

Oregon Department of Energy

HOME ENERGY PERFORMANCE SCORES 101

PRESENTATION OUTLINE

- Potential Outcomes
- New Oregon Law and Existing Rule
- U.S. Examples and Policies
- U.S. Software Tools
- International Software Tools
- Potential Questions for this group to address

POTENTIAL OUTCOMES

- **Provide valuation of energy efficiency measures in the home market by making energy performance measures visible**
 - Give contractors a language to explain the added value of energy performance measures to homeowners
 - Help homeowners distinguish the positive energy performance aspects of their home
 - Help buyers consider the energy performance of a home
 - Help appraisers and lenders value energy performance and costs
- **Help utilities and Oregon meet conservation and energy efficiency targets**

NEW OREGON LAW AND EXISTING RULE

HOUSE BILL 2801 SECTION 12 SUBSECTION 2:

In consultation with the OPUC, ODOE shall adopt by rule a voluntary home energy performance score system by which a person may assign a residential building a home energy performance score for the purpose of evaluating the energy conservation and energy efficiency of the building.

HB2801 SECTION 3 SUBSECTION 2:

“Home Energy Performance Score” means a score assigned to a residential building using the home energy performance score system adopted by the State Department of Energy under section 12 of this 2013 Act.

330-063-0000 VOLUNTARY BUILDING ENERGY RATING SYSTEMS

(3) Building energy rating systems shall include the following:

(a) **The estimated total annual energy consumption by fuel type.**

(b) Acceptable **benchmarks** include, but are not limited to:

(A) A similar building built to state building code standards

(B) Oregon or national averages

(C) A comparable-sized building in square footage

(4) Building ratings **may include the estimated amount of carbon dioxide emissions** per housing unit, as a calculation of the carbon intensity for each fuel source used in the unit.

(1) Building energy ratings systems for residential buildings shall meet the following additional requirements:

(a) Include the **estimated total annual energy cost.**

(b) The rating for existing residential buildings shall be an **asset rating** based upon the projected energy performance of the building and **may include a physical inspection of the building.**

(2) **Residential energy use shall be displayed in annual Mbtu as determined by approved energy modeling methods, using standard inputs to represent a typical household.** The annual energy consumption of each fuel (electricity, natural gas, oil, propane, etc) shall be displayed in retail units (kWh, therms, gallons, etc) and estimated annual customer cost based on an Oregon average. Local labeling strategies are encouraged to add local pricing data.

U.S. EXAMPLES AND POLICIES

CALIFORNIA HOME ENERGY RATING SYSTEM PROGRAM ' 1672. Requirements for Rating Systems.

a. Rating Site Inspections and Diagnostic Testing. Each rating shall be based on a **site inspection** of the home, and **diagnostic testing** as specified by the rating system. Each rating system shall have documented procedures for site inspection and diagnostic testing of rated homes.

(b) **Energy Uses Rated.** Each rating system shall rate the total combined energy efficiency of the following energy uses of each home rated:

- (1) space heating;
- (2) space cooling; and
- (3) service hot water.

(c) **Rating Scale.** Each rating system shall rate the annual source energy efficiency of homes on a scale of **0 to 100**. The rating shall be for the combined total of the three energy uses described in Section 1672(b).

CALIFORNIA PROPOSED DISCLOSURE FROM

California Energy Performance Disclosure

In conformance with California Code of Regulations, Title 20, Article 9 (2010)



Portfolio Manager
Building Energy Rating



U.S. Environmental Protection Agency

California Building Energy Performance Rating



Reduce your building energy your way!

