

Disclose Building Historical Energy Use

POLICY DESCRIPTION

Building owners could be required to disclose the historical energy use of their buildings. Owners would be required to report utility data for a specified time frame (e.g., last 5 years). These data could then be held in a public database and accessed by any investor to help inform purchasing decisions. This option could also be implemented as a voluntary program and coupled with upgrade incentives and financing mechanisms.

POLICY OBJECTIVE

To increase information available to building owners and occupants, create a mechanism for market differentiation, and encourage voluntary upgrades.

SUMMARY OF CRITERIA RATINGS (★★★★★ = best/most feasible)

Energy Efficiency Potential

★

Cost of Policy Implementation

★★★

Economic Benefit

★

Administrative Feasibility

★★★★

INDIVIDUAL CRITERIA RATINGS

ENERGY EFFICIENCY POTENTIAL

Rating:

★

- **Little incentive for measure implementation:** Effectiveness hinges on ability of information alone to provide sufficient motivation to follow through with efficiency upgrades. Historical data also do not provide any guidance on what measures should be implemented.
- **Does not account for normal fluctuations in energy consumption.** Historical use data alone do not account for changes in weather and homeowner or business activity over time that will influence energy use.
- **Motivation only for buildings that are below average.** Providing energy use data would need to be compared to some benchmark to demonstrate how well a building is performing. Even in this context, historical data will only be a motivating factor for buildings that fall below the benchmark. Consequently, some potential upgrades will be missed in "above average" buildings.
- **Broadly applicable across sectors and measures:** Historical billing data could be obtained for all sectors. Policy could apply equally to all fuels (gas, oil, steam, electricity) and measures within these sectors.

ECONOMIC BENEFIT

Rating:

★

- **Low economic potential.** Given the issues discussed above that limit the energy efficiency potential, it is unlikely that simply disclosing historical billing data will result in many new measure installations. As a result of the limited energy efficiency potential, the economic benefit of this policy is low. Based on economic modeling, this policy had the lowest overall impact among all the policies reviewed.

COST OF POLICY IMPLEMENTATION

Rating:

★★★

The total cost to city and partners of establishing this policy is estimated to be \$80,000 - \$170,000.

-**Assessment of disclosure methods: \$10,000 - \$30,000.** The City would need to assess the trade-offs and methods for requiring natural gas and electricity use disclosure and how to address landlord-tenant privacy concerns and other disclosure issues.

-**Development of database: \$50,000 - \$100,000.** A public database could be developed to house and provide access to the ratings. Alternatively, existing databases could potentially be leveraged for residential and commercial ratings, respectively. The database would likely require more security than for a performance checklist but less complexity than for a performance rating.

-**Legislative development: \$20,000 - \$40,000.** City staff and legal counsel would need to develop the policy specifics and legislation. Much of this work could be done within existing staffing levels, meaning few new resources needed.

Disclose Building Historical Energy Use

(continued)

INDIVIDUAL CRITERIA RATINGS (CONTINUED)

ADMINISTRATIVE FEASIBILITY

Rating: ★★★★★

- Few technical challenges appear to stand in the way.** For example, both Seattle City Light and Puget Sound Energy have approximately five years of data in their records. By state law, the utilities must abide by strict customer confidentiality rules, but with written customer request they can disclose data. If billing records were uploaded to a database, it would likely have to be done in a manner that preserved the confidentiality of the customer.
- **Privacy concerns can raise legal questions that are usually surmountable.** Any mandate that requires public disclosure of customer data or compromises landlord-tenant privacy could raise potential concerns. Most existing programs have avoided the most significant legal hurdles by requiring customers to disclose data (rather than utilities) and by limiting the policy scope for particularly challenging sectors (e.g., commercial tenants).
- **Compliance mechanisms may be needed, but potentially difficult to enforce:** If disclosure is mandated, an enforcement mechanism will need to be defined and a public authority must be in charge of monitoring compliance.

STAKEHOLDER IMPACTS

This policy would likely place the greatest burden on utilities and other providers, but the affects can likely be mitigated:

- Utilities would need to provide data.** Requiring historical energy use disclosure would necessarily involve the active participation of Seattle City Light, Puget Sound Energy, and other energy providers to release data (with written customer request). Depending on the scope of the program, utilities could potentially handle the requests with existing staff but may need to hire additional customer service representatives to handle requests. Nevertheless, the utilities would also benefit from the energy conservation benefits of the policy.
- Residential homeowners.** Disclosing energy use history without considering all the factors that cause energy-use variation could raise equity concerns. There are many reasons why energy use is much higher for certain properties. The size of a family, the number of hours worked out of the home, the age and health of family members, and other lifestyle factors can influence a home's energy use.
- Commercial building owners.** As with residential buildings, variations in energy use of a commercial property are sometimes more related to the activities of the occupants than to the building itself, potentially raising equity concerns for a policy that is based only on energy use and not on other factors related to a building's performance. Building owners would have to obtain permission from tenants to release energy data.

