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

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

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

Disclosure Rating - Core Principles

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

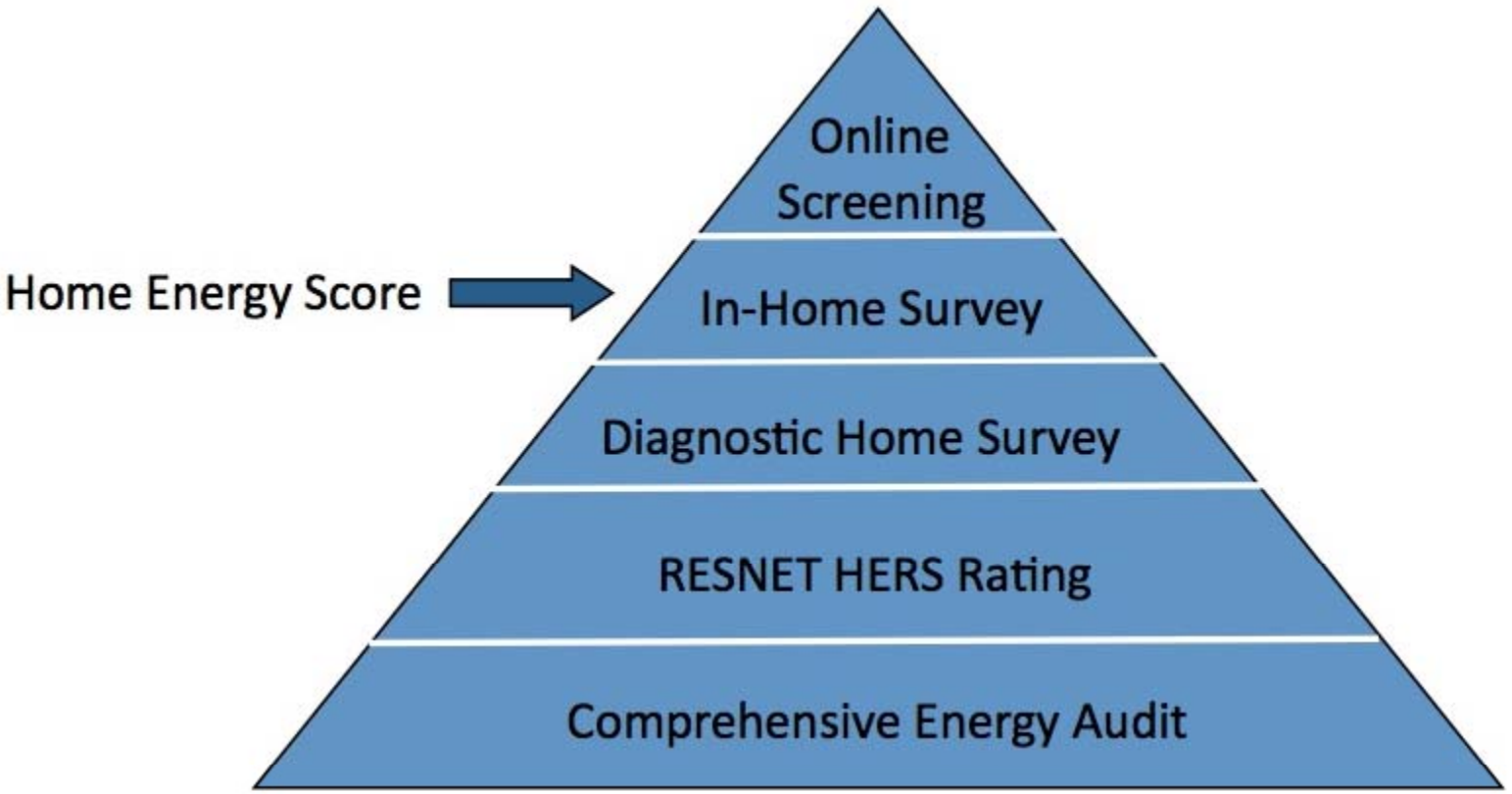
Recommended Tool Score Format

- *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

- 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"



