

Energy Efficiency and Green Building Implementation Working Group (EE/GB IWG)

Summary of Proposed Actions

EE/GB Action 1: Energy Efficiency Incentives

This proposed action recommends legislation designed to use incentive-based approaches to motivate and accelerate the design, construction, and annual operation of buildings to levels of superior energy performance (Action 1A), and to encourage the incorporation of combined heat and power, distributed electricity generation, and other distributed and district energy systems, including district heating and cooling (Action 1B). Proposed legislation would reward actual demonstrated energy performance with tax credits.

EE/GB Action 1A: Energy Efficiency Quality Investment Program (EEQUIP)

Proposed legislative concepts include the following:

1. Public Utility Tax credit for non residential buildings that meet specific levels of energy performance based on actual utility data.
2. An energy benchmark public disclosure requirement for non residential buildings at time of sale or, in some circumstances, at time of lease.
3. Partial sales tax refund for new non-residential buildings that achieve a specified level of energy performance based on an accepted third-party energy performance rating system.
4. Partial sales tax refund for new and existing residential buildings that meet a specified level of energy performance
5. A modification of statutory language related to Local Improvement Districts (LID) that adds energy efficiency as a qualifying activity.

EE/GB Action 1B: Expanded Implementation of Distributed Energy, Combined Heat & Power (CHP) and Renewable Energy

Offer incentives to encourage the development and use of CHP and other distributed energy systems, in concert with CTED's proposed bioenergy tax, utilizing options potentially including B&O (business and operations) Tax credits, Public Utility Tax credits for buildings and industries that use CHP/distributed energy systems, sales tax exemptions on machinery and equipment used in CHP/distributed energy systems, and/or property tax exemptions.

EE/GB Action 2: Energy Efficiency in Existing, New and Renovated Public Buildings

Legislative action is proposed to substantially upgrade the energy efficiency and sustainability of publicly-constructed and -operated buildings, including both new and existing buildings. Key elements of the proposed legislation, which has slightly different provisions for State agencies, colleges, universities and school districts and for cities, counties, and other taxing authorities, would include:

1. Require a process of benchmarking, auditing, and implementation of energy-efficiency measures in existing publicly-constructed and –operated buildings, with energy-efficiency requirements becoming more stringent over time in a tier/phased approach.
2. Require that new and substantially renovated publicly-constructed and –operated buildings meet strict energy performance standards, again with energy-efficiency requirements becoming more stringent over time in a tier/phased approach.
3. Emphasize education and promotion as critical components of the program will need to be critical components to the success of the program.
4. Implementation will emphasize the use of existing programs and funding in state and local governments.
5. Partnering with US EPA’s ENERGY STAR program is a critical element and has been initiated.

EE/GB Action 3: 2009 State Energy Code Improvements and the Establishment of the Washington State Continuous Energy Efficiency Improvement Program for Buildings

This Action includes two major elements:

1. In the 2009 Washington State Building Code adoption cycle, revise the Washington State Energy Code (WSEC) to achieve a 30 percent reduction in new building energy use compared to the 2006 edition of the WSEC. Provide substantial efficiency advances in the code as it applies to remodeling, retrofit and equipment replacement. Specify a process of periodic review and improvement of building energy codes. Consider the impacts of codes on the availability of incentives through utility demand-side management programs, and provide education and technical assistance in the implementation of updated codes.
2. Undertake legislative action is recommended to establish a **Continuous Energy Efficiency Improvement Program for Buildings**, including establishing targets for building energy efficiency and carbon reductions in both new and existing buildings for the years 2010-2030; direction to develop and adopt future editions of the WSEC to meet the targets for new buildings and help meet the targets for existing buildings through improvements as they are remodeled; addition of 5 appliance categories to 19.260 RCW (HB 1062 - 2005-06) and direction to the Department of Community Trade and Economic Development to participate in the federal appliance rule making process; provision of tax incentive for buildings and building/community integrated power systems (as in Action 1), and establishment of funding in support of university and community college public/private partnerships and building industry activities involved in building efficiency research, demonstration and education programs designed to support the achievement of the building energy performance targets. For new buildings, target development will follow a schedule similar to the schedule developed the Architecture 2030 Challenge, using current code levels as the starting point. Existing buildings will be improved over time to achieve a 50 percent reduction in energy use intensity for the sector.

Full 2009 Action Descriptions

EE/GB Action 1: Energy Efficiency Incentives

EE/GB Action 1A: Energy Efficiency Quality Investment Program (EEQUIP)

2009 Action Description:

The derived public benefit from investments in superior energy efficiency in Washington is a superior quality-built environment for those using and operating buildings, as well a strategic attraction for additional investments in our economy. To this end, development assistance to provide incentives for quality improvements in building energy efficiency, by definition, must also ensure quality improvements in operations, performance, measurement, and the craftsmanship and training that go into quality buildings. In addition to alignment with the goals of Executive Order 07-02 and subsequent statutes, this rationale works to better ensure the transparency, accountability, and success of the program, from the perspective of the direct beneficiary as well as the public at-large.

This action recommends the following;

1. Public Utility Tax credit for non residential buildings that meet a specific level of energy performance based on actual utility data.
2. An energy benchmark public disclosure requirement for non residential buildings at time of sale or, in some circumstances, at time of lease.
3. Partial sales tax refund for new non-residential buildings that achieve LEED NC Gold rating using at least 4 EAc1 points.
4. Partial sales tax refund for new and existing residential buildings that meet a specified level of energy performance
5. A modification of statutory language related to Local Improvement Districts (LID) that adds energy efficiency as a qualifying activity.