ADDITIONAL LESSONS FROM OTHER JURISDICTIONS

The following three jurisdictions have recently established a system for disclosing historical building energy use:

- Montgomery County, MD,** will be requiring homeowners to disclose energy use and costs to prospective buyers.
- The State of California** will require building owners to disclose their Portfolio Manager benchmarking energy use data (and ratings) to a prospective buyer, lessee, or lender as of 2010. (This Assembly Bill 1103 will also require electric and gas utilities to maintain at least 12 months of records for all nonresidential buildings in a format compatible with Portfolio Manager.)
- Gainesville, FL,** has developed an interactive database that allows homeowners served by the public utility to view their current and past energy use and compare with other homes.

Additional lessons can be learned from several jurisdictions currently considering this option. Among them:

- Portland, OR** has found that disclosing energy use has been their biggest challenge. They can require building owners to report data, but disclosure would be harder to require for sub-metered (and potentially other) tenants. Portland will be developing a request form (reportedly similar to that in California) for owners to use with tenants, but without the legal authority, compliance cannot be mandated.
- Austin Energy** considered an approach requiring the seller to provide data (not the utility) but concluded that the biggest factor in energy consumption was owner lifestyle and behavior (as opposed to performance of the building structure and systems) and that historical energy use alone would not be particularly meaningful.

Key lessons learned:

- Utilities can help play a leading role in trouble-shooting customer privacy concerns and legal issues.
- Developing consumer education is a key piece of this policy option. Prospective buyers must be informed about how to interpret historical energy data and to what degree it should inform their buying decisions.
- This policy could aid the implementation of other policies (e.g., as an input into a full audit) or be used as a way to evaluate and track the success of a policy or incentive.

Disclose Building Energy Performance (Checklist)

POLICY DESCRIPTION

Building owners could be required to disclose the energy performance of their buildings using a common checklist of energy efficiency measures. The checklist would include a set of the most common and cost effective measures which, if implemented, would achieve a desired level of energy performance. Completion of the checklist would be required (likely by a third-party auditor) at building time-of-sale, by a certain date, or as a prerequisite for financing and then disclosed to prospective buyers or tenants or to the general public. Properties could be "rated" based on the number of measures achieved out of the total included on the list (e.g. a property would be rated a "4" if 4 out of 10 measures are present at the time of disclosure).

POLICY OBJECTIVE

To increase information available to building owners and occupants, create a mechanism for market differentiation, help identify opportunities for efficiency gains, and encourage voluntary upgrades.

SUMMARY OF CRITERIA RATINGS (★★★★★ = best/most feasible)

Energy Efficiency Potential

★★★

Cost of Policy Implementation

★★★

Economic Benefit

★★★★

Administrative Feasibility

★★★★★

INDIVIDUAL CRITERIA RATINGS

ENERGY EFFICIENCY POTENTIAL

Rating: ★★★

- **Broadly applicable across sectors and measures:** An energy performance checklist is applicable to both residential and commercial building types. Policy applies equally to all fuels (gas, oil, steam, electricity) and could include all measures for each fuel type.
- **Little incentive for measure implementation:** Effectiveness relies on the ability of the checklist information alone to provide sufficient motivation to owners to follow through with efficiency upgrades. Policy does provide some guidance on which measures should be adopted. Tying this disclosure policy to financial incentives could increase the energy efficiency potential.

ECONOMIC BENEFIT

Rating: ★★★★★

- **Moderate economic potential:** The broad range of applicable measures and the specificity of the checklist in providing direction as to what measures need to be installed provide a modest amount of efficiency potential. This results in a moderate amount of potential economic impact. Based on the economic impact modeling, this policy ranked in the upper third of policies reviewed in terms of potential economic output and jobs.
- **Applicable to all sectors:** This policy could be feasibly implemented in both the residential and commercial sectors. Specific industries that would receive economic benefits include installation contractors for the various measures (lighting, AC, heating, etc.). The general economy would also benefit from increased spending and business output resulting from reduced energy bills. There are little or no manufacturing benefits expected from this policy as all measures are likely manufactured outside the Seattle city limits.
- **Job growth to the energy auditor industry.** Requiring assessments of building performance would encourage growth in the number of energy auditor jobs.

