

Overview of Energy Performance Score (EPS)



| DoubleTree Berkeley Marina 200 Marina Blvd. |
Berkeley, CA 94710
| February 23rd, 2011 |

Sean Penrith, Executive Director

Earth Advantage Institute
Portland, Oregon

Topics covered



“MPG” label for label for new & existing homes

- Should homes be labeled?
- What should a label display?
- How to inform stakeholders to easily understand the impact of green building and home improvements on energy consumption
- Can home labeling progress influence homeowners & builders to make energy efficiency improvements?
- Oregon & Washington labeling pilot outcomes, recommendations, and national progress

EAI: Areas of Expertise

- ▶ Consulting
- ▶ Certification Programs
- ▶ Technical services
- ▶ Program development, licensing, & management
- ▶ Education and training
- ▶ Quality Control & oversight



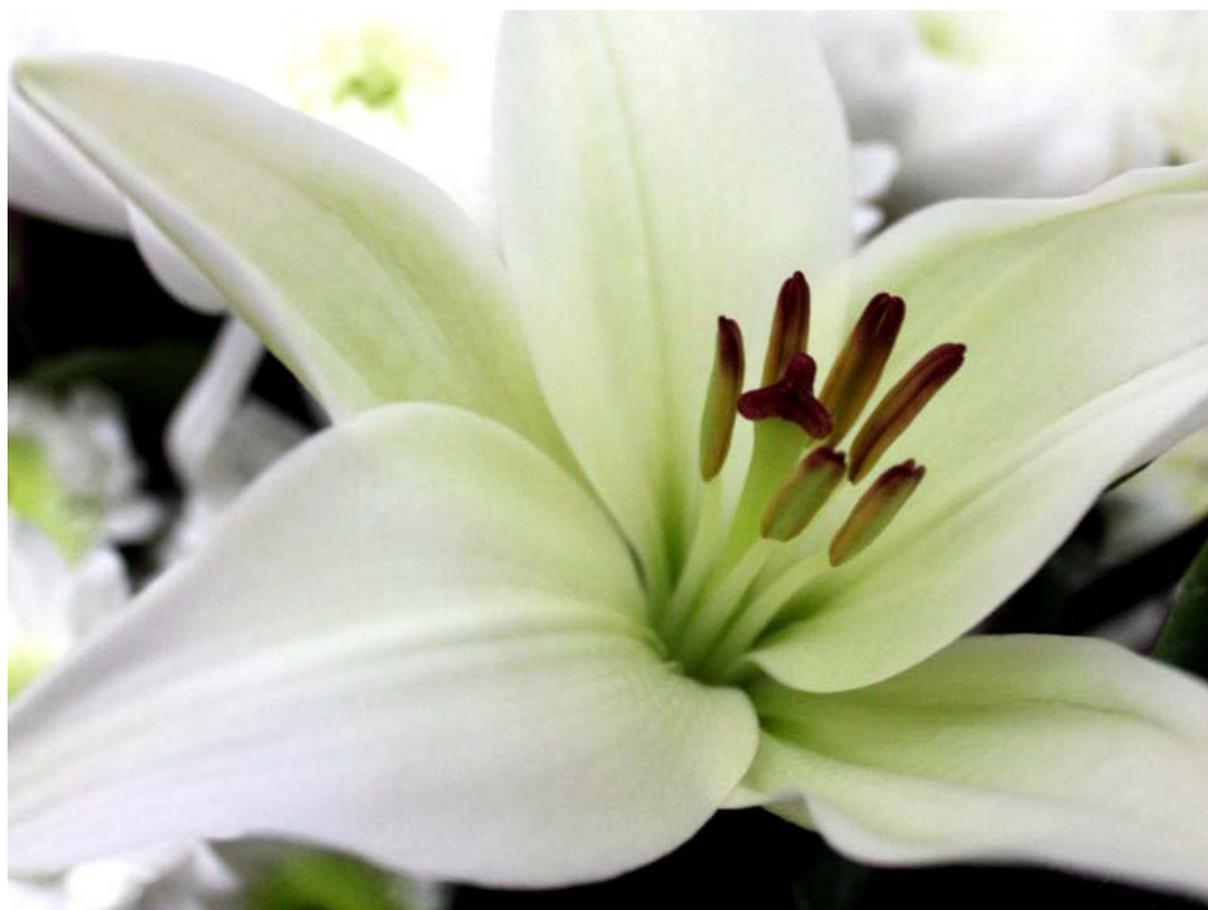


Recovery Act



Investments made in EE & RE to:

- ▶ Save consumers \$
- ▶ Reduce energy costs & consumption
- ▶ Reduce environmental impacts





Barriers to Residential Uptake



- Confusion over necessary versus unnecessary measures
- Affordability
- Lack of metric to assure payback

Oregon pilot:

- Simplicity
- Trust
- Accountability



WANTED!



- A simple market mechanism that incentivizes multiple sectors
- A foundation for an energy efficiency infrastructure
- A delivery system that makes energy upgrades a no-brainer

Labels guide behavior; drives market



U.S. Government Federal law prohibits removal of the label before consumer purchase.

ENERGYGUIDE

Refrigerator-Freezer
 • Automatic Defrost
 • Side-Mounted Freezer
 • Through-the-Door Ice

XYZ Corporation
 Model ABC-L
 Capacity: 23 Cubic Feet

Estimated Yearly Operating Cost

\$67

Cost Range of Similar Models: 57 to 74

630 kWh
 Estimated Yearly Electricity Use

Your cost will depend on your utility rates and use.

- Cost range based only on models of similar capacity with automatic defrost, side-mounted freezer, and through-the-door ice.
- Estimated operating cost based on a 2007 national average electricity cost of 10.65 cents per kWh.
- For more information, visit www.ftc.gov/appliances.

- Guide performance
- Promote improvements
- Allow comparison

Compare this vehicle to others in the **FREE FUEL ECONOMY GUIDE** available at the dealer.

CITY MPG

23

Actual Mileage will vary with options, driving conditions, driving habits and vehicle's condition. Results reported to EPA indicate that the majority of vehicles with these estimates will achieve between 19 and 27 mpg in the city and between 26 and 35 mpg on the highway.

Fuel Economy Information

1993 CANARY 2.0 LITER
 L4 ENGINE FUEL INJECTED
 AUTO 3 SPD TRANS CATALYST
 FEEDBACK FUEL SYSTEM

Estimated Annual Fuel Cost:
\$850

HIGHWAY MPG

30

For Comparison Shopping, all vehicles classified as **COMPACT** have been issued mileage ratings ranging from 1 to 31 mpg city and 16 to 41 mpg highway.

TransUnion

840
750
650 ← You are here (640)
450
310

Experian

840
750
650 ← You are here (635)
450
310

Equifax

840
750
650 ← You are here (618)
450
310

[Click Here To Get Score!](#)

Labels: reflect whole house energy



- ▶ Asset
- ▶ Operational



Residential audits: consumer challenge

STEP-BY-STEP ENERGY AUDIT GUIDE

- 1) Health and Safety Check
 - Testing for Carbon Monoxide, Gas Leaks and Chimney Draft on all Combustion Appliances in order to insure good indoor air quality.
- 2) Furnace/Boiler Monitoring
 - Measuring the efficiency and performance of heating/boiler system and domestic hot water by measuring flue gases.
- 3) Blower Door Testing
 - Testing the convective losses (leakiness) of the home by depressurizing the home to -50 pascals using a Minneapolis Blower Door.
- 4) Infrared Camera Inspection
 - Complete inspection of the entire thermal boundary with the use of infrared thermal imaging to assess insulation levels.
- 5) Electrical Load Quantification
 - Inventorying of electrical load and direct quantification of major appliances using Kill-a-Watt meter to determine average approximate yearly usage.
- 6) Utility Bill Analysis
 - Examination of past and present utility bills in order to determine usage patterns and to target most effective energy improvement measures using

Rebate amounts depend on whether MichCon is your primary heating supplier and whether you also have Detroit Edison-powered central air conditioning.

