

Leading the Way: Regional, state and Local Actions



Introduction

To successfully address climate change in Washington, the state's leaders and its citizens have shown their desire to rise to the challenge. The Governor's Executive Order 07-02 calls not only for recommendations for policies and strategies, but also for:

- ◆ initiating active involvement by the state in the development of regional and national climate policies and coordination with British Columbia;
- ◆ recommending how the state as an entity can reduce its generation of greenhouse gas emissions;
- ◆ working with state of Washington's local governments to maximize coordination and effectiveness of local and state climate initiatives; and
- ◆ engaging the general public in the process, soliciting comments and involvement and developing recommendations for future public education and outreach.

This chapter addresses these aspects of the Climate Change Challenge in three parts: 1) recommendations for a framework to support an engaged and informed citizenry, 2) actions that state government is taking and 3) public efforts at the local level:

- ◆ The proposed Citizen Engagement and Action Framework is the product of an extensive stakeholder process, and identifies a range of things needed for citizens to effectively engage in addressing climate change.
- ◆ The state Government Actions section looks at how Washington's state government is working with other governmental partners at a regional level, is incorporating climate change issues into its services to the people of the state, and is reducing its own greenhouse gas footprint. This section includes a progress report on several recent actions, including work toward clean cars, clean fuels, state fleet efficiency, energy efficiency, renewable energy, and the utility greenhouse gas emissions performance standard.
- ◆ The Local Efforts section profiles several public efforts that dovetail with the state's goals and provide leadership for addressing climate change from the local level.

I. Citizen Engagement and Action Framework

Interim Recommendations of the Climate Education Stakeholders

Washington governments, businesses, communities, and individuals all have a stake in reducing GHG emissions and preparing for the effects that cannot be avoided. Legislation, policies, and incentives are some of the actions needed to meet the state's goals. And many of these actions will require people to make different choices in their day to day decisions and activities.

For example, in 2005, 47 percent of Washington's greenhouse gas emissions were related to transportation. This is an area in which individuals, businesses and communities can make big reductions by making different choices. Reducing greenhouse gas emissions related to transportation will require thoughtful consideration around different infrastructure investment, community planning, and land use in order to allow real choices for people in how they get to where they live, work and play. It will also require that individuals think differently about how – and how often – they travel, especially as a single passenger.

Individual choices and actions can also make a huge difference in how efficiently homes and commercial buildings use energy. Innovative construction and remodeling, new technology, and conservation can help reduce energy demands.

To reach the 2020 reduction goals, all of us – consumers, homeowners, commuters and business owners – need to understand how our personal decisions contribute to climate change and what we can do to reduce greenhouse gas emissions. We also need to take advantage of the opportunities presented by climate change for new technologies, new jobs, and economic prosperity, including some of society's more disadvantaged populations.

Individuals need to think differently about how – and how often – they travel.

Stakeholders developed recommendations for citizen engagement

The Governor's Executive Order asked for recommendations for educating and engaging the public in the Climate Change Challenge. In fall 2007, Ecology hosted three summits around the state to tap into westside and eastside knowledge and expertise on climate change education. The two goals of the summits were to draft a framework for citizen engagement recommendations in response to the Governor's Executive Order, and to develop a network of climate education practitioners and stakeholders.

More than 70 climate educators attended the three summits. They represented a diverse group including regional energy providers, non-profits, city and county governments, tribes, zoos, aquariums, universities, classroom teachers, private citizens, and federal and state agencies. Dozens more stakeholders and citizens also provided review and comments on the draft framework. (See Appendix S for complete list of attendees and reviewers.)

The citizen engagement and action framework is linked to the priorities and recommendations identified by the Climate Advisory Team, and its Technical Working Groups, and the Preparation and Adaptation Working Groups, but it's only the beginning. Because citizen engagement stakeholders, the Preparation and Adaptation Working Groups, Technical Working Groups and Climate Advisory Team were all simultaneously working on their respective recommendations, there is still much work to be done to fully align the citizen engagement framework with the recommendations found in other chapters of this report.

A proposed framework for citizen engagement and action

Hundreds of comments were received from the climate change education summit participants and reviewers. The stakeholder process resulted in eight fundamental intended results and generated hundreds of ideas for specific actions that can be taken to reduce our state's greenhouse gas emissions, to prepare for the impacts of climate change, and to identify and take advantage of economic opportunities.

Washington's inclusion of a public education and engagement framework in its planned response to climate change challenges is unique. It presents the state with the opportunity to provide leadership in further engaging citizens in taking action to address climate change. Because these opportunities are so numerous, this should be considered a preliminary framework. It shows a few examples of existing and emerging programs ready to help accomplish the intended results. A complete framework would include many more of the actions generated by the stakeholders and would also identify program gaps and ways to fill them. (See Appendix T for complete list generated by the stakeholders.)

*WSU's
Carbon Masters
help local
neighbors reduce
their greenhouse
gas emissions.*

› Preliminary Citizen Engagement and Action Framework

The Citizen Engagement and Action Framework describes examples of actions that could be taken to achieve the following intended results:

Technical Assistance

Intended Result: Consumers, homeowners, commuters, business owners, and others have the technical assistance they need to make choices that will reduce their greenhouse gas emissions.

Action: Implement grassroots efforts through existing channels, such as energy providers, municipalities, and extension offices to provide technical assistance with such things as programmable thermostats, smart meters, consumer purchasing decisions, transportation options, and lighting options. Another effort could create carbon labels to be used on appliances and products to help consumers make informed choices. WSU Extension is developing a Carbon Masters program, similar to its Master Gardener program, in which people will be trained to teach others about reducing their greenhouse gas emissions.

Program Capacity

Intended Result: Existing climate change educators work in coordination to deliver effective programs in local communities; gaps are identified and filled.

Action: Coordinate and support the efforts of existing climate change education programs and local efforts to ensure maximum return for each dollar spent and to minimize duplication. WSU now sponsors "Power Your Future," a competition for high school students to develop programs and/or technology related to climate change.

WSU is looking for partners to broaden the outreach and participation in this program. Potential partners include Office of Superintendent of Public Instruction's "Sustainable by Design" program, Ecology, CTED and Pacific Education Institute. WSU has the potential to reach many students around the state, but needs assistance in getting information about the program to interested teachers and students.

Economic Advantage

Intended Result: A trained and knowledgeable "green collar" work force helps place Washington in a competitive global economic position.

Action: Train existing and future employees through targeted programs, mentoring, and apprenticeships and prepare them to work for a clean energy future. For example, Puget Sound Energy is making it a priority to re-strain its existing work force and to find qualified employees trained in energy efficiency and clean energy technology. Energy providers, secondary and post-secondary education providers can partner in developing these training programs. Special attention should be paid to low-income and other disadvantaged populations.

Education & Training

Intended Result: A vocational/technological career pathway from high school to post-secondary institutions produces a workforce prepared to meet climate change challenges.

Action: Develop climate change-related vocational and technical programs that meet the needs of students and that prepare them for careers that will help reduce Washington's greenhouse gas emissions. This requires also training teachers capable of developing and teaching the programs. An example of this type of program currently is offered at Cascadia Community College in Seattle.

Access

Intended Result: A climate change clearinghouse of information and resources is created and maintained.

Action: Currently, many groups and programs are working separately and independently to inform and assist Washington citizens to reduce their greenhouse gas contributions. In the citizen engagement summits held around the state in 2007, participants voiced a strong interest in having access to a clearinghouse to find resources, to stay informed, and to collaborate with colleagues. A responsible party is needed to develop and maintain an effective clearinghouse of information and resources; a function that could be provided by a state agency.

Youth Grassroots Engagement

Intended Result: A peer-to-peer network of youth is informed and motivated to reduce their GHG emissions, seek careers and business opportunities, and develop appropriate technology.

Action: To reach youth, enlist the assistance of informed youth to develop enticing and compelling messages via sources most familiar to young people (such as YouTube, MySpace, etc.). A youth network of peers could be developed through the use of state-required culminating projects at the high school level.

*Cascadia
Community College
is offering
clean energy
job training
through degrees
in alternative
energy technology
and business.*

Media Informs Citizens

Intended Result: The media consistently have the information they need, when they need it, to help citizens make informed decisions.

Action: Consistent messages and data – and timely news opportunities – are provided to the media by government, business, education program providers, and others. Information is easily accessible to the media through websites, press releases, and personal communication, such as editorial boards and tours of local projects.

Preparing for Unavoidable Impacts

Intended Result: Farmers, foresters, coastal landowners, homeowners and many others understand what actions they can take to prepare for and adapt to climate change.

Action: Local, state and federal public agencies develop information and educate specific audiences to help prepare for and adapt to unavoidable impacts of climate change.

› **Recommended Next Steps – Supporting the Framework**

This framework provides an effective roadmap for developing a comprehensive approach to citizen engagement and action. However, much work remains to be done:

- ◆ The recommendations for action need to be further developed by a broader group of public and private stakeholders.
- ◆ There needs to be more opportunity for public review and input.
- ◆ The framework needs to be tied more directly to the recommendations from the Climate Advisory Team and the Preparation and Adaptation Working Groups.

Several state and many local agencies have a role in meeting the challenge of climate change, but none have the existing capacity to carry out the public outreach and citizen engagement necessary to meet the climate change challenge. Their existing communication and engagement resources are devoted to helping them carry out their current core missions. Climate change is new and evolving and consistency in messages to the public is critical.

