

**Region 10 Strategic Endeavor for  
Clean Energy and Climate Change  
June 2008**

The Region recognizes that energy production and use and climate change are closely linked, affecting many dimensions of the environment and the programs designed to protect and sustain it. Due to the overlapping nature of these issues and the actions to address them, there are distinct advantages in developing an integrated strategy for clean, energy and climate change in the Pacific Northwest and Alaska (PNW&A). The three major components within this strategic endeavor are: (1) the development and implementation of a regional approach to address climate change, (2) participation in the West Coast Collaborative to address diesel, and (3) the appropriate application of EPA authorities related to oil and gas exploration, development, and production in Alaska to maximize permitting efficiencies and maintain environmental standards.

While each component has its own goals and strategy to achieve them, they share many common concerns and opportunities for addressing the broader mission of clean energy and climate change. Therefore, some activities may only appear in one component’s strategy when they also deliver benefits that support most or all three components. Other activities may reside in the strategies for two of the components because of a different aspect of the results. For example, issuing permits for test sites for enhanced oil recovery, a form of geologic carbon sequestration for oil and gas exploration and production, is included in the Oil and Gas Sector strategy rather than in the Climate Change strategy. Another example is supporting the development and use of renewable energy, which is an activity shared by both the West Coast Collaborative strategy and the Climate Change strategy, but with a different emphasis in each.

**Table of Contents**

Region 10 Climate Change Strategy .....	- 2 -
West Coast Collaborative Strategic Plan.....	- 8 -
Alaska Oil and Gas Sector Strategy .....	- 11 -
Appendix: Climate-Change Related Activities Not Included in the Strategy .....	- 12 -

## Region 10 Climate Change Strategy

Region 10's Climate Change Strategy serves as a starting point for focusing key activities in our current work and identifying new activities that will help address expected impacts of climate change in our Region and to promote mitigation. Some activities we expect to accomplish in the next 12 – 18 months, while others will take longer to implement and to realize the intended results. Since many critical factors both internal and external to our Region will be changing rapidly over the next several years, we expect to review revise the strategy at least once a year, or sooner if needed.

While many actions should be taken at the national level, our States, Tribes and local government partners are already working to address this complex and time-critical problem by developing and implementing their own climate change action plans. We would like to provide technical, financial, and policy support for those actions where we can. In addition, we want to take advantage of opportunities where EPA may fulfill a unique and value-added role.

Because this represents strategic opportunities, many activities that are delivering co-benefits for our climate change strategy were not included that the Region is already implementing and committed to continuing. These activities are important for their contributions to addressing climate change as well as their primary focus of providing other significant environmental benefits. A list of these activities can be found in the Appendix to our Climate Change Strategy, which is available on the EPA Region 10 website at: [www.epa.gov/r10earth/climatechange](http://www.epa.gov/r10earth/climatechange)

**OBJECTIVE #1:** To reduce greenhouse gases (GHG) in the Pacific Northwest and Alaska (PNW&A), EPA Region 10 will support activities, using the best available science, to identify and quantify sources and sinks of GHG emissions.

- Provide GHG emissions inventory technical support to R10 state, local and tribal governments, and provide regional representation to national emissions reporting efforts.
  - By December 2008, begin to provide enhanced level of technical support to Region 10 partners in GHG emissions inventory development. Expand technical assistance for source/sector reporting per Emission Inventory Reporting Rule (proposed rule expected in Sep. 2008).
  - By March 2008, participate in the national EPA Climate Reporting Rule Workgroup and provide input to the workgroup based on our partner's activities and needs.
- Support our States and Tribes' mitigation policy/planning development processes, by providing technical expertise, and act as liaison between our partners and national programs, so as to influence national program policies and implementation.
  - By April 2008, arrange for an EPA employee to work half-time with Alaska Department of Environmental Conservation to provide support to their climate mitigation and adaptation activities through June 2009.
  - By April 2008, arrange for an EPA employee to work full-time with the National Policy Consensus Center for two years to support development of implementation processes and strategies for local and state governments around climate change; use lessons learned to help inform regional and national climate change program development.