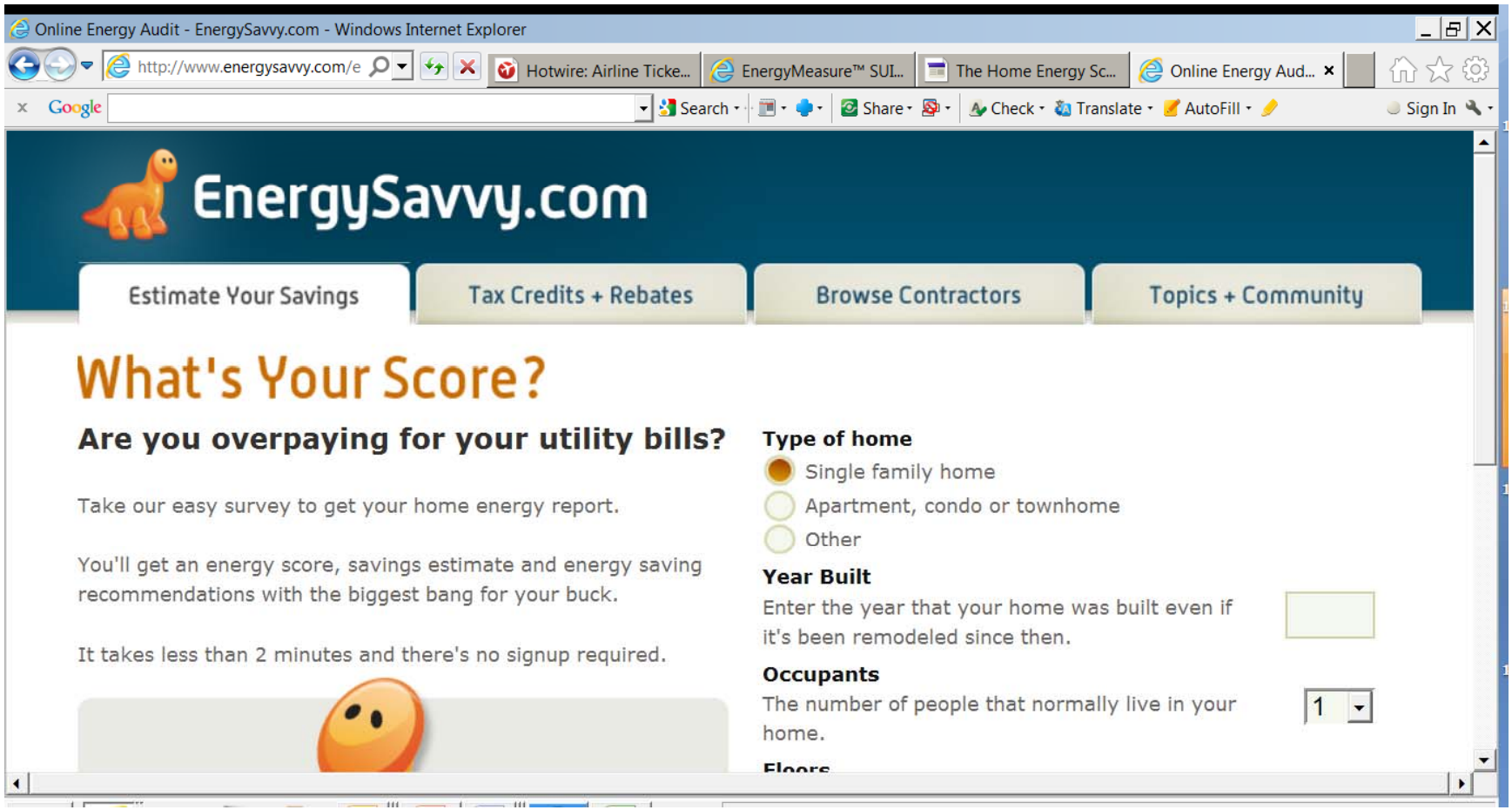
Time of Sale Energy Labeling of Homes: A Concept Paper, Philip Fairey (FSEC), Home Energy Magazine, July 2010 Issue.

Some Sample Rating Tools

From the Seven Examined:

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

EnergySavvy



EnergySavvy

STRUCTURE | HEATING & COOLING | 3 APPLIANCES | 4 USAGE

How much attic insulation do you have?

No insulation

Some insulation

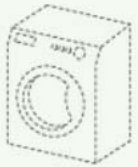
Thick insulation

Not sure

Is your clothes dryer natural gas or electric?

Natural Gas

Electric


No dryer

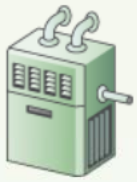
What fuel does your heating system use?

- (•) Natural gas
- ( ) Electricity
- ( ) Oil

What kind of gas heater?