To further develop and implement the framework to help Washington meet its climate change goals, additional new elements are needed:

Phase 1

To provide citizens with opportunities to understand and join Washington's climate challenge, Ecology and CTED will:

- ◆ Develop and maintain a climate change website and listserv.
- ◆ Inform the public about the Climate Advisory Team, the Technical Working Groups, the Preparation and Adaptation Working Groups, and the Education and Engagement process, providing opportunities for comment.
- ◆ Share draft documents on the climate change website and via the listserv, and solicit public comment.
- ◆ Release the draft recommendations of the Climate Advisory Team and the PAWGs, both of which will be posted on the Ecology website for public review and comment. Experts are available to the media to answer questions.
- ◆ Conduct news and editorial briefings around the state prior to the release of the final reports and recommendations to CTED and Ecology.
- ◆ Announce the final recommendations of Ecology and CTED to Governor Gregoire on Feb. 6, 2008. Experts are available to the media to answer questions.

Phase 2

Contingent on available funding, establish a Citizen Engagement & Action coordinator at Ecology to serve Ecology, CTED and other state and local agencies and organizations involved in carrying out Washington Climate Challenge strategies.

If funded, this coordinator will:

- ◆ Leverage the combined communication and engagement resources of several state agencies in helping Washington communities, businesses and citizens to meet the challenge of climate change.
- ◆ Organize and support a Washington Climate Action Network of citizen, community, business and public-sector groups around the state.
- ◆ Be accountable for carrying out an engagement and action plan and delivering specific outcomes.
- ◆ Work with the Climate Action Network to establish quantifiable and measurable targets that will demonstrate the impacts of local and individual actions on greenhouse gas emissions goals.
- ◆ Use the new Climate Action Network to identify gaps and overlaps and recommend targeted engagement investments for decision makers to consider in 2009-11.

Phase 3

If established, the Citizen Engagement & Action coordinator will:

- ◆ Continue to implement and coordinate a fully-functioning Climate Action Network.
- ◆ Collect measurable data from network members to document the number of people involved in activities that will help meet the state's greenhouse gas reduction goals.
- ◆ Work with staff at Ecology, who will be measuring GHG reductions, to assess the success of the state's various strategies to reduce emissions, and to disseminate this information to the public.
- ◆ With the Network, evaluate engagement programs to determine where efficiencies can occur and where additional funding is needed to build capacity.
- ◆ Work with the Network, funding entities, and users of the engagement program(s) to identify gaps.

II. State Government Actions

State government has many responsibilities in providing services to the people of Washington. Included in those responsibilities is the need to address climate change. This section looks at how Washington state government is working with other governmental partners, is incorporating climate change issues into its services, and is working to reduce its own impacts.

◆ As a partner with other state and provincial governments, Washington's participation in the Western Climate Initiative (WCI) recognizes that our state's climate change impacts and opportunities do not end at our borders. In addition, a Memorandum of Understanding with British Columbia recognizes that as we share a climate and marine environment with our neighbor to the north, we must also work together to protect it.

◆ Within our borders, state government can address climate change issues not only through its programs and services, but also as an entity itself. The state owns and operates facilities across the state and is the owner of a large fleet of motor vehicles, ferries and airplanes. Efforts to reduce the state's own greenhouse gas emissions not only serve as a model but also are critical to the success of the Climate Change Challenge. We must "walk the talk."

The Western Climate Initiative

The Western Climate Initiative is a collaboration effort between western states, Canadian provinces, and Mexican states to reduce greenhouse gases in our region.

The Initiative was originally signed on February 26, 2007 by the governors of Washington, Oregon, California, Arizona and New Mexico. It invited other states, provinces, Mexican states and Indian Tribes to join as partners or observers. As of this date, the provinces of British Columbia and Manitoba and the states of Utah and Montana have formally joined as partners. Kansas, Wyoming, Nevada, Colorado, Alaska, Idaho, the provinces of Quebec, Saskatchewan and Ontario and the Mexican states of Sonora, Tamaulipas, Baja and Chihuahua are all observers.

The Initiative directs the staff of the partners (signatories) to accomplish three tasks:

1. Set a regional greenhouse gas reduction goal that is consistent with each partner's individual reduction goal;
2. Join a multi-state registry to track, manage and credit entities that report their greenhouse gas emissions and the reductions they make; and
3. Develop a design for a regional multi-sector market-based mechanism, such as a load-based cap and trade program, to help achieve the emission reductions. This design is to be completed by August 26, 2008, eighteen months after the Initiative was signed by the five founding partners.

› What We Expect To Deliver

Recommendations for the regional multi-sector market-based mechanism will be delivered to our respective governors and premiers in the form of a Memorandum of Agreement. It will be accompanied by information that explains where the partners believe consistency between the states and provinces is crucial to ensure a seamless carbon trading market as well as those design features where consistency is not as critical. Just as important, the partners will explain where they believe more work is necessary in both the short and long term. In Washington, these recommendations will be forwarded to the 2009 legislature for its consideration.

› WCI Work Status

The partners have accomplished two of the three tasks: a regional reduction goal has been established and all partners (and observers) have joined The Climate Registry, the only multi-state registry in the United States.

› Regional Reduction Goal

Working with the emissions inventory and projection for each of the partner jurisdictions, the WCI determined that a 15 percent reduction from 2005 levels by 2020 was consistent with all of the partners' individual goals. With each partner reaching its own goal, the region is assured of achieving this level of reduction. For Washington, the regional goal is consistent with the goals set out in Executive Order 07-02 and Senate Bill 6001.

› The Climate Registry

The Climate Registry is developing standard protocols to ensure consistent, accurate and verifiable reporting of greenhouse gases. These protocols will ensure that a ton of carbon, wherever emitted or reduced, is counted in the same way, giving assurance to any carbon trading markets that have formed or will form.

The Climate Registry is a non-profit corporation whose Board of Directors is made up of each of the governments that are its members. Currently, there are 39 states, the District of Columbia, three Canadian provinces and four Mexican states that are members. (All 13 Canadian provinces have committed to join.)

› Multi-Sector Market-Based Mechanism: GHG Cap and Trade

Currently, five subcommittees have been formed to analyze the technical aspects of creating a cap and trade program for greenhouse gases and make recommendations to the partners. The subcommittees and their initial responsibilities are to address:

- ◆ *Scope* – Which sectors of the economy, which emission sources and greenhouse gases should be covered in a cap and trade program? What is the right point of regulation for each?
- ◆ *Electricity* – Given the unique nature of the electricity sector in the west, how should the program be designed to best include that sector in a cap and trade program?
- ◆ *Allocations* – How will the regional cap on greenhouse gas emissions be determined and allocated between the partners and/or between sectors? How should credit for early reduction actions be given?
- ◆ *Offsets* – What is the role of an offset in this cap and trade program and how should it be designed to ensure offset projects are credible?

◆ *Reporting* – What is the best design for reporting that can ensure maximum consistency throughout the partner jurisdictions for reporting sources and for the states and provinces? What should be the role of The Climate Registry and how should that be set up to make reporting administratively simple for reporting sources and for government?

In early February, 2008, the WCI will be issuing a contract for an economic analysis and modeling of the various cap and trade design options.

› How WCI Works

The WCI works through subcommittees and operates on a consensus decision-making model. Each of the partners participates in monthly staff-level work sessions of the group. Partners and observers participate on the subcommittees. The Center for Climate Strategies is under contract to WCI to provide technical analysis. Support is also provided by the Pew Center on Climate Change, the World Resources Institute, the New America Foundation and the United Kingdom. The Western Governors Association is under contract to the WCI to provide overall project management.

› Stakeholder Outreach

In addition to hosting a website and a list serve, WCI partners hold regional teleconferences with stakeholders after each monthly working session. There are educational webinars hosted by the WCI technical advisors on the basics of cap and trade. The WCI work plan and each subcommittee's initial design issues have been submitted for public review and comment. One regional face-to-face stakeholder meeting has been held and more are planned. The subcommittees are identifying opportunities to provide their initial recommendations for public review and comment. A comprehensive draft of the recommendations will be made available for public input in May 2008. The draft design will be made available in July 2008.

Each state and province is also conducting its own WCI stakeholder process. In Washington, we meet regularly with WCI stakeholders in person and via teleconferences. We regularly post information on our list serve and maintain a comprehensive climate change website with WCI and The Climate Registry information. We are also working with our stakeholders to try to find common ground on the major design options being considered by the subcommittees.

› Other Efforts in the United States

WCI is not the only regional climate change effort underway in the United States, and there is opportunity for lessons learned to be shared among these efforts. Counting the states in the WCI, 23 states are currently working on the development of regional cap and trade programs for greenhouse gases. The Regional Greenhouse Gas Initiative is a cooperative effort between ten eastern states to establish a regional cap and trade program for the electricity sector. In addition, six mid-western governors have signed an agreement to create a multi-sector market-based mechanism for their states. Their model rule is to be developed by August 2008.

Partnering with British Columbia

In addition to working as partners under the Western Climate Change Initiative, in 2007 the Governor and British Columbia's Premier signed a Memorandum of Understanding between the state of Washington and the Province of British Columbia on Pacific Coast Collaboration to Protect Our Shared Climate and Ocean.

