

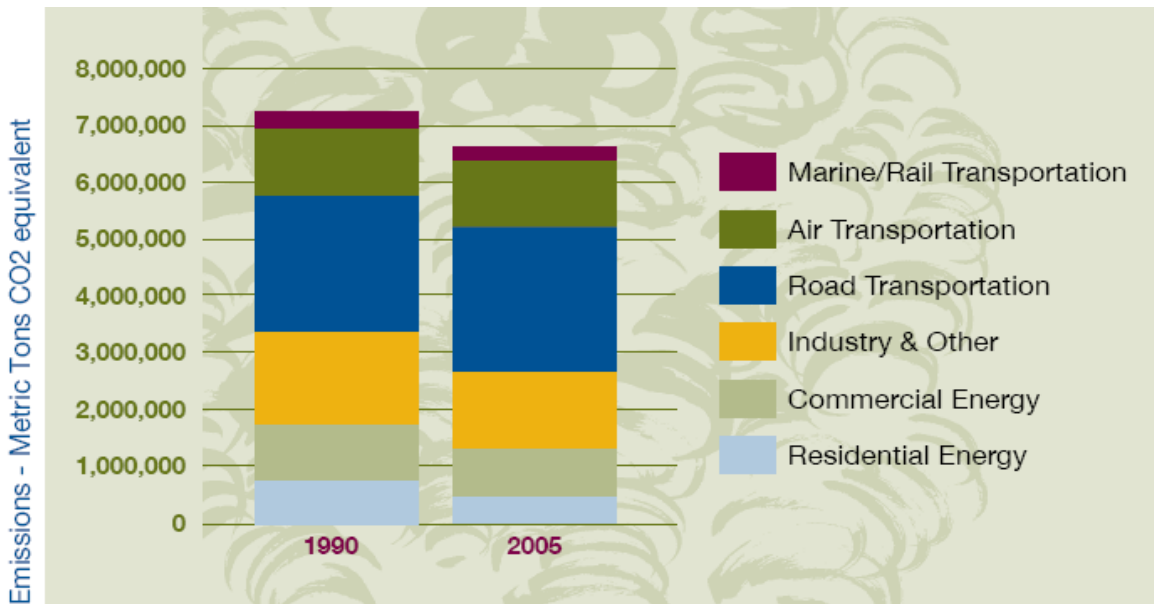
City of Seattle  
Green Building Capital Initiative  
Draft Staff Policy Recommendations  
January 30, 2009

DRAFT

## 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. 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> 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.



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

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.

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

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 goal, he 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

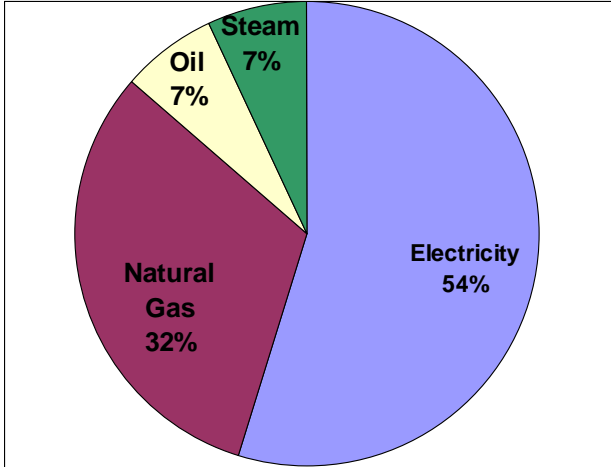
Electricity (at 55%) is the largest source of energy in Seattle's residential and commercial buildings, followed by natural gas (31%), oil (7%), and steam (7%). Since 1990, overall building energy use has increased slightly, but different sources of energy reflect different trends. According to preliminary 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 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.

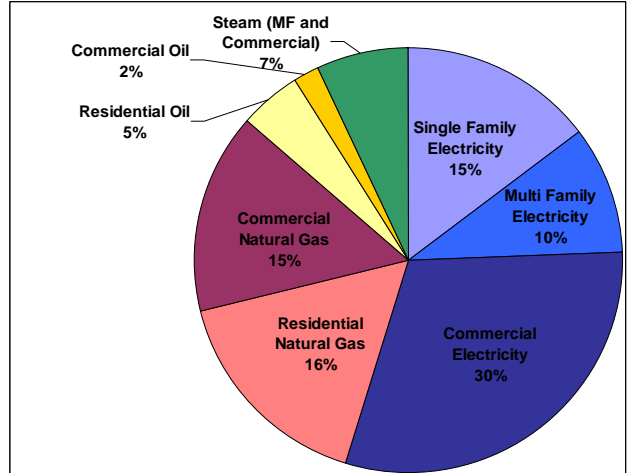
Both SCL and PSE agree there is still considerable potential for conservation in Seattle buildings. Specifically, SCL concluded that the main opportunities for improving energy efficiency in the residential sector are lighting (electricity) and space/water heat (electricity, natural gas and oil). The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

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



**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 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.

<sup>3</sup> Task Force membership list available at: <http://seattle.gov/environment/GBTaskforce.htm#GBMembers>

## 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 attached as **Appendix A**.

<b>EXPAND EXISTING INCENTIVES</b>	<ul style="list-style-type: none"> <li>•Density Bonus for Exemplary Energy Performance</li> <li>•Priority “Green” Permitting</li> </ul>
<b>NEW INCENTIVES</b>	<ul style="list-style-type: none"> <li>•Green Investment Fund</li> <li>•Energy Efficiency “Feebate”</li> </ul>
<b>CODE CHANGES</b>	<ul style="list-style-type: none"> <li>•Mandatory Green Building Performance Standards</li> <li>•Building Code Updates</li> <li>•Energy Code Updates</li> </ul>
<b>NEW IDEAS</b>	<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.

