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# United States Senate

WASHINGTON, DC 20510-1903

COMMITTEES:
COMMERCE, SCIENCE, AND TRANSPORTATION

OCEANS, ATMOSPHERE, FISHERIES AND COAST GUARD SUBCOMMITTEE

FINANCE

INTELLIGENCE

RANKING MEMBER, SMALL BUSINESS

May 22, 2009

The Honorable Daniel K. Inouye, Chairman
The Honorable Thad Cochran, Vice Chairman
Senate Committee on Appropriations
S-131, U.S. Capitol
Washington, D.C. 20510

The Honorable Byron L. Dorgan, Chairman
The Honorable Robert F. Bennett, Ranking Member
Appropriations Subcommittee on Energy and Water Development
186 & 184 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senators Inouye, Cochran, Dorgan, and Bennett:

I am writing to request your support for funding in the Fiscal Year 2010 (FY2010) Energy and Water Development Appropriations bill for programs and projects that are important to Maine. A description of these requests in alphabetical order by organization follows.

I certify that neither I nor my immediate family has a pecuniary interest in any of the congressionally directed spending item(s) that I have requested for Fiscal Year 2010, consistent with the requirements of paragraph 9 of Rule XLIV of the Standing Rules of the Senate. I further certify that I have posted a description of the items requested on my official website, along with the accompanying justification.

Once again, thank you for your time and consideration. Please feel free to contact my staff with any further questions.

Sincerely,

OLYMPIA J. SNOWE
United States Senator

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TWO GREAT FALLS PLAZA
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PORTLAND
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MAINE RELAY SERVICE
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IN MAINE CALL TOLL-FREE 1-800-432-1599

**Central Maine Community College, Alternative Energy Development: Educating Students & Reducing Costs, Auburn, Maine -- $290,000.**

To install, teach, demonstrate, and use sustainable energy technologies that promote the economic and environmental health of the college and the communities we serve. CMMC would make much of the campus an alternative energy lab while making it more energy efficient. With fuel costs expected to rise, making greater use of sustainable, affordable, and environmentally sound sources of energy is clearly an excellent use of taxpayer dollars. Also, local residents, contractors, designers, etc. will be able to make use of the campus energy lab to learn how to incorporate more alternative energy in their work and in their homes and businesses.

**Central Maine Community College Education Foundation, CMCC Northeast Regional Wind Energy Demonstration, Auburn, Maine -- $1,808,000.**

The CMCC Education Foundation seeks funding to construct a small-scale wind turbine farm on the Central Maine Community College campus, to serve as a demonstration laboratory for CMCC's proposed Alternative Energy concentration and to serve as an educational exhibit for businesses, individual homeowners, and governmental units. It will also provide the opportunity to learn about the benefits of renewable energy as it applies to windpower generation of all types and sizes. The wind turbine farm will generate approximately $110,000 worth of electrical power each year, which can be sold to provide funding for scholarships for CMCC students.

Funds will provide renewable energy and energy conservation research and will assist in the development of additional wind projects through rural and urban areas in Maine. CMCC will have a small-scale wind farm on campus, an alternative energy program concentration for its students, a laboratory for the new program, and will provide to the general public a regional information center for small wind projects. Students who take part in this program will be in the vanguard of a growing industry, will be well trained to assist commercial and residential consumers of wind power, and, as wind technology attracts more users in Maine, will be more likely to remain in Maine after graduation.

**Town of Fort Kent, St. John and Fish Rivers, Maine, Flood Study, Fort Kent, Maine -- $100,000.**

To conduct an analysis of the current flooding situation at the confluence of the St. John and Fish Rivers and recommend possible solutions that would alleviate the flooding potential. The area of concern is the primary commercial district for the community. Currently an existing levee provides partial protection to the West Main area of the community from flood waters associated with the St. John River. However it provides no protection from flood waters associated with the Fish River. Also, no protection from flood waters associated with both the St. John and Fish Rivers is currently afforded to the East Main area of the community. An analysis of current hydrological data as well as the area requiring protection would need to be conducted to determine potential solutions to the problem. Once this is determined a feasibility analysis of the potential solution or solutions would need to be conducted.