Under this Memorandum, Washington and British Columbia commit to work together to:

- ◆ cap greenhouse gas emissions;
- ◆ reduce greenhouse gasses from the transportation sector;
- ◆ pursue aggressive clean and renewable energy policies;
- ◆ combine efforts to improve air quality;
- ◆ coordinate efforts to encourage clean technologies; and
- ◆ monitor and record improvements.

Washington and British Columbia also commit to work together on ocean health; collaborate on activities that protect and restore coastal and marine habitats; encourage the development of ecosystem management approaches for ocean and coastal resources; build partnerships with individuals, businesses and others to help achieve climate change goals; and bring Pacific Coast governors and their key cabinet members together to forge a new Pacific Coast Collaborative on other areas of mutual interest and benefit for the Pacific coast region.

The related Forest Memorandum of Understanding between Washington and B.C. was also adopted to collaborate to improve forest health conditions, adapt to climate change, increase capacity and effectiveness for wildfire protection, and produce bio-energy from forest products.

The University of Washington's Climate Impacts Group (CIG) is working with British Columbia universities and other entities on several collaborative research projects related to hydrology and water resources:

- ◆ Working with the Columbia Basin Trust (based in the interior of B.C.) on water initiatives, including an effort to launch a climate change adaptation pilot project with four communities in the BC portion of the Columbia basin.
- ◆ Collaborating with the Pacific Climate Impacts Consortium (PCIC), B.C. Hydro, and Environment Canada to assist in building a fine scale, high resolution model for all of British Columbia and the Frazer basin. In addition, CIG is working with Bonneville Power Administration (BPA), the Northwest Power and Conservation Council (NPCC), and BC Hydro on the Columbia Basin hydrologic modeling work and developing hydrologic climate change scenarios for approximately 200 stream locations in the Columbia River basin. CIG's work on the Columbia is funded by Washington, British Columbia, Idaho, Oregon, BPA and NPCC.

In the area of forest management, the Climate Impacts Group and British Columbia entities are involved in the following research projects:

- ◆ A collaborative project between the U.S. Forest Service, the Climate Impacts Group, and the University of British Columbia looked at regional relationships between climate and surface fire in the interior Columbia Basin (B.C., Washington and Oregon). The fire history was reconstructed and summarized along with reconstructed climate data from the region for the period between 1651 and 1900. The results were published in the International Journal of Wildland Fire, on 8/10/2007.

23 states are currently developing regional cap and trade programs for greenhouse gases.

In the area of salmon conservation, the Climate Impacts Group, UW Department of Fisheries, and collaborators from University of British Columbia and Simon Frazer University are:

◆ Collaborating to assemble historic salmon abundance, harvest and hatchery production data. They are also developing a simulation model for investigating the integrated impacts of large scale threats and conservation strategies for pink, sockeye and chum salmon in the North Pacific. This project began in 2007 and will end in July 2009. It is funded by the Gordon and Betty Moore Foundation. Collaboration is also underway on coastal and sea level rise modeling and assessment of the impacts.

State Actions to Date and Underway

The state has been a leader in taking actions over the past several years to begin reducing greenhouse gas emissions, support sustainable practices and help catalyze the emergence of new clean technologies and jobs. The actions taken were mandated by Executive Orders and actions by the Legislature.

The Governor's Climate Change Challenge Executive Order 07-02 identifies several recent actions that, when fully and timely implemented, are expected to achieve more than half of the greenhouse gas reduction target set for 2020.

In addition, over the past five years, the legislature passed a number of major pieces of legislation that will make Washington more energy efficient and reduce our emissions of greenhouse gases.

The actions taken by the legislature cover tailpipe emissions standards, renewable fuels, state fleet efficiency, green buildings, energy efficiency, renewable energy and establishment of a greenhouse gas emission performance standard for utilities. A brief progress on the key state actions is provided below.

› 1. Tailpipe Emission Standards

Transportation is Washington's main source of greenhouse gas emissions. Washington state needs vehicle tailpipe standards to meet its 2020 emissions reduction goal. In 2005, the Washington Legislature adopted California's clean car standards, which ensure that, beginning with 2009 models, cars sold in Washington meet stringent emission standards, including standards for greenhouse gas emissions.

For Washington's (and California's) greenhouse gas emission standards to take effect, the U.S. Environmental Protection Agency (EPA) must first approve a petition filed by California allow the adoption of more stringent tailpipe emission standards. Since the 1970s, the EPA has quickly granted every vehicle waiver — more than 40 — requested by California. However, in December 2007, the EPA Administrator denied California's greenhouse gas waiver request.

It is estimated that implementation of California clean car standards for greenhouse gas emissions would reduce those emissions in Washington by 5.5 million metric tons by 2020. This is equivalent to eliminating about one million cars from Washington's roads. In comparison, the federal standards would reduce greenhouse gases by only 3.5 million metric tons by 2020.

Washington is one of 16 states that have adopted the California clean car standards, including standards for greenhouse gas emissions. In addition to Washington, the other state that have adopted, or have committed to adopting, California's strict automobile emissions standards are Arizona, Colorado, Connecticut, Florida, Illinois, Iowa, Maine, Maryland, Massachusetts, Montana, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Utah, and Vermont .

After EPA announced its intention to deny California's waiver request, Governor Gregoire announced that Washington would seek legal action against the federal government, and joined 12 other states in suing EPA for its failure to approve the waiver.

On January 23, 2008 the Governor joined 12 other governors in sending a letter to the EPA Administrator, Stephen Johnson, objecting to the Administrator's denial of the waiver on the basis that it is without merit and it ignores the rights of the states, as well as the will of the citizens of the nation. Also, on January 23, 2008, 17 Attorneys General sent a letter to the Administrator urging him to move forward and take action on the Massachusetts v. EPA remand, and if not, the states will take action to enforce the Court's mandate.

› 2. Clean Fuels

Washington has worked to diversify its fuel supply by exploring natural gas and hybrid vehicles and biofuels. Washington's state agencies, fleets, industries and citizens were early adopters of biofuels and have worked to coordinate the wide range of implementation issues, from air quality and agricultural production to permits and taxes.

Biofuels – ethanol and biodiesel

In 2006, Governor Gregoire and the Legislature positioned the state to play a central role in supporting a biofuels industry. The Legislature passed into law several requirements and incentives supporting an in-state biodiesel industry. A statewide minimum renewable fuel use standard for ethanol and biodiesel was established to ensure a growing renewable fuels market in the state. Two percent of all diesel fuel sold in Washington must be biodiesel by November 30, 2008 (jumps to 5 percent when in-state oil seed crushing and feedstocks reach a 3 percent threshold), and two percent of all gasoline sold in the state must be ethanol by December 1, 2008 (could go as high as 10 percent if it is recommended by Ecology based on the results of the air quality study underway, and if in-state feedstocks are available).

More than \$13 million in low interest loans from the Energy Freedom Program were awarded in fiscal year 2007 to support vital biodiesel infrastructure. Loans were awarded to integrated oilseed crushing and biodiesel production projects; oilseed crushing projects; and anaerobic digester bio-energy projects.

Biofuels feedstock development in the state varies dramatically according to the fuel in question and differs significantly from those currently being used to produce biofuels in other regions. More typical biofuel feedstocks, such as corn and soybeans, are not produced in quantity in Washington and must be imported (or irrigated if grown regionally), so the associated economics are even more challenging for our state.

While Washington faces some challenges in producing energy crops, it has a variety of other biomass resources that may be used to develop bio-based products and fuels. Due to our climate and growing conditions, Washington's most abundant sources of biomass are woody and complex in nature (timber waste, wheat straw, municipal solid wastes). This type of biomass is referred to as cellulosic biomass because the energy and fuel potential lies in the plant structure itself (the cellulose), rather than the seeds. Therefore, significant work must be done to develop crops and conversion technologies that are targeted to Washington's conditions.

Washington is investing in research to develop conversion technologies that will enable the state to utilize the most abundant biomass resources while also

identifying and establishing feedstocks that have the greatest potential to succeed in Washington's climate. Research will help create the needed collection, transportation and conversion technologies, improve existing and develop new sources of biomass, and uncover high-value bio-products to enhance the economics of the bio-economy.

A study conducted by Washington State University (WSU), with funding from the Department of Ecology (Ecology), indicates that such biomass could significantly contribute to meeting Washington's energy needs. For example, assuming that about 50 percent of the available resource — from biomass, municipal solid waste, straw, animal waste and forest harvesting/thinning residues — could be efficiently collected and converted, this could yield nearly 25 percent of the state's transportation fuel needs.

WSU and the Pacific Northwest National Laboratory (PNNL) have established a new partnership that will leverage decades of research to provide national leadership and advance our region's role in the emerging bio-products and bio-energy industry. To help set priorities for the collaboration, WSU and PNNL are conducting analyses of our state and regional resources that also will serve as a roadmap to guide future research, investments and strategies required to create and maintain an economically sustainable bio-economy in the Pacific Northwest.

In 2007, the Legislature passed a Cleaner Energy Act (HB 1303). Section 402 directed Washington State University and the Department of Community, Trade and Economic Development (CTED) to develop suggestions for potential biofuel incentive programs, including market incentives, preferred research programs, and other research methods to accelerate instate biodiesel crop development.