COST OF POLICY IMPLEMENTATION

Rating: ★★★

- The total cost to city and partners of establishing this policy is estimated to be \$60,000 - \$190,000.
- **Development of appropriate checklists: \$20,000 - \$50,000.** Sample checklists from other jurisdictions are easily available and the technical capacity to develop the checklist likely exists primarily in-house. Some consultant research may be needed to assess energy benefits of checklist items.
 - **Development of database: \$20,000 - \$100,000.** A public database could be developed to house and provide access to the ratings, and complexity and security requirements for a checklist approach would likely be less than for a performance rating approach. Alternatively, existing databases could potentially be leveraged for cost savings.
 - **Legislative development: \$20,000 - \$40,000.** City staff would be needed to develop the policy specifics and legislation. Much of this work could be done within existing staffing levels, meaning few new resources needed.

Disclose Building Energy Performance (Checklist)

(continued)

INDIVIDUAL CRITERIA RATINGS (CONTINUED)

ADMINISTRATIVE FEASIBILITY

Rating: ★★★★★

Establishing a requirement for an energy performance checklist is quite feasible.

- **Few technical or legal challenges appear to stand in the way.** In the residential sector, checklists are generally easier to develop than performance ratings because they don't require quantitative assessments of performance. In the commercial sector, checklists can sometimes be more difficult than performance ratings because buildings vary so greatly: measures that are very suited to one type of building may not be applicable (or most applicable) to other types of buildings. Note that in both sectors, potential legal hurdles concerning disclosing energy use data are absent.

- **Quality assurance can be an ongoing maintenance concern.** Checklist results can vary depending on who completes the assessment. For the best results, a certified energy auditor should complete the checklist, but this can sometimes be nearly as time intensive and costly as an energy audit.

- **Compliance mechanisms may be needed, but potentially difficult to enforce.** If disclosure is mandated, an enforcement mechanism will need to be defined and a public authority must be in charge of monitoring compliance.

STAKEHOLDER IMPACTS

This policy is expected to have the greatest impact on homeowners but the effects can likely be mitigated:

- **Residential homeowners** would be affected financially, as the cost for a performance checklist can be approximately \$100 to \$300. Owners could also be impacted by a policy that required disclosure at time-of-sale, which could potentially delay a transaction, although some jurisdictions allow this responsibility to be transferred to the buyer. Similarly, realtors could be impacted if their clients' sales are delayed or otherwise affected, but checklist approaches are generally considered less of a burden than ratings and are sometimes considered to be easier to understand and less confusing than a rating or label. Homeowners (and realtors) could also benefit from higher home sale prices for higher performing homes.

- **Commercial building owners** would be similarly affected, although many building owners already perform energy audits and the cost is not expected to be as great of a burden.

- **Low-income homeowners** could face particular difficulty with the cost of required performance audits. On the other hand, low-income tenants would stand to benefit from lower utility bills and the potential for greater knowledge about the energy use of prospective rental units. Consideration and quantification of utility cost savings and offering of low-income exemptions have generally been important considerations for low-income residents and their advocates.

ADDITIONAL LESSONS FROM OTHER JURISDICTIONS

Few cities require use of a building energy checklist. A sample of those that do include:

- **Berkeley and San Francisco, CA** both use checklist-type approaches as part of their Residential Energy Conservation Ordinances (RECO). While the checklists have been useful for several years, both Cities are currently considering moving to performance-based ratings due to the ability of ratings to help homes move further beyond the baseline measures set out in the existing checklists.

- **Chicago, IL** provides a home energy checklist audit to low income residents as a piggy-back to three other residential home upgrade programs. City staff are already charged with visiting homes to provide other services (e.g., lead abatement, disability accommodation) and now provide energy efficiency audits in the same visit.

Several cities throughout the country are planning to move forward with checklist-based options:

- **The Denver Board of Realtors** launched a pilot in September 2008 that involves a voluntary home energy checklist to be completed by a contractor (SunPower) as part of a mini-audit. The Denver Board of Realtors is partnering with the City and with a local university in the effort and will provide valuable lessons.

- **Austin, TX** is proposing to develop an in-house, 8-item audit checklist for homeowners. They have not yet received final approval from City Council, but have strong support and are expecting the measure to pass in late 2008.

Key lessons learned:

- Other cities have found that checklists can offer a good middle ground between energy use disclosure and energy audit performance disclosure, at least for homeowners. Checklists offer more "actionable" information than historical energy use yet can be easier to conduct than performance ratings. On the other hand, checklists do not provide as much ability to compare one home to another or to quantitatively assess potential efficiency gains.