The funding would allow the Army Corp of Engineers to provide a detailed project report concerning potential solutions to the ongoing flooding situation. It would augment a previously constructed flood protection levee (1978) and in essence complete the flood protection system. By providing solutions to the flooding situation it would minimize the current and ongoing outlay of federally subsidized flood insurance claims as well as FEMA and SBA disaster assistance funding.

**Hydro-Photon, Inc. and Crystal-IS, Ultraviolet Light Emitting Diode (LED) Filter for Disinfection of Contaminated Drinking Water, Blue Hill, Maine -- $3,000,000.**
Financial support is sought to help develop light emitting diodes (LEDs) that produce ultra violate light at the germicidal wavelength. When developed these LEDs will require significantly less power to operate than current approaches, will be mercury-free, and pose no environmental hazard. Once developed the diodes will be incorporated as filters into portable water containers and tested to EPA & NSF standards for disinfection. The portable containers will also be tested under field conditions. The project will focus on three priorities: improvement of the efficiency and manufacturability of the UV LEDs; design and integration of UV LEDs into prototype point-of use applications for drinking water disinfection; and testing and evaluation of the effectiveness of UV LED against bacterial, viral, and protozoan pathogens such as E. coli, Salmonella, Cryptosporidium, and Giardia.

Ultraviolet light (UV-C) is a safe and effective means of disinfecting drinking water without the use of toxic or carcinogenic chemicals. Current generation ultraviolet water disinfection techniques rely on extensive banks of mercury vapor fluorescent lamps which are subject to breakage and result in mercury entering the water supply and contamination of the environment. Light emitting diodes are highly energy efficient substitutes for other sources of light and new technology and materials now enable the manufacture of LEDs in the germicidal ultraviolet wavelengths. Using ultraviolet LED technology for the disinfection of water can replace current generation mercury vapor lamps with a safer and more energy efficient technology. Widespread adoption of UV LEDs can ultimately replace chlorination as the primary means of disinfecting drinking water at the municipal level. Replacement of chlorination will result in significant energy savings both globally and to the nation.

**Town of Mapleton, Maine, Camp NOMACCA Eroding Bank, Aroostook River – $100,000.**
To initiate a rehabilitation of stream bank erosion along approximately 1,700 feet of the southern shoreline of the Aroostook River in Mapleton, Maine. Between 2004 and 2007, the stream bank eroded through approximately 25 feet of forest and 15 feet across the access road, which had to be abandoned by the Town of Mapleton. If this erosion continues it will destroy a 3.4 acre wetland, 18 publicly used structures, an access road, a multi-purpose recreation trail, and a well traveled connector road between the communities of Presque Isle and Washburn, Maine.

**Ocean Renewable Power Company of Maine, Maine Tidal Energy Site Characterization and Analysis, Eastport, Maine -- $470,000.**

This project will fund site evaluation and analysis necessary for environmental permits and final design on the first commercial tidal energy device installation in the US and result in new marine environmental data and analysis in the public domain. This project will collect data on fish, mammals, and the benthic environment, assess the power generating potential of the resource, characterize the oceanographic and geotechnical environment, and other details. This effort will establish a model for acceptable and sustainable development of ocean energy resources.

A national effort to increase renewable energy development and reduce dependence on fossil fuels requires a long-term public policy commitment. Tidal energy will provide emission free electricity while blazing the path for other ocean energy developments to follow. The funding of this project will assist with permitting the first commercial scale tidal energy project in the United States while providing a baseline of environmental data for public domain use that will assist in further responsible development of ocean energy resources.

**Ocean Renewable Power Company of Maine, Maine Tidal Energy Environmental Monitoring Program, Eastport, Maine -- $500,000.**

Tidal energy provides a unique opportunity in Maine to generate emission-free electricity from an indigenous renewable energy resource. The project will provide equipment and analysis for detecting sea life, noise, vibration, and other environmental factors. The project will establish the environmental baseline for tidal energy from Maine's coastal waters, making data publicly available. This effort will help create a world class ocean energy research, development, and commercialization cluster in Maine that will be the catalyst for environmentally responsible ocean energy development throughout the Northeastern U.S. and Maritime Canada. Funds will be used to purchase equipment such as sonar, cameras, sensors, and other gear necessary for environmental monitoring. This project increases energy independence and security, creates over 250 jobs statewide in five years, spurs investment in Maine of up to $1 billion in 5-to-7 years, and creates a model for environmentally sensible ocean energy development. The Eastport community has embraced tidal energy as a cornerstone of future economic opportunity. Situated at the entrance to the Bay of Fundy, which has the highest tides in the world, Eastport is the working port closest to two of the most robust tidal energy development sites in North America.

