

# Seattle Green Building Capital Initiative



## Summary Report

April 22, 2009



City of Seattle  
Office of the Mayor  
Office of Sustainability & Environment  
Department of Planning & Development

## Overview of the Green Building Capital Initiative

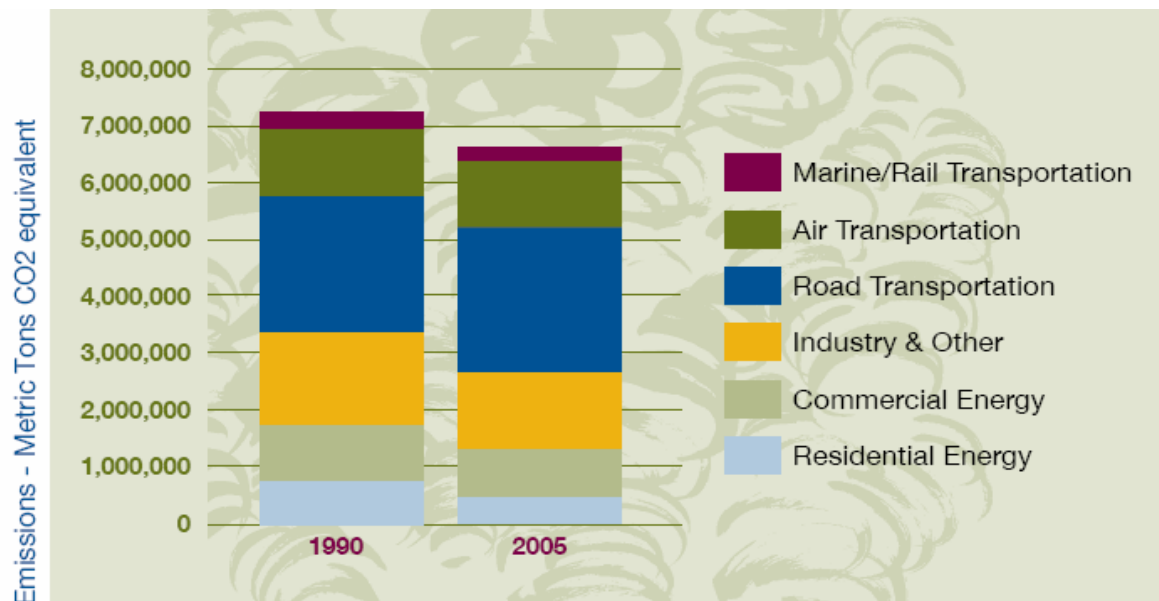
In February 2005 Mayor Nickels launched the Seattle Climate Protection Initiative with the goal of reducing Seattle's greenhouse gas emissions 7 percent below 1990 levels by the year 2012. Recognizing a lack of leadership at both the state and federal levels, he challenged local governments across the country to join him in this effort. He set an initial target of 141 co-signatories to a Mayors Climate Protection Agreement – the same number of country signatories to the Kyoto protocol. There are now more than 930 signatories of this agreement, representing over 83 million Americans.

This political commitment soon led to concrete action in Seattle. Mayor Nickels convened a Green Ribbon Commission, made up of local leaders and visionaries to help identify the first steps Seattle could take to meet this ambitious goal. To help inform this process, Seattle became one of the first local governments in the country to complete a community greenhouse gas inventory – to quantify sources of emissions, and to identify opportunities to reduce them. This assessment is our main way of gauging progress toward the near-term and long-term goals for reducing climate pollution in Seattle. It also helps us to identify opportunities for further action to reduce our emissions.

In 2006, based on recommendations developed by the Mayor's Green Ribbon Commission, the Seattle Climate Action Plan identified 18 near term actions that the City should take to meet the Mayor's climate protection targets.

In November 2007, Seattle's Office of Sustainability and Environment completed an update of the City's greenhouse gas emissions inventory – or carbon footprint – based on 2005 data.<sup>1</sup>

**Figure 1. Seattle Greenhouse Gas Emission Inventory – by Sector**



<sup>1</sup> Seattle's Community Carbon Footprint, Available at:  
<http://www.seattle.gov/climate/docs/Seattle%20Carbon%20Footprint%20Summary.pdf>

Overall, the community's 2005 carbon footprint was about eight percent smaller than it was in 1990. Although 2005 is just a one-year snapshot, the reduction from 1990 levels is a remarkable achievement for the community of Seattle, and one that must inspire further action. We are well on our way towards meeting our ambitious short-term target, but we still need to make substantial investments in climate protection to meet all our goals.

While transportation emissions remain the largest contributor to Seattle's community carbon footprint, building energy emissions still represent a significant component – and one where there may be the greatest near term opportunity for emissions reductions through conservation and alternate energy sources.

Recognizing the tremendous opportunity for greenhouse gas emission reductions by increasing the energy efficiency in residential and commercial buildings, Mayor Nickels announced plans for a focused initiative to make Seattle the nation's Green Building Capital, putting a special emphasis on increasing the efficiency of Seattle's residential and commercial buildings. The three goals of this initiative, announced as part of the Mayor's 2008 State of the City Address are to:

- Improve the energy efficiency of residential and commercial buildings
  - o Increase energy efficiency in existing buildings by 20%
  - o Increase energy efficiency in new buildings and major retrofits consistent with the requirements of the 2030 Challenge<sup>2</sup>
- Create job opportunities in the green economy
- Save Seattle residents and businesses money on energy costs

To help the city accomplish these goals, Mayor Nickels convened a Green Building Task Force to provide guidance on new policy proposals aimed at making Seattle the nation's green building capital, including meeting these energy efficiency targets.