Disclose Building Energy Performance (Rating/Label)

POLICY DESCRIPTION

Building owners could be required to disclose the energy performance of their buildings using a common rating or label. Rating systems typically use a combination of energy use records and in-person audits to develop a performance "score" (sometimes accompanied by a more detailed assessment) that enables comparison of buildings. Ratings typically must be performed at either building time-of-sale or by a certain date and then disclosed to prospective buyers or tenants or to the general public. Performance-based rating systems exist for both residential and commercial buildings, and several options are currently used (or in pilot phase) around the country. This option could also be implemented as a voluntary program and coupled with upgrade incentives and financing mechanisms.

POLICY OBJECTIVE

To increase information available to building owners and occupants, create a mechanism for market differentiation, help identify opportunities for efficiency gains, and encourage voluntary upgrades.

SUMMARY OF CRITERIA RATINGS (★★★★★ = best/most feasible)

Energy Efficiency Potential

★★★

Cost of Policy Implementation

★★★

Economic Benefit

★★★★★

Administrative Feasibility

★★★

INDIVIDUAL CRITERIA RATINGS

ENERGY EFFICIENCY POTENTIAL

Rating: ★★★

- **Broadly applicable across sectors and measures:** An energy performance rating is equally applicable to both residential and commercial building types. Policy applies equally to all fuels (gas, oil, steam, electricity) and could include all measures for each fuel type.
- **Low to moderate incentive for measure implementation:** Effectiveness relies on the marketing value of the rating or label to motivate building owners to pay for the efficiency upgrades. Labels such as LEED and ENERGY STAR typically provide requirements for efficiency for various end uses and measures, so some direction is provided on which measures need to be installed. Tying this policy to financial incentives or mechanisms to help pay for these measures could result in greater energy efficiency potential.

ECONOMIC BENEFIT

Rating: ★★★★★

- **Moderate economic potential:** The broad range of applicable measures and the specificity of the checklist in providing direction as to what measures need to be installed provide a modest amount of efficiency potential. This results in a moderate amount of potential economic impact. Based on the economic impact modeling, this policy ranked in the upper third of policies reviewed in terms of potential economic output and jobs.
- **Applicable to all sectors.** This policy could be feasibly implemented in both the residential and commercial sectors. Specific industries that would receive economic benefits include installation contractors for the various measures (lighting, AC, heating, etc.). The general economy would also benefit from increased spending and business output resulting from reduced energy bills. There are little or no manufacturing benefits expected from this policy as all measures are likely manufactured outside the Seattle city limits.
- **Job growth to the energy auditor industry.** Requiring assessments of building performance would encourage growth in the number of energy auditor jobs.

COST OF POLICY IMPLEMENTATION

Rating: ★★★

- The total cost to city and partners of establishing this policy is estimated to be \$180,000 - \$450,000.
- **Assessment of existing rating systems: \$50,000 - \$200,000.** Experience to date has indicated that existing rating systems must be vetted in the marketplace before making mandatory. ENERGY STAR is well-established for commercial buildings. A current pilot in Portland, Oregon may help shorten the development time for residential ratings, but extensive work might still be needed.
 - **Development of database: \$100,000 - \$200,000.** A public database could be developed to house and provide access to the ratings. Alternatively, existing databases (such as the Multiple Listing Service or EPA's Portfolio Manager) could potentially be leveraged for residential and commercial ratings, respectively.
 - **Legislative development: \$30,000 - \$50,000.** City staff and legal counsel would need to develop the policy specifics and legislation. Much of this work could be done within existing staffing levels, meaning few new resources needed.

Disclose Building Energy Performance (Rating/Label)

(continued)

INDIVIDUAL CRITERIA RATINGS (CONTINUED)

ADMINISTRATIVE FEASIBILITY

Rating: ★★★

Establishing a requirement for building energy performance is generally quite feasible, if potentially lengthy.

- **Most jurisdictions have taken at least a year to study similar policies.** The steps discussed above under *Cost of Policy Implementation* can take one to two years (or more) to test models, establish in-person audit and historical data procedures, and iron out details.

- **Privacy concerns can raise legal questions that are usually surmountable.** The development of a performance rating would likely require at least 12 months of energy use data. Any mandate that requires public disclosure of customer data (via utilities) or compromises landlord-tenant privacy could raise potential concerns. Most existing programs have avoided the most significant legal hurdles by carefully developing disclosure agreements, limiting any public disclosure to the end ratings and not the input energy use data, and by limiting the scope of the mandates for particularly challenging sectors (e.g., commercial tenants).

- **Compliance mechanisms may be needed, but potentially difficult to enforce.** If disclosure is mandated, an enforcement mechanism will need to be defined and a public authority must be in charge of monitoring compliance.

