

Reducing Carbon in the Built Environment (Energy Efficiency and Green Building) Implementation Working Group

Note to Members of the Reducing Carbon in the Built Environment (Energy Efficiency and Green Buildings) Implementation Working Group (EE/GB IWG):

Based on the goals set out in the Draft Scope of Work for the EE/GB IWG, this Group has been tasked with designing “legislative, executive, and other actions capable of achieving significant emission reductions in Washington’s built environment, both directly through reduced use of fossil fuel based energy as well as indirectly by reducing the use of GHG-intensive products.” Five options have been identified, based on the results of the first phase of the Climate Advisory Team (CAT) process, as a starting point for the IWG’s deliberations. These are:

- **Targeted Incentives and Instruments to Encourage Green Building Practices and Energy Efficiency Improvements in New and Existing Buildings**
- **Regulatory and Educational Initiatives for Green Building Practices and Energy Efficiency Improvement in New and Existing Buildings**
- **Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil**
- **Lost Opportunity Strategies**
- **Land Use**

Note that the last of these options, Land Use, is recognized to be largely in the purview of other IWGs working in parallel with the EE/GB IWG, so while this IWG will track ongoing work in the legislature and in other IWGs on this issue, the EE/GB IWG will likely not work on it directly.

The remainder of this document provides brief descriptions of the first four options listed above, then provides, for reference by the IWG, summary text from the 2007 work of the Residential, Commercial and Industrial Technical Working Group (RCI TWG) of the CAT process that may be of relevance for each option. The text provided is intended as a starting point for the work of this IWG, and may ultimately be built upon or replaced as the IWG continues its deliberations. The text provided here represents some, but by no means all, of the ideas compiled by the RCI TWG. Likewise, the form in which these options are currently laid out should be considered an interim configuration, to be modified at the IWG sees fit. Text from the Draft EE/GB Scope of Work appears in *italics*; all other text summarizes or is taken directly from the December, 2008 version of the RCI TWG “Summary List of Recommended High Priority Mitigation Options” document (the full RCI document has been provided to the EE/GB IWG separately for reference).

EE/WG-1. Targeted Incentives and Instruments to Encourage Green Building Practices and Energy Efficiency Improvements in New and Existing Buildings

Goals for Option Design

This task will likely involve crafting legislation to create a business energy tax credit, or other targeted financial incentives and instruments to encourage energy efficiency in the development, design, and construction of new and existing energy-using building and building systems. The group should focus on identifying those incentives which are most likely to significantly influence energy efficiency and “green” actions. To the maximum extent possible, work undertaken as part of HB 3120, Incentives for Green Buildings, will be tied to this effort.

Option Summary

[From RCI-2] Targeted financial incentives and instruments, through two primary vehicles 1) business energy tax credits and 2) private/public efficiency funds, can be used as means of encouraging energy efficiency improvements that will affect the development, design, and building of both new and existing energy-using systems in the RCI sectors. This option is designed to offer financial mechanisms to support and encourage energy-efficiency improvements in both entire buildings and in stand-alone energy systems, and in both existing and new construction. As such, it serves as a key means of implementation of programs to improve energy efficiency in new and existing buildings.

Business Energy Tax Credits can provide incentives for businesses to invest in energy efficiency and/or customer-sited renewable energy systems. Washington lacks an income tax, but has business and occupations taxes (B&O taxes), typically on gross receipts, that apply to a number of different categories of businesses, and has a retail sales tax that affects most purchases made by businesses. Business energy tax credit would be applied to these types of taxes. Offering tax incentives for both new construction and retrofit projects to exceed energy codes would be a goal. Specific types of tax credits for energy-efficiency/renewable energy applications in Washington might include:

- **Energy Performance Contracting Sales Tax Exemption:** Provide an exemption from retail sales taxes (~6.5%) for those projects electing energy savings performance contracting services.
- **Superior Energy Efficiency Sales Tax Exemption:** Provide exemption from a portion of sales taxes to projects that produce buildings and other infrastructure (including, for example industrial process equipment) that have superior energy performance. This exemption would be applied both for improvements to new or existing buildings or processes, and could be applied, for example, to sales of qualifying energy efficiency services, construction materials, and high-efficiency equipment.
- **Clean Technology Businesses B&O Credit:** Provide a B&O tax credit for businesses that deliver energy-efficiency-related services.

The overarching intent of these tax credits would be to yield a nearly neutral revenue position for the State while reducing the use of fossil fuels and their climate change impact. Tax credits applied to energy efficiency or renewable energy projects will generate additional government revenues through increased local market activity and job creation, and through re-spending of energy cost savings.

Public/Private Efficiency Funds would provide zero- or low- interest loans for energy efficiency applications in both retrofit and new construction, as well as in non-building projects such as improvements in the efficiency of industrial processes. These loans would be used to fund the remaining portions of energy efficiency projects that are not addressed by utility rebates or business energy tax credits. Zero- or no-interest loans offer project developers and their professional service providers the opportunity to construct substantially more energy efficient projects within their budgets. Loans repayments can be made from of shared savings via energy performance contracting or through other mechanisms; public and private building or other energy-using infrastructure projects may use different repayment models.

Programs of both tax credits (on sales tax and B&O taxes) and efficiency funds/loans will need to be designed carefully to make sure that the proper incentives and signals are being provided to the markets for energy-efficiency goods and services. For example, in some building markets, such as where buildings are built by developers and then sold, sales taxes exemptions, which have a direct impact on the cost of developing buildings, may be more effective than efficiency funds or low-interest loans¹.