An interim report was published by WSU December 1, 2007, and is available at: <http://www.ses.wsu.edu/research/EnergyEcon.htm> The primary objective of this interim report is to develop a set of policy recommendations that provides a set of proposed actions to:

- ◆ Advance economically viable instate production of biofuel and biofuel feedstocks;
- ◆ Encourage environmentally sustainable instate production of biofuel and biofuel feedstocks;
- ◆ Encourage private investment in the feedstock, distribution, and fuel production sectors;
- ◆ Deliver the greatest net reductions of carbon emissions; and
- ◆ Reduce petroleum dependence.

The final report is due December 1, 2008.

Plug-in hybrid electric vehicle technology and electrification

Plug-in hybrid electric vehicle technology (PHEV) offers one of the best opportunities to reduce transportation carbon dioxide emissions in a cost-effective way. Smart integration of PHEVs into the electric power grid and into the transportation system can provide significant additional reductions. Coupling biofuels with PHEVs would further enhance the capability of PHEVs to lower greenhouse gas emissions.

In 2007, the Legislature directed CTED and Ecology to analyze vehicle electrification (HB 1303, section 401). The purpose is to accelerate the deployment of this electrification technology, remove barriers to more rapid adoption, create initial incentives and provide for the integration of PHEVs with other systems, including the power system and the transportation system.

The Climate Advisory Team, assisted by the Transportation and Energy Supply Technical Working Groups, analyzed the vehicle electrification as an option for greenhouse emissions reduction and recommended a strategy to accelerate and integrate Plug-in Hybrid Electric Vehicle use and speed up the deployment of PHEV technology, remove barriers to more rapid adoption, create initial incentives, and provide for the integration of PHEVs with other energy systems (see CAT recommendation 6, and Transportation option 10). The CAT recommended that PHEVs account for 10 percent of car, SUV, and small truck vehicle miles traveled (VMT) statewide by 2020.

CTED and the Department of Ecology, building on the recommendations of the CAT and the Transportation and Energy Supply Working Groups will submit a report to the Legislature on March 1, 2008. The report will focus on:

- ◆ Description of the various technologies, i.e., plug-in vehicles, vehicle-to-grid and electrical power technologies.
- ◆ Documenting the benefits to Washington's environment and economy from the use of these technologies.
- ◆ How to strategically expand the use of electrification, plug-in hybrid and other technologies to cargo and cruise terminals, port-related operations and equipment, school buses, state fleet, transit vehicles and others.
- ◆ Ways Washington can demonstrate to the original equipment manufacturers that there is a market for the technologies.
- ◆ What the state has to offer in the development of these technologies in the state – incentives, wireless communications, software, etc.
- ◆ Strategic demonstrations to promote transportation electrification in the private and public sectors.

The report will also provide some background for the development of vehicle specifications for 2015 required by HB 1303.

Biomass could significantly contribute to meeting Washington's energy needs.

› 3. State Fleet Efficiency

In 2005, an aggressive renewable fuel standard for state agencies was established by Governor Gregoire in Executive Order 05-01 (superseding Executive Order 04-06), Establishing Sustainability and Efficiency Goals for state Operations. The Executive Order directed agencies to reduce petroleum use (state agency fuel use is about 36 million gallons per year) by 20 percent in the operation of state vehicles and privately-owned vehicles used for state business by September 1, 2009, in part through managed replacement of the state vehicle fleet with high-efficiency vehicles, and in part through replacing standard diesel with biodiesel blends.

Public agencies have purchased more than 1,100 hybrids since these vehicles became available through state contracts; 500 of those are part of state agency fleets. This is a 25 percent increase from 2006. In 2007, a total of 340 of Washington's governmental organizations bought high efficiency vehicles under a contract negotiated by the Department of General Administration (GA). The contract is considered one of the best in the nation. It uses GA Vehicle Rapid Order Online Messaging (VROOM) to order vehicles via e-mail, reducing paper work, saving time and ensuring clear communication between the customer and the dealer. More than 37 public agencies received rebates on purchases.

The Cleaner Energy Act (HB 1303) Section 202 requires all state and local government-owned vessels, vehicles, and construction equipment to operate on electricity or biofuel by 2015. CTED is required by June 1, 2010 to develop rules about how state and local governments are to achieve the requirements of Section 202. The rules must outline a plan for how the goals will be met, the factors considered to comply with the goals, and a schedule for a phase-in process.

In addition, the Cleaner Energy Act encourages replacing school buses that are 1994 models or older with new models through a school bus replacement incentive program. Also, about 8,500 diesel school buses will be retrofitted in the next five years.

› 4. Washington's Green Building Initiative

In April 2005, Governor Gregoire signed Leadership in Energy and Environmental Design (LEED) requirements into law, requiring green standards for state-funded projects larger than 5,000 square feet and for major renovation projects. The Governor's leadership in making Washington the first state to require that new public buildings meet green building standards has landed her national recognition as a leader in the public works community. The landmark law creates energy efficiency, water conservation and other environmental standards. The high-performance green buildings bill made Washington the leader in building schools and other state buildings that do a much better job of protecting the state's air, land and water.

The use of green building designs would result in major energy savings and other improvements. For example, according to the state Board of Education and the Superintendent of Public Instruction's office, use of green building designs would result in:

- ◆ 20 percent annual savings in energy costs;
- ◆ 20 percent reduction in water costs;
- ◆ 38 percent in waste water production;
- ◆ 22 percent reduction in construction waste;
- ◆ A potential reduction in student absenteeism;
- ◆ A potential 5 percent decrease in teacher turnover rates; and
- ◆ A potential 5 percent to 26 percent improvement in standardized test scores.

The mandate specifies that major facility projects (those that receive funds from the capital budget) must be built to comply with the Leadership in Energy and Environmental Design Silver Standard, effective July 1, 2006. Washington's Department of General Administration (GA) is responsible for implementing this standard. It must also report to the Governor on the energy savings of the new buildings and identify incentives and disincentives that arise through the process. GA will be adopting rules in June 2008 to ensure compliance with the mandate.

Effective July 1, 2007, all K-12 school projects must be built to either the Washington Sustainable Schools Protocol or the LEED Silver Standard. Washington's Office of the Superintendent of Public Instruction (OSPI) is responsible for implementing this standard. They must also report to the Governor on the energy savings of the new buildings and identify incentives/disincentives that arise through the process.

Effective July 1, 2008, all affordable housing projects receiving Housing Trust Funds must be built to the Evergreen Standard for Affordable Housing (the standard that was developed to comply with Chapter 39.35D RCW). The Department of Community, Trade, and Economic Development (CTED) is responsible for implementing this standard. CTED must report energy savings from these projects to GA beginning in 2009.

Concurrent to the Governor adopting the high-performance public buildings legislation, the Department of Ecology began implementing an innovative solid and hazardous waste plan: Beyond Waste. In response to the significant contribution to landfills from construction and demolition debris, the Beyond Waste plan contains the Green Building Initiative. The primary goal of the Green Building Initiative is to make green building mainstream in Washington. This will drastically reduce construction and demolition waste, because every green-building standard requires a minimum a 50 percent reduction in on-site waste.

GA has identified 60 projects that meet the definition of a major facility project. Of those, the agency cites 56 projects that will proceed toward LEED silver certification.

› 5. Energy Efficiency

Building and energy codes and appliances standards

Washington is one of only 10 states with standards for minimum energy efficiency of specific products not covered by federal standards. The 2005 Legislature adopted minimum efficiency standards for 12 products (RCW 19.260.040). Some were overridden by the 2005 federal standards.

The 2007 federal Energy Policy Act adopted several new standards for lighting, appliances, and new standards and grants for promoting efficiency in government and public institutions.

Energy Independence Act efficiency measures

Energy efficiency measures called for by Initiative 937, the Energy Independence Act, are expected to make more efficient use of energy by reducing energy consumption through policies that spur efficiency, including appliances and equipment standards, building codes and consumer education. The potential for “saved” energy from residential and commercial use is quite high.

The Energy Independence Act requires the use of “methodologies consistent with those used by the Pacific Northwest electric power and conservation planning council in its most recently published regional power plan...” also known as the NPCC 5th Plan. The NPCC 5th Plan calls for reduction of 2,800 aMW (average megawatts) in energy consumption through conservation in the next 20 years (2025) in the Northwest. Washington consumes about 50 percent of the energy in the Northwest (based on Washington’s population compared to the rest of the region). The Department of Community, Trade and Economic Development (CTED) is in the process of adopting rules that outline the process, timelines, documentation and reporting requirements to ensure proper implementation of the Energy Independence Act (I-937). The rules cover both the conservation/efficiency and renewable energy requirements. CTED intends to adopt the rules in the spring of 2008.

› 6. Renewable Energy

Washington state ranked 4th in the nation in private investment (about \$121 million) in clean energy programs, according to Thomson Financial and the National Venture Capital Association. Also, the amount of clean technology in the Puget Sound region grew by 45 percent from 1997 to 2001, compared to 9 percent nationally.

Washington has significant renewable energy sources: solar, wind, wave, tidal and bio-mass. Shifting from fossil fuel-based energy to bio-energy and bio-products will reduce greenhouse gas emissions. The Energy Independence Act (Initiative 937) passed by the state’s voters in 2006 established renewable portfolio standards. Large utilities (25,000 customers and more) are required to obtain 15 percent of their electricity from new renewable resources such as solar and wind by 2020 (3 percent in 2012, 9 percent in 2016 and 15 percent in 2020) and undertake cost-effective energy conservation. The renewable portfolio standards affect 95 percent of the electric generation in the state.

