



BUILDING ENERGY DISCLOSURE LEGISLATION S. 143 & H.497

**Vermont House Committees on
Natural Resources and Energy**

February 3, 2012



Richard Faesy, Energy Futures Group

Energy Futures Group Consulting

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Areas of Expertise

- Policy Development
- Program Design
- Building Codes
- Evaluation
- Cost-Effectiveness

Range of Clients

- Government Agencies
- Advocates
- Regulators
- Utilities

Clients in 15 states/provinces plus regional, national and international organizations.

Overview

3

- Core Principles
- Examples of Rating Tools Considered
- Summary of Current Research
- EnergySavvy.com Test Drive
- Q&A

Disclosure Rating - Core Principles

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1. Reasonable cost to end user (\$0-300)
2. Rating can be presented as a single number or letter
3. Accurate
4. Makes recommendations for upgrades
5. Smooth process to pursue upgrades as follow-up
6. Asset rating – based on features of home rather than occupant behavior (for residential)
7. Home Energy Rating System (HERS)-compatible
8. Tiered on-ramp - allowing drilling deeper if desired for more accuracy
9. Ability to customize and maintain for VT, but can be used and understood outside VT

Recommended Tool Score Format

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- Score format should be separate and distinct from rating tool decision:
 - Produces estimate of site energy MMBtu based on typical occupancy and weather
 - Presents as a single number with a visual scale for context
 - Provides comparisons to other homes (e.g., average Vermont existing home, code Vermont home, zero-energy home)
 - Includes estimated annual energy cost

