

Energy & Water

The following appropriations requests were submitted by Senator Merkley to the Appropriations Committee for consideration as part of the Energy, Water and Related Agencies appropriations bill for fiscal year 2011.

Hood River County Biomass Conversion Project- \$1,000,000

Hood River County, Oregon

The funds will be used to design and construct a distributed biomass boiler system serving the county courthouse and the city administration building. The project will be done in conjunction with an urban renewal project directed by the City of Hood River reconstructing State Street and city infrastructure. Funding would be used to purchase the new boiler and install systems to connect the two public buildings to the new biomass boiler.

Mirror Pond Restoration- \$500,000

City of Bend - Oregon

This project will analyze alternatives for the restoration of Mirror Pond, created in 1910 by the construction of the Pacific Power and Light Company (PPL) dam, which provided the city with its initial source of electricity. One hundred years later, the dam produces an inexpensive source of electricity that continues to benefit approximately 4,000 Bend households annually. Since 1910, the flow of the Deschutes River through the “pond” has gradually carried sediment from the approximately 700,000 acre Upper Deschutes River watershed into Mirror Pond. As a result, sediment has settled behind the dam, creating shallow mudflats along the margins of the pond. In 1984, the community supported a dredging project to repair the Pond’s features, but it did not result in a long term fix to the sedimentation problem. Over the past five years, the sedimentation in Mirror Pond has again become a concern for the community because the mudflats interfere with the flow of the river, recreational uses, and have altered the aesthetics of Mirror Pond in relation to Drake Park and downtown Bend tourism and commerce.

Funds will be used to conduct a funding & alternatives analysis, which will include extensive public outreach and input.

Deschutes Project- \$5,000,000

Deschutes Basin Board of Control (Representing all seven irrigation districts) and the City of Prineville - Bend, Madras, Prineville, Redmond, Sisters, and Tumalo

These funds will accelerate an array of innovative water conservation and fisheries restoration projects in planning, design and construction. All of the projects will benefit federally protected fisheries, including bull trout and steelhead, in the Deschutes River and its tributaries. All of the projects include lining and piping open irrigation canals, and returning a portion of the previously diverted water supplies back to the river forever as protected instream flows. These projects will ultimately be linked to a multi-species Habitat Conservation Plan (HCP) now in development.

Solar Power for Central Oregon Community College- \$750,000

Central Oregon Community College (COCC) - Bend, Oregon

The Solar Photovoltaic (PV) Power System will be installed on the COCC Campus in Redmond, providing renewable energy to generate electricity on the campus and to establish an onsite demonstration laboratory for conservation and green-energy technology students. It will also

serve as a resource for other organizations considering the same choices when constructing or remodeling buildings -- demonstrating COCCs commitment to leading-by-example. COCC project managers collaborated with community leaders, businesses, and energy experts and manufacturers and considered the wishes of the citizens, students, and staff as they explored viable options for sustainable and renewable energy resources. Now that the voters approved the November 2009 Bond Measure to help fund the College's several construction projects, work on the new classroom facilities and the Solar Power Project can begin.

Deschutes Ecosystem Restoration Project- \$2,000,000

Deschutes River Conservancy – Bend, Oregon

In FY2011-2012, the Deschutes Ecosystem Restoration Project will focus on large scale water conservation with four irrigation districts in the upper Deschutes Basin - Tumalo Irrigation District, North Unit Irrigation District, Ochoco Irrigation District, and Three Sisters Irrigation District. These canal lining and piping projects will prevent the seepage of irrigation water into central Oregon's porous volcanic soil, allowing irrigation districts to better manage their water supplies and providing water for stream flow restoration. Through these projects, the Deschutes River Conservancy expects to build on its past successes and restore unprecedented amounts of stream flow in the Deschutes River, the Crooked River, Tumalo Creek, and Whychus Creek. They will improve habitat for federally listed salmon and steelhead trout while enhancing water supplies for local irrigation districts.

Funding will support collaborative water management planning and water banking directly with local partners and through the existing Deschutes Water Alliance, a joint venture between municipalities, irrigation districts, and the Deschutes River Conservancy.

Ladd Creek Restoration - \$0, Report language is requested

Oregon Department of Transportation

About six miles south of LaGrande, Interstate 84 passes through the narrow, steep Ladd Canyon and crosses Ladd Creek three times. When I-84 was constructed in the 1960s, engineers designed a 20-foot tall vertical shaft, known as the "Glory Hole," connecting a new section of culvert to an existing culvert to carry the creek under the freeway. This design resulted in a complete barrier to fish passage on Ladd Creek for all species at all flow levels, cutting off spawning habitat in the upper reaches of the creek. Two additional concrete box culverts lower in the canyon also create partial fish passage barriers.

This project will eliminate these fish passage barriers by replacing the existing culverts or rerouting the creek. Removal of these fish barriers will open over 12 miles of spawning habitat for the Snake River summer steelhead and Snake River spring Chinook, both of which are listed as threatened under the Endangered Species Act. The Oregon Department of Fish and Wildlife (ODFW) designated the "Glory Hole" barrier as one of the state's top priorities for fish passage restoration.

Wallowa Lake Dam Rehabilitation and Water Management Act - \$2,300,000

Associated Ditch Companies Inc. (ADC) - Joseph, OR

Funds would be used to rehabilitate the 91-year-old dam at Wallowa Lake, providing flood control for Wallowa County, maintain instream flows in support of salmon migration and other endangered fish, sustain critical habitat along the Wallowa River, and to sustain agriculture

production in Wallowa & Union Counties. The Wallowa Lake Dam is the economic engine for the region.

Umatilla Basin, Oregon Water Supply Study, Bureau of Reclamation- \$300,000

U.S. Bureau of Reclamation- Vicinity of Pendleton, Hermiston and Echo, OR

Funds will be used by the Bureau of Reclamation (BOR) to complete and refine the design, engineering, and cost analysis on final project alternatives that would satisfy the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) treaty reserved water rights in the Umatilla basin. The water projects are needed to achieve a settlement of CTUIR water rights in a manner that preserves the agricultural economy in the Umatilla basin. The BOR will also use the funds to study the potential integration of the Tribal water supply project with the State of Oregon-led aquifer recharge project in the lower Umatilla basin. The BOR study is needed by the Federal Indian Water Rights Assessment Team to evaluate how the CTUIR reserved water rights can be satisfied and to determine if a water rights settlement is feasible. The water projects identified in the Bureau's water supply study will provide the information necessary for a negotiated solution to the Tribes reserved water rights, which will avoid protracted, expensive and divisive litigation involving the CTUIR, the State, the United States and multiple municipalities, irrigation districts and individual water users.

