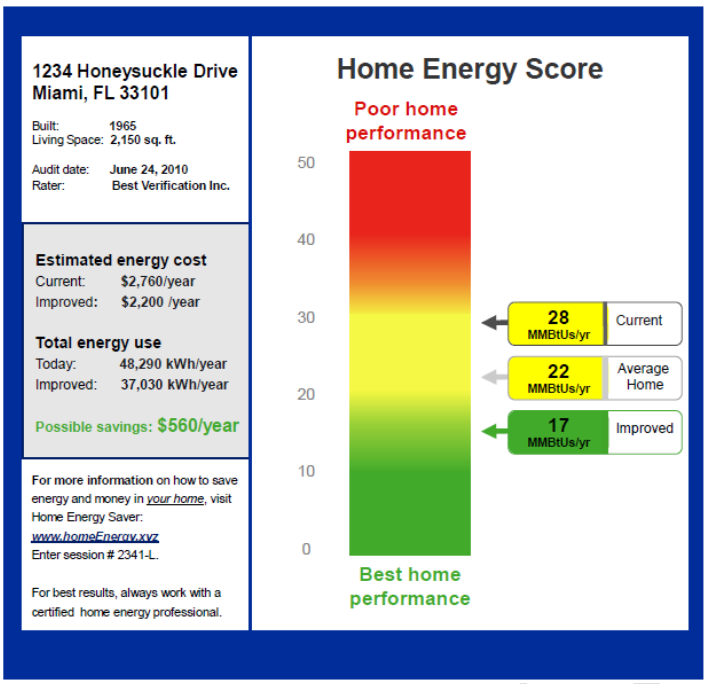
SCALE



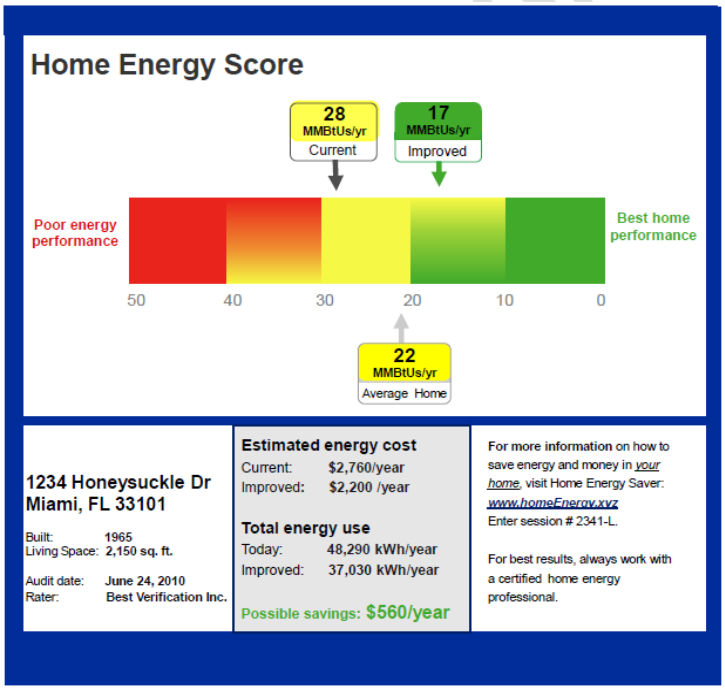
STARS

LOCATION: FT LAUDERDALE, FL

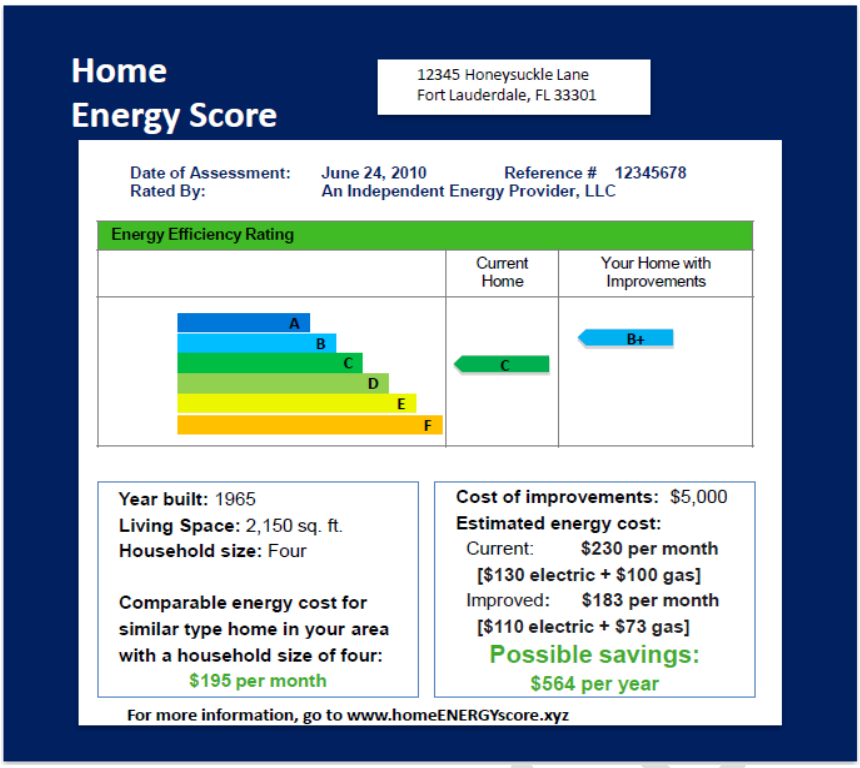
BTU-V



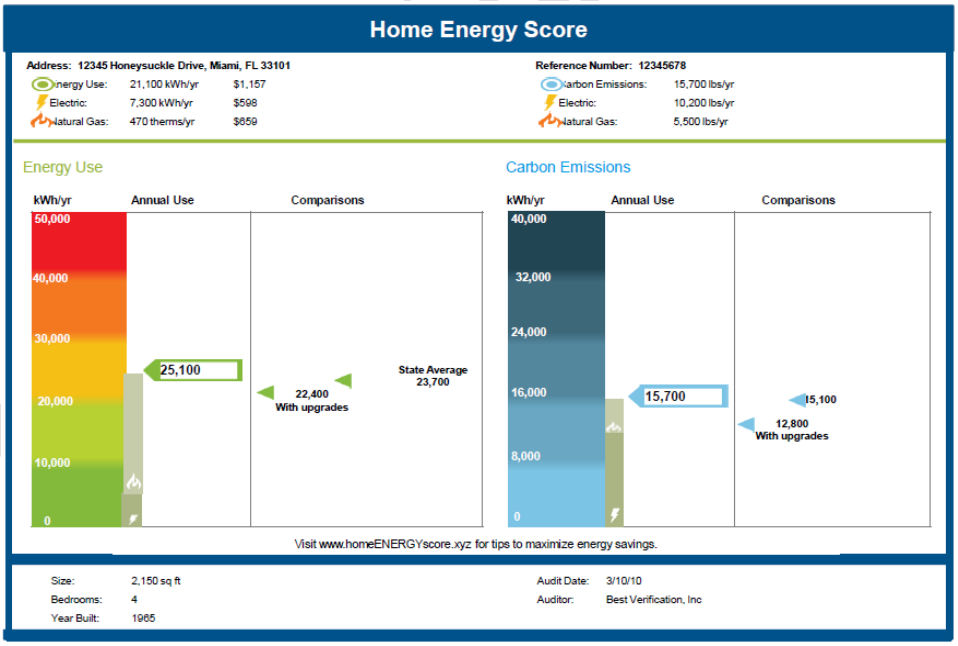
BTU-H



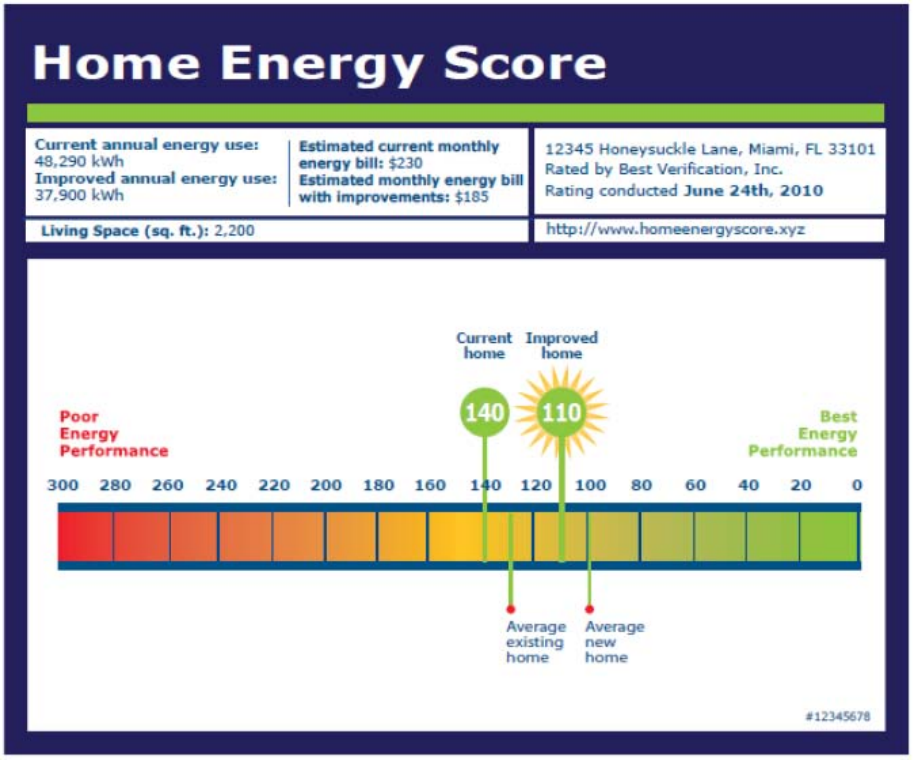
GRADES


Home
Energy Score
12345 Honeysuckle Lane
Fort Lauderdale, FL 33301
Date of Assessment: June 24, 2010 Reference # 12345678
Rated By: An Independent Energy Provider, LLC
Energy Efficiency Rating
Current Home
Your Home with Improvements
A
B
C
D
E
F
C
B+
Year built: 1965
Living Space: 2,150 sq. ft.
Household size: Four
Comparable energy cost for similar type home in your area with a household size of four:
$195 per month
Cost of improvements: $5,000
Estimated energy cost:
Current: $230 per month
[$130 electric + $100 gas]
Improved: $183 per month
[$110 electric + $73 gas]
Possible savings:
$564 per year
For more information, go to www.homeENERGYscore.xyz

KWH


Home Energy Score
Address: 12345 Honeysuckle Drive, Miami, FL 33101
Energy Use: 21,100 kWh/yr $1,157
Electric: 7,300 kWh/yr $598
Natural Gas: 470 therms/yr $859
Reference Number: 12345678
Carbon Emissions: 15,700 lbs/yr
Electric: 10,200 lbs/yr
Natural Gas: 5,500 lbs/yr
Energy Use
kWh/yr
Annual Use
Comparisons
50,000
40,000
30,000
20,000
10,000
0
25,100
22,400
With upgrades
State Average
23,700
Carbon Emissions
kWh/yr
Annual Use
Comparisons
40,000
32,000
24,000
16,000
8,000
0
15,700
15,100
12,800
With upgrades
Visit www.homeENERGYscore.xyz for tips to maximize energy savings.
Size: 2,150 sq ft
Bedrooms: 4
Year Built: 1965
Audit Date: 3/10/10
Auditor: Best Verification, Inc

