

Energy Efficiency and Green Building IWG

Note to TWG members: The five 2009 Action descriptions that follow are concepts developed by small groups following our last teleconference on June 23. The text for each 2009 Action was compiled with some clarifying edits by the EE/GB IWG facilitators and represents the small groups' work as of the afternoon of July 8. The text for each 2009 Action will be updated as the small groups provide additional materials and following full IWG member discussion during our teleconference on Wednesday, July 9.

EE/GB Action 1: Incentives for Higher-Efficiency Building Operations

Develop targeted proposals for tax and other types of incentives that promote the construction, retrofitting, and long-term operation of buildings (both residential and commercial, including the typically underserved small-commercial segment) at substantially higher levels of energy efficiency. IWG members suggested that this action include discussion of innovative financing funds, means of benchmarking building operations at an escalating scale over time, an energy efficiency fund to further support the transition from BAU to high performing buildings, and incentives to upgrade/retrofit existing buildings.

2009 Action Concepts (as produced by small group)

The conversation was segmented into two areas - commercial and residential buildings.

The discussion for commercial buildings covered the distinct but related challenges of providing incentives for higher energy-efficiency in new commercial construction (e.g. through design and equipment selection decisions) and improving the actual energy performance of all commercial buildings (of all ages) once occupied. An idea that was floated early in this group's process was discussed. In essence this is an idea for a tax incentive for all commercial properties (both leased and owner occupied) that can demonstrate superior energy performance through the ENERGY STAR Portfolio Manager benchmarking tool (see below for some additional detail and discussion on this concept). Call participants seem supportive of this as an approach, but suggestions for additions or complements in some areas were discussed. This included:

- Should there be a tiered incentive based on other indices of superior greenhouse gas reduction performance? For example, if a building qualified for LEED EB (which uses an ENERGY STAR Portfolio Manager score of 69 as a prerequisite) and thus demonstrating both energy end use performance and other sustainability performance metrics - should it either qualify de jure for the tax credit or even be eligible for a higher tier tax credit given its added features?
- A related question tied to this first bullet was: should the performance standard be more inclusive to look at other ratings and certification systems (beyond LEED)? The example of Green Globes was used. (Participants will be investigating how the Green Globes system works).
- There was also discussion about whether this approach provided sufficient incentive for energy-efficiency improvements in new construction. Subgroup participants are interested in whether subgroup # 3 (codes and standards) is addressing this issue. Absent any work in that area from subgroup #3, there is interest in exploring how this concept provides incentives for decisions at the design/construction stage of projects leading to higher energy efficiency building performance. There was the observation that all new buildings become existing ones immediately upon occupancy. An annual tax credit incentive for

demonstrated performance could possibly work as an incentive for owners/developers to challenge design teams to product a building product that will qualify for this credit upon occupancy

- Further small group discussion regarding addressing energy efficiency needs in commercial buildings includes support for the concept of rewarding superior energy performance (e.g. through an ENERGY STAR Portfolio Manager benchmark score) with an annually available tax incentive. That incentive could be scaled to fit a realistic state budget framework (e.g. smaller incentive in 2009-2010 and a larger incentive as the state budget picture improves). We have speculated on using the B&O tax, but the group is also interested in seeing if a form of property tax incentive is somehow available at the state level. In addition, the group is also supportive of the idea of generating a capital fund that could be accessed for loans to finance energy improvements in commercial buildings. A number of ideas have been entertained as a means to form that fund. Those include: Feebate mechanism - poor energy performers pay and superior energy performers benefit
- Expanded authorization of Public Works Trust Fund
- Public - private partnership - attract private equity capital to a fund supplemented by either contributions from government appropriations or a financial guarantee of payment to private investors by some form of government

The discussion on residential incentives observed that this market is at least segmented by single family and multi-family (and the differing ownership structures for those markets) and the now-familiar distinction between existing buildings and new construction. Two idea "structures" evolved out of this conversation. The first idea involves a tax incentive (of some unspecified type) for new homes built to an identified performance standard. For example, Built Green at the four and five star levels certifies homes to be 15% and 30% better than code baseline houses (there is a slightly different structure for multi-family structures in Built Green but the program does accommodate them). Built Green is a statewide program but different franchises have slightly different standards across the state. This could provide some challenges with regard to equity treatment and tax structures, but also could be addressed programmatically.