Walla Walla Watershed, OR & WA- \$2,000,000

U.S. Army Corps of Engineers Walla Walla District (ACOE), Confederated Tribes of the Umatilla Indian Reservation (CTUIR)- Walla Walla River Basin - Umatilla, Wallowa, Union Counties, OR; and Walla Walla and Columbia Counties, WA

The project is designed to deliver Columbia River water to three irrigation districts in the Walla Walla Basin in exchange for those irrigators bypassing the same amount of their normal Walla Walla River diversions. Funds will be used to restore instream flow levels in the Walla Walla River to near natural flow levels, enabling recovery of a sustainable salmon fishery while maintaining the current water uses in the basin. The project is currently in the Feasibility Study phase. The Feasibility Report/Environmental Impact Statement is scheduled for completion in late 2010. Funds will be used for Pre-construction, Engineering, and Design work.

Drinking Water System Pipeline Security Project- \$1,216,200

City of Corvallis, Public Works- Corvallis

The City of Corvallis requests funds to protect the community's water supply from damage during seismic activity or other emergencies. The two pipelines that carry water from the city's main water treatment plant to the major populated areas of the city cross the Marys River hung underneath bridges on 4th and 15th Streets. A recent seismic evaluation determined that the bridges are at risk in the event of an earthquake. If the bridges are damaged, then the city's ability to supply the community with water will be compromised. Additionally, the city completed a Water System Security Vulnerability Assessment as required by the federal Public Health Security and Bioterrorism Preparedness and Response Act of 2002. This report indicated that the pipeline crossings were susceptible to damage/destruction and that this would have a significant negative impact on the city. This project would remove the two pipelines from the bridges and place the pipes underneath the river bottom where they are less susceptible to damage from a seismic event or from a terrorist attack.

Lane Bio Energy Facility- \$1,980,000**Lane County, Oregon - Junction City, Lane County, OR**

Lane County requests funds that will be used to develop a publicly owned facility, which will convert grass straw waste and other feedstocks to cellulosic ethanol, electricity, and pellets. The field burning of grass straw, a byproduct of grass seed production in the Willamette Valley, will be phased out by 2011 under legislation adopted in 2009. While this legislation creates an air quality benefit, it creates a massive disposal problem for the Willamette Valley's \$600 million grass seed industry. The facility will initially produce a minimum of a) 3MW of electricity from anaerobic digestion; b) 12,000 tons/yr of biomass heating fuel in the form of wood bricks, and c) 200,000 gallons of cellulosic ethanol. This project has been selected as a "Signature Infrastructure" project by the Oregon Way Advisory Group, appointed by Governor Kulongoski to guide ARRA funding opportunities. As an Oregon Signature Infrastructure project, Lane County believes the project will be more competitive in subsequent ARRA funding rounds.

Bio-gas Electrical Co-generation System- \$1,980,000**Metropolitan Wastewater Management Commission – comprised of City of Springfield, Lane County, and City of Eugene - Eugene, OR**

The WPCF treats over 13 billion gallons of wastewater annually. It services a population of approximately 220,000 people, as well as the commercial and industrial entities in Eugene and Springfield. The solids removed from the wastewater are sent to one of three anaerobic digesters for treatment, where a biological by-product is methane gas. Currently, a portion of this "bio-gas" is used as fuel for an 800 kilowatt-hour internal-combustion electrical co-generation unit, which produces approximately 60% of the power used at the WPCF. Excess bio-gas is either burned in a boiler to heat portions of the operation or a waste gas burner (a "flare") to ensure safe disposal and odor control. Currently, both the existing co-generation unit and supporting electrical infrastructure have reached their maximum operating capacity. Funds will be used to complete detail design and construction contract services to build an expanded co-generation system, including engine-generator and electrical infrastructure improvements, bio-gas conditioning and catalytic converters for emission controls, heat recovery for maximum efficiency, and improving building constraints for safety.

Lane Community College Energy Demonstration Building- \$1,980,500**Lane Community College – Eugene, OR**

Lane Community College requests funding for equipment for its Center for Energy Transformation to train local workforce in sustainable energy and water uses in commercial buildings. The center serves education, workforce, and business needs by providing short-term and longer-term energy efficiency and renewable energy workforce training, and by facilitating statewide efforts as an educational and training clearinghouse for renewable energy technologies, training, and business opportunities. The proposed new facility's hands-on learning capacity will include comprehensive control, metering, and monitoring systems; real-time demonstration of the energy dynamics within the building; a lighting system mock-up and change-out capability that provides real-time system demonstration; a variety of photovoltaic systems that serve as an installation laboratory for students; and a water reclamation system. Lane Community College and the Northwest Energy Education Institute have been nationally-recognized leaders in energy efficiency for nearly three decades. The requested equipment

would be installed at the college's new Downtown Campus, currently scheduled for construction in fall 2010, where the program will be relocated upon completion.

Siuslaw River ACOE Operations and Maintenance- \$1,083,000

Port of Siuslaw - Florence, OR

Funding will be spent on Army Corps operations and maintenance for annual dredging activities, major Maintenance Report N&S Jetties, and ocean disposal site evaluation. This last activity was supposed to be funded through ARRA, but funding was shifted away from the Port.

Wave Energy Test Berth Development and Analysis- \$1,980,500

Oregon State University - Corvallis and Newport, OR

The proposed funding will supplement the DOE's Northwest National Marine Renewable Energy Center (NNMREC) through: (1) development of an additional mobile floating ocean test berth and a central junction box for wave energy device testing available to industry and public entities; (2) ecological and environmental analysis of the potential impacts of marine energy infrastructure and devices on marine ecosystems with attention to changes in behavior of marine species, seabirds, benthic habitats; changes in underwater acoustics; wave and current energy distributions; and electromagnetic fields; (3) analysis of marine energy infrastructure and devices on the human dimension through social, cultural, political and economic-related research; and (4) engaging coastal community businesses, residents and visitors with educational outreach related to marine renewable energy.