STAKEHOLDER IMPACTS

This policy is expected to have the greatest impact on homeowners but the effects can likely be mitigated:

- **Residential homeowners** would be affected financially, as the cost for a performance rating varies between \$150 and \$700, depending on the complexity. Owners could also be impacted by a policy that required disclosure at time-of-sale, which could potentially delay a transaction, although some jurisdictions allow this responsibility to be transferred to the buyer. Similarly, **realtors** could be impacted if their clients' sales are delayed or otherwise affected, but some realtors have used energy performance ratings to help differentiate their clients homes in a tight market. Homeowners (and realtors) could also benefit from higher sale prices for higher performing homes.

- **Commercial building owners** would be similarly affected, although many building owners already use Portfolio Manager. Obtaining the ENERGY STAR performance rating requires the stamp of a professional engineer, which would require some cost. In cities throughout the country, building owners have generally recognized the value in performance audits, particularly systems such as Portfolio Manager.

- **Low-income homeowners** could face particular difficulty with the cost of required performance audits. On the other hand, low-income tenants would stand to benefit by lower utility bills and greater knowledge about the energy use of prospective rental units. Consideration and quantification of utility cost savings and offering of low-income exemptions have generally been important considerations for low-income residents and their advocates.

ADDITIONAL LESSONS FROM OTHER JURISDICTIONS

The following jurisdictions have established a requirement for disclosing building energy performance:

- **The State of California.** -- Will be requiring commercial buildings to use Energy Star Portfolio Manager and disclose results to a prospective buyer, lessee, or lender (effective 2010). Their companion residential bill is not likely to pass, but will likely be reintroduced during the 2009 legislative session.

- **Washington, D.C.** -- Will be requiring commercial buildings to use Energy Star Portfolio Manager and publicly disclose results. The bill is modeled after the California legislation.

- **Boulder County, CO**--Follow-up after audits has been very important. Audits are tagged with upgrade/ technology subsidies and educational resources to do self- improvements or to select a pre-approved contractors.

In addition, several other jurisdictions are considering energy performance ratings. Among them:

- **New York City** is considering a requirement that commercial buildings over 50,000 sq. ft disclose energy use annually in Portfolio Manager. Portfolio Manager ratings (not energy use) will be made public on the City's web site.

- **Portland, OR** is considering a similar requirement for commercial building owners to use Portfolio Manager for buildings over 20,000 square feet.

- **Washington State's** Climate Action Team is investigating a state-wide benchmarking requirement for commercial buildings using Portfolio Manager.

Key lessons learned:

-- Energy Star / Portfolio Manager has wide acceptance and is likely the best starting point for a commercial building rating. However, LEED-EB and ASHRAE 100 are also mentioned by some cities as contenders.

-- Approaches to residential homes vary widely and many are still in pilot. The Home Energy Rating System (HERS), the National Energy Audit Tool (NEAT), and the Energy Performance Score (EPS) ratings are considered the leading models for existing-home residential ratings at this point.

Prescriptive Upgrade Requirements

POLICY DESCRIPTION

Building owners would be required to complete certain energy efficiency upgrades at a pre-defined trigger point (e.g., time-of-sale, date certain, or as a requirement for financing). The policy is similar to (and would likely incorporate) an energy measure checklist. The prescriptive upgrade requirements (the items on the checklist) would be established to achieve a minimum level of cost-effective energy efficiency (roughly comparable to the 20% efficiency target).

POLICY OBJECTIVE

To establish an absolute level of energy efficiency in all targeted building stock by mandating upgrades.

SUMMARY OF CRITERIA RATINGS (★★★★★ = best/most feasible)

Energy Efficiency Potential	★★★★	Cost of Policy Implementation	★★★
Economic Benefit	★★★★	Administrative Feasibility	★★

INDIVIDUAL CRITERIA RATINGS

ENERGY EFFICIENCY POTENTIAL

Rating: ★★★★★

- **Broadly applicable across sectors and measures:** Policy applies equally to all fuels (gas, oil, steam, electricity) and measures within these sectors. It also provides guidance as to what measures should be installed.
- **Policy required for all property owners:** Since this policy is a mandate, it eventually could achieve a high level of technical efficiency potential within the city and realize the significant energy savings attainable through the upgrades on the checklist.

ECONOMIC BENEFIT

Rating: ★★★★★

- **High economic potential:** The high energy efficiency potential for this option results in a very high level of expected economic benefits as most of the technical efficiency potential could be achieved. Based on our modeling, this policy ranked very high in economic impacts among all the policies reviewed.
- **Applicable to all sectors:** This policy is eligible to be implemented in both the residential and commercial sectors. Specific industries that would receive economic benefits would be installation contractors for the various measures (lighting, AC, heating, etc.). The general economy would also benefit from increased spending and business output resulting from reduced energy bills. There are little or no manufacturing benefits expected from this policy as all measures are likely manufactured outside the Seattle city limits.