A second idea structure addresses existing residential properties and the need to provide incentives for retrofits of those properties to improve their energy efficiency. The idea of a loan fund that is accessible to residential property owners was discussed. The idea of providing some sort of tax credit for owners who demonstrate a financial investment in increasing energy performance of the property was also discussed.

Both residential ideas need additional maturation and investigation of either a tax credit mechanism to which positive actions could be attached or the mechanics of creating a loan fund for energy retrofit upgrades.

Further small group discussion regarding residential buildings included support for tax incentives that reward residential properties that meet a standard such as Built Green. There is uncertainty as to the tax to which this incentive is applied. The idea of a loan fund remains viable within the group as well with a number of the issues identified for the commercial sector above also applying here. The group also discussed the challenge of providing incentives for improved energy performance in existing houses (assuming that the Built Green example above pertains only to new construction). A number of cities nationally are contemplating an "energy performance certificate" program that would offer a rating or performance standard for existing residential occupancies. If such a mechanism were developed, it could be used as the basis for providing incentives for the residential sector to perform to this standard. That incentive could be annually through a tax credit mechanism or conceivably at point of sale.

EE/GB Action 2: Public Building Operation and Building Standards

Develop a proposal that will substantially upgrade the energy efficiency and sustainability of publicly-constructed and -operated buildings by policies that allow better linking of first and operating cost decisions, improve energy standards for construction of public buildings, and use other mechanisms to improve the energy-efficient design and operations of public buildings in an integrate fashion. This option may include elements such as providing case studies as examples to the private sector, and pursuing sustainable building practices more generally.

2009 Action Concepts (as produced by small group)

NOTES:

1. Items in bold/italics are items that the small group is seeking full IWG feedback on.
2. The following are Parking Lot issues that we would like whole group feedback on:
 - a. *Affordable Housing (HTF) Projects*. How do they fit into this framework? How should they be addressed?
 - b. *Cost-effective*. How should this be defined?
 - c. *Square footage*. What are the square footage thresholds we want to use?
 - d. *Implementation dates*. What are the implementation dates we want to propose?

Energy Efficiency in Existing & New/Renovated Public Buildings

Existing Buildings:

Section 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 5,000 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 60, state agencies, colleges, universities and school districts shall undertake a preliminary energy audit by July 1, 2011. ***Under discussion within the sub-group: require or recommend that the department's energy performance contracting program be used, and this provision might be different for state v. city/county/other public buildings.***
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 70 after October 1, 2016.
7. Recertification must occur every 3 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. 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.
9. 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 group of appropriate stakeholders.
10. Results of this self-certification will be posted to a web site determined by the Dept. of Ecology. **Items 9 & 10 this section, Self-certification an issue under discussion.**
11. All buildings over 50,000 SF covered by this section must achieve the following standards:
 - a) LEED-EB Optimize Energy Performance – 5 points.
 - b) LEED-EB Water Use Reduction – 1 point.
 - c) LEED-EB Water Efficient Landscaping – 1 point.
 - d) LEED-EB Occupant Recycling – 3 points.
12. Buildings without dedicated metering, such as buildings on a campus, will develop, with assistance from the department, a metering plan and achieve Energy Star target performance levels as a campus. These buildings will take the self-certification path as appropriate for the building sizes.
13. 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.
14. All leased buildings over 20,000 SF occupied entirely by a state agency, university or school district must achieve the following standards by July 2015: **Verification mechanisms need discussion.**
 - a) LEED-EB Optimize Energy Performance – 5 points.
 - b) LEED-EB Water Use Reduction – 1 point.
 - c) LEED-EB Water Efficient Landscaping – 1 point.
 - d) LEED-EB Occupant Recycling – 3 points.
15. 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.
16. Public entities under this section are encouraged to make operational refinements to improve the Energy Star score prior to the July 2010 target date and there after. These could include scheduling equipment operation to coincide with occupancy and emphasis on energy efficient occupant behavior.
17. It is recommended that entities under this section 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.

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

The provisions are the same as above for state agencies, colleges, universities, and school districts, except the timelines are extended, as follows:

- If potential cost effective energy savings are identified, an investment grade energy audit must be completed by July 1, 2014.
- Cost-effective energy conservation measures identified in the investment grade energy audit must be implemented by July 1, 2017.
- All buildings under this section will be required to maintain an Energy Star score of greater than 70 after October 1, 2018.
- 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.