Wind energy

As of January 2008, Washington has eight wind projects in operation, with more than 1,100 megawatts (MW) power capacity and an additional 126 MW is under construction. The state ranks 5th in wind production after Texas, California, Minnesota and Iowa. According to the Northwest Power Conservation Council, the potential wind energy capacity in the state is estimated at 3,740 MW.

Wave and ocean energy

Special buoys, turbines, and other technologies can capture the power of waves and tides and convert it into clean, pollution-free electricity. Waves are produced by winds blowing across the surface of the ocean. Because waves travel across the ocean, their arrival time at the wave power facility may be more predictable than wind. Tidal energy, which is driven by the gravitational pull of the moon and sun, is predictable centuries in advance.

Oregon and Washington have the strongest wave energy resource in the contiguous 48 states and could eventually generate several thousand megawatts of electricity using wave resources. Several sites in Puget Sound with excellent tidal resources could be developed, potentially yielding several hundred megawatts of tidal power. While no commercial wave or tidal projects have yet been developed in the state, several projects are planned for the near future. AquaEnergy Group, Ltd. is currently designing and permitting a one-megawatt demonstration wave power plant at Makah Bay, Washington. Several tidal power projects are also being explored in the region. Tacoma Power has secured a preliminary permit to explore a tidal power project at the Tacoma Narrows, and Snohomish County Public Utility District has received preliminary permits for seven other potential tidal power sites in Puget Sound.

The full environmental impacts of wave and tidal power remain uncertain. Concerns include impacts on marine ecosystems and fisheries. Environmental impact studies are currently underway and several pilot and commercial projects are undergoing environmental monitoring.

› 7. Greenhouse Gas Emission Performance Standard

In 2007, the Legislature passed the Climate Change – Mitigating Impacts Act (SB 6001), which includes a greenhouse gas performance standard for all new electricity-generating resources (including long-term power purchase contracts, defined in the legislation as five years or longer). The performance standard requires new resources to emit no more than the emissions rate of an average new, natural gas, combined-cycle combustion turbine, or 1,100 lb CO₂e/MWh (pounds of carbon dioxide emissions per megawatt hour of electric power), whichever is less. A resource is considered new when it becomes a “subject of long-term financial commitments,” defined in the bill as a five year or longer contract. The legislation allows for sequestering carbon dioxide in order to meet the performance standard.

The Department of Ecology is in the process of adopting rules to deal with:

- ◆ The implementation and enforcement of the Emission Performance Standard (EPS);
- ◆ Criteria for evaluating carbon sequestration plans;
- ◆ An output-based methodology for calculating emissions of greenhouse gases (GHGs) for cogeneration facilities; and
- ◆ An underground injection control program dealing with injection well construction, injection of CO₂ underground and monitoring geologic sequestration projects.

The draft rule language was developed with input from stakeholders representing public and private utilities, environmental groups, state and federal agencies and various interests. Ecology plans to file the rule-making proposal with the code reviser’s office on February 20, 2008. The Energy Facility Site Evaluation Council (EFSEC) will be filing similar rule amendments on the same day. Both Ecology and EFSEC will adopt the rule on or before June 30, 2008. The U.S. Environmental Protection Agency is in the process of adopting nation-wide rules addressing the injection of CO₂ underground. Once adopted, the federal rule will likely override the state’s underground injection control program, including the amended rule.

State Agencies Knowing and Reducing their Own Carbon Footprint

In 2005, Governor Gregoire in Executive Order 05-01 (superseding Executive Order 04-06), *Establishing Sustainability and Efficiency Goals for state Operation*, directed state agencies to write sustainability plans. Among the reasons identified were "...the regional and global implications of climate change, loss of biological diversity, and threats to resources such as clean water require us all to examine and change behaviors"; and "...state government should model sustainable business practices that contribute to the long-term protection and enhancement of our environment, our economy and the health of current and future generations."

Agencies responded by establishing sustainability objectives and preparing a biennial sustainability plan. The plan focuses on modifying the agencies' practices regarding resource consumption; vehicle use; purchase of goods and services; and facility construction, operation and maintenance. Agencies also looked at their policies, program implementation, relationships with local communities and internal employee education.

As a result, state agencies have done a tremendous job in eliminating waste and reducing energy used in conducting their agency's business. These practices not only reduced our environmental footprint, they translated into dollar savings.

However, a new way to see the future is emerging—a "low-carbon" future. According to the Governor's Executive Order 07-02, by 2020, greenhouse gas emissions in the state must return to 1990 levels. To further this goal, the Executive Order re-emphasized the need for state government to provide leadership in reducing greenhouse gas emissions from its own operations.

As the lead agency for climate change, Ecology responded by conducting a pilot project in the fall of 2007 to analyze the greenhouse gas (GHG) emissions footprint connected with its operations in the Lacey building. The first phase of the pilot project is to estimate the GHG emissions for 2006. This phase was done with Cascadia Consulting Group. The second phase is to develop a GHG emissions reduction plan and performance tracking, building on the work being done on the Sustainability Plan. The reduction plan will recommend interim emissions reduction targets, how to measure progress, and specific actions to meet both the interim targets and the long-term goal of zero net greenhouse gas emissions by 2020 from the agency's operations statewide.

Ecology is recommending that the pilot project be expanded to the other state agencies and to charge the sustainability teams, within the agencies, with the following tasks:

- ◆ Adopt GHG emissions reduction goal of zero net GHG emissions by 2020, striving toward negative GHG emissions.
- ◆ Analyze their agency carbon footprint.
- ◆ Develop a Greenhouse Gas Emissions Reduction Plan for their agency. The plan would contain reduction targets for 2010, 2015 and 2020, with interim milestones.

In developing the plan, the sustainability teams will:

1. Use information gathered in the GHG “footprint” analysis related to the quantity and sources of GHG emissions from the agency’s operations to establish interim reduction targets for 2010 and 2015, using 2006 as the base year. Targets should be set for each office (if feasible) and for the agency’s operation as a whole.
2. Identify best management practices (BMPs) and mitigation measures to meet the interim targets and the 2020 goal.
3. Evaluate the measures and BMPs based on:
 - Costs of implementation, and savings/avoided costs associated with implementation
 - Challenges and incentives for implementation
 - Effectiveness in meeting targets.
 - Availability of data.
 - Implementation timetable –immediately, short-term and long-term.
4. Develop a system to improve and coordinate data collection, tracking and reporting of GHG emission reductions.
5. Develop a system to verify the reliability of reported energy savings and GHG reductions.
6. Include a process improvement system to evaluate reduction plan performance and make improvements, when needed.

In developing the reduction plan the sustainability teams must:

- ◆ Be mindful of complementary initiatives – Executive Orders and legislation. It must build on work being done to implement sustainability objectives and plans, and take into account existing legislative requirements and Governor’s directives relating to state operations, including the Governor’s directive requiring the use of the energy saving software on all computers operated by state agencies.
- ◆ Actively seek input and involvement from their agency staff.
- ◆ Post progress and work products on the agency intranet site.
- ◆ Include progress on the GHG reduction plan in conjunction with the sustainability plan.

Before this recommendation is implemented there is a need to make Ecology’s piloted tool applicable to all regions of the state. Emission factors appropriate for the various regional transit systems and electric utilities that serve each portion of the state in which state agencies operate will need to be added. The current tool only covers the greater Puget Sound region. Also, there is a need to train state agencies in use of the footprint calculator and provide assistance with data compilation, analysis and reporting.

A total budget of \$25,000 to \$50,000 is needed to expand this tool to the more than 40 state agencies.

*A new way
to see the future
is emerging —
a “low-carbon”
future.*

III. Local Efforts

The Governor's Executive Order 07-02 calls for working "with the state of Washington's local governments to maximize coordination and effectiveness of local and state climate initiatives."

The recommendations of the Climate Advisory Team, the Preparation and Adaptation Working Groups, and the Citizen Engagement and Action Framework all underscore the importance of coordinating state and local efforts.

Cities and counties around the state are already taking measures to address climate change issues. Many of them are incorporating conservation efforts, such as switching light bulbs to compact fluorescents and installing energy-saving thermostats in municipal buildings. These conservation measures are a drop in the bucket toward meeting the state's goal of reducing greenhouse gas emissions to 1990 levels by 2020. There are many more opportunities for local efforts to make a big difference, and the state is more likely to meet its greenhouse gas emissions reduction goals with the help of local efforts.

County and municipal governments are not the only local public entities that can make a difference. Entities such as utility, education, transportation and conservation districts also can play a significant role.

Following are examples of some of the many local efforts in Washington addressing reductions in greenhouse gas emissions. These examples are by no means exhaustive; they merely illustrate some of the critically important steps being taken by local jurisdictions of various types and sizes, all across the state.

Washington's local-level efforts are not alone. Similar efforts are underway across the nation and around the world. The cities included in the examples below all have signed the U.S. Mayors Climate Protection Agreement, and are striving to meet or beat the Kyoto Protocol targets, which include a 7 percent reduction in greenhouse gases from 1990 levels by the year 2012.