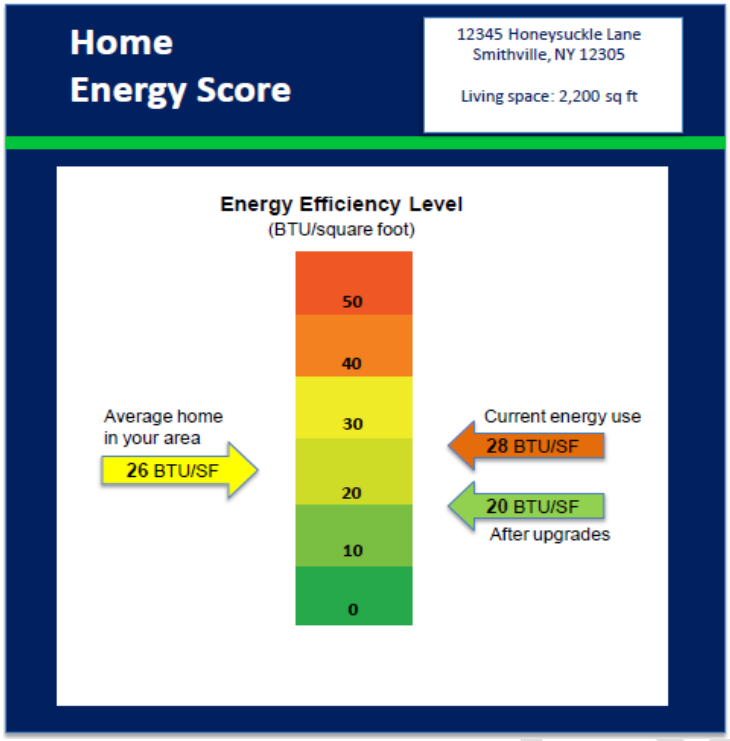
SCALE



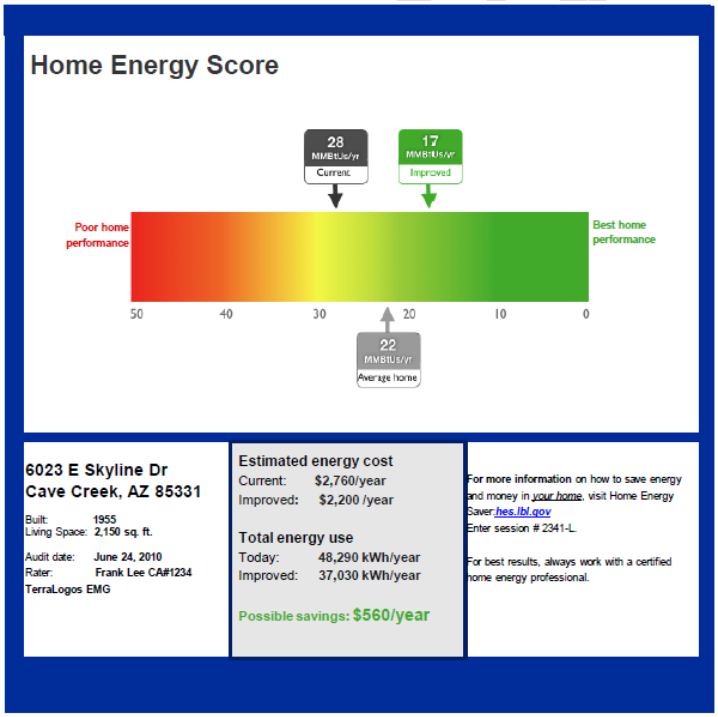
STARS

LOCATION: PHOENIX, AZ

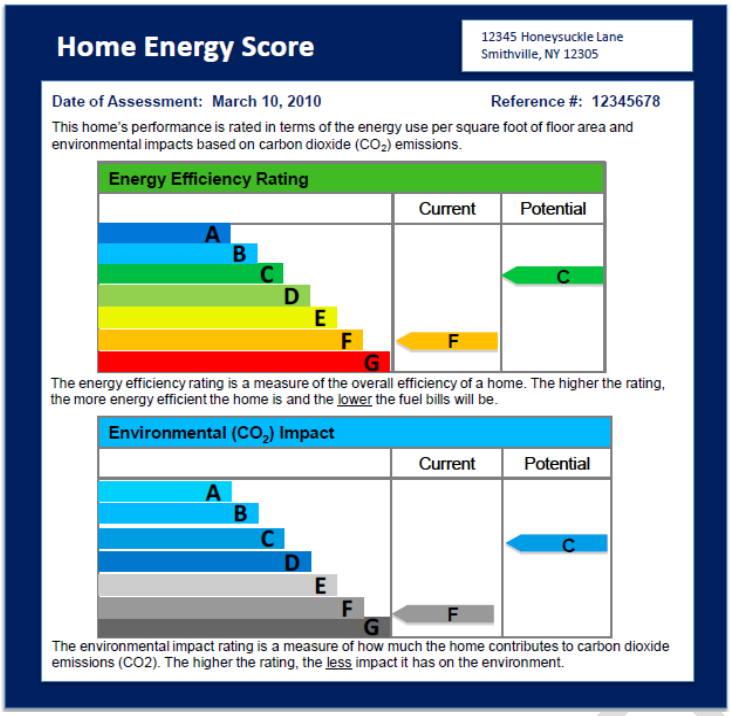
BTU-V



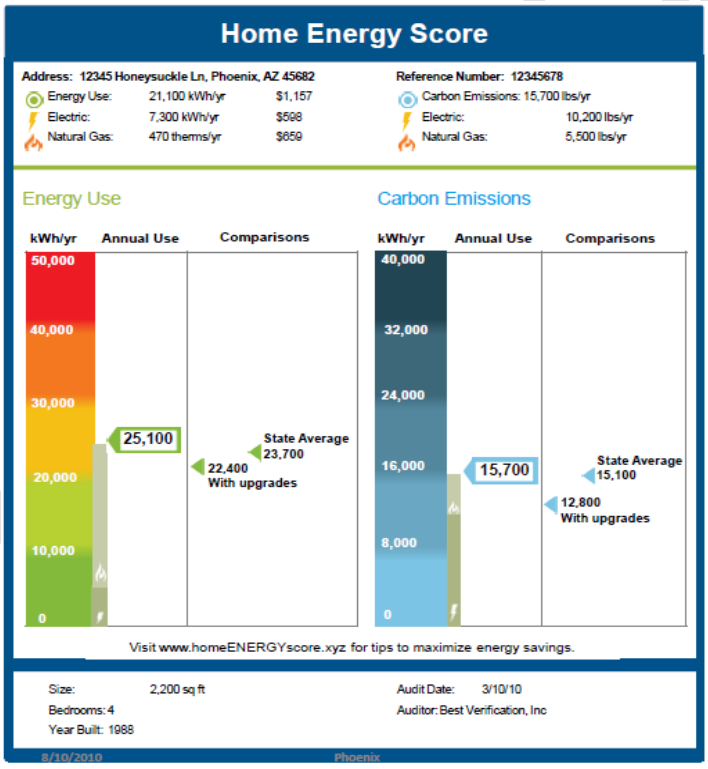
BTU-H



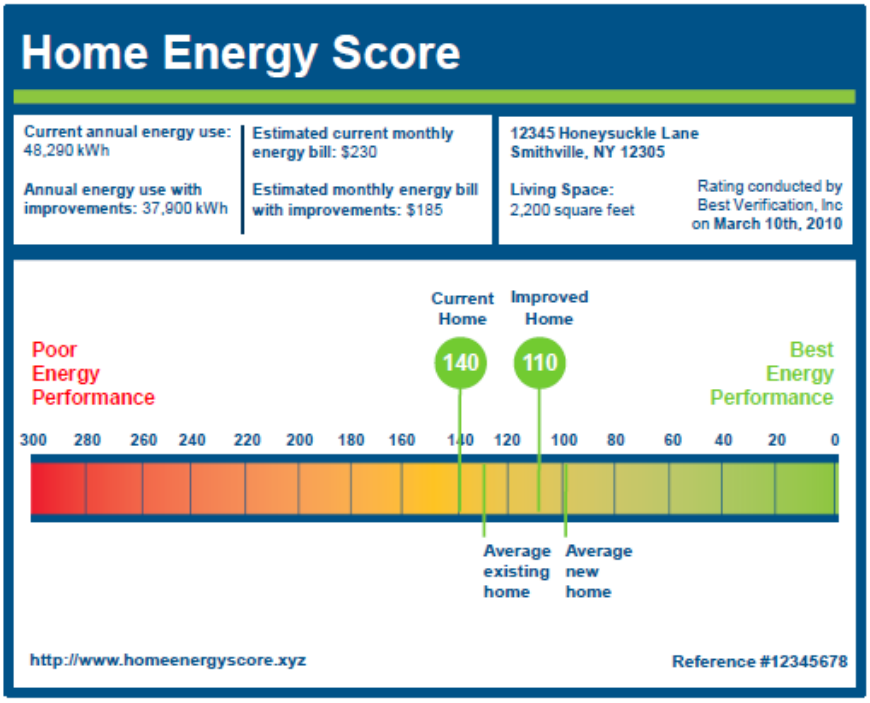
GRADES



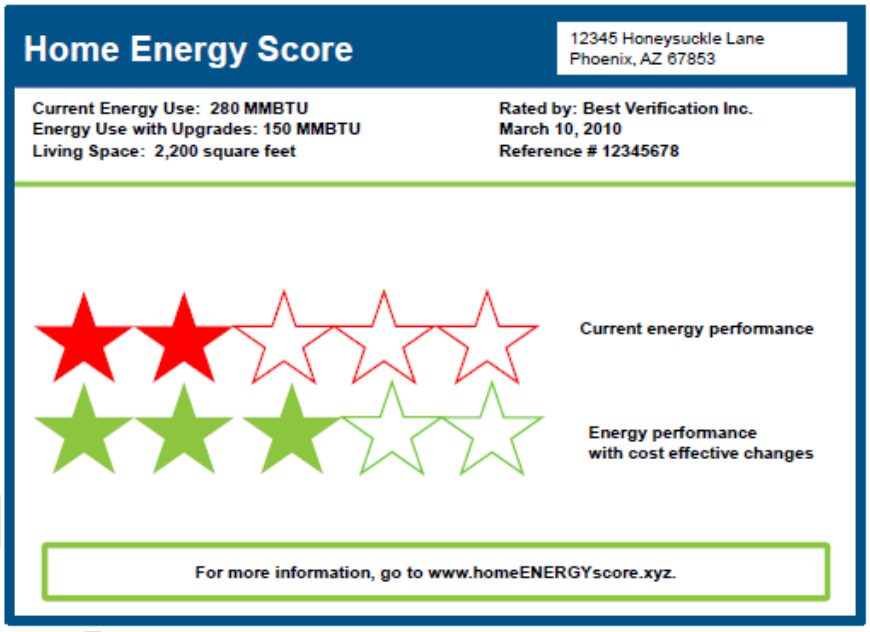
KWH



SCALE

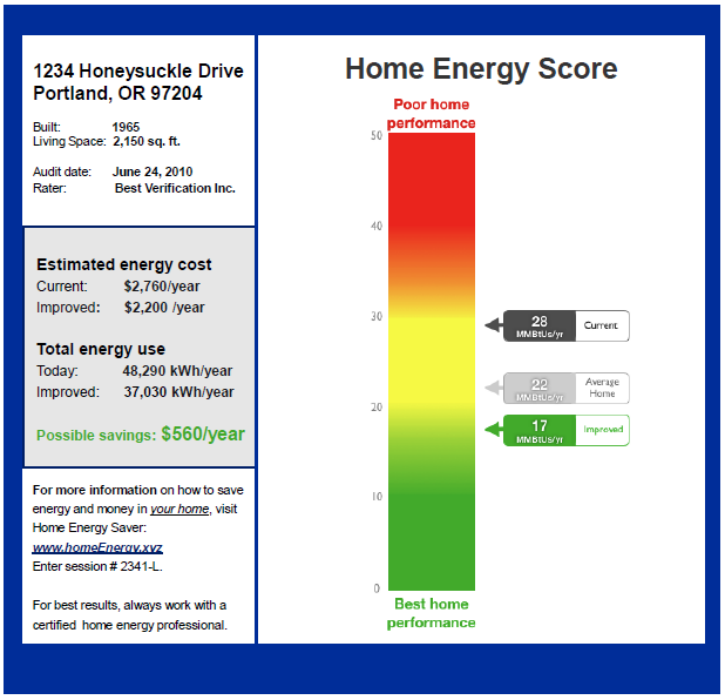