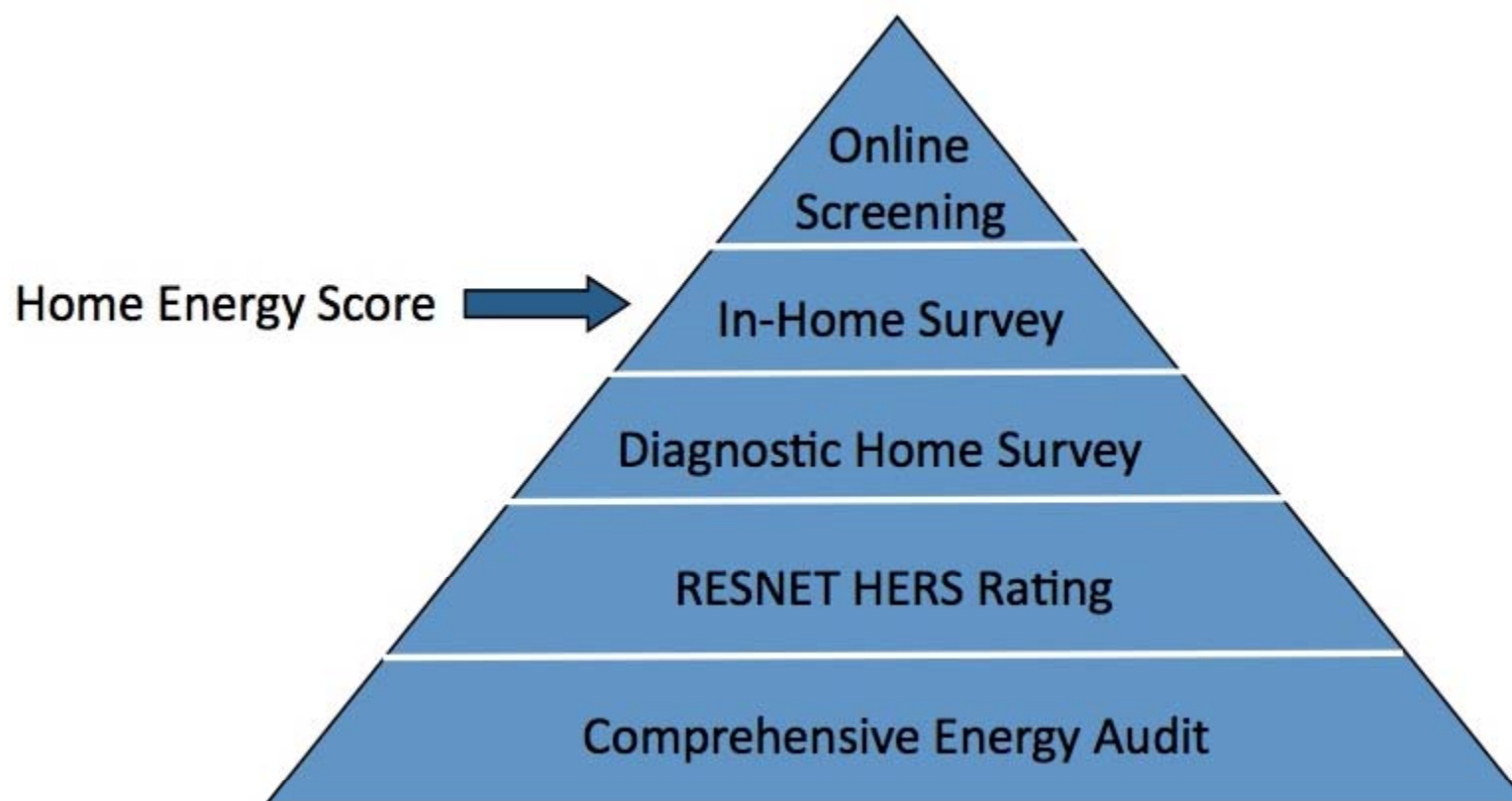
Recommended Rating Tool Criteria

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- Specify criteria for the software rather than specifying any one particular tool, including:
 - Web-based tool
 - Free or low-cost to the end user
 - Asset-based
 - Uses simplified inputs
 - Produces an estimated energy disclosure score
 - Generates recommendations and links to contractors
 - Produces a brief report
 - Technical support is available (e.g., from trained Realtor or Efficiency Vermont Customer Support)
- DPS process for tool selection

Hierarchy for “Rating Tools”

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Time of Sale Energy Labeling of Homes: A Concept Paper, Philip Fairey (FSEC), Home Energy Magazine, July 2010 Issue.

Some Sample Rating Tools

From the Seven Examined:

- EnergySavvy.com
- CSG's EnergyMeasure
- Earth Advantage's Energy Performance Score

EnergySavvy


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Online Energy Audit - EnergySavvy.com - Windows Internet Explorer

http://www.energysavvy.com/e

Hotwire: Airline Ticke... EnergyMeasure™ SUL... The Home Energy Sc... Online Energy Aud... x

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 **EnergySavvy.com**

Estimate Your Savings Tax Credits + Rebates Browse Contractors Topics + Community


What's Your Score?

Are you overpaying for your utility bills?

Take our easy survey to get your home energy report.

You'll get an energy score, savings estimate and energy saving recommendations with the biggest bang for your buck.

It takes less than 2 minutes and there's no signup required.



Type of home

☒ Single family home

☐ Apartment, condo or townhome

☐ Other

Year Built

Enter the year that your home was built even if it's been remodeled since then.

Occupants

The number of people that normally live in your home.

Floors

EnergySavvy

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✓ STRUCTURE

✓ HEATING & COOLING

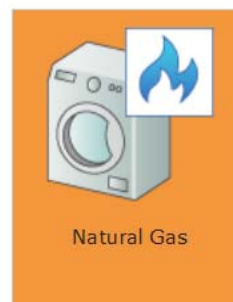
3 APPLIANCES

4 USAGE

How much attic insulation do you have?



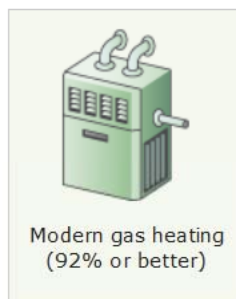
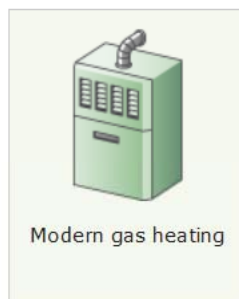
Is your clothes dryer natural gas or electric?



What fuel does your heating system use?

What kind of gas heater?

- ☒ Natural gas
- ☐ Electricity
- ☐ Oil



EnergySavvy

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EnergySavvy will find the right contractor for your project. - EnergySavvy.com - Windows Internet Explorer

http://www.energysavvy.com/rt

Hotwire: Airline Ticke... EnergyMeasure™ SU... The Home Energy Sc... EnergySavvy will fi...

Google Search Share Check Translate AutoFill Sign In

EnergySavvy will find the right contractor for your project.

* All Fields Required

Your Name

Richard Faesy

City

Starksboro

State

Vermont

Zip

05487

Email

rfaesy@energyfuturesgroup.com

Phone

802-355-9153

Project stage

Please Select One

Please Select One

Ready to Hire

Planning & Budgeting

Just Researching

What's on your mind? (Optional)

Tell us about your project needs.

Send Request

Improve Your Score

WASTING ENERGY AND MONEY

ENERGY EFFICIENT

About Our Contractors

We work hard to ensure you have a great experience with expert contractors who really understand energy efficiency.

