Oregon Task Force on Energy Performance Scores

Report to the Oregon Legislative Assembly

September 2010

OREGON
DEPARTMENT OF
ENERGY

Report to the Oregon Legislative Assembly
Oregon Task Force on Energy Performance Scores
September 2010

For copies of the report, see
http://www.oregon.gov/ENERGY/CONS/EPS/

or contact:
Oregon Department of Energy
625 Marion Street NE, Salem, OR 97301-3737
503-378-4040 or 1-800-221-8035 (toll-free in Oregon)
E-mail to: energyweb.incoming@state.or.us

Energy Performance Scores Task Force Members:

Chair:

Mike Arnett	President, Lifestyle Homes

Vice-Chair:

Shaun Jillions	Oregon Association of Realtors

Task Force Members:

Denise Bower	Community Management Inc.
Jack Davis	Northwest Energy Efficiency Alliance
Jeff Dreyer	Rosendin Electric
Andrew Dykeman	Lease Crutcher Lewis
Bill Edmonds	NW Natural Gas
John Endicott	UA Local 290 Plumbers & Steamfitters
Nathan Good	Architects PC
Robert Simonton	Oregon University System
Kendall Youngblood	Energy Trust of Oregon
Jim Kitchin	Interworks LLC
Theresa Gibney	Public Utility Commission

Report to the Oregon Legislative Assembly
By the
Task Force on Energy Performance Scores

Executive Summary

The Task Force on Energy Performance Scores was created by Senate Bill 79 in the 2009 Oregon Legislative Session. The focus of SB 79 was to increase energy efficiency in commercial and residential buildings. The bill called for increasing energy conservation requirements in the state building construction codes, creating a voluntary "Reach Code" to encourage even greater efficiencies in the construction of buildings, and a Task Force to investigate voluntary and mandatory building energy scores.

The job of the Task Force was to research existing building energy scoring systems currently in use and make recommendations for Oregon. A building energy score is analogous to the miles per gallon rating given to motor vehicles. The idea behind a building energy score is to make available a rating of the building's energy efficiency for use by the owner or prospective buyer or renter in making purchasing decisions, and decisions about possible energy efficiency upgrades to the building.

The Task Force was comprised of 13 members from stakeholder groups with interests and expertise in building energy efficiency. The Task Force was charged with making recommendations to the Oregon Department of Energy (ODOE) regarding a voluntary scoring system, and with making a report to the legislature including recommendations regarding a mandatory scoring system.

The Task Force met regularly between January and July 2010. The Task Force heard presentations by experts in the field of building energy efficiency, and from individuals from the major scoring systems currently in use in the United States.

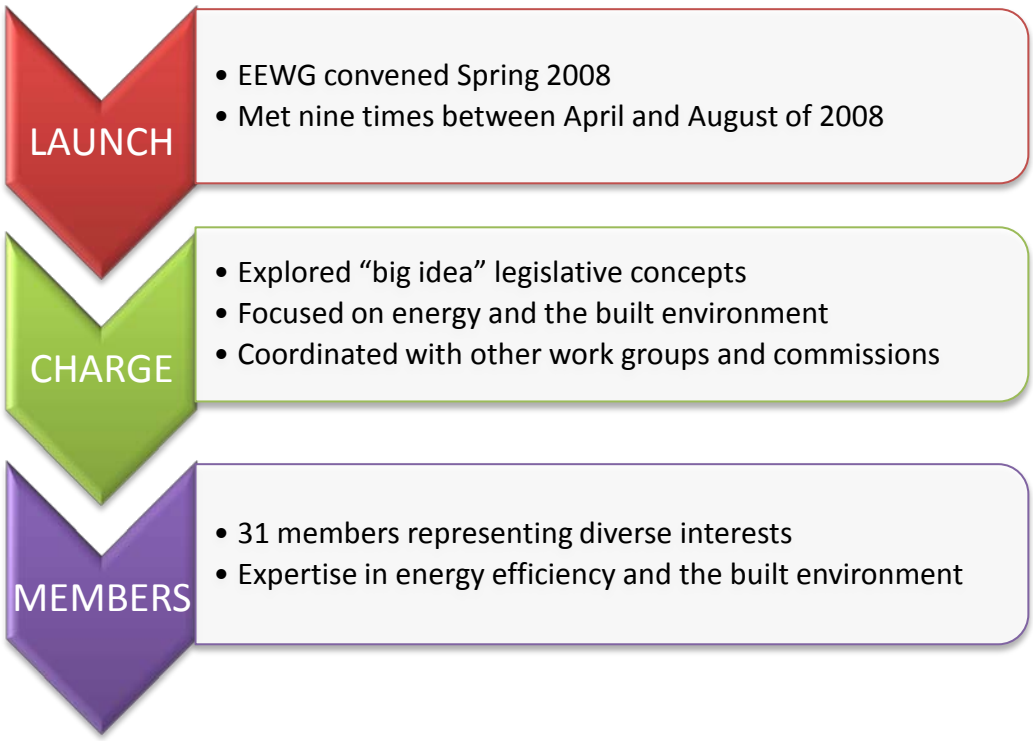
Recommendations for a voluntary building energy scoring system were formulated and presented to ODOE. The recommendations formed the basis of administrative rules which went into effect July 1, 2010. The rules spell out a consistent methodology for building energy scoring, the metrics and format for displaying the score, and software approval requirements. The rules were designed to be flexible enough to accommodate a national score when USDOE comes out with one, scheduled to occur this fall.

A majority of the Task Force did not support mandatory energy scores for buildings, citing cost, privacy, workforce infrastructure, and enforcement issues. The members who supported mandatory scores cited concerns about global warming and the need to reduce energy consumption. The Task Force did agree on several recommendations for the legislature to consider. These recommendations would strengthen the voluntary building energy scoring rules. The Task Force agreed to recommend a physical inspection requirement for residential buildings, a certification requirement for raters, and granting authority to ODOE to approve software tools used to produce energy scores.

History

Senate Bill 79 was passed into law by the 75th Oregon Legislative Assembly in the 2009 Regular Session. The legislation grew out of the governor's legislative agenda which included reducing energy use in Oregon with a focus on energy efficiency in the built environment.

In the spring of 2008 the governor convened the Energy Efficiency Work Group (EEWG). This group consisted of 31 members representing a broad range of stakeholder groups. The charge of the group was to explore "big idea" concepts around the subject of energy efficiency for the legislature to consider.



The EEWG produced 12 concepts in three categories: information and training, codes and standards, and financial incentives. Several of its recommendations from the information and training category became the substance of SB 79.

SB 79 consisted of two main components. One focused on building codes, providing for the revision of the state's commercial and residential building codes to increase energy efficiency in new buildings from 10 to 25%; and to create a Reach Code to promote voluntary construction of energy efficient buildings above and beyond the requirements of mandatory building codes. The other provided for the creation of a Task Force to examine the subject of building energy scoring, a concept analogous to the miles per gallon score given to automobiles. The stated goal of SB 79 was to reduce energy consumption in buildings.

The Task Force was comprised of 13 members representing a wide variety of stakeholders from the utility industry, commercial and residential contracting, building design professionals, building trades, property management, real estate, the university system, providers of energy efficiency incentives, and the Public Utility Commission. Oregon Department of Energy (ODOE) and Department of Consumer and Business Services (DCBS) provided staff support for the Task Force.

The Task Force met for the first time on January 5, 2010 and held nine public meetings through July, 2010. This report contains the substance of the discussions and the recommendations of the Task Force**.**

Guiding Principles for the Task Force

From the beginning, the Task Force concentrated on the three tasks outlined in SB79. The Task Force divided its work into three phases based upon the language of the bill:

Phase 1: Study and evaluate energy use in new and existing commercial and residential buildings in Oregon.
Phase 2: Develop recommendations for a voluntary energy performance scoring system for use in new and existing commercial and residential buildings.
Phase 3: Make recommendations regarding the implementation of a statewide mandatory energy performance scoring system for new and existing commercial and residential buildings.

In carrying out its duties, the bill directed the Task Force to give consideration to the following:

- Energy performance scoring methods that are used in Oregon or have been adopted by other municipalities, states or nations;
- The estimated costs per building to obtain an energy performance score;
- The identification of a consistent methodology for determining an energy performance score;
- The reliability of the energy performance score and the relationship of the score to the goal of reducing energy consumption in buildings;
- Necessary qualifications or other criteria for persons responsible for determining the energy performance score of a building;
- The features for a uniform score publication method to make scores readily available to potential building purchasers and the public;
- The ability to compare energy performance scores;
- The availability of state or local governments or private entities to timely conduct energy performance scores; and
- Any other matters the Task Force believes would enhance the creation of an energy performance scoring system.

The bill directed the Task Force to make any recommendations for a voluntary energy performance scoring system in time for the Oregon Department of Energy to adopt rules by July 1, 2010. This was done and rules went into effect July 1, 2010. The bill also directed the Task Force to submit a report to an interim committee of the Legislative Assembly by October 1, 2010. This is that report.

The Task Force sought to remain true to the intent of the legislation by keeping focused on the bill's stated goal of reducing energy consumption in buildings, and to keep its decisions consistent with the statutory authority of the Department of Energy.

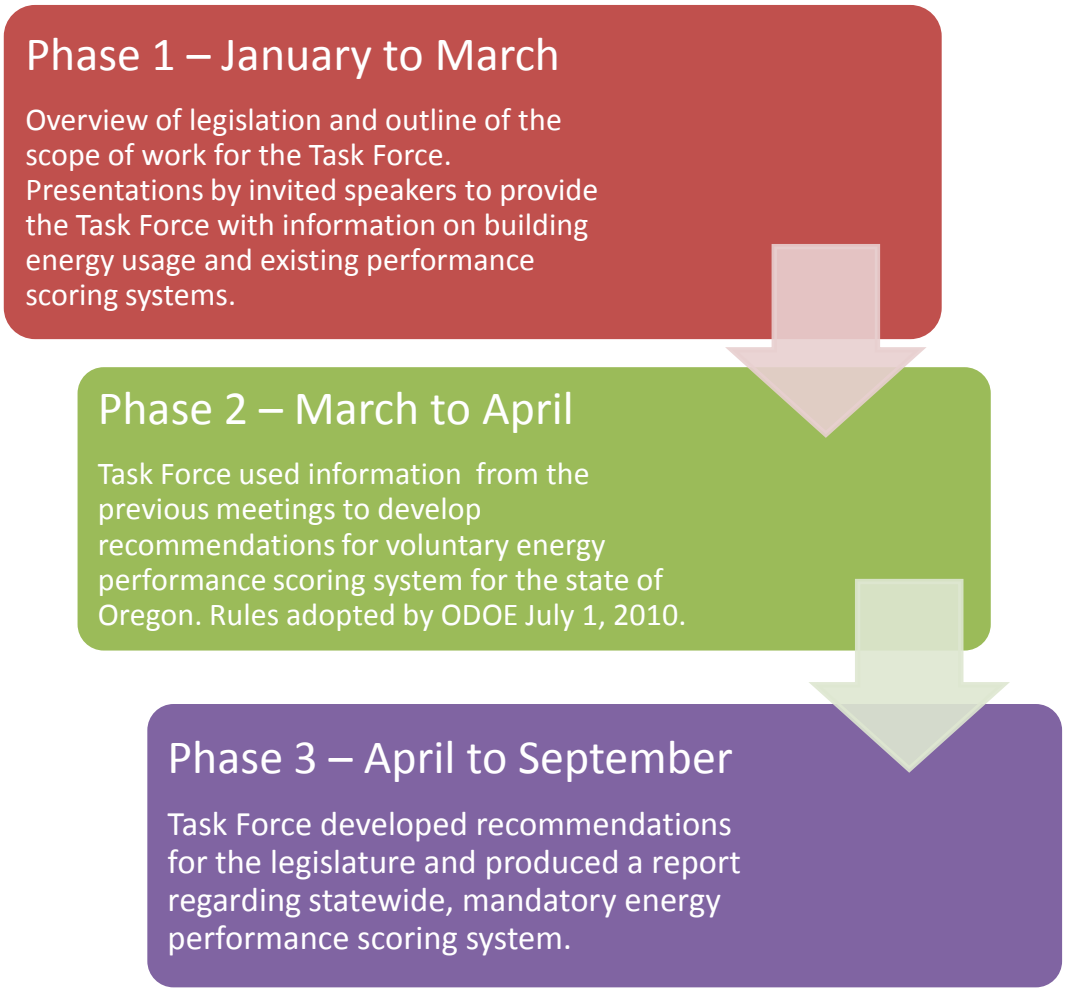
Task Force Work Plan

The work of the Task Force was organized into three phases.

In Phase 1 the Task Force was evaluating building energy use. Experts were invited to make presentations to the Task Force regarding energy use in general and building energy use specifically. This provided perspective for the Task Force members on the sources and uses of energy in the state and nationally.

In Phase 2 the Task Force worked on formulating recommendations for a voluntary energy performance scoring system for use in Oregon. Experts made presentations to the Task Force regarding the variety of building energy scoring systems in use around the country and the world. There were also specific presentations about the building energy scoring system pilot in Oregon by the Energy Trust, and from the two major building energy scoring systems in use nationally in residential and commercial applications.

In Phase 3 the Task Force discussed the information received in previous meetings and evaluated the pros and cons, benefits and costs, of a potential mandatory building energy score for residential or commercial applications in Oregon.



To aid the Task Force by providing background, context, and information about building energy rating efforts taking place in other parts of the country and the world, various resources were recommended by Task Force members and stakeholders. A major study was completed for a regional effort in the Northeast and a report published by the Northeast Energy Efficiency Partnership (NEEP). This report, *Valuing Building Energy Efficiency Through Disclosure and Upgrade Policies – A Roadmap for the Northeast US* made several key recommendations:

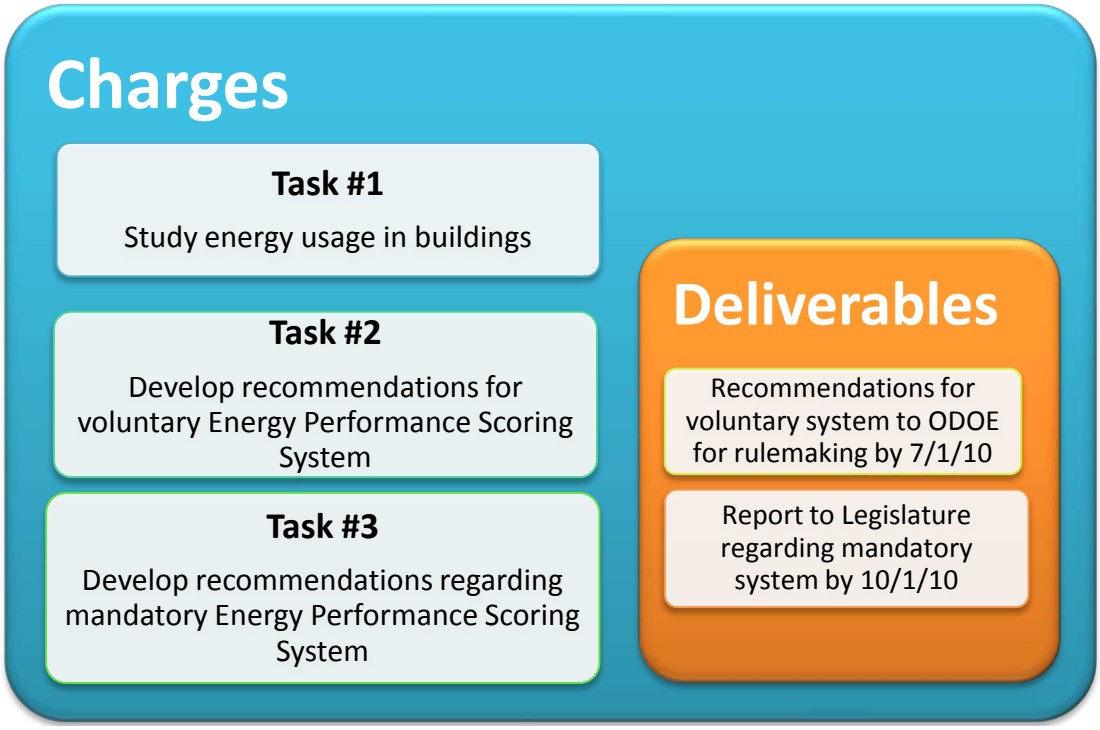
- Use a national-level rating system
- Adapt the rating system to state-specific needs
- Building energy rating policies must be mandatory in order to be effective
- Residential energy ratings should be based on an asset rating (based on modeling the home's design rather than actual energy use)