STARS

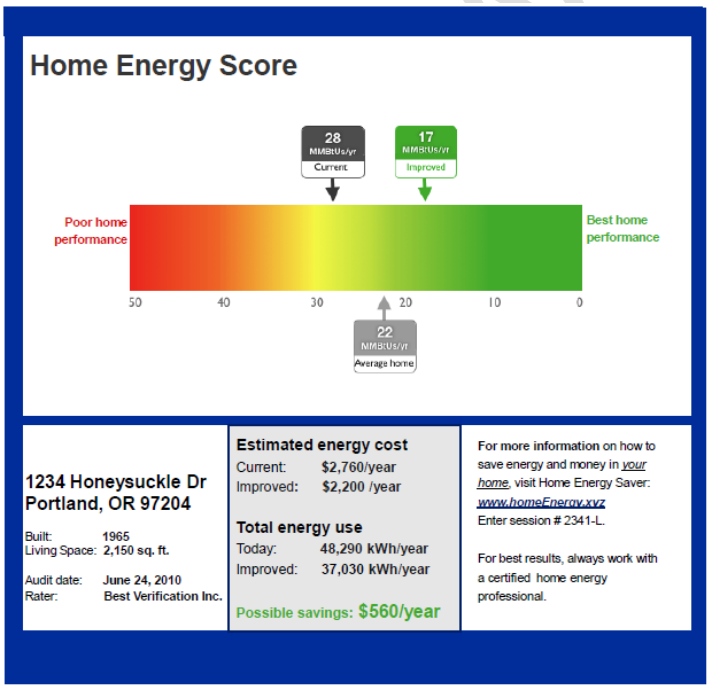


LOCATION: PORTLAND, OR

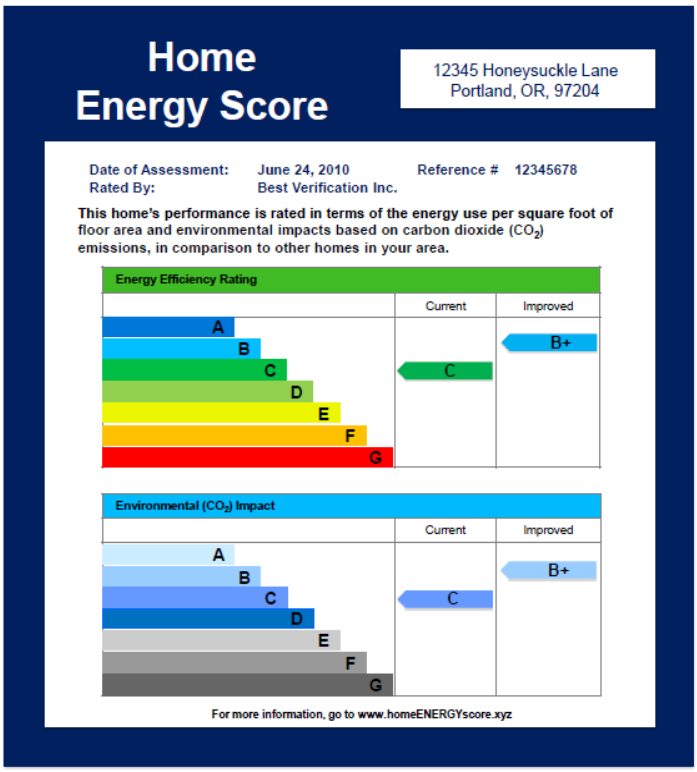
BTU-V



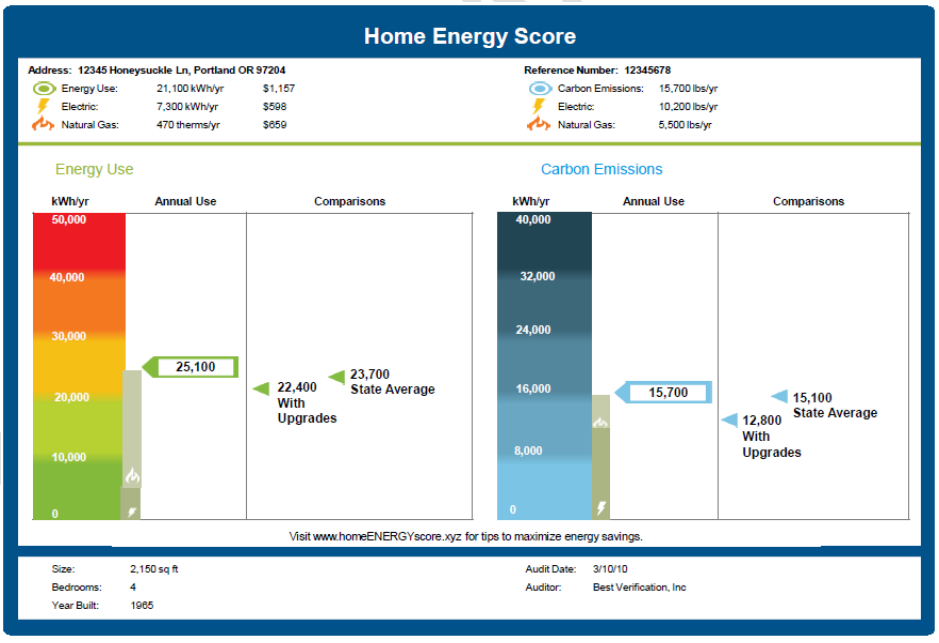
BTU-H



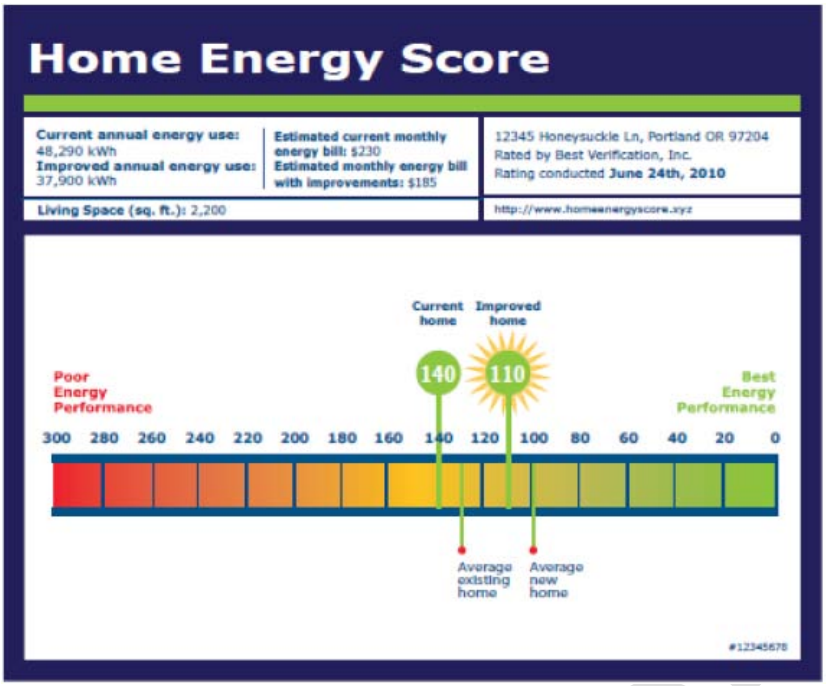
GRADES


Home
Energy Score
12345 Honeysuckle Lane
Portland, OR, 97204
Date of Assessment: June 24, 2010
Reference # 12345678
Rated By: Best Verification Inc.