PUT Credit and Benchmarking Requirement for Existing Commercial and Multifamily Residential Buildings

Legislative action is recommended in 2009 to establish a tax incentive for buildings (non-residential occupancies) that meet or exceed a defined level of energy performance as determined by the ENERGY STAR Portfolio Manager program (or a comparable verified third-party or independent system of standardized accounting and benchmarking as determined by the Community, Trade, and Economic Development Department). The Department will develop a program that provides the tax credit that initially (e.g. 2009-2010 biennium) provides incentives for buildings that meet or exceed a Portfolio Manager score of 75 or demonstrate an annual improvement of energy performance of at least 15% (regardless of baseline year Portfolio Manager score). Buildings that continue to meet or exceed the Portfolio Manager threshold

score may claim the tax credit annually. Buildings that meet the 20% improvement target may claim the credit only one time. Thereafter, those buildings must meet the Portfolio Manager threshold score to claim the credit in other years

There are three mechanisms for qualification for the PUT credit. All three mechanisms begin with establishing a baseline score using the previous calendar year of energy use data).

1. If the score is 90 or above and that score is maintained or improved in the subsequent calendar year, the PUT credit for year 2 (year after baseline) is available for refund. The PUT refund is available for subsequent years if the score is maintained at 90 or above.

2. For buildings whose baseline year score is between 75 and 89, those buildings must demonstrate 5 points of improvement in year 2 to qualify for a PUT tax refund for year 2 (Note any building that exceeds a score of 90 in the second year will qualify for the process described above). If the 2nd year Portfolio Manager score is maintained or improved in subsequent years, the PUT refund will continue to be available.

3. For buildings whose baseline year score is below 75, those buildings must achieve a minimum score of 75 in any subsequent year to qualify for a PUT refund. If a score of 75 or above is maintained, the PUT refund will continue to be available.

After 3 years, the baseline score in mechanism #2 moves to a range of 80 to 89. All other features remain the same for the subsequent 3 years.

After 3 years, the baseline score for mechanism #3 moves to 80.

After 6 years, the baseline score for all buildings to qualify for a PUT credit will be 90. A score of 90 or above must be maintained in subsequent years to continue to receive the PUT credit.

The tax credit described here should be applied to the Public Utility Tax (PUT). The PUT is assessed to electric and natural gas utilities and passed through to energy end use customers. The Department will establish a mechanism in consultation with the state's public and private utilities and in collaboration with the Department of Revenue to minimize the transactional cost of applying this credit to qualifying buildings. Buildings that meet the level of superior energy performance as described here will receive a full credit of the PUT.

Revenue effects: It is estimated that up to 28 million square feet of commercial property will qualify for a PUT refund in the second year of the 2009-2010 biennium (given the need for a baseline year, there will be no credits in 2009). The anticipated PUT refund with this level of participation is approximately \$1,500,000.

Disclosure Requirement for Energy Performance of Non Residential Buildings

Legislation is recommended in 2009 which requires non residential building owners to develop an energy benchmark score using the ENERGY STAR Portfolio Manager tool or an alternative equivalent benchmark process as determined by CTED. Building owners would be required to disclose this benchmark information at point of sale to prospective buyers. This benchmark score would also be disclosed to potential lessees when an entire building is being offered for lease to that prospective tenant.

To facilitate the transition to this disclosure requirement, it is further recommended that the benchmark requirement be phased in over time. Buildings 100,000 square feet or more would comply by January 2010. All buildings over 50,000 square feet would comply after January 2011. Buildings that are 20,000 square feet and larger would comply after January 2012. Buildings under 20,000 square feet would be exempt from this requirement.

In addition, electric utilities in the state with 25,000 customers or more and all natural gas utilities would be required to provide their billing data in a form compatible with automatic download to Portfolio Manager. ENERGY STAR already offers this automatic download feature to utilities in its tool and qualifying Washington utilities would provide this feature to customers by January 2010. Specific requirements should be patterned after California's AB 1103 legislation. Additionally, data formats should also be compatible with existing benchmarking efforts by institutions and commercial businesses.

Revenue effects: No substantial state revenue effects are anticipated by this action.

Sales Tax Refund for Non Residential New Construction

Legislative action is recommended in 2009 to establish a sales tax incentive for buildings (non-residential occupancies) that meet or exceed LEED-NC Gold standards achieving a minimum of 4 Energy & Atmosphere (EA_{c1}) credits. All projects that meet this rating will be eligible for a sales tax refund of 0.75% of the project's documented cost of construction. The Department will establish rules for documenting qualification under the LEED-NC rating system and for verification of qualifying cost of construction. Project owners will receive the incentive in the form of a sales tax refund.

Revenue effect: In the 2009-2010 biennium, \$500,000,000 of construction costs are estimated to qualify for the refund. This would translate to a tax refund of \$3,750,000. It is estimated that very few projects would be completed in 2009, so the majority of this tax refund would occur in 2010.

Sales Tax Refund for Existing and New Residential Buildings

Legislation is recommended in 2009 to establish a partial sales tax refund for qualifying costs incurred by residential property owners for energy efficient new construction remodels and/or retrofits if as a result of that work the property reaches an established threshold of superior energy performance. As there are numerous rating systems to demarcate superior residential energy performance, CTED will determine a minimum threshold of energy performance required to qualify for this sales tax refund and subsequently certify any rating system that demonstrates to CTED's satisfaction that it meets that requirement.

The sales tax for these projects would be paid pursuant to RCW 82.08.020. If the project met the threshold requirement – or tiered requirements if so determined by CTED – the property owner would be eligible to claim a partial refund for sales tax paid on the project.

Revenue effect: The revenue effect on the state is estimated to be \$5 - \$10 million per year.

Amendment to Local Improvement District Statute

Legislative action is recommended in 2009 to amend the statute governing Local Improvement Districts (LID) to add energy efficiency and distributed energy projects to those qualifying for local improvement district financing.

Revenue effect: This concept would have no revenue impact at the state level. However, local governments would need to assign a fee for the loan transaction to cover the administrative cost of a LID program.

Basis for Selection:

These legislative concepts are designed to use an incentive-based approach to motivate and accelerate the design, construction, and annual operation of buildings to levels of superior energy performance. They are designed to work with familiar and accessible programs of merit (e.g. LEED, ENERGY STAR, Built Green or other verifiable third-party or independent certifications) that have gained acceptance by the commercial and residential buildings market. The reward through tax credits for actual demonstrated energy performance is innovative and critically important to achieving the state's overall greenhouse gas reduction and quality job creation goals, outlined in Executive Order 07-02.