## Background

Electricity (at 55%) is the largest source of energy in Seattle's residential and commercial buildings, followed by natural gas (31%), oil (7%), and steam (7%). Since 1990, overall building energy use has increased slightly, but different sources of energy reflect different trends. According to preliminary analysis completed by Seattle City Light (SCL), electricity use in all sectors (commercial and institutional, single family residential and multi-family residential) has been increasing annually since 2005. Natural gas use has increased considerably in both the residential and commercial sectors. Oil use has decreased by more than half in both the residential and commercial sectors, primarily due to conversions to natural gas.

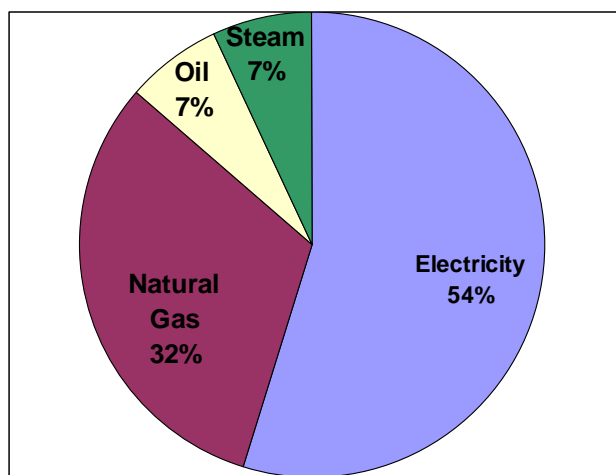
Both SCL and Puget Sound Energy (PSE) recently conducted assessments of the conservation potential in residential and commercial buildings. Seattle City Light's Conservation Plan aims to ramp up its conservation program and put SCL on target to nearly meet load growth within the next 5 years, and if this pace is maintained to result in approximately an 18% reduction in existing buildings by 2020. This level of conservation is consistent with the findings of the Utility's conservation assessment. PSE's Integrated

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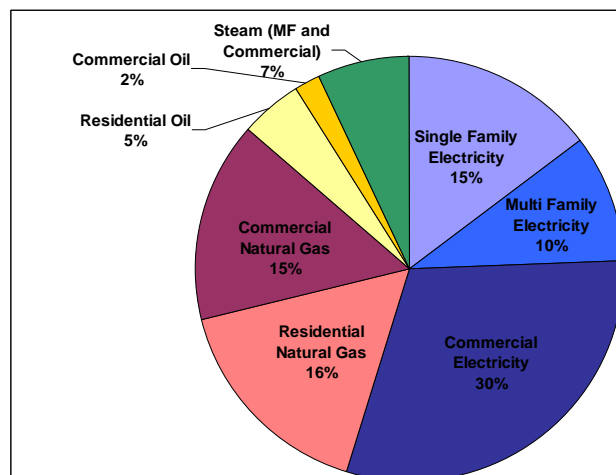
<sup>2</sup> 2030 Challenge: <http://www.architecture2030.org/>

Resource Plan anticipates conservation will account for about 14% of projected load growth over its entire service area over 20 years. This level of conservation represents about 4.4 % of the projected future load in 20 years, or about half of the conservation potential identified in the Utility's conservation assessment. Oil and steam distribution companies do not have any comprehensive conservation programs.

Both SCL and PSE agree there is still considerable potential for conservation in Seattle buildings. Specifically, SCL concluded that the main opportunities for improving energy efficiency in the residential sector are lighting (electricity) and space/water heat (electricity, natural gas and oil). The main opportunities for improving energy efficiency in the commercial sector are lighting (electricity), cooling (electricity), and space/water heat (natural gas and steam).



**Figure 2. 2005 Seattle Residential and Commercial Building Energy Use**



**Figure 3. 2005 Building Energy Use by Sector**

Achieving the City's 20% energy efficiency target in all sectors (residential and commercial) and among all energy sources (electricity, oil, natural gas, steam) will require more than what is available through existing conservation programs and policies. This is particularly true in for the non-electricity sources of energy (natural gas, steam, and oil) where the rate and industry structures do not always provide a business case for conservation, and where the City has less authority to direct investments in conservation.

## Policy Development Process

In July 2008 the Mayor convened a Green Building Task Force to provide guidance and feedback on policy mechanisms that the City could employ to achieve the goals of the Green Building Capital Initiative. Mayor Nickels selected and invited 50 stakeholders<sup>3</sup> with a range of perspectives on environmental and policy issues to sit on the Task Force, including real estate professionals, building owners and operators, green building experts, architects, engineers, low-income housing providers and advocates, historic

<sup>3</sup> Task Force membership list available at: <http://seattle.gov/environment/GBTaskforce.htm#GBMembers> and is included as an appendix to this report.

preservation advocates, energy suppliers, financial institutions and other interested parties. To facilitate increased participation and make best use of considerable member expertise, the Task Force was broken out into two committees of approximately 25 members each (a New Buildings Committee and an Existing Buildings Committee), where most of the work was completed.

The two Task Force Committees met regularly between July 2008 and January 2009, and provided feedback to staff on these policy options, including thoughts on feasibility, likelihood of success and compatibility/ synchronization with other state, regional, national and international efforts. Significantly, in order to ensure that all voices were heard, the Task Force was not asked to develop a consensus recommendation, but rather to provide input during the meetings to inform the staff recommendations.