Goals and Timing

[To be determined]

Implementation Mechanisms

[From RCI-2] Specific implementation mechanisms for **business tax credits** could include:

- **Energy Performance Contracting Sales Tax Exemption:** Provide an exemption from retail sales taxes (~6.5%) for those projects electing energy savings performance contracting services (RCW 39.35a) carried out on public buildings in the state, including schools, universities, community colleges, and state and local government buildings and energy savings performance contracting services in private buildings meeting the intent of RCW 39.35a. This exemption may also apply to non-building energy-efficiency projects. In a retrofit project the system energy use is clearly defined and therefore the tax credits should apply to the overall project for those projects improving energy efficiency by a minimum of 20% over the existing energy performance of a building or process.

¹ The document, [Tax Credits for Energy Efficiency and Green Buildings: Opportunities for State Action](http://www.aceee.org/pubs/e021full.pdf), by Elizabeth Brown, Patrick Quinlan, Harvey Sachs, and Daniel Williams of the American Council for an Energy Efficient Economy (2002), provides a summary of some of the approaches that can be used to establish incentives for energy efficiency, and the advantages and drawbacks of each. This document is available as <http://www.aceee.org/pubs/e021full.pdf>.

- **Superior Energy Efficiency Sales Tax Exemption:** Sales tax incentives in the form of credits or rebates could be offered to developers for buildings whose performance substantially exceed the energy code (for example, by 20% to 30%). Since even state and local governments, as well as schools and hospitals, pay sales tax on construction costs, such an incentive would have wide application. Sales tax incentives could also be developed to provide incentives for businesses installing industrial process equipment (for which there are no applicable codes) to invest in superior energy-efficient improvements. On new construction in public and private buildings, or improvements in industrial energy-using equipment (for example), tax credits would be targeted at reducing the differential between the project costs for energy code rated systems (systems meeting or only modestly exceeding the level of energy performance required by codes) versus those systems that exceed the collective energy efficiency of the building or process by 20% over that of the energy code in effect at the time, to 1% of the total project construction costs for those projects that exceed the collective energy efficiency by 50% over that of the energy code in effect at the time, and to 2% of the total project construction costs for those projects that are net-zero buildings, meaning that they consume no more energy than they produce. Guidelines and exemptions that provide similar incentives for non-building improvements may be developed along similar lines.
- **Clean Technology Businesses B&O Credit:** To compel job creation and the growth of clean technology businesses, a B&O tax credit will be provided to those businesses that deliver energy efficiency related services, to include professional services, construction services, and highly efficient products. This B&O credit will be applied to those business revenues associated with those projects and systems that also qualify for the retail sales tax credit.

For **public/private efficiency funds**, low or no-interest loans would be used to fund the remaining portion of a project that is not addressed by utility rebates or a business energy tax credit. It is expected that this funding option would cover 30 to 70% of a total project costs. In new construction (or for new process equipment purchases), this fund would only be applicable to the differential between the project costs for energy code-rated systems versus those systems that exceed the collective energy efficiency of the building by 20% over that of the energy code in effect at the time.

The State of Washington Treasurer's program does have both a COP and LOCAL loan program that provides tax-exempt financing to municipal and state entities. And many commercial financial institutions provide a variety of equipment and system tax-exempt and commercial grade lease-back options. Tax exempt interest, even at 4%, over a 10 year loan term reduces the possible energy efficiency project scope by up to 30%. Nearly 50% of the project scope is eliminated if commercial rates of 7.5% are used to finance energy efficiency projects. Therefore, a no-interest loan program would yield significantly more energy-efficiency project scope since public and private organizations that choose to secure outside financing will be able to direct more funds at projects improving energy efficiency versus interest charges.

For public entities, the loan obligation could be guaranteed to be paid out of the annual energy savings through an energy savings performance contracting (ESPC) model. Legislation already exists that enables an ESPC delivery in existing building, and a minor modification to RCW 39.35a would allow for the use of ESPC in new construction projects and systems. There is

precedent for the national and international adoption of the ESPC model. For instance, through the Clinton Climate Initiative Energy Efficiency Building Retrofit Program (C40) an international effort is in motion to leverage ESPC programs with public/private funding to complete \$5 billion in energy efficiency work internationally. For private entities the loan obligation could also be paid out of the annual energy savings through direct owner payment, micro-utility, a public/private resource management association (RMA,) a condominium association, or the energy savings performance contracting (ESPC) model.

There are different potential models for the organizations that would coordinate public/private efficiency funds, including government agencies and not-for-profit independent organizations. As noted above, these fund/loan programs—as well as the tax credit options included here, will need to be carefully designed so as to assure that their effect on the markets for energy-efficient products and services in the sectors that the programs are designed for have the desired impacts on the actors in those sectors and the markets they are designed to spur.

[From RCI-3]

- Create a tax incentive for new energy-efficient commercial and residential buildings, as well as new master-planned communities, using the Oregon incentives as a model. To maximize effectiveness, tax incentives should target cutting-edge, very high-efficiency technologies or practices that customers might not find otherwise. The incentives should be large enough to affect decision-making, while reporting requirements should be just stringent enough to make fraud insignificant.
- Support and provide incentives for programs that recognize embodied energy and operational energy in the building process.
- Provide tax credits for construction of a green building or rehabilitation of an existing structure to green building standards.
- The state could provide incentives that encourage and promote the use of climate friendly products in both commercial and residential buildings and building materials. Promote the utilization of products harvested, manufactured and shipped within Washington State as a means to lessen the greenhouse gas emissions associated with the harvesting of natural resources, product manufacturing and the shipping of products to market.
- Increase and extend the tax credit for PV, biomass and wind that are mandated in SR 5101 to meet the standards of other states.