- Support mitigation policy/planning development processes by providing our technical expertise, as appropriate and resources allow. Also serve as a liaison, conveying national policy developments and the regional perspectives and needs.
- Support and convene regional, state, and local efforts to reduce GHG emissions and increase energy efficiency through waste prevention, recycling, composting, product stewardship and other strategies.
  - By September 2008, provide education, outreach, and information sharing opportunities around waste, recycling, materials management, and climate change to partners in our region through electronic conferencing technology.
  - By December 2008, convene key government stakeholders in a West Coast (EPA Regions 9 and 10) strategic planning process to produce strategic plans focused on waste, recycling, materials management, and climate change. This process will be used to identify key activities for collaborative implementation.

Focus on Energy Efficiency & Renewable Energy:

- Region 10 will reduce GHG emissions by providing technical assistance on energy efficiency and renewable energy options to communities, states, businesses and federal sector entities located in the Region.
  - Track and document annually the GHG emissions reductions achieved by the Region's existing pollution prevention program and partnership programs (Energy Star, WasteWise, Water Sense, Climate Partners, and Performance Track) to help achieve improved energy efficiency.
- Promote energy and water efficiency in drinking water and wastewater facilities. Treating and transporting water takes significant amounts of energy, so water conservation is an effective way to achieve energy efficiency.
  - By Sept. 30, 2009, enlist five new Utility partners for the WaterSense program.
  - By September 2008, recruit six utilities who volunteer to attend EPA R10's workshop on energy efficiency for water utilities and apply the Energy Star benchmarking tool before implementing EPA's handbook, and then again one year later. The volunteers will report back to EPA in September 2009 on their energy efficiency gains.

Focus on Transportation and Land Use: EPA will support regional, state, and local activities to identify and quantify sources and emissions from transportation and land use and to reduce GHG emissions from that sector.

- Explore with HQ and state/local partners integration of GHG mitigation considerations into transportation, conformity, and land use planning with an emphasis on Smart Growth strategies.
  - By December 2009, work with the Office of Transportation and Air Quality, Federal Highway Administration, state Departments of Transportation and state and local partners to introduce inventory and modeling tools (MOVES) and protocols for Metropolitan Planning Organizations and others to use to consider including Smart Growth and other mitigation strategies into Regional Transportation Plans, urban planning and Transportation Implementation Plans.

- By working with partner agencies and NGOs, encourage the environmentally appropriate growth of low carbon fuel feedstocks, production, distribution and use in the Pacific Northwest and Alaska to accomplish the following goals:
  - By 2015 20% of total fuel use in the PNW&A will be low carbon fuels (biodiesel, ethanol, biogas/natural gas, electric ...).
  - By 2020 20% of all renewable fuels used in the PNW&A will be grown and produced regionally supporting local agriculture and forestry sectors while also protecting air, water and land quality.
  - By summer 2008 convene the ‘Rural Economic Development Opportunities in a Low Carbon Economy Initiative’ with federal, state and local partners to support the development of renewable energy/fuels, energy efficiency and sequestration projects in our rural communities.
  
- Continue integration of climate change considerations into the Region’s NEPA review work on projects relating to transportation and land use.
  - By September, 2010, Regional NEPA review comments on major federal agency actions will influence projects such that by the time the decision document is written, 70% of the identified climate change impacts have been mitigated.

OBJECTIVE #2: Using the best available science about climate change impacts specific to our region, EPA Region 10 will promote measures to help the Region and our partners adapt to climate change and to protect the resiliency of our ecosystems.

- Develop the scientific information and tools needed for determining climate change impacts on air and water programs.
  - In August of each year, work to initiate research and tool development so that the Region’s media programs can understand climate change impacts and utilize tools that account for climate change in programmatic activities.
  