## Policy Options Considered

The Office of Sustainability and Environment, the Department of Planning & Development and Seattle City Light spent the better part of a year researching and identifying policy options available to the City to meet these targets. This list of options, approved by the Mayor and senior staff in early 2008, was then turned over to teams of consultants, who completed a technical analysis for each policy option. The consultant analysis was *not* a recommendation, but instead a summary of the technical, administrative, and economic feasibility of each policy option. This information was brought to the Task Force for consideration and feedback.

### ***New Buildings Policy Options***

The members of the New Buildings Committee were initially presented with seven policy alternatives for achieving the City's energy efficiency goals. The list of policy options considered by the New Buildings Committee is posted on the Task Force website as **Appendix A**.

EXPAND EXISTING INCENTIVES	<ul style="list-style-type: none"> <li>•Density Bonus for Exemplary Energy Performance</li> <li>•Priority "Green" Permitting</li> </ul>
NEW INCENTIVES	<ul style="list-style-type: none"> <li>•Green Investment Fund</li> <li>•Energy Efficiency "Feebate"</li> </ul>
CODE CHANGES	<ul style="list-style-type: none"> <li>•Mandatory Green Building Performance Standards</li> <li>•Building Code Updates</li> <li>•Energy Code Updates</li> </ul>
NEW IDEAS	<ul style="list-style-type: none"> <li>•District Energy Solutions</li> <li>•Continuous Monitoring of Building Performance</li> <li>•Restructure Seattle City Light Energy Rates</li> <li>•Innovation Review Board</li> </ul>

**Figure 4. Policies Considered by the New Building Committee**



## Existing Buildings Policy Options

Policies considered by the Existing Buildings Committee fell broadly into five categories (represented below): Measurement & Disclosure, Financing, Incentives, Repayment Mechanisms, and Upgrades. Please see **Appendix B** for a summary of all policies considered.

	Performance Measures	Prescriptive Measures
MEASUREMENT & DISCLOSURE	<ul style="list-style-type: none"> <li>•Historical Energy Use</li> <li>•Energy Performance Rating or Label</li> </ul>	<ul style="list-style-type: none"> <li>•Energy Measure Checklist</li> </ul>
FINANCING	<ul style="list-style-type: none"> <li>•Public Financing Pool (Local Improvement District or Bond Sale)</li> <li>•Private Financing Pool</li> <li>•Low-Interest Loans</li> <li>•Energy Efficiency Mortgages</li> </ul>	
REPAYMENT MECHANISMS	<ul style="list-style-type: none"> <li>•Add-on to Property Taxes</li> <li>•On-Bill Financing</li> </ul>	
INCENTIVES	<ul style="list-style-type: none"> <li>•Energy Efficiency Fee-bate</li> <li>•Energy Efficiency Tax Credit</li> </ul>	
UPGRADE REQUIREMENTS	<ul style="list-style-type: none"> <li>•Minimum Energy Performance Upgrades</li> </ul>	<ul style="list-style-type: none"> <li>•Prescriptive Measure Upgrades</li> </ul>

Figure 5. Policies Considered by the Existing Buildings Committee

## Policy Scorecards

Consultant teams developed a “policy scorecard” for each policy under consideration, evaluating it with regard to energy efficiency potential, economic benefits, and administrative feasibility. Scorecards for each policy, together with background case studies, were presented to the Task Force for consideration. These are attached as **Appendices C & D** for New Buildings and Existing Buildings, respectively.

## Green Building Capital Policy

The City of Seattle is advancing a suite of new policy and program directions that will enable us to achieve the objectives of the Green Building Capital Initiative. This policy direction maximizes environmental, economic and social benefit and minimizes adverse impact to stakeholders, while providing a high degree of confidence that the stated energy efficiency goals will be achieved.

## New Buildings Policy

### Near-Term Recommendations

The City will be implementing several new programs and policies to improve energy efficiency in new construction and major renovations. Some of these programs can be implemented quickly and easily, and will be enacted before the end of 2009, to

incentivize greater technological innovation and encourage increased development of leading edge, high performance buildings. Others will be initiated in 2009, but will not be fully launched until 2010 or later.

## **Priority Permitting**

The City is developing a new, expedited permitting program to provide guaranteed review and approval times for projects committed to achieving high levels of energy efficiency. This “Green Q,” which builds upon the existing Priority Green permitting program, will be launched by December 2009 and be available to both residential and commercial projects. It will be available only to projects that commit to achieving specific energy goals, but do not anticipate encountering significant code compliance issues. Our target is to achieve a 30% reduction in typical permit review times.

The requirements for participation in the program will be periodically reviewed and revised to insure that:

- Participation is sufficient to encourage a sufficient number of leading edge projects to demonstrate viability of high performance buildings in the market.
- Participation continues to target the highest levels of energy performance.
- Consideration is given to additional priorities (e.g., the Green Q program could also provide priority for projects supporting smart growth, by providing enhanced permitting for projects in targeted neighborhoods or land use zones).
- DPD’s review capacity is not overwhelmed.

## **Enforcement**

Expedited permitting will provide a high degree of predictability, with known timeframes and consequences for failure to perform (e.g., assessing penalties if a project fails to achieve the required level of energy performance). Conversely, DPD may consider a permit fee rebate if the guaranteed review schedule is not achieved. DPD will conduct further analysis before the program is launched to determine the appropriate mechanism for addressing non-compliance.