Willamette River Floodplain Restoration Study- \$153,000

The Nature Conservancy- Eugene, OR and surrounding area

The Willamette Floodplain Restoration Study will provide information for the Army Corps of Engineers to contribute to the long-term restoration of floodplain habitat in the Willamette River Basin, an important step toward recovery of several federally threatened fish species. The project's restoration efforts, including increasing floodplain connectivity and replanting riparian forests, will enhance the Corps' ability to reduce river temperatures and meet their obligations under the Clean Water Act. The Study will advance the goals of the broader Sustainable Rivers Project, which is identifying environmental flow requirements for the Willamette and its tributaries, and tying those flow requirements to stream channel and floodplain restoration projects.

Douglas County Wave & Tidal Energy Project- \$300,000

Douglas County- Project is located at mouth of Umpqua River – near Salmon Harbor, OR

Douglas County is developing a wave resource renewable energy project to provide a new source of renewable energy as well as to stimulate the wave energy industry centered around the Oregon coast at Reedsport. The project obtained a preliminary permit from the Federal Energy Regulatory Commission (FERC) in 2007 and has subsequently completed bathymetric, wave resource, wave tank modeling, and public scoping. The funding requested herein would be utilized to identify the initial site and project engineering; cost estimations; follow up with the FERC identified studies; and, continued public outreach. Success at this stage of the project will be measured by whether the project is physically and cost effective; FERC license application; and public support. Success of the project overall will be the construction of a 3 megawatt wave energy facility connected to the grid.

Water for Irrigation Streams and Economy (WISE) - \$2,500,000

Talent Irrigation District (TID) - Talent, OR

The WISE Project is a locally driven and supported regional project to improve agriculture, streams, and outdoor recreation. The project is currently in the middle of the required Feasibility Study and Environmental Impact Statement (FS/EIS). The recently completed Pre-feasibility Study details quantitatively how modernizing the existing regional irrigation infrastructure by piping the entire system, increasing reservoir storage and implementing reclaimed effluent for irrigation can significantly increase irrigation efficiency, reliability and availability while improving local streams. The entire irrigation system would be under gravity pressure, even producing micro-hydropower within the irrigation system. The funding requested through this form is needed to complete the required FS/EIS before project construction can begin. Development of a preferred alternative through the FS/EIS process, which will then be carried forward for construction, represents the successful completion of the FS/EIS.

Medford Airport Solar Park (RVIMA) - \$500,000

Jackson County, Medford, OR

In its desire to increase energy independence and achieve sustainability, Jackson County is fully engaged in implementing the goals set forth in its environmental plan. Currently, numerous energy conservation projects are underway. Jackson County now plans to develop a solar energy park for the Rogue Valley International-Medford Airport (RVIMA) on a forty-seven acre parcel of land that they currently own. This would enable the county to sell renewable power to the grid on Pacific Power's Schedule 037 or through an anticipated feed-in-tariff (FIT). The area could support a 7.9MW facility that could generate sales revenues up to \$1.2M annually. The project would generate an estimated 17,352,508 kWh annually. RVIMA intends to develop the facility, provide for the interconnection study, utility interconnection, step-up transformers, and initial infrastructure. These funds would help the airport accomplish this goal and solicit private companies to participate. Private participants' solar generation will be sub-metered so they receive a proportional share of the revenues, incentives, and tax credits after lease and interconnection fees are paid to the airport. Several large local businesses have expressed interest in participating in this project to increase their revenue in a time when Jackson County's unemployment rate is at 13.7—one of the highest in the state. The additional revenue will enable the airport to be more competitive, giving them an opportunity to lower landing fees, and thus ticket prices, making travel to and from Medford more attractive and thereby increasing tourism in this economically depressed area.

Wastewater Treatment Plant Renewable Energy Project- \$800,000

City of Corvallis, OR

The City of Corvallis will use funds for this project to purchase equipment to utilize methane gas, which is a byproduct of the wastewater treatment process, for energy production. The primary intended use of the methane would be to generate electricity to reduce the use of commercial electricity used to power the wastewater treatment plant. The City treats on average 3 billion gallons of wastewater each year, at an electricity cost of over \$200,000 per year. Most of the electricity purchased from Pacific Power and Light is fossil fuel (coal) based. The city estimates it could produce enough electricity to offset approximately \$50,000 of fossil fuel based electrical costs per year if the methane generated at the treatment plant is used.

Reedsport Wave Power Project (Phase I) - \$1,980,500

City of Reedsport, OR

Phase I of the Reedsport Wave Power Project will deploy and install one 150 kW wave energy PowerBuoy 2.5 miles off the coast of Reedsport. A leading Oregon manufacturing company has already begun fabrication of the first PowerBuoy. FERC issued a preliminary permit for the Reedsport OPT Wave Park project in 2007, and a final license application for a multiple buoy project (Phase II) was recently submitted. Phase II of the project would consist of 10 PowerBuoys with a combined output of 1.5 MW. Once fabrication of the PowerBuoy is completed later this year, federal funding will supplement non-federal funds to manufacture and deploy the mooring systems, deploy the PowerBuoy, manufacture and deploy the undersea electrical infrastructure, and provide onshore power grid capabilities. The project will help create a new domestic renewable wave energy technology industry and generate jobs in a particularly hard-hit region of Oregon. The City of Reedsport will oversee the development of this key renewable energy initiative, coordinate the use of community workforce resources, orchestrate the use of local vendors and integrate the project into a fully articulated community energy plan. The city has also been engaged in a collaborative settlement process with state and federal agencies, conservation groups, fishing groups, and Ocean Power Technologies to build consensus for wave energy development, which has resulted in an agreement that includes an adaptive management strategy with study plans to identify and address any adverse ecological or socioeconomic effects from the first and second phases of the wave energy project.