## Draft Staff Recommendations

City Staff has developed a suite of recommended policy actions to achieve the objectives of the Green Building Capital Initiative. These recommendations take into consideration the potential impacts on stakeholders and other criteria analyzed for each policy alternative, while providing a high degree of confidence that the stated energy efficiency goals of the Task Force will be achieved.

### New Building Policy Recommendations

For new buildings, staff recommendations have been grouped based on the anticipated time frame for implementation, with considerations for funding constraints, legal barriers, and operational capacity. These groupings are not meant to imply any prioritization with regard to the City’s interest in moving forward with any recommendation, or its energy efficiency potential:

- Short-Term Recommendations – next 12 months
- Medium Term Recommendations – 12 to 24 months
- Recommendations for Further Consideration – longer term implementation – 2011 and beyond, with intermediate milestones

### ***Short-Term Recommendations***

These recommendations can be implemented quickly and easily and should be enacted as soon as possible to incentivize greater technological innovation and encourage increased development of leading edge, high performance buildings.

### **Green Permitting**

The proposed policy will expand the existing Priority Green permitting pilot to incorporate an expedited permitting system, with guaranteed review and approval times for projects committed to achieving high levels of energy efficiency. This “Green Q” will be launched by December 2009 and be available to both residential and commercial project types.

#### **Existing Priority Green Pilot Program**

Though DPD’s existing Priority Green Permitting program has been operating as a pilot for approximately six months, the number and size of projects that have signed up to participate in the program since its inception in July 2008 is still low (fewer than 10 projects). The current version of Priority Green utilizes a sustainability scorecard matrix, with a minimum number of points in different categories required for participation in the program, including achieving energy performance compliant with the 2030 Challenge goals. Because they are typically pushing the technological envelope, projects participating in the Priority Green Program often face significant code challenges. Facilitation by dedicated staff knowledgeable about the green elements of proposals, combined with a single point of contact to deal with issues across multiple departments, is meant to address the unique needs of these projects.

#### **Green Q**

Green Q, a separate, expedited permitting queue will target a 30% reduction in typical permit review times. Green Q will be available only to projects that commit to achieving specific energy goals, but do not anticipate encountering significant code compliance issues.

#### **Participation Requirements**

Energy efficiency targets for program participation in the Green Q will be defined as stretch codes: participation in the Green Permitting program will require a commitment to achieving energy performance that is a minimum of 10% better than the current energy code. Green Q will be available only to projects that do not anticipate encountering significant code compliance issues. Project proponents will be encouraged to meet with permit intake representatives as early as possible.

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

- DPD’s review capacity is not overwhelmed.
- Participation levels are high enough to encourage the construction of a sufficient number of leading edge projects to demonstrate viability of high performance buildings in the market.

- Participation levels remain low enough that participation provides real value to a developer, rather than becoming the standard process for most projects.
- 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).

### **Enforcement**

Expedited permitting should provide a high degree of predictability, with known timeframes and consequences for failure to perform. For the developer, this will entail either providing a performance bond, or a post occupancy assessment of financial penalties if a participating project fails to achieve the required level of energy performance. DPD is conducting further analysis to determine the appropriate mechanism for addressing non-compliance.

### **Encourage Innovation**

The proposed policy will expand the role of the Construction Codes Advisory Board to provide early review and guidance on permitting of innovative technologies for energy efficiency approaches that are difficult to evaluate against existing code requirements. Staff recommends that the membership of the CCAB be expanded to establish a separate advisory sub-committee, including experts in sustainable technologies and emerging construction techniques.

### **Construction Codes Advisory Board**

The City currently staffs the Construction Codes Advisory Board (CCAB), a voluntary board appointed by the Mayor and confirmed by the City Council.

- **Membership:** 13 members, specified by the Seattle Building Code, including: architect, structural engineer, electrical engineer, mechanical engineer, general contractor, electrical contractor, commercial building owner or operator, apartment building owner or operator, residential developer, organized labor, and three general public.
- **Authority:** 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.

### **Innovation Sub-Committee**

The new sustainability innovation advisory sub-committee will be modeled on the City of Portland's recently created Alternative Technology Advisory Committee (ATAC) ([http://www.portlandonline.com/bds/index.cfm?c=48661#cid\\_214141](http://www.portlandonline.com/bds/index.cfm?c=48661#cid_214141)), which evaluates and makes recommendations for innovative, sustainable technologies in the context of building code requirements.

- **Review Process:** An applicant wishing to use an emerging, sustainable technology must submit an application to the CCAB along with any relevant information that shows how the technology can meet the intent of the building code, including:
  - Product testing protocols and results performed by a testing agency
  - International product certifications
  - Case studies of buildings that have successfully used the technology
  - Academic research about the technology
  - Articles from books or professional journals

- Narrative describing how and where the technology is extracted, harvested, and manufactured
- Material Safety Data Sheet (MSDS) for the technology
- Installation instructions (from manufacturer if possible)
- Recognition from a green product certifier (Green Seal, Cradle to Cradle, Pharos, etc.)
- **Eligible Projects:** Applications to the sub-committee may be made for either:
  - A technology that will be used in a specific project
  - A particular technology that may be used in multiple future projects.
- **Timing:** Applications may be made in advance of a building permit application, or as part of the permit review process.
- **Minimum Criteria for Approval:**
  - The technology or process will provide energy efficiency or sustainability **benefits beyond** that achieved by standard, code compliant solutions, or
  - The technology or process will provide energy efficiency or sustainability benefits equivalent to that achieved by standard, code compliant solutions **at a lower cost**. A portion of the cost savings must be applied to additional energy efficiency or renewable energy investments.
- **Recommendation:** The Advisory Board will review the submitted information and make a recommendation to the applicant that can be included as part of a building code appeal:
  - Recommendations will be considered by DPD permit review staff as supporting documentation
  - Recommendations do not authorize use of the product or technology
  - 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.
  - The CCAB could give a “conditional” recommendation for a technology, requiring monitoring, or follow up testing once the technology is in place. In these instances the applicant would be required to sign and record a waiver against the property that would hold the City of Seattle harmless against any future issues resulting from the use of the technology.