Section 3) Additional Suggestions for Saving Energy and Resources in Existing Public Facilities through Improved Operations and Maintenance Practices

- Utilities Provide Incentives for Resource Conservation Management: All utilities affected by I-937 shall provide incentives equal to or better than the incentives established by Puget Sound Energy for Resource Conservation Management. These incentives can be tied to benchmarks consistent with those developed by PSE.
- Utilities to Provide Electronic Utility Data: All electric and natural gas utilities will provide electronic billing data upon request by the customer that is compatible with the US EPA Energy Star program by July 1, 2012. New

Note: need to consider whether the following ideas are needed in addition to existing programs, including a statewide expanded RCM program such as described above, with some more support from WSU and maybe BOC.

- Public buildings operations staff outreach and education program: Ongoing outreach and education programs directed at building operations line staff and supervisors are needed, to ensure they know about best practices for efficient operations, who to contact for ideas and help, and programs (such as Performance Contracting) that can support their improvements. Regular bulletins with peer case studies of operations and behavior changes that resulted in demonstrated resource savings could constitute the core of these. Advertisements for training, services and products could help pay for it. This could be extended to private audiences as well. (WSU Energy, NEEC)
- Facility and operations staff energy /resource review (link with Energy Star rating): Support for review of current staff capabilities and training levels in resource conservation, facility billing review and related "desk audit," etc., to determine facility baseline energy use and energy intensity, and prepare for Energy Star rating.
- Technical support services (from WSU Extension Energy Program in concert with GA?): Expert energy analysis staff trained and dedicated to supporting O&M

resource saving projects would be available for a walk-thru O&M audit of participating facilities and for limited phone-based consultation on planning, financing, implementation and M&V of O&M projects.

- Operations resource saving improvements program: As envisioned, participants would follow a fairly prescriptive “workbook” program, modeled on the Plan-Do-Check-Act model of gathering information, coming up with ideas for measures, developing and getting support for those measures that appear likely to save resources, implementing the measures, and measuring savings over an extended period of time. Steps / “chapters” would likely include something like the below:
 - Facility Baselines
 - Facility Benchmarking with Energy Star
 - Goal setting
 - Identifying savings opportunities for energy and other resources
 - Savings opportunity/action specific baselines and benchmarks
 - Developing Action Plans
 - Implementation of actions
 - Measurement and verification of savings from actions
- Reporting outcomes: Participants would annually report measurable outcomes from their O&M resource savings projects to a central state database as a requirement of participation.
- Funding: It should be possible to demonstrate that an operations and maintenance program such as the one described is cost-effective on a regional basis, from energy savings. A modest draw on utility taxes could possibly serve to fund the ongoing programs described above. Alternately, the State could offer utilities the choice to contribute to, support or implement such programs as a means to meet I-937 requirements. An evaluation would be needed after a number of years to test cost effectiveness. Once effectiveness of the program were demonstrated, it may be possible to rate-base the program.

New Construction:

Section 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. 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. *Under discussion by the group*

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

1. 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. By July 2011, local governments state-wide shall adopt rules that are at least compliant with this section. Through this process, local governments may require that additional credits be met to ensure that projects are built to maximize indoor environmental health, reduce toxics in the environment, optimize water and energy savings, and encourage economic growth in their region.
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. ***Under discussion by the group.***

Building Materials and Products:

The department of ecology may adopt and implement a standard and product verification program to verify that building materials and other products are sourced, manufactured, and managed in a manner that is consistent with existing state rules, the agency's existing environmental priorities, green building standards, and other existing product/material certification schemes. The program must be voluntary and available to all businesses and manufacturers that do business in the state. The department of ecology may develop a logo that businesses and manufacturers may use on their products to demonstrate to consumers that the product complies with the standard. The department of ecology may recover costs for this service.

Definitions:

"Benchmark" means the energy used by a building recorded monthly for at least one year to establish annual energy use. The units are in KBtu/SF/YR. This together with 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" means a building that is occupied more than 20 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" means the Department of General Administration.

“Energy Star score” means the score developed using the Energy Star’s Portfolio Manager program. It may not be available for all building types. Building types not covered under the Energy Star Portfolio Manager program will only develop a building benchmark. For these building types, pursuit of cost effective energy measure implementation will depend on the benchmark score. Evaluation of the benchmark by the department is recommended. 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.