## **Encourage Innovation**

### **Construction Codes Advisory Board Innovation Sub-Committee**

The City currently staffs the Construction Codes Advisory Board (CCAB), a voluntary board appointed by the Mayor and confirmed by the City Council. The CCAB serves as an advisory hearing body for appeals related to Seattle’s technical codes (Building, Residential, Energy, and Mechanical codes). Both DPD and elected officials rely heavily on its guidance. There are 13 members of the CCAB, as specified by the Seattle Building Code.

The City will expand the role of the CCAB by the end of 2009 to provide early review and guidance, in advance of a building permit application, on permitting of innovative technologies for energy efficiency. The goal is to provide a clearly defined venue where the City can embrace innovation and learn from experience with solutions that are not addressed by existing code requirements. The membership of the CCAB will likely be expanded to establish a separate advisory sub-committee, including experts in sustainable technologies and emerging construction techniques.

Applications to the sub-committee may be made for either a technology that will be used in a specific project, or a particular technology that may be used in multiple future projects. The CCAB Innovation Sub-Committee will review the submitted information and make a recommendation to the applicant that can be included as part of a building code appeal. This recommendation will be considered by DPD permit review staff as supporting documentation. Though DPD is not bound by the recommendations of the Advisory Board, a favorable preliminary recommendation would be strongly considered should the same issue be brought to the CCAB as part of a building code appeal.

## **Energy Code Updates**

The City will continue to rely on progressive energy codes as a foundational element of our energy efficiency strategy for new construction, by setting the minimum level of acceptable performance for all buildings.

### **Increase Efficiency of State Energy Code**

The City will advocate for updates during the current revision cycle of the Washington State Energy Code that will provide at least a 30% improvement in energy efficiency compared to the 2006 Edition. This would put our State code at a level approximately 5% higher than the current targets of the 2030 Challenge (per [http://www.architecture2030.org/pdfs/2030Challenge\\_Codes\\_WP.pdf](http://www.architecture2030.org/pdfs/2030Challenge_Codes_WP.pdf)).

### **Increase Efficiency of Seattle Energy Code**

The City will institute amendments to the Seattle Energy Code in 2010 to provide additional improvements beyond the State requirements. This will insure that the Seattle Energy Code delivers typical building performance in alignment with the prevailing 2030 Challenge targets.

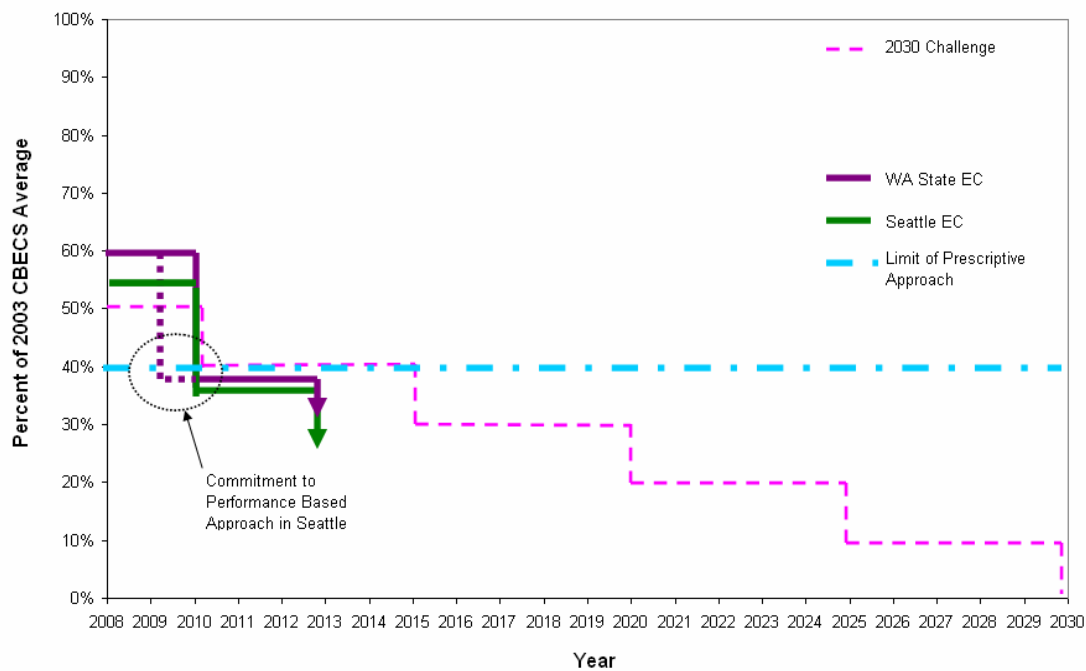
The City will also work with regulatory officials of Washington State and other Puget Sound jurisdictions to develop support for state-wide or regional adoption of similar energy code provisions.

### **Moving to Performance-Based Energy Codes**

Analysis of our current code shows that performance is near the limit of what can be achieved through a prescriptive compliance approach. The City will initiate a pilot project in 2009 to develop and implement a model for the Seattle Energy Code that promotes a whole building approach to energy efficiency and relies on performance metrics. The performance pilot review process will be implemented in 2010, with the goal of increasing the number of projects that complete whole building energy modeling for performance based code compliance.

The performance code pilot project will also examine the viability of developing absolute energy performance targets for different building types, relying on actual, rather than projected, energy consumption. This effort will also provide training for permit review staff as well as development of tools, operational capacity, and standards to facilitate whole building analysis.