## ***Medium Term Recommendations***

These recommendations are the most critical elements of an energy efficiency strategy, and have the greatest potential for achieving real improvements in energy efficiency.

## **Energy Code Updates**

The proposed policy incorporates updates to the energy code as the foundational element of our energy efficiency strategy for new construction, setting the minimum level of acceptable performance for all buildings:

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

Advocate for updates to the Washington State Energy Code that will provide at least a 30% improvement in energy efficiency compared to the current version of the code as recommended by the Governor’s Climate Action Team.

- 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)).

- However, this would fall approximately 5% short of the next scheduled increase in the 2030 Challenge goals, which will take effect in 2010.

#### **Increase efficiency of Seattle Energy Code**

Institute amendments to the Seattle Energy Code which provide additional improvements beyond the State requirements.

- Increase efficiency of SEC to provide at least a 30% improvement in energy efficiency compared to current code.
- Amend Resolution 30280, which currently directs DPD and SCL to “propose to the City Council...amendments to the Seattle Energy Code...to achieve up to 20% enhanced energy efficiency beyond the current version of ASHRAE/IESNA Standard 90.1” to instead establish the City of Seattle’s commitment to periodically updating local energy codes to maintain performance consistent with the 2030 Challenge goals.
- Work with elected officials of other Puget Sound jurisdictions to develop support for regional adoption of similar Energy Code provisions.

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

Analysis shows that our current code performance is near the limit of what can be achieved through a prescriptive compliance approach. Prescriptive codes are the preferred approach in Seattle and Washington State because of their simplicity and predictability. However, many of the most aggressive energy codes in the world, such as those used in California and throughout much of the EU, rely more on a whole building analysis approach, using energy modeling to predict building performance.

- Establish a pilot process to increase the number of projects that complete whole building energy modeling for performance based code compliance, in order to ensure that this approach is proven out and can be mandated as part of the 2012 energy code revision cycle.
- Train permit review staff and develop tools, operational capacity, and standards to facilitate promotion of whole building analysis approach for energy code compliance.

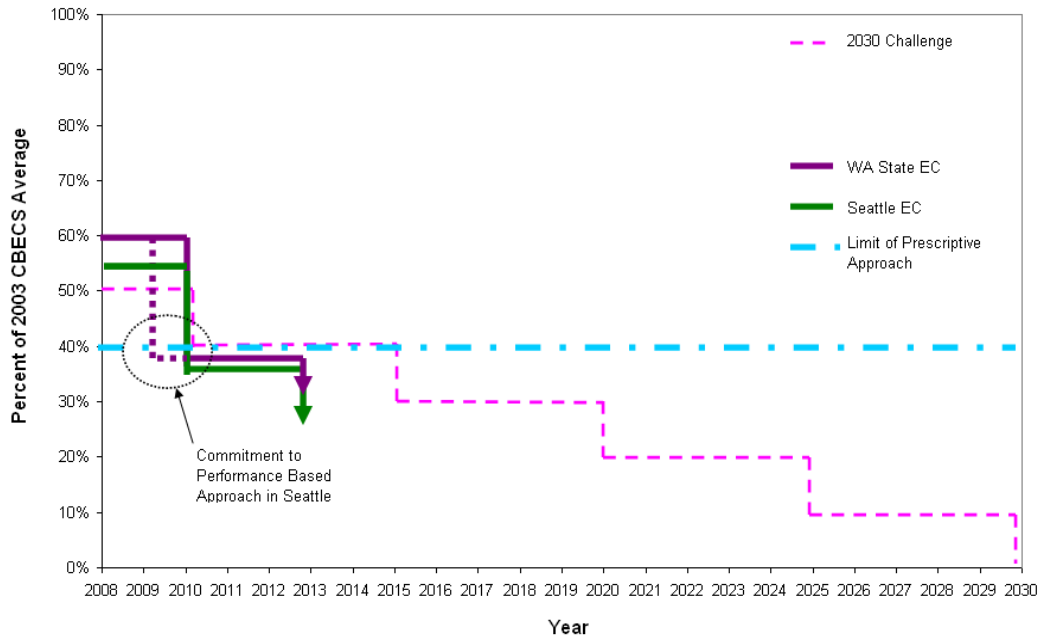


Figure 6. Code Comparison Against the 2030 Challenge Targets

### ***Recommendations for Further Consideration***

These recommendations are potentially the most far reaching but face significant challenges that have to be addressed to ensure success.

### **Neighborhood Energy Strategies**

Some of the greatest opportunities for energy efficiency lie outside of individual buildings, by focusing on the infrastructure used to move energy between buildings. There is strong interest in these solutions as well as significant potential for energy savings.

### **District Energy Pilot Project and Analysis**

Staff recommends:

- Identify a contained area like North Downtown, Pioneer Square or Yesler Terrace where a pilot project can be developed to consider best practices for financing, institutional structures, and ownership and test potential approaches.
- Develop a business case and an implementation roadmap for the pilot neighborhood scale energy system.
- Identify external partners and/or federal support for funding and operations.
- Conduct an evaluation of the opportunities for capturing waste heat and other thermal sources on a block or district scale. This would begin with a citywide "Heat Map", an inventory of significant heating/cooling sources and loads in the city.

### **Electric Resistance Heating**

Staff recommends further exploration of policies to promote use of hydronic based heating systems for all new commercial and large-scale multi-family projects with recommendations ready for review by December 2009.

One of the greatest barriers to widespread deployment of neighborhood scale thermal energy solutions is having an adequate aggregation of thermal loads sufficient to justify the capital investment of distribution infrastructure. Resistive baseboard heating is still widely used in new construction, especially in multi-family construction. This choice is due primarily to the low capital cost of the equipment, the current low cost of electricity in the city, and most contractor's lower familiarity with and market availability of hydronic systems. However, each new building that uses this approach is effectively locked out of connection to a thermal energy system for its lifespan of 50 years or more.