Building Information

Building Name: **Grass Valley Office Center**

Building Owner: **Joe B. Owner**

Address: **1234 Rolling Hills Rd.**

City: **Grass Valley**

Zip Code: **95945**

Building ID Code: **001234**

Building Type: **OFFICE**

Gross Floor Space: **63,900 sq. ft.**

Energy Use Index

Actual: **125 kBtu/sf-yr**

Weather Normalized: **130 kBtu/sf-yr**

Energy Use Information

Annual Electricity Usage: **591,760 kWh**

Annual Natural Gas Usage: **13,288 therms**

Other Annual Energy Usage: **None**

Total Site Energy Usage: **3,347,902 kBtu/h**

Renewable Energy Production: **None**

Percent of Electricity from Renewables: **0%**

The Energy Performance Ratings reported here were determined for this building based on recorded energy consumption, building floor area and the following default or actual building characteristics:

| Default | Building Data | Building Characteristic |
|--------------------------|---------------|---------------------------|
| <input type="checkbox"/> | <u>70</u> | Weekly operating hours |
| <input type="checkbox"/> | <u>450</u> | Number of occupants |
| <input type="checkbox"/> | <u>500</u> | Number of computers |
| <input type="checkbox"/> | <u>70</u> | Percent floor area cooled |
| <input type="checkbox"/> | <u>70</u> | Percent floor area heated |

Building Owner Verification

Date: _____ Signed: _____

CITY OF AUSTIN, TEXAS

- The Energy Conservation Audit and Disclosure (ECAD) ordinance, Austin City Code Chapter 6-7, requires that **before the sale of their home**, owners of a single-family home must have an **energy audit** performed on the property.
- If a home needs an energy audit, the seller must provide a copy of the energy audit to the buyer or prospective buyer. **The energy auditor must provide a copy of the energy audit to Austin Energy.**

CITY OF AUSTIN, TEXAS
RESIDENTIAL PROPERTIES MUST USE THE FOLLOWING FORM:



SINGLE FAMILY
Energy Audit Data

*In compliance with the
 City of Austin's Energy Conservation
 Audit and Disclosure Ordinance,
 Austin City Code Chapter 6-7, June 2009.*

Submission Date: _____

PROPERTY

Austin Energy Electric Meter Number _____ Tax Assessor's Property ID _____
 Owner Name _____ Year Built _____
 Street Address _____ Estimated Square Footage _____
 City, State, Zip Code _____

AUDITOR

Auditor _____ Phone Number _____
 Company Name _____ Property Audit Date _____

WINDOWS & SHADING

Type(s) of Window(s) _____
 Type(s) of Existing Solar Shading _____

ATTIC INSULATION

Attic Insulation Type _____ Average R-Value _____
 Open Chases(s) _____

HEATING & COOLING AIR DUCT SYSTEM

HVAC SYSTEM: Condenser: Manufacturing Date _____ Estimated EER _____
 Furnace/AH: Manufacturing Date _____ Estimated AFUE _____
 Pressure Leakage _____ % Leakage _____
 Duct System Type(s) _____ No Duct System _____
 enrolled in the Austin Energy Power Partner Thermostat Program _____

ADDITIONAL SYSTEM: Condenser: Manufacturing Date _____ Estimated EER _____
 Furnace/AH: Manufacturing Date _____ Estimated AFUE _____
 Pressure Leakage _____ % Leakage _____
 Duct System Type(s) _____ No Duct System _____
 Enrolled in the Austin Energy Power Partner Thermostat Program? _____

AIR INFILTRATION/WEATHERIZATION

Exterior doors: weather-stripped or not weather-stripped? _____
 Plumbing penetrations: sealed or unsealed? _____

ADDITIONAL AUDIT INFORMATION

Domestic Water Heater Type(s) _____
 Type(s) of Toilet(s) _____

800819

AUSTIN RENTAL PROPERTIES REQUIRE ADDITIONAL DISCLOSURE

2011



Austin City Code Chapter 6-7, Energy Conservation

ENERGY GUIDE FOR PROSPECTIVE TENANTS

ESTIMATED MONTHLY ELECTRIC COST



THIS PROPERTY

This graph above represents the range of electric costs for Austin properties of a similar type to this one.

This property is:

- all electric
- built before 1985
- 800 sq. ft. average apartment size

Cost information:

- is based on this facility's average size apartment,
- based on a cost of \$0.10 per kWh, and
- is updated annually.