Implementation Approach and Mechanisms:

These tax credit proposals have a revenue impact on the state's general fund. However, the ideas can be scaled to both near term and long term budget realities. It is recommended that the complexities of tax credit program mechanics be left to a rule making process conducted by the Department.

Supporting Information:

- Analysis of estimated greenhouse gas emissions reduction and net costs for this Action will begin shortly.
- Other supporting information will be added as appropriate.

EE/GB Action 1B: Expanded Implementation of Distributed Energy, Combined Heat & Power (CHP) and Renewable Energy

2009 Action Description:

Background:

Combined heat and power systems produce both heat—in the form of hot water, steam, or heated air—and power. The heat can be used for industrial or commercial processes, or to provide water heating and/or space heating in individual buildings or throughout multi-building campuses or districts. Using technologies such as absorption chillers, the heat from CHP systems can also be used for cooling/freezing applications, including applications such as air conditioning and in the food processing industry. Waste heat that often goes up the smoke stack can also be used on the “back end” of industrial processes (following its use in the process) to produce power and recover the waste heat.

The sizing of CHP systems can be based on: 1) following the thermal demand for a facility; 2) following the power demand for a facility; or 3) following both thermal and power demands, when seasonal variations occur; and 4) meeting power needs demanding high reliability. Prime CHP opportunities include forest products/pulp and paper mills, food processing with year-round operations, dairies, feedlots, wastewater treatment facilities, campus settings with district heating of multiple buildings, industrial process facilities with available waste heat, natural gas compressor stations, and facilities with high power reliability, heating and hot water, and cooling requirements such as hospitals and data centers. Cogeneration is an older term for CHP. For additional information see the Northwest CHP Application Center website at <http://www.chpcenternw.org/>.

Incentives for Development of Combined Heat and Power/Distributed Energy Systems

It is proposed to offer incentives to encourage the development and use of CHP and other distributed energy systems, including district heat in the following ways:

- Offer tax incentives in concert with CTED’s proposed bioenergy tax, with tax incentive options potentially including B&O (business and operations) Tax credits, Public Utility Tax credits for buildings and industries that use CHP/distributed energy systems, sales tax exemptions on machinery and equipment used in CHP/distributed energy systems, and/or property tax exemptions. In some cases, it may be possible to integrate these incentives with the building energy efficiency incentive programs described in Action 1A, above.
- Adoption of output-based emissions regulations.
- Requiring CTED and the UTC to assess the regulatory barriers to CHP and recommend enabling changes (see “Potential Barriers to Implementation” comments, below)

Eligibility of CHP/Distributed Energy Systems

Eligible CHP projects: Combined heat and power systems that meet minimum efficiency standards should be eligible. Combined heat and power systems shall be designed to have a

projected overall thermal conversion efficiency (output of electricity plus usable heat divided by fuel input) of at least 60 percent.

A tiered approach to providing incentives based on efficiency is suggested, as follows:

- Projects that have a projected overall thermal efficiency between 60-70% would be eligible for 50% of the available tax credits
- Projects that have a projected thermal efficiency between 70-80% would be eligible for 75% of the available tax credits
- Projects that have a projected thermal efficiency above 80% would be eligible for 100% of the available tax credits

There is some disagreement over the definitions of alternative energy/bioenergy with respect to organic byproducts of the pulping process. We are not sure if this is the proper forum for this discussion, but wanted to point out that some individuals feel that organic byproducts of the pulping process should be included in all definitions with respect to alternative energy/bioenergy.

Eligibility criteria for incentives for other distributed energy systems are under development.

Basis for Selection:

Greenhouse Gas Reduction Opportunity – CHP efficiencies—the rate of conversion of fuel energy to electricity plus useful heat—ranges from 60% on the low end to 85% on the high end. This is in stark contrast to standalone fossil energy power plants (fueled principally with coal and natural gas) that have efficiencies historically in the range of 30% to 36%. It is the double or triple use of the energy that gives CHP the extra efficiency boost. This makes CHP (even natural gas-based CHP) a greenhouse gas winner. See the ES-7 strategy the chart on page 47 of “Leading the Way on Climate Change: The Challenge of Our Time”. ES-7 is CHP <http://www.ecy.wa.gov/climatechange/interimreport.htm>. In Washington State, most CHP projects are biopower/opportunity fuels-based. This further intensifies the greenhouse gas win, since the initial fuels used for CHP produce low or no GHG emissions when burned.

CHP Potential in Washington – A 2004 report done by Energy and Environmental Analysis titled Combined Heat and Power in the Pacific Northwest: Market Assessment showed the technical market potential for CHP in Washington to be 7,721 MWc. See page 52 of the study http://www.chpcenternw.org/NwChpDocs/Chp_Market-Assessment_In_PNW_EEA_08_2004.pdf. Tapping waste heat sources for power production would provide additional CHP opportunities not specified in this report. This same report also analyzed the major environmental benefits of CHP, including reduced NO_x, SO_x and CO₂ emissions (see pages 73-75).

Implementation Approach and Mechanisms:

Additional details on the approach for implementation of this option, and integration of incentive approaches for CHP and distributed energy with incentive approaches for building energy efficiency improvement, are under development.

Potential Barriers to Implementation, and Approaches to Address Them

No significant CHP capacity has been built in Washington during the past 15 years due to a number of important economic and policy barriers that need to be overcome:

- Ability to Dispatch Technology: control of the operation of a CHP plant by the utility that operates the grid that the plant is connected to can be a concern for the plant owner. Mutually agreeable dispatch protocols should be negotiated between the plant owner and the host utility.
- Compliance with Grid Interconnection Standards: Washington State could seek to influence and streamline grid interconnection standards and associated costs, where applicable. Standards are set by FERC and NERC rather than the State.
- High Transaction costs Associated with CHP Projects: CHP and distributed energy projects sometimes face high financing costs because of lender unfamiliarity and perceived risk,
- “Split Incentives”: Split incentives between building owners and tenants, and utility-related policies like interconnection requirement, high standby rates, exit fees, etc, act as barriers to CHP/distributed energy system development.
- Lack of Financial Incentives to Pursue CHP/Distributed Energy: Consistent, long-term, clear incentives supporting CHP, waste energy recovery, and other distributed energy systems have been largely lacking to date. The proposals above help to address these needs.