### **Energy Performance Rebate Program**

In conjunction with energy code updates, Staff recommends further investigation of opportunities for rewarding high performance and incentive substandard performers to improve, including Portland's proposed program, which establishes a self funding mechanism to incentivize building performance that exceeds minimum code requirements.

Because Washington State law (RCW 82.02.020) currently prohibits the City from charging permit fees that 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:

- Investigate alternative means of funding this program, such as impact fees, general fund, utility surcharge, or utility connection fees.
- Alternatively, evaluate the viability of proposing the State legislative changes necessary to give the City authority to use permit fees for this program.

## **Existing Building Policy Recommendations**

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, disclosure of building energy performance would help identify opportunities for energy efficiency gains, encourage voluntary upgrades, and create a mechanism for market differentiation. Staff recommends requiring measurement and disclosure for all building sectors, as well as development of new financing mechanisms for single family and small multifamily buildings. All recommendations for existing buildings are intended to apply to current buildings, as well as all projects completed after these policies are enacted.

## Existing Buildings Draft Approach

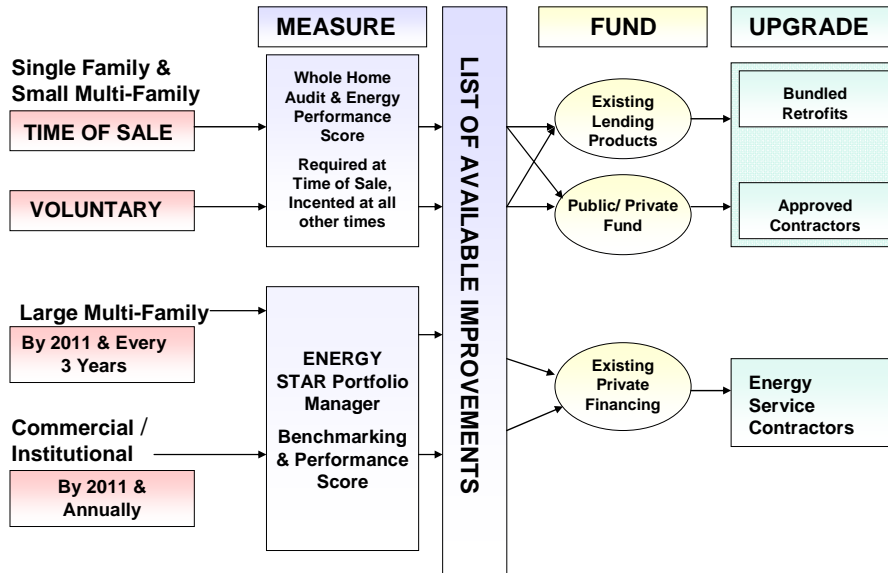


Figure 7. Staff Recommendations for Existing Buildings

### Measurement & Disclosure

#### Commercial and Institutional

The proposed policy will require that commercial and institutional buildings participate in the Energy Star Portfolio Manager program to measure and report building performance information on an annual basis, including: energy use, carbon dioxide emissions, indoor environmental quality information, water consumption levels, and Energy Star ratings according to the following schedule:

Building Size	Disclosure Date
Greater than 50,000 SF	January 1, 2010
Greater than 10,000 SF	January 1, 2011

Table 1. Proposed timeline for commercial/institutional disclosure

Building owners or managers shall submit an EPA Energy Star Portfolio Manager Statement of Energy Performance to the City each year in hard copy or via online reporting ([http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)). For new construction, the first disclosure of energy performance must be submitted within one year of occupancy. Building owners or managers must make this information available to any current or prospective tenant, buyer, or financier. See **Appendix E** for a Sample Energy Star Portfolio Manager Statement of Performance.

## Large Multi-Family

The proposed policy will require that large multi-family buildings (buildings with >4 units) utilize the Energy Star Portfolio Manager tool to disclose building performance information every three years, including: energy use, carbon dioxide emissions, indoor environmental quality information and water consumption levels, according to the following schedule:

Building Size	Disclosure Date
Greater than 50,000 SF	January 1, 2010
Greater than 10,000 SF or 4 units	January 1, 2011

**Table 2. Proposed timeline for large multi-family disclosure**

Building owners or managers shall submit an EPA Energy Star Portfolio Manager Statement of Energy Performance to the City every three years either in hard copy or via online reporting

([http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)).

For new construction, the first disclosure of energy performance must be submitted within two years of occupancy. Building owners or managers must make this information available to any current or prospective tenant, buyer, or financier.

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

## Energy Star Portfolio Manager

Portfolio Manager is a free, interactive energy management tool that allows users to assess and track energy and water consumption for a single building or across an entire portfolio of buildings in a secure on-line environment. Portfolio Manager allows building owners and managers to:

- **Benchmark energy and water use and set a baseline against which improvement can be measured**
- **Identify under-performing and top-performing buildings to prioritize energy efficiency projects via energy performance ratings**
- Verify efficiency improvements
- Understand the carbon emissions of a building
- Obtain data to support mortgage, sale, and/or lease transactions
- Document performance in energy service contracts
- Communicate energy performance with tenants/customers/general public.

There is growing national interest in benchmarking energy use as a way to spur and measure improvement in buildings. National associations such as the Building Owners and Managers Association, the American Society of Healthcare Engineers, and others are encouraging and in many cases challenging their members to assess the energy use in their buildings as a first important step toward improvement. The BOMA of Seattle-King County was one of the first local Associations to launch a "Kilowatt-Crackdown," to challenge members to measure and improve their energy performance.

To date, organizations of all types have used Portfolio Manager to benchmark the energy performance of over 60,000 buildings and 8 billion of square feet of commercial space across the country (10% of all commercial building space and as much as 25% of

office space). Portfolio Manager provides an objective and standardized way measure and communicate the energy performance of buildings in the US and is rapidly becoming the national standard.