- Support development of integrated watershed management and land use decision making tools (such as smart growth and low impact development) to minimize the impacts of development on water quality and storm water while preventing the loss of critical wetlands and hydrologic functions necessary to maintain watershed resilience.
  - By October 2008, issue one grant to a local government to develop and implement watershed tools that will result in changes by September 2012 to zoning, development regulations, surface water management and funding priorities for habitat restoration and farmland preservation in light of growth pressures and potential effects of climate change.
  - By September 2008, include climate change adaptations as a factor or overlay for evaluating proposed projects in the 2008 Western Estuaries Initiative Request for Proposals.
  
- Support the collection of information about climate change impacts (such as traditional knowledge, local research efforts, etc.) and facilitate the exchange of that information with other communities, federal and state agencies, and the appropriate technical experts.
  - Continue to engage EPA’s tribal coordinators and tribal specialists in each media program in supporting the collection of information and facilitating the exchange of information.

- Support efforts to increase ecosystem resilience such that key habitats, ecological functions, and endangered or threatened species are protected, and climate change impacts are minimized. Apply EPA's relevant programs and funding tools to accomplish this.
  - By September 2008, identify one watershed with partners who are willing to include ecosystem resilience in the face of climate change as a goal and with which the Region is engaged.
  - Beginning in September 2009, provide annual reports on progress to date and lessons learned that are applicable to similar efforts elsewhere.

**OBJECTIVE #3:** EPA Region 10 will work with others to exchange information on climate change and its expected impacts in the region, and actions that individuals, businesses, our partners, and other organizations can do to reduce their GHG emissions.

- Develop training and technical assistance workshops with Tribal governments and organizations, to exchange information about available tools and resources.
  - Each year, use conferences with significant Tribal participation, such as the Alaska Forum on the Environment, the Region 10 Tribal Leaders Summit, and the Alaska Conference on Tribal Environmental Management, to provide two workshops on climate change mitigation and adaptation opportunities and issues.
- Host conferences and convene meetings for our partners and targeted sectors of the community to discuss common areas of concern and to focus on mutual interests regarding climate change mitigation and adaptation strategies.
  - PNW Air Directors Meeting on Climate Change and Air Quality in Region 10 – Seattle, WA, June 30, 2008
  - Climate Impacts on Air Quality Seminar – Seattle, WA (date yet to be determined)
  - Climate Change and Water Infrastructure: Preparing for Adaptation Conference – Seattle, WA Sep. 4, 2008
  - Increasing Energy Efficiency for Water Utilities Conference –Worley, ID Sep. 18-19, 2008
  - West Coast Conference on Climate Change, Waste Prevention, Recovery and Disposal – Three Web-based training sessions to address the nexus between waste prevention, recycling, composting, materials management, disposal and climate change. All stakeholders are invited to participate. More information is available on this website:  
<http://www.epa.gov/region10/westcoastclimate.html>  
 The free sessions will be held on the following dates:
    - June 26, 12:30 – 4:30 pm, 101: Introduction to Climate Change and Materials Management;
    - July 16, 1 – 3:30 pm, 201: Compost and Landfill Issues; and
    - August 5, 1 – 3:30 pm, 301: Accounting Systems, Modeling, and Economic Incentives

**OBJECTIVE #4:** To engage our staff and resources in the broad scope of climate change work, EPA Region 10 will examine the potential for integrating current climate change science, mitigation priorities, and adaptation goals into core EPA programs and funding mechanisms.

EPA Region 10 will also reduce the GHG emissions from its daily operations and work-related travel.

- Develop a pilot project with a regional media program (Office of Water and Watersheds (OWW), Office of Air, Waste, & Toxics (OAWT), or Office of Environmental Cleanup (ECL)) to promote and reinforce understanding of climate change principles and potential for integration of climate change in EPA operations.
  - By October 2008, meet with the pilot program to provide climate impact information related to their program, and determine what scientific information is needed to integrate climate change into their everyday operations.
  - By February 2009, launch the activity to collect and deliver on a regular basis (at least once per year) science-based information on the most recent current and projected climate change-related impacts and provide the information tailored for the pilot program and other regional programs.
  