**Figure 6. Code Comparison Against the 2030 Challenge Targets**

## Neighborhood Energy Strategies

The City will identify an area such as North Downtown or Yesler Terrace to analyze the viability of an expanded district energy system, considering best practices for financing, institutional structures, and ownership models. The analysis will focus on the use of waste heat or renewable energy as the primary sources of heat for any expanded system.

### Electric Resistance Heating

One of the greatest barriers to widespread deployment of neighborhood scale thermal energy solutions is an adequate aggregation of thermal loads to justify the capital investment of distribution infrastructure. Resistive baseboard heating is still widely used in new construction, especially in multi-family construction, primarily due to the low capital cost of the equipment, the current low cost of electricity in the city, and lack of familiarity with and market availability of hydronic systems. However, each new building that uses this approach is effectively locked out of connection to a future thermal energy system for its lifespan of 50 years or more. The City will continue to explore policies that promote the use of alternatives to resistive electric heating for all new commercial and large-scale multi-family projects.

### Energy Performance Rebate Program

In conjunction with energy code updates, the City will continue to investigate the potential for using permit review fees to reward high performance buildings. Because Washington State law (RCW 82.02.020) currently prohibits the City from charging permit fees which are greater than what is required to cover the actual cost of processing

applications, this program would require a state legislative change or the identification of an alternative funding model. The City will evaluate the viability of proposing the changes necessary to give the City authority to use permit fees for this program during upcoming State legislative sessions.

## Existing Buildings Policy

The opportunities for increasing energy efficiency in existing buildings must be driven by a better understanding of how these buildings are performing. By increasing the amount of information available to building owners and occupants, measurement and disclosure of building energy performance will help identify opportunities for energy efficiency gains, encourage voluntary upgrades, and create a mechanism for market differentiation. All policies for existing buildings are intended to apply to current buildings, as well as all projects completed after these policies are enacted.

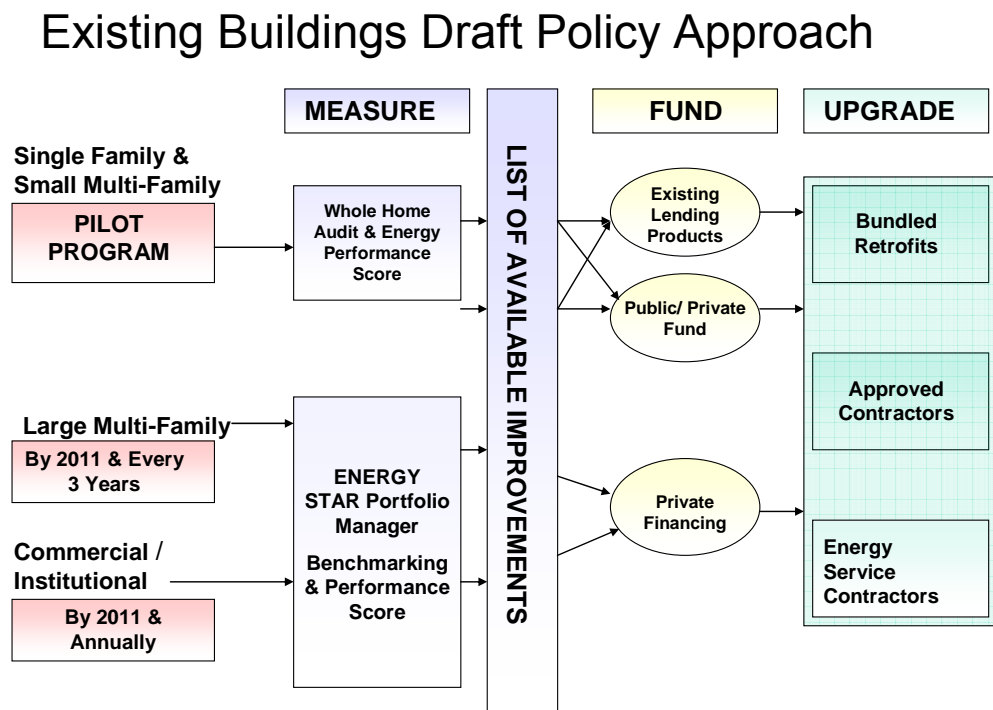


Figure 7. Existing Buildings Policy

## Commercial and Multi-Family Disclosure Requirement

The City of Seattle is establishing a requirement for mandatory energy performance disclosure in the Commercial and Large Multi-Family building sectors. Legislation will be introduced in spring 2009 following a 3-tiered disclosure approach, requiring disclosure from the largest buildings beginning in 2010, with sequentially smaller buildings coming on line in 2011 and 2012. Multi-family building owners and managers will be required to report and disclose Energy Star Portfolio Manager benchmarking data to the City as well as any prospective tenant, buyer or lender. Commercial building owners and managers will be required to report and disclose Energy Star Portfolio Manager benchmarking data as well as their energy star rating to the City and any prospective tenant, buyer or lender. All data will be reported through EPA's secure server (with automated downloads provided to the City at regular intervals).