**City of Portland, Maine, Portland Harbor Dredging, Portland, Maine -- $2,000,000.**

The Army Corps of Engineers has indicated a need for federal funds for maintenance dredging of Portland Harbor. The efficient operation of Maine's busiest port ensures the economic vitality of the City of Portland and the region. The Corps will be dredging the Portland Harbor navigation channel in 2010-2011. The City and the private owners of the businesses and piers in Portland Harbor would like to coordinate their dredging efforts with the Army Corps to perform this work as cost effectively as possible.

Dredging will ensure commercial fishing boats, tugs, tankers, cruise ships, coast guard, and other vessels can navigate the harbor and allow this area to continue to be a center of marine-related jobs and other businesses whose economic impact will be felt statewide.

**University of Maine, Maine Offshore Wind Initiative, Orono, Maine -- $5,000,000.**
Maine has the equivalent of 40 nuclear power plants of offshore wind energy within 50 nautical miles. If only 5 percent of this wind resource is captured, Maine can still generate the equivalent of two nuclear power plants of electricity – that is 5 GW of wind or 2 GW of conventional power. This is enough electricity to heat every home with heat pumps and to fill every plug-in electric vehicle in the state's 500,000 vehicle fleet. The construction of 5 GW of offshore wind will attract $20 billion of private capital to Maine and would represent by far the largest construction project in the State's history, resulting in over 10,000 jobs.

Since the vast majority of the offshore wind resource in Maine and in the US is located in deep water (>200ft), an offshore wind research center is needed to support development of floating platform technology. The effort will build on UMaine Composites laboratory expertise in wind energy, as well as other expertise at UMaine including GIS, geological sciences, earth sciences, environmental sciences, fish, and wildlife.

Total investment required will be approximately $100 million over ten years, with funds coming from State, federal, and private sector sources. Large-scale private investment to build the wind farms and associated electrical infrastructure will be on top of the $100 million required to lead the way for commercial development. The State recently authorized a $5 million revenue bond to pay for expansion of the AEWC facility at UMaine to develop and test composite wind blades up to 70 meters in length; construction started in 2009. The FY2010 funding will be leveraged by additional investment from the State of Maine, commercial research and testing contracts, and in-kind support from the National Renewable Energy Lab. If $5 million is appropriated in FY2010, an estimated an additional $3 million will be available from these other sources.

**University of Maine, Environmental Impact Protocols for Tidal Power, Orono, Maine -- $3,000,000.**
This funding is requested to accelerate the permitting process for tidal power by developing protocols to evaluate the environmental impacts of tidal energy and developing a model monitoring system. The proposed program will develop protocols to evaluate the environmental impacts of tidal energy and will develop a model monitoring system. This effort will concentrate on scientifically sound assessment of fish and marine mammal populations and the energy potential.

Tidal energy development is underway in the Western Passage of Passamaquoddy Bay. Marine life such as the endangered Atlantic salmon, shortnose sturgeon, and other sea-run and marine fishes are all likely to at least travel through the Western Passage during their lives as juveniles or adults. Similarly, marine mammals, including the critically

endangered North Atlantic Right whale and seals, use this region. The impact of tidal energy must consider the spatial and temporal use of the water column by these species. The effect of energy extraction on the ecosystem is a crucial aspect of the development of this resource. It is expected that the changes in the basin circulation would be modest; however the changes in overall flows in the multiple passages that connect many tidal estuaries to the ocean may change significantly. This could impact critical areas for resources of ecological and economic importance. Unique expertise exists at the University of Maine in proximity to these sites for tidal turbines.