ASK ABOUT ENERGY STAR

Our prescreened contractors and auditors

PERFORMANCE ENERGY DURABLE

EnergyMeasure View

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EnergyMeasure™ VIEW

powered by:  CONSERVATION SERVICES GROUP



Home Energy Survey

How efficient is your home?

[CONTRACTOR LOGIN](#)



5	Easy Steps Only 5 steps to find you savings from your roof shingles to your light bulbs.
7	Minutes to Complete Save hundreds of dollars on your energy bills in as little as 7 minutes!
12	Possible Ways to Save We will show you energy recommendations and incentives in your area.
\$0	It's Free

EnergyMeasure View

13

How much insulation is in your attic?

☐ Covers the ceiling beams
 ☐ Fills the ceiling beams
 ☒ Some
 ☐ I don't know


How leaky is your house?

☐ Very Leaky
 ☒ Somewhat Leaky
 ☐ Very Tight

Okay, now we know about your home. Next up, we will learn a little bit about your windows and roof.

CONTINUE TO WINDOWS AND ROOF >

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EnergyMeasure View

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1

YOUR HOME

2

WINDOWS & ROOF

3

HEATING & AIR

4

WATER HEATER

5

LIGHTING & APPLIANCES
 YOUR RESULTS

BACK TO WINDOWS AND ROOF

Heating and Air Conditioning

Your heating and air conditioning can greatly impact your energy efficiency. Please tell us about those components.

What is your usual setting for heating temperature?

68

☐ I don't know

TIP

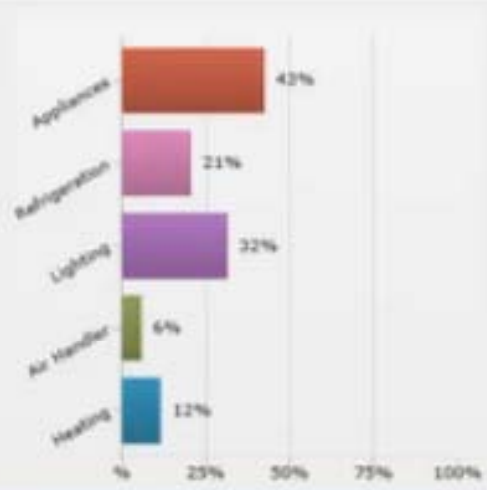
Slide the green button above to select your choice.
 If you have a programmable thermostat, just use your best guess at the average temperature.

What is your main heating fuel?


☒ Gas
 ☐ Electric
 ☐ Oil
 ☐ I don't know

How is your heat delivered?

Total Fuel Consumption




Category	Percentage
Appliances	43%
Refrigeration	21%
Lighting	32%
Air Handler	6%
Heating	12%



EnergyMeasure View

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Slide the green button above to select your choice

If you have a pool, how big is it?

No pool

Wave

Small

Medium

Large

Very Large

If you have a spa/hot tub, what type of fuel does it use?

Gas

Electricity

Oil

Solar

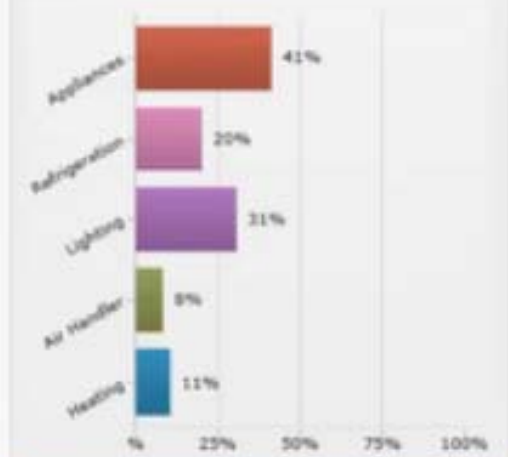
I don't have a spa

Do you have a dehumidifier?


Yes

No

Total Fuel Consumption



Category	Percentage
Appliances	41%
Refrigeration	20%
Lighting	21%
Air Handler	8%
Heating	11%