What type of Utility Service do You Have?	Heat: Not MichCon Electric: Detroit Edison with Central Air Conditioning		Heat: Detroit Edison all Electric Heat		Heat: MichCon Electric: Detroit Edison on Central Air		Heat: MichCon Electric: not Detroit Edison		Heat: MichCon Electric: Detroit Edison with Central Air Conditioning	
	After Survey/ Audit Max.	No Survey/ Audit Max.	After Survey/ Audit Max.	After Survey/ Audit Max.	After Survey/ Audit Max.	After Survey/ Audit Max.	After Survey/ Audit Max.	After Survey/ Audit Max.	After Survey/ Audit Max.	No Survey/ Audit Max.
Air Sealing 4	\$50	\$25	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
Basement Wall Insulation	\$50	\$25	\$220	\$220	\$220	\$220	\$220	\$220	\$220	\$220
Floor or Band-Joist Insulation 3	\$25	-	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
Above Grade Wall Insulation	\$100	\$50	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
Ceiling or Attic Insulation 4	\$100	\$50	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Duct Seal AND Insulation 7	\$75	\$35	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
Window Replacement 8	\$250	\$125	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500

ecoENERGY Retrofit - Homes

Energy Efficiency Evaluation Report
House file number: 2470D00126

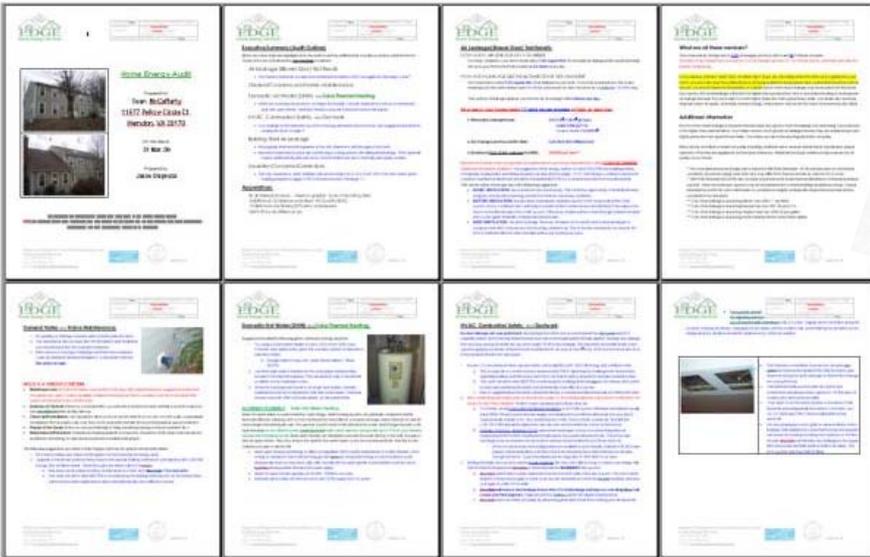
EnerGuide rating

37 (current rating) 69 (target rating)

(0-20) (21-49) (50-79) (80-100)

least efficient/la moins efficace most efficient/la plus efficace

- Your house currently rates 37.
- If you implement all of the recommendations, you could reduce your house's energy consumption by up to 58% and increase its energy efficiency rating to 69.
- The average energy efficiency rating for a house of this age in Canada is 57.
- By achieving 69, your home would rate in the top 10% of this group of houses.



- The goal of the audit & report is to spur consumer upgrade action
- Non-standard forms make this challenging for the homeowner



“MPG” for new & existing homes



Energy Performance Score (EPS)



Asset rating: The needed “MPG” for homes

- Absolute site energy consumption per annum
- Associated carbon emissions per annum