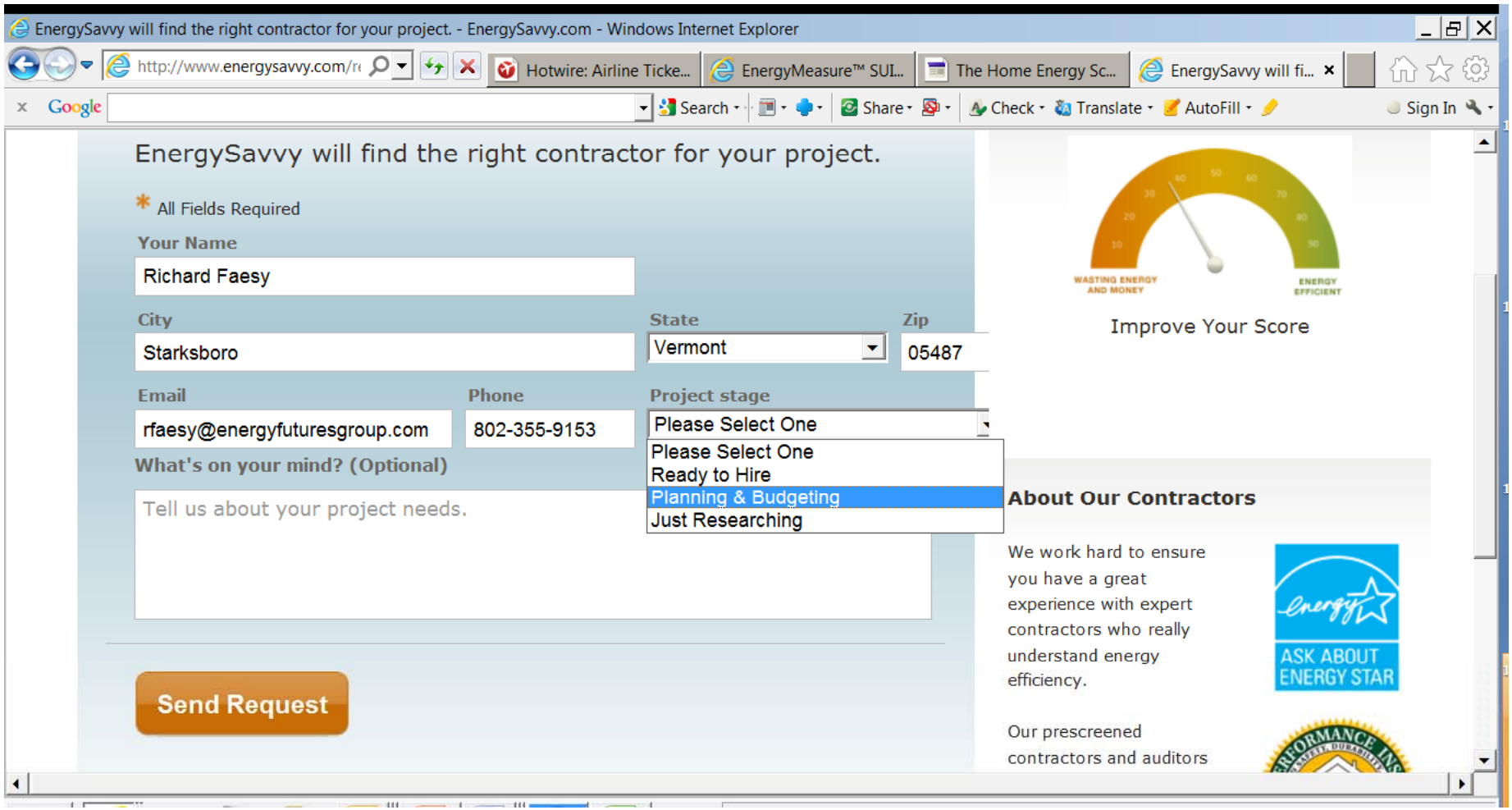
Over 20 years old gas heating

Modern gas heating


Modern gas heating (92% or better)