1,200 kWh

ESTIMATED MONTHLY ELECTRIC USE

For details, visit the web site austinenergy.com/go/ECAD, call 482-5278 or see QR Code:



YOUR BILL

Your actual bill will depend on many factors:

- Weather (bills are higher in extreme heat and cold – especially if electric heat is used),
- Thermostat settings,
- Number of occupants,
- Lifestyle habits,
- Size and location of unit (upper floors and south and west facing units are generally warmer),
- Energy efficiency measures in place, and
- Age and type of heating/cooling equipment.

ENERGY AUDIT RESULTS FOR THIS PROPERTY:

4321 APARTMENT AVENUE, AUSTIN, TX 78700

STREET ADDRESS

| ENERGY EFFICIENCY MEASURES EVALUATED | AUSTIN ENERGY RECOMMENDS | AUDIT RESULTS (AVERAGED) |
|--------------------------------------|-------------------------------------|--------------------------|
| Air Duct System | Less Than 15% | 44% Leakage |
| Attic or Roof | Between R22–R30 | R-14 |
| Solar Screens or Window Film | On all East, South and West Windows | Complete |

"Average" values are calculated from results obtained from multiple buildings and systems.

CONSTRUCTION YEAR: 1978, 1982 ENERGY UTILITIES: All Electric ENERGY AUDIT CONDUCTED BY: A Qualified Auditor
 NUMBER OF UNITS: 57 DATE OF ENERGY AUDIT: September, 2011 DATE OF DISCLOSURE NOTICE: June 30, 2011

I acknowledge that I have been given an opportunity to review the results of this multi-family property's energy audit conducted in accordance with Austin City Code, Chapter 6-7.

Signature/Date

Owner's Representative

Signature/Date



OREGON
DEPARTMENT OF
ENERGY

U.S. SOFTWARE TOOLS

ARCHITECTURAL ENERGY CORPORATION CERTIFICATE

Home Energy Rating Certificate



5 Stars Plus
Verified Condition

Uniform Energy Rating System

| 1 Star | 1 Star Plus | 2 Stars | 2 Stars Plus | 3 Stars | 3 Stars Plus | 4 Stars | 4 Stars Plus | 5 Stars | 5 Stars Plus |
|---------|-------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|
| 500-401 | 400-301 | 300-251 | 250-201 | 200-151 | 150-101 | 100-91 | 90-86 | 85-71 | 70-0 |

Energy Efficient

HERS Index: **55**

General Information

Conditioned Area: 2146 sq. ft. HouseType: Single-family detached
 Conditioned Volume: 15473 cubic ft. Foundation: Unconditioned basement
 Bedrooms: 3

Mechanical Systems Features

Heating: Fuel-fired hydronic distribution, Propane, 92.0 AFUE.
 Water Heating: Integrated, Propane, 0.85 EF, 80.0 Gal.

Duct Leakage to Outside: NA
 Ventilation System: Exhaust Only: 169 cfm, 54.0 watts.
 Programmable Thermostat: Heating: Yes Cooling: No

Building Shell Features

Ceiling Flat: R-37 Exposed Floor: R-39, R-0
 Vaulted Ceiling: NA Window Type: U:0.35, SHGC:0.30
 Above Grade Walls: R-19 Infiltration:
 Foundation Walls: R-10.0 Rate: Htg: 830 Clg: 830 CFM50
 Slab: None Method: Blower door test

Lights and Appliance Features

Percent Fluorescent Pin-Based: 70.00 Clothes Dryer Fuel: Electric
 Percent Fluorescent CFL: 0.00 Range/Oven Fuel: Propane
 Refrigerator (kWh/yr): 460.00 Ceiling Fan (cfm/Watt): 0.00
 Dishwasher Energy Factor: 0.66

The Home Energy Rating Standard Disclosure for this home is available from the rating provider.

REM/Rate - Residential Energy Analysis and Rating Software v12.5 Vermont

This information does not constitute any warranty of energy cost or savings.
 © 1985-2008 Architectural Energy Corporation, Boulder, Colorado.