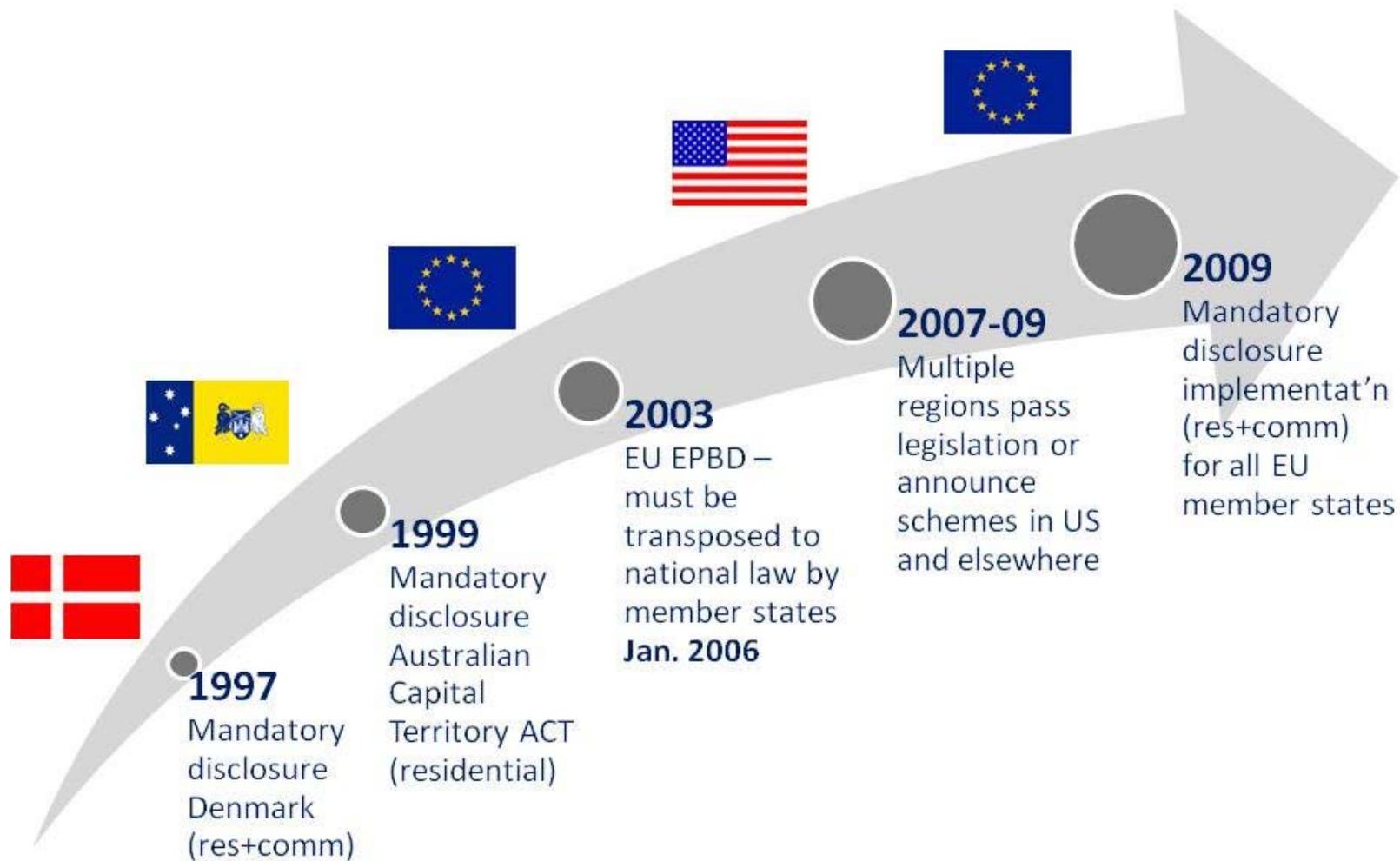
Desirable outcomes of any “MPG” label



- Apply to any new & any existing home
- Timeless
- Allow meaningful comparison
- Spur consumer action
- Allow common terminology in an energy discussion
- Increase demand for contractor & builder services for high performance homes
- Work with any 3rd-party certified green/EE program + existing audit programs
- Reflect builder performance & eliminate green washing claims
- Stimulate preferred mortgage & insurance products
- Empower Realtors with sales proposition
- Link to MLS
- => Market mechanism for stakeholders



Building labeling history





International labeling efforts



- ▶ European Union Energy Performance of Buildings Directive (EPBD)
- ▶ Australia

Europe: Energy Performance Certificate



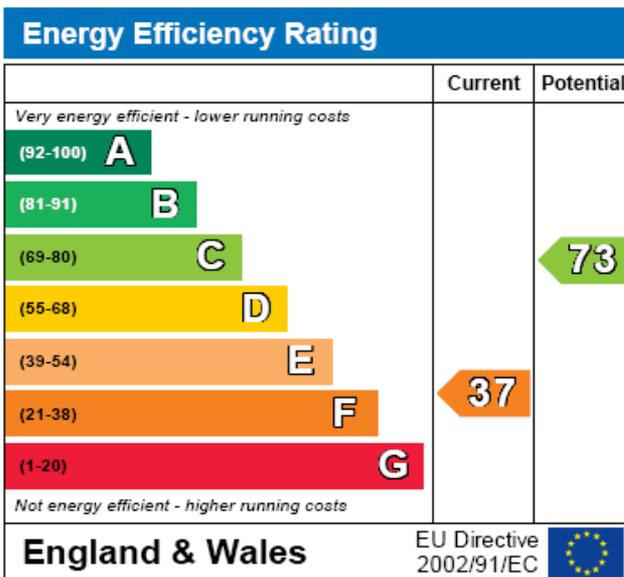
Energy Performance Certificate



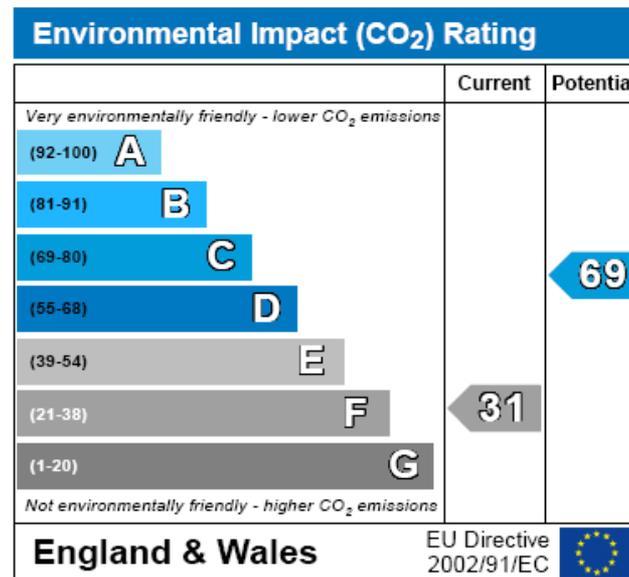
17 Any Street,
Any Town,
County,
YY3 5XX

Dwelling type: Detached house
Date of assessment: 02 February 2007
Date of certificate: [dd mmmm yyyy]
Reference number: 0000-0000-0000-0000-0000
Total floor area: 166 m²

This home's performance is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills will be.



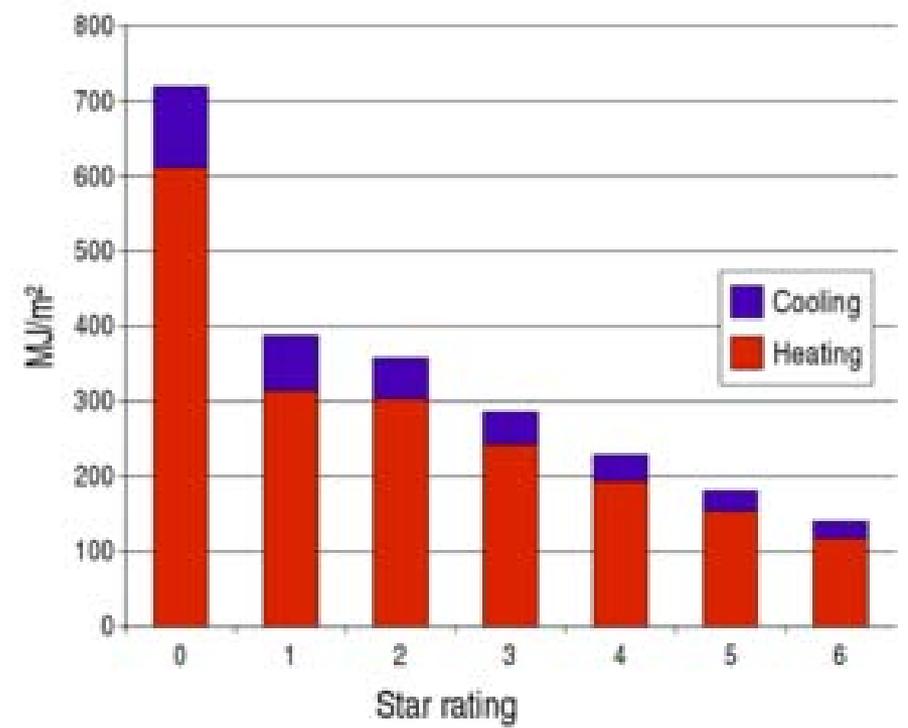
The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.