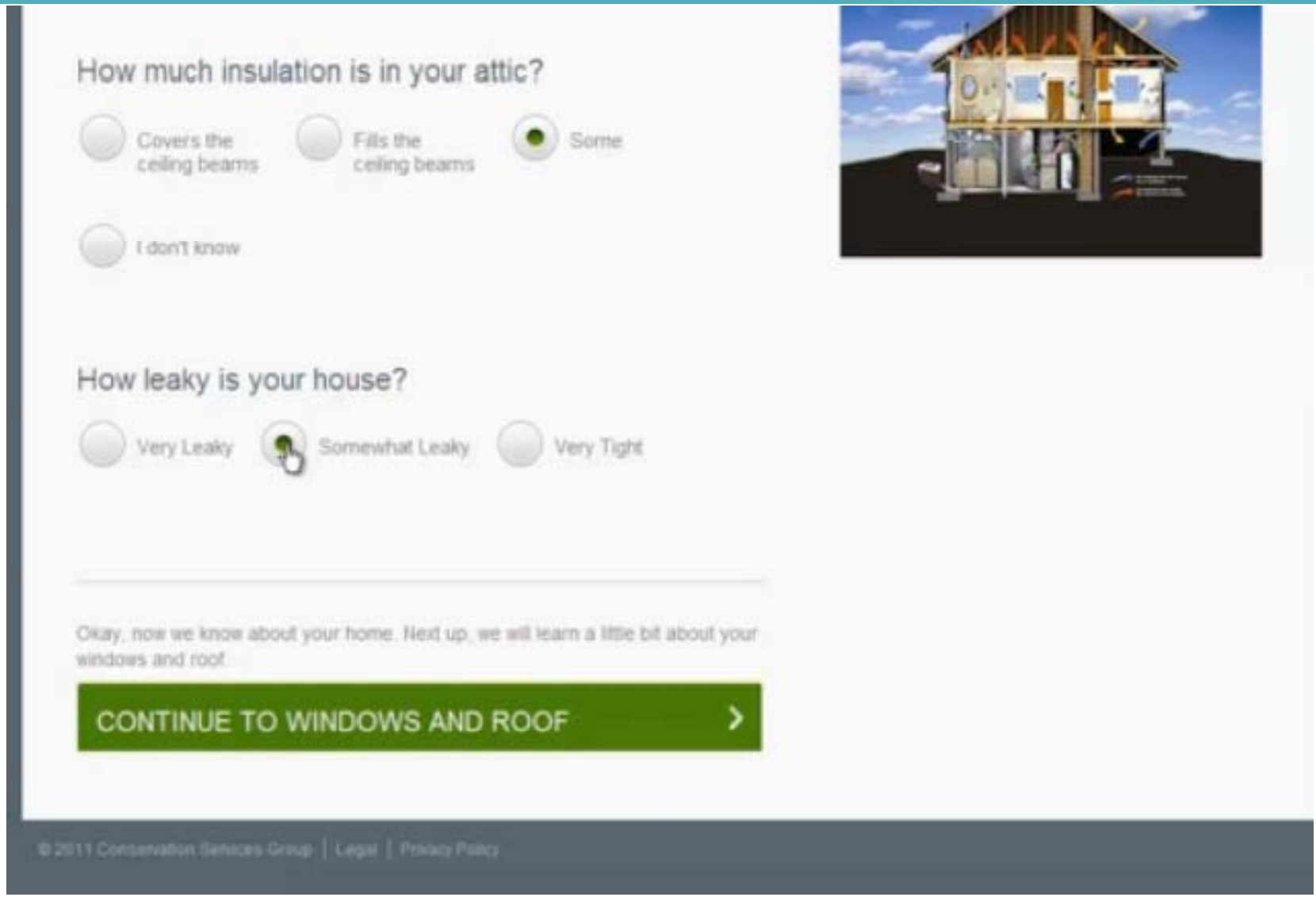
Not sure

EnergySavvy



EnergyMeasure View

EnergyMeasure View



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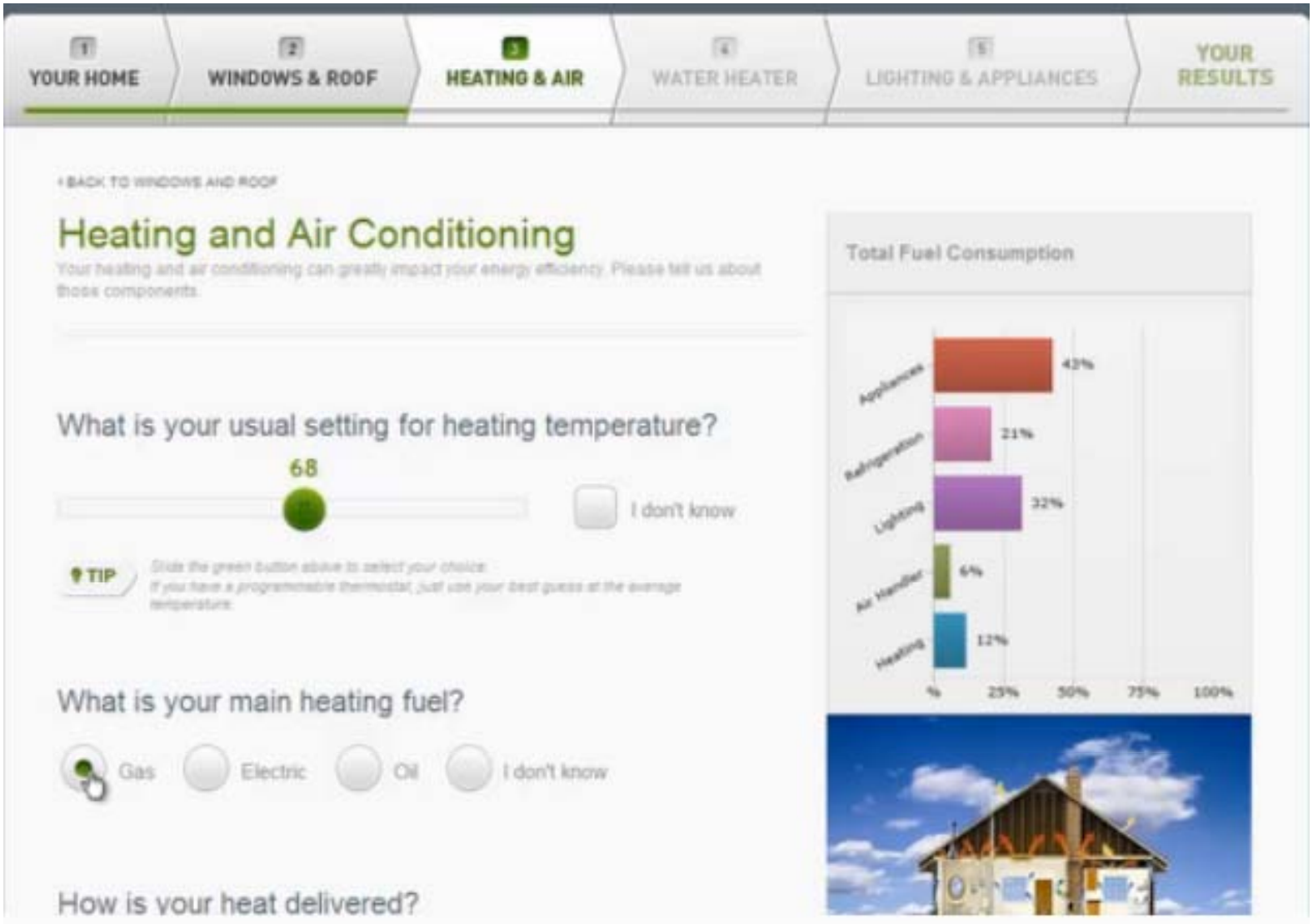