See <http://www.iclei.org/> and <http://www.usmayors.org/climateprotection/about.htm>

Snohomish County

Through a 2007 Executive Order, Snohomish County set a greenhouse gas emissions reduction goal of 20 percent below 2000 levels by the year 2030. The Executive Order also created a county staff Climate Change Committee. The Committee is reviewing the County's internal operations and will make recommendations on how to reduce Snohomish County government's carbon footprint and greenhouse gas emissions. The Committee is also developing an inventory and baseline of greenhouse gas emissions for Snohomish County.

Chelan Public Utilities District

› Resource \$mart

This program helps industrial and commercial PUD customers install energy efficient improvements. Chelan PUD helps pay for part of the up-front costs to replace, retrofit or install new energy efficient equipment. They can provide up to 75 percent of the cost for each project. Some of these projects include better lighting, heating and cooling system improvements, more efficient refrigerator fans and fast-acting doors for fruit warehouses.

Resource \$mart is made possible because Chelan PUD can resell saved energy to the wholesale market. This market system then allows for lower energy prices for all customers. Businesses who are participating in this program have saved an average of 4.2 megawatts per year – enough to power 1,800 homes.

› Sustainable Natural Alternative Power (SNAP)

Chelan PUD created the SNAP program in the fall of 2001 to link local customers who want to produce solar and wind energy with those who would like to purchase it. The program is entirely voluntary; customers choose to pay a little extra on their utility bills to support solar and wind power. The solar and wind energy producers are limited to installments of 25 kilowatts or less and they are responsible for maintenance. Electricity that is generated from the solar and wind equipment is added to Chelan PUD's existing hydropower base and transferred across the grid. The SNAP program is sustained by PUD customers, with no subsidies or rebates offered. Due to this, the energy producers receive payment based on the amount of solar and wind energy purchased by customers.

SNAP began with three customers – one was a homeowner and the other two were the Federal Building in Wenatchee and the Wenatchee Valley College. In June 2003 Alcoa and the International Brotherhood of Electrical Workers provided more than \$1 million in materials and labor to install solar panels at all Chelan County schools and seven nonprofit agencies. The proceeds generated from these solar panels were split between the schools, agencies and the Alcoa foundation, which uses the money for other community projects. Having solar panels at Chelan County schools has allowed for the addition of solar energy to science lessons. Chelan PUD is working with schools to add equipment that would allow students to monitor the solar energy generated by the panel located at their school.

One year after the SNAP program began, Washington moved from last place to sixth in the nation for making solar energy cost-effective. In June of 2003, the SNAP program earned a national innovation award from the Interstate Renewable Energy Council.

City of Washougal

In September 2007, the City of Washougal adopted Resolution No. 951, which supports sustainable practices and encourages the formal adoption of sustainable goals. In part, the city resolves to initiate meaningful sustainability by:

- ◆ Increasing citywide recycling to work with citizens and Waste Connections to determine the current recycling baseline and report annually on recycling progress.
- ◆ Determining Washougal's carbon footprint and establishing strategies, goals and timelines for reducing carbon emissions.
- ◆ Using hybrid vehicles and other forms of clean transportation within the city fleet, where feasible.
- ◆ Creating a standing sustainability committee comprised of citizens and businesses to assist the city in the significant sustainability effort.

City of Olympia

› Green Power

One way the city is achieving its goal of sustainability is to reduce greenhouse gas emissions from electricity consumption by purchasing 100 percent green power for its power utilities. Green power will be used to provide all of the electrical needs for drinking water, wastewater and storm and surface water utilities. Due to citizen support, Olympia is the largest purchaser of green power from Puget Sound Energy.

› Green Fleets

In 2007 the City of Olympia adopted a green fleets policy. The city is converting its fleet to B40 biodiesel (a blend of 40 percent biodiesel and 60 percent petroleum diesel), which is expected to reduce its carbon emissions by 31 percent. Starting in July 2005, the city also retrofitted 20 heavy duty trucks and machines with diesel oxidation catalyst converters (DOC). DOCs reduce carbon monoxide and hydrocarbon emissions by more than 50 percent.

› Zero Waste

In June 2006 the Olympia City Council adopted a Zero Waste Resolution, creating two waste reduction and recycling targets. The first target is to reduce waste by 5 percent per capita, a reduction equal to 3,600 tons of waste. The second target is to increase the recycling and composting portion of total waste from 51 percent to 65 percent. The city wants to divert 9,750 tons of waste from the landfill through strategies such as increased recycling of residential and commercial waste, increased diversion of organics, and improved recycling of construction and demolition debris. Along with these two targets, the city also included three long-term goals in the Zero Waste plan. These goals are:

- 1) Reduce the overall waste generated in Olympia.
- 2) Increase the quantity of recyclable and compostable materials diverted from the landfill.
- 3) Manage Olympia's waste system responsibly.

City of Bellingham

› Green Power

In October 2007, the City of Bellingham received the Green Power Leadership award from the US Environmental Protection Agency (EPA) in recognition of the city's impact on the green power market. Starting in 2006, Bellingham's city government began purchasing 100 percent of its electricity from renewable sources through Puget Sound Energy's Green Power Program. The clean power purchase is part of the city's Green Power Community Challenge, a community-wide campaign to promote renewable energy and reduce the community's dependence on fossil fuels and its vulnerability to rising energy costs. The Whatcom County government has also decided to begin buying 100 percent of its electricity from green sources. Nearly 60 businesses and several hundred residential customers are also doing the same, and the numbers are growing.

› Climate Protection Plan

The city has been working with ICLEI- Local Governments for Sustainability <http://www.iclei.org/> on a Climate Protection Plan. The plan includes the following steps:

- 1) conduct a baseline emissions inventory and forecast
- 2) adopt an emissions reduction target for the forecast year
- 3) develop a Climate Action Plan
- 4) implement the Action Plan; monitor and verify results

City of Spokane

The City of Spokane created an advisory committee that is looking at ways to achieve a 7 percent reduction in greenhouse gas emissions from 1990 levels by 2012. A greenhouse gas inventory was completed in 2007.

› Spokane Transit

In 2006 Spokane Transit saw an increase of 9.4 percent in ridership that was largely due to service improvements made in 2005. The improvements were accomplished even though fewer dollars were spent per profitable hour than by any other urban transit system throughout the state. The increase in ridership was the second highest for all urban systems in the state of Washington and more than three times higher than the national average. Increases in ridership for 2007 are projected to be in the double-digits, with the first three quarters showing an increase of 11.7 percent.

In mid-2007 Spokane Transit was awarded a grant from the Department of Ecology to reduce diesel emissions on many of its buses. By the end of summer 2007, 83 buses were retrofitted with new emissions components which, according to the manufacturer, reduce emissions by 90 percent. Each bus was equipped with a filter for recycling oil that vaporizes within the engine before escaping into the atmosphere. Spokane Transit will also be using grant funds to fit many of the buses with filters that will remove particles from the exhaust. New buses will be required to have a computerized version of the same filtration systems.

› CTED Sustainability Grant

The City of Spokane was awarded a sustainability grant from the Department of Community, Trade and Economic Development for 2008. The sustainability grant will help the city create a strategic plan for how climate change and high oil prices will impact the city's ability to operate and provide services. It will also help the city figure out how to help the Spokane community prepare and adapt to the impacts from climate change.

City of Vancouver

› Greenhouse Gas Footprint

The City of Vancouver is working with Good Company, a research and consulting firm, to measure the greenhouse gas emissions of the city and community day-to-day operations. The target areas in which the city is collecting data include: electricity and natural gas consumption, transportation with fleet and personal vehicles, and waste and composting. The city plans to finish the overall project by the summer of 2008. The greenhouse gas baseline based on the data will be used in the city's efforts to meet the U.S. Mayors Climate Protection Agreement emissions targets.

› Sustainable Vancouver Green Ribbon Panel

In November 2007, the city convened the Sustainable Vancouver Green Ribbon Panel which includes 20 leaders of businesses, agencies, organizations and neighborhoods. The panel is working together to create the policy and plan for addressing sustainability for city operations and community strategies. The panel is due to finish the planning process by the end of summer 2008. The sustainability policy and plan will then be provided to the City Council for consideration and adoption in 2008.

The panel is considering community strategies that include supporting local products and encouraging green buildings and sustainable development. They are considering city operations such as practices for saving energy and other resources.

The city has already begun programs and taken actions toward promoting sustainability. Some of these actions include:

- ◆ Enhancing the city's tree canopy through the Urban Forestry Program.
- ◆ Expanding trails and transportation networks to encourage biking and walking.
- ◆ Switching to LED lights in traffic signals and to T-8 fluorescent bulbs in city facilities.
- ◆ Adopting a new policy ensuring that new and existing facilities will meet green building, LEED (Leadership in Energy and Environmental Design) standards. This new policy can be seen in the sustainable design of the Firstenberg Community Center, the Marshall Center remodel, and recently the first Hilton hotel in the world to be LEED certified.

City of Seattle

› Mayors Initiative and Green Ribbon Commission/ Climate Action Plan

In February 2005, Seattle Mayor Greg Nickels launched the U.S. Mayors Climate Protection Agreement, inviting other cities to join Seattle in advancing the goals of the Kyoto Protocol—cutting greenhouse gas emissions to 7 percent below 1990 levels by 2012. (See below.) <http://www.usmayors.org/climateprotection/about.htm>.