Supporting Information:

Interaction of CHP/Distributed Energy Systems with Market-based Regulatory Systems for GHG Emissions

CHP has been recognized in programs such as those developed by RGGI (Regional Greenhouse Gas Initiative, a collaborative effort by 10 Northeastern and Mid-Atlantic states), and by Alberta, and is now being discussed within the WCI (Western Climate Initiative) cap-and-trade design. There are several potential approaches on CHP and similar technologies might be handled in a market-based system. One approach would be for CHP projects to be awarded allowances or auction proceeds for the projects' avoided emissions. Another option would be simply to exempt existing CHP facilities/projects from emissions limits, and to allow for new CHP facilities/projects to qualify for offset credits. Whatever approach is adopted in a market-based system with respect to CHP, the approach should reward/provide incentive for CHP, and seek to avoid inadvertently penalizing CHP systems.

GHG Reduction Potential

By recovering waste heat and reusing it, an equivalent amount of new fossil-based energy can be displaced, resulting in a more energy efficient production of energy services and significantly less GHG production per unit of electricity generated/heat delivered.

Analysis done for the Climate Advisory Team in 2007 indicated that implementation of CHP could result in a reduction of 12.1 million metric tons of greenhouse gas emissions between 2008 and 2012. Additional analyses of potential savings from this option are underway.

Costs/Cost Savings

Analysis done for the Climate Advisory Team in 2007 suggested cost savings from CHP implementation between 2008-2012 could be \$317 million dollars on a net present value basis. Additional analyses are ongoing.

Interaction with Ongoing GHG Emissions Reduction Programs in Washington

Programs developed in compliance with I-937 get double credit for all CHP projects.

EE/GB Action 2: Energy Efficiency in Existing, New and Renovated Public Buildings

[Please note that revisions to this option by IWG members ongoing as of 9/12/08 are not yet reflected in the text below]

2009 Action Description:

Background

The overall effort would involve all of the public sector. It includes existing buildings and new construction. It would include state agencies, universities, colleges, school districts and local governments. Education and promotion of the program will need to be critical components to the success of the program. Implementation will emphasize the use of existing programs and funding in state and local governments.

Partnering with US EPA's ENERGY STAR program is also critical and has been initiated. The ENERGY STAR program is poised to help, for the most part, at no cost. Reporting will be through ENERGY STAR and the US Green Building Council (USGBC).

Affected state agencies will report activity to OFM, but for schools, universities, colleges and local governments will report internally. Energy performance of all buildings will be posted to a highly publicized web site. It is this program transparency and activating of stakeholders and constituents with information and awareness that will become the "carrot and stick" the program needs for success.

The program relies upon the well-established ENERGY STAR and US Green Building Council LEED programs for some level of training, third party verification, and reporting that will be accessible to the public. Additional training will also be coordinated by GA, Dept. of Ecology, and WSU Extension – Energy Programs.

Public entities affected by this proposal are encouraged to make operational refinements to improve the ENERGY STAR score prior to the July 2010 target date and thereafter. These could include scheduling equipment operation to coincide with occupancy and emphasis on energy efficient occupant behavior.

It is recommended that entities affected by this proposal that manage over 1,000,000 SF of conditioned building space consider the implementation of a Resource Conservation Management program utilizing dedicated staff. Seek assistance from your serving energy utility(s) for financial support and technical assistance. Technical assistance will also be available through the WSU Extension – Energy Programs.

PROPOSED LEGISLATION DETAIL

Section A: Definitions

Benchmark. The energy used by a building as recorded monthly for at least one year. The building energy use and the building characteristics information are required inputs for

ENERGY STAR's Portfolio Manager. Buildings on a campus served by a central plant or centralized metering can develop a prorated benchmark for the buildings served by the central plant.

Conditioned and Occupied Building. A building that is occupied more than 30 hours per week, on average, and meeting the definition of a Conditioned Space in the Washington State Energy Code.

Cost-effective. Energy conservation measures means energy conservation measures that the investment grade audit concludes will generate savings sufficient to finance project loans of not more than ten years.

Department. Refers to the Department of General Administration.

ENERGY STAR score. The score provided by the ENERGY STAR program, which indicates the energy efficiency performance of the building compared to similar buildings in that climate. ENERGY STAR is a nationally recognized EPA building energy rating system that is also used by LEED – EB O&M as the energy performance metric. Unrated building types will develop a benchmark using guidance and principles from the ENERGY STAR and LEED EB programs. The department will recommend methods to establish benchmarks for unrated buildings.

Investment grade energy audit. A detailed audit prepared by an Energy Service Company pre-selected by the department to provide an energy savings proposal that will guarantee of first cost and savings of the energy measures identified. The proposed measures must meet the customer's cost effectiveness criteria or the investment grade audit is free.

LEED – EB O&M. Refers to Leadership in Energy and Environmental Design – Existing Buildings Operations & Maintenance as developed by the United States Green Building Council.

MACC. The maximum allowable construction cost.

Preliminary energy audit. A quick evaluation by an Energy Service Company of the energy savings potential of a building. This is a free service through the department's energy savings performance contracting program.

Resource Conservation Management program. A program focused on tracking and conserving energy and water to save on expenses.

Section B: Existing Public Buildings

Part 1: State agencies, colleges, universities and school districts

1. By July 1, 2010 each state agency, college, university and school district shall create an energy benchmark for each conditioned and occupied building over 10,000 square feet using the US EPA's ENERGY STAR Portfolio Manager program.
2. This baseline information will be posted on the ENERGY STAR website or other site as determined by Dept. of Ecology and will be open to public review.
3. For each building with an ENERGY STAR score below 50, state agencies, colleges, universities and school districts shall undertake a preliminary energy audit by July 1, 2011. Department of General Administration's Energy Performance Contracting program will provide the necessary technical assistance to meet this requirement.