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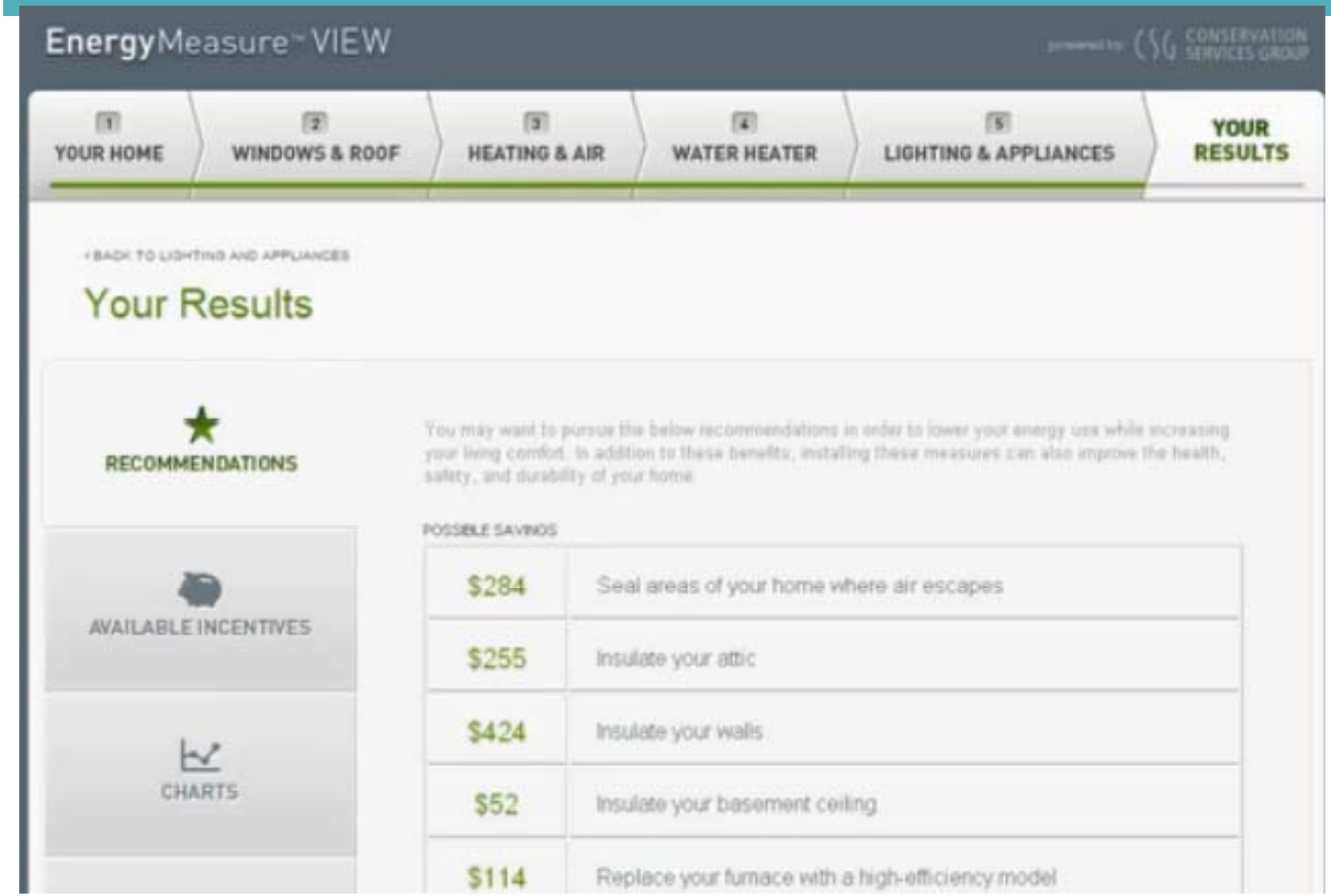