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

To catalyze energy efficiency investments in the City's single-family housing stock, staff recommends that the City adopt a policy to require that single family and small multi-family buildings perform a whole home energy audit and obtain an Energy Performance Score (EPS). The most promising mechanism for this requirement is through real estate transactions at the point of sale.

In order to evaluate the costs and benefits of a home energy audit requirement, staff recommends an 18-month pilot program, beginning in mid-2009. During this pilot period, home energy audits will be voluntary. Staff recommends also that the pilot audits be subsidized to some degree through utility conservation funding in order to achieve greater market demand. The intent of the pilot period is to familiarize the industry to the audit tool, and to document the efficacy of an energy performance rating to drive conservation in the residential sector. The City plans to work with real estate professionals to better understand the challenges of implementing an audit requirement at the point of sale. The specific issues to be analyzed will be how the cost of an audit is apportioned and how the introduction of an audit requirement affects the timing of a real estate transaction.

- **Cost of Audit:** Staff estimates that, at scale, the Energy Performance Score audit product should ultimately cost \$250 per customer and be completed within two hours. During the pilot phase, audits could cost up to \$500 and take four hours to complete.
- **Availability of Audits:** Audits will be marketed:
  - by teams of canvassers staffed by independent contractors
  - to Seattle Climate Action Now Partners
  - through Seattle City Light's conservation website
  - through partnerships with industry associations
- **Auditor Training and Certification:**
  - The existing energy auditor training program at South Seattle Community College should be adapted to incorporate the Energy Performance Score standards.
  - Approved Auditors will be required to complete the training program and receive an EPS-certification, as established by the City of Seattle (national certification standards are under development).
  - The City of Seattle will provide a list of certified auditors to potential customers.
- **Online Database:** Results of the EPS audits will be wirelessly transferred to an electronic database (held by the City).
- **Web Portal:** The City of Seattle will establish a web portal where the results of the EPS audits may be accessed by home energy efficiency contractors and financiers. Individuals are identified by an ID number (so privacy is retained) and region. Contractors wishing to complete the work can log in and bid on packages of improvements as recommended by auditors. Customers can then view these bids online and select from a list of approved contractors. The web portal also includes links to financing options to facilitate easy, one-stop shopping.

Individuals without access to the internet can complete the same process by mail.

- **Financing for Upgrades:** A critical component of a successful audit program is the availability of financing for homeowners who complete an audit to implement recommended upgrades. There are several funding options currently under development which could be shopped to customers who participate in the pilot program. Staff recommends the City continue to work with partners to develop a public-private loan fund with take-out financing (see Financing section, below).

## **Energy Performance Score**

The Energy Performance Score is a whole-home audit and rating tool that is being developed by Earth Advantage, a non-profit based in Oregon. An EPS-audit, 300-home pilot project was completed in January 2009 in the Portland, OR area and the report, due for release in February 2009, will identify best practices for implementation in other jurisdictions.

The Energy Performance Score includes:

- Analysis of home energy performance using state-of-the-art diagnostics, such as a blower door test to measure air leakage
- Comparison of home energy and carbon score to established benchmarks.
- Recommended upgrades to improve your home's score while also reducing energy costs and increasing comfort and safety.

The primary difference between the EPS and existing home energy rating systems (such as HERS in California) is that the EPS allows to other homes of similar size and characteristics, in addition to allowing owners to track the performance of their building over time as compared to code, or other established benchmarks. By providing customers with a "MPG" rating for their homes in addition to a list of available upgrades to increase this score, standards and labels can lead to increased building energy efficiency as well as create the opportunity for market differentiation. See **Appendix F** for a sample energy performance score label and report.

## ***Financing***

Lack of access to adequate financing is considered by many Green Building Task Force members to be the single greatest barrier to increased conservation in the residential sector. To that end, staff has been exploring existing lending products that could be utilized by homeowners for investment in energy efficiency upgrades.

## **Existing Lending Products**

Three primary tools are currently available to homeowners:

- Energy Efficient Mortgage
- FHA 203K Loans
- Home Equity Loans

There are opportunities but also limitations associated with each of these options:

Lending Product	Benefits and Potential Limitations
<b>Energy Efficient Mortgages:</b>	A new ENERGY STAR Loan product is being developed as a pilot through a partnership with the Energy Programs Consortium, though this is not yet ready for a national launch. There is an existing Fannie Mae Energy Efficient Mortgage, but rarely used as few individuals are able to qualify.
<b>FHA 203(k) Loans</b>	Two types of FHA loans are available in the Seattle market offering up to \$35,000 for retrofits. 203(k) products may also be used for refinancing. The maximum loan available is \$417,000, which may limit utility for the Seattle market.
<b>Home Equity Loans</b>	Home equity products are not terribly viable in the current market (there are not a lot of banks who are currently willing to lend this type of credit, and most homeowners have already exhausted the equity in their homes. In addition, studies have shown that energy efficiency tends to be a lower priority than other considerations

**Table 3. Analysis of Existing Lending Products**

To address these limitations, staff has continued to investigate new and innovative financing options that could be made available to individuals involved in a home transaction, as well as those not intending to sell immediately. The concept with the greatest promise is presented graphically in Figure 9 below and combines a private (or public-private) energy efficiency financing pool with “take out” financing to replenish the loan pool, provide additional security to the private investment and make financing available at the scale of the city.

**Energy Efficiency Loan Fund**

Staff recommends that the City continue to explore partnership opportunities to develop one or more public-private loan funds. This energy efficiency loan fund would be a receptacle for all potential sources of loan funds (private equity, public (city, state and federal grant funds or debt), foundation dollars), and would be managed by the private sector – thereby not creating a new lending function at the City (alternatively, a PDA could be created to serve this function). Staff estimates that in order for this fund to respond adequately to the audit pilot project, an initial investment of \$10-20 million will be necessary.

**Take Out Financing**

Staff recommends that the City continue to explore opportunities to utilize bonding authority to replenish the energy efficiency fund as resources are exhausted.