- Determine what additional scientific information is needed to successfully incorporate climate change mitigation and adaptation into program delivery. Make necessary changes in program implementation based on climate change mitigation opportunities and/or adaptation challenges.
  - By November 2008, OWW, OAWT, and ECL will determine what additional scientific information they need to integrate climate change mitigation and adaptation opportunities into their program's implementation.
  - By May 2009, and in May of subsequent years, OWW, OAWT, and ECL will obtain updated climate change impact information related to their program and determine what additional changes should be made to continue integration of climate change mitigation and adaptation opportunities into their work and work products.
  - By October of each year OWW, OAWT, and ECL will think broadly and resourcefully about how climate change impacts their work and will show how this information is being used to alter program delivery.
  
- Use grant programs and contracts (as allowed and applicable) to support climate change mitigation and adaptation work.
  - By February 2009, examine which R10 grant programs and contracts can support some of the mitigation and adaptation needs of communities. Identify those grant programs and contracts that would allow such activities and develop means to consider encouraging climate change mitigation and adaptation activities through the solicitation and negotiation processes.
  - By October 2009, implement changes in at least five grant programs and/or contracts to further Regional climate change mitigation or adaptation goals.
  
- Expand the Region's Environmental Management System (EMS) to include reducing R10's carbon footprint.
  - By June 2008, amend Region's Environmental Policy to include reducing R10's carbon footprint.
  - By Oct. 2008, calculate R10's carbon footprint.
  - By the end of December, 2008 establish specific goals, and develop a strategy to reduce the size of its carbon footprint.
  - By October 2009, begin implementation of the strategy to meet the goal of reducing the R10's carbon footprint.

- Annually report reductions in Region 10's carbon footprint. Provide this information in some publication to show leadership by example.
- Lead a "Federal Green Challenge" for all federal facilities in Region 10, including EPA, to reduce each facility's carbon footprint by 5% over a twelve-month period in at least two of the four focus areas. Each federal facility will select two of the four main areas listed in Executive Order 13423, which are energy, transportation, waste, and water, on which to focus their reduction efforts.
  - By June 2008 issue the challenge to the federal agencies in the Region and to ourselves to reduce their "carbon footprint" with measures to reduce GHG emissions.
  - By October 2008, establish a baseline for two of the four areas (consistent with the Region 10 EMS baseline for our carbon footprint).
  - By July 2009, coordinate annual results from each participating agency and report out on the results of the challenge.

## **West Coast Collaborative Strategic Plan**

The West Coast Collaborative (WCC) is an ambitious partnership between leaders from federal, state, and local government, the private sector, and environmental groups committed to reducing emissions from heavy duty engines and, in general, goods movement/transportation along the West Coast and in EPA Regions 9 and 10. Partners come from all over Western North America, including California, Oregon, Washington, Alaska, Arizona, Idaho, Nevada, Hawaii, Canada and Mexico.

The WCC is focused on creating, supporting and implementing emissions reductions projects with an emphasis on diesel engines. To accomplish this goal, the Collaborative:

- Raises awareness of the need for emissions reductions and the many highly successful state, tribal, local, and regional efforts that promote and support voluntary projects;
- Creates a forum for information sharing through sector calls, conferences, workshops, and a regularly updated website among diesel emissions reductions advocates; and
- Implements projects that are regional in scope, leverages funds from new sources, achieves measurable emissions reductions, and creates momentum for future emissions mitigation efforts.

The WCC is organized around six Sector Workgroups that meet regularly. These include Locomotive, Trucking, Construction and Distributed Generation, Agriculture and Biofuels, Marine Vessels and Ports and Public Fleets/School Buses. The Collaborative is an integral part of the National Clean Diesel Campaign and helps to coordinate regional efforts for the Clean School Bus USA program. To address the overarching vision and integration of all of these sectors, the workplan states the WCC's long-term, intermediate, and short-term goals and activities across all sectors and focus areas. The long-term outcomes are the goals for an approximate 10-year timeframe.