4. If potential cost effective energy savings are identified, an investment grade energy audit must be completed by July 1, 2012.
5. Cost-effective energy conservation measures identified in the investment grade energy audit must be implemented by July 1, 2015.
6. All buildings under this section will be required to maintain an ENERGY STAR score of greater than 75 after October 1, 2016.
7. Recertification must occur every 5 years through the ENERGY STAR program with the revised ENERGY STAR score posted for public review at a site determined by Dept. of Ecology.
8. (a) By October 1, 2016 all buildings between 20,000 SF and 50,000 SF will use LEED – EB O&M as a guide for their operations and will self-certify based on guidelines developed by the department in consultation with a committee of affected agencies. These buildings must achieve the following standards:
 - i) ENERGY STAR score of 75 or better.
 - ii) LEED-EB-OM: WE credit 2 Indoor Plumbing Fixture and Fitting Efficiency – 1 point.
 - iii) LEED-EB-OM: WE credit 3 Water Efficient Landscaping – 1 point.
 - iv) LEED-EB-OM: MR credit 7 Solid Waste Management: Ongoing Consumables – 3 points(b) These standards will be evaluated for update by rule by the department in consultation with a committee of affected agencies in 2016 and every 4 years following.
(c) The state reserves the right to audit said buildings to verify compliance with this section.
(d) Results of this self-certification will be posted to a web site determined by the Dept. of Ecology.
9. (a) By October 1, 2016 all buildings over 50,000 SF under this section will be certified to LEED – EB O&M Silver or equivalent system as determined by the department, and will be re-evaluated every 5 years.
(b) All buildings over 50,000 SF covered by this section must achieve the following standards:
 - i) ENERGY STAR score of 75 or better.
 - ii) LEED-EB-OM: WE credit 2 Indoor Plumbing Fixture and Fitting Efficiency – 1 point.
 - iii) LEED-EB-OM: WE credit 3 Water Efficient Landscaping – 1 point.
 - iv) LEED-EB-OM: MR credit 7 Solid Waste Management: Ongoing Consumables – 3 points(c) These standards will be evaluated for update by rule by the department in consultation with a committee of affected agencies in 2016 and every 4 years following.
10. Buildings planned for demolition or major renovation by July 1, 2015 are exempt from the requirement to undertake a preliminary energy audit and subsequent energy audits and energy measure implementation.

11. New buildings will be required to comply with the Existing Public Buildings requirements 3 years after occupancy.
12. (a) All leased buildings over 20,000 SF occupied entirely by a state agency, university or school district must achieve the following standards by October 1, 2016:
 - i) ENERGY STAR score of 75 or better.
 - ii) LEED-EB-OM: WE credit 2 Indoor Plumbing Fixture and Fitting Efficiency – 1 point.
 - iii) LEED-EB-OM: WE credit 3 Water Efficient Landscaping – 1 point.
 - iv) LEED-EB-OM: MR credit 7 Solid Waste Management: Ongoing Consumables – 3 points
- (b) These standards will be evaluated for update by rule by the department in consultation with a committee of affected agencies in 2016 and every 4 years following.
13. (a) Buildings that have lease agreements that predate this statute will be exempt, however, any renegotiation must comply within 15 months of the new lease inception.
- (b) Buildings planned for demolition or major renovation by July 1, 2015 are exempt from the requirement to undertake a preliminary energy audit and subsequent energy audits and energy measure implementation.

Part 2: Cities, Counties, and other Public Taxing Authorities

The provisions are the same for buildings owned and leased by cities, counties and other public taxing authorities as in Section B (Part 1), *except* the following timelines are extended:

1. By July 1, 2011 each city, county, and other public taxing authority shall create an energy benchmark for each conditioned and occupied building over 10,000 square feet using the US EPA's ENERGY STAR Portfolio Manager program.
2. For each building with an ENERGY STAR score below 50, each city, county, and other public taxing authority shall undertake a preliminary energy audit by July 1, 2012.
3. If potential cost effective energy savings are identified, an investment grade energy audit must be completed by July 1, 2014.
4. Cost-effective energy conservation measures identified in the investment grade energy audit must be implemented by July 1, 2017.
5. All buildings under this section will be required to maintain an ENERGY STAR score of greater than 75 after October 1, 2018
6. By October 1, 2018 all buildings over 50,000 SF under this section will be certified to LEED – EB O&M Silver or equivalent system as determined by the Department, and will be re-evaluated every 5 years.
7. The initial energy benchmarking efforts will be the responsibility of the local jurisdictions. This is good building operating practices and will help the owners identify buildings with savings opportunities. It would also help to identify no cost and low cost measures. The cost of a preliminary audit and investment grade audit, if working through the Dept. of General Administration's Energy Savings Performance Contracting (ESPC) program, would be zero (if no cost effective measures are identified) or would be rolled

into the cost of the qualified and contracted energy conservation measures identified. Utility incentives would be utilized to reduce the first cost of measures identified. The balance of the costs for implementation of the energy measures could come from low cost State Treasurer financing. Financing would be paid back from the guaranteed savings. Using this approach requires no capital outlay. The cost of the measures is completely paid off by the savings.

8. As for the cost of the LEED – EB O&M program for buildings over 50,000 SF, these would need to come from the local jurisdictions, however, savings in energy and water, and increase productivity of the workers would provide for a quick payback on costs. An estimate of the cost for documentation and submittal fees is \$10,000 to \$50,000 per building. Economies will be realized with multiple buildings and through a learning curve, subsequent buildings within an organization will cost less. The cost for Re-Evaluation would be minimal.