Australia: House Energy Rating Scheme



Annual energy usage for heating and cooling



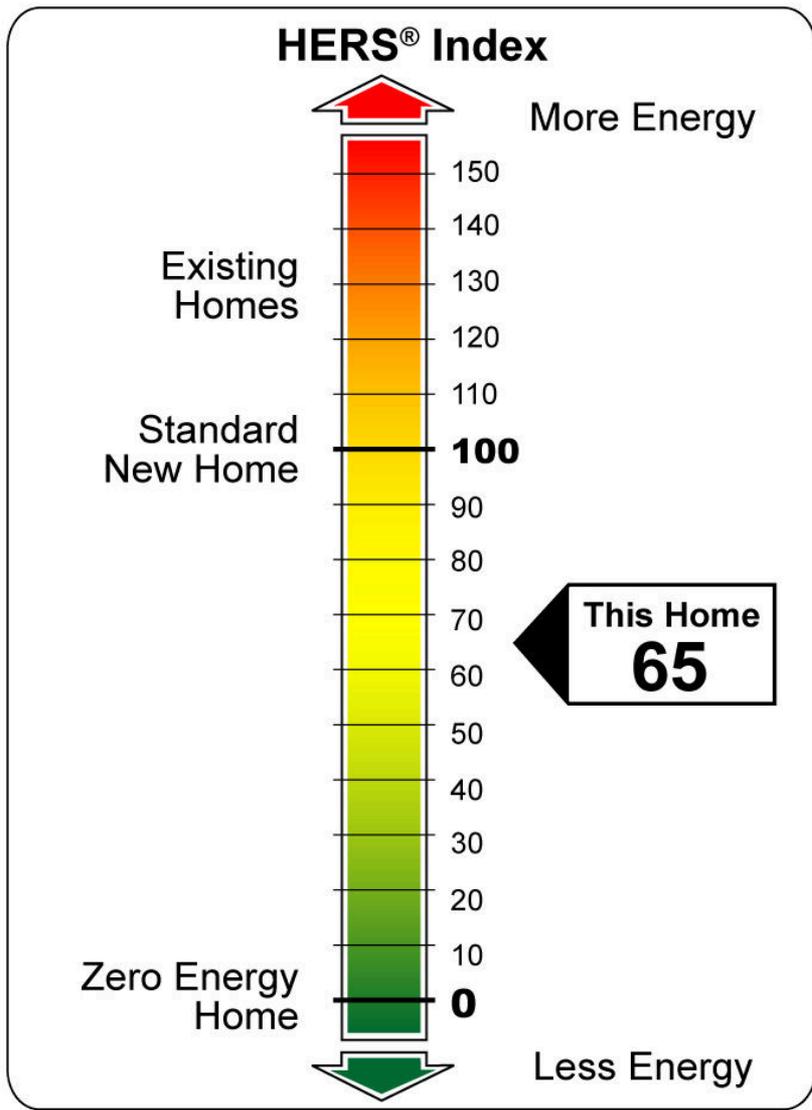


National labeling efforts



- ▶ HERS Index
- ▶ EnergySmart Home Scale
- ▶ Energy Performance Score (EPS)
- ▶ HES-Pro
- ▶ Home Energy Score (US DOE)

HERS index



- ▶ HERS index a recognized index of efficiency
- ▶ Used in EEM and EIM products
- ▶ Modeling tool used by RESNET raters



Index vs actual consumption

- ▶ HERS index on 100 – 0 scale indicates energy efficiency relative to HERS reference home built to code
- ▶ HERS index does not factor house size (energy per square foot)
- ▶ HERS index works well for new homes to calculate delta
- ▶ Non-comparable between homes
- ▶ Does not offer sense of magnitude of energy use

- ▶ Asset label should indicate absolute actual energy consumption
- ▶ Asset label should account for house size
- ▶ Asset label should address new and existing homes
- ▶ Asset label should allow home-to-home comparison
- ▶ Asset label could highlight carbon measure

Consumption vs Index



Both homes have a HERS score of 70



EPS Score of 62



EPS Score of 178

HESpro - LBNL



- ▶ Online
- ▶ Energy assessment based on all end uses
- ▶ Recommendations
- ▶ Estimates carbon footprint

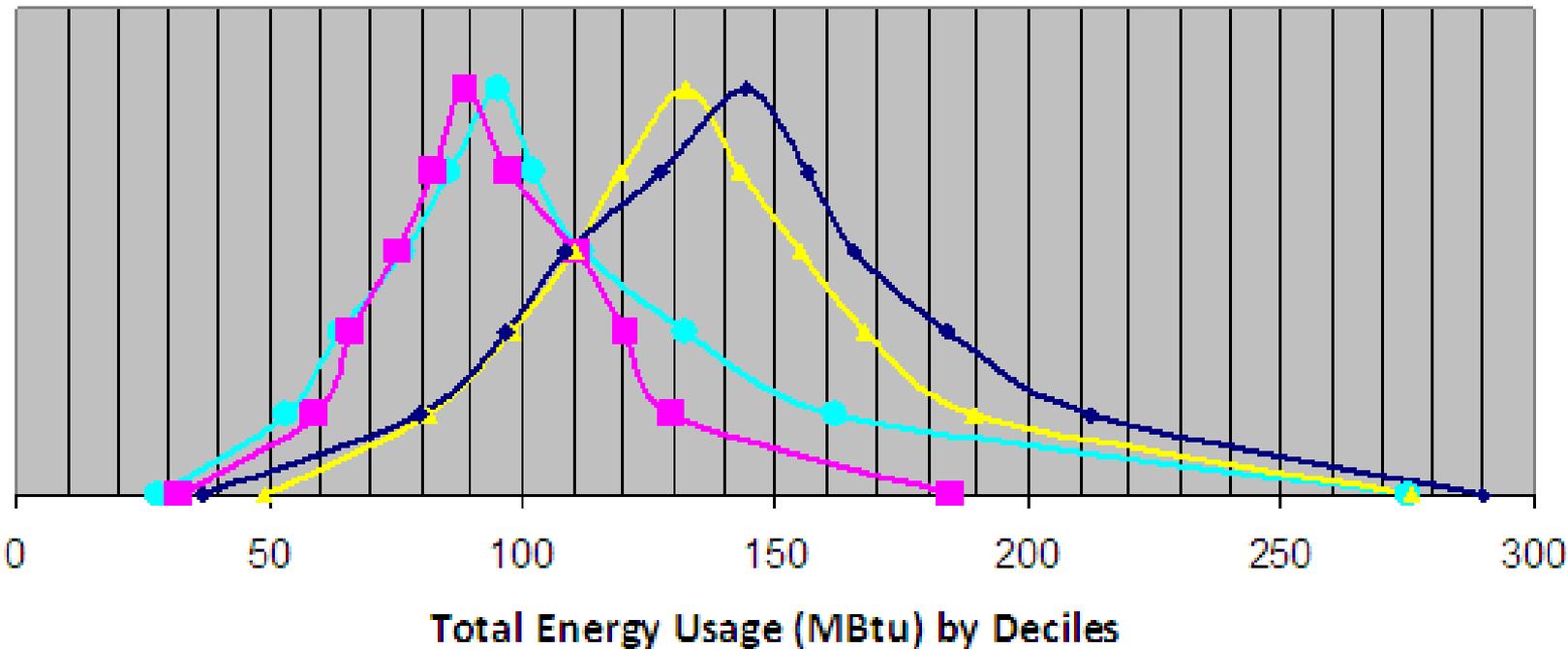


HOME ENERGY SAVER™ *pro*

Oregon EPS



- ▶ Energy Performance Score (EPS) existing 300 home pilot 2008
- ▶ EPS issued for New Homes 2010
- ▶ Positive builder (90%), Realtor (89%), and consumer (100%) feedback





Does a home label motivate?



The Earth Advantage EPS Pilot Program was very useful to us in targeting things that we could do to reduce the energy use for our home in Oregon. **We had already installed a high efficiency heat pump system, and we were planning on installing new energy-efficient windows, but the pilot program showed us that we could also save energy by increasing the amount of insulation in our attic, installing insulation in our crawl space (we had none), and doing air and duct sealing.** We did all those improvements and I have been tracking our energy use every month. **We have saved 33% overall in the last year**, and that greatly reduces our energy bill and carbon footprint. We are planning on adding a 5.3 Kwatt solar system to our roof this spring to reduce our electric consumption even more, and we are already on our local utility's "Clean Wind" program.