**Long-Term Goals** (Unless otherwise stated, baselines will be from 2004):

### **1. Protect/Improve Public Health by:**

- Helping to meet National Ambient Air Quality Standards (PM2.5, Ozone)
  - Heavy duty engine operations will NOT be a significant contributor to PM2.5 and Ozone concentrations
  - By 2015, reduce the concentration of PM2.5 and Ozone precursors from heavy duty diesel engines by 50%
- Meeting air toxics goals (both federal and state/local partners)
  - Emissions are reduced such that there are NO areas where lifetime cancer risk is above 10 in a million due to heavy duty engine operations

### **2. Support Energy Security and Green House Gas Reductions by:**

- Using 10% cleaner fuels (biodiesel, biogas/natural gas, electric ...) relative to total diesel fuel by 2015



- Quarter of all renewable fuels used are produced regionally supporting local agriculture and forestry sectors
- Utilize SmartWay and other programs to virtually eliminate on-road, locomotive and, where appropriate, non-road HDD idling
- Facilitating the development of renewable/alternative fuels and efficiency strategies that are cost effective and support economic development in the West

### **Intermediate (5-year) Goals and Objectives**

- 1. By 2012, eliminate 300,000 pounds of diesel emission pollutants along the I-5 (and connecting E-W corridors), reducing emissions from each truck by 50%.**
  - 5000 long haul trucks have Auxiliary Power Units and/or entire SmartWay upgrade kits installed
    - All R9 and R10 states have established innovative financing (e.g. state infrastructure banks) for over \$20 million.
  - Installation of truck stop electrification at 10 new sites on the West Coast
  - Each state has at least 3 biofuels stations on interstate
- 2. By 2012, reduce diesel particulate matter by 5,300 tons, sulfur oxides by 11,500 tons, and nitrogen oxides by 37,900 tons in the marine sector with a focus on cross sector objectives.**
  - Working with the ports sector and OTAQ, design and implement a voluntary drayage truck pilot program at one West coast port.
  - Transfer this pilot program to two other ports in the United States
  - Fund at least 5 cross-sector ports projects.
- 3. By 2012, influence increased use of cleaner fuels (not including ULSD) by 200% (50% percent increase per year)**
  - Create a cleaner fuels strategy (natural gas, biofuels, electric) for the WCC
  - Fund 15 projects which advance the production/ distribution/use of cleaner fuels
    - Fund 2 projects per year that demonstrate/support biofuels production from local producers
  - Increase understanding and resources on biodiesel fuel and policy issues
- 4. By 2012, reduce diesel emission pollutants by 2,000 tons through Superfund and Brownfields via contracts, voluntary efforts, or enforcement actions (running total)**
  - Create mutual partnership (Clean Up Clean Air) between Air and Superfund within Regions 9 and 10
  - Create a guidance manual on clean diesel for Superfund (part of the Smart Energy Resource Guide)
  - Implement 10 projects at Superfund sites, which includes federal facilities and private cleanup sites)
  - Create contracts which reduce emissions for our internal fleets
- 5. By 2012, reduce diesel emissions through CMAQ and other government funding by leveraging over \$100 million**
  - Hold funding forums throughout all states

- Impact the implementation of 10 projects financed by other federal or state monies.
- 6. By 2015, reduce emissions from the West Coast school bus fleet by a significant portion**
- All legacy school buses are either replaced with new clean diesel engines or retrofitted with aftertreatment
  - 90% of school districts have idle reduction programs implemented
  - 5% of fuel used for school buses are cleaner fuels
- 7. By 2012, eliminate 1,000 pounds of diesel particulate matter along US Borders, reducing emissions from sources by 16%**
- Engage Canada and Mexico as interactive partners with the WCC Objective 2: Retrofit 100 trucks that travel between the Mexico and US border per year
  - Fund at least 4 border-related projects