Rating Number: [REDACTED]

Export Build Run No: [REDACTED]

Certified Energy Rater: [REDACTED]

Rating Date: [REDACTED]

Rating Ordered For: [REDACTED]

Estimated Annual Energy Cost

Verified Condition

| Use | MMBtu | Cost | Percent |
|-------------------|-------|---------------|-------------|
| Heating | 71.7 | \$2276 | 67% |
| Cooling | 0 | \$0 | 0% |
| Hot Water | 3.9 | \$125 | 4% |
| Lights/Appliances | 22.6 | \$868 | 26% |
| Photovoltaics | -0.0 | \$-0 | -0% |
| Service Charges | | \$119 | 4% |
| Total | | \$3389 | 100% |

This home meets or exceeds the minimum criteria for all of the following:

- Federal Energy Policy Act, 2005*
- Vermont Energy Star Homes Criteria*
- Vermont Residential Energy Code*

* Compliance with criteria for this program is determined by the rater.

Vermont Energy Investment Corp.

255 South Champlain St.
 Burlington, VT 05401
 800-639-6069
 Fax 802-658-1643
 www.veic.org



OREGON
DEPARTMENT OF
ENERGY

ENERGY TRUST OF OREGON EPS



SAMPLE

Energy Performance Score is a tool to assess a home's energy consumption and water footprint.

Energy Performance Score is a tool to assess the energy consumption and water footprint of a home. The score for each assessment is the EPS (Energy Performance Score) which is a home's energy efficiency and a home's water footprint and water conservation.

Estimated Monthly Energy Costs

\$ **120***

Estimated average annual energy costs: **\$1,440***

Estimated average energy costs per month (based on 12 months per year)

Location:
 12345 Southwest Hwy Living
 Corvallis, OR 97331
 Meter Size: 2" Meter
 M3. PORTAGE 2.112
 EPS ASSES DATE: 8-17-11
 Address:
 Corvallis, OR 97331
 County: Polk County (General District)

Energy Score
92

ENERGY CONSUMPTION



Estimated average energy usage (based on 12 months per year) 1.44 kilowatt-hours per month

CARBON FOOTPRINT



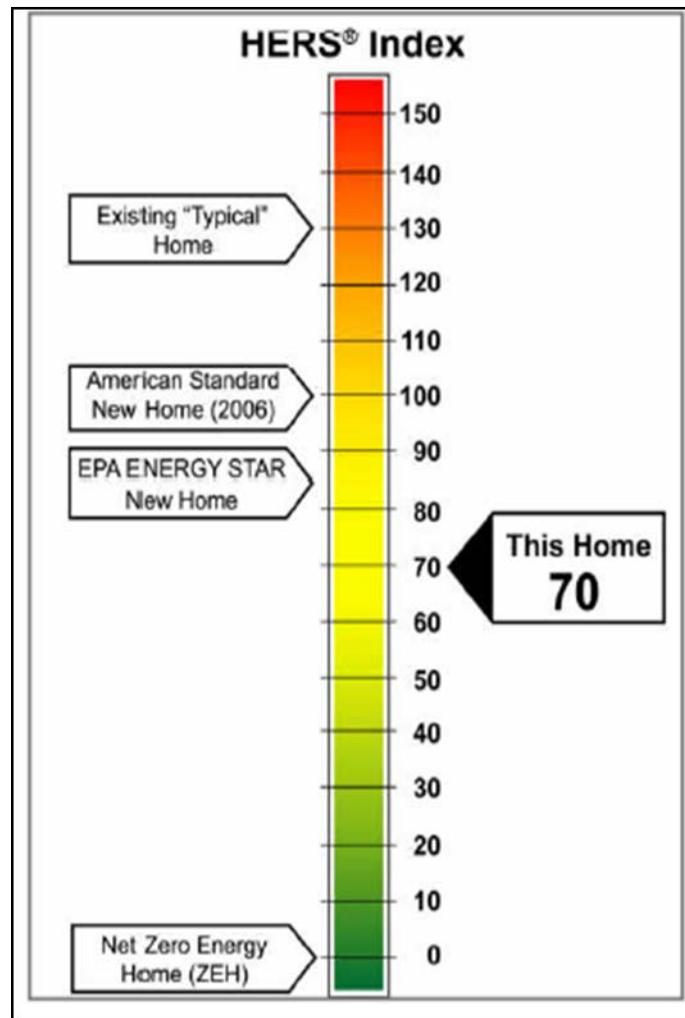
Estimated average carbon footprint (based on 12 months per year) 1.44 kilowatt-hours per month

* Values shown are only estimates and are based on the information provided. Energy Trust of Oregon does not guarantee the accuracy of the information provided. Energy Trust of Oregon is not responsible for any errors or omissions in the information provided. Energy Trust of Oregon is not responsible for any damages or losses resulting from the use of the information provided.