Section C: New Construction of Public Buildings

Part 1: State agencies, colleges, universities and school districts

1. All occupied and conditioned buildings over 5,000 SF going into design after July 1, 2011 will be required to certify to the LEED NC Gold level or equivalent as determined by the Department. This also applies to major renovation projects where the project construction budget is over 50% of the assessed value of the building. All affected buildings must achieve the following as prerequisites:
 - a) Meet “Architecture 2030” goals for energy performance.
 - b) LEED-NC Water Use Reduction – 2 points.
 - c) LEED-NC Water Efficient Landscaping – 1 point.
 - d) LEED-NC Construction Waste Mgt. – 2 points.
 - e) A minimum of 0.5% of the MACC must be spent on renewable energy systems as defined under LEED.
 - f) LEED-NC Regional Materials – 1 point.

Part 2) Cities, Counties, and other Public Taxing Authorities

1. (a) By July 2011, local governments state-wide shall adopt rules that are at least compliant with this section.
(b) All occupied and conditioned buildings over 10,000 SF going into design after July 1, 2013 will be required to certify to the LEED NC Gold level.
2. The LEED NC Gold requirement also applies to major renovation projects where the project construction budget is over 50% of the assessed value of the building. All affected buildings must achieve the following as prerequisites:
 - a) Meet “Architecture 2030” goals for energy performance.
 - b) LEED-NC Water Use Reduction – 2 points.

- c) LEED-NC Water Efficient Landscaping – 1 point.
 - d) LEED-NC Construction Waste Mgt. – 2 points.
 - e) A minimum of 0.5% of the MACC must be spent on renewable energy systems as defined under LEED.
 - f) LEED-NC Regional Materials – 1 point.
3. The added cost to implement LEED NC Gold for jurisdictions that have no LEED requirements would be 2.7%*. For jurisdictions that already require LEED NC Silver, the costs should be 0% to 1%.

* Davis Langston Adamson, Costing Green: A Comprehensive Cost Database and Budgeting Methodology, 2004.

Procedural and administrative provisions and requirements

It is recommended that this proposal be implemented through legislative action. As currently proposed, it is consistent with the Governor's new Executive Order on Sustainability (expected to be released in Fall 2008). An Executive Order alone could achieve a portion of the desired emission reductions; however, the extent of the impacts would be far less.

Many existing programs will be utilized to implement this recommendation: the department, Dept. of Ecology, ENERGY STAR, US Green Building Council's LEED program, NEEC (Northwest Energy Efficiency Council), and electric and gas utility conservation programs.

Currently the Dept. of General Administration is responsible for tracking and administration of new construction/major renovations of state and higher education LEED projects. This would remain in place. For the existing buildings, format for reporting will be established by a stakeholder group facilitated by the department (GA). Annual reporting by state agencies will be submitted to OFM. School districts and local governments will be responsible for administration of their own data through a web site identified by Dept. of Ecology.

Costs of implementation for existing buildings below 50,000 SF would be minimal. Energy savings will pay for improvements. There will be some administration related to energy data collection and interaction with the ENERGY STAR website, and if energy savings potential exists, administration of energy performance contracts with the Department would be needed. Often this expertise exists within public organizations and can be absorbed by current staff.

Cost of implementation for existing buildings 50,000 SF and higher to achieve LEED-EB O&M Silver would range from \$10,000 to \$50,000 per building. Economies will be realized with multiple buildings and through a learning curve, subsequent buildings within an organization will cost less. Some costs to achieve LEED-EB O&M Silver could come from the energy performance contracting activities. Cost savings from energy, water and recycling efforts will off-set the costs to achieve LEED-EB O&M Silver over time. Support from utilities may be possible though incentives and/or a reimbursement program.

The added cost for new construction to achieve LEED Gold may only be on the order of \$10,000 for current projects that must meet LEED Silver. The added construction cost to entities currently not building to LEED Silver would be 0.5% to 6% of the construction cost.

Basis for Selection:

With the 2005 passage of Chapter 39.35D RCW High-performance public buildings, Washington State stepped forward as a national leader in public sector green building projects. As the mandate has seen implementation, areas that can increase the energy-conserving attributes of these buildings have become known. This proposal aims at increasing the strength of the legislation as it currently exists, ensuring that green public buildings are operated and maintained in such a way as to meet the energy goals of the projects, and set the stage to address issues related to embodied energy as focus shifts to building products.

Because this proposal builds on existing legislation that has seen success, it is primarily a revision to a statute with agency and public momentum. This proposal will ensure that public buildings (new/renovated) prioritize energy efficiency credits offered in green building standards and help to build the market for regionally produced green building materials.

Projected emission reductions:

Emission reductions in existing buildings when buildings reach the ENERGY STAR level of 75 will result in an average reduction in CO₂ of 20% to 25%. This would be further reduced as buildings recertify with ENERGY STAR level of 75, because the overall building energy use will go down thus raising the bar for all buildings. As older buildings are replaced with new efficient buildings, this too will raise the average energy efficiency of the building stock as a whole.

LEED Gold projects for new construction and major renovations CO₂ reductions of 60% would occur by 2010. This would increase because the Optimize Energy credit within LEED would be tied to Architecture 2030 goals which call for Net Zero carbon buildings by 2030.

Overall the number of buildings will increase and so will overall square footage of buildings. It is for this reason that the Architecture 2030 goals be met to achieve the reductions we seek.

Implementation Approach and Mechanisms:

Draft legislation will be prepared for the 2009 Legislative Session by **September 5, 2008**. The legislative text will be completed by a team consisting of: Rachael Jamison (Department of Ecology), Stuart Simpson (Department of General Administration), Ash Awad (McKinstry), David Van Holde (King County), Tony Usibelli (CTED), Becky Kelly (Washington Environmental Council).

Potential Barriers:

The primary critique of the state's existing green building mandate is its lack of additional funding to ensure compliance. By revising the mandate to require a higher level of certification with currently optional credits made mandatory, agencies may have difficulty supporting the legislation due to its potential fiscal impacts and need for additional resources (education/staff/etc.).