[From RCI-4]

- Provide state tax incentives for building owners- public and private - to invest in cost effective energy conservation and measures.

Related Policies/Programs in Place

[Summarized from RCI-2]

Washington

In 2005, the Washington legislature enacted the Renewable Energy System Cost Recovery (RCW 82.16.110) and Tax on Manufactures or Wholesalers of Solar Energy Systems.

Other States

A business energy tax credit (BETC) scheme similar to the one being successfully implemented in Oregon (http://www.oregon.gov/ENERGY/CONS/docs/EcoNW_Study.pdf) would serve as a good model for Washington State. In Oregon, the tax credit is 35 percent of the eligible project costs - the incremental cost of the system or equipment that is beyond standard practice. Trade, business or rental property owners who pay taxes for a business site in Oregon are eligible for the tax credit. A project owner also can be an Oregon non-profit organization, tribe or public entity that partners with an Oregon business or resident who has an Oregon tax liability. The tax credit can cover all costs directly related to the project, including equipment cost, engineering and design fees, materials, supplies and installation costs. Tax credits can apply to retrofits, new buildings, co-generation projects, and renewable resource projects.

Models in other states include the Cambridge Energy Alliance in Massachusetts (independent non-profit that will assist residents, businesses and institutions and provides technical expertise, low-interest loans that will be repaid out of documented energy savings), the Clinton Climate Initiative Energy Efficiency Retrofit program, and the Toronto Atmospheric Fund.

GHG Reductions, and Other Direct and Indirect Costs and Benefits of Option

[To be determined—will likely include quantitative and qualitative costs and benefits]

Text for Legislative or Executive Action

[Draft text produced could be included here, or this section could just provide updates on the process of producing text for legislative or executive action.]

EE/WG-2. Regulatory and Educational Initiatives for Green Building Practices and Energy Efficiency Improvement in New and Existing Buildings

Goals for Option Design

This task will involve developing enabling legislation or taking administrative action to promote advances in both the design and operation of buildings through building code and efficiency standard enhancement (for the 2009 revision cycle), point-of-sale (or rental or finance) requirements (for benchmarking, commissioning, performance standards, audits, upgrades, and/or labeling), and/or tools and support for considering life-cycle impacts and improving building operations.

Option Summary

[From RCI-3] Energy used in residential, commercial, and industrial buildings contributed roughly 20% of Washington's GHG emissions in 2005. As such, it is recommended that goals be set to encourage all new construction, both residential and commercial, to meet significantly higher energy efficiency standards in the near future. Efficiency standards should take into account all the energy required in the entire building process, including the amount of energy needed to make building materials along with the performance of the building through its use. This combination of building performance and embodied energy will produce a metric for life-cycle GHG emissions that designers and builders can look to improve upon.

This policy provides incentives and targets to induce the owners and developers of new and existing buildings in each of the RCI sectors to improve the efficiency with which energy and other resources are used in those buildings, along with provisions for raising targets periodically and providing resources to building industry professionals to help achieve the desired building performance. This policy can include elements to encourage the improvement and review of energy use goals over time, and to encourage flexibility in contracting arrangements to encourage integrated energy- and resource efficient design and construction. Several design standards exist that can be drawn upon to promote improved design and community planning, including, but not limited to, LEED², Architecture 2030³, National Association of Home Builders (NAHB) Green Home Building Guidelines⁴, Built Green⁵, Energy Star Homes Northwest and Green Globes⁶. Hereafter, this group of standards and certification systems, and/or new standards and certification systems that may be developed in the future, are collectively referred to as “**third-party-verified green building certification systems**” to denote that a number of

² See, for example, <http://www.usgbc.org>.

³ <http://www.architecture2030.org/home.html>

⁴ <http://www.nahbrc.org/greenguidelines/>

⁵ Built Green is a Washington-based program that includes green building guidelines and certification. Built Green works closely with the National Association of Home Builders on the latter's programs. See, for example, <http://www.builtgreen.net/checklists.html>.

⁶ <http://www.greenglobes.com/fitup/Non-Flash/index.htm>

candidate systems may be applicable to a given policy, but that whatever system is used should provide a consistent, independently adjudicated yardstick of energy efficiency performance. This policy could also include consideration of the concepts of embodied energy and “renewability” of building materials.

[From RCI-4] Existing buildings will continue to consume the bulk of the energy used in the residential and commercial sectors in Washington for many years. This option would promote and provide incentives for the improvement of the resource (including energy, water, and other resources) efficiency of the existing building stock. Key to reducing energy use and GHG emissions in existing buildings are building operations, maintenance, and occupant behavior (for example, via total resource management systems). This option is designed to facilitate substantial improvements in the efficiency of existing buildings in Washington through a combination of measures related to building design, code enforcement, energy performance review, and improvements in building operations.

[From RCI-10] This option is designed to advance policies and programs that result in improved life-cycle benefits of new lighting, equipment, appliances and consumer electronic products, that is, through increasing energy efficiency while also increasing product recycling and reuse and avoiding the generation of solid waste and the production and emissions of toxic materials.