## **Alaska Oil and Gas Sector Strategy**

In response to the President's Energy Policy (2001), the Alaska Oil and Gas Sector Team was established in 2002 to apply a holistic/integrated approach to high profile oil and gas activities including exploration, development and production permitting for NPDES, UIC, air, and NEPA review and compliance. As a result, Region 10 has consistently met aggressive permitting timeframes, avoided costly project delays, and innovatively addressed unique and emerging Alaska energy issues, while also meeting environmental justice and tribal trust responsibilities. The Team also focuses on forecasting needs and developing internal capacity for new challenges such as: carbon sequestration, health impact assessments, Outer Continental Shelf (OCS) permitting in the Chukchi and Beaufort Seas, and incorporating Traditional Ecological Knowledge in permitting. Projects have included Exxon Mobil's Point Thomson gas, Shell's OCS exploration, BP's Liberty Development, Conoco-Phillips' Alpine Development, Pioneer's Ooguruk, National Petroleum Reserve-Alaska, the Alaska Gas Line and the Arctic and Cook Inlet general permits.

The primary goal of the Alaska Oil and Gas Sector is to enable EPA to exercise its authorities in a timely and coordinated manner in the oil and gas sector in Alaska to meet the highest standards of environmental and subsistence resource protection, while not unnecessarily limiting or restricting industry in contributing to the energy needs of the United States. As a component of the Clean Energy and Climate Change strategic endeavor, sound decision-making will reflect integration of agency initiatives and programs with early project involvement to facilitate issue resolution. Working collaboratively with state, federal and tribal government partners, EPA programs and actions will be consistent with the need to:

- Allow current production and exploration levels to be maintained or expanded in an environmentally sound manner; and
- Assure that the effects, direct and cumulative, will be identified, minimized and mitigated, where possible, by integrating input from partners, stakeholders and the public.

### **Intermediate Objectives for Alaska Oil and Gas Sector (2007 – 2011)**

- By January, 2009 review all Corps of Engineers 404 public and coordination notices for oil and gas sector activities and provide, where appropriate, 404 (b)(1) assistance.
- By January, 2010 complete integrated and comprehensive agency permitting actions for the BP Liberty development Project including 404, NPDES and NEPA and coordination with State of Alaska on air permitting considerations.
- By May, 2010 complete development of North Slope Communication Protocol and implement recommended principles of communication and tribal coordination and consultation in all agency actions related to North Slope oil and gas activities through education of program managers and staff and adequate resource allocation.
- By January, 2011 revise the Alaska Oil and Gas Sector strategic plan to identify and develop a base of expertise in onshore and offshore oil and gas exploration, development and production to facilitate joint planning and coordination of agency inspections, compliance, permitting and policy actions in all applicable media program areas in order to effectively and efficiently implement agency responsibilities for Alaska oil and gas activities.

**Appendix**  
**Region 10's Climate-Change Related Activities**  
**Not Included in the Strategy**

Alaska Operations Office:

*Investment in nearly full-time position to work on climate change* (but currently half of that position is on IPA to Alaska DEC, as reported in the Strategy). Other functions include: outreach and advancement of climate change research and development of adaptation techniques and mitigation opportunities; member of Chugach Electric Renewable Energy Committee; participation in Alaska Climate Impacts Assessment Commission and Alaska Governor's Climate Change Sub-cabinet.

Office of Air, Waste and Toxics (OAWT)

*National Ambient Air Quality Standards:* The impact of climate change on weather and air quality is being studied. For example, ozone can increase with temperatures of 90 degrees F or higher. At the same time, the scientific community is finding that there is no threshold level for ozone exposure and health effects. Standards continue to be revised downward to add protection to public health and welfare.

*Toxics Release Inventory (TRI):* The Region's TRI Coordinator is developing a list of TRI chemicals that are also chemicals linked to climate change, to work in cooperation with interested local clean air agencies to provide compliance assistance to facilities to encourage the use of chemicals alternatives.