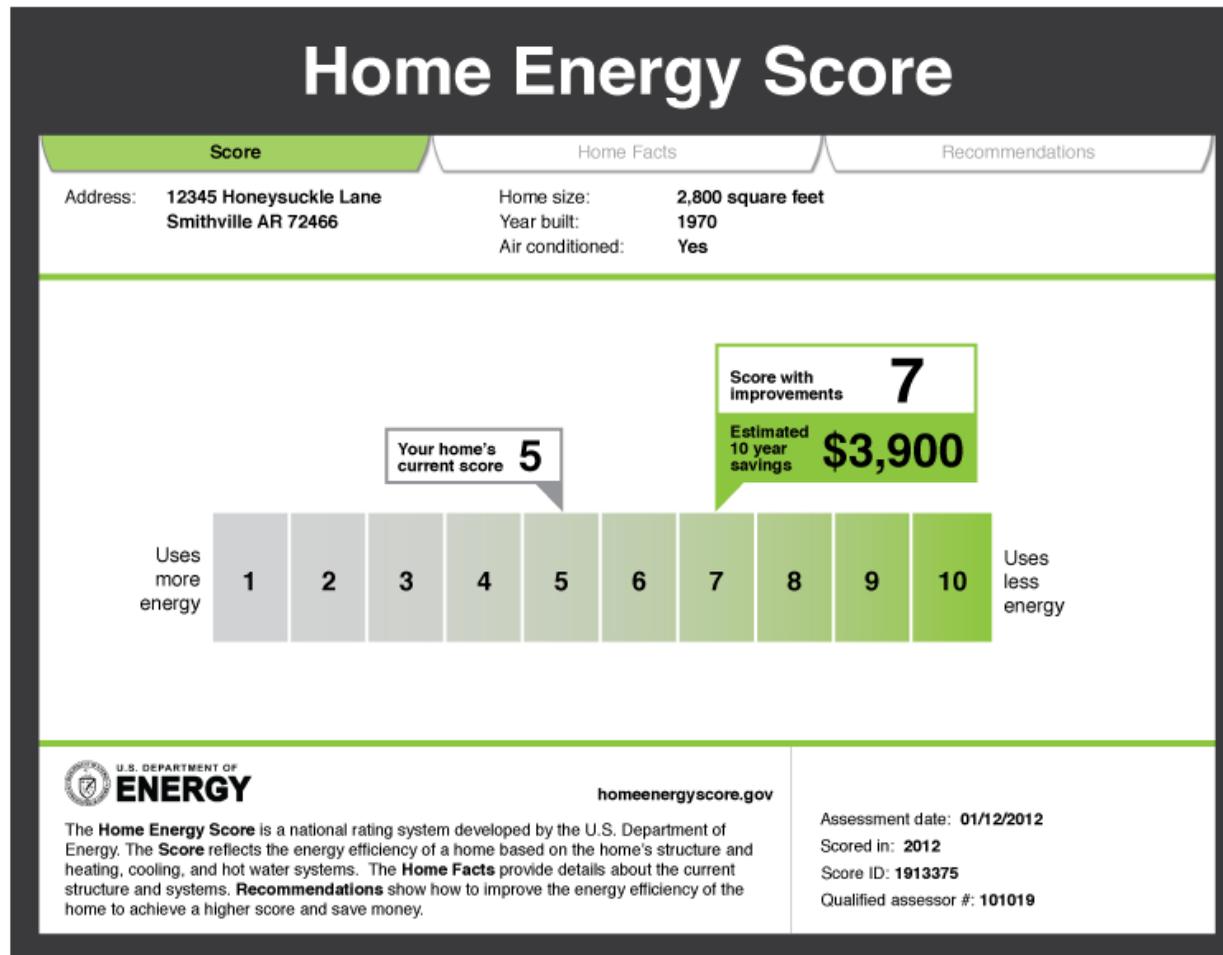
ENERGY TRUST OF OREGON



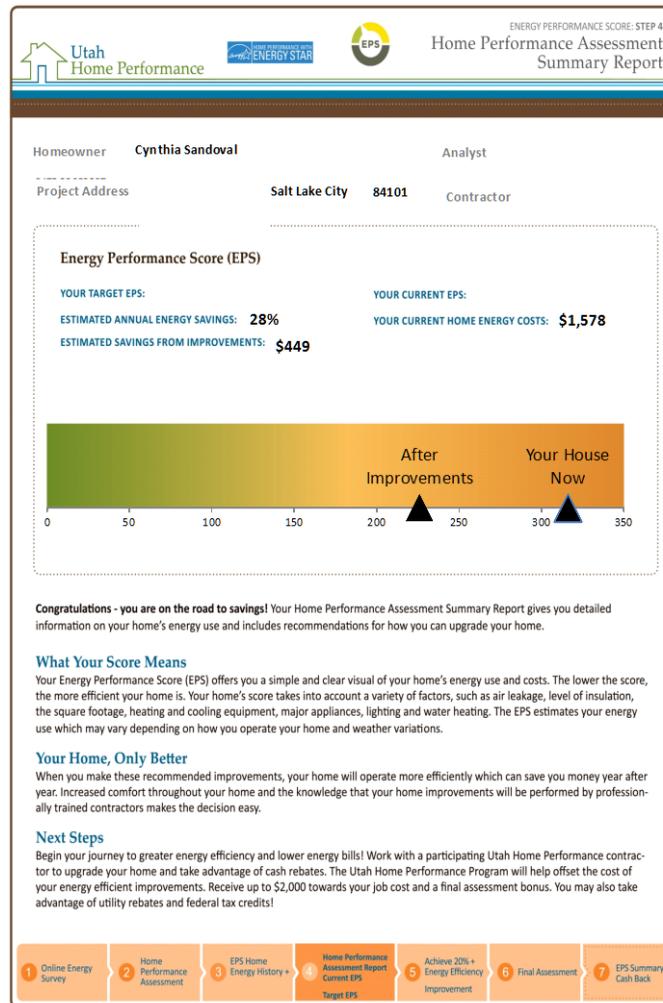
RESNET HOME ENERGY RATING SYSTEM (HERS)



US DOE HOME ENERGY SCORE (HES)