Goals and Timing

[To be determined]

Implementation Mechanisms

[Summarized from RCI-3]

General incentives and promotion:

- Create a tax incentive for new energy-efficient commercial and residential buildings, as well as new master-planned communities, using the Oregon incentives as a model. To maximize effectiveness, tax incentives should target cutting-edge, very high-efficiency technologies or practices that customers might not find otherwise. The incentives should be large enough to affect decision-making, while reporting requirements should be just stringent enough to make fraud insignificant.
- Support and provide incentives for programs that recognize embodied energy and operational energy in the building process.
- Encourage state agencies to utilize appropriate rating systems to promote the construction and design of energy-efficient buildings. Provide incentives for use of these systems statewide for construction in the private sector.
- Provide tax credits for construction of a green building or rehabilitation of an existing structure to green building standards. Increase and extend the tax credit for PV, biomass and wind that are mandated in SR 5101 to meet the standards of other states
- Provide incentives that encourage and promote the use of climate friendly products in both commercial and residential buildings and building materials, including locally-manufactured materials.

- Encourage utilities to develop and offer (or continue to offer) "green power" programs that utility customers can voluntarily subscribe to.

Requirements for State Buildings:

- Adopt Architecture2030 goals⁷, as adopted by the US Conference of Mayors, as the basis for reductions in fossil fuel use and energy efficiency performance for all buildings receiving state funding effective 2008.
- Reinforce existing state law requiring state agencies to applicable rating systems that address greenhouse gas emissions associated with building construction and operation to promote the construction and design of energy-efficient buildings and energy-efficient remodels, require the use of increasingly stringent goals over time, and provide funding to achieve those goals. Tie State of Washington energy performance and fossil fuel use reduction goals for State of Washington buildings to the Architecture2030 goals. This will help to reduce greenhouse gas emissions, serve as a leadership example to the private sector, and promote the state's emerging clean technology industry.
- Require pre-design and programmatic studies for State of Washington-funded buildings and master plans to include resource systems analysis for energy, water, waste, recycling, transportation, and greenhouse gas emissions. Provide funding for that effort.
- Sustainably designed, built, and certified new or major renovation of public buildings should require a focus on sustainable operation in order to demonstrate the importance of sustainable operational practices in new facilities. It is truly how the facilities operate that yields the GHG savings, not only how they are built. The sustainable operation of a new facility should include, yet not be limited to, the ongoing staff training, use of documented best practices for all facility and property management activities, building re-commissioning every other year, and an ongoing measurement and verification process to track all energy usage and assess the expected and actual performance of building energy systems. Adopting third-party-verified green building certification system goals would provide for a standard approach and protocol for this post- construction focus on operations.

Building Code Enhancement:

- To ensure that the state achieves the projected energy savings and greenhouse gas reductions reflected in the CAT Inventory and Forecast, the state should evaluate and monitor energy code enforcement, and should provide funding for training and/or technical assistance for local government officials who are responsible for energy code implementation. In addition, the State Building Code Council should, as part of its regular revision cycle, include the value of carbon in the benefit cost analysis of code changes being considered, utilizing for example, the Northwest Power Planning Council's risk assessment methodology for valuing carbon.

Consideration of life-cycle emissions:

- Consideration of concepts of embodied energy in building materials, and of the "renewability" and ability to recycle building materials⁸

⁷ See http://www.architecture2030.org/2030_challenge/index.html; a footnote in RCI-3 includes a summary of the goals of the program.

- Include embodied energy/carbon footprint/life cycle assessment information for building materials in green building standards. Ultimately, it may be desirable to move to a more unified system for assessment of life-cycle emissions and energy use that is simple and cost-effective for designers, developers and builders to apply.
- Targeting reduction of emissions from diesel engines used in new construction developments.
- Develop and support a business assistance program to help identify and achieve GHG goals and life-cycle cost analysis of buildings and building components.
- Promote measures to reduce urban “heat island” effects through integrated strategies, including green roofs, white roofs, urban forestry, natural drainage systems, and streetscape plantings.
- Promote the state’s local renewable forest products industry as a good choice in producing building products for reducing climate change impacts, relative to fossil fuel-based materials, as well as promoting the minimization of long-distance materials transportation through use of local forest industry products.

For tools and standards:

- Set up a clearinghouse for information on and access to software tools to calculate the impacts of energy efficiency and solar technologies for buildings, including tools for use by local governments in evaluating community design options. Encourage cooperation between local governments on community planning issues, with the ultimate goal of promoting high participation by governments across the region.
- Encourage, through promotions and incentives, private standards for green building and sustainable forest management (such as SFI, CSA, PEFC, FSC), as well as green building product certification for other building materials, such as Greenseal.
- Set a cap on consumption of energy per unit area of floor space for new buildings, and consider mechanisms to discourage the construction of residential dwellings that are larger than needed.⁹

[Summarized from RCI-4]

Promote retro-commissioning and BOC in all facilities of large portfolio organizations:

- Through state legislation, require benchmarking and commissioning whenever buildings are sold, financed or refinanced.
- Task CTED and or DOE to work with utilities and help coordinate and promote utility energy conservation incentive programs aimed at existing facilities; consider legislation

⁸ See, for example, CORRIM (Consortium for Research on Renewable Industrial Materials), Life Cycle Environmental Performance of Renewable Building Materials in the Context of Residential Construction, available from http://www.corrim.org/reports/2005/final_report/index.htm.

⁹ It is recognized that defining “larger than needed” in this context will not be straightforward. The goal of this implementation mechanism is to discourage the construction of single family homes that are very large, but may have relatively few occupants, as such homes can have large total space conditioning, lighting, and other energy use, and energy use per occupant, even if they meet guidelines on energy use per unit floor area.

adding gas utilities to the requirements of I-937 (i.e., if they have more than 25,000 retail customers, they would be required to achieve all cost effective energy conservation within similar timeframes as required by I-937).