Sector	
<b>Large Multi-Family</b>	<ul style="list-style-type: none"> <li>▪ Mandatory disclosure of Energy Star Portfolio Manager benchmarking data</li> <li>▪ Reported through EPA secure server</li> <li>▪ Training and technical assistance program offered in partnership with US EPA</li> </ul>
Properties ≥ 20 Units 1260 Buildings 57500 Units	By 2010 & every three years thereafter
Properties 10-20 Units 1400 Buildings 18800 Units	By 2011 & every three years thereafter
Properties 5 – 9 Units 3100 Buildings 17500 Units	By 2012 & every three years thereafter
<b>Commercial/ Institutional</b>	<ul style="list-style-type: none"> <li>▪ Mandatory disclosure of Energy Star Portfolio Manager benchmarking data and rating</li> <li>▪ Reported through EPA secure server</li> <li>▪ Training and technical assistance program offered in partnership with USEPA, BOMA, IFMA, others.</li> </ul>
Properties ≥ 50,000 SF 680 Buildings, 104 million SF	By 2010 & annually thereafter
Properties ≥ 25,000 SF 680 Buildings 23 million SF	By 2011 & annually thereafter
Properties ≥ 10,000 SF 1650 Buildings 26 million SF	By 2012 & annually thereafter

Building owners or managers will submit an EPA Energy Star Portfolio Manager Statement of Energy Performance at the required intervals to the Director of the Department of Planning and Development ([http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)). Building owners must also make this information available to any current or prospective tenant, buyer, or lender upon request. In addition, commercial building owners must also report an energy star rating. Should a building desire to become an ENERGY STAR labeled facility, this rating must be verified by a professional engineer. For new construction, the first disclosure of energy performance must be submitted within two years of occupancy. See **Appendix E** for a Sample Energy Star Portfolio Manager Statement of Performance.

Seattle City Light and Seattle Public Utilities will work closely with building owners and managers to ensure that utility data is provided in a form compatible with the Portfolio Manager, for direct upload to the online interface.

#### Technical Assistance and Outreach Program

A 1-year training and technical assistance program will be implemented before disclosure requirements for both multi-family and commercial properties go into effect.

The assistance program will be offered in partnership with US EPA, Building Owners and Managers Association (BOMA), Northwest Energy Efficiency Alliance (NEEA), International Facility Managers Association (IFMA) and/or other industry groups.

Components of the technical assistance program may include:

- Web resource clearinghouse for building owners and operators to include the following information:
  1. How to use Portfolio Manager
  2. Understanding your Energy Star benchmarking data and rating
  3. Undertaking an investment grade energy audit
  4. Best practices and opportunities for multi-family and commercial energy efficiency upgrades
  5. Links to area Energy Service Contractors
  6. Links to available utility incentives and financing
- Regular workshops on the same topic areas outlined above and to allow for peer to peer information sharing
- Direct technical assistance to building owners and managers subject to the reporting requirement

### ***Single Family and Small (1-4 Units) Multi-Family Residential***

To catalyze energy efficiency investments, the City of Seattle is partnering with Puget Sound Energy (PSE) and Seattle City Light (SCL) to develop and implement an 18 month, 5,000-unit residential energy performance audit and home rating pilot program for small multi-family and single family residential customers throughout the Seattle.

**Cost to Participant:** Audits will be made available to customers at the deeply subsidized rate of \$95 (audit value is approximately \$600). The cost of the audit may be refunded if or when homeowners choose to move forward with energy efficiency retrofits as recommended.

**Audit Tool:** The City of Seattle has identified a building energy performance audit tool that: increases the information available to home owners (and occupants), is relatively simple and easy to understand, creates a mechanism for market differentiation, helps identify opportunities for efficiency gains and encourages voluntary upgrades.

**Energy Performance Score:** The Energy Performance Score (EPS) includes a whole home performance audit and recommendation report detailing cost-effective improvement options for the home. In addition, the EPS includes a numerical score displayed graphically – like a miles per gallon rating for residential properties. The EPS enables homeowners to learn how efficiently their homes are performing with respect to both energy consumption and carbon impact. Homeowners can then compare their EPS scores to those of other homes, take measures to improve their scores, and use the improved performance as a valuable selling point on the residential real estate market. See **Appendix F** for a sample energy performance score label and report.

### **Auditor Training Standards**

In partnership with Puget Sound Energy and Seattle City Light, the City of Seattle will establish consistent standards for auditor training and certification. Options include:

- Building Performance Institute Certification: baseline certification required
- Northwest Public Power Association Certification
- Utility training: Current utility and customer trends

- EPS Training: Energy Performance Score training

**Contractor Services for Follow-On Retrofit Services:** In partnership with PSE, the City of Seattle will establish consistent “certified contractor” standards or accreditation requirements. Referral services will be open to participation by new contractors.

## ***Financing***

Lack of access to adequate financing was considered by many Green Building Task Force members to be the single greatest barrier to increased conservation in the residential sector. The City of Seattle will work with a local Community Development Financial Institution to attract and manage a pool of public and private capital to finance loans for residential energy efficiency retrofits. The loan fund will be targeted to homeowner investments that reduce their carbon footprint by upgrading lighting, furnaces, water heaters and windows among other items.

### Target market

Currently, low-income renters and homeowners at or below 200% of the federal poverty level are eligible for weatherization grants through the City’s HomeWise program. Existing programs for low income weatherization, including HomeWise, will be greatly expanded (nearly quadrupled) under the American Recovery and Reinvestment Act.

This new loan program will be designed for all households but specifically target homeowners who do not qualify for grants through the City’s HomeWise weatherization program. The loan program will utilize a tiered payment structure with greater subsidy for the lowest income borrowers. Loans will range between about \$8,000 - \$20,000 depending on the types of upgrades undertaken.

