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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 BUILDING 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 Efficiency 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.

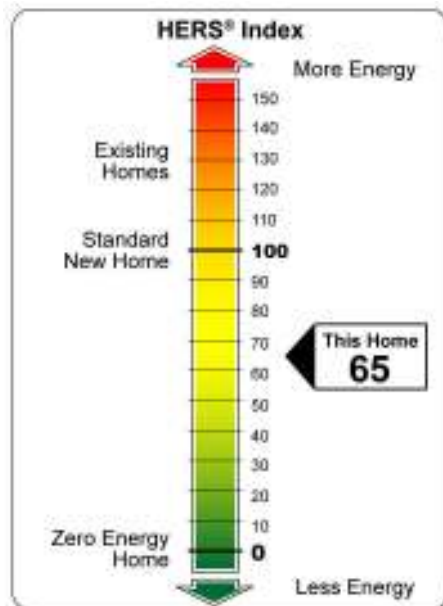
National Efforts – Residential Buildings

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.

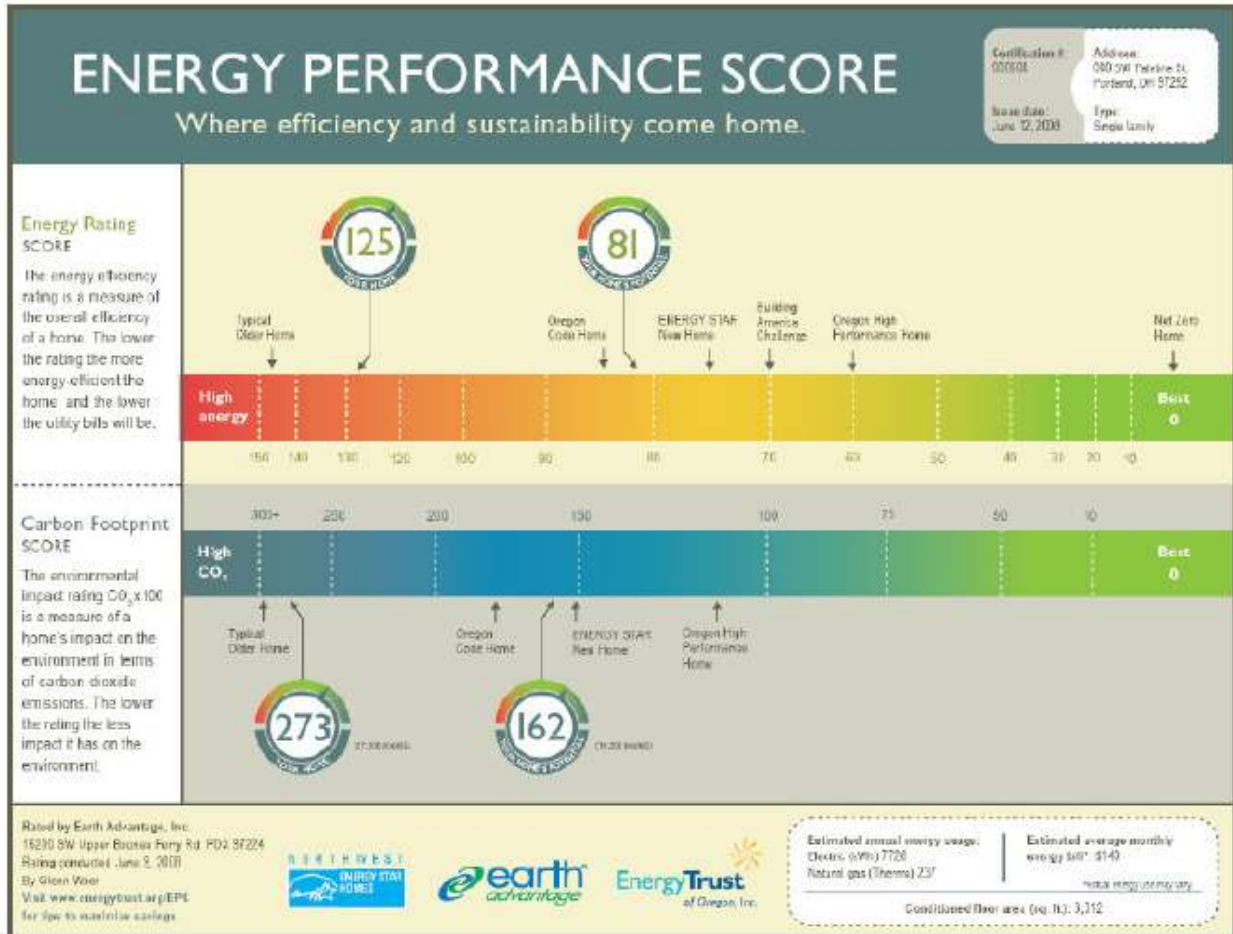
Below is a picture of a label created by the HERS rating system label:



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 through 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 interest 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 DISCLOSURE 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 VOLUNTARY 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.

CONTINUING 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



STATEMENT OF ENERGY PERFORMANCE Nash School

Building ID: 1840230
For 12-month Period Ending: June 30, 2009¹
Date SEP becomes ineligible: N/A

Date SEP Generated: January 06, 2010

Facility
Nash School
103 SEWALL ST
Augusta, ME 04333

Facility Owner
State of Maine, Property Management Div.
State House Station 76 111 Sewal Street
Augusta, ME 04333

Primary Contact for this Facility
Richard Buotte
State House Station 76 111 Sewal Street
Augusta, ME 04333

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

Energy Performance Rating² (1-100) 81

Site Energy Use Summary³

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

Energy Intensity⁵

Site (kBtu/ft ² /yr)	93
Source (kBtu/ft ² /yr)	131

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	57
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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.

Meets Industry Standards⁶ for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

Certifying Professional

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 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.

The government estimates the average time needed to fill out this form is 6 hours (includes the time for entering energy data, PE facility inspection, and notarizing the SEP) and welcomes suggestions for reducing this level of effort. Send comments (referencing OMB control number) to the Director, Collection Strategies Division, U.S., EPA (2622T), 1200 Pennsylvania Ave., NW, Washington, D.C. 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



Date Generated: 01/06/2010