The Seattle Mayor's Green Ribbon Commission on Climate & Climate Action Plan describes a suite of climate protection actions that will allow Seattle to meet or beat the Kyoto Protocol greenhouse gas emissions reduction goal.

› Clean & Green Fleet

Seattle city government has already reduced greenhouse gas emissions by more than 60 percent with green buildings and alternative fuel vehicles. Seattle's Clean & Green Fleet Plan set a goal of using the cleanest fuels and most fuel-efficient vehicles available. As a result, the city has reduced fleet use of fossil fuels by 12 percent compared to 1999. http://www.seattlecan.org/about/city_progress.html

› Seattle City Light

Seattle City Light (SCL) was the first electric utility in the country to achieve zero net greenhouse gas emissions. This was achieved through aggressive conservation programs, innovative energy efficiency solutions, and carbon offsets. Some examples of these programs/solutions include: a 2003 greenhouse gas offset contract with Climate Trust (SCL buys offsets from cement material construction); and in 2002 SCL began receiving energy from the stateline Wind Project through which they are producing about 54 megawatts of wind power per year.

› Seattle Climate Partnership

In 2006 Seattle initiated the Seattle Climate Partnership, which includes 50 Seattle-area employers. The members voluntarily joined and have agreed to assess and reduce their carbon footprints. The partnership provides technical assistance and other resources to help businesses take action to reduce their carbon impact.

› Climate Action Now (CAN)

Seattle Climate Action Now (CAN) is being led by the city of Seattle and involves partnerships with businesses, organizations and individuals throughout Seattle. Seattle CAN provides local citizens with tools they can use to start making a difference to slow the effects of climate change. These tools are applicable at home, work or on the road. Along with these tools, individuals can partner with people from all over the city to work together toward protecting the climate. Seattle CAN provides four simple steps for anyone who wants to get involved: calculating individual's carbon footprint, developing a personal climate action plan, finding climate protection resources and ideas, or participating with friends and neighbors in one of many community events. (www.seattlecan.org)

› The Mayors Climate Protection Agreement

Launched by Seattle Mayor Greg Nickels, the U.S. Mayors Climate Protection Agreement shows how local leadership and action can make a difference in addressing climate change issues, and why coordination with state initiatives is important.

Since February 2005, when the initiative began, more than 500 mayors from all 50 states, as well as the District of Columbia and Puerto Rico, have signed on to the agreement on behalf of their own cities. By signing, the mayors commit to:

1. Urge their state governments, and the federal government, to enact policies and programs to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol – 7 percent reduction from 1990 levels by 2012;
2. Urge the U.S. Congress to pass the bipartisan greenhouse gas reduction legislation, which would establish a national emission trading system; and
3. Strive to meet or beat the Kyoto Protocol targets (7 percent reduction from 1990 levels by 2012) in their own communities, through actions ranging from anti-sprawl land use policies to urban forest restoration projects to public information campaign

Each community meeting the emissions targets contributes to an overall reduction of emissions across the United States. The same is true at the state level.

4. In Washington, the number of cities that have signed the agreement has increased by about 50 percent since the Governor issued Executive Order 07-02.

Washington state cities that have signed the agreement

Auburn	Lake Forest Park
Bainbridge Island	Lynnwood
Battle Ground	Olympia
Bellevue	Pacific
Bellingham	Redmond
Bremerton	Renton
Burien	Sammamish
Camas	Seattle
Clyde Hill	Shoreline
Coupeville	Snoqualmie
Edmonds	Spokane
Everett	Tacoma
Ferndale	Tukwila
Issaquah	Tumwater
Kirkland	Vancouver
Lacey	Washougal

<http://www.usmayors.org/climateprotection/about.htm>

Endnotes

- 1 Greenhouse gases are certain gas molecules in the atmosphere that absorb and reemit infrared solar radiation, warming the earth's surface and the lower atmosphere. GHGs included in the Washington Greenhouse Gas Inventory are Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur hexafluoride (SF₆).
- 2 The terms Clean Economy and Low-Carbon Economy are used interchangeably in this report to describe activities related to the production and distribution of goods and services in a way that promotes environmental protection, economic prosperity, high quality jobs, social equity, and future quality of life, while emitting far less carbon and other greenhouse gases into the atmosphere.
- 3 All net present value estimates are calculated using a 5% real discount rate.
- 4 Intergovernmental Panel on Climate Change: Fourth Assessment Report. Working Group 1. Climate Change 2007: The Physical Science Basis. Available at: <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html>
- 5 Based on results from a number of global climate models. From Overview of Climate Change Impacts for Washington. Summary by the UW Climate Impacts Group in Preparing for the Impacts of Climate Change in Washington: Draft Recommendations of the Preparation and Adaptation Working Groups. December 21, 2007 draft.
- 6 Intergovernmental Panel on Climate Change: Fourth Assessment Report. Climate Change 2007: Summary for Policymakers. Available at: www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf
- 7 The goals of Executive Order 07-02 were legislated during the 2007 Legislative session with the passage of Senate Bill 6001 (SB 6001). On May 3, 2007, Governor Gregoire signed this landmark legislation which established in statute the statewide GHG emissions reduction goals and imposed an emissions performance standard on baseload electric generation. See Appendix A for Executive Order 07-02 and Appendix B for SB 6001.
- 8 See Appendix C for the CAT charter and the CAT website for additional information: www.ecy.wa.gov/climatechange/cat_overview.htm
- 9 Rosenthal, Elizabeth. "U.N. Report Describes Risks of Inaction on Climate Change." NY Times. 17 November 2007. Available online at: www.nytimes.com/2007/11/17/science/earth/17end-climate.html?pagewanted=print
- 10 The major GHGs include three gases and three groups of fluorinated gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Emissions of these GHGs are presented using a common metric, (CO₂e), which indicates the relative contribution of each gas to global average radiative forcing on a Global Warming Potential (GWP) weighted basis.
- 11 Intergovernmental Panel on Climate Change: Fourth Assessment Report. Climate Change 2007: Summary for Policymakers. Available at: www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf
- 12 Figure referenced from Mote et al. 2005. Research by the Climate Impacts Group at the University of Washington shows that spring snowpack, also referred to as snow water equivalent (SWE), has declined since monitoring became widespread in the 1940s. Many "individual" monitoring sites in the Cascades show 30-60% losses. SWE is affected by both temperature and precipitation, each of which shows large year-to-year and decadal variations associated with natural variability. Relative losses are greater in lower and mid-elevations where mid-winter temperatures are warmer; higher elevation sites where average mid-winter temperatures are still well below freezing do not show declines in SWE. www.climate.washington.edu/snowpackdiscussion.html
- 13 Climate Impacts Group, University of Washington. <http://ces.washington.edu/cig/>
- 14 Overview of Climate Change Impacts for Washington. Summary by the UW Climate Impacts Group in Preparing for the Impacts of Climate Change in Washington: Draft Recommendations of the Preparation and Adaptation Working Groups. December 21, 2007 draft.
- 15 United States Geological Survey Glacier Studies Program. <http://geochange.er.usgs.gov/poster/glacier.html>
- 16 Ibid.
- 17 Doppelt et al, 2006. Impacts of Climate Change on Washington's Economy: A Preliminary Assessment of Risks and Opportunities. Washington Economic Steering Committee and the Climate Leadership Initiative Institute for a Sustainable Environment at the University of Oregon. November 2006. Available at: www.ecy.wa.gov/pubs/0701010.pdf
- 18 Stern, 2006; Doppelt et al, 2006
- 19 Gross emissions estimates exclude carbon dioxide removed or sequestered from the atmosphere as the result of land use, land use change, and forestry activities.
- 20 This analysis includes the six gases included in the U.S. Greenhouse Gas Inventory: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Emissions of these GHGs are presented using a common metric, CO₂ equivalence (CO₂e), which indicates the relative contribution of each gas to global average radiative forcing on a Global Warming Potential (GWP) weighted basis. In order to be consistent with the US EPA National GHG inventory, the GWP values in this report are from the Second Assessment Report (SAR) of the Intergovernmental Panel on Climate Change (IPCC).
- 21 Gross U.S. emissions in 2005 were 7,260 MMtCO₂e (U.S. EPA, U.S. Inventory of Greenhouse Gas Emissions and Sinks 1990-2005).
- 22 This projection for GHG emissions through 2020 was developed using the State projections of population and employment growth, utilities' projections of electricity use, and input from Washington staff from CTED, Ecology and other departments. For greater detail, see the full report in Appendix D.
- 23 Chlorofluorocarbons and hydrochlorofluorocarbons are also potent greenhouse gases; however, they are not included in GHG estimates because of concerns related to implementation of the Montreal Protocol. See Appendix D for more information.
- 24 The recent decision on December 19, 2007 by EPA to deny California's request for a waiver from the Clean Air Act so that it could implement tailpipe emissions standards for GHGs illustrates that reductions in GHG emissions cannot be counted on until they actually occur. Washington State has also adopted the California standards, and the potential reductions from their implementation in Washington has been factored into the emission reductions and net cost/benefits of the 'recent actions' referred to in this interim report. The US Congress has passed and the President has signed, also on December 19, 2007, federal legislation that increases the Corporate Average Fuel Efficiency (CAFE) standards as well. Washington has joined a lawsuit against EPA over its decision. This report and the cumulative analyses of potential emissions reductions and net costs/benefits, have not been adjusted or modified to reflect what either the delay or denial of the State's ability to implement the California standards or the increase of the CAFE standards might mean for either emission reductions or cost benefits. At minimum, given the pending litigation, implementation of the California standards will be delayed. This delay will diminish the anticipated GHG emissions reductions (18.3 MMtCO₂e cumulative GHG savings from 2008-2020) and benefits (\$2.6 billion in overall benefits to the state on a cumulative net present basis through 2020), and the overall positive contribution of this recent action towards meeting the Executive Order goals. Also, the increases in CAFE standards will go into effect later than the original date on the California standards, so they will not fully make up for the California standards.
- 25 Members of the CAT organized and attended a meeting with representatives of the financial and entrepreneurial communities to discuss how best to enhance investments to reduce carbon and spur technological innovation throughout Washington's economy. This text builds on findings from these discussions.
- 26 See Appendix E for a list of TWG members. Additional information is available on the website: www.ecy.wa.gov/climatechange/cat_twg_overview.htm
- 27 The options were analyzed for their net GHG reduction potential in MMtCO₂e using IPCC 100 year global warming potential, reported for 2012, 2020, and cumulatively 2008-2020 (where applicable, longer-term reduction potential was noted as an additional benefit, but not quantified due to uncertainties associated with extended projections of reductions). Details of additional benefits that are likely to accrue from each option are contained in the complete policy options documents in Appendices F-J.
- 28 For a summary of the key elements of the recommended methodology for quantifying the GHG impacts and costs for those TWG policy options that were considered amenable to quantification, see Appendix K.
- 29 While most strategies were separately assessed in terms of emission and cost implications as if they were implemented alone, their combined impact was also analyzed and overlapping emission reductions were subtracted to avoid double counting.
- 30 Overlaps among options within sectors are included in the overall sectoral results shown. The total estimated emissions reduction shown in Figure 5 for 2020 thus represents the sum of all the bars shown in Figure 5.
- 31 The height of each bar indicates its cost per ton of CO₂e reduced or removed, while the width represents its cumulative emissions savings through 2020. The area is equivalent to its net present value cost to 2020, or cost savings if below the axis.
- 32 A recent report from McKinsey & Company (2007) does a similar analysis of the US as a whole and this analysis correlates well with what the CAT found regarding its strategies.
- 33 All net present value estimates are calculated using a 5% real discount rate.