COST OF POLICY IMPLEMENTATION

Rating: ★★★

The total cost to City and partners of establishing this policy is estimated to be \$145,000 - \$350,000.

- **Assessment of required upgrades: \$75,000 - \$150,000.** Although sample checklists from other jurisdictions are available, assessing and establishing what upgrades are needed in each sector to meet city-wide energy efficiency goals, while also assessing the cost-effectiveness of those measures, is likely to be a significant task.
- **Development of a database: \$20,000-\$100,000.** A database would be needed to track what properties are in compliance with the mandate. Alternatively, existing databases could potentially be leveraged for cost savings.
- **Legislative Development: \$50,000 - \$100,000.** City staff and legal council would need to develop the policy specifics and legislation. Much of this work could be done within existing staffing levels, meaning few to moderate new resources would be needed.

In addition, the challenge of **establishing a compliance mechanism** and conducting on-going enforcement is expected to be a significant cost. Based on the experience of other jurisdictions, the City would likely require at least two full time administrators (one for residential and one for commercial), as well as support staff.

Prescriptive Upgrade Requirements

(continued)

INDIVIDUAL CRITERIA RATINGS (CONTINUED)

ADMINISTRATIVE FEASIBILITY

Rating: ★★

- **Identifying the required upgrades can pose some difficulty.** Residential programs have typically been able to apply a more general set of measures due to more uniform building stock. Commercial programs have had greater difficulties identifying consistent requirements that are easily enforceable, especially for larger buildings with complex and varied heating and cooling systems.
- **Compliance mechanisms are needed, but enforcement can be very challenging.** Programs have only been successful if there is a way of enforcing the mandates and consequences for non-compliance. Enforcement is particularly challenging for this policy due to the need to conduct spot-check audits, which require a new class of highly-trained workers, and potential complexities associated with checklist-based compliance. For example, enforcement difficulty in commercial buildings led San Francisco to discontinue its commercial prescriptive upgrade requirement. Alternatively, compliance could be tracked through registration of deeds at time-of-sale, involving new costs passed on from the County.
- **Quality assurance can be an ongoing concern.** In order for an upgrade program to be successful, there must be a workforce of contractors able to perform upgrades at a level that ensures compliance. Some residential programs have found that homeowners who attempt to do the upgrades or hire untrained "handy-men" do not achieve true compliance.
- **Legal constraints may exist regarding state residential energy code.** State law restricts a city's ability to exceed the State energy code for residences, restricting the potential scope of residential upgrade requirements (per RCW 19.27A). Nevertheless, many older homes are not up to the current code and large gains would still be attainable.

STAKEHOLDER IMPACTS

- **Residential homeowners** would be affected financially, as the cost of required upgrades could be many thousands of dollars. In the medium term, homeowners would benefit from lower energy bills, but up-front capital would still be required. If upgrades were required at time of sale, the policy could potentially delay a transaction, although some jurisdictions allow for responsibility to be transferred to the buyer. In addition, most residential (single and multi-family) energy ordinance programs have a cost ceiling of between 1% and 3% of the sale price of the home. Homeowners could benefit from higher home sale prices for higher-performing homes as well as from the energy savings of the homes.
- **Commercial building** owners would be similarly affected. The maximum expenditure for commercial programs is often around 1% of the value of the property, or is limited to improvements that are cost-effective over a pre-defined time period.
- **Low-income homeowners** could face particular difficulty with the cost of performing upgrades. Other jurisdictions typically include some form of financial or technical assistance or (in time-of-sale requirements) permit the seller to pass on compliance responsibilities to the buyer as part of the sale negotiations. Low-income renters would benefit from lower utility bills associated with upgrades made to rental properties.

ADDITIONAL LESSONS FROM OTHER JURISDICTIONS

The following jurisdictions have established prescriptive upgrade requirement programs:

- **Berkeley, CA** established a Residential Energy Conservation Ordinance (RECO) program in 1981 and a Commercial Energy Conservation Ordinance (CECO) in 1994. The City reports that compliance has become a routine part of doing business and between 400 and 500 homes make upgrades as a result of the ordinance each year.
- **San Francisco** has a RECO policy in place, but its CECO policy is no longer in effect. Building inspectors (who enforced the CECO requirements) found the inspection process very difficult for large buildings with numerous systems.
- **Burlington, VT** passed an ordinance in 1997 to establish a Minimum Rental Housing Energy Efficiency Standards for single and multi-unit rental properties, saving each housing unit an estimated average of \$240 per year in electricity costs.