Program Costs:

Existing programs will be utilized as much as possible; however, it is recommended that a professional level FTE be provided to each of the following agencies: Dept. of Ecology (for local governments), Dept. of General Administration (for State agencies, colleges and universities),

and Office of the Superintendent of Public Instruction (for K-12 Schools). This is needed to implement these efforts across all public sector entities.

Supporting Information:

- Analysis of estimated greenhouse gas emissions reduction and net costs for this Action will begin shortly.
- Other supporting information will be added as appropriate.

EE/GB Action 3:

2009 State Energy Code Improvements and the Establishment of the Washington State Continuous Energy Efficiency Improvement Program for Buildings

2009 Action Description:

Part 1

In the 2009 Washington State Building Code adoption cycle, revise the Washington State Energy Code (WSEC) to achieve a 30 percent reduction in new building energy use compared to the 2006 edition of the WSEC.

Background:

In 2030, new buildings constructed in the preceding two decades will account for 20 to 25 percent of the commercial building floor area and will account for more than 20 percent of the housing units. Over the same 20 year period, it is expected that most existing buildings will undergo some level of renovation, install new equipment, and will add or replace many energy using devices. As a result, the effectiveness of the State Energy Code as well as federal and state equipment and appliance standards will play a large role in the future energy use intensity of all buildings. It is important to note that it is much less expensive to implement energy efficiency in buildings during initial construction and major renovations than as stand alone measures. There will also be incentives for improvement of existing buildings as the state's electric utilities implement conservation activities in compliance with the state Energy Independence Act.

Building Codes for the State of Washington are reviewed and adopted through an administrative process conducted by the Washington State Building Code Council (SBCC). National and state-developed codes are reviewed, revised and adopted on a three-year cycle. The next review cycle begins early in 2009. Codes adopted by the council during the 2009 cycle will be implemented July 1, 2010. Under the current schedule this process will be repeated in 2012, 2015, 2018, 2021 and so on.

Specific Actions:

Code Development

Through the established administrative process, revise the Washington State Energy Code (WSEC) to achieve a 30 percent reduction in new building energy use compared to the 2006 edition of the WSEC. The administrative process will take place in 2009, with the revised code being implemented in July 2010.

The Office of the Governor is responsible for articulating the code revision objective to the SBCC, and will provide political and administrative support consistent with obtaining the objective. Technical support shall be provided by the Department of Community, Trade, and Economic Development (CTED) Energy Policy Division.

To limit negative impacts of new building code provisions on existing structures, code development activities will make recommendations for alternative energy code provisions that may be applied to renovations and system replacement in existing buildings. Such

recommendations shall require strong but reasonable improvements in energy efficiency in buildings where the challenge of meeting the new building energy code provisions might result in negative energy effects such as delayed or deferred investment in building renovations, or the premature demolition of existing structures. To the extent possible, the technical development of the code will consider the impact of revised codes on the effectiveness of utility incentive programs.

Regulation of Utility Conservation Incentives

To reduce the negative impacts that energy code revisions may have on utility conservation payments, the CTED Energy Policy Division shall make recommendations to the State Auditors office and the Utility and Transportation Commission that revise rules regarding investments in improvements to existing buildings. Under current rules, as the code stringency increases, this can cause a reduction in the incentives available to building owners. As a result, owners may decide to defer those investments to some future date. If utilities were permitted to pay incentives for the energy savings based on the difference between a building's current level of performance and the higher level of efficiency offered through a code-compliant building retrofit or renovation, building owners would be able to make building improvements.

Code Implementation Support to Local Government

Technical support for local building departments and the building industry shall be provided. Through federal and utility grant programs, Washington State University Extension Energy Program (WSU) and the Northwest Energy Efficiency Council (NEEC) have historically provided training and technical support to assist in the implementation of the energy code. These activities provide free training to local building department staff and professionals in the building industry. Grant funds for this activity have been secured through 2010. The IWG recognizes that training and technical support are important supporting activities for this implementation strategy.

Part 2

Legislative action is recommended to establish a **Continuous Energy Efficiency Improvement Program for Buildings**. It is recommended the legislation include the following five components.

1. Targets for building energy efficiency and carbon reductions in both new and existing buildings for the years 2010-2030
2. Direction to develop and adopt future editions of the WSEC to meet the Targets for new buildings and help meet the targets for existing buildings through improvements as they are remodeled.
3. Action that adds 5 appliance categories to 19.260 RCW (**HB 1062 - 2005-06**) and directs the Department of Community Trade and Economic Development to participate in the federal appliance rule making process.
4. Tax incentive for buildings and building/community integrated power systems. (See action item: **Incentives for Superior Energy Performance in New and Existing Buildings**)

5. Establishes funding in support of university and community college public / private partnerships and building industry activities involved in building efficiency research, demonstration and education programs designed to support the achievement of the Targets.

Targets for Building Energy Efficiency and Carbon Emissions Reductions: The Washington State Continuous Energy Efficiency Improvement Program for Buildings will include specific targets for median building energy use, by building occupancy class and climate zone. For new buildings, target development will follow a schedule similar to the schedule developed the Architecture 2030 Challenge, but using current code levels as the starting point. By or before 2015, the target for new buildings will be 50 percent of the energy use of base code buildings built to the 2006 WSEC, with an incremental improvement in new building efficiency reaching net zero by 2030. Existing buildings will be improved over time to achieve a 50 percent reduction in energy use intensity (EUI) for the sector. CTED will be charged with determining the best methodology for establishing the 2009 baseline and monitoring future improvements. Sector improvements may include energy efficiency improvements, implementing innovative sustainable design strategies, generating with on-site renewable power and/or purchasing (20% maximum) renewable energy and/or certified renewable energy credits. The table, **Target Building Sector Median Energy Use Intensity (EUI)**, details the targets.

Target Building Sector Median Energy Use Intensity (EUI)							
Percent of Median 2009 EUI Building Occupancy Class and Climate Zone							
Target Year	2009	2010	2015	2020	2025	2030	
Existing Building Sector (2009)	100%	96%	85%	74%	63%	50%	
New Building Sector (2009)	100%	70%	50%	40%	20%	0%	

Legislative action is recommended that directs the Washington State Building Code Council through their established public process to achieve the energy savings targets.