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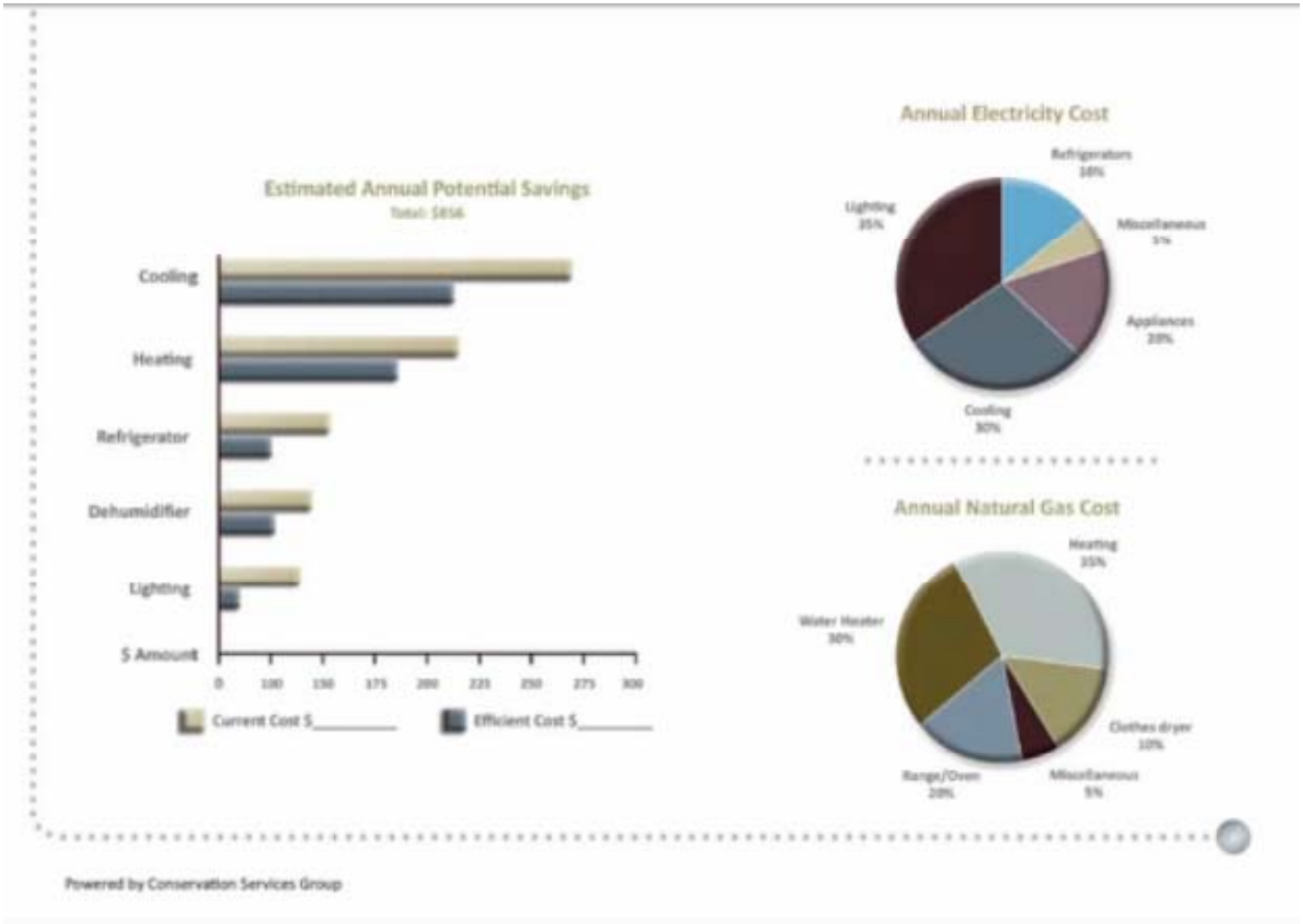

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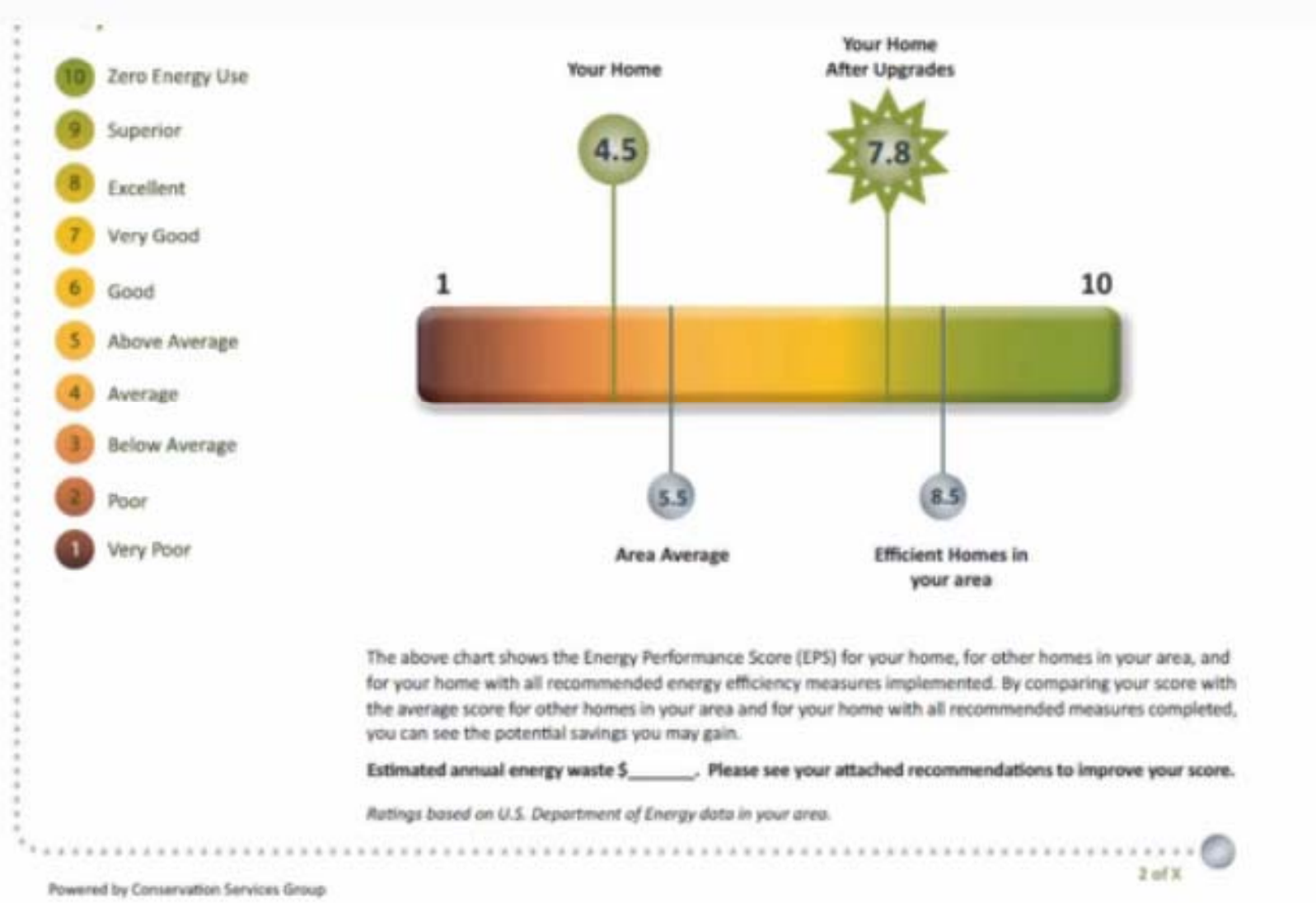