In 2008, the following jurisdictions have been considering implementing or expanding prescriptive upgrade requirements:

- **New York City** is considering requiring larger buildings (those over 50,000 or 100,000 square feet) to perform an energy audit every 10 years and perform those retrofits that are cost-effective with a 5-year payback period.
- **Austin, TX** is developing an 8-item checklist for residential upgrades. Austin is proposing voluntary targets for the percent of single-family homes sold that receive upgrades -- if these targets are not met, Austin will consider requiring upgrades up to a financial limit of the lesser of: (1) the total cost of performing upgrades with a 7-year pay-back period or (2) one percent of the sales price of the home. Austin is proposing a similar system for multi-family buildings, but with additional mandatory upgrades for "energy hog" properties using 50% more than the average energy use intensity in the City.

Key Lessons Learned:

- Prescriptive upgrade requirements have generally been more effective for single-family homes than for non-residential properties.
- Certification of third-party auditors (and possibly retro-commissioners) is a necessary precondition for required upgrades based on audits.

Performance Upgrade Requirements

POLICY DESCRIPTION

Building owners would be required to meet a minimum level of energy performance based on a selected energy rating or labeling system (e.g. 20% better than baseline, ENERGY STAR, or some other rating equivalent to a 20% improvement). Compliance would be enforced at a pre-defined trigger point (e.g., time-of-sale, date-certain, as a requirement for financing).

POLICY OBJECTIVE

To establish an increased level of energy efficiency in all targeted building stock by mandating compliance with a selected performance standard.

SUMMARY OF CRITERIA RATINGS (★★★★★ = best/most feasible)

Energy Efficiency Potential	★★★★★	Cost of Policy Implementation	★★★
Economic Benefit	★★★★★	Administrative Feasibility	★★

INDIVIDUAL CRITERIA RATINGS

ENERGY EFFICIENCY POTENTIAL

Rating: ★★★★★

- **Broadly applicable across sectors and measures:** Policy applies equally to all fuels (gas, oil, steam, electricity) and measures within these sectors. Labels such as ENERGY STAR, and EPS ratings typically provide some guidance as to which specific measures should be installed to achieve an improved rating.
- **Policy required for all property owners:** Policy would be mandated for all properties and could eventually result in achieving most (if not all) the technical achievable efficiency potential.

ECONOMIC BENEFIT

Rating: ★★★★★

- **High economic potential:** The high energy efficiency potential for this option results in a high level of expected economic benefits. Based on our modeling, this policy ranked near the top in economic impacts among all the policies reviewed.
- **Applicable to all sectors:** This policy is eligible to be implemented in both the residential and commercial sectors. Specific industries that would receive economic benefits would be installation contractors for the various measures (lighting, AC, heating, etc.). The general economy would also benefit from increased spending and business output resulting from reduced energy bills. There are little or no manufacturing benefits expected from this policy as all measures are likely manufactured outside the Seattle city limits.

COST OF POLICY IMPLEMENTATION

Rating: ★★★

The total cost to City and partners of establishing this policy is estimated to be **\$225,000 - \$500,000**.

- **Assessment of existing rating systems: \$75,000 - \$200,000.** Experience to date has indicated that existing rating systems must be vetted in the marketplace before making mandatory. In addition to selecting a rating system, the City would need to assess and select appropriate performance requirements.
- **Development of database: \$100,000 - \$200,000.** A database could be developed to house and provide ability for property owners or City program managers to access the ratings. Alternatively, existing databases (such as the Multiple Listing Service or EPA's Portfolio Manager) could potentially be leveraged for residential and commercial ratings, respectively.
- **Legislative Development: \$50,000 - \$100,000.** City staff and legal council would need to develop the policy specifics and legislation. Much of this work could be done within existing staffing levels, meaning few to moderate new resources would be needed.

Performance Upgrade Requirements

(continued)

INDIVIDUAL CRITERIA RATINGS (CONTINUED)

ADMINISTRATIVE FEASIBILITY

Rating: ★★

- **Potentially easier to develop standards than prescriptive requirements.** Performance-based upgrade requirements may be easier to develop (and solicit support for) because they allow for more flexibility and are not measure-specific.
- **Compliance mechanisms are needed, but enforcement can be challenging.** Programs have only been successful if there is a way of enforcing the mandates and consequences for non-compliance. Enforcement of this policy may not be as dependent on site-visits as a prescriptive (checklist)-based approach due to the ability to track building performance through a regular reporting of a performance score (whether Portfolio Manager, a home energy EPS, or other metric). Still, spot-check audits or other mechanisms requiring new highly-trained workers may still be necessary.
- **Legal constraints may exist regarding state residential energy code.** State law restricts a city's ability to exceed the State energy code for residences, restricting the potential scope of residential upgrade requirements (per RCW 19.27A). Requiring upgrades at time-of-sale may help address this concern, but further legal review is needed.