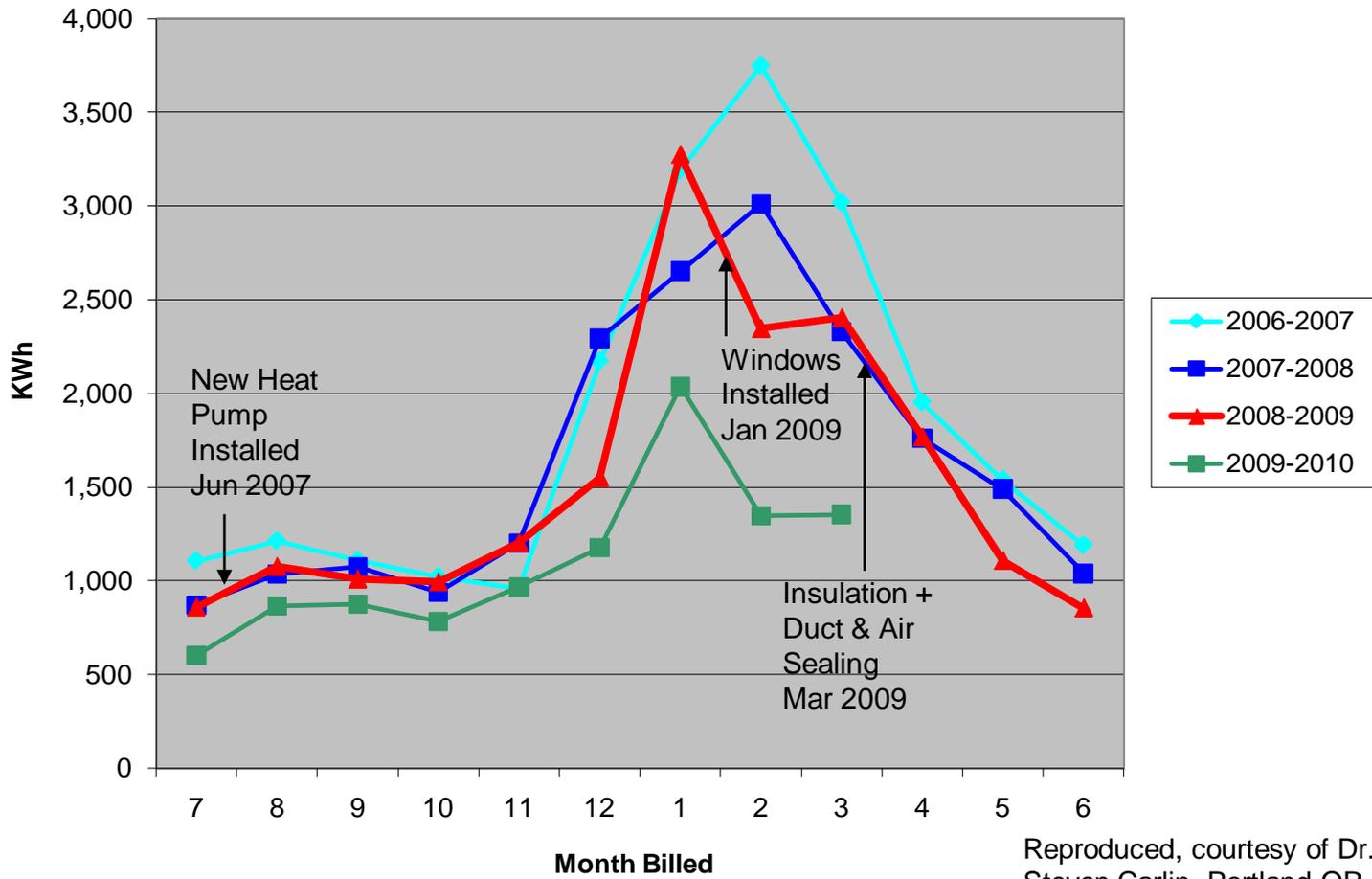
posted by Steven Carlin

Reproduced, courtesy of Dr.
Steven Carlin, Portland OR
homeowner

Consumption: results following EPS '08 audit



Carlin Residence Electric Use (KWh)



Reproduced, courtesy of Dr. Steven Carlin, Portland OR homeowner

EPS for New Homes in Oregon



Savings Beyond ENERGY STAR® with the: Energy Performance Score





Why Redesign?

- Residential energy code was changing in Oregon
- Increasing energy efficiency by 15%
- ENERGY STAR needed to change, keeping ahead of code
- Created an ENERGY STAR level that was highest in nation
- ENERGY STAR in the Northwest is a prescriptive path



Why Redesign?

- Builders were not sure of meeting the new ‘all or nothing’ prescriptive path
- Energy Trust did not want to loose builders the program had spent four years developing
- Crashing construction market meant builders were even more cost conscious



What Was Needed

- Design a new program with builders concerns first
- Allow builders to participate at a level that works for them
- Design a program that works with green building and energy efficiency programs



MPG Provides Benefits

- Base the program on a home's energy consumption vs. code
- Allow builders to build at their comfort level better than code
- Provide quantifiable and easy to understand numbers for home buyers



MPG Provides Benefits

- Educate consumers on energy use, cost and carbon
- Tie the homes “MPG” to Green and EE programs
- Allow the program to claim actual savings from the home



Introducing...



**ENERGY
PERFORMANCE
SCORE**



CARBON EMISSIONS

Measured in tons of carbon dioxide per year (Tons/yr).
One ton = 2,000 miles driven by one car (typical 21 mpg car).



car).

REPORT FOR: This is not an actual EPS

ISSUE DATE:
05-20-2010

**CONDITIONED FLOOR AREA
(SQUARE FEET):**
2,000

**ESTIMATED ANNUAL
ENERGY USAGE:**

Electric (kWh): 512
Natural gas (Therms): 491

IDENTIFICATION #:
123456

TYPE:
Single Family

**ESTIMATED AVERAGE
ANNUAL ENERGY COSTS*:**

\$598

monthly average: \$50

* Actual energy costs may vary.

REPORT I

ISSUE DA
05-20-2
CONDITIO
(SQUARE
2,000

2.9

**This Home's
Carbon Score**

← **2.7** This home with energy
from renewable sources



TONS/YR



Program Implementation

- The Energy Performance Score was rolled out to builders first
- Targeted home tours for builders to use EPS to help sell their efficient homes
- Free trainings to builders and realtors
- Articles in industry trades
- Builder testimonials



Program Implementation Cont.

- A marketing campaign was targeted at Realtors and Builder sales staff to promote EPS
- Targeted Homebuyers explaining “MPG for your home”
 - Becoming a “smarter homebuyer”
 - A way to comparison shop between homes based on efficiency and energy costs



First Year Initial Results

- Program market share has increased by 25% in a down market
- 81% of program builders are building ENERGY STAR equivalent or higher
- Average per home energy savings is 15% higher than ENERGY STAR deemed savings

New homes builder response



TUESDAY, OCTOBER 27, 2009

Miranda Homes Announces Free Energy Performance Evaluation

Home Builder will team with Earth Advantage to give home buyers tools for comparison.