- Commercial buildings should use both an asset (based on building modeling) and operational (based on actual energy use) rating
- Enforcement should be a priority
- Requirements should be phased in

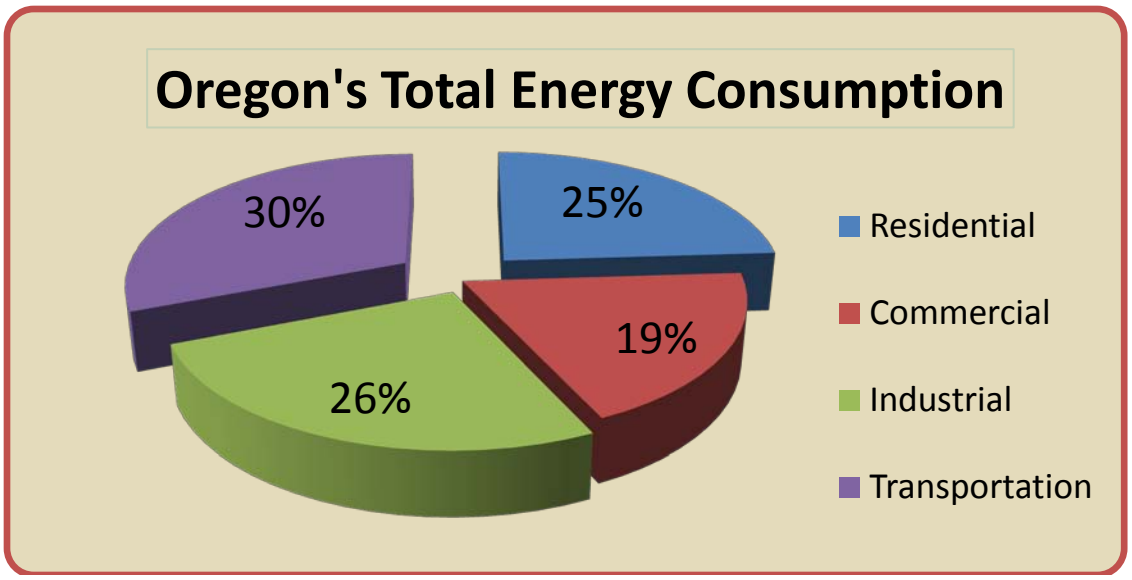
Other resources recommended to the Task Force included the 2008 Energy Trust Pilot EPS Report, and reports on similar building energy scoring projects from the cities of Austin, San Francisco, and Seattle, and reports from Maine and Nevada. These and other resources were posted to the "Resources" section of the Task Force website. The NEEP report Executive Summary, and representative state reports are included as appendices.

Phase 1: Study and evaluate energy use in new and existing commercial and residential buildings in Oregon.

During Phase 1 the Task Force learned that energy use in residential and commercial building taken together account for over 40% of the total energy consumed from all sources in Oregon.



The Task Force learned that energy efficiency is the least costly way to extend our energy resources. When compared with the cost of constructing new energy generation facilities, capturing energy efficiency in buildings is relatively inexpensive. The West, already generally more energy efficient than the rest of the country, still has an enormous opportunity to capture additional energy savings in the built environment.



Source: U.S. Energy Information Administration – State Energy Data 2008: Consumption
http://www.eia.gov/emeu/states/sep_use/notes/use_print2008.pdf

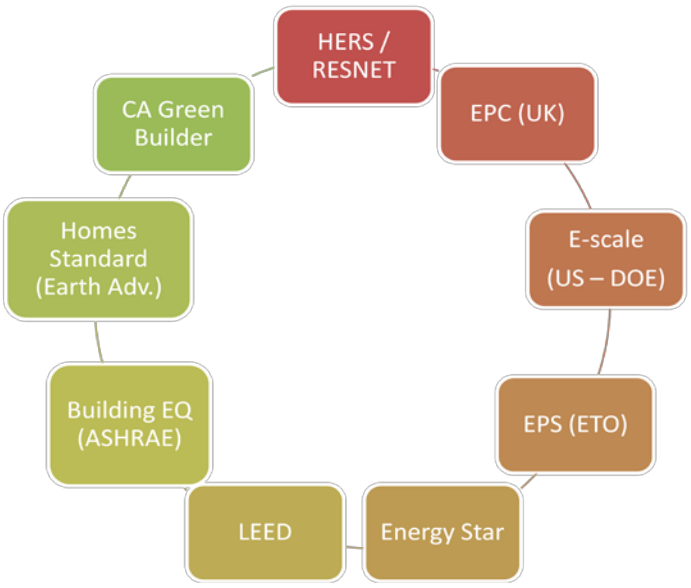
The Northwest Power Planning Council's Sixth Power Plan finds that enough energy conservation is available and cost-effective to meet 85 percent of the Northwest region's energy load growth for the next 20 years.

Phase 2: Develop recommendations for a voluntary energy performance scoring system for use in new and existing commercial and residential buildings.

During Phase 2 the Task Force gathered information on existing and proposed building energy rating systems. The Task Force learned about the features of various systems, their pros and cons, and their costs. Similar initiatives in other states and other countries were examined. The job of the Task Force in this phase was to formulate recommendations for a voluntary building energy scoring system. SB 79 instructed the Task Force to make recommendations in time for ODOE to adopt rules by July 1, 2010. This was accomplished and rules went into effect July 1, 2010.

The Task Force heard presentations about a variety of energy scoring systems in use nationally and internationally. Through the Task Force's investigations, two existing residential rating systems appeared most relevant in meeting the SB 79 criteria and to the future development of a voluntary and/or mandatory system for Oregon. The first is the Energy Performance Score (EPS) system which was developed by a team of the Energy Trust, Portland Energy Conservation, Inc, Earth Advantage, and Conservation Services Group. They have had an EPS for new construction available since mid 2009, and piloted a system for existing homes in 2008, issuing a report in August 2009. The other system is the Home Energy Rating System (HERS) produced by the national organization Residential Energy Services Network (RESNET). The RESNET group develops standards for energy audits, and trains and certifies home energy raters. The HERS rating is the most widely used residential scoring system.

Review existing energy performance scoring systems



The state of Nevada has recently begun requiring point of sale home energy scores and is requiring the use of the HERS system. Both EPS and HERS measure the energy efficiency of the home, estimate total annual energy use for electricity and natural gas, and estimate carbon emissions. Additionally, the EPS score shows total energy consumption in BTUs (British thermal units), a metric the Task Force found useful and included in its recommendations.

For existing commercial buildings, the Energy Star Portfolio Manager (E*PM) developed by the US Environmental Protection Agency (EPA) is the major national player. The system is available online at no cost. Training is available from EPA. This is an "operational" rating, meaning it utilizes actual energy use data from utility bills to produce the score. Buildings are rated relative to other buildings of the same type. For new commercial buildings, Energy Star Target Finder is available.

The rules which went into effect July 1st spell out a consistent methodology for building energy scores; define residential and commercial structures, the metrics and format for displaying the score, and necessary approval by USDOE of software tools used to produce scores. The rules are flexible enough to accommodate a national score when USDOE comes out with one, scheduled for this fall.

Some Task Force members would have preferred to see some additional rule language for inspection requirements, rater qualifications and certification. However, in the opinion of staff there is insufficient statutory authority to make inspections and certifications mandatory. In addition, some on the Task Force felt that software approval by a state agency would be advantageous. Representatives of Oregon Housing and Community Services (OHCS) expressed concerns that if energy scores were produced using software which had not gone through the

USDOE approval process, this could disqualify low income home owners from accessing weatherization programs funded by the federal government.

Phase 3: Make recommendations regarding the implementation of a statewide mandatory energy performance scoring system for new and existing commercial and residential buildings.

In the last phase of the Task Force's work the possibility of a mandatory energy scoring system for buildings was discussed. One of the key recommendations of the NEEP report for the Northeastern states was that energy scoring systems needed to be mandatory to be effective in reducing carbon emissions and energy use in buildings.

The Task Force had a robust discussion around the issue of mandatory versus voluntary energy scoring. Of the thirteen member Task Force, two members were in favor of mandatory building energy scores, one member was undecided, and eight members were in favor of building energy scores remaining voluntary (the two state agencies represented on the Task Force remained neutral).

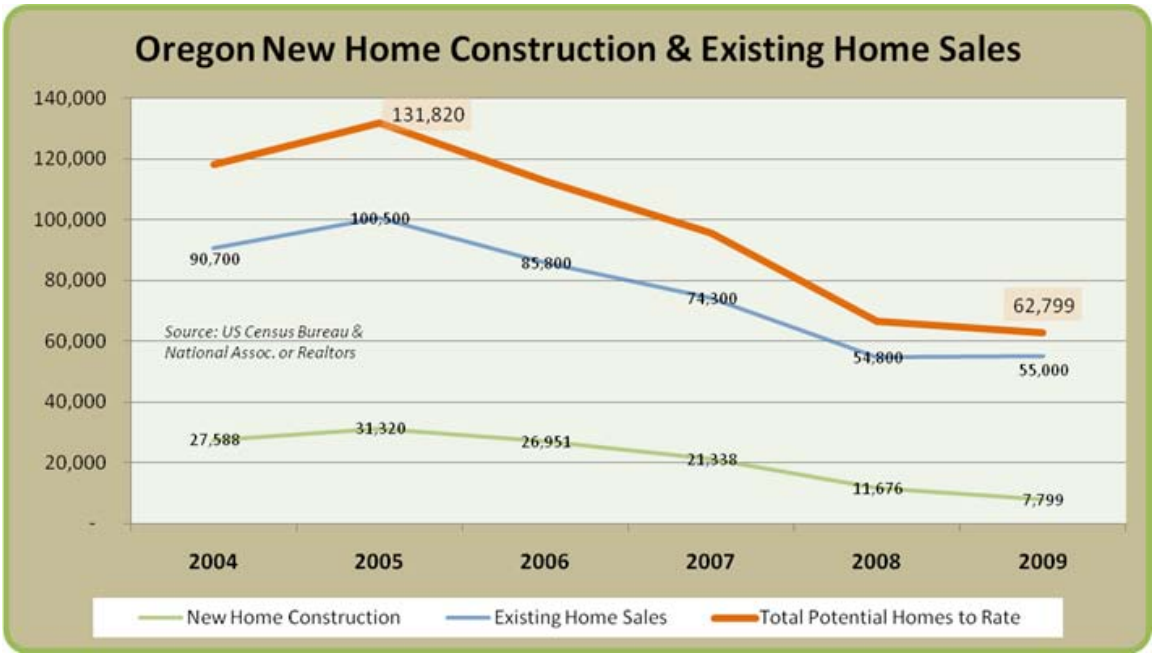
The two members favoring a mandatory system cited the benefits of energy scoring information to prospective purchasers or renters of buildings, and encouraging energy upgrades to buildings. In their view, the effectiveness of voluntary energy scores in helping to produce reductions in energy use in buildings would be very limited. They cited the NEEP report which expresses concerns about global warming and the need to reduce energy consumption. They referred to the added value of a mandatory system. In their view, the reason for the legislation in Oregon was that there is a recognition we need to achieve greater energy savings. An energy scoring mechanism is a tool that can be added to the suite of other tools that are already in the marketplace to reach the people who aren't willing to pay attention to all the education efforts going on around energy issues, and who aren't willing to participate in a voluntary way. Having energy scoring data would provide important information needed to help building owners make energy upgrades.

Proponents of mandatory scoring acknowledged the fact that the disclosure of building energy data is controversial. It would be critical to mandate that utilities support the providing of data to those needing it to generate scores, and for privacy issues to be resolved. They also pointed to the fact that organizations in the energy scoring business are continually working to reduce the costs and improve the accuracy of energy ratings.

One Task Force member was undecided about mandatory vs. voluntary energy scoring. This member expressed a general opposition to increasing regulations, but also recognized there is a societal cost and consequences to energy consumption. This member was hopeful that energy savings could be achieved through incentives and voluntary means. Public education would play a major role if substantial energy savings are to be achieved. The LEED building certification system was cited as an example of a voluntary program that is working and gaining traction in the free market. However, because of the importance of energy savings being achieved on a significant scale, this Task Force member might support a mandatory system if the voluntary system proved ineffective.

The majority of the Task Force, eight members, supported energy scoring remaining voluntary. They cited issues of the costs to property owners and government agencies, privacy issues, and the potential negative effects on property values for inefficient buildings. Lack of sufficient numbers of qualified raters and enforcement concerns were also raised.

The first major concern was cost. To give some perspective on statewide costs of requiring energy scores; the cost of obtaining energy score for a residential structure currently averages between $500-700.



Year	Total Homes to Score	Cost of Energy Score @ $500 per Unit
2005	131,820	$ 65,910,000
2006	112,751	$ 56,375,500
2007	95,638	$ 47,819,000
2008	66,476	$ 33,238,000
2009	62,799	$ 31,399,500

In 2009 just over 60,000 homes were sold. At $500 per score this would amount to just over $30,000,000 in costs to Oregonians statewide to obtain scores if they were required at the point of sale. How these costs would be covered – whether through government programs, private individuals, energy rating organizations, or some other way – are policy decisions that would need to be worked out if energy scores were mandatory. The cost of energy upgrades still need to be added to this total because as one member pointed out, getting the score doesn't save any energy. The cost of rating commercial buildings is not included either. The state of the economy was of major concern and it was stated that putting additional burdens on property

owners was ill advised. In addition, there would be governmental costs to administer the program, maintain data, provide training and education, issue or verify licenses, and conduct enforcement activities.

Privacy issues about energy scores, coupled with property value concerns were raised numerous times during the Task Force proceedings. This is a major concern of those who favor a voluntary system. The potential of older or less efficient buildings being hurt by a required energy score and its public disclosure was thought to be unfair. Property values have declined significantly in the last couple years. It was stated that 25-33% of all homeowners are "under water" in their mortgages. To further devalue buildings because of energy scores, and to add costs to real estate transactions, was thought to be bad policy.

Rater infrastructure and enforcement were concerns as well. If point-of-sale energy scores were required, that would require a workforce capable of supplying thousands of scores each year (over 60,000 last year for residential alone). At present there are very few qualified raters in Oregon. In addition, there would need to be an enforcement structure in place to insure that raters possessed proper certifications and ratings were properly done. This would likely prove very challenging for state and local governments which are currently facing significant budgetary and staffing limitations.

Proponents of a voluntary system believed that the best use of resources would be to provide education about the benefits of energy efficiency, and the incentives that are available for making improvements to building energy efficiency. The programs available through the Energy Trust and other utility incentives were noted. In their view the "carrot" of free energy audits and low interest loans to make energy improvements, rather than the "stick" of requirements is more productive. They expressed the hope that a voluntary system and associated incentives for energy upgrades would be attractive enough that it would open up the market for loans and homeowners and Realtors would see energy efficiency as a benefit and not just a cost. Those in favor of a voluntary system believed that the marketplace was the best mechanism to decide these issues.

Recommendations

Notwithstanding the diversity of opinions represented by the Task Force membership, there was consensus that strengthening the voluntary scoring system would add value.
The Task Force discussed various changes to the voluntary system rules which they believed would be valuable.

The following three recommendations to the Oregon Legislature were agreed upon by the Task Force:

1) ***For residential ratings, physical inspection of the building should be required.***

Staff has determined that statutory authority to require inspections would need to be granted to a state agency. Statute would need to provide for staffing, fees, and rulemaking as well.

2) ***Those engaged in the business of producing building energy ratings should be required to have a certification from Building Performance Institute (BPI) or Residential Energy Services Network (RESNET).***

Staff believes this recommendation will require legislation as well, granting the necessary statutory authority to a state agency to require certification of individuals producing energy ratings.

Currently, as part of the federal Energy Star Homes program ODOE is the state certifying organization for home "verifiers" and provides them with training in the administrative rules for the Energy Star Homes program. However, beyond this ODOE does not issue certifications or licenses, nor does it have statutory authority to do so. This authority would have to be granted to ODOE through legislation, or added to a state agency that already possesses such authority, like the Construction Contractors Board, or the Building Codes Division, for example.

BPI and RESNET are recommended because they are national organizations engaged in the business of training and accrediting individuals and companies in the building energy industry.

BPI is an independent, nonprofit organization that develops technical standards for home performance and weatherization retrofit work that are recognized across North America. From these standards, they develop training programs, and professional credentialing for individuals and company accreditations.