Green Technology Center (GTC) - \$555,000

Oregon Institute of Technology (OIT) - Portland Campus, Portland, OR

The GTC will be developed within an existing gymnasium at OIT's East Campus. The proposed funds will purchase equipment for four new renewable energy laboratories. The laboratories focus on the existing strengths at OIT Portland, and balanced with industry needs for graduates versed in the various disciplines of energy engineering. The recent emphasis by Governor Kulongoski on promoting the renewable energy industry in Oregon, and a similar promotion by President Obama for renewable R&D at the federal level, has encouraged investors and business to consider investing in the energy sector. Thus, the Renewable Energy Engineering (REE) program is attracting students to take advantage of the potential for meaningful employment in Oregon. Developing the GTC laboratories will assist OIT in providing current and practical training for future energy engineers. The Bachelors of Science in REE program at the OIT continues to grow at a rapid rate. This fall 151 students enrolled in the program and further enrollment increases are anticipated.

Rural Energy Efficiency Pilot Program- \$600,000

Clackamas County, OR

Clackamas County's Rural Energy Efficiency Pilot Program guides the county's economic redevelopment investments towards Estacada and Molalla, two historic timber towns. The first phase of the program centers on energy investments. The program will promote local energy security by investing in a) energy efficiency among neighborhoods and for industrial activities, b) studying sustainable local energy supplies, including biomass from working forest and agricultural lands, and c) identifying opportunities to integrate energy systems at scale to achieve further efficiencies. During phase one, federal funds will be combined with existing state

incentive programs, and Clackamas County's energy outreach and energy efficiency programs. More residents and small businesses will be able to access expanded energy efficiency programs, such as the County's low-interest energy efficiency loan program, part of the Clean Energy Works Oregon model, under development. By boosting the low-interest loan program, Clackamas County's investments will yield long-term savings and be re-invested many times in each community. Clackamas County's energy efficiency program for businesses, known as Energy Efficiency on Main Street, provides a one-stop shop coordinating energy assessments, identification of incentives, and additional grants that complement state and federal incentives.

Willamette Falls Locks- \$258,000

City of Oregon City, OR

Funding will provide regular program operation of the locks, keeping them open to recreational, commercial, and industrial traffic and preserving the connectivity for navigation between the northern and southern portions of the Willamette River. The locks have great historical significance and have long been used by commercial and recreational vessels. For decades, the federal government has maintained and operated these facilities. However, there is a strong interest amongst all stakeholders – including the Corps of Engineers – to eventually transfer the locks (as well as the annual operation and maintenance responsibilities) to a local or state authority. In the meantime, it is critical that this funding be provided to ensure the locks remain open and in safe condition.

Tualatin Basin Water Supply Project- \$1,440,000

Clean Water Services- Washington County, OR

The Tualatin Basin Water Supply Project will explore solutions for meeting the growing municipal, industrial, agricultural and environmental water demands of Washington County, Oregon. By 2050, an additional 50,000 acre-feet of water per year will be needed. The economy, environment and quality of life in this region are dependent on long-term, reliable water sources for the future. The purpose of the Water Supply Project is to identify sources of water for balancing the competing needs. The Water Supply Partners are currently working with the U.S. Bureau of Reclamation to complete an Environmental Impact Statement examining alternatives to meet these needs.

Round Top 9-1-1 Tower Energy Efficiency- \$250,000

Washington County Consolidated Communications Agency (WCCCA-911) , Beaverton, OR

This project will provide increased reliability for vital public safety communications, reduced operating costs, and dramatic environmental benefits. Construction of this project could begin immediately upon receipt of funding. Funds will be spent for construction, materials (wire, vaults, transformers), and labor. Without federal assistance, completing this important investment will require an increase in membership dues from local governments and public safety agencies whose budgets have already been significantly impacted by Oregon's economic downturn.

Solar Panels for Confederated Tribes of Siletz Indians (CTSI) Administration Building- \$420,000

Confederated Tribes of Siletz Indians (CTSI) – Siletz, OR

Solar panels will be installed on the south-facing roof of the existing Confederated Tribes of Siletz Indians' Administration Building. The solar panels will generate enough electricity to provide for 21% of the power currently used in the building, up to 59,000 kw/year. Additionally, education about renewable energy and energy efficiency will be provided. The system has already been designed.

City of Wheeler Waterfront Dredging Project - \$306,600

City of Wheeler, OR

The project will dredge approximately 400 feet of waterfront or 9350 cubic yards of material, located at the City of Wheeler, in order to reclaim commercial and recreational areas lost to silt build-up over a number of years. Currently during low tides, approximately half of the boat slips at the waterfront are unusable because the docks are resting in the tide mud.

Tillamook Bay and Bar- \$600,000

Port of Garibaldi – Garibaldi, OR

The funding requested would be used to repair and restore the Tillamook Bay jetties. The north and south jetties at the entrance to Tillamook Bay have experienced damage to the jetty heads, trunks and north jetty root. A recent apparent increase in the Pacific Ocean wave climate has exposed both jetties to more extreme storm waves, particularly the south jetty, which is more exposed to southwesterly storm events. In addition to the increased concern regarding jetty stability, there is concern that further recession of the jetty heads will contribute to already hazardous navigation conditions over the ebb tidal shoal or bar. Funds will allow the U.S. Army Corps of Engineers to continue the restoration and repair of this jetty system. Construction is currently underway to repair the north jetty. The funding requested here would allow the Corps to conduct a survey of the south jetty, and to produce the plans and specifications for the coming repairs.

Drift Creek Reservoir - \$1,000,000

East Valley Water District - Silverton, OR

The intent of the project is to provide a stable water supply for high value crops grown on 15,000 acres of prime farmland in the Willamette Valley, Oregon. Conditional "time-limited" permits and temporary transfers for the use of water currently delivered to the farms don't provide long-term stability and those rights must be replaced with a permanent water supply. The stored water will relieve pressure in the three limited groundwater areas (designated by the Oregon Water Resources Department) in the district's service area. Funds will be used to conduct preliminary studies to affirm 401 permit conditions and engineering analyses.

Yaquina Bay ACOE Operations and Maintenance- \$1,986,000

Port of Newport - Newport, OR

Funds will be used by the Army Corps to perform routine dredging and operations and maintenance.