“Investment grade energy audit” means 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” means Leadership in Energy and Environmental Design – Existing Buildings Operations & Maintenance. This is a green building operations rating system developed by the US Green Building Council.

“MACC” means the maximum allowable construction cost.

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

“Posted for public review” means that it will be posted on a web site identified by the Dept. of Ecology.

“Resource Conservation Management program” means a program focused on tracking and conserving energy and water to save on expenses.

EE/GB Action 3: State Energy Code Improvements, and Establishment of 2030 Building Goals

Develop a path or detailed plan to significantly upgrade the state's energy code (residential and commercial) in 2009 to the highest levels among state codes (e.g. 30% above current levels), and develop a proposal that will drive Washington toward the construction of low-carbon, zero net energy buildings by 2030. This proposal should include, at a minimum, provisions for education/training, building benchmarking, and certification, but should also address financing of building improvements.

2009 Action Concepts (as produced by small group)

Objectives and Related Actions

1. 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.

Action Item: 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 shall be provided by CTED Energy Policy Division and the WSU Extension Energy Program.

Additional Discussion: The actual approach of the action item still needs further committee discussion. A stronger policy statement is requested by some committee members. It has been noted that an executive order or legislative action may be needed to assure the SBCC fully implements the recommendation.

2. Establish programs that provide building and neighborhood efficiency research, development, demonstration and education assuring that the building industry has the ideas and resources need to meet future efficiency benchmarks, maintains an efficiency leadership position, and that Washington State remains competitive in the new Clean Energy economy.

Action Item: Through legislation, establish funding in support of university and community college public / private partnerships, and building industry activities involved in building efficiency research, demonstration and education programs.

Additional Discussion: Because of fiscal impact, the committee still needs to discuss funding and timing for this action item.

3a. The State Legislature should establish state goals for improvement in commercial and residential, new and existing building energy efficiency over time through code upgrades and other measures. Using the "Commercial Buildings Energy Consumption Survey (CBECS)" and the Residential Energy Consumption Survey (RECS) or equivalent systems as a baseline, establish efficiency targets for new and existing buildings for 2010 through 2030. For new construction and major renovations, develop goals to meet an objective of net zero energy by 2030. For existing buildings, reduce energy use by 50% compare to CBECS 2003 survey data.

3b. Establish a state incentive program for new construction that is measurably more efficient than the minimum state code, and for existing buildings that meet efficiency benchmarks as defined by objective 3a. In addition, establish a revolving loan fund with low interest loans for building energy efficiency, combined heat and power systems, and district energy systems.

Action Item: Prepare a bill for the 2009 legislative session that establishes state standards for improving building energy efficiency, authorizes a state agency to develop rules for broad implementation of a energy use intensity tracking and rating system (such as energy star portfolio manager or equivalent), and establishes rules for the Department of Revenue for the distribution of incentives for building greenhouse gas reductions based on building efficiency ratings, [ongoing efficiency operations, and reduction of the buildings greenhouse gas usage. Standards and incentives will be developed for district, or neighborhood based energy systems, commercial and residential buildings, including existing buildings and new construction.

The legislation should require a state agency to consider the adoption of ASHRAE 189 for the Washington State building code.

The package of incentives should include the following:

- A tiered incentive based on indices of superior greenhouse gas reduction performance to provide incentives for various levels of GHG reduction. The more the reduction, the higher the incentive.
- An exemption from retail sales taxes for performance contracting services.
- Incentives to improve home energy efficiency upon sale.

The legislation will also establish a revolving loan fund to provide low and no interest loans for energy efficiency, combined heat and power systems, and district energy systems for new and existing buildings. The use of the loan fund will be limited to project cost that exceeds state, federal and utility incentives. In addition, the legislation will address any issues related to the creation of public utility districts in support of community energy systems.

Discussion: A number of details need to be worked on. For example:

What are the best state incentive / financing methods?

What level of financial support is appropriate?

Are the CBECS and RECS data the appropriate base case for Washington State?

Can ASHRAE 189p be adopted as a state standard without creating a conflict with federal preemption?

4. Appliance/equipment/lighting efficiency standards should 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 appropriate. This should include California's efficiency standard for televisions.