EnergyMeasure View

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EnergyMeasure™ VIEW

powered by CONSERVATION SERVICES GROUP

1 YOUR HOME

2 WINDOWS & ROOF

3 HEATING & AIR

4 WATER HEATER

5 LIGHTING & APPLIANCES

YOUR RESULTS

BACK TO LIGHTING AND APPLIANCES

Your Results

★

RECOMMENDATIONS

AVAILABLE INCENTIVES

CHARTS

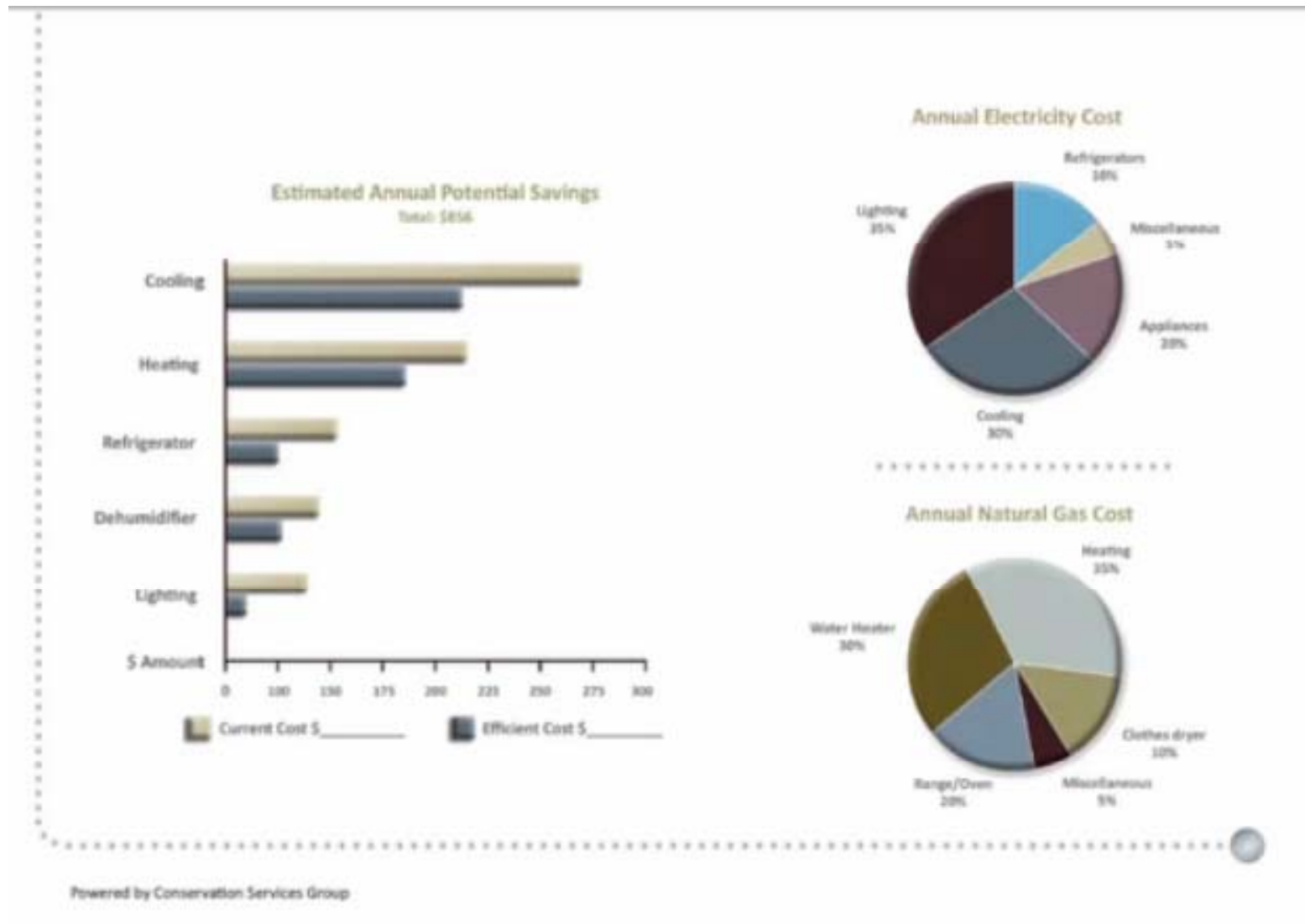
You may want to pursue the below recommendations in order to lower your energy use while increasing your living comfort. In addition to these benefits, installing these measures can also improve the health, safety, and durability of your home.