ENERGY PERFORMANCE SCORE

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

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.

EPS
EnergyPerformanceScore
brought to you by Energy Trust of Oregon

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.

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

Monthly Energy Costs

$114*

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

*Actual utility costs may vary depending on consumer use.

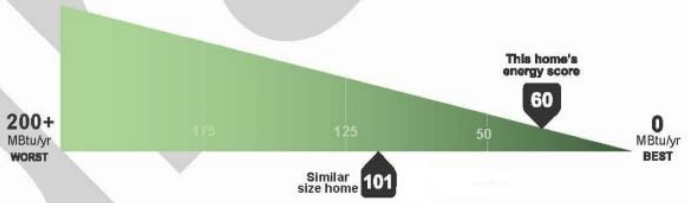
Estimated average annual energy costs:
$1,368*

Energy Score

60

ENERGY CONSUMPTION:

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

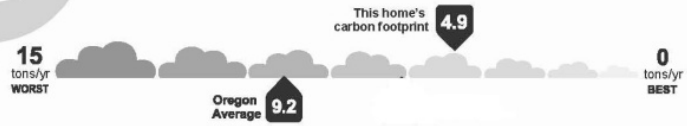


Estimated average energy usage: Electric (kWh): 512*, Natural gas (therms): 491

*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).



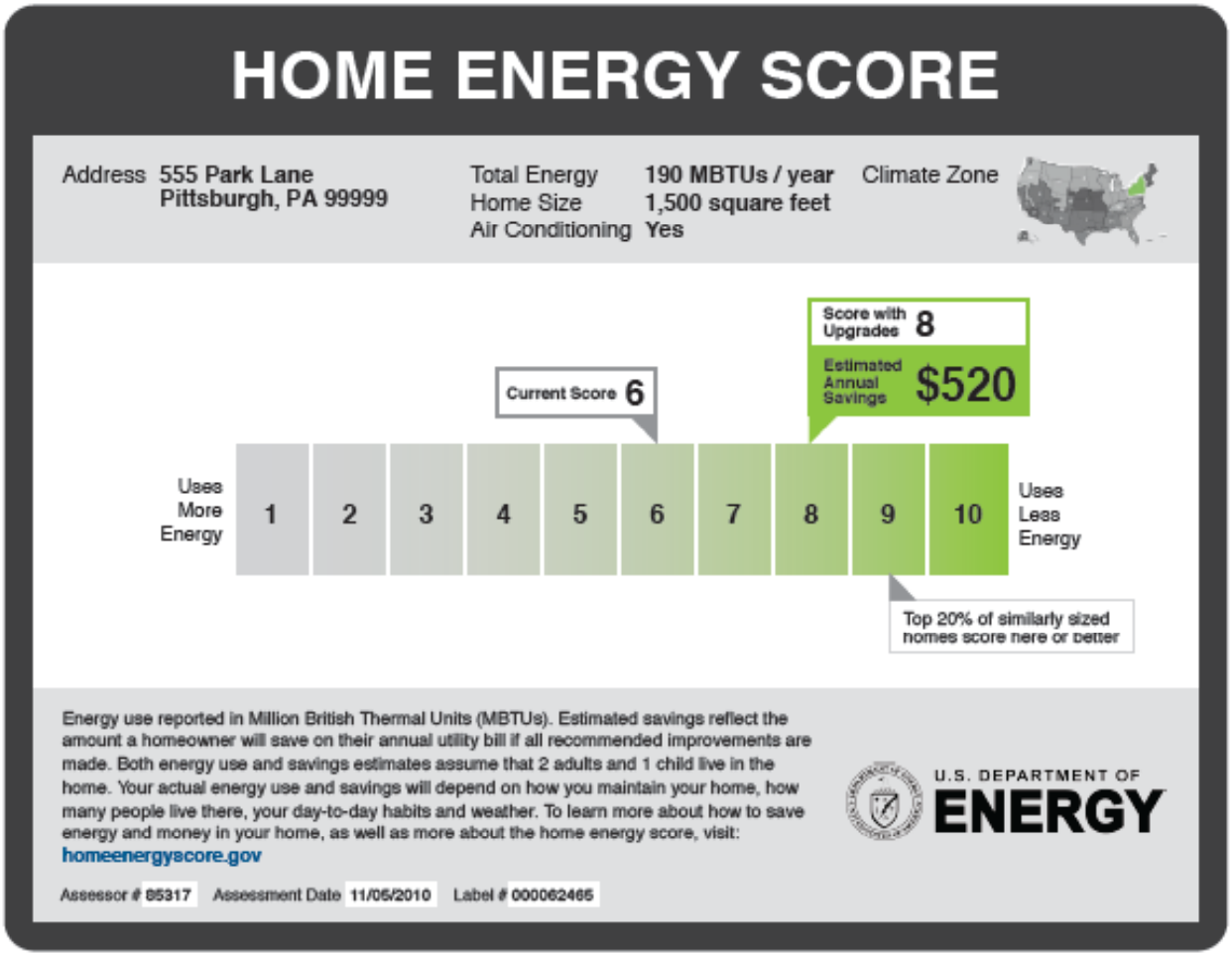
Estimated average carbon footprint: Electric (tons/yr): 3.1, Natural gas (tons/yr): 1.8