Oyster Wave Energy System for Oregon- \$1,980,500

Central Lincoln People's Utility District – Newport, OR

Central Lincoln People's Utility District, with 120 miles of shoreline coverage along the Pacific Ocean, in a public-private partnership with Aquamarine Power, proposes to develop a limited

demonstration project which focuses on stakeholder input and environmental studies before installation of an already ocean-tested, near-shore power generation device. This project will demonstrate the third (and potentially fourth) generation devices that will incorporate technological advances developed from the original proof-of-concept device now in operation in Scotland and subsequently installed prototype devices. This near-shore, wave energy device, created by Aquamarine Power, was officially launched in Orkney, Scotland in 2009 as the world's largest working hydro-electric wave energy device. The proposed project is a unique partnership between Central Lincoln PUD and Aquamarine Power that uses a near shore (i.e. 30 to 55 feet in average water depth) mechanical hinged device in the Pacific Ocean that moves with the passing of waves. The energy from the waves drives high pressure water via a closed-loop system to an onshore hydro-electric Pelton wheel generator that can be easily maintained from land. The Oyster's excellent power-to-weight ratio enables its annual average power output to be competitive with devices that weigh up to five times more. A single cluster of three (3) Oyster II devices has the capability to produce up to 2.5MWs. The CLPUD/Aquamarine systems are expected to operate efficiently and cost-effectively under most wave conditions. Therefore, this system is expected to provide reliable electric power along the world's shorelines, starting with Oregon's.

Depot Slough ACOE Operations and Maintenance- \$12,000

Port of Toledo – Toledo, OR

Funding will be spent on a project condition survey, as listed in the Army Corps's Portland District capability.

Depoe Bay ACOE Operations and Maintenance- \$166,000

Port of Depoe Bay - Depoe Bay, OR

Funds are requested for removal of silt collected behind ACOE constructed check dam. The check dam is located on South Depoe Creek which flows into Depoe Bay harbor. The check dam was constructed by the Army Corps of Engineers to stop/slow silt from the creek entering the harbor in an effort to alleviate frequency of harbor dredging. Also, removal of silt collected behind the check dam before it enters the harbor is considered to be a more efficient method. In the past, the Corps has cleaned out silt from behind the check dam with every other harbor dredging activity (approximately every ten years). The last time the silt was cleaned out was in 1996-97 and now the pond behind the dam is nearly full of built up silt material. It is our understanding that this activity had been suspended due to lack of funding in the Corps budget, but with a funding allocation the Corps would conduct the work.

Vernonia Sustainable Schools- \$1,475,000

Vernonia School District – Vernonia, OR

After the devastating flood of December 2007, all of Vernonia's schools were filled with tainted water from the nearby sewage facility, destroying most of the facilities. Since that time, more than 700 students have been displaced into nearby minimally repaired buildings and modular classrooms still located in the floodplain and vulnerable to flooding. The cost to repair and insure these schools in the new federally designated floodplain is prohibitive, leaving Vernonia in the unprecedented position of having to rebuild an entire school district, grades K-12. The new K-12 complex will integrate green practices including energy efficiency and sustainable technologies. The school will serve as a showcase for energy efficiency and sustainable

technology in an educational environment. It will incorporate demonstration and educational features as well. The 150,000 square foot facility will house the Vernonia School District's schools, K-12. The school will be the first LEED Platinum certified public K-12 building in Oregon and perhaps the country. Utilizing "whole building" technology, the school will incorporate a variety of efficient and sustainable technologies such as high-efficiency lighting, highly efficient windows and skylights, ground source energy & radiant floor distribution, demonstration-scale biomass boiler, rainwater harvesting & graywater re-use, and sustainable materials & finishes.

Columbia River Jetties- \$21,100,000

Columbia River Channel Coalition – Mouth of the Columbia River – Astoria, OR

The U.S. Army Corps of Engineers maintains three rubble-mound jetties at the Mouth of the Columbia River. These structures not only accelerate the flow of the river, helping maintain the depth and orientation of the navigation channel, they also provide a safe entrance/exit for commercial and recreational vessels of all sizes crossing the Columbia River. The 6.9-mile South Jetty was constructed between 1885 and 1913. The 2.5-mile North Jetty was built in 1914-17. The one-mile Jetty "A" was constructed in 1938-39. Frequent and large storms over the past few years have accelerated wave damage to the Jetties, thereby risking navigational safety. Although they are still performing their function of keeping the navigation channel at its authorized depth, outer sections of the Jetties have completely eroded, other sections have been at risk of breaching, and receding beaches have exposed greater portions of the Jetties to wave damage. If either the North Jetty or the South Jetty breaches, sand would fill and restrict shipping in the Columbia River Federal Navigation Channel, essentially shutting down commercial and recreational navigation at the mouth of the Columbia River and requiring very expensive emergency measures to repair the Jetty and restore the channel depth.

The proposed rehabilitation work would prevent future failures that may prevent the jetties from performing their functions. After 2 years of careful study and analysis, the Corps recently completed their major rehabilitation report recommending construction of this project. This project has been carefully evaluated to avoid negative environmental impacts and ensure mitigation by the U.S. Army Corps of Engineers and will be completed in multiple phases over the next 20 years.

Coastal Data Information Program – Waves and Beaches - \$2,000,000

Scripps Institution of Oceanography - La Jolla, CA

The Coastal Data Information Program (CDIP) measures, models and forecasts waves in Oregon and along the U.S. west and east coasts, the Hawaiian Islands, the Caribbean, and Guam, and disseminates the results in real-time to the National Weather Service and to more than 80,000 users per day via the website (<http://cdip.ucsd.edu>). This proposal would expand CDIP's buoy coverage to areas of critical need. This includes additional buoys in coastal Oregon. Funded by the U.S. Army Corps of Engineers, CDIP is a critical source of information for that agency in its coastal projects. Wave data from CDIP's Umpqua and Clatsop Spit buoys – located just outside of Coos Bay and at the Mouth of the Columbia River, respectively – are broadcast in near real-time, providing timely information on ocean conditions for the marine community at large. The Clatsop Spit buoy was deployed in fall 2009. If this wave data were not provided, life and property would be at risk. CDIP's wave data is accessed on a regular basis by thousands of fishermen, coastal engineers, boaters, bar

pilots, harbor masters, lifeguards, divers and recreational ocean users in Oregon and around the country for accurate and timely wave data that ensures maximum marine safety. Based on CDIP data, the National Weather Service issues sea state and surf warnings to protect life and property; the U.S. Navy determines safe times for ships to enter ports; and the U.S. Geological Survey conducts research on coastal erosion issues. CDIP's Oregon buoys provide critical wave information for mariners in the region that enhances their safety and the efficiency of their operations.