**University of Maine, Next Generation Composite Wind Blade Manufacturing Technologies, Orono, Maine -- $3,000,000.**

Currently, the majority of composite wind blades are manufactured in Asia and South America. However, the increasing demand for wind blades offers an opportunity for manufactures in Maine and the US to compete in this market. At the 2008 Washington International Renewable Energy Conference (WIREC) Dr. Dan Arvizu – Director of the Department of Energy's National Renewable Energy Lab – stated that U.S. composite wind blade manufacturers will be able to compete if they can increase productivity by 30 percent. Further, prominent wind energy developers are seeking local suppliers of composite wind blades, with the rationale of reducing both the cost and carbon footprint associated with long-distance transportation of wind blades from foreign manufacturers to wind power sites in the U.S. To respond to this opportunity, UMaine's Composites Center has developed a technology commercialization plan for Next-Generation Composite Wind Blades. This plan includes:

- The development and scale up of advanced manufacturing processes for large composite wind blades. These processes include automated composite tape placement, and should reduce production labor and time by up to 50 percent.
- The development of a recyclable, thermoplastic composite wind blade. With up to 15,000 composite wind blades to be put into service every year, the industry needs an environmentally-friendly, recyclable composite manufacturing technology. The use of thermoplastic composites will result in zero-waste production, with a wind blade that can be fully recycled at the end of its service life.

The $3 million is requested for the development and testing of next generation composite wind blade manufacturing technologies. This research has the potential to add hundreds of new jobs to Maine's distressed composite boatbuilding industry. In addition, it leverages the recent $5 million expansion of the AEWC Center, for a full-scale wind blade testing facility. Scheduled to be completed in late 2009, this state-funded expansion will provide the AEWC Center with the ability to manufacture and test a full-scale, 55 meter composite wind blade.

**University of Southern Maine, Undergraduate Research Involvement Center Initiative, Portland, Maine -- $1,662,000.**

USM's proposed Undergraduate Research Involvement Center Initiative (URICI) will build out available lab-ready space in the BioScience Building on the Portland campus. These labs will be designed to be adaptive to various biology and chemistry protocols and lines of work to serve as a hub for faculty work that engages students. If fully funded, USM expects to increase undergraduate students' involvement in faculty research by another 100 students per year, almost double the current student participation in the sciences.

The shortfall in science and technology-educated college graduates is a national need recognized in recent assessments such as The Gathering Storm. This shortfall is an issue acutely important to the future prosperity of Maine's young citizens as well as Maine's overall economy as it transitions into the innovation economy of the 21st century. URICI lays the foundation for graduating and creating such a workforce. Indeed, many recent USM graduates involved in faculty research have become research technicians in Maine's science-based economy at firms such as IDEXX, Inverness Medical, Portland Water District, Biodiversity Institute, and Tom's of Maine.

**Wind Blades LLC, Commercialization of Highly Efficient, Green Technology, The Composite Rotary Engine, Topsham, Maine -- $4,000,000.**

This request for $4,000,000 will complete the research, development, commercialization, and tooling design of the Composite Rotary Engine [CRE] and will establish a manufacturing facility in northern Maine to build these engines. It is estimated that, by 2011, the manufacturing facility will provide meaningful direct employment for 50 people and increase employment opportunities in related companies. The Composite Rotary Engine is a lightweight, compact engine which is more energy efficient, runs cleaner and is eco-friendlier than internal combustion engines currently in use. The CRE will power cars, trucks, railcars, and commercial vessels and can also be used as a stand alone power generator. The CRE can run on various commercially available fuels.

This program was initiated with an FY2005 DoD Appropriations for Mobile TIPSS R&D Project, prior funding ($1 million) was received through the Dept of the Army, TACOM Division in Warren, MI. At The University of Maine Advanced Manufacturing Center, this project converted the metal engine design into a 3D CAD model of the Composite Rotary Engine; developed a suitable manufacturing process for molding the high tech composite material; and evaluated the use of high strength composites in a ballistic armor panel.

Private funding was then used to construct a half sized aluminum engine model with working parts which validated the design and the interface of engine parts. The project will continue the collaborative effort of Wind Blades [Topsham], Alion Science and Technology [Bath], and the University of Maine's Advanced Manufacturing Center [Orono]. The plan will be to complete the research started in FY2005 and to establish a manufacturing plant in Northern Maine.