### Funding/Capital

A pilot program with loan capital of \$3 – \$5 million will include City of Seattle Energy Efficiency Block Grant funds as well as philanthropic dollars and private investment. The City of Seattle will contribute initial seed capital for the pilot loan program using Federal Energy Efficiency Block Grant funds. We estimate that a loan pool of \$12 million would be needed to reach 1,000 homes. To bring the program to scale, we envision a \$20 - \$40 million loan fund.

### Terms

- Interest rates of 2-6% dependent upon income
- No payments for lower income customers until sale or refinance of property
- Flexible amortization schedules up to 15 years dependent upon income
- Fees: Loan Fee: \$450
- Loan Amount: \$8,000 - \$20,000
- Collateral: Lien on property

## **Green Jobs and Workforce Development**

### ***Job Creation Potential***

Of the many sectors that may be created in the green economy, energy efficiency is considered a major new economic and employment driver – in 2006, the energy

efficiency industry nationwide exceeded 8 million jobs (90% in private industry).<sup>4</sup> Modest projections forecast an additional 7 million jobs in energy efficiency nationwide by 2030. Within the Pacific Northwest, energy efficiency products and services are projected to bring in more than \$2 billion in annual sales through 2020.<sup>5</sup>

A recent study completed for the US Conference of Mayors shows that a national reduction in energy consumption levels of 35% over the next 30 years could result in creation of nearly 81,000 jobs divided nearly evenly between the commercial and residential sectors.<sup>6</sup> The same study estimates that current green jobs in the Seattle metro area could increase by over 40,000 by 2038 given consistent investment in green policies and programs.

We estimate that approximately 230 jobs will be created by the existing building policies included in this initiative.<sup>7</sup>

### ***Green Building Design Services***

The region also has unique strengths in the intellectual capital of the thousands of architects, consulting engineers, project and construction managers, energy and water efficiency experts, and other green professionals. This expertise not only creates high performance buildings in the Northwest, but is exportable across the U.S. and overseas. By continuing to develop the appropriate intellectual capital, implementing progressive building code reforms and green building incentives, and leading by example in local projects, Seattle can be a world-class leader in the next generation of green building design. A recent study by Climate Solutions estimates that these green building design services can lead to the development of between 10,000 and 12,000 new jobs in the Pacific Northwest by 2020.<sup>8</sup>

### ***Investment in Workforce Development***

The energy efficiency sector generally focuses on retrofitting existing buildings that would otherwise not have been improved upon, which may include mechanical, electrical and plumbing upgrades. Retrofitting buildings to be more energy efficient includes a variety of skills and jobs, mainly in “manufacturing the construction materials and devices to make buildings more efficient, as well as construction jobs and high-skill auditing jobs.”<sup>9</sup>

New sustainable strategies and materials may require new skills and new job opportunities, along with entirely new specializations, within the energy efficiency sector. Yet the majority of jobs within the sector will be in fields that presently exist. The lack of a skilled workforce is perhaps the greatest non-technical barrier to the advancement of

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<sup>4</sup> Renewable Energy and Energy Efficiency: Economic Drivers for the 21<sup>st</sup> Century 2007. American Solar Energy Society.

<sup>5</sup> POISED FOR PROFIT: How Clean Energy Can Power the Next High-Tech Job Surge in the Northwest. Climate Solutions. 2001.

<sup>6</sup> US Metro Economies: Current and Potential Green Jobs in the US Economy. Prepared by Global Insight for the US Conference of Mayors

<sup>7</sup> ECONW Memo

<sup>8</sup> Carbon Free Prosperity 2025: How the Northwest Can Create Green Jobs, Deliver Energy Security, and Thrive in the Global Clean-Tech Marketplace. Climate Solutions and Clean Edge. 2008.

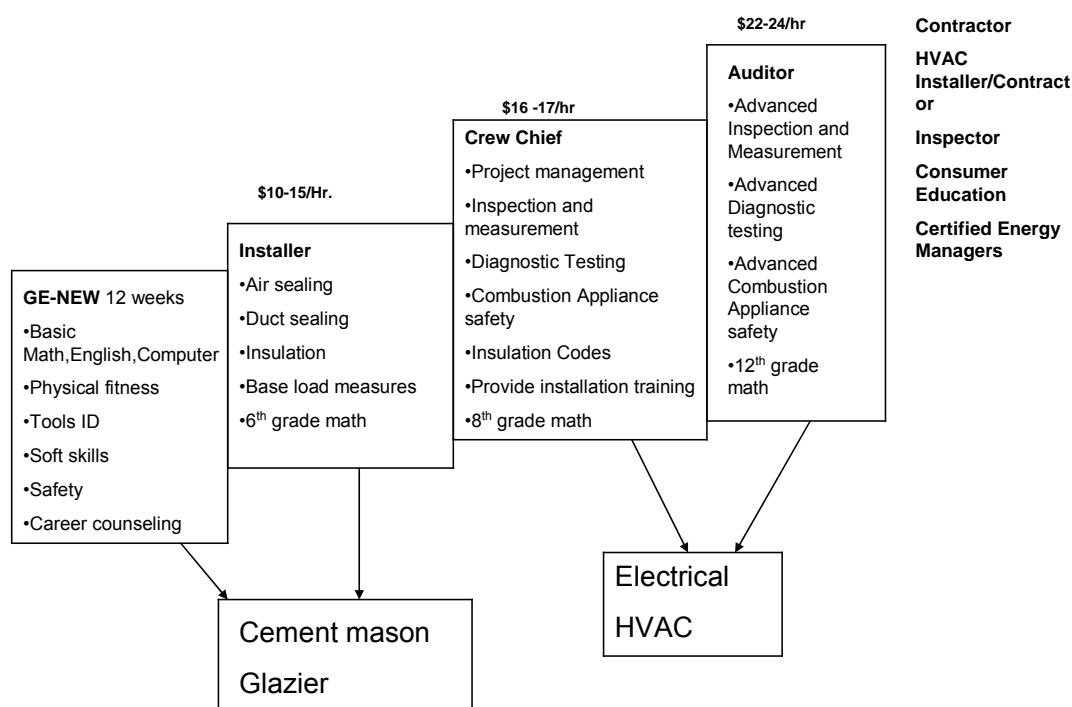
<sup>9</sup> Community Jobs in the Green Economy. Apollo Alliance/Urban Habitat. 2007.