- Voluntary lighting upgrades supported by state technical assistance.
- Require, and fund, bi-annual re-commissioning of all state-funded buildings to ensure maximum operational efficiency.
- Provide state tax incentives for building owners- public and private - to invest in cost effective energy conservation and measures.
- Promote availability of existing state and utility incentives for distributed generation.

Requirements for upgrading the energy efficiency of buildings at the time of resale

- Establish minimum energy performance standards, energy rating systems, and/or cap energy budgets at the time of sale.
- Establish (or facilitate by opening up legal pathway) point of sale and point of rental requirements for energy efficiency audits and upgrades, including labeling of the energy efficiency of buildings being rented or sold.
- Provide assistance to non-profit organizations, charities and affordable housing to allow those properties to access energy conservation incentive programs (e.g., utility programs) and to meet the same energy performance standards.
- Secure commitment of state and local government entities to undertake energy efficiency upgrades and operational changes in government-owned and -operated facilities as a first step in moving the market.

[Summarized from RCI-10]

Appliance/Equipment/Lighting Efficiency and Product Environmental Impact Improvements

- Appliance/equipment/lighting efficiency standards can be implemented at the state level for appliances and other devices not covered by federal standards, or where higher-than-federal standard efficiency requirements are appropriate¹⁰. Task CTED with adopting California's efficiency standard for televisions. Require, through state legislation, TV manufacturers/distributors to rate the energy use of TV units sold, and to display rating results at point of sale. Develop and implement minimum efficiency standards for televisions in "active mode"¹¹, digital TV adapters and other consumer electronic goods, working with US DOE or other parties. Task CTED with analyzing the potential to apply efficiency standards to include lighting products, including minimum lumen/watt standards being discussed in California. Task CTED with reporting to the governor and legislature on the level of wholesale and retail compliance with the state's appliance efficiency standards.

¹⁰ In recent years, Arizona, Oregon, and Washington, among other states, adopted state standards for several appliances; this led to the inclusion of standards for these appliances in the 2005 federal Energy bill.

¹¹ See NRDC estimates of potential savings from television improvements (see, for example, <http://www.nrdc.org/air/energy/energyeff/tv.pdf>, and more detailed note in RCI-10).

- Consideration of potential shifts in the use of toxic materials (such as mercury in fluorescent lamps) that could inhibit consumer demand for efficient devices and create costly disposal issues. For example, efficiency standards policies could be linked to manufacturer “takeback” requirements, toxics reduction standards, or incentives for development and use of non-toxic technologies. Require (through state legislation) manufacturers to reduce the levels of toxins in lighting products, such as mercury in fluorescents, consistent with requirements already in place in the European Union. Require (through state legislation) manufacturers to have an effective system in place for collecting and recycling end-of-life bulbs that contain hazardous materials that is easy and convenient for the consumer¹². This can be done by including the cost of collection and recycling in the purchase price of the product and by working with retailers, recyclers, utilities, local governments and others to provide convenient collection opportunities. Manufacturer-designed and -financed systems would ensure the most efficient and effective collection programs. Phase out incandescent lighting and set a date for a ban on them (with appropriate exemptions such as surgeries).
- Consideration of “waste-to-fuel” issues in product and packaging design, with the goal of reducing the life-cycle greenhouse gas (and other) emissions “footprint” of products and their packaging.
- Substantially increase the use of green electronic products and reduce solid waste by promoting EPEAT™ (*The Electronic Product Environmental Assessment Tool—see, for example, <http://www.epeat.net/>*) through a consortium of state, local government and business procurement entities.
- Provide incentives for manufacturers to improvement the energy efficiency of products, the efficiency with which products can be produced, and the degree to which products can be recycled.
- Consider the impact of the standards and requirements included in this option on lower-income groups, and consider ways to mitigate those impacts.
- With state, utility and private sector financial support, invest in research and development initiatives or incentive programs to accelerate the use of LED (light-emitting diode) and other least toxic, highly-efficient lighting technologies in all sectors.
- Require (through state legislation) the preferential procurement of EnergyStar™ products if available (equipment, appliance or technology) if state funds are involved (e.g., state purchasing contracts, state grants or loans, etc.)
- Create state tax incentives to increase sales and use of EnergyStar™ appliances and equipment.
- To achieve economies of scale and market efficiency, many of the most promising mitigation options would be most effective if planned and developed regionally, through, for example, the Western Climate Initiative. That said, however, it is important for Washington and other individual states to press forward with new appliance/equipment/lighting efficiency

¹² For example, transitioning from incandescent lighting to CFLs in the residential sector offers enormous energy savings potential, but the fact that there is no comprehensive and effective system in place for recycling or disposing of old CFLs to avoid mercury contamination creates a barrier to achieving the full potential of CFLs.

standards, and with related standards for the environmental impacts of products, as doing so will accelerate the move toward higher regional and national standards, and will play a key role in educating consumers.