A loan fund can only respond to demand up to the initial level of investment, in addition to opportunity created through repayment. In some cases, efficiency upgrades may warrant 15-20 year repayment plans, limiting the “revolving” capacity of this fund. To be effective:

- Permanent bonding acts as a take-out or replenishment mechanism for intermediary financing through the energy efficiency fund
- Can be backed by the city and/or enhanced by a guaranty fund, limiting the risk to the fund manager and private investors
- Secured by a “super” (or first) lien on the property (further limiting risk to private investment)

- Is comprehensive: covers efficiency upgrades for all fuel sources

There are three potential mechanisms available to the City to enable take out financing, all requiring state legislation:

**Energy Efficiency Local Improvement District:** Would enable the City to establish a city-wide local improvement district for energy efficiency and allow individual property owners to opt-in to participation (and repayment of loan amount as a property tax assessment). The loan fund would act as intermediary financing, collecting loan agreements until the fund reaches capacity, at which time the City would issue local improvements bonds to replenish the fund(s).

**Conservation Utility:** Would enable the City to establish a conservation utility, with the capacity to issue bonds in order to provide financing (in the form of both grants and loans) to individuals for investment in energy efficiency. Debt would be repaid through property tax assessments on individuals participating in the program.

**Climate Benefit District:** Would enable the creation of multiple “climate benefits districts” managed by a city-designated Community Sustainability Agency with access to new revenue tools, including LID assessments to fund energy efficiency (or other programs with a measurable climate benefit).

### Energy Efficiency Fund with Take Out Financing

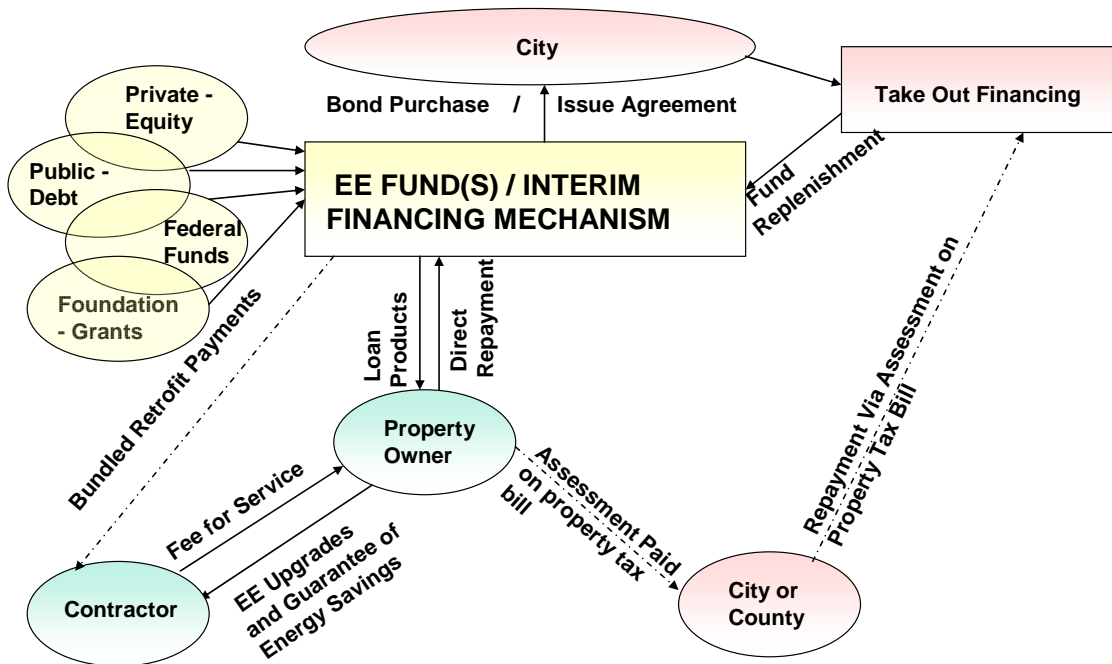


Figure 8. Energy Efficiency Loan Fund with Take Out Financing

## **Recommendations for Further Consideration**

### **Upgrade Requirements for Buildings with High Levels of Energy Use**

Task Force members discussed several special cases during their Committee meetings. Staff will consider upgrade requirements for buildings exhibiting egregiously high levels of energy use. The proposed policy will explore:

- New requirements for upgrades applicable to buildings with the highest energy use, based on data gathered through the disclosure process:
  - Commercial and Institutional buildings scoring below a 30 on the Energy Star rating scale (performing worse than 70% of the nation's average).
  - Multifamily buildings averaging an energy intensity (measured in Btu/ft<sup>2</sup>) 50% more than the average Seattle multi-family property

### **Rate Restructuring**

Staff recommends further analysis of opportunities for using Seattle City Light rate design to incentivize conservation and drive investment in energy efficiency.

In addition to the specific financing options considered by the Committee, members expressed a strong interest in raising and/or restructuring utility rates to set a price signal that encourages energy conservation:

### **Education Campaign**

The proposed policy will develop an aggressive outreach campaign to engage and educate owners of existing buildings in Seattle. There are three primary audiences for the campaign:

- 1) Homeowners;
- 2) Owners of apartment buildings; and
- 3) Commercial building owners.<sup>4</sup>

### **Homeowners (Single-Family Homes and Condominiums)**

Based on 2007 data from the U.S. Census Bureau, Seattle contains about 139,000 single-family houses, of which about 114,000 (82%) are owner-occupied. Of Seattle's 125,000 units in multi-family buildings, about 20,000 (16%) are owner-occupied units in condominiums and cooperatives. Overall, about half of Seattle's housing units are owner-occupied. Table 4 provides more detail and categorizes Seattle's housing units by tenure and type.

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<sup>4</sup> Additional audiences, such as real estate agents, contractors, and inspectors are also addressed as potential pathways for reaching the building owners with ultimate responsibility and decision-making authority.