POSSIBLE SAVINGS

\$284	Seal areas of your home where air escapes
\$255	Insulate your attic
\$424	Insulate your walls
\$52	Insulate your basement ceiling
\$114	Replace your furnace with a high-efficiency model

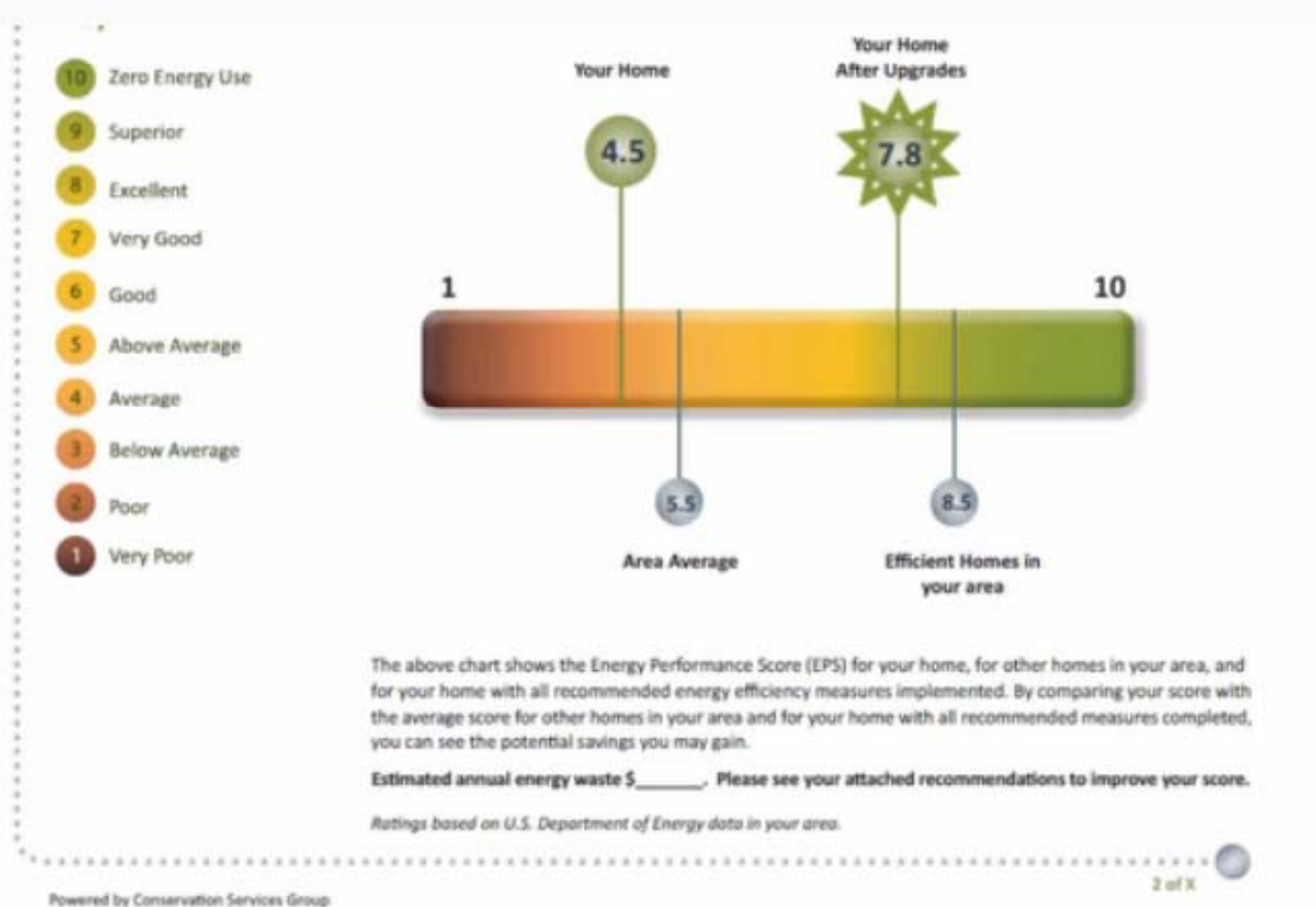
EnergyMeasure View

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EnergyMeasure View

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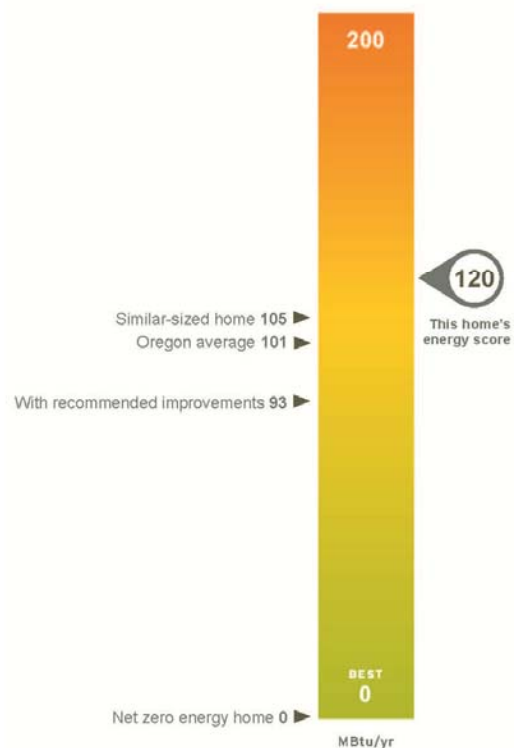