34 This figure reflects the estimated cost of the Low-Carbon Fuel Standard (T-11). This option would require significantly more biofuel (or other low carbon fuels) than the agriculture and forestry options would provide, and thus the costs of In-State Production of Biofuels & Biofuels feedstocks (AW-2) and Improved Commercialization of Advanced Lignocellulosic Processes (F-7) are assumed to overlap with the overall cost of the standard.

35 Options not quantified for costs and GHG emissions reductions are not included in this table. Additional details on all options are contained in Tables 4.1–4.5 at the end of this document and in Appendices F–J.

36 See Appendix L for additional information on the fuel and jobs goals methodology and analysis.

37 Fuel imports are understood as State imports; fuel produced domestically in another State is considered an import. Biofuels are also to be included when progress toward the goal is tracked, as it is also presumed that import (versus in-State production) of biofuels is to be minimized. Fuels that are technically imported into the State for the purpose of generating electricity are not necessarily energy imports into the State, since electricity generated in Washington is often delivered outside the State. Segregating fuel imports used for in-State electric delivery versus out-of-State electric delivery is extremely difficult and hence changes in the electric generation sector cannot be tracked; these fuel imports are therefore omitted from the analysis. See Appendix L for additional information on the fuel goal methodology and analysis.

38 See Appendix M and the WCI website for more information: www.westernclimateinitiative.org/

39 Chapter 43.21C RCW. Enacted in 1971, SEPA provides the framework for agencies to consider the environmental consequences of a proposal before taking action. It also gives agencies the ability to condition or deny a proposal due to identified likely significant adverse impacts. The Act is implemented through the SEPA Rules, Chapter 197-11 WAC.

40 SB 5441 passed by the 2005 Legislature created the Washington Learns Steering Committee, which was co-chaired by Governor Gregoire, and after a year of intensive study, developed a final report with comprehensive, long-term recommendations for Washington's education system. www.washingtonlearns.wa.gov/

41 2006. Washington Learns Final Report: World Class, Learner Focused, Seamless Education. Available at: www.washingtonlearns.wa.gov/ourwork.htm

42 The estimates developed for the CAT on job creation from its strategies (see Section III) are based on aggregate information about clean energy activity and jobs, and implicitly assume that the same relationship between jobs and expenditures as witnessed historically will hold through 2020. Actual deployment of changing technologies and production practices will inevitably produce a different outcome, but the promise of significant skilled labor employment appears bright.

43 Quote from Van Jones, a Yale-educated lawyer who founded the Ella Baker Center for Human Rights in Oakland. Jones believes that green-collar jobs are exactly what unemployed residents of cities like Oakland need. Walsh, Bryan. Bring Eco-Power to the People. November 21, 2007. Time Magazine. www.time.com/time/magazine/article/0,9171,1686811,00.html. Accessed December 18, 2007.

44 This strategy incorporates and builds upon the State's recently developed Beyond Waste Plan.

45 A partial list of the approaches in this strategy includes: source reduction (waste prevention) initiatives; expanding existing and encouraging more reuse, recycling, composting, and processing in businesses; establishing product stewardship programs; using environmentally preferable procurement practices; facilitating safe byproduct "synergy" strategies; achieving a reduction of toxics in packaging and products to make them safer to manufacture, use and recycle while increasing their value and use in the market place; increasing closed-loop recycling and the percentage of recycled-content in products, and expansion of disposal bans. Additional detail on this and all strategies is available in Appendices F–J.

46 The science regarding the causes of global warming, the extent of its impacts, the pace at which it is occurring, and the amount of GHG emissions reductions needed to stabilize the climate are all continuing to evolve. All interested parties will need to stay abreast of these developments and the State will need to be able to react accordingly as the science becomes more specific about or changes regarding the above issues. While the CAT was not charged with examining the science, to the extent that some interests believe that climate change is either not happening or is not influenced by human actions and conversely that other interests believe climate change is happening to a greater extent and more quickly than currently predicted, the CAT believes that being adaptive and nimble however the science "proves out" is crucial to having an efficient and effective response to global warming.

47 The CAT recognizes that these costs, in light of how large they actually will become, underscore the compelling need for action to occur sooner rather than later in implementing these recommendations.

48 The general approach of direct (NPV) cost and cost effectiveness analysis is used, as widely applied to GHG mitigation policy options. Included are the direct, economic costs from the perspective of the state as a whole (e.g. avoided costs of electricity rather than consumer electricity prices). In contrast to macroeconomic analysis, this bottom-up approach is relatively transparent and capable of reflecting the costs (and cost savings) associated with an individual policy option.

49 These methods are described generally in Section 2.4.3 of the IPCC Fourth Assessment Report, Working Group III. The specific policy option quantification methods used in the CAT process are described in a memo posted at the CAT website: http://www.ecy.wa.gov/climatechange/CATdocs/100407Policy_Option_Quantification_Methods.pdf

50 Emissions reductions are the difference between emissions with and without a given policy or action. Therefore emission reduction estimates are always based on a counterfactual—a "without" policy or action scenario which has not taken place—and thus can never be known with the same precision as emissions estimates themselves.

51 As noted in the text above, the emissions reductions and costs have not been estimated for all options. See detailed tables below to see which options are included in the totals shown. In some cases, emissions reductions are estimated, but not costs; therefore, an overall cost-effectiveness per sector cannot be calculated (as this would implicitly treat the uncosted reductions as zero cost reductions).

52 www.worldtradedata.com

53 Agronomic Zones for the Dryland Pacific Northwest, PNW 354, Sept. 1990

54 Degree days is the number of degrees that the average temperature is above a baseline value. Every degree that the average temperature is above a baseline value becomes a growing degree day. Used by horticulturists and growers to predict the date that a crop will reach maturity. (Source: www.usask.ca/agriculture/plantsci/vegetable/definition.htm)

55 This section focuses on agricultural sector. See the Water Resources and Quality section for more description of the impacts and issues for water resources.

56 WSDA estimates for 2005 drought analysis

57 Irrigated acreage calculated based on 2006 WSDA-NRAS field mapping data. Note: Adams County is included as the number five county for irrigated crop value, Walla Walla County is specified as number five in overall agricultural sales (see Overview of Climate Impacts for Washington Agriculture section)

58 Written communication, Mary Toohey-Asst. Director WSDA., 12/05/07

59 US Census Bureau

60 Ibid

61 Heilig, G.K., 1999. Can China Feed Itself? A System for Evaluation of Policy Options. www.iiasa.ac.at/Research/LUC/ChinaFood

62 National Corn Growers Association, www.ncga.com

63 This strategy focuses on the need to ensure adequate water supply for the agricultural sector. Elements of these recommendations also appear in Chapter V –Water Resources and Quality developed by the Water PAWG for more detailed recommendations on water resources. We have not, at this time, reconciled the recommendations of the two working groups.

64 Members of the Forestry PAWG are listed in Appendix A.

65 Members of the Water PAWG are listed in Appendix A.