Related Policies/Programs in Place

[Summarized from RCI-3]

- Executive Order 05-01, directs the adoption of green building practices in the construction of new or renovated existing state buildings (>25,000 ft²), as well as mandates a 10% reduction in State Agency energy purchases from 2003 levels by September 1, 2009 and LEED silver standards for WA public buildings.
- High-Performance Public Buildings bill (Chapter 39.35D RCW), requires all new state-funded facilities over 5,000 sq. ft. to meet green building standards.. The Department of Community, Trade, and Economic Development is required to adopt sustainable building standards by July 1, 2008. The legislature prioritized the use of locally extracted and manufactured products in all state building projects.
- Several local governments offer LEED Incentive Programs. There are several tax incentives available in Washington State for solar and renewable energy products, which can be incorporated into green buildings.
- CTED's Smart Growth Strategy for the 21st Century (<http://smartgrowth.wa.gov>)
- July 2007 Snohomish County Executive Order to reduce the County's greenhouse gas emissions to 20% below 2000 levels by 2020.
- Several individual communities are now working to calculate their own GHG emissions using a variety of currently available software packages.

[Summarized from RCI-4]

- Many of the state's utilities (notably, Puget Sound Energy, Seattle City Light, Avista and SnoPUD) offer financial incentives to pay part of the cost of retrofitting commercial, institutional and residential buildings to make them more energy efficient.
- Initiative 937 requires electric utilities (who have more than 25,000 retail customers) to acquire all cost effective energy conservation. Much of that conservation will come from retrofits in existing homes and facilities.
- Many local governments such as Seattle and King County require their new and remodeled facilities to be at least Silver LEED.
- Generally, renovated commercial and residential buildings must meet applicable sections of the energy code if the renovation work involves a relevant section of the code (e.g., if there is a building addition, walls and windows must meet code.)

The state's Housing Trust program will be implementing its Evergreen Sustainable Building Standard in 2008.

Several local governments in the U.S. have established residential energy conservation ordinances that institute minimum energy efficiency time of sale requirements for residential properties.^{13 14}

[Summarized from RCI-10]

- In 2005 the Washington Legislature adopted minimum efficiency standards for 12 products (RCW 19.260.040). State standards for four of these products were eliminated in 2006 legislation after stricter federal standards were established for those products. 2006 legislation established minimum efficiency standards for 8 types of commercial appliances, heating/cooling and lighting equipment sold within the State.
- CTED is authorized by statute to update and recommend standards not covered by federal standards under the following conditions: if the alternative products are being produced, are cost effective, have equal or improved utility, and if the standards already exist in at least two states.
- **Electronic Product Recycling Program:** The Washington State Legislature passed legislation in 2006 requiring the manufacturers of televisions, computers, laptops and monitors to establish and finance a system throughout the state for the collection and recycling of those products by January 1, 2009.
- **Washington State Environmentally Preferable Purchasing Policies:** The State of Washington has a broad legislative and policy mandate for environmentally preferable purchasing activities by state agencies, including Executive Order 02-03, Sustainable Practices by State Agencies, Executive Order 05-01, Establishing Sustainability and Efficiency Goals for State Operations, Executive Order 04-01, Persistent Toxic Chemicals, RCW 43.19, the General Administration's enabling legislation, provides a broad legislative basis for state purchases of recycled content and energy saving products. It also provides the flexibility to allow GA to award state contracts based on environmental considerations. RCW 43.19A includes goals requirements to increase the purchase and use of recycled content products. RCW 43.19.530A requires a chain of custody record that documents to whom the products were initially delivered through to the end use manufacturer, Chapter 70.95M RCW The Mercury Education Reduction Act (MERA), mandates priority and preference to the purchase of equipment, supplies, and other products that contain no mercury-added compounds or components.

GHG Reductions, and Other Direct and Indirect Costs and Benefits of Option

[To be determined—will likely include quantitative and qualitative costs and benefits]

¹³ A tabular summary of several Residential Energy Conservation (and similar) ordinances is available as http://ci.boulder.co.us/files/appendix_a_reco_programs.pdf.

¹⁴ Savings in the Berkeley program are as reported by the C40 Large Cities Climate Summit in “Berkeley's Building Standards Mandate Increases Efficiency and Pays Back Householders in Two Years” (http://www.nycclimatesummit.com/casestudies/building/bldg_berkeley.html) A summary of the specifications of the Berkeley program is available at <http://www.ci.berkeley.ca.us/sustainable/residents/resSidebar/reco.html>.

Text for Legislative or Executive Action

[Draft text produced could be included here, or this section could just provide updates on the process of producing text for legislative or executive action.]

EE/WG-3. Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil

Goals for Option Design

This task involves developing an initiative to address the non-electric side of the energy efficiency savings, and could, for instance, involve drafting legislation that adapts successful policies in electric energy efficiency to non-electric fuels.

Option Summary

[From RCI-1]

This policy is designed to use a number of different funding and incentive mechanisms to increase the investment in natural gas, propane (or liquefied petroleum gas—LPG), and fuel oil demand-side management programs. These DSM activities shall be designed to work in tandem with other strategies recommended by the CAT that also encourage energy efficiency gains in the residential, commercial and industrial sectors.

In order to implement DSM programs for natural gas and LPG/fuel-oil consumers, a number of funding and incentive mechanisms could be considered, analogs of many of which are in place for electric-sector DSM programs (including the recently enacted I-937¹⁵), while other mechanisms are being considered by the CAT for this and other policy options.¹⁶ Candidate mechanisms for increasing the efficiency with which these fuels are used in the Residential, Commercial, and Industrial sectors include revising existing statutes to enable investments in energy efficiency, potentially including not only investments that are now cost-effective on the basis of fuel costs alone, but also eligible programs that are cost-effective when the value of avoided GHG emissions are considered.

