

APPROPRIATIONS REQUEST FORM OREGON HOUSE DELEGATION FISCAL YEAR 2010

DEADLINE FOR SUBMISSION: FEBRUARY 20, 2009

PLEASE NOTE: As required by the House Appropriations Committee, all requests will be made public on the requesting Member's website.

- 1. Project Title:** Accelerating Marine Renewable Energy Development in the U.S.
- 2. Organization Name and address:**
Oregon State University
Corvallis, Oregon 97331-4501
- 3. Primary Contact name, phone number, mobile phone number, fax number and email:**
- 4. Project Location Address (if different from Organization):** Oregon locations include Corvallis and Newport. In addition, the tidal work will take place in the Puget Sound.
- 5. Please describe the requesting organization's main activities, and whether it is a public, private non-profit, or private for-profit entity:**

Public University. Oregon State University is one of only two U.S. universities designated a land grant, sea grant, space grant and sun grant institution. Its more than 20,300 students come from all 50 states and more than 80 countries. OSU programs touch every county within Oregon, and its faculty teach and conduct research on issues of national and global significance.

- 6. Briefly describe the activity or project for which funding is requested (please keep to 500 words or less.)**

The earth's oceans provide an extremely abundant and promising source of energy in the form of wave, tidal, marine current, thermal and salinity. According to a recent Electric Power Research Institute (EPRI) report, the Oregon coast is an ideal place for demonstrating and analyzing the potential for wave energy. Puget Sound in Washington State holds similar potential for tidal energy.

The combination of key facilities, scientific expertise, successful marine energy research and collaboration, tremendous marine energy potentials, and well-suited geography make the Pacific Northwest a prime site for future federal investments in these important technologies. In fall 2008, OSU and UW competed successfully and were named the US Department of Energy's Northwest National Marine Renewable Energy Center (NNMREC).

The purpose of NNMREC is to help move the generation of energy from waves, ocean currents and tides from the laboratory to part of the nation's alternative energy future by providing outreach and services to potential users of the center, and by providing educational outreach and engagement to citizens.

The USDOE center grant provides an annual award of \$1.25 million in funding that can be renewed for up to five years. In order to expedite the development and assessment of impacts of this technology, OSU and UW are requesting an additional \$5 million in FY10 funding. This will be combined with funds from the Oregon Legislature, the Oregon Wave Energy Trust, the University of Washington, BioSonics, Inc., Snohomish PUD, the Electric Power Research Institute and other sources. We request augmentation of these funding sources to complement and accelerate existing efforts to rapidly advance the U.S. marine renewable energy agenda by supporting high priority, ancillary studies.

The proposed FY10 Federal Appropriations funding will:

1. Develop a mobile (non-grid connected) floating infrastructure of up to five test berths and a central junction box for wave energy device testing. The mobile test berths will be available to industry and public entities in need of a location to test wave energy devices and their impacts.
2. Develop an advanced and comprehensive mobile package for tidal energy site and device characterization. The system would include dedicated instrumentation and power analysis equipment and fulfill the promise of the prototype system currently under development with existing equipment at the Applied Physics Laboratory (APL)-UW.
3. Develop and instrument a continuous flow water flume for tidal energy device and array optimization studies.
4. Analyze the potential impacts of marine energy infrastructure and devices on the marine ecosystems by conducting ecological and environmental studies and modeling on: changes in behavior of marine mammals and listed marine species, seabirds, benthic habitats; sediment dynamics in nearshore environments; characterization of changes in underwater acoustics; wave and current energy distributions; and electromagnetic fields. Cumulative effects of these impacts will also be studied.
5. Analyze the potential impacts of marine energy infrastructure and devices on the “human dimension” through social, cultural, political and economic-related research.
6. Engage coastal community businesses, residents and visitors with educational outreach related to the marine renewable energy.

7. Has this project received federal appropriations funding in past fiscal years?

No, however FY09 funds are currently pending. A mark was identified within the FY09 DOE EERE account.

7a. If yes, please provide fiscal year, Department, Account, and funding amount of any previous funding.

N/A

8. Federal agency and account from which funds are requested (Please be specific –e.g. Department of Housing and Urban Development, Economic Development Initiatives account):
US Department of Energy (USDOE); Energy Efficiency and Renewable Energy Programs (EERE)

9. What is the purpose of the project? Why is it a valuable use of taxpayer funds? How will the project support efforts to improve the economy and create jobs in Oregon?

Marine renewable energy will be a key component of America's clean energy economy. Through accelerated development of marine renewable technologies, the nation can more quickly commercialize these technologies, build a vibrant green energy manufacturing base, and reduce its dependence on foreign oil. The "salary" funding for this Wave Energy Center (\$700,000) would partially fund the time of 2-3 professors, 1 Center Manager, 1 Technician, and about 7 graduate and undergraduate students, creating in the range of 12 positions. In addition, the Environmental Monitoring would fund about 2 graduate students in marine biology. The work to construct the Wave Energy Interconnect Nodes off the Oregon Coast to shore (\$3,000,000) would also enable a local company to fund another 8-10 employees.

10. Have you requested funding for this project from other Members of Congress?

If so, who? Support is being sought from the entire Oregon Congressional Delegation

11. Funding Details:

a. Total project cost (all funding sources and all years): \$20,000,000

b. Amount being requested for this project in Fiscal Year 2010: \$5,000,000

c. What other funding sources (local, regional, state) are contributing to this project or activity? (Please provide specific dollar amount or percentage.)

USDOE is funding \$6,250,000 over five years. The additional \$7,250,000 is coming from State Funding (\$3,000,000), Oregon Wave Energy Trust (\$250,000), OSU, University of Washington and USDOE cost share, BETC credits.

d. Do you expect to request federal funding in future years for this project? Yes

e. Breakdown/budget of the amount you are requesting for this project in FY 2010. (e.g. salary \$40,000; computer \$3,000):

Wave Energy

Infrastructure to enable connection of up to five test berths including power analysis and data acquisition systems \$1,500,000

- Central junction box \$800,000

Analysis and studies of impacts: Existing and planned funding for the NNMREC includes very limited ecological and environmental research and works to leverage other funding sources. Research to address particularly important environmental questions will allow more rapid advances. The human dimension assessment studies are not funded at all within the NNMREC, but represent an important aspect in coastal communities.

- Ecological Assessment Studies \$440,000
- Cumulative effects modeling and analysis \$280,000
- Sediment transport dynamics study \$220,000
- Acoustics interaction study \$250,000
- Dissemination \$10,000
- Human dimension assessment studies \$200,000

Outreach and engagement: The NNMREC lacks funds to conduct outreach and engagement studies with stakeholders and the public. Public education about marine renewable energy will be crucial to the eventual acceptance of marine renewable energy facilities.

- Outreach and engagement \$100,000

Tidal Energy

Equipment to augment NNMREC tidal capabilities:

- Dedicated mobile package for site and device characterization \$500,000
- Laboratory flume development and instrumentation \$500,000

Acceleration of existing NNMREC tidal research areas through increased faculty and graduate student support:

- Analysis and study: site and device characterization \$50,000
- Analysis and study: environmental impacts \$70,000
- Analysis and study: device and array optimization \$30,000
- Analysis and study: advanced materials reliability and survivability \$50,000

f. Please list public or private organizations that have supported/endorsed this project:

Portland General Electric
Pacific Power
Columbia Power Technologies
Navy

g. Is this project scalable? (i.e. if partial funding is awarded, will the organization be able to use the funds in FY 2010?): Yes