Barry Well Geothermal District Heating System- \$1,900,000

Town of Lakeview, OR

The Town of Lakeview is ready to develop a geothermal district heating system using a known geothermal source, which will provide geothermal heat for the Lake District Hospital and Long Term Care Nursing Facility, all four Lakeview School District 7 facilities, and the Lake County Industrial Park. The project includes a production well, reinjection well, all of the delivery piping, control systems and retrofit needs of the school facilities. The town has prepared a feasibility study of this project based on using geothermal water from this well. Attempting to use the old well in the new system would allow a weak link and lead to untimely failure at which time a new well would be required.

OIT Geothermal Power Generation Plant- \$1,100,000

Oregon Institute of Technology - Klamath Falls, OR

Federal funds would enable OIT to construct a new high efficiency geothermal power plant on the campus. The power plant would use geothermal water from a 5,000 plus foot deep geothermal well to generate approximately one megawatt (MW) of electricity. New technology developed from this power plant is expected to improve the efficiency and reliability of low temperature geothermal power plants throughout the West. Technical support for construction and operations would be provided by OIT's Geo-Heat Center. The site would serve as a demonstration and educational training facility for OIT students and faculty. The students, mainly electrical, computer and mechanical engineering majors, but to a lesser extent business students, would be involved in instrumenting and monitoring the plant. These data would be used to calculate efficiencies, operational costs, and investment return. Material on the plant operations would be included in appropriate courses, especially those in the new Renewable Energy Engineering program. Research projects would be funded from the savings and income generated from the plant. This would make OIT students more competitive in the business world, especially in the renewable energy market.

Klamath County Agricultural Energy Center - \$1,980,500

Klamath Falls, Oregon

Klamath County requests funds to build the Klamath County Agricultural Energy Center on the grounds of the Oregon State University - Klamath Basin Research and Extension Center (OSU-KBREC). A county department with OSU faculty, OSU-KBREC is the Klamath Basin's leading agricultural experiment and extension farm located on 86 acres at the edge of Klamath Falls. The entire 86 acre farm is county-owned property. The Klamath County Agricultural Energy Center will be a hands-on demonstration site for renewable energy projects, such as solar electric irrigation pump technologies, solar hot water applications, anaerobic digester energy systems, wind energy, ground source heat pumps, low-head hydroelectric generation, and bio-fuel

powered farm equipment. The center will also provide a laboratory to certify newly developed renewable energy applications and bio-products processing techniques for value-added opportunities as they become applicable to agricultural markets. Once the energy center is built, Klamath County will partner with OSU-KBREC and the Oregon Institute of Technology (OIT) to develop ongoing programs. More than 70 OIT renewable energy engineering students are currently studying at OIT's main campus in Klamath Falls. Funds will be used for building materials, 25 construction workers, 20 energy systems installers, and 3 staffers, a total of 48 jobs created.

Port of Morrow Steam Energy Line - \$600,000

Port of Morrow- Boardman, OR

Funds will help the Port construct approximately 4,000 feet of high-pressure steam line to deliver steam energy to a processing plant from gas-fired power plant.

Willow Creek Piping Project- \$3,962,000

Vale Oregon Irrigation District (VOID) – Vale, OR

The lower Malheur and Willow Creek drainages are an area of intensive agricultural production in Eastern Oregon. This proposal will focus on the 35,000 acres adjacent to Willow Creek and the Malheur River. Funds will be used to pipe irrigation laterals in the Willow Creek and Malheur River basin. Since Malheur County ranks 34th of the 36 counties in Oregon for per capita income, this project will provide much needed jobs and opportunities for local businesses. The construction phase of the project alone will last four years. The Oregon Department of Environmental Quality (DEQ) ranks the lower Malheur River and Willow Creek as having the second and third worst water quality in the state, and both are tributaries of the Snake River. Farming practices cause these drainages to receive excessive levels of sediment, nutrients, and E.coli, primarily from irrigation-return flow. Piping these laterals creates economic benefits, environmental improvements, reduces electricity and fossil fuel requirements, improves habitat for Federally listed fish species, and conserves water.

Blue Mountain Hospital Wood Pellet Boiler Project- \$100,000

Blue Mountain Hospital- John Day, OR

The hospital has two 1950 boilers that burn crude oil as its main heating source, with a more modern 2002 heating fuel boiler as backup. Depending on the cost of oil, annual costs can range between \$90,000 and \$120,000. The hospital plans to install a biomass wood pellet boiler system that will reduce fuel costs by as much as 50 percent each per year. The cost savings can be used to offset the free/uncompensated/charity care for those who are unemployed, low income, and elderly in Grant County.

Confluence Project – Celilo Park- \$2,500,000

Confluence Project- The Dalles, OR

The purpose of this project is a complete renovation and restoration of Celilo Park. There have been no construction improvements in Celilo Park in more than 50 years to update aging park facilities and enhance the visitors experience by having distinct separation of park users. Funds will be used to upgrade existing restrooms adding showers and ADA accessibility. This requires an upgraded drain-field and an additional new restroom in the artwork area. Paving and widening of roadway with turn-outs will be added. Extensive earthwork, tree removal, re-

landscaping with focus on native species adding an underground irrigation system, reconstruction of the boat ramp area west and adjacent to the park with additional trailer, camper and vehicle parking are planned. The success of this project will be measured by Confluence's ability to responsibly create new artworks that honor traditional cultures, engage the community with public programs and educational activities, promote environmental stewardship by protecting habitat, fish, and wildlife during all phases of this project, and stimulate economic development.

Crooked River Wetland Facility- \$180,000

City of Prineville- Prineville, OR

The proposed project is located within the urban growth boundary of Prineville, Oregon, rural Crook County's only incorporated city. Due to rapid population growth, the City of Prineville's wastewater treatment system is nearing capacity and as a result, the city has a limited ability to serve new business or residential developments. The city needs to act quickly to ensure sufficient wastewater treatment capacity. The city has recently begun the process of updating the wastewater facilities plan. This facility plan is researching an alternative treatment option that would be far less costly while providing equivalent wastewater treatment. The facility plan will analyze the feasibility of a natural wetland system for wastewater treatment and create a new wastewater master plan based on the development of a wetland system. This wetland technology would allow for the continued utilization of the city's lagoon systems for treatment. This project will consist of the wetland facility design, permitting and engineering services required to develop the construction documents and bid specifications related to the construction of the wetland facility.