Washington State Energy Efficiency & Green Buildings Codes & Incentives Straw Proposal (for format, values to be developed)

New & Existing Buildings & Industrial Processes Codes & Superior Energy Efficiency BETC Incentives

Establish Code targets & provide an exemption from retail sales taxes, plus additional funded incentives, based upon the chart below for construction cost, operations contracts, and energy savings performance contracting services for those projects electing a range of energy demand reduction targets that exceed baseline conditions or code requirements on a superior basis. This incentive would be applied for improvements to new or existing buildings or industrial processes and applied to sales of construction materials, high-efficiency equipment and energy efficiency design and services. Incentive would apply to the total construction cost of a project.

ARCHITECTURE 2030	ENERGY CODES	INCENTIVES				
		Efficiency Target	Construction Cost	Operations Contract	Performance Contracting	
Architecture2030 CBECS Energy Reduction Targets & Dates	Energy Code CBECS Efficiency Requirement	Energy Efficiency CBECS Building Reduction Target	Business Energy Tax Credit Sales Tax Rebate	Business Energy Tax Credit Sales Tax Rebate	Energy Demand Reduction Target	Business Energy Tax Credit Sales Tax Rebate
		20%	1 ½%	1 ½%	20%	1 ½%
		30%	2 ½%	2 ½%	30%	2 ½%
		40%	3 ½%	3 ½%	40%	3 ½%
2008 - 50%		50%	4 ½%	4 ½%	50%	4 ½%
2010 - 60%	30%	60%	5 ½%	5 ½%	60%	5 ½%
2015 - 70%	50%	70%	6 ½%	6 ½%	70%	6 ½%
2020 - 80%	70%	80%	6 ½% + 1%	6 ½%	80%	6 ½% + 1%
2025 - 90%	70%	90%	6 ½% + 2%	6 ½%	90%	6 ½% + 2%
2030 - Net Zero	Net Zero	Net Zero	6 ½% + 3%	6 ½%	Net Zero	6 ½% + 3%

Energy Efficiency, Combined Heat & Power, & District Energy Systems Superior Energy Efficiency Fund

Low or no-interest loans to be used to fund the portion of a project that is not addressed by utility rebates or business energy tax credit. In existing buildings, industrial processes, combined heat & power, and district energy systems, the fund would apply to the total costs associate with the improvement. 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.

Energy Efficiency CBECS Demand	Energy Efficiency, Combined Heat & Power, & District Systems
-----------------------------------	--

Reduction Target	Superior Energy System Fund 30 Year Interest Rate
30%-50%	3%
50%-70%	2%
70%-90%	1%
90%-Net Zero	0%
Combined Heat & Power	0%
District Energy Systems	0%

EE/GB Action 4: CHP and Distributed Energy Development

Develop a plan to better utilize Washington's biomass and other resources in distributed energy systems, with a focus on distributed small-scale (less than 30 MW) combined heat and power systems, but also including, for example, larger industrial CHP systems and district heating systems as applicable.

2009 Action Concepts (as produced by small group)

Expanded Implementation of Distributed Energy, Combined Heat and Power (CHP) and Renewable Energy

Introduction – What is CHP? – CHP produces both heat/steam and power. The heat/steam can be used for industrial processes or to heat buildings/campuses. The heat/steam can also be used for cooling/freezing such as 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 to produce power and recover the waste heat. CHP system size can be based on: 1) Following the thermal demand for a facility; 2) Following the power demand for a facility; 3) Both when seasonal variation occurs; and 4) Providing power to a facility with high reliability. Prime CHP opportunities include forest products/pulp and paper mills, food processing with year round operation, dairies, feedlots, wastewater treatment facilities, campus settings with district heating of multiple buildings, industrial process facilities with 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/>.

Greenhouse gas reduction opportunity – CHP efficiencies—the sum of the energy in output electricity and heat divided by the total fuel energy inputs—ranges from 60% on the low end to 85% on the high end. This is in stark contrast to standalone fossil energy power plants (principally coal and natural gas) with efficiencies 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.

CHP and the Northwest power grid - The Northwest has had over a quarter century of very strong policy analysis of its power grid. This is a distinct advantage in sorting out the

greenhouse gas impact of energy efficiency, renewable energy, and CHP. The Northwest Power and Conservation Council is one of the major analytical bases for the Northwest <http://www.nwcouncil.org/>. If a megawatt (MW) of energy efficiency or CHP comes on line, what happens? The answer depends on whether or not the grid is in baseload mode or “on peak” (when a tough region wide cold snap occurs in winter for example). Our region has natural gas based “peaker” plants. They are also called “marginal resources”. On peak, we use less standalone natural gas. On base, we use less standalone coal based power from the Southwest or Eastern Montana. Note: Our hydropower system has been maxed out for years. So, we have wrapped around it energy efficiency, renewables, CHP, natural gas peaker plants, and imported coal based power. CHP is viewed as baseload power and as such can best be compared to the greenhouse gas production of coal based power. For an example of the depth of analysis see the I-937 presentation by the Northwest Power and Conservation Council staff (especially slides 25 to 31) at I-937 Rulemaking under conservation 2/23/07 “NWPCC Conservation Methodology Presentation <http://www.cted.wa.gov/site/1001/default.aspx> .