BPI certified individuals have proven their skills, meeting nationally recognized standards by passing written and field examinations. Ongoing Continuing Education Units are required to keep these individuals on top of emerging issues, technologies and best practices.

Using the house-as-a-system approach, they conduct comprehensive whole-home assessments that establish performance levels and trace problems to root causes. Then they prescribe and prioritize solutions based on proven building science.

RESNET is an organization focused on residential energy rating systems, and rater training and certification. The National Association of State Energy Officials and Energy Rated Homes of America founded RESNET in 1995 to develop a national market for home energy rating systems and energy efficient mortgages.

RESNET's standards are officially recognized by the federal government for verification of building energy performance for such programs as federal tax incentives, the Environmental Protection Agency's ENERGY STAR program and the U.S. Department

of Energy's Building America Program. RESNET standards are also recognized by the U.S. mortgage industry for capitalizing building energy performance in the mortgage loans, and certification of "White Tags" for private financial investors.

RESNET maintains a directory of certified energy auditors and raters and qualified contractors and builders. To be included in the directory, these individuals must complete the required energy training to meet RESNET standards. All RESNET-certified and RESNET-qualified professionals agree to abide by the RESNET Code of Conduct.

3) Software tools for producing energy ratings should be approved by either USDOE or ODOE.

This recommendation would require statutory authority be granted for staffing, fees, and rulemaking so that the department could review and grant approval of software tools used to for energy scoring. The concerns of Oregon Housing and Community Services regarding federal requirements that low income weatherization assistance programs utilize USDOE-approved software tools would have to be addressed as well.

Appendix A

Task Force Resource Links

Appendix A

Task Force Resource Links:

Oregon Department of Energy website, Energy Performance Scores Taskforce webpage
http://www.oregon.gov/ENERGY/CONS/EPS/

The links listed below can also be accessed by going to the Energy Performance Score Taskforce webpage.

Energy Performance Disclosure and Improvement Act (Vermont)
http://www.oregon.gov/ENERGY/CONS/EPS/docs/NEEPModelBuildingLegislationfnl.pdf

Model Building Energy Performance and Disclosure Act (Vermont)
http://www.oregon.gov/ENERGY/CONS/EPS/docs/NEEPIEEFinalReportOnModelLegLanguageFeb2010.pdf

Audit at Time of Sale Recommendations (Nevada)
http://www.oregon.gov/ENERGY/CONS/EPS/docs/ConsolidatedReport1.pdf

NEEP Report (Dunsky)
http://neep.org/uploads/policy/NEEP_BER_Report_12.14.09.pdf

WSU Extension Energy Program Commercial Building Rating System
http://www.energy.wsu.edu/documents/building/project/Commercial_Bldg_O&M_Rating_System_Prill.pdf

City of Portland Building Benchmarking Proposal
http://www.portlandonline.com/bps/index.cfm?c=45879

The State of Maine Report
http://www.oregon.gov/ENERGY/CONS/EPS/docs/maine.pdf

City of Seattle Report
http://www.imt.org/files/FileUpload/files/Benchmark/090422PR-GBCIpolicyReport.pdf

City of San Francisco Report
http://www.imt.org/files/FileUpload/files/Benchmark/sf_existing_commercial_buildings_task_force_report.pdf

City of Austin Report
http://www.oregon.gov/ENERGY/CONS/EPS/docs/FinalEEUTaskForceReportSeptember172022008.pdf

Appendix B

Energy Labels

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Office Sample Facility

Building ID: 2005550
For 12-month Period Ending: April 30, 2010[1]
Date SEP becomes ineligible: August 28, 2010

Date SEP Generated: July 02, 2010

Facility
Office Sample Facility
1234 Main Street
Arlington, VA 22201

Facility Owner
Sample Owner
1500 Test Avenue
Charlotte, NC 28227
555-555-5555

Primary Contact for this Facility
Jane Smith
1500 Test Avenue
Charlotte, NC 28227
555-555-5555
jsmith@jsmith.com

Year Built: 2000
Gross Floor Area (ft²): 53,232

Energy Performance Rating[2] (1-100) 90

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	2,288,770
Natural Gas (kBtu)[4]	1,228,009
Total Energy (kBtu)	3,516,779

Energy Intensity[5]

Site (kBtu/ft²/yr)	66
Source (kBtu/ft²/yr)	168

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	413

Electric Distribution Utility
Dominion - Virginia Electric & Power Co

National Average Comparison

National Average Site EUI	114
National Average Source EUI	289
% Difference from National Average Source EUI	-42%
Building Type	Office

Professional Engineer Stamp

Signature: _____

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate and in accordance with the Licensed Professional Guide.

Meets Industry Standards[6] **for Indoor Environmental Conditions:**

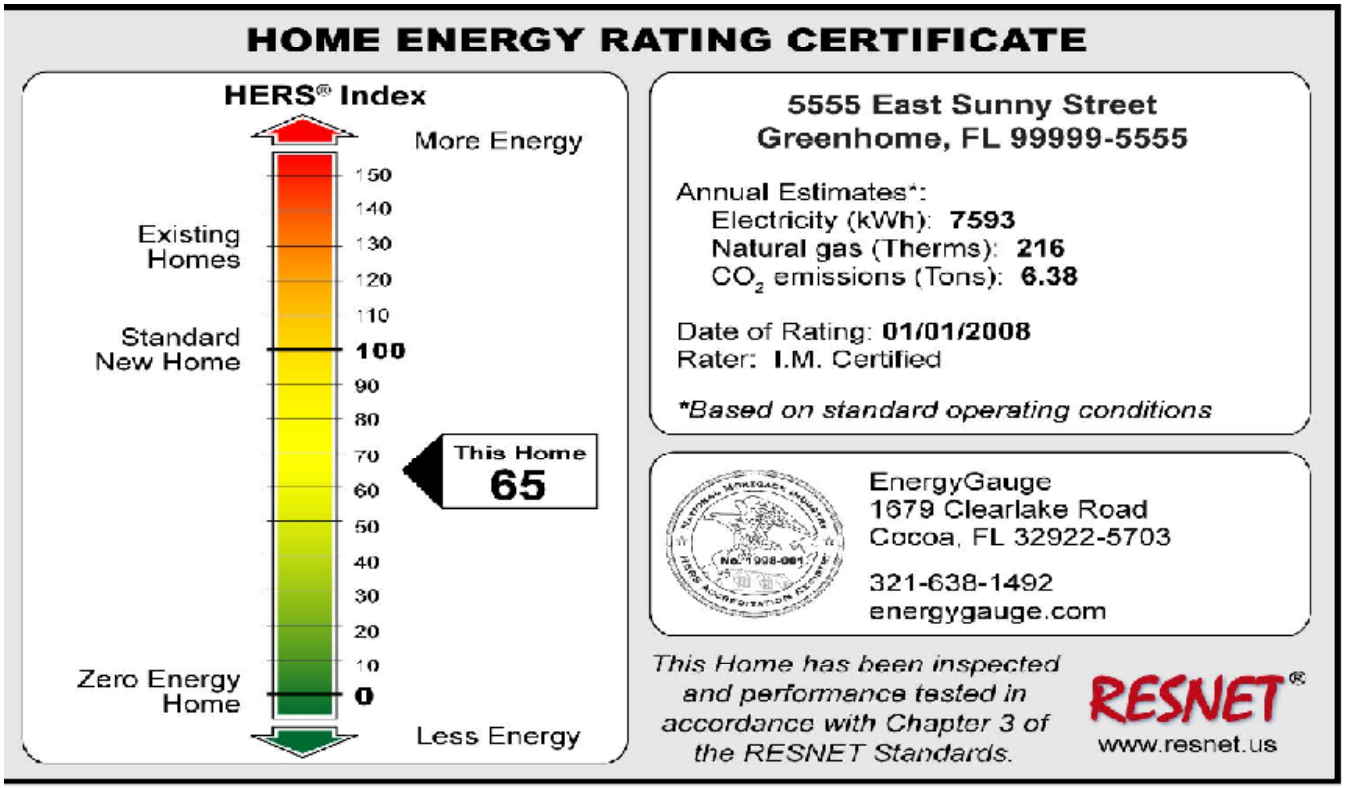
Ventilation for Acceptable Indoor Air Quality	**Yes**
Acceptable Thermal Environmental Conditions	**Yes**
Adequate Illumination	**Yes**

Professional Engineer
License Number: 0000001
State: VA
John Doe
333 Old Sample Lane
Arlington, VA 22201
555-555-1234

Notes:
1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

Tracking Number: SEP201007020001044613

RESNET Rating Label



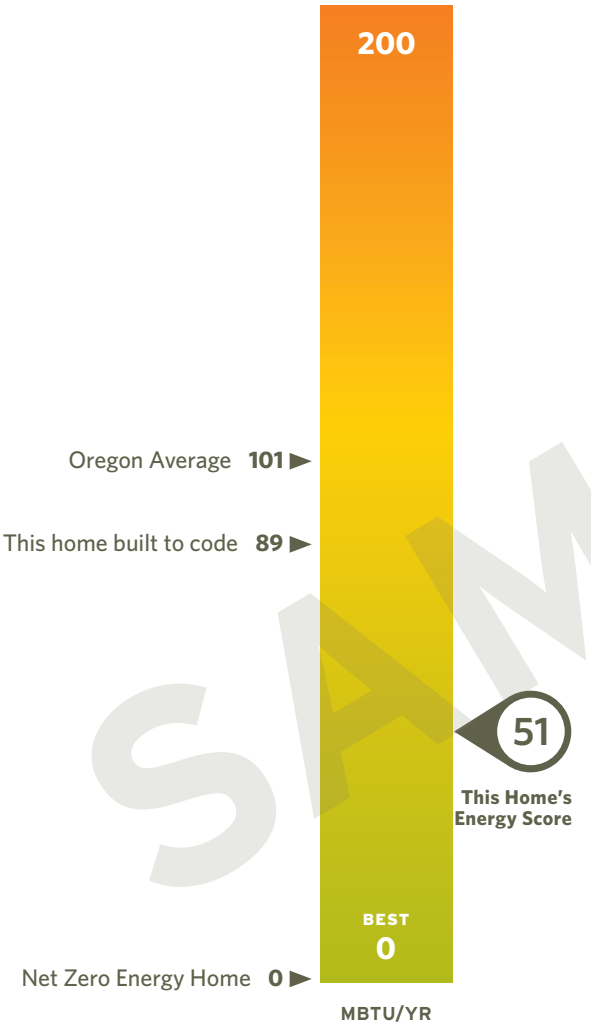
Affix to electric panel

ENERGY PERFORMANCE SCORE

Independent assessment of energy consumption and carbon emissions.

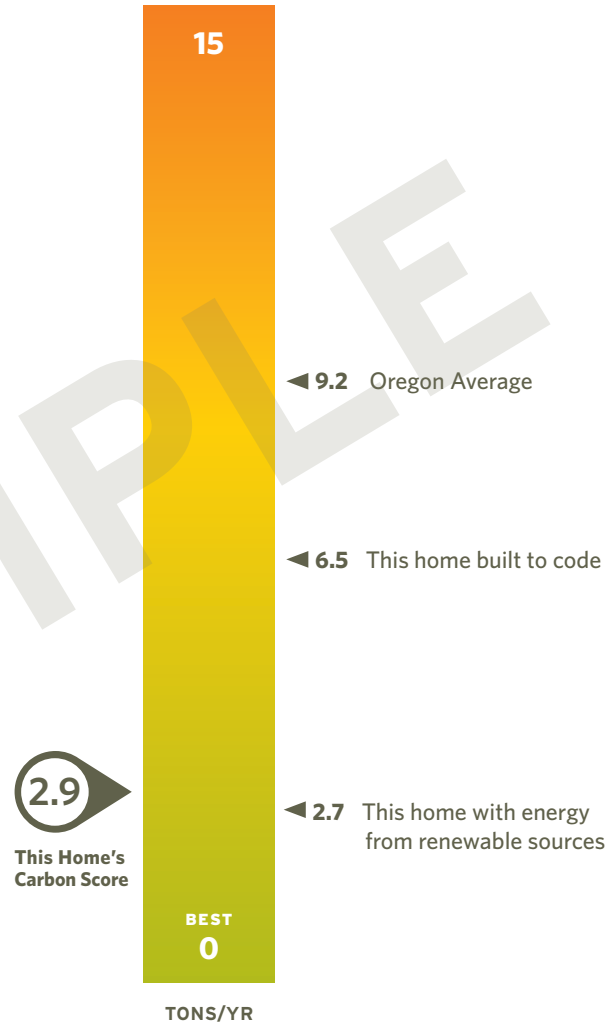
ENERGY CONSUMPTION

Measured in million BTU per year (MBTU/yr).
A 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

ISSUE DATE:
02-01-2010

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.

The EPS is brought to you by Energy Trust of Oregon. Energy Trust makes it easy for homes to identify ways to use energy more efficiently. We provide cash incentives for everything from energy-saving products to insulation to solar energy systems.

For more information visit www.energytrust.org/eps.

The Energy Performance Score (EPS) is a tool for home buyers to assess energy consumption and carbon emissions of a home.

Please retain this certificate with building and purchasing paperwork.

EnergyTrust of Oregon

The Easy Way To Compare Energy Use

Energy efficiency, utility costs and environmental impact are important factors to consider when buying or building a home. They can affect the real and perceived value of a home, but aren't always easy to quantify. The EPS is a clear and quantitative way to compare a home's energy use and costs.

Measuring Energy Use and Costs

Calculating the EPS is based on several factors: the building's size, insulation, air leakage and ventilation, heating and cooling systems, major appliances, lighting and water heating.

If the home has renewable energy systems, the amount of energy used and the cost to operate the home decreases.

Actual energy use will vary with occupant behavior and weather. Fuel costs are based on retail prices of each gas and/or electric utility at the time the EPS is issued.

Carbon Footprint

A home's energy consumption affects carbon emissions and impacts the environment. The EPS estimates these emissions from the electric production and natural gas consumption of the home to create a Carbon Score. You can change your carbon footprint by purchasing renewable energy options from your utility or other carbon offset programs. To see how much impact your offsets have, see the "renewable energy" arrow in the EPS carbon footprint scale.

Brought To You By Energy Trust of Oregon

Energy Trust is an independent nonprofit that developed the EPS to educate Oregonians about energy efficiency, reduce our state's energy use and provide a credible tool to make informed home buying decisions.

Energy Trust helps you save energy and access renewable resources by providing solutions, advice and cash incentives. Energy Trust can guide you as you make decisions to reduce your energy costs and environmental impact.

+ *For more information about EPS, contact Energy Trust at 1.877.283.0698 or visit www.energytrust.org/eps.*

USEFUL TERMINOLOGY

Energy Calculation
The Energy Performance Score is displayed in millions of BTU (MBTU) per year.

A British Thermal Unit is a measurement of the heat content of fuel. One BTU = the energy produced by a single wooden match.

Annual kilowatt hours (kWh) X 3,413 per kWh + Annual therms x 100,000 = xxx million annual BTU

Built to Oregon Code
The annual energy use for this home with 1.25 occupants per bedroom if it was built to 2008 Oregon code or code at time of construction.

Oregon Average Carbon Score
The annual carbon dioxide from electricity production and gas use for typical homes, built to average pre-2008 Oregon building practices.

U.S. Average Carbon Score
The annual carbon dioxide from electricity production and gas use for typical homes, built to average U.S. building practices.

Carbon Emissions
Carbon dioxide is displayed in tons per year. The carbon score is calculated from the electric and natural gas consumption of the home.

***For electricity:** The carbon dioxide score is based on emissions of electricity production—Oregon electricity production ranges from 0.4 to 2.08 lbs carbon dioxide per kWh.*

***For natural gas:** The carbon dioxide emissions are based on 11.7 lbs carbon dioxide for each therm used by gas equipment in the home.*

Appendix C
Administrative Rules - Voluntary Building Energy Rating Systems

OREGON DEPARTMENT OF ENERGY

DIVISION 63

VOLUNTARY BUILDING ENERGY RATING SYSTEMS

330-063-0000

Purpose and Scope

(1) These rules establish a voluntary building energy rating system.

(2) The building energy rating system shall be available for voluntary evaluation of energy use in new and existing commercial and residential buildings in Oregon and shall follow the standards established in these rules.

330-063-0010

Definitions

For the purposes of these rules, unless otherwise specified, the following definitions shall apply unless the context requires otherwise:

(1) "Asset rating" means the building energy use rating generated by modeling under standardized weather and occupancy conditions, adjusted to account for variances in energy consumption.