Coos Bay Dredging & Jetty Repair- \$5,791,000

Oregon International Port of Coos Bay- Coos Bay, OR

Maintenance dredging is essential if the Port is to continue to serve the vessels and barges currently calling at Coos Bay. In 2003, emergency repair of the North Jetty was undertaken, but a study is needed to assess the severity of ongoing erosion and how best to permanently fix the Jetty. Repair of the jetty is essential, as a significant breach would have major impacts on navigation and would prohibit any useful function of the jetty. Funds will be used to conduct maintenance dredging, and develop a jetty evaluation report & initiation of plans & specs.

Umpqua River ACOE Operations and Maintenance- \$1,296,000

Port of Umpqua- Reedsport, OR

Funding will be spent on Army Corps operations and maintenance for routine annual dredge operations and clamshell dredging Winchester Bay access channels.

Port Orford ACOE Operations and Maintenance- \$810,000

Port of Port Orford- Port Orford, OR

Funding will be spent on Army Corps operations and maintenance for annual dredging needed for safe transit of commercial and recreational vessels.

Chetco River ACOE Operations and Maintenance- \$586,000

Port of Brookings Harbor- Brookings, OR

Funds will be spent on Army Corps annual dredging of Chetco needed to provide a safe entrance bar for U.S. Coast Guard, commercial fishermen, and recreational users.

Rogue River ACOE Operations and Maintenance- \$911,000

Port of Gold Beach- Gold Beach, OR

Funding will be spent on Army Corps operations and maintenance for annual dredging. Dredging is needed for safe transit of commercial and recreational vessels, and dredging for the small boat basin.

Coquille River ACOE Operations and Maintenance- \$733,000

Port of Bandon - Bandon, OR

Funding will be spent on Army Corps operations and maintenance to conduct annual dredging activities, develop report for Letter L shaped pile dike, which was supposed to be funded through ARRA, but funding was shifted away from the Port. Additionally, funds will support an engineering evaluation for north and south jetties, which was also supposed to be funded through ARRA, but funding was shifted away from the Port.

Ferry Creek Reservoir Salmon Acclimation- \$256,000

City of Brookings- Brookings, OR

The project replaces the concrete overflow chute as well as makes improvements to the drain lines that serve the Ferry Creek Reservoir. The use of this reservoir as a salmon rearing and acclimation site for the Chetco River fishery enhances the salmon fishery for the Chetco River and provides valuable resources for regional commercial and recreational fishing. These improvements are needed to allow this facility to continue to be used as a storage reservoir. Oregon Water Resources, Dam Safety Division has determined that both replacement of the concrete overflow chute and improvements to the drain lines that serve the Ferry Creek Reservoir all need to be repaired. This project will improve/restore the fishery, resulting in more fish for recreation, more tourism industry jobs, and additional fishing guides. The project will support approximately 15 temporary construction jobs.

Mt Hood Community College Living Building Lab- \$591,750

Mt. Hood Community College- Gresham, OR

The proposed Living Building Lab (LBL) at MHCC will create a space to train future green building professionals. MHCC currently hosts several programs in the green industry, but does not have a dedicated space in which to continue training new green professionals in the installation and use of green technologies. The idea of the LBL is to build a fully self sufficient classroom that not only demonstrates that buildings can be green, but also serves as a living laboratory in which to train future green professionals. The building will capture, filter and use rain water for all its water needs. It will produce all of its electricity through solar and wind power. It will use the latest technologies in insulation and energy efficiency, far exceeding all LEED certification levels. By leaving many of the key technologies (e.g. PV cells, rain catchment, insulation) exposed to students, MHCC will be able to provide them the opportunity to “tune” the building for current usage. In addition, this building will allow students to easily monitor energy and water consumption to validate energy usage models. This building could serve as a model for future efforts in expanding capacity while building green, as well as a model for cutting-edge pedagogy/space integration in green building curriculums.

Beaver Creek Culvert Replacement Project- \$5,000,000

Multnomah County- Troutdale, OR

The project area is located along the lower three miles of Beaver Creek within the City of Troutdale. The lower reach of Beaver Creek is critical habitat to federally endangered species, including Lower Columbia River Chinook Salmon and Steelhead Trout, and candidate species including Lower Columbia River Coho Salmon. The project will replace three culverts along Beaver Creek in the City of Troutdale, which will correct environmental degradation created by culverts that have been deemed by the Army Corps of Engineers to be fish passage barriers to upstream habitat. The project includes: restoring natural substrate under bridges and culverts; stabilizing stream bed to ensure no head-cutting occurs; removing non-native exotic plant species and replanting with native species along bank; and, enhancing a forested wetland adjacent to the Stark Street crossing by removing non-native species with native species. This would improve habitat for many wildlife species including neotropical migratory birds that use riparian habitat for nesting and cover, small mammals that use riparian areas as migration corridors, and native amphibians and reptiles that use wetland habitats. Replacing the culverts allows constructing segments of Troutdale Road, Cochran Road and Stark Street to modern, urban standards. Currently these roads are two lane roads without sidewalks, drainage, bicycle lanes and turn lanes, amenities commonly found on urban roadways. Each road serves a local school, and constructing sidewalks and bike lanes improves safe access per the federal Safe Routes to Schools Program. These roads also provide an important function in accommodating growth within the urban area at the rural fringe. An additional benefit that will be derived from the culvert replacement is better stream hydraulics (i.e. increased flow capacity and storm flow detention). The existing undersized culverts have previously been blocked with debris flow and have resulted in stream flow backup ultimately creating roadway flooding.

Willamette River Environmental Dredging, Section 312 (Lower Willamette Ecosystem Restoration, GI) - \$220,000

City of Portland/Port of Portland- Portland, OR

The City and Port have been working closely with the Corps of Engineers to develop a critical project to pursue ecological restoration and, potentially, sediment clean-up in the Lower Willamette. At the City's request, the Corps has broadened its existing environmental dredging feasibility study to encompass the City's ecological restoration objectives. The City and Port agreed to become the sponsors of this broadly scoped project with considerable local investment. These funds will ultimately enable the City and Port to make substantial improvements in the ecological functioning of the Lower Willamette and will have enormous environmental and economic benefits for the Lower Willamette region.