STAKEHOLDER IMPACTS

- **Residential homeowners** would be affected financially, as the cost of attaining the performance standard could be many thousands of dollars. In the medium term, homeowners would benefit from lower energy bills, but up-front capital would still be required. If upgrades were required at time of sale, the policy could potentially delay a transaction, although some jurisdictions allow for the responsibility to be transferred to the buyer. In addition, most residential (single and multi-family) energy ordinance programs have a cost ceiling of between 1% and 3% of the sale price of the home. Homeowners could benefit from higher home sale prices for higher-performing homes as well as from the energy savings of the homes.
- **Commercial building owners** would be similarly affected, although many measures would likely be cost-effective. Using Portfolio Manager (or other energy performance tools) as a basis for requiring performance upgrades may pose an equity concern due to variation in building stock—even within one class of buildings, e.g. office buildings.
- **Low-income homeowners** could face particular difficulty with the cost of performing upgrades. Other jurisdictions typically include some form of financial or technical assistance. Low-income renters, on the other hand, would benefit from upgrade mandates applied to rental properties.

ADDITIONAL LESSONS FROM OTHER JURISDICTIONS

The following jurisdictions have been considering implementing performance-based upgrade requirements:

- **Portland, OR** has been considering a performance-based upgrade requirement for existing commercial and multifamily buildings. The requirement would apply to buildings receiving an ENERGY STAR Portfolio Manager score of less than 30 (on a 100-point scale). Such buildings would have 3 years to improve their score to 30 or demonstrate a 15% improvement in their energy use intensity (EUI). Portland is looking to phase in this requirement, with a policy threshold of 100,000 square feet in 2011 (2% of Portland's existing buildings), 50,000 square feet in 2012 (an additional 3%), and 20,000 square feet in 2013 (an additional 6%). Commercial buildings over 20,000 square feet represent 74% of Portland's commercial building stock. Multi-family buildings over 20,000 square feet represent 65% of Portland's multi-family building stock. Buildings that rate below 30 and do not meet the upgrade requirements would be subject to a financial penalty.
- **Austin, TX** is considering a goal of having 80% of commercial square footage in the City achieve a Portfolio Manager score of 50 or 20% improvement in energy efficiency within 5 years (after an initial 2-year audit period). The provision would exclude properties that have a Portfolio Manager score over 75, certain historic properties, and certain other property types. Austin is considering making these performance-based goals mandatory if the voluntary targets are not met.
- **Berkeley, CA**, after many years using a prescriptive-based Residential Energy Conservation Ordinance (RECO), is moving towards a performance-based approach. The City hopes that a performance-based approach will help even RECO-compliant homes continue to improve.

Key Lessons Learned:

- Performance-based upgrade requirements can allow for greater flexibility in selecting upgrades and therefore potentially greater cost-effectiveness
- Performance-based upgrade requirements are generally considered better suited than prescriptive-based approaches for the non-residential sector.

Summary Assessment Matrix

10/21/2008

POLICIES	ASSESSMENT CRITERIA			
	Energy Efficiency Potential	Economic Benefit	Cost of Policy Implementation	Administrative Feasibility
FUNDING SOURCES				
Low-interest Loans	★★	★★	★★	★★★★
Private Financing Pool	★★	★★	★★★	★★
Energy Efficient LIDs	★★	★★	★★★	★★
Revenue or General Obligation Bond Sale	★★	★★	★★★	★★★
Energy Efficiency Mortgages	★★★	★★★	★★★★	★★
INNOVATIVE REPAYMENT MECHANISMS				
Add-on to Property Taxes	★★★	★★	★★★★	★★★★
On-Bill Financing	★★	★★	★	★★
OTHER FINANCIAL INCENTIVES				
Energy Efficiency Tax Credits	★★★	★★★★	★★	★★
Energy Efficiency Feebate	★★★★	★★★★	★★★	★★
DISCLOSURE MANDATES				
Building's Historical Energy Use	★	★	★★★	★★★★
Building Energy Performance Checklist	★★★	★★★★	★★★	★★★★
Building Energy Performance Rating/Label	★★★	★★★★	★★★	★★★
UPGRADE MANDATES				
Prescriptive Requirements	★★★★	★★★★	★★★	★★
Performance Requirements	★★★★★	★★★★★	★★★	★★