Should CHP enabling legislation consider only systems of up to 30 MWc (MW electrical capacity)? – CHP systems provide greenhouse gas and other emissions and economic benefits regardless of size. It is strongly recommended that no size restriction be placed on CHP systems. Rather than a size restriction, it is recommended that an efficiency restriction of no less than 60% for CHP plants be placed within the legislation. This is roughly double the efficiency of standalone power plants.

Pace of CHP project development in Washington – A few CHP projects are now being built or repowered (5 projects in 5 years). These are principally forest product mills and dairies. These 5 projects now on-line are Hampton Timber Mill in Darrington at 7.5 MWc, Sierra Pacific Mill in Burlington at 28 MWc, Vander Haak (450 kW) and DeRuyter (1.2 MWc) dairy digesters and Grays Harbor Paper (total capacity is now 18.5 MWc). Three of the five projects required grant or state assistance. A combination of the I-937 Initiative, development of interconnection rules and standards, improved economics with long term Power Purchase Agreements (10 years) and technology research/development and commercialization efforts have shifted Washington State from a position of no projects at all coming on-line to this trickle of projects.

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 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 . Waste heat to power 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 (see pages 73-75).

How does CHP in Washington compare to other states? – The American Council for an Energy-Efficient Economy (ACEEE) gives state CHP score cards based on a set of criteria. Washington ranks in the mid-tier. See slide 16 of this June 5, 2008 presentation given at an EPA CHP Partnership meeting

http://www.epa.gov/chp/documents/meeting_52508_elliott.pdf . In contrast, Oregon is in the top tier. Oregon has a combination of policies, incentives and Oregon Public Utility Commission (OPUC) regulatory standards. Preserving family wage jobs in rural Oregon (especially in the forest products industry) is a core policy goal. Climate change, renewable energy development and improved energy efficiency are others. A crucial landmark study was done by the OPUC. It is titled "Distributed Generation in Oregon: Overview, Regulatory Barriers and Recommendation, February 2005 by Lisa Schwartz http://www.puc.state.or.us/PUC/electric_gas/dg_report.pdf . Washington does not have an equivalent report. Since this report, the OPUC has methodically worked through a range of regulatory proceedings to enable CHP/distributed generation including standby rates, new generation, competitive bidding, PURPA groundrules and interconnection. Washington has done some of this effort but not with the determination and drive of Oregon. Output-based emission regulations (see below) are another area of needed improvement. California, Texas and a number of states in the Mid-West and Northeast have adopted this type of regulation.

What items would be included in CHP Legislation? – The following items are proposed to be included in the legislation:

- Tax Incentives in concert with CTED proposed bioenergy tax incentives – options include;
 - B&O tax credits;
 - Sales tax exemptions on machinery and equipment; and
 - Property tax exemptions
- Adjusting the definitions of alternative energy/bioenergy to include the recycling of spent liquor (the organic material is burned to recover the chemicals in pulp & paper mills;
- Adopting of output-based emissions regulations;
- Requiring CTED (on behalf of public utilities) and UTC (on behalf of investor owned utilities) assess the regulatory barriers to CHP and recommend enabling changes; and
- Preparing the state to address the waste energy provisions of the federal Energy Independence and Security Act of 2007.

Specifics of each item are detailed below.

How does this package of CHP enabling items fit with recent legislative, voter initiative and regulatory actions and proposals? – A number of recent steps have been taken that earned Washington its mid-tier score by ACEEE.

I-937 includes CHP under both the energy efficiency standard and the renewable electricity standard. This has helped establish the marketplace. Interconnection rules have been adopted per the state net metering law and federal Energy Policy Act of 2005. The Energy Freedom Program (now led by CTED) has funded several anaerobic digester projects and core infrastructure funding has been provided to Grays Harbor PUD in concert with Grays Harbor Paper.