(2) "Building" means any enclosed structure created for permanent use as a residence, a place of business, or any other activities whether commercial or noncommercial in character.

(3) "Building envelope" is that element of a building which encloses conditioned spaces through which thermal energy may be transmitted to or from the exterior or to or from unconditioned spaces.

(4) "Commercial building" means a structure of which more than 50 percent of usable square footage is used or intended for use in connection with:

  (a) The exchange, sale, or storage of goods; or

  (b) The provision of services.

  (c) A residential building with more than five dwelling units is a commercial building for the purposes of these rules.

(5) "Energy audit" means an assessment of a building's energy use and efficiency in order to determine the building's energy performance.

(6) "Operational rating" means a building energy use rating generated by measuring actual energy consumption taking into consideration all physical systems and their operation.

(7) “Physical systems” means any energy consuming equipment integrated in the building design, function or operation.

(8) “Residential building” as defined in ORS 701.005.

330-063-0020

Evaluation of Energy Performance

(1) Persons producing energy performance scores shall have training in the software program used to produce the rating.

(2) Building energy ratings must meet the following requirements:

(a) Building energy audit software used to produce building energy ratings shall be approved by the U.S. Department of Energy.

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

(c) Ratings shall be readily available and understandable to an actual or potential building purchaser, lessee, renter or other occupant and shall include an explanation of the rating, the assumptions, the baseline, the date of the rating, and the name of the rater or rating organization.

(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. The score should be calculated by aggregating the following estimates:

(a) The number of lbs CO2 / kWh of electricity consumed annually should be based on the eGRID sub-region NWPP data and adjusted annually. This is currently 0.902 lbs CO2 /kWh.

(b) 11.64 lbs CO2 / therm of natural gas consumed annually.

(c) 22.29 lbs CO2 / gallon of fuel oil consumed annually.

(d) 12.76 lbs CO2 / gallon of propane consumed annually.

330-063-0030

Specific Energy Performance Scoring Standards for Residential Buildings

(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.

330-063-0040

Specific Energy Performance Scoring Standards for Commercial Buildings

(1) Building energy ratings systems for existing commercial buildings shall be an operational rating based upon the actual energy usage of the building and shall utilize utility data.

(2) Commercial energy use shall be displayed in annual btu per square foot as determined by approved energy modeling methods, using standard occupancy profiles for the building type. The annual energy consumption of each fuel (electricity, natural gas, oil, propane, etc) shall be displayed in retail units.

Appendix D

Representative Reports

- NEEP Report, Executive Summary
- State of Maine Report; Voluntary Rating System
- State of Nevada Report; Mandatory Reporting System

Northeast Energy Efficiency Partnerships

VALUING BUILDING ENERGY EFFICIENCY THROUGH DISCLOSURE AND UPGRADE POLICIES

A ROADMAP FOR THE NORTHEAST U.S.

A **DUNSKY ENERGY CONSULTING** REPORT

in collaboration with VERMONT ENERGY INVESTMENT CORPORATION

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For **NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS**

under the direction of Ed Schmidt, Director of Regional Initiatives

NOVEMBER 2009

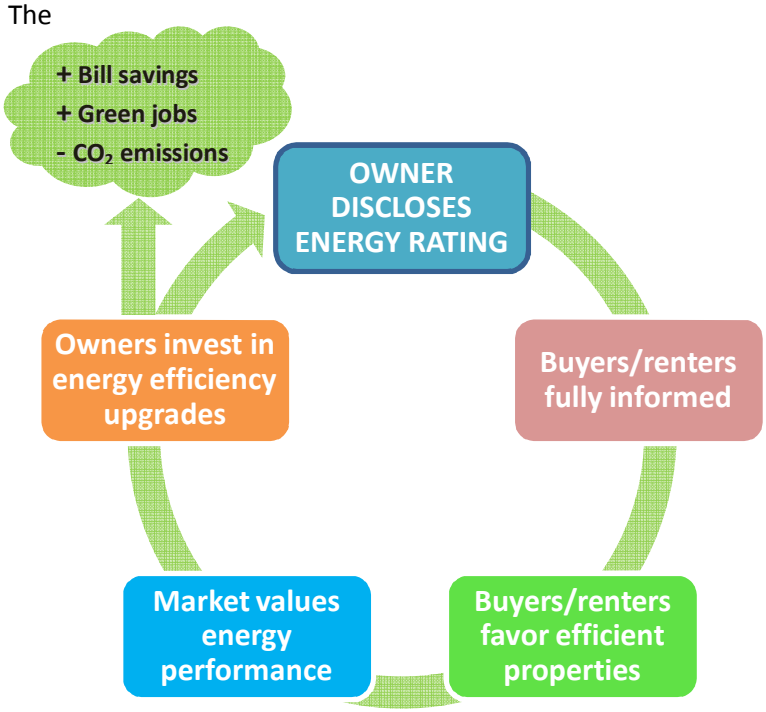
EXECUTIVE SUMMARY

As states ramp up their energy and carbon savings goals, energy efficiency leaders must find new and innovative ways to improve energy efficiency in the stock of existing homes and buildings. One key tool – mandatory building energy ratings – seeks to transform markets by requiring that meaningful information about building energy performance be disclosed to potential buyers, renters and the public. A sister tool – mandatory upgrades – would require adoption of certain cost-effective energy efficiency measures.

Though mandatory building energy rating disclosure policies involve a wide array of specific policy and design choices, they coalesce around a few key concepts:

1. **TIME OF SALE TRIGGERS.** When selling a home or building, owners must disclose a valid energy rating to potential buyers. The rating indicates current performance and potential improvements, providing meaningful information to consumers and empowering them to consider energy performance in their decision-making. Armed with information, some consumers will give preference to more energy efficient homes, enabling markets to value energy performance, and providing a greater return on investment to projects aimed at improving building energy performance.

2. **TIME OF RENTAL TRIGGERS.** The same process applies at the time of rental (this requirement may be phased in at a subsequent stage).



How "triggered" disclosure leads to energy savings

3. **SCHEDULED DISCLOSURE (OPERATIONS).** Commercial building owners must obtain a simplified, standardized rating, indicating their annual "operating" performance. This enables owners *and building managers* to measure their performance annually, to institute continuous improvement practices, to benchmark against other buildings (within or outside of their own fleet), and to establish performance targets in their annual plans and objectives. Polic5t6vbvies can also require that ratings be displayed in prominent locations within the building or published in a publicly-available database.

These variations create additional drivers to improved energy monitoring and performance: renters may ask owners to address energy performance, utility incentive programs (or recognition programs) may be marketed more effectively at owners with poorer (or higher) performance, energy service companies can more effectively identify high-value potential customers, and owners can gain market recognition and other added value from their efforts.

First adopted over a decade ago in Australia and Denmark, mandatory building energy rating policies are now in place in more than 30 countries worldwide. They are also increasingly being considered, adopted or implemented in the U.S., in states like California, Nevada, Washington, Oregon and New Mexico, and in cities like Austin, New York and Washington, D.C. Indeed, the past year has seen a flurry of activity around this policy opportunity in the U.S., including landmark legislation currently being debated in both houses of Congress.

Against this backdrop, the Northeast Energy Efficiency Partnerships (NEEP) commissioned Dunsky Energy Consulting to prepare a white paper for northeast states. In so doing, we examined the international and domestic experience with disclosure and upgrade policies, pinpointed key success factors, identified the issues, distinguished between critical and non-critical facets, and assessed the variety of options available. Key findings include:

MANDATORY DISCLOSURE POLICIES

- **Disclosure policies can be effective** in getting markets to value energy efficiency, and act as a powerful complement to more conventional incentive programs.

- To be effective, **disclosure must be *mandatory*.** Indeed, the effectiveness of these policies rests on the premise that ratings are ubiquitous – that buyers and renters can compare the energy performance of *all* of the homes and buildings they are considering. Similarly, effectiveness depends on **disclosure early in the process**, i.e. in all advertising. If ratings need only be presented after purchase offers are made, for example, they will forfeit their value to inform buyers and influence the market.

- To be politically acceptable, **rating costs will have to come down**. This can be achieved in part through economies of scale (following adoption of enabling legislation), though additional effort will likely be required (several key stakeholders have recently begun work in this regard). In the meantime, states and utilities can consider incentives to buy down a part of the rating costs.

- The system for **homes should use an "asset" rating**. An asset rating is a rating such as the Home Energy Rating System (HERS) that assesses the modeled efficiency of the home's envelope and key components under standard conditions.

- The system for **commercial buildings should use both an asset and an "operational" rating** (such as the EPA's Portfolio Manager – based on actual consumption). Asset ratings should be valid for 5-10 years and be disclosed to prospective buyers and renters;

operational ratings should be renewed annually and be displayed in the building (where applicable) and loaded into a publicly-available database.

- Asset rating reports should **provide recommendations** on cost-effective energy efficiency measures, as well as links to utility or other incentive programs.

- **Enforcement should be a priority.** A combination of strong fines, robust controls and market-based enforcement mechanisms should be considered.

- Legislation should **phase in the requirements**. Disclosure of operational ratings can apply to public buildings almost immediately. Disclosure of operational *and asset* ratings can be required shortly thereafter of all large building owners (private and public), expanding gradually to smaller buildings as well. Disclosure of asset ratings for homes can be phased-in in roughly the same timeframe. See page 41 for details.

- **States, utilities and others can collaborate to build market demand** and supply in advance of legislation. For example, access to certain funding or incentives can be conditional upon production of a valid rating report. Similarly, states and utilities can encourage financial institutions to provide preferred mortgages for homes that produce strong ratings. Incentives to obtain ratings prior to legislation should also be considered.

- Though not necessary for statewide adoption, municipalities can collaborate with states and utilities by using **municipal pilots to test mandatory disclosure policies**.

- States (or their regional representatives) will need to **engage DOE, EPA and other national players** (e.g. ASHRAE, COMNET, RESNET), to ensure that the foundational systems they are currently working on – rating systems, data registries, auditor certifications, rater training and quality control mechanisms – are consistent with and supportive of the requirements of a *mandatory* disclosure policy.

WHO BENEFITS?

By enabling markets to value energy efficiency, disclosure policies can unleash a broad array of added value for both society and individual stakeholders.

- ✓ **Property owners** are informed of cost-effective energy savings opportunities, and benefit from a more secure return on investment, even if they sell early.
- ✓ **Buyers and renters** can make more informed purchase decisions, and avoid costly surprises.
- ✓ **Commercial building** owners and managers can benchmark their facilities' performance, enabling continuous improvements.
- ✓ **Energy auditors** gain a substantial, sustained new business opportunity, and an incentive to innovate.
- ✓ **Contractors** will see sustained growth in market demand, providing a stable stream of renovation jobs.
- ✓ **Developers** gain added value for building to and beyond energy codes.
- ✓ **Realtors** can provide their clients with credible information to distinguish high-performing buildings from their peers.
- ✓ **Energy services companies (ESCOs)** can market directly to owners of buildings with the biggest savings opportunities.
- ✓ **Utilities** will see greater uptake in energy efficiency programs, and will be able to target-market incentives in the commercial building sector.
- ✓ **Society** as a whole will benefit from decreased energy dependence, lower utility bills, reduced greenhouse gas emissions, and an upsurge in "green" and local jobs associated with energy efficiency retrofits.

MANDATORY UPGRADE POLICIES

Beyond mandatory disclosure policies, this report also addresses **mandatory *upgrade* policies.** As with disclosure, upgrade policies already exist in a number of regions, including in Burlington (Vermont), Berkeley (California) and in the state of Wisconsin (groundbreaking legislation addressing commercial building upgrades is also currently pending in New York City).

With proper enforcement, mandatory upgrade policies can be a powerful tool in advancing building energy efficiency. States aiming for deep and timely energy savings should give serious consideration to such policies. To this end, upgrade requirements can be triggered by property sales (as in Berkeley) or by major renovations; can use "smart" prescriptive protocols to determine which measures would be required in which homes or buildings, and access sufficient resource for robust enforcement.

For others, we urge an initial focus on improving enforcement of existing codes. Indeed, many states have adopted IECC codes that already require – on paper – improvements to building systems and areas during major renovations. Yet compliance is lackluster throughout much of the region. For many, investment in more robust enforcement offers the "low-lying fruit" of potential energy savings.

MOVING FORWARD

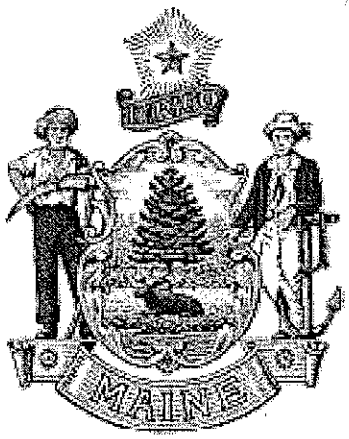
The pace with which individual states choose to move these policies forward will depend on their own needs and objectives. Some will prefer a gradual phase-in of disclosure policies alone, while others may want to move disclosure and upgrade policies forward aggressively and simultaneously. States may also want to tailor specific policies and legislation to local market conditions.

Ultimately, both policies offer an exciting new opportunity that, when combined with other strategies (including voluntary incentive programs), offer the prospects of transforming markets to value and secure energy savings. They also offer at least a part of the pathway to a more efficient and low-carbon energy future.

Report to the Joint Standing Committee on Utilities and Energy

Building Energy Efficiency and Carbon Performance Ratings

STATE OF MAINE
PUBLIC UTILITIES COMMISSION
ENERGY PROGRAMS DIVISION/EFFICIENCY MAINE



February 1, 2010

Definitions/Acronyms

A. **Asset Rating** – Assessment of Building Based on the components in the design. (Modeling)

B. **BIM** – Building Information Modeling

C. **BPI** – Building Performance Institute

D. **CBECS** – Commercial Building Energy Consumption Survey

E. **Commercial Building** – A non-residential structure or residential structure 4 stories or more

F. **DOE** – Federal Department of Energy

G. **EPA** – United States Environmental Protection Agency

H. **EUI** – Energy Use Index (or Intensity)

I. **HERS** – Home Energy Rating System

J. **NBRP** – National Building Rating Program

K. **Operational Rating** – An energy rating based on actual energy use

L. **NEEP** – Northeast Energy Efficiency Partnership

M. **Rater** – An auditor

N. **Residential Building** – A structure 3 stories or less used as housing

O. **RESNET** – Residential Energy Services Network

P. **Site Energy** – Measurement of energy use at the location where energy is consumed

Q. **Source Energy** – Measurement of energy at location where it is produced

Executive Summary

During the First Session of the 124th Maine State Legislature, the Legislature enacted RESOLVE *Chapter 134 LD 935, Resolve, Regarding Building Energy Efficiency and Carbon Performance Ratings*. The resolve directs the Public Utilities Commission to undertake the following measures regarding building energy efficiency rating systems:

1. Develop or select a standardized rating system and reporting form for building energy efficiency and carbon performance;
2. Include the standardized rating system and reporting form in professional education and training programs sponsored by the Public Utilities Commission;
3. Encourage real estate and professionals and other stakeholders to promote voluntary use of the standardized rating system and reporting form by residential and commercial property owners, including, but not limited to, voluntary disclosure of building ratings in the context of real estate transactions;
4. Encourage voluntary use of the standardized rating system and reporting form by large-scale property owners and managers, including the State, municipalities and other public and private entities; and
5. Develop a voluntary library or repository of ratings based on the standardized ratings system and reporting form.

The resolve further requires the PUC to convene a stakeholder group to assist with directive (1) and report to the Joint Standing Committee on Utilities and Energy no later than February 1, 2010 on actions taken pursuant to the five directives listed above. This is that report.

Directive 1: The Rating System

The stakeholder group met twice and included representatives of seventeen organizations. Through consensus, the stakeholders identified ENERGY STAR'S Portfolio Manager as the best available option for providing an energy rating for existing commercial buildings. Since Portfolio Manager does not apply to new construction, the stakeholder group identified Efficiency Maine's Advanced Building Program to be used in the design phases of construction.