<b>Housing Tenure</b>	<b>Housing Type</b>		<b>Total</b>
	<b>Single-family</b>	<b>Multi-family</b>	
Owner occupied	114,195	20,101	<b>134,296</b>
Renter occupied	24,939	105,145	<b>130,084</b>
<b>Total</b>	<b>139,134</b>	<b>125,246</b>	<b>264,380</b>

**Table 4. Housing Breakdown, City of Seattle, in Number of Units<sup>5</sup>**  
 (Source: American Community Survey, 2007)

According to a 2004 study of single-family homeowners completed for Seattle Public Utilities, the median age of single-family homeowners in Seattle was about 50.

### ***Leverage Existing Communication Pathways***

The most effective and efficient way to reach single family homeowners is to use existing communication pathways. The proposed policy will:

- **Include information in utility bills and other ongoing communication by utilities with their customers.**
- **Create a dedicated hotline and website** to serve as a central information and customer service center.
- **Insert materials into existing new homeowner packets.** Many real estate agents give homeowner packets to their clients that include coupons for home-related services such as energy audits and rebates. A one-page flyer on energy efficiency policies could be provided to real estate agents to include in these packets, with accompanying rebate information and other incentives.
- **Partner with existing professional trade organizations** to reach out to their members, in particular, the Rental Housing Association (RHA) and the Building Owners and Managers Association (BOMA).

### ***Develop In-Person Outreach Capacity***

- **Engage private energy and remodeling contractors.** While the remodeling industry is well-established, relatively few companies specialize in energy efficiency upgrades. The upcoming energy efficiency policies should therefore help provide economic growth in this sector.
- **Develop a citizen volunteer program.** Citizen volunteer programs such as Master Home Environmentalist, Master Recycler Composters, and Master Gardeners have proven popular and effective at providing customized assistance.

<sup>5</sup> In this table, *single-family* includes both free-standing and attached dwellings that contain a single dwelling unit. Buildings with more than one dwelling unit are counted as *multi-family*.

## Commercial Building Owners

Owners of commercial buildings in Seattle include local owners or ownership companies as well as large, national or international ownership corporations. Reaching these two types of owners may require different outreach methods. Examples of local owners with multiple properties holdings include Clise Properties, Wright Runstad, and the R.C. Hedreen Company. Examples of large national or international corporations with a Seattle commercial property portfolio include CB Richard Ellis, Trammel Crow, and Colliers International, among others. Both local and national owners are considered below.

### Leverage Existing Communication Pathways

As with homeowners and apartment building owners, to reach commercial building owners staff recommends building upon existing means of communicating with this audience, including leveraging existing utility bill communication and creating a dedicated hotline and web site.

### Develop In-Person Outreach Capacity

- **Organize a seminar for commercial building owners and managers with an opportunity for them to pledge to implement solutions.**
- **Conduct a targeted phone campaign with pledging opportunities for building owners and managers.**
- **Leverage existing in-person outreach**, through current utility outreach programs, such as Seattle City Light, Puget Sound Energy, and Seattle Public Utilities' Resource Venture Program.

### Develop a Recognition Program

- **Create a recognition/awards program** through the Seattle Climate Partnership for building owners who demonstrate energy efficiency success at their properties. This recognition could be a new program or could be integrated with existing award programs such as those offered by BOMA (e.g., their Kilowatt Crackdown) the Washington State Department of Ecology, and Better Bricks.
- **Publish and distribute case studies of building owners who demonstrate energy efficiency success at their properties.**

## 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>6</sup> Modest projections forecast an additional 7 million jobs in energy efficiency nationwide

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<sup>6</sup> Renewable Energy and Energy Efficiency: Economic Drivers for the 21<sup>st</sup> Century 2007. American Solar Energy Society.

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>7</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>8</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.

**Staff will complete a detailed analysis of the proposed policies to determine projected job growth and overall economic impact that can be anticipated from this specific set of new policy drivers.**

### ***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>9</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 including “manufacturing the construction materials and devices to make buildings more efficient, as well as construction jobs and high-skill auditing jobs.”<sup>10</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 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

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<sup>7</sup> POISED FOR PROFIT: How Clean Energy Can Power the Next High-Tech Job Surge in the Northwest. Climate Solutions. 2001.

<sup>8</sup> US Metro Economies: Current and Potential Green Jobs in the US Economy. Prepared by Global Insight for the US Conference of Mayors

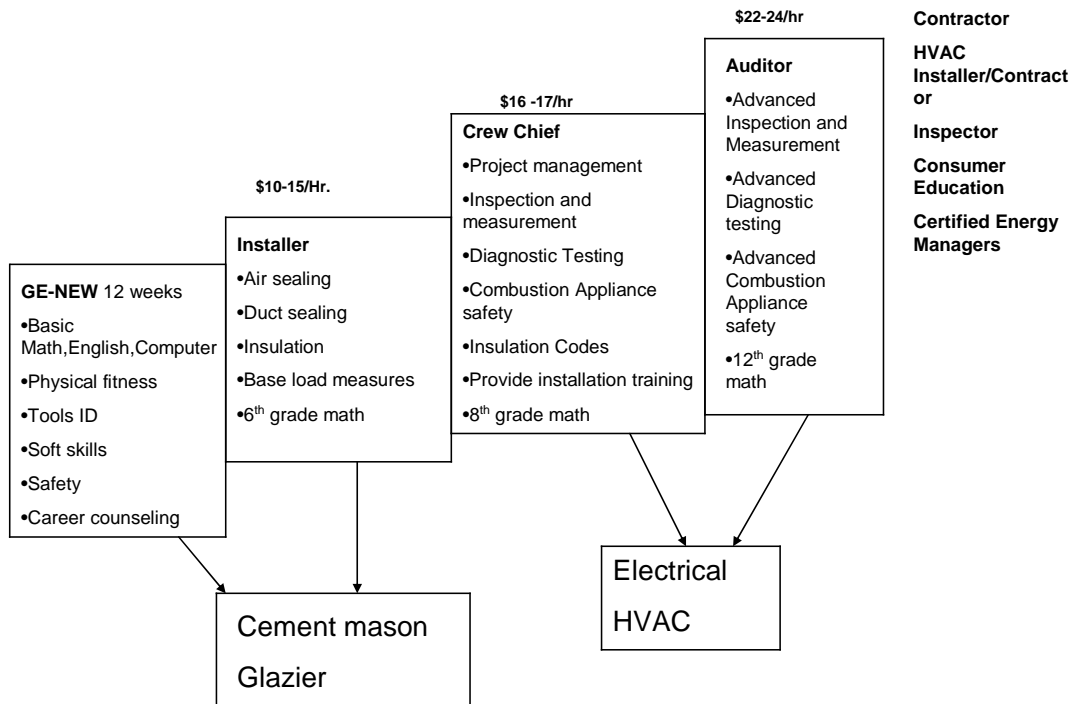
<sup>9</sup> Carbon Free Prosperity 2025: How the Northwest Can Create Green Jobs, Deliver Energy Security, and Thrive in the Global Clean-Tech Marketplace. Climate Solutions and Clean Edge. 2008.