Office of Ecosystems, Tribal and Public Affairs (ETPA):

*National Environmental Policy Act (NEPA) Unit:* Some projects subject to NEPA review are a result of or are affected by climate change. For example, an Environmental Assessment (EA) was required for a project to move the town of Newtok in Alaska because it was no longer habitable due to the effects of climate change. Region 10 is participating in a multi-agency workgroup to coordinate the issues associated with the relocation of this village, to develop a model NEPA process for relocating other villages, which is already being needed in increasing numbers.

*Agricultural Sector:* Region 10's Agriculture Sector Advisor and other Region 10 staff are working with our partner federal, state and local agencies to promote continuous no-till, conservation reserve and riparian buffers for increased carbon sequestration and decreased fuel consumption. Region 10 is also working with our partners to encourage water conservation in agriculture through improved irrigation efficiency, "precision agriculture" practices, and reduced leakage as an alternative to proposed projects for increasing water storage.

*Children's Environmental Health Program:* The Children's Environmental Health Coordinator is working with the Collaborative on Health and the Environment - Washington on a working group to address the public health impacts of climate change in Washington. These issues include thermal stress, air pollution, water & food impacts, and disease.

*Environmental Education Program:* Environmental Education grants support the development of outreach and educational activities on climate change. For example, R10 awarded a grant to Oregon State University in 2006 to hold climate change workshops for middle and high school science teachers. The purpose was to develop a cadre of teachers in the state who are equipped with the latest research-based information and teaching materials regarding climate change to be shared with their students and other teachers in their local area.

*Regional Geographic Initiative Grants Program:* When this grant program is funded in EPA's budget, it may be used to encourage climate change-related mitigation and adaptation actions. In 2007, Region 10 focused on climate change and requested proposals that either promoted renewable energy, increased energy efficiency, or sequestered carbon. Through this program four projects were funded: one in Alaska that is promoting wind power in rural areas and conservation in urban areas; a University of Idaho project to design a set of regionally relevant specifications for energy efficient buildings; 3) a Washington State University proposal to encourage households to adopt solar panels for electricity generation; and 4) a program led by the nonprofit organization ICLEI to help several cities to meet the expectations of the Mayors' Climate Challenge.

Office of Environmental Assessment (OEA):

*Environmental Characterization Unit:* Region 10 is providing technical oversight on a project titled: "Improving EPA Inundation-Hazard Warning Capacity in the Arctic Coastal Zone." Sea level rise induced by climate change is likely to increase the storm surge related inundation hazard in Arctic coastal zones. This project seeks to assist adaptation to climate change by providing advanced warning to coastal communities.

Office of Environmental Cleanup (ECL):

*Brownfields Program:* This program supports sustainable reuse of contaminated properties. The annual grant competition's criteria award points for green buildings, smart growth, ecological restoration, etc., that the applicants describe in their reuse plans. In addition to recruiting new partners interested in "green" redevelopment, the Brownfield Program is allowing costs for involving community outreach, networking and promoting green development, such as Green Building projects. Grantees may focus on subsistence and habitat restoration, which are considered legitimate property reuses, especially in rural and tribal communities. In Alaska, where communities are losing land due to flooding and changing sea conditions, projects are focusing on adaptation measures, particularly at dump sites and hazardous waste sites which are seeing immediate impacts from climate change. Region 10 is collaborating with Alaska Department of Environmental Conservation on addressing this growing pool of sites.

*Resource Conservation and Recovery Act (RCRA) Program:* The RCRA program, while focused on permitting operating hazardous waste management facilities and remediation of contaminated properties, is exploring opportunities to use its requirements for controlling air emissions to consider the use of alternative technologies and clean renewable fuels. In addition, the RCRA program does no longer allows 'freezeback' disposal as a remediation option on the North Slope of Alaska, due to climate change related impacts already affecting the permafrost and ground temperatures.