For new and existing residential buildings the stakeholder group identified RESNET's HERS rating system as the only national-scale platform available today. While the technical aspects of the rating system are sound, the rating group did raise several practical considerations such as the expense of HERS ratings and a lack of certified auditors in Maine. Efficiency Maine is considering whether there are ways to incorporate this rating system into its current Maine Home Performance Program and the Maine State Housing Weatherization Assistance Program,

Directive 2: Incorporate the Rating System into Commission Trainings

The Commission offers a number of trainings that can incorporate information about building energy rating systems, such as the Building Operator Certification program, the Commercial Energy Auditing course, and the Efficiency Maine Certification Program for the Real Estate Industry. On an independent track, Efficiency Maine recently partnered with the Maine Bureau of General Services and the United States Environmental Protection Agency to host a webinar specifically on Portfolio Manager, with an emphasis on its use in State buildings. Efficiency

Maine will continue to identify opportunities for incorporating both the residential and commercial rating systems into future training programs. More information on existing trainings can be found in the body of this report.

Directives 3 & 4: Encourage Use and Reporting of the Building Ratings
These directives inspired a robust discussion among the stakeholders regarding whether a building rating system should be voluntary or mandatory. The stakeholder group did discuss various ways for the Commission and the State to encourage voluntary use of the rating system, particularly by incorporating it into Efficiency Maine's already existing incentive and granting programs. The stakeholder group was unable to identify and agree upon a method to encourage the disclosure of building energy ratings at the point of transaction. The Commission will continue to work with real estate professionals to identify an effective way to encourage *voluntary* disclosure.

Directive 5: A Library or Repository
Ideas for a library or repository of building rating results ran the gamut from a file drawer at the Commission, to a barebones website, to an interactive website with educational opportunities. As the Commission more fully develops its plan to encourage the use of the building energy rating system and gauges the interest of its participants, it will be more prepared to develop this library or repository. For now, the Commission is keeping track of those organizations that participate in building energy rating trainings, as well as those that complete a building energy rating as part of Efficiency Maine's grant process. The Commission will maintain a hard copy of all building ratings that it receives and will be alert for funding opportunities that might enable the establishment of a web based repository in the future.

The Stakeholder Process

The Public Utilities Commission invited a number of people, businesses and other entities to participate in the stakeholder process and accepted any requests by any interested party to attend the meetings. The stakeholders met for two three-hour meetings, the first on October 1, 2009 and the second on November 20, 2009. The primary focus of the stakeholder group was to develop or select a standardized rating system and reporting form for building energy efficiency and carbon performance. However, the conversation frequently turned to the other directives. The following organizations were represented at one or both of the stakeholder meetings or received emailed information about the meetings and their results:

- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
- Associated Builders and Contractors of Maine
- Conservation Law Foundation
- Environment Northeast
- Lamey Wellehan Shoes
- Maine Association of Building and Energy Professionals
- Maine Association of Realtors
- Maine Department of Environmental Protection
- Maine Real Estate and Development Association
- Maine State Housing Authority
- Maine Uniform Building and Energy Codes Board
- Northeast Energy Efficiency Partnerships
- Natural Resource Council of Maine
- North Atlantic Energy Advisors
- State of Maine, Bureau of General Services
- US Green Building Council

DIRECTIVE 1: DEVELOP OR SELECT A STANDARDIZED RATING SYSTEM AND REPORTING FORM FOR BULDING ENERGY EFFICIENCY AND CARBON PERFORMANCE.

This was a complex topic and dominated the majority of the stakeholder discussions. The stakeholders discussed the pros and cons of developing a Maine-specific system versus adopting an already existing system. This involved exploring national, regional and state-specific efforts to adopt building energy rating systems across the commercial and residential building sectors. Coincidentally, Northeast Energy Efficiency Partnerships (a non-profit organization that facilitates regional partnerships to advance the efficient use of energy in homes, buildings and industry in the Northeast U.S.) has also been studying building energy rating systems. The NEEP report, *Valuing Building Energy Efficiency Through Disclosure and Upgrade Policies – A Roadmap for the Northeast U.S.* was released in November 2009 and the stakeholder group considered its results during deliberations. Because this regional study informed the national and state-specific discussions, we will present the regional information first.

Regional Efforts – Building Energy Ratings
The regional discussion focused primarily on the report *Valuing Building Energy Efficiency Through Disclosure and Upgrade Policies – A Roadmap for the Northeast U.S.* published by NEEP. Key recommendations from the study were:

- Use a national-level rating system
- Adapt the rating system to State-specific needs if applicable
- Building energy-rating policies must be mandatory in order to be effective
- Residential energy-ratings should be based on an asset rating (based on modeling the home's design rather than actual energy use)
- Commercial buildings should use both an asset (based on building modeling) and operational rating (based on actual energy use)
- Enforcement should be a priority
- Phase-in the requirements

Design Considerations
Before reviewing specific energy rating systems, we determined that it is important to explore some broad design considerations. Some of these were discussed in-depth during the stakeholder process, others were not. Those key design considerations are listed below.

- Adopting an existing system or developing a Maine specific system
- Energy-use ratings or carbon ratings
- Asset or operational ratings
- Existing or new building ratings

At the outset of the stakeholder process, the Commission expressed a preference for adopting an existing building rating system rather than creating a new Maine-specific system. As this report and the NEEP report reveal, building energy rating systems are technically complex, and building a new system would require significant time and financial resources. The stakeholders understood this point but wanted to be sure that existing systems would meet Maine's needs before making a final decision.

One of the immediate challenges to using an existing energy and carbon building rating system is that the stakeholder group could not identify any U.S. system that provides carbon rating. Some allow building owners to track carbon emissions, but the systems do not offer a rating to compare carbon emissions to other buildings. The stakeholder group did not discuss this issue, but the Commission would suggest that a carbon rating system could be developed in the future.

There are two different types of building energy ratings -- asset and operational. Asset ratings are based on the design of the building and are independent of occupant behavior. These ratings usually require extensive building modeling software. Operational ratings, on the other hand, are based on historical energy use data, and therefore consider the behaviors of the occupants. Another distinction is that an operational rating may not reflect the greatest efficiency potential of the building. The stakeholders kept these considerations in mind when discussing the existing building energy rating platforms.

National Efforts – Existing Commercial Buildings

The stakeholder group identified two primary national-level building energy rating platforms for commercial buildings -- the EPA's Energy Star Portfolio Manager and ASHRAE's pilot program, Building EQ.

EPA's Energy Star Portfolio Manager

Portfolio Manager is a free, interactive energy management tool that allows facility managers or building owners to track and assess energy and water consumption in one commercial building or across an entire portfolio of buildings in a secure online environment. Portfolio Manager can help set investment priorities, identify under-performing buildings, verify efficiency improvements, and provide EPA recognition for superior energy performance. Currently the Portfolio Manager can rate nearly 60 percent of the building types such as office, schools, hotels, retail stores, hospitals, etc. The EPA is currently adding more building types.

For eligible building types, Portfolio Manager can rate the energy performance on a scale of 1–100 relative to similar buildings nationwide. A rating of 50 indicates that the building, from an energy consumption standpoint, performs better than 50% of all similar buildings nationwide. A rating of 75 indicates that the building performs better than 75% of all similar buildings nationwide, and so on. Buildings are *not* compared to the other buildings entered into Portfolio Manager. Instead, statistically representative models are used to compare buildings against information about similar buildings from a national survey conducted by the Department of Energy's Energy Information Administration. This national survey, known as the Commercial Building Energy Consumption Survey (CBECS), is conducted every four years and gathers data on building characteristics and energy use from thousands of buildings across the United States. A rating of 50 indicates that the building, from an energy consumption standpoint, performs better than 50% of all similar buildings nationwide, while a rating of 75 indicates that the building performs better than 75% of all similar buildings nationwide. Please see Appendix A for a sample of an ENERGY STAR Performance Statement.

The advantage of this rating system as reported by the Northeast Energy Effciency Partnerships (NEEP) report are in its common usage. To quote the report,

> "Energy Star Portfolio Manager is widely used, with almost 17% of U.S. commercial floor space benchmarked in 2008. The Energy Star brand is also well recognized, and its methodology is robust and well tested. It is available free of charge, and third party verification of ratings are expected to remain inexpensive, especially as sales volumes increase for auditors. Finally, Portfolio Manager appears to be the most likely candidate for an operational label for DOE's National Building Rating Program.
>
> The most significant challenge with the ENERGY STAR Portfolio Manager rating scale, however, is that it reflects the existing building stock rather than currently achievable results, allowing buildings that perform below current best practices to obtain a high score. A second challenge is that 40% of the building stock will be unable to receive a rating due to the types of buildings involved. This will not change in the near term, but will hopefully be resolved within four to eight years, particularly if proposed improvements to the CBECS survey take place. This will continue to be an issue in all rating systems in the short to medium term. Finally, Portfolio Manager lacks an asset rating, although this can be overcome using the Portfolio Manager scale and COMNET protocols."

ASHRAE's Building EQ

The following description of the Building EQ program is a direct excerpt from the NEEP report.

> "ASHRAE recently proposed a rating system combining an asset and operational rating. The ratings would be based on source energy use per square foot, as with ENERGY STAR Portfolio Manager. ABEL (Building EQ) uses a technical rating scale, from A+ to F-, calibrated so that higher ratings are equivalent to best practices in building design, including netzero energy... The median energy use would be determined using CBECS data. Operational energy use would be normalized for weather, occupancy and some plug loads.
>
> The rating would be obtained by a certified third-party rater. It appears that at least initially, ABEL would rely on ENERGY STAR Portfolio Manager algorithms to normalize energy use, which would limit ABEL to covering 60% of building area until Portfolio Manager coverage is expanded or ASHRAE is able to develop a broader database. The ABEL rating would not include a full energy audit or recommended upgrades. It would include a feature checklist and possibly an optional audit for interested building owners. ASHRAE also plans to eventually rate individual building end-uses, such as lighting, HVAC, and envelope.
>
> ABEL is not yet fully developed. ASHRAE currently plans to test the operational rating with a pilot project in 2009-2010, while simultaneously developing a certification program for energy modelers. In 2010-2011, the operational rating would be refined and the asset rating further developed, with a full implementation of the rating system at some point in 2011-2012.
>
> ABEL's biggest advantage is that it follows solid design principles and is specifically designed for disclosure policies. It combines both an operational and an asset rating and would include optional audits and eventually optional end use ratings. It would also use a technical scale that requires best practices to receive higher ratings – this last point being its biggest distinction from ENERGY STAR Portfolio Manager.
>
> The major issue for ABEL is its timeline and apparent lack of resources. The June 2009 report detailing the label underscores limitations in funding, which could arguably delay the full launch beyond 2011. On the other hand, the funding issue could be resolved if the DOE, a state or a group of states contributed financing as part of their adoption of the rating system. A second issue is the lack of coverage for 40% of building area, which, as with ENERGY STAR Portfolio Manager, is likely to remain an issue until the CBECS database is expanded or a similar effort is undertaken. A third issue may be cost. ASHRAE has not determined its fee structure for the label, but it would presumably need to be higher than Portfolio Manager to cover ASHRAE's administrative and development costs. Lastly, ABEL is a new label, which would need to compete for market share with the already-successful Portfolio Manager."

National Efforts – Commercial, New Construction

The Portfolio Manager relies on at least 12 consecutive months of actual energy consumption data for determining a building rating. New buildings, however, do not have energy use records. Because of that limitation, a performance based rating system like Portfolio Manager can not be used. New buildings have to rely on an Asset Rating or Building Information Modeling (BIM). .

The EPA has another free program, Target Finder, which enables architects and building owners to set energy targets and receive an EPA rating for projects during the design process. for

commercial building space types, including office; K–12 school; hospital (acute care and children's); hotel/motel; medical office; house of worship; residence hall/dormitory; supermarket/grocery store; warehouse: refrigerated and non-refrigerated; courthouse; bank/financial institution; and retail store.

Target Finder can be used throughout the design process to rate estimated energy use for design alternatives and value engineering. The EPA rating provides an "apples-to-apples" comparison of intended (estimated) energy use with that of similar U.S. building types. The tool adjusts for primary drivers of energy use such as building size, climate, operating hours, number of occupants, and computers. A building can receive a "designed to earn the Energy Star" certification for projects.

State-specific Efforts – Commercial Buildings, Existing and New Construction

A review of various state policies for commercial building energy ratings revealed that many states have already adopted policies to encourage or mandate the use of ENERGY STAR's Portfolio Manager. For example, Ohio Executive Order 2007-02 provides that the State will use EPA's Portfolio Manager as the benchmarking tool for state-owned facilities and to measure and track energy use and carbon emissions within the state. In Mississippi, pursuant to Executive Order 2005-4 the Department of Management and Budget will establish an energy efficiency target for all state buildings managed by a department or agency within the Executive Branch of state government. Mississippi requires that all state buildings occupied by state employees be benchmarked using Portfolio Manager. In April 2009, the Washington State legislature passed House Bill 1747, which requires the benchmarking and disclosure of the energy performance of all commercial buildings using Portfolio Manager. Finally, in California, Executive Order S-20-04 requires building owners to provide a certified Portfolio Manager performance rating to any prospective buyer, lessee, or lender when the entire building is involved in a transaction.

Maine

Currently Efficiency Maine is implementing the Maine Advanced Buildings commercial new construction program. The Maine Advanced Building is based on a national program created by the New Buildings Institute to raise the standards for energy efficiency in commercial construction in North America. It uses cost effective, off the shelf building technologies and design strategies, which have been proven to reduce energy usage and improve building performance. This program provides easy to follow guidelines and incentives to design buildings that are 20-30% more energy efficient than the Maine Energy Code requires.

Stakeholder Conclusions – Commercial Buildings

Existing Buildings

The stakeholders were impressed with the potential of Building EQ and its technical advancements over Portfolio Manager, such as providing an asset and operational rating with a rating scale based on best-practices rather than comparisons to other buildings. However the stakeholder group also acknowledged the challenges listed in the NEEP report, and for those reasons concluded that the ENERGY STAR Portfolio Manager would be the best choice at this time. Once Building EQ's pilot project is complete and the platform finalized, some members of the stakeholder group expressed an interest in revisiting the State's choice for statewide building energy rating platform.

The Commission agrees that Portfolio Manager is the correct choice at this time for existing commercial buildings for the reasons listed in the NEEP report, particularly its ease of use, its affordability, and the likelihood that it will, in some form, become the Department of Energy's National Building Rating Program.

New Construction
The stakeholder group did not discuss new construction at length, but received written comments from stakeholders suggesting that Efficiency Maine's Commercial New Construction Program, Maine Advanced Buildings with Core Performance, provides solid guidance for the construction of a new commercial building and that implementing a separate rating program could cause market confusion.

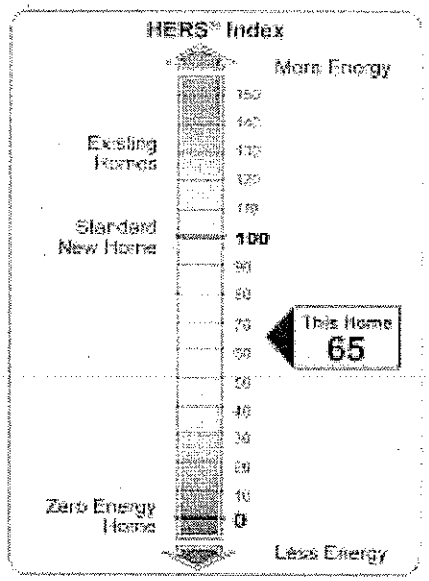
The Commission agrees with this perspective and recommends that the current focus on building energy ratings concentrate on existing buildings. As the federal Department of Energy develops an asset rating, as it recently expressed an intention to do, the states may then consider building rates for new construction. See Memorandum of Understanding on Improving the Energy Efficiency of Products and Buildings Between the U.S. Environmental Protection Agency and the U.S. Department of Energy, September 30, 2009.

National Efforts – Residential Buildings
The stakeholder group only identified one nationwide residential building energy rating system, the Home Energy Rating System (HERS) Index. The HERS Index is a scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of a HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's HERS Index, the more energy efficient it is in comparison to the HERS Reference Home.

A home energy rating involves both an analysis of the home's construction plans and onsite inspections. Based on the home's plans, the Home Energy Rater uses an energy efficiency software package to perform an energy analysis of the home's design. This analysis yields a projected, pre-construction Home Energy Rating System, (HERS), Index. Upon completion of the plan review, the rater will work with the builder to identify the energy efficiency improvements needed to ensure the house will meet ENERGY STAR performance guidelines. The rater then conducts onsite inspections, typically including a blower door test (to test the tightness of the house) and a duct test (to test the leakiness of the ducts). Results of these tests, along with inputs derived from the plan review, are used to generate the HERS Index score for the home.

Each 1-point decrease in the HERS Index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home. Thus a home with a HERS Index of 85 is 15% more energy efficient than the HERS Reference Home, and a home with a HERS Index of 80 is 20% more energy efficient.