UTAH HOME PERFORMANCE ASSESSMENT



INTERNATIONAL TOOLS

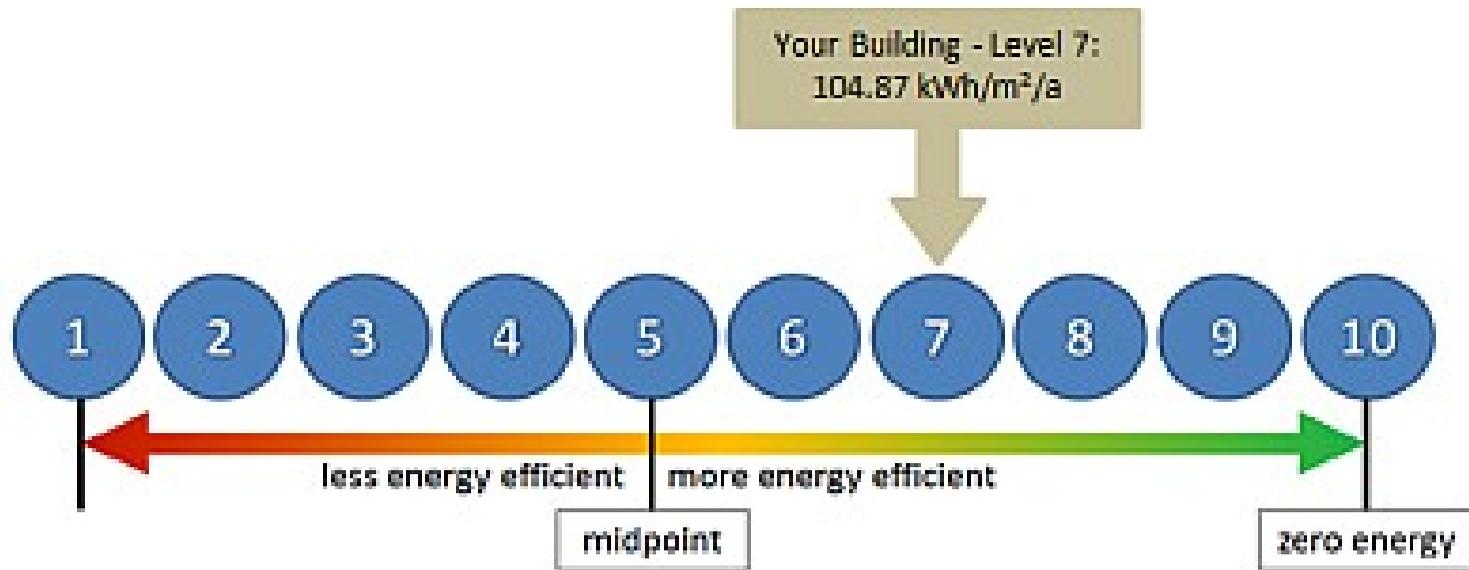
CANADA



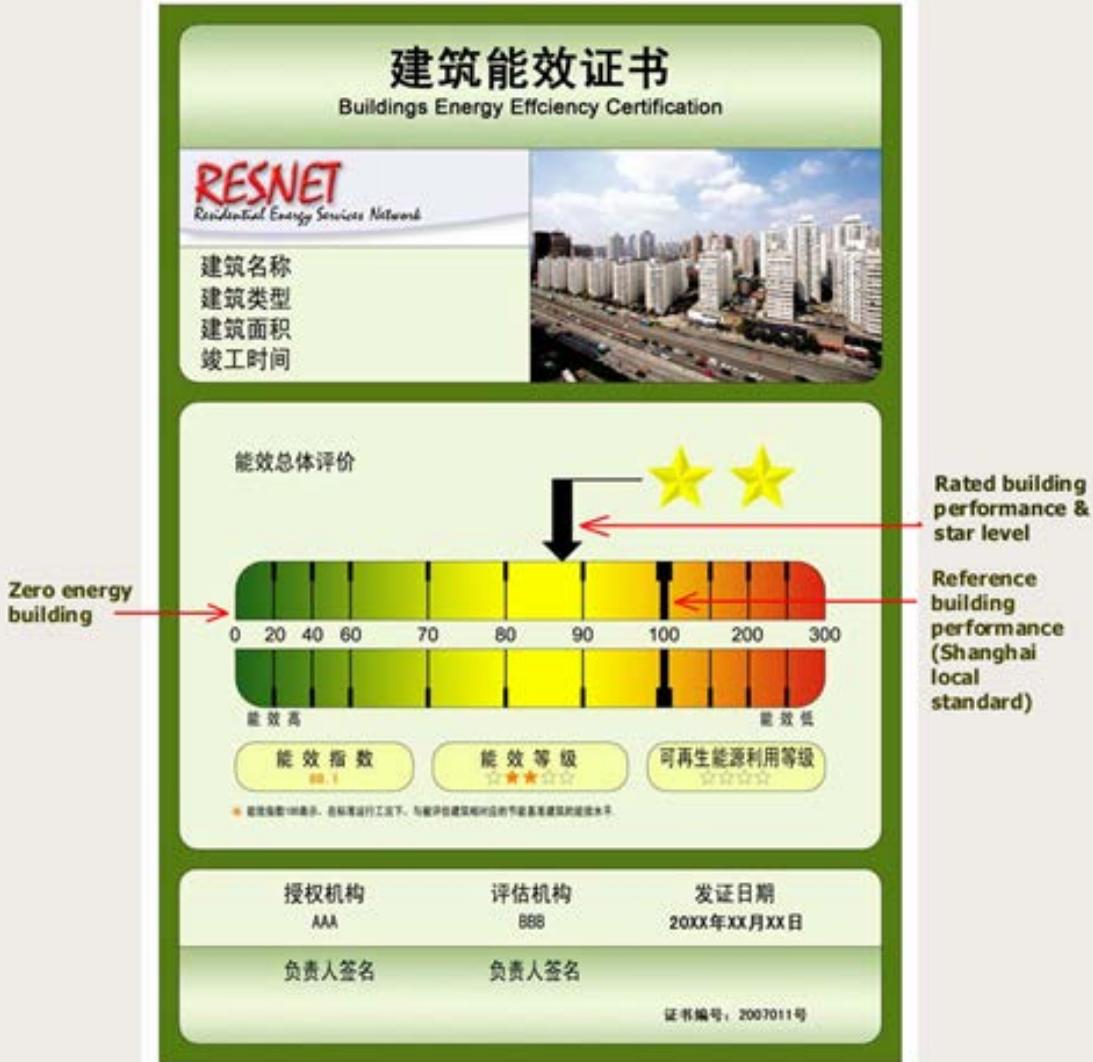
SOUTH AFRICA

Energy Rating: 7

An energy rating of 7 represents a marked improvement in terms of energy usage efficiency of the building, and is operating between 33% and 56% more efficiently than the market average.



SHANGHAI



TURKEY

| ENERJİ KİMLİK BELGESİ | | | |
|--|---|--|--|
| Belge No : Bina tipi : İnşaat yılı : Kapalı Kullanma alanı : Ada, Parsel : Adres : | Tarih : Belgeyi Düzenleyen : Oda Sicil No : Belgenin Son Geçerlilik Tarihi : İmza : | | |
| Mülk sahibi: İsim: Adres: | Müşterek tesisatların sahibi (gerekliyse): İsim: Adres: | | |
| Enerji tipine göre yıllık tüketimler | | | |
| | Nihai Enerji tüketimleri | Birincil Enerji tüketimleri | |
| Enerji Kullanım Alanı | kWsaat | kWsaat | |
| Isıtma : | | | |
| Sıhhi sıcak su : | | | |
| Soğutma : | | | |
| Aydınlatma : | | | |
| TOPLAM : | | | |
| Isıtma, sıhhi sıcak su üretimi, soğutma ve aydınlatma için enerji tüketimleri (birincil enerji olarak) | | Isıtma, sıhhi sıcak su üretimi, soğutma ve aydınlatma için sera etkilil gazı (SEG) emisyonları | |
| Nihai tüketim:kWsaat/ m ² .yıl | | Emisyon salımı:kg _e d CO ₂ / m ² .yıl | |
| Tasarruflu Bina | Bina | SEG Emisyonu Düşük Bina | Bina |