This home's performance is rated in terms of the energy use per square foot of floor area and environmental impacts based on carbon dioxide (CO_2) emissions, in comparison to other homes in your area.
Energy Efficiency Rating
Current
Improved
A
B
C
D
E
F
G
C
B+
Environmental (CO_2) Impact
Current
Improved
A
B
C
D
E
F
G
C
B+
For more information, go to www.homeENERGYscore.xyz

KWH


Home Energy Score
Address: 12345 Honeysuckle Ln, Portland OR 97204
Energy Use: 21,100 kWh/yr $1,157
Electric: 7,300 kWh/yr $598
Natural Gas: 470 therms/yr $659
Reference Number: 12345678
Carbon Emissions: 15,700 lbs/yr
Electric: 10,200 lbs/yr
Natural Gas: 5,500 lbs/yr
Energy Use
kWh/yr
Annual Use
Comparisons
50,000
40,000
30,000
20,000
10,000
0
25,100
22,400 With Upgrades
23,700 State Average
Carbon Emissions
kWh/yr
Annual Use
Comparisons
40,000
32,000
24,000
16,000
8,000
0
15,700
12,800 With Upgrades
15,100 State Average
Visit www.homeENERGYscore.xyz for tips to maximize energy savings.
Size: 2,150 sq ft
Bedrooms: 4
Year Built: 1965
Audit Date: 3/10/10
Auditor: Best Verification, Inc