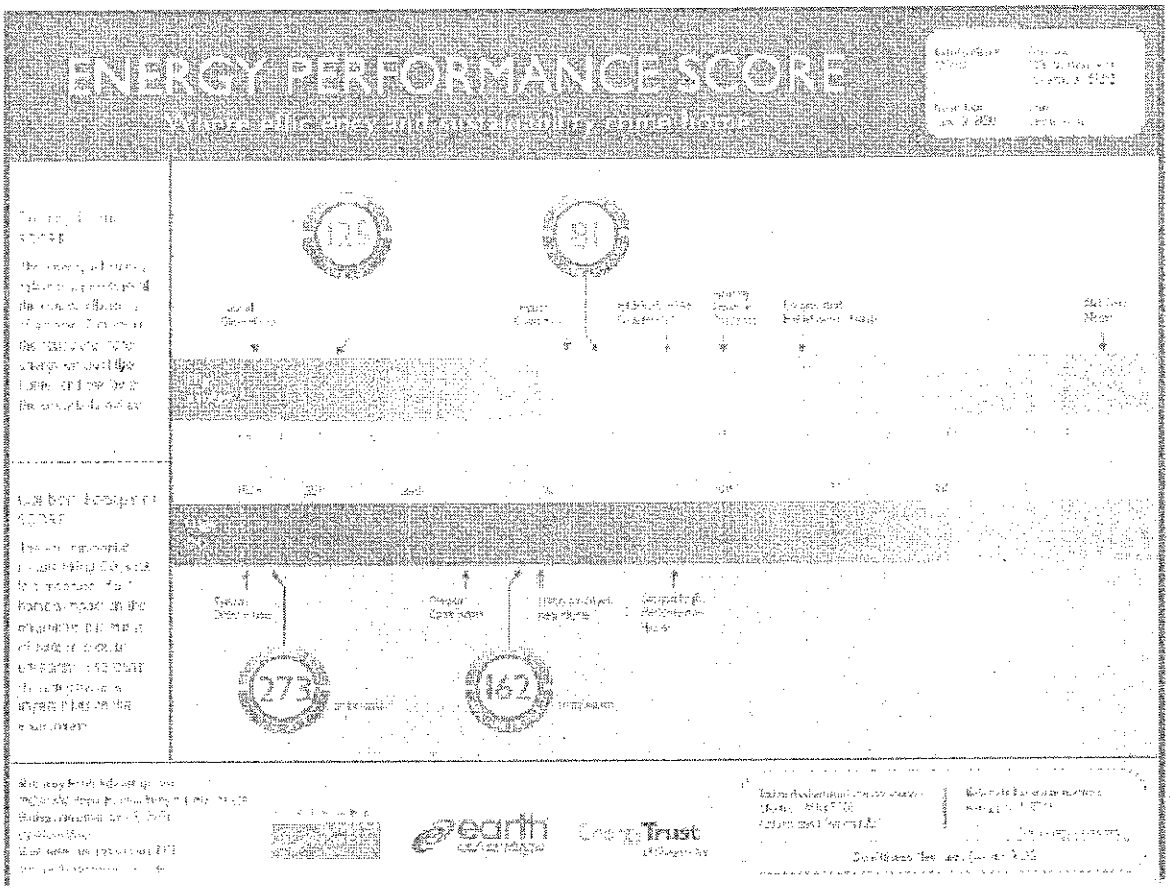
Below is a picture of a label created by the HERS rating system label:



The HERS Rating system, although endorsed by the stakeholder group, has two major barriers for immediate market place integration. The cost to obtain a rating for an existing single family home ranges from $500 to $1,000. The cost for a new single family home is between $1,000 and $1,400. The second barrier is the lack of certified raters in the Maine workforce. Currently there are fewer than 10 certified raters based in Maine.

State-specific programs –

The stakeholder group was particularly interested in a pilot program in Oregon created to test a new residential rating tool called the Energy Performance Score (EPS). Developed by the Energy Trust of Oregon, the new EPS discloses a home's energy performance and carbon emissions. The EPS is an asset rating and uses two rating scales, (see below for a sample of the proposed label) based on total site-level energy consumption and greenhouse gas emissions, respectively. Because this program is in the pilot project phase, it was difficult for the stakeholder group to gather more information on the technical merits of the system.



Conclusions

If the challenges to broad adoption of the RESNET HERS program such as high rating costs and the lack of certified raters can be addressed, it would be the recommendation of the Commission that the RESNET's Home Energy Rating System (HERS) be used to rate new and existing homes in Maine. RESNET's standards are recognized by the U.S. mortgage industry for capitalizing a building's energy performance in the mortgage loan. RESNET also makes possible certification of "White Tags" for private financial investors. Finally, RESNET is recognized, by the federal government for verification of building energy performance for such programs as federal tax incentives, the Environmental Protection Agency's ENERGY STAR program, and the U.S. Department of Energy's Building America Program.

As will be discussed under Directive 3, the Commission recommends a staggered approach to rating buildings in Maine. Due to the challenges facing residential energy ratings, it may be worth focusing initial efforts on commercial buildings.

DIRECTIVE 2: INCLUDE THE STANDARDIZED RATING SYSTEMS AND REPORTING FORM IN PROFESSIONAL EDUCATION AND TRAINING PROGRAMS SPONSORED BY THE PUBLIC UTILITIES COMMISSION

Efficiency Maine offers several training opportunities for commercial building owners and operators such as the Building Operator Certification (BOC) program. This program, provided in cooperation with the Northwest Energy Efficiency Council (NEEC), is an eight-day course offered over a two to four month period. The program provides facility managers training to improve energy efficiency, reduce maintenance costs in their facilities and enhance occupant comfort. Certified building operators demonstrate competence in evaluating building energy consumption though the use of the Energy Star Portfolio Manager, HVAC energy inspection, lighting surveys, indoor air pollutant sources and pathway locations, and facility electrical distribution.

Recently, the Commission also began offering the "Efficiency Maine Certification Program for the Real Estate Industry." Since September 2009, twenty classes have been offered and over 900 real estate professionals have already completed the training. There is continued interested in the program and seven more classes are scheduled for 2010. Efficiency Maine will work with the class instructors to incorporate building energy rating systems into this training.

Additionally, Efficiency Maine, with the Bureau of General Services and the US Environmental Protection Agency recently hosted an introduction to ENERGY STAR Portfolio Manager training. Twenty-five individuals participated in the training.

The Commission will continue to take advantage of training opportunities to encourage the use of ENERGY STAR Portfolio Manager and the RESNET HERS rating system.

DIRECTIVE 3: ENCOURAGE REAL ESTATE PROFESSIONALS AND OTHER STAKEHOLDERS TO PROMOTE VOLUNTARY USE OF THE STANDARDIZED RATING SYSTEM AND REPORTING FORM BY RESIDENTIAL AND COMMERCIAL PROPERTY OWNERS, INCLUDING BUT NOT LIMITED TO, VOLUNTARY DISCOLSURE OF BUILDING RATINGS IN THE CONTEXT OF REAL ESTATE TRANSACTIONS.

This directive inspired a robust discussion among the stakeholders regarding whether a building rating system should be voluntary or mandatory. One of the strongest recommendations out of the NEEP report was to implement a mandatory program. Page four of the report reads (bold and italics are in the report),

> "To be effective, **disclosure must be *mandatory***. Indeed the effectiveness of these policies rests on the premise that ratings are ubiquitous – that buyers and renters can compare the energy performance of *all* of the homes and buildings they are considering. Similarly effectiveness depends on **disclosure early in the process**, i.e. in all advertising. If ratings need only be presented after purchase offers are made, for example, they will forfeit their value to inform buyers and influence the market."

In general, the energy auditors and environmental organizations represented at the stakeholder meetings supported the concept of mandatory ratings and strongly agreed that in order for a rating system to be widely utilized it must be mandatory. However, all stakeholders recognized the financial challenges of implementing a mandatory building energy rating system.

The real estate organizations, particularly the Maine Association of Realtors, opposed a mandatory building energy rating requirement for the following reasons:

- The real estate sector is voluntarily moving toward more energy awareness as evidenced by energy-related continuing education courses;
- Buildings with low ratings may be stigmatized, and then sold to those who have the least means to improve them; and
- Concerns with the confidentiality of certain types of information

The stakeholder group was unable to identify and agree upon a method to encourage the disclosure of building energy ratings at the point of transaction. The Commission will continue to work with real estate professionals to identify an effective way to encourage *voluntary* disclosure.

The stakeholder group did discuss various ways for the Commission and the State to encourage voluntary use of the rating system, which is discussed in detail in the next section.

DIRECTIVE 4: ENCOURAGE VOLUNTARY USE OF THE STANDARDIZE RATING SYSTEM AND REPORTING FORM BY LARGE-SCALE PROPERTY OWNERS AND MANAGERS, INCLUDING THE STATE, MUNICIPALITIES AND OTHER PUBLIC AND PRIVATE ENTITIES.

The NEEP report presented a few key recommendations for this type of directive – developing a phase-in strategy and defining trigger points.

Phase-In Strategy

The idea of Maine adopting a building rating system is going to be a paradigm shift. Having the marketplace attach a value on energy efficiency is going to take time, and the true measure of success is whether a system can gain consumer confidence. Below are three reasons to consider a phase-in strategy:

- Gradual implementation allows rating systems and administrative structures to be tested and fine-tuned before full implementation:
- Gradual implementation avoids bottlenecks by limiting growth in demand for rating, audits and administration: and
- Gradual implementation could allow administrators to measure policy and energy rating platform effectiveness.

The stakeholders discussed several methods of gradually phasing in a building rating system and placed emphasis on two approaches -- leading by example, and staggering disclosure and trigger points.

Lead by Example

Both the State and Efficiency Maine could lead by example. Disclosing the energy performance of the state-owned buildings in addition to buildings that complete energy projects funded by Efficiency Maine could provide a catalyst for more extensive participation. With leadership from the State's Bureau General Service (BGS), a report titled, **Report of the Task Force to Advance Energy Efficiency, Conservation and Independence at State Facilities** was recently submitted to the Governor, the Joint Standing Committee on State and Local Government, and the Joint Standing Committee on Utilities and Energy. The BGS report expressed support for the following actions to increase the number of State building with an energy rating.

- Require that any eligible building that receives any of the funding proposed in the Report of the Task Force to Advance Energy Efficiency, Conservation and Independence at State Facilities obtain an energy-star rating, perhaps pre and post-project.
- Report annually on the number of buildings rated and the buildings' scores.

Likewise Efficiency Maine is investigating similar measures to encourage the use of Portfolio Manager, including:

- Requiring applicants for grant programs to submit an initial energy rating in order to be eligible for funding. As a pilot, Efficiency Maine required applicants to submit a building energy rating in order to be eligible for the Commercial Grants program funded by the American Recovery and Reinvestment Act. Efficiency Maine has not yet determined if this requirement had any negative or positive effects on participation in the granting program;
- Encouraging grant recipients to use Portfolio Manager as an optional reporting tool; and
- Offering a higher incentive to participants in Efficiency Maine's existing business program if the participant completes a building energy rating. Efficiency Maine is currently investigating the potential impacts this type of policy might have on participation rates and funding levels.

Staggered Disclosure and Trigger Points

A trigger point is the time at which a building energy rating is disclosed. A trigger can be at a time of transaction, such as the time of sale, refinance or rental, or when receiving funding for an energy efficiency project. Alternatively, a building energy rating disclosure could be scheduled periodically, such as every three years. The choice of trigger point for a building rating creates a natural opportunity for staggering implementation. Generally, it is recommended that government owned buildings have a scheduled energy rating disclosure, such as disclosing an updated energy rating every three years, and that privately held buildings disclose at a trigger point, such as a time of transaction.

DIRECTIVE 5: DEVELOP A VOLUNATARY LIBRARY OR REPOSITORY OF RATINGS BASED ON THE STANDARDIZED RATINGS SYSTEM AND REPORTING FORM.

Developing a voluntary library or repository for building energy ratings is understandably the last directive, because we must first adopt a building energy rating platform and rate buildings in order to have ratings to post. The types of buildings that participate, whether or not they have interest in voluntarily posting their ratings, and the forum in which they would like their ratings to be shared will all affect the design of a library or repository.

Ideas for this library or repository ran the gamut from a file drawer at the Commission, to a barebones website, to an interactive website with educational opportunities. As the Commission more fully develops its plan to encourage the use of the building energy rating system and gauges the interest of its participants, it will be more prepared to develop this library or repository. For now, the Commission is keeping track of those organizations that participate in building energy rating trainings, as well as those that complete a building energy rating as part of Efficiency Maine's grant process. The Commission will maintain a hard copy of all building ratings that it receives and will be alert for funding opportunities that might enable the establishment of a web-based repository in the future.

CONTINUINING EFFORTS TO MEET THESE DIRECTIVES

The stakeholder group successfully identified building energy rating platforms for existing buildings, and recommends ENERGY STAR's Portfolio Manager for existing commercial buildings and RESNET's HERS platform for residential buildings.

Substantially increasing the number of buildings with energy ratings in Maine will take a concerted and sustained effort. Efficiency Maine is working to incorporate building energy ratings into multiple programs, such as training programs and incentive programs. The next step will be to create a framework for a voluntary repository or library of ratings.

These issues will remain significant as the Efficiency Maine Trust assumes responsibility for the activities of Efficiency Maine, including the follow-up to this report, on July 1, 2010.

Appendix A:

ENERGY STAR Portfolio Manager

Statement of Energy Performance Samples

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Nash School

Building ID: 1840230
For 12-month Period Ending: June 30, 2009[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: January 06, 2010

Facility	Facility Owner	Primary Contact for this Facility
Nash School 193 SEWALL ST Augusta, ME 04333	State of Maine, Property Management Div. State House Station 78 111 Sewal Street Augusta, ME 04333	Richard Buotte State House Station 78 111 Sewal Street Augusta, ME 04333

Year Built: 1977
Gross Floor Area (ft²): 7,438

Energy Performance Rating[2] (1-100) 51

Site Energy Use Summary[3]	
Electricity - Grid Purchase(kBtu)	118,011
Fuel Oil (No. 2) (kBtu)	576,814
Natural Gas - (kBtu)[4]	0
Total Energy (kBtu)	694,825

Energy Intensity[5]	
Site (kBtu/ft²/yr)	93
Source (kBtu/ft²/yr)	131

Emissions (based on site energy use)	
Greenhouse Gas Emissions ($MtCO_2e$/year)	57

Electric Distribution Utility
Iberdola - Central Maine Power Co

National Average Comparison	
National Average Site EUI	140
National Average Source EUI	197
% Difference from National Average Source EUI	-33%
Building Type	Office

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

Certifying Professional
N/A

Meets Industry Standards[6] for Indoor Environmental Conditions:	
Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

Notes:
1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for altitude based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

Public reporting burden for this collection of information is estimated to vary from 5 to 91 hours per response, with an average of 38 hours per response. This includes time for collecting, validating, and verifying energy data, and reviewing the instructions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460.

EPA Form 5900-16

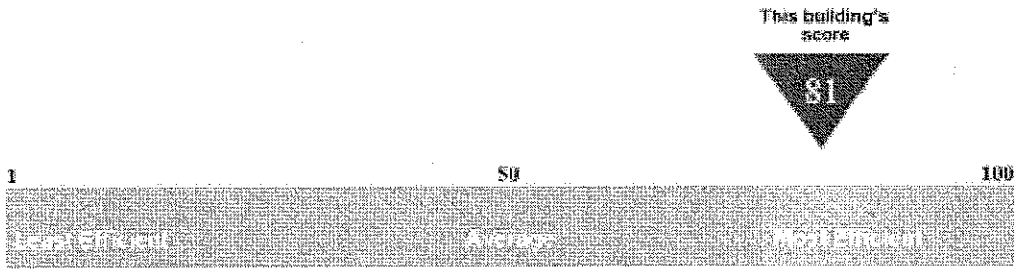
Statement of Energy Performance

2009

Nash School
103 SEWALL ST
Augusta, ME 04333

Portfolio Manager Building ID: 1840230

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit energystar.gov/benchmark.



This building uses 131 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending June 2009

Buildings with a score of 75 or higher may qualify for EPA's ENERGY STAR.