Goals and Timing

[To be determined]

Implementation Mechanisms

[Summarized from RCI-1]

¹⁵ Initiative 937, “The Energy Independence Act”, “... requires large utilities to obtain fifteen percent of their electricity from new renewable resources such as solar and wind by 2020 and undertake cost-effective energy conservation.” Text of the initiative can be found at <http://www.secstate.wa.gov/elections/initiatives/text/i937.pdf>.

¹⁶ This option does not explicitly address electricity, since it is addressed through I-937. Nonetheless, many of the suggestions below and in subsequent RCI options on policy and program implementation mechanisms, including mechanisms for financing of energy efficiency improvements, also apply to programs that save electricity, and can help to ensure the goals of I-937 are met.

- I-937-like requirements for gas utilities to acquire all cost-effective energy efficiency; Initiative 937 requires that “Each qualifying [electric] utility shall pursue all available conservation that is cost-effective, reliable, and feasible.”
- For propane and fuel oil consumers, which are served largely by local distributors (and thus are part of a fundamentally different market than gas consumers) a surcharge and/or incentive fund could be established to fund DSM activities.
- Requirements, surcharges and/or funds to provide incentives for natural gas customers not purchasing gas from utilities (including large-volume industrial customers, for example) to also acquire all cost-effective energy efficiency.
- A program such as Oregon’s Business Energy Tax Credits system could be a useful tool to make more efficient use of natural gas, propane, and fuel oil.
- A program of low-cost loans for efficiency improvements and to encourage performance contracting, as well as other financial options such as reinvestment funds should be considered to support energy efficiency investments.
- Programs and incentives for natural gas and LPG/fuel oil efficiency improvement should be available and provide significant opportunities for efficiency improvement in all customer classes, with special emphasis on, for example, low-income customers.

Additional potential implementation mechanisms and considerations for this option include the following:

Considerations in Program Design

- Analysis of DSM potential should be prepared to assist in directing the legislative and regulatory processes to set targets and fund programs.
- High-volume transportation gas customers (those directly served by pipeline, rather than by utilities) should be required and provided with incentives to install efficiency measures.
- Implementation/administration of efficiency programs may be carried out, as appropriate, by utility (including municipal utilities and cooperatives), state agency, or third-party actors.
- Energy end-use surveys should be used to help determine efficiency potential and target DSM activities.

Program Options

- Subsidized energy audits for homeowners, businesses, and industries; consumer education; focus on specific market segments that are often under-served by DSM programs (low income residential, small and medium businesses); energy efficiency reinvestment funds to provide capital for efficiency improvements in specific sectors; incentives for specific technologies; incentives for customer-sited renewable electricity and heat including solar photovoltaic (PV), passive solar space heat, and solar water heat (SWH); incentives to convert fossil fuel based heating systems to biomass based heating systems, while also increasing the overall system efficiency.

Related Policies/Programs in Place

[Summarized from RCI-1]

Integrated Resource Planning

In 2006, the Washington Legislature passed the Electric Utility Planning Act (ESHB 1010), requiring each consumer-owned or investor-owned electric utility, with more than 25,000 customers, to develop or update an integrated resource plan by September 2008.

The Northwest Power and Conservation Council (NPCC) 5th Plan calls for reduction of 2,800 MW in electricity consumption through conservation in the next 20 years (through 2025) in the Northwest.

GHG Reductions, and Other Direct and Indirect Costs and Benefits of Option

[To be determined—will likely include quantitative and qualitative costs and benefits]

Text for Legislative or Executive Action

[Draft text produced could be included here, or this section could just provide updates on the process of producing text for legislative or executive action.]

EE/WG-4. Lost Opportunity Strategies

Goals for Option Design

The IWG would investigate whether there are other strategies not covered above, if not put into place soon, could “lock-in” higher emitting infrastructure, and thus could significantly reduce opportunities for, or increase the costs of large GHG reductions in the future. This might include such areas as policies/incentive for combined heat and power (CHP), or “green” education, training, and certification.

Option Summary

[Note that the text provided below covers some of the areas explicitly mentioned in the goals above, but that this option is very much open to addition of other mechanisms that would address key opportunities for GHG emissions reduction that would otherwise be lost.]

[From RCI-8].

The ultimate effectiveness of emissions reduction activities in many cases depends on providing information and education to consumers regarding the energy and GHG emissions implications of consumer choices. Public education and outreach is vital to fostering a broad awareness of climate change issues and effects (including co-benefits, such as clean air and public health) among the state’s citizens. Such awareness is necessary to engage citizens in actions to reduce GHG emissions in their personal and professional lives. Public education and outreach efforts should integrate with and build upon existing outreach efforts involving climate change and related issues in the state. Public education and outreach will be the foundation for the long-term success of all of the mitigation actions proposed by the Washington CAT, as well as those that may evolve in the future. Education and certification programs for professionals involved in delivering services in support of this option and other policy options considered by the CAT must also be developed and implemented.

This option would additionally include elements to estimate the embodied life cycle energy use and carbon emissions associated with products and buildings, to label products and buildings being sold so as to provide feedback to consumers on their “carbon footprint”, and to encourage the use of lower-carbon products and building materials.

[From ES-7]

Combined heat and power (CHP) and thermal energy recovery and distribution can reduce GHG emissions by increasing the overall efficiency of fuel use, by reducing energy losses (where facilities are located near heat and power demands). These emissions benefits can be particularly significant where CHP and thermal facilities utilize low GHG fuels and feedstocks (e.g. biomass resources such as organic pulping byproducts). There are opportunities to recover thermal energy from CHP, industrial or municipal waste heat or renewable energy sources. District energy systems provide a key infrastructure for conveying this “recycled” energy from the sources to

energy consumers. Policies can be adopted to encourage cost-effective CHP and waste heat recovery (“recycling”) by ensuring that the full cost of the alternative central-station generation technology generation is compared to the cost of generating electricity at a CHP site (with the cost of heat sales to the thermal energy consumer covering any additional capital and operating expenses of the CHP project).