ENERGY PERFORMANCE SCORE

INDEPENDENT ASSESSMENT OF THIS HOME'S ENERGY CONSUMPTION,
COSTS AND CARBON EMISSIONS

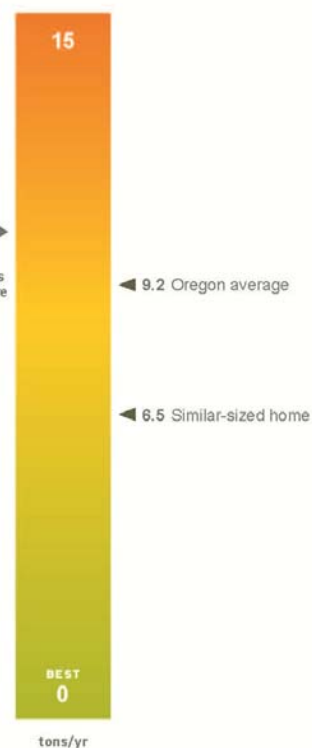
ENERGY CONSUMPTION

Measured in million Btu per year (MBtu/yr).
One million Btu = 293 kWh or 10 therms.



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).



REPORT FOR: 12345 Example Road, Portland, OR 97217

PREPARED BY: John Sweet, Energy Trust of Oregon

ISSUE DATE:
02-01-2010

YEAR BUILT:
1975

SQUARE FOOTAGE USED FOR
ENERGY CALCULATIONS:
2,000

ESTIMATED ANNUAL
ENERGY USAGE:
Electric (kWh): 5,558
Natural gas (therms): 1,028

IDENTIFICATION #: 123456
TYPE:
Single Family

ESTIMATED AVERAGE
ANNUAL ENERGY COSTS*:

\$1,674

monthly average: **\$139**
*Actual energy costs will vary.





Independent assessment of energy consumption and carbon footprint.

The Energy Performance Score is a tool to assess energy consumption and carbon emissions of a home. The lower the score, the better—a low EPS identifies a home as energy efficient with a smaller carbon footprint and lower energy costs.

Monthly Energy Costs

\$114*

Estimated average energy costs per month by fuel type:
Electric \$82, Natural Gas \$32

Estimated average annual energy costs:

\$1,368*

*Actual utility costs may vary depending on consumer use.

Location:

12345 SE Example Street,
Portland, OR 97215

ISSUE DATE: 9-17-11

YEAR BUILT: 2010

SQ. FOOTAGE: 2,112

Utilities:

Gas: NW Natural

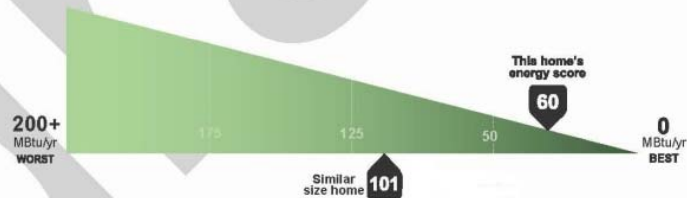
Electric: Portland General Electric

ENERGY CONSUMPTION:

Measured in million Btu per year (MBtu/yr).
One million Btu = 293 kWh or 10 therms.

Energy Score

60

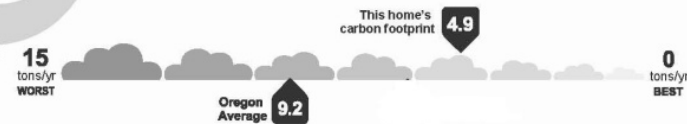


Estimated average energy usage: Electric (kWh): 512*, Natural gas (therms): 491

*Includes 2 kW of PV Solar

CARBON FOOTPRINT:

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

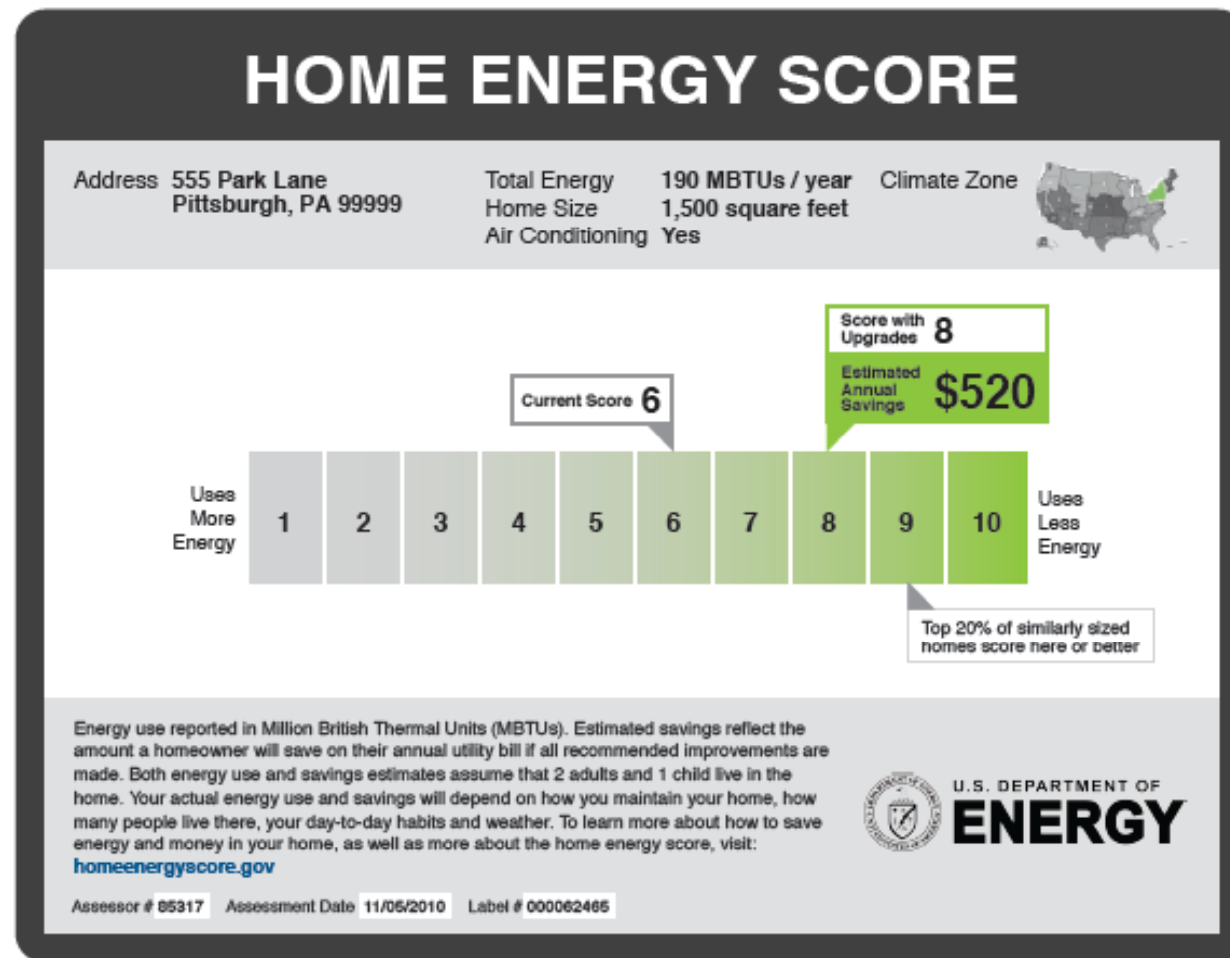


Estimated average carbon footprint: Electric (tons/yr): 3.1, Natural gas (tons/yr): 1.8

Actual energy costs are based on many factors such as occupant behavior and weather.
A home's EPS will vary based on the energy-efficient features installed in the home.
Improvement and updates to the home made after the issue date will affect the EPS.

DOE's Home Energy Score

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Typical Tool Inputs

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1. Type of home
2. Location – by ZIP code
3. Year Built
4. Number of occupants
5. Number of floors
6. Size in square feet
7. Type of Foundation
8. Wall insulation (well insulated, poor/no insulation, not sure)
9. Windows (single pane, single with storm, double pane, high efficiency windows)
10. Shading
11. How drafty does your home feel?
12. Attic insulation (none, some, thick, not sure)
13. Heating system type & fuel
14. Thermostat settings
15. Air conditioner age
16. Ducts description
17. Ceiling air vents
18. Clothes dryer fuel
19. Cooking fuel

Typical Tool Inputs

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- 20. Water heater type & fuel
- 21. Refrigerator type and age
- 22. Second refrigerator or freezer
- 23. Describe your lighting (usage & efficient bulbs)
- 24. Are there a lot of electronic and entertainment devices in your home?
- 25. Showers usage