Legislative action is recommended that adds 5 appliance categories to 19.260 RCW ([HB 1062 - 2005-06](#)) as noted in the table Proposed Appliance Standards.

Proposed Appliance Standards	
Appliance	Measure
Bottle-type water dispensers	< 1.2 kWh per day
Commercial hot food holding cabinets	40 Watts per cubic foot
Compact audio products	2 watts standby 4 watts standby with an illuminated clock display
Digital disc players and digital disc recorders	3-watt standby
Portable electric spas	Max. allowable standby energy

Legislative action is recommended that adds tax incentives for buildings and building/community integrated power systems. It is recommended that incentive programs follow the format outlined in EE/GB action item 1, **Incentives for Superior Energy Performance in New and Existing Buildings**). Reporting requirements detailed in action item 1 shall be modified to include evaluation of the tax incentive impacts on achieving the Targets detailed in the table, **Target Building Sector Median Energy Use Intensity (EUI)**

Legislative action, including funding, is recommended to support of university and community college public / private partnerships, and building industry activities involved in building efficiency research, demonstration and education programs designed to support the achievement of the Targets.

Basis for Selection:

Part 1. *In the 2009 Washington State Building Code adoption cycle, revise the Washington State Energy Code (WSEC) to achieve a 30 percent reduction in new building energy use compared to the 2006 edition of the WSEC.*

There is already recognition both in the state and at the federal level that a 30 percent is the appropriate target for improvement in both the residential and commercial building sectors. This level of efficiency is achievable and is necessary to meet the carbon reduction targets established by the Climate Action Team. Part 1 is being proposed separate from the legislative actions detailed in part 2. This is largely due to timing. It is also done in recognition of the existing State Building Code Council public process. The 2009 code revision cycle will be well underway during the legislative session.

Part 2. Legislative action is recommended to establish a **Continuous Energy Efficiency Improvement Program for Buildings**.

To achieve the proposed targets, it is essential to start early with substantial proposals. It is also important that the strategy be comprehensive and includes new and existing building construction, equipment, appliances as well as community heat and power systems.

In 2030, new buildings constructed in the preceding two decades will account for more than 30 percent of the commercial building floor area and add almost 30 percent to the number of housing units. Over the same 20 year period, it is expected that most buildings will undergo some level of renovation, install new equipment and will add or replace many energy using devices. The effectiveness of the State Energy Code as well as federal and state equipment and appliance standards will play a large role in the future energy use intensity of all buildings. The injection of state and utility incentives will move the existing building sector, as well as promote further innovation in new construction.

The change in the built environment occurs over time. Opportunities to capture the large efficiency improvements at a minimal cost occur only once or twice in the life of a structure. This opportunity occurs during the original design and construction of a building as well as during major renovations. Major building equipment replacements occur in a 15 to 25 year time frame. The development of community scale heat and power system occurs over long planning and implementation periods.

The implementation targets listed suggest a gradual improvement of all building over time. But for any specific project, it is important to achieve maximum technical potential when the prime opportunities occur. To achieve the energy efficiency targets for all buildings on average, improved energy efficiency standards and programs will need to be deployed early and be rigorous. This includes energy codes, efficiency incentives programs as well as minimum appliance and equipment standards. This is the rationale for immediate implementation of a substantial upgrade to the state energy code, implementation of additional appliance standards as well as the recommendation to add incentive programs. This will deliver the most building energy efficiency and emissions reductions at the lowest cost.

To meet the more aggressive targets in the final years, additional innovation and expertise will be required. Much of the progress in building efficiency in Washington has resulted from following a technology maturity progression that begins with research and development, moves through market entry and diffusion support efforts and culminates, where appropriate, in the adoption of common practices as minimum code requirements. Washington has been a leader in each of the elements of this progression and can take advantage of the economic development and job creation opportunity presented by additional work in these areas. Supporting university level research, participating in federal research and analysis projects, working with utilities and private sector partners within the state on market diffusion strategies and supporting effective technology transfer efforts should all be part of a comprehensive plan to continue bringing new technologies and efficiency strategies into the marketplace, into common use, and, where appropriate, into code.

Implementation Approach and Mechanisms:

In the 2009 Washington State Building Code revision cycle, revise the Washington State Energy Code (WSEC) to achieve a 30 percent reduction in new building energy use of compared to the 2006 edition of the WSEC. Provide substantial efficiency advances in the code as it applies to remodeling, retrofit and equipment replacement.

Through the 2009 administrative procedures of the Washington State Building Code Council (SBCC), develop and adopt advances to the Washington State Energy Code (WSEC) to achieve a 30 percent improvement in building efficiency compared to the 2006 WSEC. The Office of the Governor is responsible for articulating the objective to SBCC, and will provide political and administrative support consistent with obtaining the objective. Technical support for local building departments and the building industry shall be provided by CTED Energy Policy Division and the WSU Extension Energy Program.

A potential barrier to implementation of this Action is the lack of knowledge at the local government building departments and in the building industry. This proposed action includes a recommendation for funding to provide training and technical support for those implementing the revised code requirements. This assistance may include training workshops, supportive materials, and direct assistance through available phone technical advice. This approach has proven successful with past energy code changes.

Supporting Information:

The following report outlines a strategy developed by the US Department of Energy for achieving Net Zero Energy Buildings in the Commercial Sector. It is important to note that not

all individual buildings will meet this standard. But in the population of buildings, some will exceed net zero and offset the buildings that do not. This is in part the basis for establishing building sector median targets in the **Continuous Energy Efficiency Improvement Program for Buildings**.

B. Griffith, N. Long, P. Torcellini, and R. Judkoff, *Assessment of the Technical Potential for Achieving Net Zero-Energy Buildings in the Commercial Sector* National Renewable Energy Laboratory, 2007

- Analysis of estimated greenhouse gas emissions reduction and net costs for this Action will begin shortly.
- Other supporting information will be added as appropriate.