I certify that the information contained within this statement is accurate and in accordance with U.S. Environmental Protection Agency's measurement standards, found at energystar.gov

Date of certification

EPA United States Environmental Protection Agency

Date Generated: 01/06/2010

State of Nevada Report

Audit at Time of Sale SB 437, Sections 31 and 50
Stakeholders' Group Recommendations

Introduction

On February 4, 2010, the Nevada State Energy Commissioner conducted a stakeholders' meeting in Carson City with video conference link to Las Vegas, to begin to develop rules and procedures to implement SB 437, sections 31 and 50. The law, passed in 2007, requires an energy evaluation be offered on homes for sale beginning January 1, 2011.

From February to March 15, interested citizens from all parts of Nevada teleconferenced in 5 committees to analyze the issues and develop recommendations to implement the law. Participants included energy auditors, contractors, realtors, appraisers, and persons from nonprofit and government agencies. The 5 committees focused on:

(a) the nature of the energy evaluation
(b) qualifications of the energy evaluator
(c) Integration of the requirement into State real estate sales procedures
(d) enforcement of the requirements
(e) public education concerning the requirement and its benefits

The terms “audit” and “auditor” are standard in the energy evaluation industry, and are used here to refer to the evaluation and the evaluator.

Contents

I. Guiding Principles

The discussion groups considered the following points in their discussions.

- Intent of the legislation
- Existing industry standards for evaluating the energy consumption of a home.
- Ensure value to the consumer
- Accomplishment of energy savings
- Consumer protection
- Affect on sellers and buyers of real estate
- Cost to the seller
- Administrative cost to the State
- Time, equipment and training involved to qualify the auditor
- Proposed federal legislation that would provide financial incentives to homeowners for energy efficiency improvements
- Meaningful reporting data that be contained in a report to customers and to the State
- Interaction with other programs, including Federal initiatives, intended to accomplish energy reductions

II. Discussion points and conclusions

Intent of the legislation

The public input groups focused on the wording of the legislation to guide their analysis. The legislation speaks of:

- evaluating the energy consumption of residential property
- improving energy conservation and energy efficiency in residential property.

The Audit group agreed that the ***evaluation*** of the energy consumption of residential property requires a comprehensive audit to pinpoint the energy use of the components of the home (walls, windows, air infiltration, etc.). This type of comprehensive audit, which includes an on-site survey and a computer-aided energy load calculation, is well established in the industry. The law requires an *evaluation* of the energy use of a home (not just, for instance, a recital of one year's energy bills), and the comprehensive audit is the one reliable way to quantify the cost and proposed savings of building retrofits. It is thus the one reliable analysis that will achieve the legislation's goal of improving energy conservation and energy efficiency in residential property.

The groups discussed whether a less comprehensive type of survey should be adopted. Some contributors felt the cost of the audit would hinder home sales, or that a low score would stigmatize a home for sale. However, the groups came to consensus that any type of review other than the comprehensive audit would not meet the intent of (1) evaluating a home's energy use and (2) leading the way to improving residential energy use. It was not the goal of the citizens' groups to rewrite or negate the law.

Audit and auditor requirements, and program administration

The home energy auditing industry is well established nationally, with well-developed standards, procedures, and industry self-regulating bodies. It is in the State's interest to review established procedures in the industry, and accept them if appropriate, rather than expending resources to develop procedures from scratch in an area that requires specialized expertise.

The participants came to consensus that procedures of the Residential Energy Services Network (RESNET) cover the needs of the State program, and should be adopted. RESNET and the Building Performance Institute (BPI) are the most influential and well established national home energy organizations.

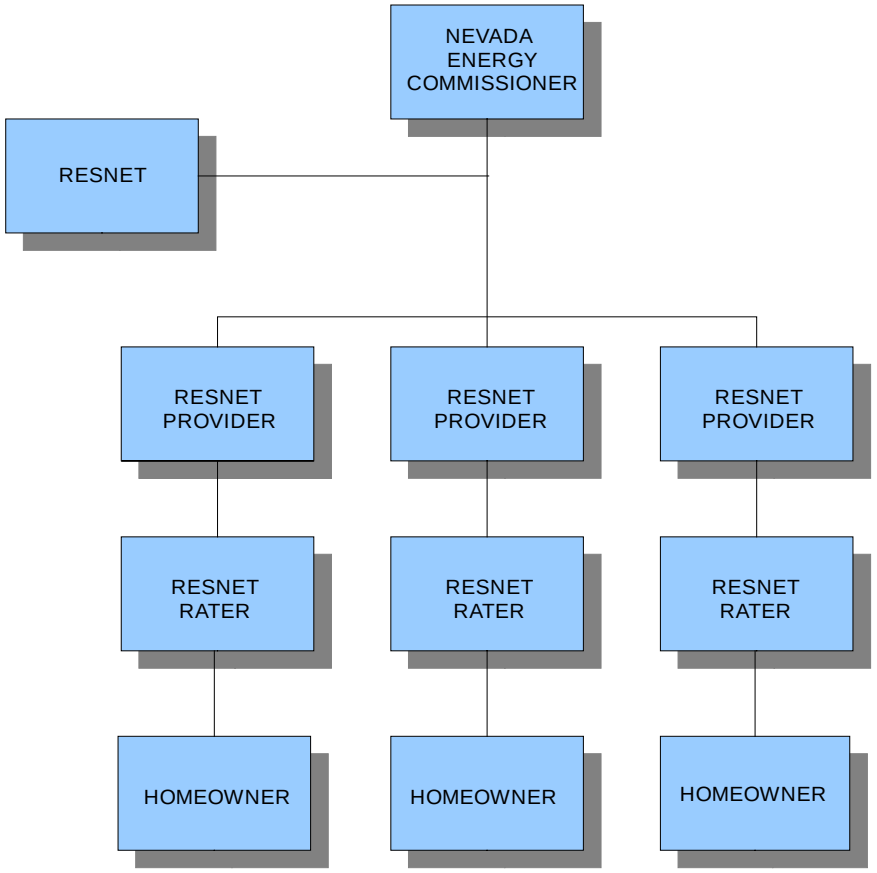
RESNET's purpose is to set the standards for quality of home energy ratings/surveys. Through stringent industry standards and certification, the organization and its members seeks to increase public awareness of home energy ratings and to enhance the technical and ethical performance of home energy raters. Nationally, RESNET is recognized by:

- The mortgage industry for capitalizing energy efficiency in mortgages
- Financial industry for certification of "white tags"
- Federal government for verification of building energy performance for:
    - Federal tax credit qualification
    - EPA ENERGY STAR labeled homes
    - U.S. Department of Energy Building America program
- States for minimum code compliance in 16 states

RESNET has in place the following:

- procedures for conducting comprehensive energy audits
- standards for energy analysis software, and licensing of software to raters
- training and certification of auditors
- continuing education requirements
- quality assurance through an oversight structure of rating providers, funded by auditors
- ethics rules
- a consumer complaint procedure with redress for poor performance

The groups concluded that RESNET covers all program aspects the State compliance program needs precisely, with the exception of insurance and licensing requirements. Since it is also funded by raters themselves, it is the only standard and set of procedures that will fulfill program requirements without causing an insurmountable burden to the State. Enlisting this free-market program in the service of public goals combines the best kind of public/private partnership, reducing the burden to government by using the free market system to accomplish public goals.



RESNET structure integrated with State of Nevada energy audit program

BPI is the other leading industry organization. Though it does not have the comprehensive structure or procedures of RESNET, it does lead in establishing procedures for combustion safety testing. Combustion safety testing is a crucial part of home energy auditing, as energy retrofit measures (specifically air sealing) affect the safe operation of combustion appliances within the home. Group participants felt it important that BPI combustion testing procedures be incorporated into the State energy audit. The latest RESNET rules incorporate BPI combustion safety testing as part of the comprehensive audit.

See Appendix A for detailed information on RESNET standards and administrative structure.

Precedent government-sponsored home energy audit programs

The group looked into other government-run audit programs of the state of Missouri and Austin, Texas to determine whether these offered a useful precedent. The Austin program allows either BPI or RESNET procedures, and does not provide the kind of oversight we feel Nevada's program should have.

A successful program exists in the City of Las Vegas. . The City has teamed with HomeFree Nevada, the Home Performance with ENERGY STAR (HPwES) affiliate, to run the program jointly, with RESNET rules providing the main oversight for the audit program. Auditors are both RESNET certified auditors and BPI certified Building Analysts. Homeowners who have participated in the program have been satisfied. The administration of the program however requires manpower in addition to the RESNET rating providers, and involves an additional layer of administration and funding that is not necessary for the program to work.

Alternate energy evaluation procedure for new homes

Southern Nevada's building officials are preparing to adopt RESNET analysis as a requirement for permit issuance, with assignment of a HERS score to quantify the energy efficiency of homes. The groups agreed that this should be considered as meeting the energy evaluation requirement of the law, and further recommend that this be adopted as a state-wide requirement, with a HERS score all other requirements of RESNET procedures be met for the issuance of a building permit.

Consumer Value and Protection

The proposed comprehensive audit will deliver tangible value to the consumer for the money spent, with its specific information that provides homeowners a specific path to energy efficiency for their particular home. The audit produces a numeric HERS score which gives concrete information to home buyers with which to compare homes, allows appraisers to give credit to energy efficiency, and provides specific goals for energy improvements.

RESNET procedures provide homeowners redress in the case of improper work or unethical actions by raters. Raters must go through a remedial procedure if they produce substandard work, and will lose their certified status, and their ability to work in the program, if problems warrant.

Auditors should carry liability insurance to protect homeowners, including general liability and automotive. Participants discussed the need for professional liability (errors and omissions) insurance, and found this should not be required. E&O insurance is optional even for professions with much greater liability. The potential for actual monetary damages of any substantial amount in energy auditing are minimal (the most likely errors would cause a homeowner to spend a few thousand dollars on improvements that did not result in the predicted energy savings but would still be an improvement to a home.)

We have suggested insurance standards identical to those required by HomeFree Nevada, which administers the City of Las Vegas' home energy auditing program. This is a successful audit program which runs smoothly.

Auditors should carry the business licenses required by the jurisdiction in which they operate. Auditors operating without a license will be subject to the same penalties as any other business, through existing local regulations. The study groups propose that RESNET providers take on the responsibility to verify their raters' business licenses are current. Nevada's two providers, Energy Conservation Group and American Energy Audit, have concurred with accepting this responsibility.

Bonding of auditors was discussed and found to be both redundant and unnecessary. The above requirements will protect homeowners and provide redress if problems arise. Auditors do not perform construction work and do not need to be regulated as if they were construction contractors.

Coordination with other government and industry programs

RESNET procedures, with its HERS rating, allow homeowners access to programs to assist in energy upgrades.

- National Home Performance with Energy Star and Home Star programs will provide homeowners with financial incentives to perform energy upgrades.
- Energy efficiency mortgages and Energy Improvement Mortgages allow homeowners extra funding based on the home's energy conservation rating.
- HERS scores give appraisers a way to consider the value of energy efficiency features in a home.
- The audit requirement will add a cost to selling a home, which is a medium cost item compared to typical closing cost items. Costs could be negotiated and rolled into mortgages. Federal incentives may be available to help with the cost of the audit. Jurisdictions may choose to assist homeowners by tying financing to the property through taxes or utility bills. Although $500 was discussed as a ball park price for a comprehensive audit, the market would determine the ultimate value.

Enforcement that the audit is offered by the seller at time of sale, **and remedy for noncompliance.**

Participants came to consensus that the Real Estate Division should include the audit as a “responsibility of a seller” on the online “Nevada Real Estate Division Residential Disclosure Guide.” The Real Estate Division should monitor this as it does the other required disclosures, with the same penalties for noncompliance. The group also recommends the Real Estate Division create a waiver form for the “buyer” if they choose to waive the requirements of the “seller.”

The group felt that while the law states that the seller is responsible for providing the evaluation, the payment for the evaluation should remain negotiable between the buyer and seller.

Public education concerning the Audit Program

Discussion group E recognized the need for public education concerning the audit program, and identified numerous ways to get the word out as well as identifying the type of information that should be disseminated. The results of their discussion constitute an action plan rather than draft regulation language, so their recommendations are listed separately. Their report is included in Appendix B.

III. Recommended draft language

1. Home Energy Evaluation Procedures

The State of Nevada shall adopt an audit that conforms to RESNET (Residential Services Network) and BPI (Building Performance Institute) standards for the Energy Audit on Home Sale program.

Auditors shall comply with RESNET and BPI standards.

The Evaluations for the Report shall use RENET Besttest approved software.

Energy Audit Reports shall include:

a. Improvement Analysis Report
- calculation of current energy costs
- calculation of energy costs after improvements
- total savings
- HERS Index
- Information for lenders and appraisers
- List of itemized recommended improvements with life cycle of item, cost, yearly savings, and simple payback period.

b. Action Report
- Ranking of building elements with respect to the largest energy consumption on a component basis

c. Air Leakage Report
- Building shell air infiltration
- Duct leakage
- Building ventilation information

d. Lights and Appliances Summary with annual costs

e. Emissions Report with absolute values for CO2, SO2 and NOX emissions produced by the building

f. Home Performance with Energy Star Energy Rating Certificate providing a home energy rating index in accordance with RESNET “Mortgage Industry National Home Energy Rating Systems Standards”

g. RESNET Home Energy Rating Standard Disclosure showing the Rater’s affiliation with the home at time the final rating is issued.

2. Audit Program administration

The State audit program shall adopt RESNET standards for administering the Energy Audit on Home Sale program, and shall use the RESNET provider network to monitor audits and ensure program quality.

3. Requirements for Raters

Home energy raters shall comply with the following:

1) Auditor must be a RESNET certified HERS Rater
2) Auditor must be a member in good standing of RESNET
3) Auditors must comply with RESNET standards.
4) Auditor must be affiliated with a RESNET Accredited Provider
5) Auditor must be subject to Provider's QA/QC (Quality Assurance/Quality Control) processes
6) Auditor must full fill all professional development requirements of RESNET
7) Auditor must uphold all Standards of Practice, Code of Ethics and Consumer Complaint processes as set forth by RESNET
8) Raters must hold current state and local business licenses
9) Raters must meet insurance requirements as set forth by Providers and/or appropriate state agency

4. Requirements for Rating Providers

RESNET rating providers shall oversee auditors performing work under the audit program. Rating providers shall comply with the following:

1) Provider must be a RESNET member in good standing
2) Provider must abide by all RESNET standards, policies and procedures
3) Providers will, at a minimum, follow the Mortgage Industry National Home Energy Rating Standards (HERS) standards in sampling audit reports for quality control.
4) Provider will provide verification of auditor rater certification to the Energy Commissioner.
5) Provider will provide notification of auditor probation, suspension and termination to the Energy Commissioner.
6) Provide will requiring insurance and licensing verification from auditors and provide verification to the Energy Commissioner.
7) Providers shall report to the Commissioner on a quarterly basis, listing:
   - the number of audits/ratings performed by raters
   - HERS scores for houses audited (in tabular form, without personally identifiable information, for use by Commissioner in gauging energy use)
   - total number of audit reports sampled by Provider for quality assurance review
   - the number of test-outs completed (post-retrofit) and final HERS scores (for use by Commissioner in gauging energy improvements made)
   - the number of audits reviewed that did and did not meet standards
   - disciplinary actions taken
8) Providers in Nevada shall ensure raters performing evaluations under this program have:
   - Proof of general liability insurance ($1,000,000)
   - Proof of workman's compensation insurance
   - Proof of all state and local licenses in which Auditor does work.

5. Other home energy audit programs.

RESNET shall serve as the model program. Other programs may be considered and adopted provided they can demonstrate equivalence to RESNET including:

1) a training program for audits, including written and field testing,
2) a third-party quality assurance procedures
3) remedies for nonperformance
4) continuing education
5) ethics requirements

6. Procedures related to the real estate sales transaction

The Real Estate Division shall include “Evaluation of the energy consumption of a residential property” as a responsibility of a Seller in the online “Nevada Real Estate Division Residential Disclosure Guide.”

The Real Estate Division shall provide a waiver form for the Buyer who chooses to waive the audit required to be offered by the Seller.

Payment for the evaluation shall be negotiable between the buyer and seller.

At time of closing, the title company shall certify one of the following:

a) The buyer received a comprehensive audit.
b) The buyer opted out of having a comprehensive audit.
c) The home was permitted and built according to local building codes that required RESNET analysis and assignment of a HERS score.
d) The sale or intended sale of the residential property falls under the categories of SB 437, Sections 50.3 and 50.4.

Title companies shall report this information statistically to the Energy Commissioner each quarter.