Miranda Homes has teamed with Earth Advantage to put together a unique offer for home buyers. For a limited time, prospective home buyers can receive a free Energy Performance Evaluation of their current home for comparison against other homes they are considering.

Similar to the MPG sticker in the window of a new car, an Energy Performance Evaluation gives home shoppers a way to compare homes they are considering against each other. Earth Advantage evaluates energy efficiency and carbon output of a home by taking into consideration insulation, windows, fixtures, design and several other factors. The evaluation takes a few hours and normally costs \$500-700 to complete.

The offer from Miranda Homes provides the first ten responding Oregon residents with a free evaluation on their current home, as long as it is on the market or they have a mortgage pre-approval letter from a bank.

For more information about Earth Advantage visit their website at www.earthadvantage.com. To schedule a tour of one of Miranda's homes and to take advantage of this offer please call Miranda Homes at 503-658-4818 and ask about the free Energy Performance Evaluation.



For a limited time, prospective home buyers can receive a free Energy Performance evaluation of their current home for comparison against other homes they are considering.

Source: Energy Trust of Oregon

- Task Force developed recommendations for a voluntary and mandatory energy performance scoring system for new & existing commercial and residential buildings.
- The Task Force recommended a voluntary energy performance scoring system for ODOE July 1, 2010.
- EPS re-entered 2011 legislative session proposing mandatory EPS disclosure in Oregon's Jobs & Prosperity Act ([HB 3535](#))



OR HB 3535



- Becomes operative January 1, 2012.
- Requires landlords and sellers to disclose energy performance of buildings and units for rent or sale to prospective tenants and buyers.
- Shall integrate the greenhouse gas emissions rating system into the energy performance rating system
- Establishes exemption from property taxation for buildings, structures and improvements that meet specified criteria relating to energy efficiency.



- Energy Efficiency [Washington HB1747, SB5854 Section 7]: tasked CTED to recommend a *“methodology to determine an energy performance score for residential buildings and an implementation strategy to use such information to improve the energy efficiency of the state's existing housing supply”*

Labeling initiatives: plethora



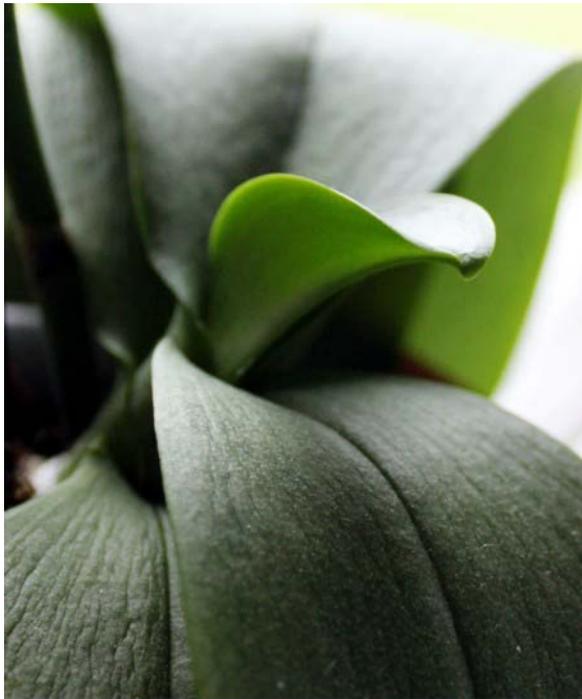
Region	Jurisdiction	Status	Summary	Type of rating (asset vs operational)
INT	Australia national	Planned for May 2011	Plans to develop national-level system based on ACT. At least one state (Queensland) has a system in effect.	Asset (presumed)
INT	Australian Capital Territory (ACT)	In effect	Asset rating required since 1997 at time of sale, in all advertising. Pioneer in mandatory disclosure, source of most significant study to date on impacts.	Asset
INT	Denmark	In effect	Legislation first introduced in 1996 and updated in 2006 to meet EPBD (see European Union below). For large buildings (>1500m ²), labelling required <u>yearly</u> . Includes Energy rating, energy plan (recommendations w/ investment cost, estimated savings, lifetime of investment and payback), energy management (objective to have an appointed energy mgr who tracks data monthly) and registration of consumption data (separate for heating, electricity and water consumption). Also estimated environmental impact. For small buildings (<1500m ²), labelling required at Time of Sale. Includes energy rating, energy plan with supporting documentation, detailed registration of building and installations, and calculated consumption	Asset
INT	European Union	In effect	Energy Performance of Buildings Directive (EPBD) required all member countries to have labeling schemes in place by January 2009. \$4-500 euros/home delivery cost. Over 1 million ratings complete. "Concerted Action" group working to bring ratings to common platform. New software in 2009. QA/QC issues have arisen.	Asset
INT	France	In effect	Diagnostic de performance énergétique (DPE) required since Nov. 2006 for Time of Sale transactions and July 2007 for Time of Rental.	Asset
INT	New Zealand	Under consideration	Development of residential mandatory disclosure included as action item in New Zealand Energy Strategy	Unknown
INT	Ontario	Planned for DATE TBD	Green Energy Act approved May 2009. Sets up residential disclosure program with rating system, etc. to be determined. Implementation date unknown Disclosure will be once buyer has made an offer, and buyer can opt to waive requirement.	Unknown
INT	Quebec	Pilots planned for 2011	Quebec's Energy Efficiency Agency has proposed a pilot project for implementation in 2010/2011.	TBD
INT	Shandong China	In effect	The Xinhua News reports that starting in 2008, all sales of new homes in Shandong Province must include information on the building's energy consumption and energy-saving measures in the contract and related documents. The requirement comes from Shandong's "Comprehensive Plan for Energy-Saving and Emission Reduction," under which energy-savings will be more stringently managed and efforts to promote green buildings will be intensified. Shandong will also strengthen the supervision of energy consumption standards for new buildings, implement testing of building energy efficiency, restrict construction permits, and improve the verification system for building energyefficiency designs. Designs that fail to meet standards will not receive construction permits; constructed buildings that do not meet standards cannot be sold.	Unknown
INT	UK	In effect	Energy Performance Certificates (EPC) required on construction, sale or rental of all residential and comm. buildings since October 1st 2008. Display Energy Certificates (DEC) required since the same date for all public buildings. Residential EPC is part of documents required in the Home Information Pack (HIP).	Asset