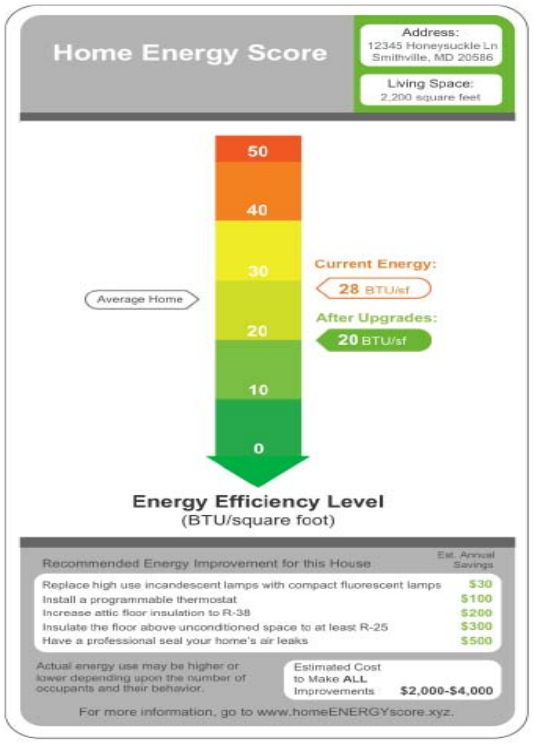
SCALE



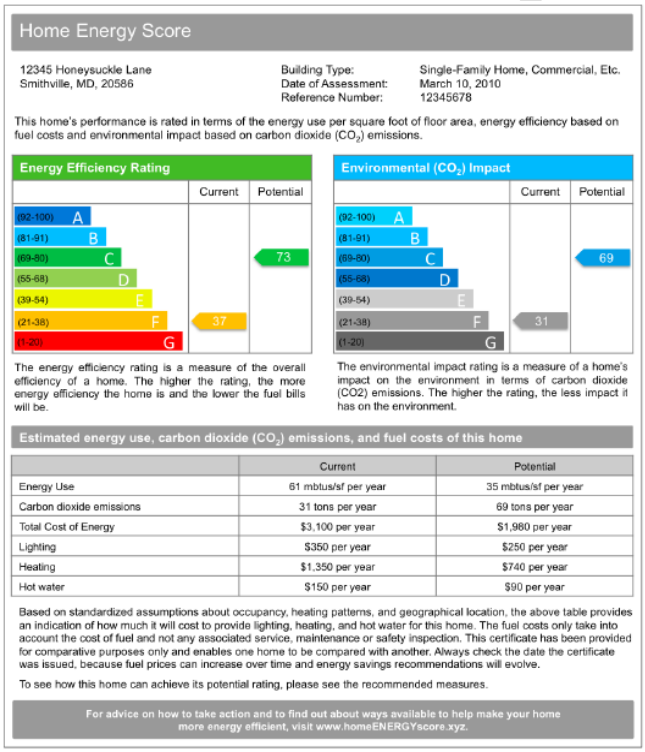
STARS

LOCATION: ROCKVILLE, MD

BTU

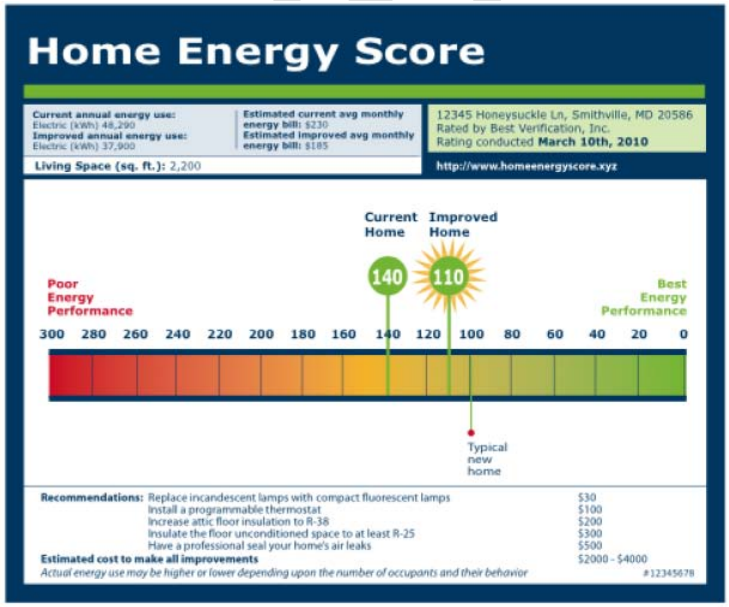


GRADES



KWH

SCALE



STARS

Home Energy Score

12345 Honeysuckle Lane, Smithville, MD 20586

Current Energy use: 280 MMBTU Energy Use with improvements: 150 MMBTU Living Space: 2,200 square feet	Rated by: Best Verification Inc. March 10, 2010 Reference # 12345678

Your home is a **2-star** home out of a possible 5 stars, but could become a **3-star** home by making the following recommended energy improvements:

	Est. Annual Savings
Replace incandescent lamps with compact fluorescent lamps	$30
Install a programmable thermostat	$100
Increase attic floor insulation to R-38	$200
Insulate the floor above unconditioned space to at least R-25	$300
Have a professional seal your home's air leaks	$500
Estimated Cost to Make ALL Improvements *Actual energy use may be higher or lower depending upon the number of occupants and their behavior.*	$2,000-$4,000

For more information, go to www.homeENERGYscore.xyz