| | | | |
| Enerji Tüketimi Yüksek Bina | kWh/m ² .yıl | SEG Emisyonu Yüksek Bina | kg _e d CO ₂ /m ² .yıl |



**POTENTIAL QUESTIONS
FOR THIS GROUP TO ADDRESS**

- **HOME ENERGY PERFORMANCE SCORE SYSTEM**
 - one specific, named product or tool that produces a home energy performance score, or
 - a defined set of criteria for calculating and reporting a home energy performance score, which could be met by any number of products or tools. *(Current OAR opts for this)*

- **ASSET OR OPERATIONAL RATING**
 - **Asset rating: Comparative Energy Performance***
 - assessment of a building's structural components based on building features and simulated operating conditions. (*Current OAR opts for this*)
 - **Operational Rating: Comparative Energy***
 - performance assessment of a building based on actual energy consumption and operating conditions, typically normalized for climate, occupancy, operating hours, floor area and other factors.

*Borrowed from Richard Faesy, Energy Futures Group, August 12, 2011 Presentation

- **SITE ENERGY VS. SOURCE ENERGY DISCLOSURE:***
 - Customer side “of the meter” vs. from extraction and utility (*Current OAR requires site through score, and source through carbon emissions*)

*Borrowed from Richard Faesy, Energy Futures Group, August 12, 2011 Presentation