Oregon Sustainability Center- \$2,000,000

City of Portland- Portland, OR

The Oregon Sustainability Center will be the first high-density, urban building to achieve triple net zero performance, serving as a living laboratory for the research, development and launch of sustainable solutions, and as a convener of people, ideas, and education focused on sustainability. The 220,000 square foot building will include classroom, conference, research and exhibit space, and will be home to leading environmental and sustainable development organizations of all sectors, providing opportunity for collaboration and innovation. When

constructed, the Center aspires to achieve triple net-zero performance, producing 100% of its energy through renewable resources and capturing and treating all water on-site. To achieve the net-zero water goals, all water flowing through the Center will be recirculated, used, or treated on site. The roofs and canopies of the Center will funnel rain water into a 200,000-gallon storage tank in the basement, enough to provide for the building throughout the dry season. Treated graywater will replace potable water in most systems in the building including flushing toilets, irrigation, or cooling mechanical equipment. By accomplishing these challenging goals, this next-generation building offers significant opportunities for private industries to commercialize new products and technologies that are designed to advance sustainable water management. The Center will spark environmental, economic and social change, altering the way we use resources and interact with the built environment and shaping urban design in a carbon-controlled and water constrained reality. As cities and nations seek to curb emissions and conserve water, this building will be the prototype.

Springwater/Johnson Creek Restoration- \$200,000

City of Gresham, Oregon

This project will allow significant new job creation to occur while fulfilling federal requirements for stormwater management and clean water. Specifically, this request is to fund the Springwater Industrial Area/Johnson Creek Water Quality Improvements project Phase I Feasibility Study in Gresham. Phase I consists of a suite of restoration projects designed to address the impaired water quality and natural resource functions of Johnson Creek within the Springwater Industrial Area. This project is a cost-effective improvement within an area slated for industrial development in the near term and will help leverage private development by proactively addressing important stream corridor needs. The Springwater Industrial Area is planned to provide 18,000 jobs at build-out. The City of Gresham believes now is an opportune time to initiate restoration in the upper Johnson Creek basin as 1,600 acres of rural and agricultural land in the upper watershed are slated for urbanization as part of the Springwater Industrial Area Urban Growth Boundary (UGB) expansion. The components of this project include floodplain reconnection/wetland restoration and riparian restoration.

OHSU District Energy Feasibility Study - \$540,000

Oregon Health and Science University (OHSU) - Portland, OR

OHSU, in partnership with the Portland Development Commission (PDC) and the Portland Oregon Sustainability Institute (PoSI), is engaged in high-level planning for a district energy system that will serve OHSU's new Schnitzer Campus and adjacent properties in Portland's South Waterfront District. OHSU's Schnitzer Campus master plan anticipates a future medical and life sciences campus with over two million square feet of new academic and research buildings, including its first building, OUS/OHSU Life Science Collaborative Complex, set to break ground in 2011. Adjacent property owners are planning several million additional square feet of commercial development over the next two decades. As transportation improvements to South Waterfront streets (due to Milwaukie Light Rail extension) are scheduled to occur in Spring 2011, now is the most opportune time to plan infrastructure and sustainability improvements that will serve development in the entire district and can be phased with new projects as they come on line. This request will fund a feasibility study and design of a district energy system to serve the South Waterfront District. According to the International District Energy Association, district energy systems generate their own electricity to produce steam, hot

water or chilled water at a central plant. The steam or water is then piped underground to individual buildings for space heating, domestic hot water heating and air conditioning. As a result, individual buildings served by a district energy system don't need their own boilers or furnaces, chillers or air conditioners. Aggregating the thermal requirements of different buildings allow district energy systems to enjoy economies of scale and operational benefits such as using industrial grade equipment, alternative fuel technologies that would otherwise not be economically or technically feasible for individual buildings, and reduced capital cost to individual building development. District energy systems improve energy efficiency, enhance environmental protection through reduced greenhouse gases, and are more reliable providers of energy.

Oregon MOVES: Mobilizing Oregonians through Vehicle Electrification Systems - \$1,500,000

Portland State University – Portland, OR

The Oregon MOVES project at PSU will establish a living laboratory to study and advance transportation electrification in the urban environment to help mitigate pollution, congestion, and dependence on foreign oil. The project will provide the nation with a systematic way of encouraging and field testing innovative, green transportation products and services in a real world setting and in a way that evaluates not only the new technology and supporting infrastructure, but also the social innovation required for successful adoption. Moving the country away from dependence on fossil fuels toward environmentally friendly solutions requires efforts such as:

- Evaluating Driver Responses to EV using GPS Working with Toyota and Nissan as they launch Portland-based pilot programs, GPS technology will test the notion of range anxiety and examine how EV infrastructure informs vehicle operation and possible ownership.
- Adapting Policy Environments to Facilitate New Vehicle Technology Examine and propose necessary changes to maximize the benefits of EV s including zoning and building codes, state regulations regarding electricity sales, and the creation of new types of transportation infrastructure like “electric boulevards.”
- Electrification of Urban Freight Mobility Assist the city and county in meeting climate change policy goals by examining the impact of freight emissions and identifying electrification opportunities for manufacturers and shippers.
- Sustainability Mobility Index Establish instruments to determine the capacity for sustainability mobility, identify benchmarks and performance measures, and track progress of sustainability mobility aspirations over time.
- Demographic Changes and New Vehicle Technology Examine transportation preferences and mobility values of differing generations in urban, suburban, and rural communities to inform future infrastructure expectations and needs.

Troutdale Wastewater Wind/Hydrogen Project - \$1,980,500

City of Troutdale, OR

The funds will be spent on ground preparation and construction of the foundation, erection of wind turbine poles, installation of electrical wiring and interconnection, plumbing and hydrogen interconnection, storage facility and pad for hydrogen system ordering of the turbines and hydrogen system, final completion of turbine install and commissioning. The project goal is to

reduce the \$100,000 electrical energy bill facing the City of Troutdale every year, as well as achieving Green Energy Tag sales, Hydrogen sold for commercial use, hydrogen for transportation, hydrogen research and education, and the enhancement of the wastewater facility through the introduction of pure oxygen into the wastewater aeration process.