Labeling initiatives: plethora



Region	Jurisdiction	Status	Summary	Type of rating (asset vs operational)
US	Austin, TX	In effect	Ordinance #20081106-47 sets out requirements for mandatory audits for residential, commercial and multifamily buildings receiving service from Austin Electric Utility (AEU). Rules for audits and auditor certification to be developed by the director of AEU. In effect as of June 1st, 2009. Residential building owners must provide energy audits to prospective buyers at time of sale, with audits being valid for ten years. No rating included. Multifamily building owners must have audits performed by June 1, 2011 if the building was built before June 1st, 1999. Newer facilities must have audits performed within ten years of construction. Audit results must be provided to all tenants. High Use MF buildings (defined as consuming 150% of average) will be required to reduce energy consumption to no more than 110% of average within 18 months. Note that original provisions for mandatory upgrades were mostly defeated, except the MF provision.	No rating - audit only.
US	California	Past proposal	California Energy Commission proposed mandatory disclosure schemes for residential sectors in 2005, as part of an overview of options for improving efficiency in existing buildings (in response to both AB549 and S-20-04). Current status of work on residential mandatory labeling unknown, but there appears to be some activity in considering labeling from PowerPoint presentations found on the web.	Unknown
US	Federal Government	Active proposal	Waxman-Markey bill contains a provision whereby the EPA would develop a model label for use in both residential and commercial labelling; test it with a pilot program aimed at improving baseline datasets (CBECS in particular); apply it to DoE and EPA facilities; and provide funding to states that adopt mandatory labelling requirements. National Building Rating Program announced fall 2009 by DOE. DOE announced plans to have label developed by fall 2010.	Asset and operational
US	Maine	In effect	Truth in Heating Act -bill disclosure	Bill disclosure
US	Massachusetts	Past proposal	2008 bill (SB2468) substantially weakened in final form (SB2768): mandatory audits and Time of Sale disclosure downgraded to information provision to home buyers re the benefits of audits. Bill did not pass. Mass. utilities planning on piloting a labeling initiative in 2010 to meet internal "metrics requirement".	Unknown
US	Montgomery County, MD	In effect	Bill 31-07 requires home sellers to provide buyers with copies of all energy bills for the last 12 months, before the sale of the home, as well as a standard information package on retrofits. Came into effect in January 2009. Does not require energy audit. County government is exploring the option of eventually requiring an audit.	Bill disclosure
US	Nevada	Planned for 2011	Nevada Senate Bill 437 (SB 437) signed into law in June 2007, requiring NSOE to develop a residential time of sale disclosure program. The program is slated to come into force as of Jan 1, 2011, but further details had not yet been developed as of May 2009.	Unknown
US	New Jersey	Past proposals	S706 and AB1630 were active in 2009 - but did not pass. The bills would have require that home inspectors also conduct an energy efficiency analysis and provide a rating, using a to-be- determined rating system and methodology. Opposed by the home inspection industry, principally because of the risk that this will make home inspections prohibitively expensive.	Unknown
US	New York City	Unknown	NYC has a commercial benchmarking ordinance, but, we are unaware of any residential (SF) building labeling initiatives in NYC.	
US	New York State	In effect	Truth in Heating Act - bill disclosure	Bill disclosure
US	Oregon	In Development	SB79 passed into law; directs State Department of Energy to develop an Energy Performance Score rating system, regulations and administrative infrastructure to allow mandatory disclosure at time of sale for both residential buildings and non-residential buildings larger than 20 000 ft2. Voluntary by Oct. 2010, mandatory in 2012. Currently developing rules. All new construction homes that participate in Energy Trust of Oregon program receives an Energy Performance Score (EPS) label. MLS system currently captures ENERGY STAR, LEED or Earth Advantage and AFUE. Governor's task force is working on this, looking at the EPS system along with other options.	Unknown
US	Santa Fe, New Mexico	In effect	Ordinance 2007-38 requires that HERS ratings be posted in a conspicuous place in all new single family homes as of January 2008.	Asset
US	Vermont	Defeated	2009 bill substantially weakened due to Realtor lobbying -allowed either buyer or seller to opt out. Not passed.	Unknown
US	Washington	Unknown	Some activity is under way, but were not able to substantiate. SB 5854, Section 7 addresses energy labeling. CTED has issued recommendation paper.	Unknown
US	Wyoming		Portland Energy Conservation Inc. is presumably working on a labeling effort.	Unknown

Washington EPS adoption



- ▶ Part of Seattle's Clean Energy, Efficient Buildings strategy for 5,000 EPS pilot
- ▶ Bellingham 1,500 home pilot
- ▶ Recently signed Snohomish County 600 home pilot
- ▶ EPS part of Community Power Works 4,000 home audit & retrofit program in SE Seattle
- ▶ Integrates EPS into real estate market
- ▶ Message & behavior study with LBNL

“We use EPS information as a marketing tool to help sell our homes,” said Aaron Fairchild, president of G2B Ventures, a Seattle-based real estate investment firm. “The EPS is an amazingly innovative tool that will help us transform the Seattle real estate market.”



Strengthening the Buildings

Retrofit Market [FOA #251]



- ▶ Earth Advantage Institute part of a NASEO four-state team to implement US DOE's award for "Strengthening the Buildings Retrofit" market that includes the EPS (26,000 EPSs estimated).
- ▶ Participating states: MA, WA, AL, VA



Goals & barriers addressed in FOA 251



- ▶ 12,150 whole home retrofits (2% of homes in targets)
- ▶ Savings of 309,336 MMBtus over the three years of the project
- ▶ Robust retrofit model expected to retrofit 76,550 homes and save 1,953,155 MMBtus by 2021
- ▶ Tiered consumer engagement
- ▶ EPS label to inform on home's performance & recommendation pathway
- ▶ Access to finance mechanisms
- ▶ Workforce training: auditors, contractors, Realtors, appraisers. MLS
- ▶ Policy toolkit
- ▶ M&V protocol



Motivating Home Improvements

The information needed to empower Americans to manage their energy diet fits together like a puzzle:

1. Raise awareness with a simple SCORE (their weight) that can be included in marketing, on the MLS, etc...
BUT, this has no meaning on its own, so...
2. Give them a tool to understand it – A SCALE (a graphic display to compare their current score and goals).
3. Give them a LABEL with more information to make good decisions when they shop.
BUT, they can't take action without clear steps, so...
4. Give them the full REPORT - a summary of information, plus for existing homes step-by-step instructions to improve their homes

Researched and prepared by Newport Partners, LLC Aug, 2010

Nov 9th, 2010



**Vice President Biden Announces Actions to
Build a Strong Home Energy Retrofit Market to
Increase Energy Efficiency, Savings for Families**

.....a new Home Energy Score program that will
help homeowners make cost-effective decisions
about home energy improvements