Goals and Timing

[To be determined]

Implementation Mechanisms

[Summarized from RCI-3 and RCI-4]

Education and training:

- Provide training and certification of building professionals in green building-related specialties. Provide suitably trained building professionals with “green building” certification so that potential purchasers and developers of green buildings can be assured that builders and designers so designated are equipped to produce green buildings. A preliminary step here would be to adapt, adopt, and/or develop a suitable set of qualifications that building professionals must meet to receive third-party-verified green building certification.
- Fund and require green building, green communities, energy efficiency, and carbon emissions reduction education as an addition to the state’s existing K-12 environmental education requirements and in higher education curricula.
- Provide consumer and education related to green building and green communities.
- Provide consumers with real-time information on their energy consumption: provide incentives for in-home. Couple with information on products/services available for investment
- Develop outreach and education programs aimed at traditionally underserved populations who are energy users, i.e., public housing authorities, charities, non profit organizations, etc.
- Conduct a state-wide campaign aimed at encouraging behavioral changes. Models in California (e.g. Flex Your Power) have had significant success at reducing statewide residential energy demand.
- Increase private sector education to promote high performance green buildings.
- Provide incentives for building operator certification.

[Summarized from RCI-8]

- A consumer education requirement at the time of sale for key products.

- Labeling of building materials in reference to CORRIM study¹⁷ and LCA¹⁸ work.
- Providing tools and information for residents, businesses and communities to perform GHG inventories, and to evaluate and act upon inventory results.
- Expanding climate involvement and participation within communities.
- Developing programs to have state agencies/local governments promote improvements within small business sectors and trade associations by using existing models for business education of environmental impacts.
- Convene an advisory panel to help in developing carbon labeling standards and protocols

[Summarized from ES-7]

Incentives to encourage, new CHP facilities, as well to expand and/or repower existing facilities. No significant CHP system has been built in Washington in the last 15 years, in part due to the costs of CHP systems being higher than current avoided costs. In order to provide incentives to reduce GHG emissions through CHP, the state should specifically consider establishing CHP tax credits under existing B&O tax system or form other sources to provide investment incentives. These incentives should be equally accessible to public as well as private power suppliers. Oregon's Business Energy Tax Credit (BETC) program provides a useful example for the State to consider.

Other potential financial incentives to implement CHP programs include tax credits can be sold to third parties, enabling public utilities to take advantage of the program as well; siting Incentive Programs; low-cost bonding or loan guarantee programs; tax credits for investment in CHP; amended procedures for streamlined permitting of CHP and thermal energy recovery facilities, without compromising other environmental goals.

Financial incentives to implement district energy thermal distribution infrastructure, waste heat recovery and renewable thermal energy systems through a variety of programs including: property owner incentives to join waste heat based district heating systems; low-cost bonding or loan guarantee programs; tax credits for investment in thermal energy projects, and/or for production of recycled energy; incentives for buildings to connect to district energy systems established to use or convert to renewable energy or recover waste energy; incentives to upgrade existing steam district energy systems to hot water district energy distribution to enhance system performance and improve efficiencies; and Encouragement of public/private partnerships for thermal energy transmission and distribution infrastructure installation.

Pro-active information/education/outreach communications are needed to address the importance of removing barriers to optimizing existing and CHP generation and district energy development. We need to overcome real or perceived barriers about such important issues as avoided cost barriers, regulatory barriers, lack of integrated community energy planning, and lack of financial sector misunderstanding of these systems.

¹⁷ http://www.corrim.org/reports/2006/fpj_oct_2006/FPJproductSubs.pdf

¹⁸ <http://www.epa.gov/ORD/NRMRL/lcaccess/>

Related Policies/Programs in Place

[Summarized from RCI-3]

Ecology's Solid Waste and Financial Assistance Program is actively involved in promoting Green Building (GB) by training architects, builders, and lenders on Green Building and working with governments, communities, schools, commercial and residential sectors on GB initiatives. Some of the activities include:

- Working with some counties to adopt GB in Solid Waste Plans.
- Maintaining the Website developed at Ecology.

[From RCI-8]

Carbon Labeling

The UK is implementing a program of carbon labeling through the UK Climate Trust. The methodology for determining the carbon footprint of each product can be found here: http://www.carbontrust.co.uk/NR/rdonlyres/6DEA1490-254B-434F-B2B2-21D93F0B0C98/0/Methodology_summary.pdf. The development of carbon labeling programs for various products is also underway in Oregon and Connecticut, including labeling programs for automobiles.

[From ES-7]

- PURPA, 1978, [Existing] B & O Taxes, Business Energy Tax Credits (BETC) in Oregon.
- The Washington UTC has an interconnection standards process underway with provisions for comments
- Senate Bill 6001 includes language (Section 5 (6)) to recognize the output of cogeneration, which could be modified for other policy design elements.
- Senate Bill 6631 – Thermal Energy Companies – Exemption from Utilities and Transportation Commission Authority.
- House Bill 114 – Regulation of District Heating Systems and Services

GHG Reductions, and Other Direct and Indirect Costs and Benefits of Option

[To be determined—will likely include quantitative and qualitative costs and benefits]

Text for Legislative or Executive Action

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