Appendix A: RESNET Standards and Procedures

Standards

RESNET's purpose is to set the standards for quality of home energy ratings/surveys. Through stringent industry standards and certification, the organization and its members seeks to increase public awareness of home energy ratings and to enhance the technical and ethical performance of home energy raters.

RESNET Rating Standards of Practice
http://www.natresnet.org/standards/mortgage/RESNET_Mortgage_Industry_National_HERS_Standards_2002.pdf

Code of Ethics
RESNET's Rating and Home Energy Survey Code of Ethics stresses a home energy rater/home energy survey professional's obligation to present accurate and unbiased information on a home's energy performance in a professional manner and disclose any potential conflicts of interest. Every RESNET certified rater must sign an agreement attesting that they have read and agree to abide by the RESNET Rating Code of Ethics as part of their professional certification. RESNET Rating Providers are responsible for insuring that their certified raters abide by the Code of Ethics and have a progressive disciplinary process in place to deal with violations.
RESNET Code of Ethics Complaint.
http://www.natresnet.org/standards/practice/ethics.htm

Conflict of Interest
RESNET provides written conflict of interest provisions that prohibit undisclosed conflicts of interest but allows waiver with advanced disclosure.
RESNET Home Energy Rating Standard Disclosure.
http://www.natresnet.org/standards/disclosure/default.htm

Complaint Resolution
RESNET's rater members subscribe to high standards of quality and ethics in their rating services. RESNET has adopted a complaint resolution process to address consumer complaints of a rater's services.
RESNET Rater Complaint Resolution Process.
http://www.natresnet.org/consumer/complaint/default.htm

Rater Certification
RESNET Raters are certified based on:

a. Knowledge base and skill sets defined by RESNET Standards
b. Training Providers are accredited by RESNET
    i. Curricula approval
    ii. Instructors certified by RESNET (must pass examination)
c. Rater candidates must pass national online test
d. Rater candidates must perform 5 ratings under the supervision of certified rater
e. Rater may then be certified by RESNET accredited Rating Provider
f. Raters must complete 18 hours of professional development through a RESNET Accredited Training Provide or attendance of RESNET conference every three years or pass RESNET rater test.

http://www.natresnet.org/standards/mortgage/amendments/2009/adopted.htm

RESNET maintains a directory of certified rater members at RESNET Certified Rater Directory.
http://www.natresnet.org/directory/directory.aspx?MemberTypeID=1

Quality Assurance
RESNET provides for quality assurance within the Rating industry by:

- Each Rating Provider must employ a certified Quality Assurance Designee
- Quality Assurance Designee must independently verify internal consistency of a minimum 10% of all building input files
- Quality Assurance Designee must independently field verify the accuracy of a minimum of 1% of each certified Rater's homes
- Quality Assurance Designee must annually complete a two hour roundtable and complete 12 hours of attendance at the RESNET conference or 12 hours of continuing education units or document 25 home QA (Quality Assurance) home reviews.
- RESNET monitors the Rating Providers compliance with quality assurance requirements

RESNET Policy on Quality Assurance of Ratings
http://www.natresnet.org/programs/providers/quality_assurance.htm

Rater Discipline
RESNET requires Accredited Providers to implement written rater discipline procedures that include progressive discipline involving Probation, Suspension and Termination of certification.

The following is the recommended process for the implementation of the "auditor" qualifications:

Process
RESNET's process sets forth a structure whereby RESNET accredits organizations with Provider status for overseeing and training raters. Raters are required to report to a RESNET Accredited Provides and submit to their over site/training through an established QA/AC (Quality Assurance/Quality Control)/ongoing training process. In turn, the national home energy rating standards requires that RESNET annually randomly select Accredited Rating Providers to conduct a quality assurance review of their files. The purpose of this review is to ensure that the Provider is following the rating quality assurance procedures.

Providers
RESNET Accredited Rating Providers have the responsibility of ensuring the quality of rating services. Rating Providers are responsible for administering rating programs. These responsibilities include:

- Certification of raters
- Selection of accredited rating software programs
- Rating quality assurance Marketing of rating/surveyor services RESNET maintains a directory of certified rater members at http://www.natresnet.org/programs/providers/quality_assurance.htm

The "Audit"
RESNET is a flexible program that covers procedures and standards for different levels of energy assessment..

Categories of energy audits in the RESNET National Home Energy Audit Standard

- Home Energy Survey
  - On-Line Home Energy Survey

    - In-Home Home Energy Survey
    - Diagnostic Home Energy Survey
- Comprehensive Home Energy Audit

RESNET National Standard for Home Energy Audits

On-line Energy Survey
The On-Line Home Energy Survey shall collect substantially the same data and information and shall be subject to the same limitations as the In-Home Home Energy Survey. On-line Home Energy Survey instruments shall be hosted by a RESNET accredited Survey Provider or another organization approved by RESNET and the on-line instrument shall be approved by RESNET

In-Home Energy Survey
This Home Energy survey shall include on-site visual inspection of the energy features of the dwelling unit, and documentation of its general condition, including envelope features and ages; equipment types, characteristics and ages; and, appliance and lighting characteristics. Where available, the In-Home Home Energy Survey shall include a review of utility use and billing history.

The In-Home Home Energy Survey is a visual inspection only and does not require the use of a blower door, duct leakage test, an infrared camera or other test equipment. An In-Home Home Energy Survey is not a prerequisite for the Diagnostic Home Energy Survey or Comprehensive Home Energy Audit.

Diagnostic/Field Rating Inspection
A homeowner may elect to go through this process with or without a prior In-Home Home Energy Survey. The Diagnostic Home Energy Survey includes all of the provisions of the In-Home Energy Survey, with diagnostic testing and reporting.

Comprehensive Energy Audit
The purpose of the Comprehensive Home Energy Audit is to cause improvement to be made to the audited home. The Comprehensive Audit includes an evaluation, performance testing and proposed treatments for improvement of an existing home. The evaluation shall include a review of the data collected from any previous energy audit or survey, any further required measurement and performance testing, combustion appliance testing, and a computerized simulation analysis of the home's energy performance and a calculation of the energy and environmental savings from improving the energy performance of the home. The performance analysis shall determine the scope of work for the home. The qualified Auditor shall guide the homeowner to a Certified Contractor. A homeowner may elect to go through this process without a requirement of a prior Home Energy Survey or a Diagnostic Energy Survey.

Appendix B: Provisions for Information

PURPOSE

Group E was tasked with creating "Provisions for Information" to describe all public outreach and marketing , including financing, for establishing a program to evaluate energy consumption of residential property for its sale, as described in SB 358 section 1.69 of 2009.

OVERVIEW

Group E developed an overall description of a plan to provide outreach, education, communication, and marketing (collectively referred to as communication) of the new program to a variety of target audiences. Some of these audiences can also be used as resources for communication channels, as they themselves have internal tools for this effort, and customers or constituencies with which they regularly interact.

Reaching each audience effectively would require specific tactics, the detailed descriptions of which are beyond the scope of this document; however, they fall into several general categories: media, Internet, electronic, social networking, and public events.

It is anticipated that basic and continuing education will be ongoing needs for this program, especially for some of the target groups, such as homeowners and consumers. Therefore education will need to be an important component of communication.

It was also determined that whenever possible, the communication for this new state program should interface positively with other similar programs, such as ENERGY STAR® for New Homes, Home Performance with ENERGY STAR®, L.E.E.D. (Leadership in Energy & Environmental Design) for Homes, Home Star, Home Free, Green Chips, and P.A.C.E. (Property Assess Clean Energy), among others, and build on the informational frameworks already established by those programs. This cross-communication will serve to reinforce the overall messages of mutually compatible programs in the minds and hearts of all target audiences.

It is recommended that the outreach be implemented in a minimum of three stages: First, a general conditioning of the market; Second, information to include basic education and resources for further information; Third, refinement, reinforcement, and amplification of the messages and tactics.

The Nevada Energy Commissioner (NEC) and Southwest Energy Efficiency Project (SWEEP) will ultimately be responsible for initiating and overseeing the development of the specific tactics to be used in the implementation of the program communication strategies; however, this document recommends several which could be considered.

TARGET AUDIENCES

The new program will affect a variety of target audiences; therefore, effective communication strategies will be required for each of them, with some crossover potentially possible. The audiences include but are not necessarily limited to the following:

- Homeowners
- Consumers/Renters
- Lenders
- Banks
- Appraisers
- REALTORS☐
- Real estate licensees
- Real estate companies
- Title companies

- Municipal governments
- Chambers of Commerce
- Public Utility Commission of Nevada
- Public utility companies
- Municipal utility companies
- Environmental and conservation groups
- Non-profit agencies
- Homeowners' associations
- Property management companies
- Building performance professionals
- Homebuilders
- Contractors and building trades
- Designer/specifiers such as architects and engineers
- Professional trade organizations

RESOURCES FOR COMMUNICATION

The following is a brief, but not exhaustive list of potential organizations that may be favorably disposed toward this new program and possess avenues that could be utilized as communication channels either internally or externally, or both. Most, if not all, have Websites and other means of contacting their constituencies.

RESNET (Residential Energy Services Network)

This is the national oversight organization which accredits home energy rating providers and raters and ensures consistency in their methodology. Their Website is a valuable resource for building performance professionals and others interested in the technicalities of home energy audits.

BPI (Building Performance Institute)

The leading developer of technical standards for home performance and weatherization retrofit work that are recognized across North America. From these standards, they have developed training programs, professional credentialing for individuals and company accreditations – including quality assurance programs – that help raise the bar in home performance contracting.

Real estate organizations

These include the Greater Las Vegas Association of REALTORS, and the Reno-SparksAssociation of REALTORS, as well as the Nevada Association of REALTORS, and the Nevada State Division of Real Estate. All have members with whom they regularly communicate either locally or on a statewide level. They also sponsor continuing education events and classes for real estate licensees.

Lending organizations

Groups such as the Mortgage Bankers Association, and others which could potentially offer financing for home improvements under this program, would have a great opportunity to seek customers using program-compatible messages.

Appraisal organizations

These include the Coalition of Appraisers in Nevada, the Las Vegas and Reno-Carson- Tahoe chapters. They all have members with whom they regularly communicate, and they, too, sponsor continuing education events and classes for appraisal licensees.

Training and Education Organizations

Trade schools, RESNET & BPI certified trainers and facilities, universities, career training academies and community colleges have the ability to communicate, facilitate and reach the workforce.

US Green Building Council (USGBC)

Local chapters of this national organization have many members, including designer/specifiers such as architects and engineers. They hold regular meetings and events and serve as a resource concerning green construction and retrofitting. Additionally, they certify building professionals to do the qualifying work for L.E.E.D. (Leadership in Energy & Environmental Design) designation of buildings.

Nevada ENERGY STAR® Partners - GREEN Alliance

This organization of professionals associated with energy performance, energy conservation, and green jobs began as the Nevada ENERGY STAR Partnership in Southern Nevada, and has now broadened its scope to include Northern Nevada. It serves as a networking and cooperative advertising/marketing resource for its members and has a wide communication reach among them, and consequently, their audiences.

News and information media

The Green Alliance's budget for media placement, including newspapers, magazines, billboards, and radio could be made available for this program.

Public and municipal utilities

Public electric and gas companies are required to participate in energy conservation programs. They send monthly bills to their customers, as well as frequent bill inserts and newsletters that could be utilized for communication. They also have Websites. In addition, Southwest Gas has an Energy Services call center and contractor referral program which may be available for use in this program.

Southern Nevada Water Authority (SNWA)& Truckee Meadows Water Authority

These organizations are not-for-profit, community-owned water utilities, overseen by elected officials and citizen appointees from Southern and Northern Nevada, respectively. They oversee all regional water issues including supply and distribution, and are very influential in their jurisdictions.

Environmental/conservation organizations

Examples include Sierra Club, PLAN (Progressive Leadership Alliance of Nevada), Audubon Society, The Nature Conservancy, Center for Biological Diversity, Nevada Clean Energy Coalition, among others. These have large membership constituencies with whom they regularly communicate via Websites, electronic media, social networking sites, newsletters and events. Some organizations also conduct meetings, usually open to the general public. Besides its obvious interest in energy conservation, the Sierra Club in particular is very proactive in promoting renewable energy and green jobs for Nevada.

Labor and professional trade organizations

These organizations are very interested in the potential for green jobs that the new program and its possible offshoots may present. As such, they could be used as a communication channel for their membership.

Homebuilder associations

They have newsletters for their members, and they hold regular membership as well as committee meetings.

Grant and Funding Opportunities

New and existing state and federal programs available for funding weatherization, retrofit, auditing and other services.

Marketing and public relations organizations

For Profit and Non-Profit companies identified with green market programs and incentives.

Chambers of Commerce

These pro-business organizations can promote the opportunities for green jobs with their membership.

Home owners associations (HOAs)

Many HOAs conduct monthly meetings for their member homeowners - a perfect opportunity to communicate with them about the program.

Building performance professionals

These are likely to be the qualified companies who will perform audits or ancillary services; their communication to reach potential customers could be enhanced with program- compatible messages. They also conduct on the job training for their home energy raters.

Public Utilities Commission of Nevada

This organization is influential throughout the state and provides approvals for utility companies to participate in energy programs.

Local school districts

These organizations have the capability of reaching many people due to their stature in the communities they serve.

FINANCING/FUNDING

It is beyond the scope of this document to establish or enumerate potential funding sources for this program. It appears that at a minimum funding would be needed for the following:

- Production and placement of media
- Production of program collaterals such as brochures, flyers, etc.
- Other communication expenses such as Website creation and maintenance, conducting of public events, etc.
- Creation and maintenance of a call center as a central information and referral source.
- Financing for home energy improvements undertaken by participating homeowners

It is recommended that wherever possible the program should capture and utilize existing or incipient financial mechanisms created both locally and nationally, such as Green Chips and Home Star. Opportunities for federal grants, such as State Energy Grants from the US Department of Energy should also be explored and applied for, where feasible.

In addition, it is recommended that Energy Efficient Mortgages (EEMs), Energy Improvement Mortgages (EIMs) and Green Mortgages be explored and utilized by the lending industry to their fullest potential.

IMPLEMENTATION

Prior to implementation, Group E recommends that concise, coherent program messages be developed, i.e. a "brand identity," that might be modified slightly yet would remain consistent for all target audiences. It would be very valuable to create a program Website and have all messages drive people to the site as a resource for all information. In addition, a centralized call center would serve as a resource for those who do not have computer access.

It is recommended that communication be implemented in stages as follows:

Preliminary Stage - messages to condition the market

Initial Website development and "soft" messages about the value of energy efficiency and home energy improvements.

During this stage the program Website should be developed, and pages created on social networking sites, such as MySpace, Facebook and Twitter. Program messaging can drive people to the Website as a central repository for information; however, it should be recognized that since not all members of a target audience are necessarily computer literate or have ready access to a computer, other means must be created for people to access program information and resources. One option might be a centralized call center.

Stage I - messages will build general awareness prior to program introduction

- The home energy audit is a legal requirement commencing Jan. 01, 2011
- What is a home energy audit and why is it valuable?
- What are the options for the seller and buyer of a home?
- Who can do energy audits/what to look for when selecting an energy auditor
- How to obtain more information

Stage I will also include educational activities geared toward housing industry and building performance professionals so they are ready for program implementation.

Stage II - will evaluate, revise and expand on the targeted messages as well as reinforce them through a communication and education campaign such as:

- On-line Webinars
- Public informational events
- Continuing education for target audiences
- Program evaluation
- Program updates
- Traditional multi-media

SUMMARY

Under the guidance of the NEC and SWEEP, an outreach development team should create the "brand" for this program, with appropriate messages that are consistent yet flexible for all target audiences identified in this document. This team would also be charged with developing the program materials and resources necessary for the initial stage of the program, and engaging all the available channels for communication also described in this document. Communication should be implemented in stages, as determined by the NEC and SWEEP, and described above.

Appendix C: Discussion Group Participants

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Group E, Provisions for Information

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Jacqueline Garcia-Green	Environmental Business Network Campaign
Joe Johnson	Lobbyist, Sierra Club, Toiyabe Chapter
Pam Kinkade	Coalition of Appraisers of Nevada & the Las Vegas Chapter of the Appraisal Institute
Joanne Levy	Levy Realty Co./Nevada Association of REALTORS®
Karen Miller	KMM's Total Green Solutions
Rita Ransom	Sierra Club, Southern Nevada Group
Linda Rheinberger	Nevada Association of REALTORS☐
Matthew Weinman	Environmental Alternatives