US DOE: Home Energy Score

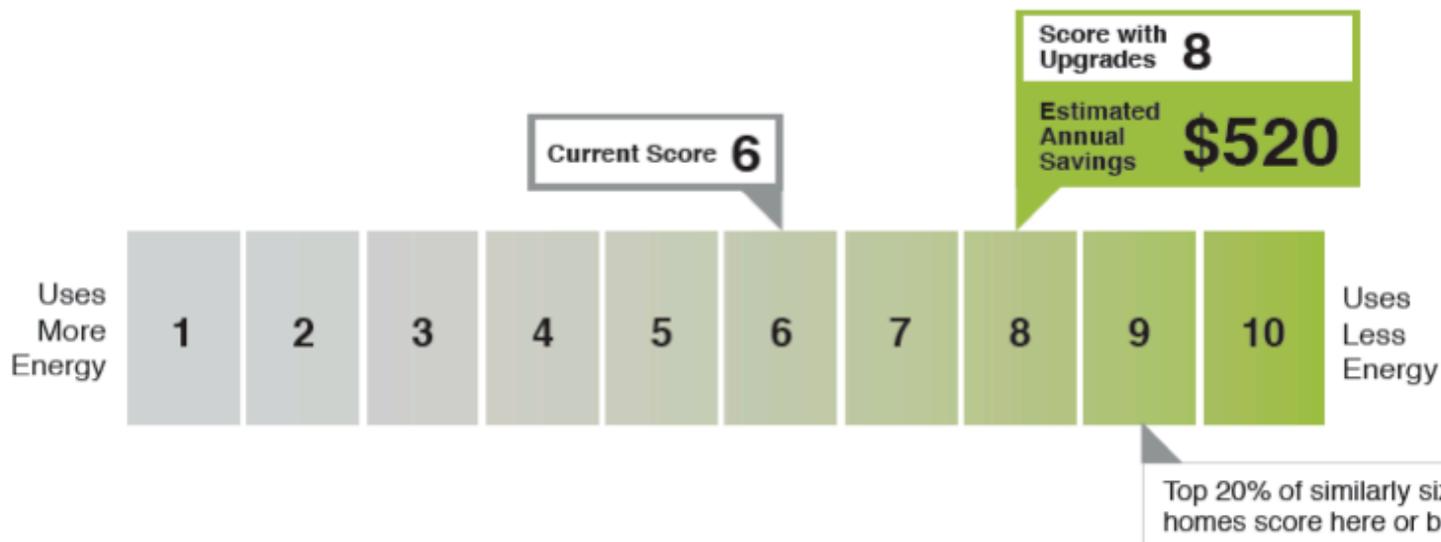
- ▶ Voluntary label in pilot phase in communities in 10 states in 2011
- ▶ HES is a statistical score that compares a home's estimated total energy consumption against a large group of homes in that climate zone, then assigns a value of 1 to 10
- ▶ Earth Advantage Institute selected by US DOE to compare the results of the Home Energy Score software tool (HES-Pro) to the results of the Energy Performance Score (EPS) tool in the Seattle 5000 home pilot.

HOME ENERGY SCORE

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

Total Energy **190 MBTUs / year**
Home Size **1,500 square feet**
Air Conditioning **Yes**

Climate Zone



Energy use reported in Million British Thermal Units (MBTUs). Estimated savings reflect the amount a homeowner will save on their annual utility bill if all recommended improvements are made. Both energy use and savings estimates assume that 2 adults and 1 child live in the home. Your actual energy use and savings will depend on how you maintain your home, how many people live there, your day-to-day habits and weather. To learn more about how to save energy and money in your home, as well as more about the home energy score, visit:

homeenergyscore.gov



U.S. DEPARTMENT OF
ENERGY

Assessor # **85317** Assessment Date **11/05/2010** Label # **000062465**

Home Energy Score



Pros

- Scoring quick and cheap
- Simple to read.
- DOE is maintaining BPI or RESNET certification as a requirement for assessors
- Recommendations are optional and can be left out by the assessor (*con?*).

Cons

- 10-point scoring is based on somewhat arbitrary bins. Recommend a continuous technical scale.
- Uses RECS (Residential Energy Consumption Survey) data from all existing homes, so little differentiation at the high end.
- Treatment of site vs source energy could be confusing to consumers.
- There are two different scales depending on whether the house is less than or greater than 2200 sq. ft.
- Score will change over time as RECS gets updated, so score may not be timeless

EPS architecture

The screenshot displays a web application interface for managing home energy data. The top navigation bar includes links for Home, Leads, Accounts, Contacts, Opportunities, Reports, Homes (selected), Contractors, Proposals, and About. A search bar is located on the left, and a 'Recent Items' list is visible below it. The main content area shows the 'Homes Detail' for site ID 410000001, with fields for personal information, energy scores, and carbon footprints. A table lists 'Action Required' items like 'Email Needed' and 'Field Visit'. The bottom section shows 'Proposal Details' with a 'New Proposal Detail' button.

Homes Detail	
Site ID Number	410000000
First Name	Jane
Last Name	Smith
Mailing Street	1234 Elm St
Mailing City	Portland
Mailing State/Province	OR
Mailing Zip/Postal Code	97212
Phone	503-456-7890
Email	janesmith@me.com
Energy Score	27,900 kWh/yr
Energy Score With Upgrades	22,300 kWh/yr
Energy Score If Built To Code	
Carbon Score	20,100 lbs/yr
Carbon Score With Upgrades	16,900 lbs/yr
Carbon Score With Renewable Power	0 lbs/yr

Action Required	
Email Needed	Reason
Field Visit	Reason
Lookup Appliance Info	

- ▶ Cloud-based database with embedded EPS SIMPLE algorithm
- ▶ Wireless data entry in the field.
- ▶ ARRA reporting

Auditor Interface: Audit Preview Screen

Calendar Event: Taylor... | EPS Audit | http://energy-perform... | http://energy-performance-score.com/pro/audits/1122/view?infoMessage=The%20audit%20has%20been%20saved.&

Website Support | My Profile | Logout

For Homeowners | For Professionals | About | FAQ | Contact

Home | Audits

The audit has been saved.

View Audit

6552 37th Ave
Seattle, WA 98116

Auditor: Bradley, Casey
Audit Date: 04/28/2010
Reference Number:
Status: Complete
Homeowner: Silber, Andy

[View Scorecard](#) [View Recommendation Report](#)

Energy Use (click to enlarge)

kWh/yr

Category	Annual Use	After Upgrades	Comparisons
Energy Use	29,600	5,700*	28,000 Seattle Average 22,400 Seattle 2020 Target 6,600 Seattle 2050 Target

Carbon Emissions (click to enlarge)

tons/yr

Category	Annual Emissions	After Upgrades	Comparisons
Carbon Emissions	7.7	2.9*	8.8 Seattle Average 6.2 Seattle 2020 Target 1.8 Seattle 2050 Target

	Current Home			After Upgrades		
	Energy (kWh)	Fuel Cost*	Carbon (tons)	Energy (kWh)	Fuel Cost*	Carbon (tons)
Heating	18,300	\$812	3.3	7,100 - 13,300	\$317 - \$588	1.3 - 2.4
Cooling	NA	NA	NA	NA	NA	NA
Water Heating	5,300	\$237	1.0	3,700 - 6,900	\$166 - \$308	0.7 - 1.2
Lighting & Appliances	6,000	\$411	3.5	4,200 - 7,800	\$288 - \$534	2.4 - 4.5
Total	29,600	\$1,459	7.7	15,100 - 28,000	\$770 - \$1,430	4.4 - 8.1

* Fuel costs are based on prices at the time the EPS is issued and do not include taxes and surcharges.

[Edit Audit](#) [Finalize](#) [Delete Audit](#)

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Web Information Portal

▶ **Trust:** consumer ratings of contractors

▶ **Simplicity:** finance approval & contractor bid review and scheduling

▶ **Accountability:** Post-job EPS audit validates increased performance

PNW Market Mechanism



- Incentivizing performance in new homes
- Reflecting premium in retrofitted homes
- Preferred mortgage rates on high performing EPS homes (0.375% credit on closing up to \$1,500 - \$2,500)
- Preferred homeowner insurance for high performing EPS homes (10% discount)
- Links to regional MLS custom score fields
- Trained Realtors & appraisers
- EPS appraisal methodology underway

Summary



- Energy labeling here to stay
- Jury is out on the best “MPG” label
- Legislative initiatives to include abound
- Stakeholders embracing the EPS metric in PNW
- US DOE Home Energy Score pilot and NASEO FOA 251 pilot will valuable provide consumer feedback
- Incentivizing performance vs thresholds will gain traction

Thank you!



Download EPS Findings & Recommendations report at:
<http://www.earthadvantage.org/program-tools/about-eps/eps/>



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