energy efficiency and renewable energy technologies. Recognizing that any of the many possible outcomes from the Green Building Capital Initiative would result in greater demand for skilled workers in the energy efficiency sector, the Office of Economic Development has invested in developing Residential and Commercial energy efficiency training pathways.

## ***Residential Energy Efficiency Pathway***

A career pathway includes a stepwise progression, starting at the lowest levels of literacy/numeracy prevailing in the region. Training opportunities move people through these steps. A Residential Energy Efficiency Pathway was developed by the Georgetown Campus of South Seattle Community College during 2008 with support from the City of Seattle and is now in place (Figure 9 shows the stepwise progression of the Residential pathway). Each training step is a discrete component with industry recognized titles and competencies arranged sequentially and culminating in Energy Auditing training and certification.

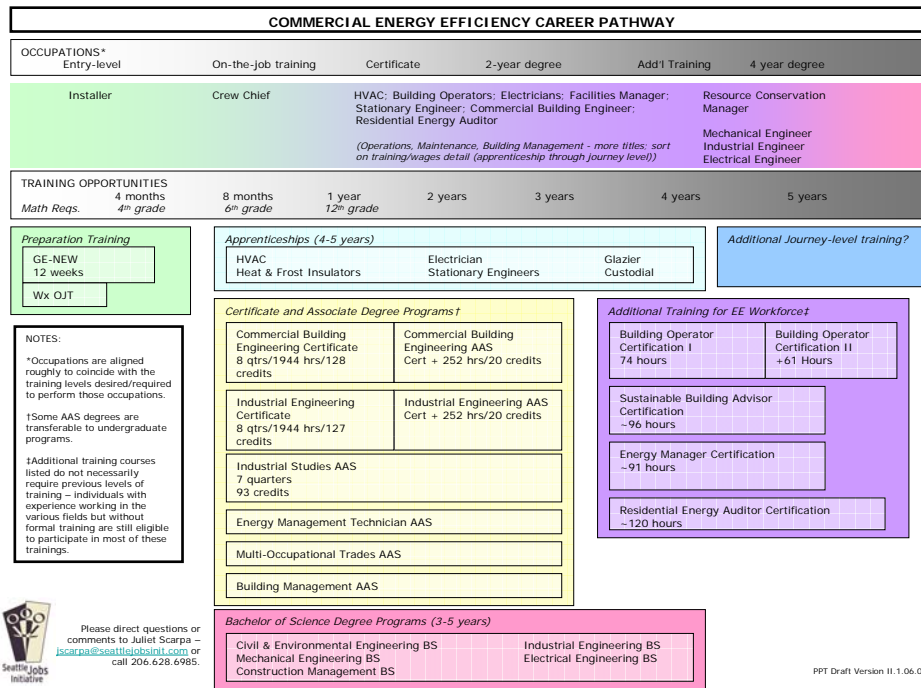


**Figure 9. Residential Energy Efficiency Training Pathway**

To be successful, the residential pathway must: (1) engage multiple employers and other leadership in the region to help identify and solve clean energy workforce training barriers; (2) increase the number of on-ramps/access points for low-skilled, low-income residents to acquire clean energy workforce skills; (3) develop, refine, and systematize career pathways within and across the sector; and (4) build upon previous clean energy planning processes, taking promising practices to scale and sustainability.

## Commercial Energy Efficiency Pathway

Building upon the success of the Residential Energy Efficiency pathway, the City of Seattle and its workforce training partners are providing support for the development of a Commercial Energy Efficiency Pathway. Across the region, energy efficiency industry associations and utilities have expressed the need to map out existing training capacity and establish new training to meet any competency gaps in commercial energy efficiency. Work is underway, and a conceptual draft of a commercial energy efficiency training pathway is presented here as Figure 10.



**Figure 10. Proposed Commercial Energy Efficiency Training Pathway**

As the Green Building Policy Initiative moves forward, we can expect demand for a skilled workforce to meet the energy efficiency needs of the commercial building sector. This workforce will include not only tradespeople associated with the installation of energy efficient products, but the efficient management of these buildings throughout the building's life cycle.

To help meet these workforce needs, Seattle has partnered with the Seattle King County Funder's Collaborative to secure a \$250,000 grant from the Living Cities Community Development Fund. This grant will fund an inventory of existing training capacity in the commercial energy efficiency sector, create a training information portal where this information can be shared, create curriculum to meet the demand of any skills gaps identified by the commercial energy efficiency community, and create entry points into commercial energy efficiency careers. This effort - the New Energy Efficiency Opportunities Project (New Op) - will begin in early May 2009.