SSB 6806 passed the legislature this last session and is signed into law. It exempts anaerobic digesters from property and leasehold excise taxes for 6 years

<http://apps.leg.wa.gov/documents/billdocs/2007-08/Pdf/Bills/Session%20Law%202008/6806-S.SL.pdf> .

SHB 2081 - Promoting the growth of cogeneration facilities in Washington was sponsored by Representative Van De Wege with co-sponsors including Blake, Koehler, McCoy, Takko and Hudgins. It provided a Business & Occupation tax credit of 50% of CHP costs <http://apps.leg.wa.gov/documents/billdocs/2007-08/Pdf/Bills/House%20Bills/2081-S.pdf> .

CTED is preparing a comprehensive set of bioenergy tax credit incentives as part of its 09-11 biennium legislative concept papers.

The 08 supplemental budget included \$50,000 to the Department of Ecology for a pulp and paper mill aging boiler and CHP potential study. The WSU Extension Energy Program will add steam assessments using Attorney General natural gas overcharge funds to complete the analysis.

Tax incentives – There are three traditional types of tax incentives used by our state: 1) Business and occupation tax credits; 2) Sales tax exemptions; and 3) Property tax exemptions. It is important to note that due to the minimal pace of CHP system development, minimal tax losses would occur for options 2 and 3 (“We’re not getting the revenue anyway”).

Output-based emissions regulations – EPA strongly encourages a shift from input-based air quality emissions regulations for boilers and power generation to output-based emissions regulations <http://www.epa.gov/chp/state-policy/output.html> . Traditionally boilers and power generators have been regulated on an input basis. Efficiency and renewable energy options do not compete on an equal footing with this air quality style of regulation. Output-based emissions provide a level playing field. EPA has developed a handbook to guide this change. It is entitled Output-Based Regulations: A Handbook for Air Regulators http://www.epa.gov/chp/documents/obr_final_9105.pdf .

Waste energy – The federal Energy Independence and Security Act of 2007 (EISA) (within the industrial section of the legislation see sections 372 to 375) included a requirement for EPA to provide the states a registry of recoverable waste energy. This section of the legislation would require Washington to take the necessary steps to take advantage of this opportunity. Waste heat to power should be added to I-937s options for power generation.

Spent liquor from pulp and paper mills – Green-e is a national program that certifies renewable energy certificates <http://www.green-e.org/> . It includes black liquor as eligible for renewable energy credits - See bottom of page 2 of the Green-e Energy National Standard v 1.5 http://www.green-e.org/getcert_re_stan.shtml#standard . Spent liquor is the remaining liquid from pulp and paper mill processes. The organic material in the liquid can be burned to recycle and recover the chemicals used. There are two types of liquor – red and black. Red liquor processes are rare. Washington has

one mill that uses this process (Cosmopolis). I-937 excludes black liquor as renewable resource even though it is organically based – See RCW 19.285.030 (18) <http://search.leg.wa.gov/pub/textsearch/ViewRoot.asp?Action=Html&Item=1&X=627151724&p=1> . Red liquor is excluded because it is not a solid or animal waste. This structure of the definition also excludes biodiesel based power generation. Note: Simpson Tacoma Kraft Mill's CHP project will sell its renewable power to California in part because of this issue. It is recommended to include spent liquor and biofuels in the definition.

EE/GB Action 5: Energy Efficiency for Natural Gas, Propane, and Fuel Oil

Develop one or more model program design that can be used by natural gas, propane, and fuel oil suppliers or others, as appropriate, to capture all cost-effective energy efficiency opportunities for users of those fuels.

2009 Action Concepts (as produced by small group)

Scope:

Do not address propane and fuel oil at this time - mechanisms for addressing this are not in place yet - needs further work.

Options:

1. Use a '937' requirement for gas utilities. Include cost recovery mechanisms. Decoupling/revenue neutrality should be provided.
2. Collect a charge on retail bills that is dedicated to conservation acquisition. (Determining the correct percentage for this could be problematic.) Provide revenue neutrality/decoupling.

Questions to CTED staff from this group:

What are current requirements for gas utilities to acquire cost effective efficiency?

What is the difference between this level of acquisition and the resource that could be achieved with options above.

Are there any carbon cost factors currently included in cost effectiveness calculations for gas utilities?

What impact would a carbon cost factor have on these figures?