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.

EnergyTrust of Oregon

draft

DOE's Home Energy Score



Typical Tool Inputs

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

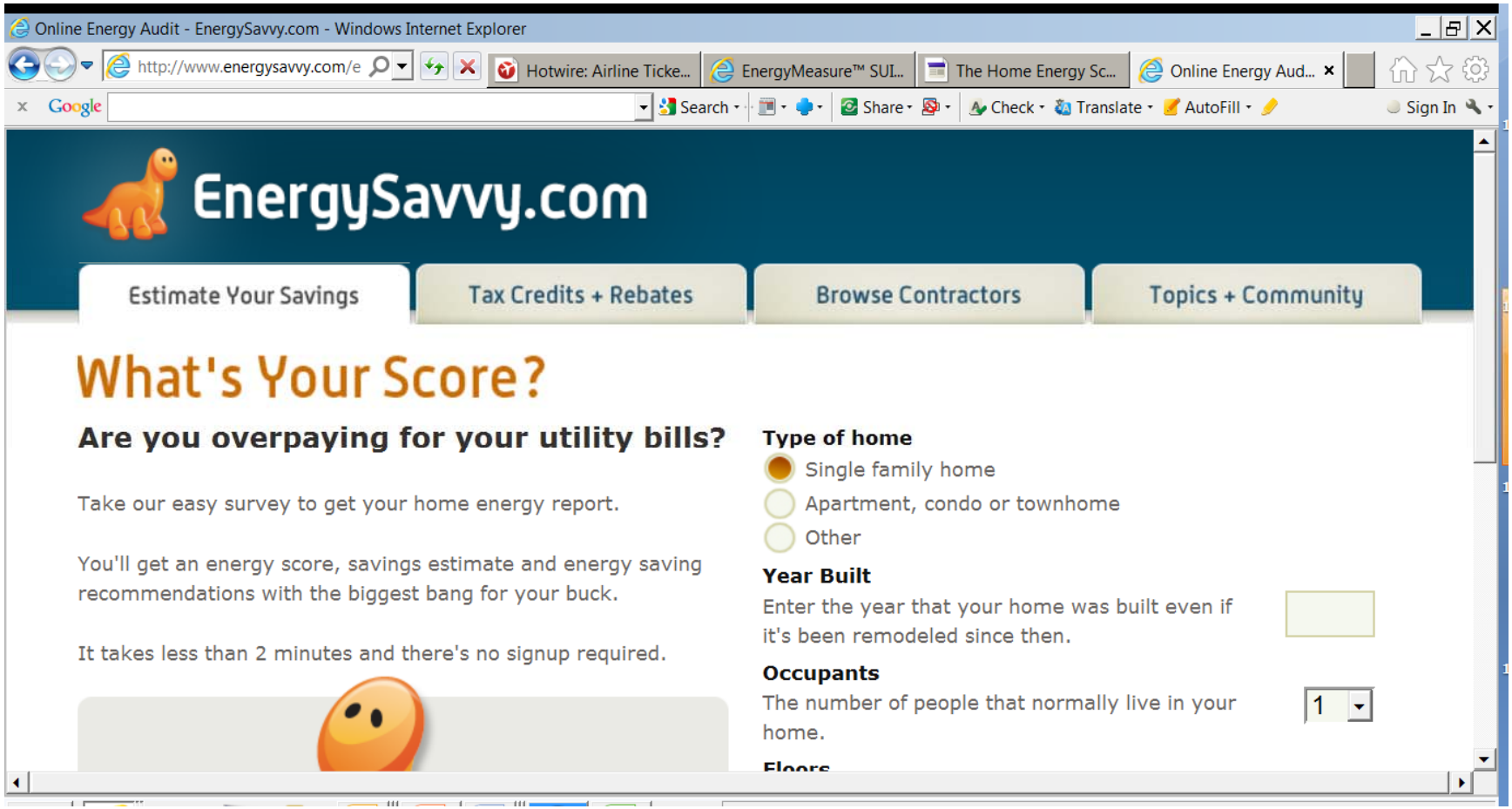
20. Water heater type & fuel
21. Refrigerator type and age
22. Second refrigerator or freezer
23. Describe your lighting (usage & efficient bulbs)
24. Are there a lot of electronic and entertainment devices in your home?
25. Showers usage

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 +/- 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

- http://www.energysavvy.com/home-energy/



Q&A

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