*Superfund Program:* Where feasible, contracts for cleaning Superfund sites are being used to encourage the use of clean renewable energy to power equipment used in the cleanup work. Recent example include the 2007 ERRS contract and the Taylor Lumber site specific cleanup contract, which enabled the use of in B20 ultra low sulfur diesel (ULSD) fuel being used in that site's cleanup in 2007. Cleanup remedies consider the recycling of materials (such as steel) to the maximum extent possible, which leads to fewer GHG emissions through reduced energy consumption. Also being explored are potential actions to be taken at potentially responsible party (PRP)-lead sites to reduce emissions. Finally, two Emergency Response trucks have been using biodiesel fuel (B100) since 2006 and the Research Vessel Monitor has been using B5 since June 2007.

Office of Compliance and Enforcement (OCE):

*Underground Injection Control Program for Geologic Sequestration (Carbon Capture & Storage):* Region 10 is participating on EPA's rulemaking workgroup for developing a geologic sequestration rule under the UIC program. The proposed rule will be issued in July 2008 and is expected to be final

in late 2008 or early 2009. At this time applications for 22 projects across the nation (but none in Region 10) are expected once the rule is issued. That number would change if Congress passed any geologic sequestration legislation. In the meantime, until the new rule takes effect, the national UIC program issued guidance in March 2007 for permitting class W experimental technology wells to cover carbon sequestration in geologic formations. Also, EPA is collaborating with the U.S. Department of Energy in their selection and evaluation of large scale pilot projects to determine the commercial viability of carbon sequestration. Region 10 has also offered assistance to Washington's Department of Ecology who has received an application for an experimental geologic sequestration project in Wallula.

Office of Water and Watersheds:

*Forestry Sector:* Region 10 Forestry Policy Advisor and other staff in Region 10 are working to protect existing acreage of forested lands serving as important carbon "sinks." They are also promoting the widening of riparian buffers and increased acres of forest land for protection from harvest and management toward late successional forest for increased carbon sequestration.

*State Revolving Fund Program:* The Clean Water and Drinking Water state revolving funds (SRFs) can fund water infrastructure projects, planning including vulnerability assessments, and many of the activities these facilities may need to mitigate GHG emissions directly, reduce energy and water consumption, and address adaptation concerns. In addition, the Clean Water SRF can be used more broadly to address use of low-carbon energy, stormwater BMPs, and stream, estuarine or coastal restoration or protection activities. We have had conversations with our state counterparts who manage the state revolving funds to discuss energy efficiency, and water conservation, and are beginning to discuss climate change adaptation.

*Water Quality Trading:* Region 10 has been an early leader within EPA on developing and promoting this innovative approach to achieving water quality goals at lower cost and potentially with a more effective environmental result. Funded by an EPA grant obtained by Region 10, Oregon Department of Environmental Quality and Clean Water Services (a wastewater public utility in Washington County outside of Portland, Oregon) pioneered the application of water quality trading to meeting a temperature limit established under the Total Maximum Daily Load (TMDL) for the Tualatin River. Clean Water Services planted 35 miles of riparian buffer upstream of their treatment plant, creating shade that will deliver cooling effects estimated to be twice as much as they would have needed to meet the temperature limit at their discharge pipe. This also enabled them to avoid building and operating a large chiller to cool their discharge 1.5 degree F that the permit would have required in the absence of the water quality trade. The climate change benefits are the avoided use of electricity to operate the chiller in the hot summer months and the sequestered carbon from planting trees and riparian habitat along 35 miles of stream and river banks. This important ecosystem-based approach to meeting a temperature TMDL is now being applied throughout the entire Willamette River Basin under an EPA Targeted Watershed Grant awarded to the Willamette Partnership, a stakeholder-based nonprofit. Under a U.S. Department of Agriculture Conservation Innovation Grant, they are also expanding the concept of generating temperature reduction credits through ecosystem restoration, to other ecosystem services that are also being provided, such as carbon sequestration and habitat protection, to be traded in the new Willamette Marketplace.