<sup>10</sup> Community Jobs in the Green Economy. Apollo Alliance/Urban Habitat. 2007.

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 act as a conveyor belt to 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. Along this training pathway, students are exposed to, and are offered help in, accessing apprenticeship training available on the same campus (currently there are eight apprenticeship options with varying levels of math and English requirements).



**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. Next steps include:

- **Door-to-door Audit Intake Program:** Staff recommends expanding the existing pilot project to develop an audit “in-take” mechanism, and possibly developing the project into a pre-apprenticeship program. The City of Seattle has taken a leadership role in researching and piloting a residential door-to-door energy auditing program for low income youth. At-risk youth receive training and then provide residential energy auditing services to neighbors in low income communities.
- **Energy Auditor Training:** Staff recommends continued work with South Seattle Community College to expand existing “green” sector training, particularly through a ramp up of the energy auditing training program.

## 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.

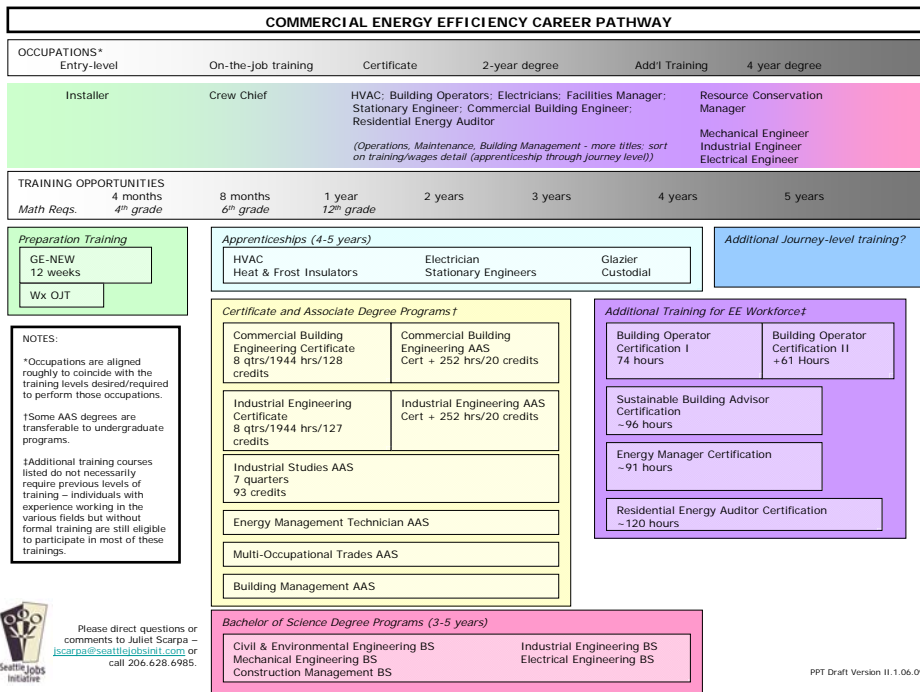


Figure 10. Proposed Commercial Energy Efficiency Training Pathway

Staff recommendations for further developing commercial opportunities include:

- **Planning:** Undertake additional analysis of regional opportunities, including:
  - convening key regional clean energy stakeholders and employers,
  - identifying promising educational and vocational clean energy workforce strategies,

- identifying barriers and needs
- identifying potential solutions/implementation activities to these solve these barriers.
- **Commercial Audit Training:** Expand South Seattle Community College's residential energy auditing program to the commercial sector by investing in curriculum development, identifying apprenticeship connections and providing student support costs.
- **Internship Program:** Develop and implement a residential and commercial energy auditor internship program at South Seattle Community College.

## Public Participation and Next Steps

The Green Building Task Force is a group of 50 local stakeholders from the following constituent groups: Building Owners, Developers, Real Estate professionals, Architects, Engineers, Affordable Housing Advocates, Environmental Advocates, Energy Efficiency Service Providers, Contractors, and Financial Institutions. Staff attempted to engage all relevant stakeholder interests in the Task Force itself. We have also encouraged individuals serving on the Task Force to communicate proceedings back to their organizations, so that we can benefit from their broader input through this process. See **Appendix G** for the complete Task Force roster.

The Green Building Task Force and its Committees met a total of 14 times between July 2008 and January 2009 to provide feedback to staff on proposed policies. This feedback was captured in Meeting Summaries, distributed to the group for approval and posted on the Green Building Task Force website:

<http://seattle.gov/environment/GBtaskforce.htm>.

In addition, staff has received formal comment from a number of stakeholder interest groups, as well as individual task force members. Comments received to date are posted at: <http://seattle.gov/environment/GBTfpublic.asp>. Additional public comment will be accepted at this site, via mail and email, at [GBTf\\_public@seattle.gov](mailto:GBTf_public@seattle.gov): will be accepted until February 6, 2009.