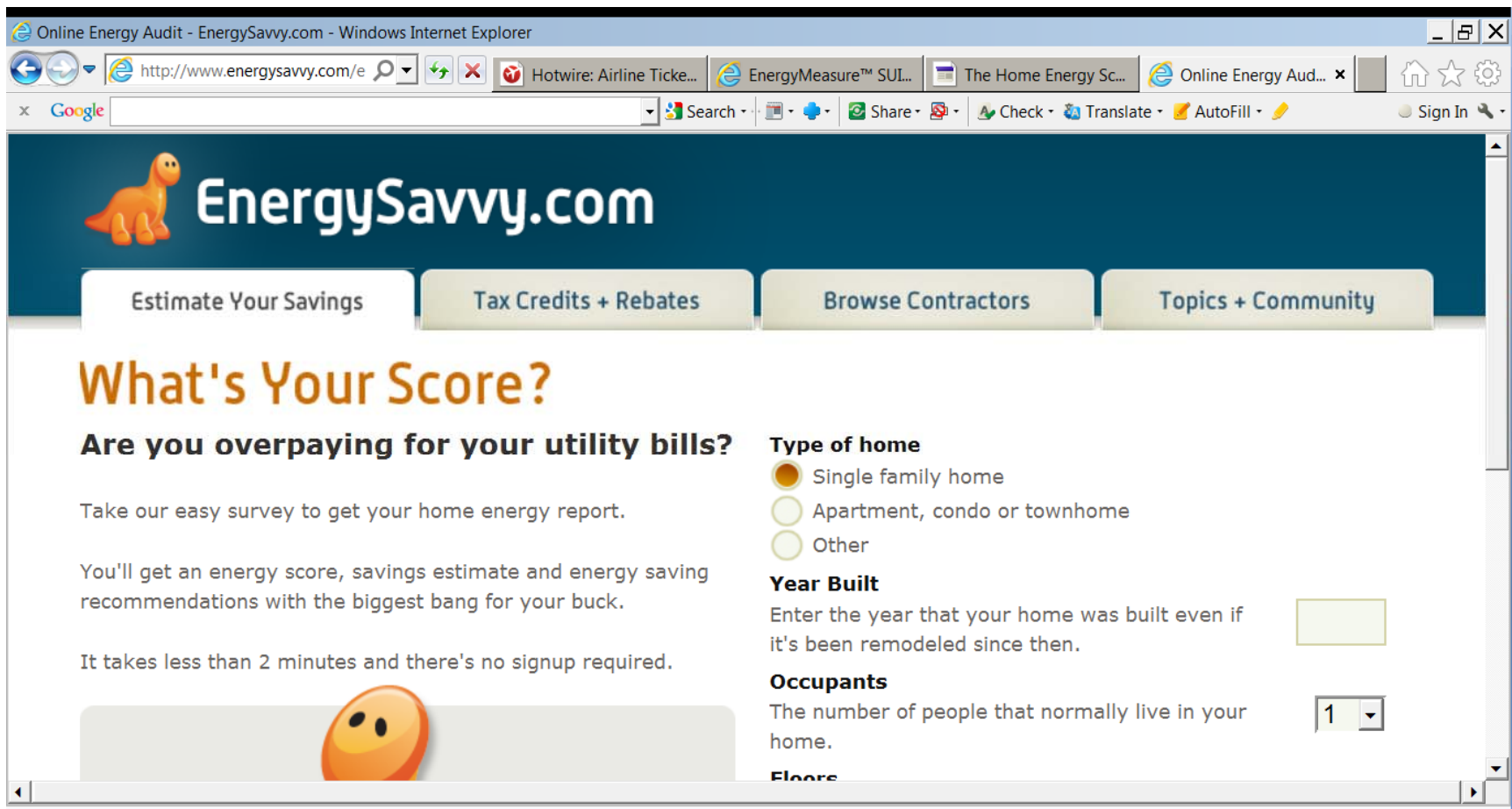
Key Findings from Oregon Research

1. Complicated models were no better at forecasting energy savings than less complex models.
2. Models predict energy consumption within the $\pm 30\%$ average usage range (“your mileage may vary”).
3. Comparisons to billing data are not the accurate test of a model’s ability to forecast, due to homeowner behavior.

Test Drive

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□ <http://www.energysavvy.com/home-energy/>




Online Energy Audit - EnergySavvy.com - Windows Internet Explorer

http://www.energysavvy.com/e

Hotwire: Airline Ticke... EnergyMeasure™ SUL... The Home Energy Sc... Online Energy Aud... x

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Floors

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Q&A

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