



# **Marine Energy Technology Advancement in US: State/Federal Partnership**



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May 2010

# Webinar #1: Project Kickoff

- Agenda:
  1. Project Introduction: Mark Sinclair, CESA
  2. Marine Energy Technology Overview, DOE
  3. DOE Marine Energy Program, DOE
  4. Marine Energy Partnership Project Description, Mark Sinclair, CESA
  5. State Survey, Ellen Lutz, Clean Markets LLC
  6. NREL Draft Marine Energy Roadmap, Robert Thresher, NREL
  7. Q&A, Discussion

# Marine Energy Accelerator Project: What is It?

- Advance increased public funding to support most promising wave and tidal devices through full scale prototype deployment
- Demonstration of full scale devices at sea is central to realizing the potential of marine energy and catalyzing first commercial projects in US waters
- Value proposition: interested states can leverage DOE funding and technology expertise to accelerate faster progress in marine energy commercialization

# Project Partners

- State Partners:
  - Clean Energy States Alliance (CESA)
  - National Association of State Energy Offices (NASEO)
  - Association of State Energy Research and Technology Transfer Institutions (ASERTTI)
- Federal Partners:
  - DOE
  - NREL



# Important Role of States in Advancing Clean Energy Technology

## State-Leadership in Clean Energy – 1998-2010

- States are a key locus to accelerate development of renewable energy and the green economy
- Clean energy is economic development
- Rapid bottom-up learning – allows for many, diverse experimental programs, demonstration projects
- Rapid growth of state clean energy funds & programs
- Results that matter: in 10 years, \$1.9 billion state investment in 52,000 projects, leveraging \$10.1 billion
- New financing models –loans, loan guarantees, feed-in tariffs, renewable portfolio standards

# State-Federal Clean Energy Technology Acceleration

- Historically, DOE and states have not worked together strategically on clean energy development & deployment
  - RD&D resources limited
  - Insufficient focus on technology commercialization
  - Fragmented government programs
  - Lack of information sharing
- Concept: create new federal and state partnerships with joint funding to accelerate clean energy innovation, commercialization, and deployment.

# Proof of Concept: Marine Energy Technology Partnership

- **Challenge:** Fast learning and step change cost reductions necessary to make marine energy cost competitive
- **Response:** Link public/private sectors for accelerated marine development & deployment
- **Framework:** Establish federal/state technology partnership to coordinate funding and innovation

# Marine Tech Partnership Objectives

- Accelerate the pace of development and commercialization of marine hydrokinetic energy in the United States
  - Ensure information-sharing among states, institutions, and other stakeholders on marine energy technologies
  - Ensure state input and assistance to implement DOE marine energy roadmap
  - Provide increased opportunity to test marine renewable energy projects
  - Coordinate state/federal funding of several large scale demonstration projects
  - Document and communicate the experience and lessons learned from early projects: performance, O&M, regulatory challenges, costs
- Serve as a model for other technology collaboration areas
  - Evaluate and document the project as a prototype for how states and DOE/NREL can better align their renewable technology advancement goals and activities



# Marine Partnership Activities

- Establish **marine energy technology partnership network**
- Engage stakeholders in **information sharing** and capacity building
- Provide state input to **national Marine energy roadmap**
- Advance **test facilities** activities and cooperation
- Develop Fed-State **joint or coordinated funding & solicitation** process for public support of marine energy demonstration projects



Ocean Power Technologies has contracted with Oregon Iron Works to start building what it hopes will become a 10-buoy test system in the waters off Reedsport, OR.

# Marine Energy Network

- Marine Working Group: participants interested in exploring partnership support
  - State Clean Energy Funds
  - State Energy Offices
  - Universities and Research Organizations
  - DOE/NREL
- Advisory Committee: Strategic/Technology Advice
  - Representatives from regulatory agencies
  - Environmental and siting experts
  - International technology experts
  - Industry representation- OREC

# Information Sharing

## What:

- Identify how to manage regulatory challenges
- Identify environmental research priorities & link study efforts
- Assess state-based marine support activities
- Learn from EU experience
- Highlight policy and funding instruments to overcome deployment barriers
- Identify technology advancement and cost reduction opportunities

## How:

- Survey activities of dispersed stakeholders
- Monthly webinars and conference calls
- State/federal meeting



# Marine Technology Roadmap

- Provide input from states and organizations to the DOE roadmap process
- Meetings between states, industry and DOE/NREL to advance roadmap implementation



Florida Atlantic University's Center for Ocean Energy Technology (COET) has installed devices to measure the Gulf Stream for potential as a renewable energy source.

# Marine Energy Test Facilities

- No sea test facilities in the U.S.
- Provide NREL/DOE with state input and assistance in developing & implementing national test facility plan and strategy.



Joule Centre Wave Flume, Univ. of Manchester, UK

# Joint Demonstration Project Solicitation Process

- Work with states to obtain resource commitments to leverage DOE cost-sharing on projects
- Provide options to DOE/states for establishing a coordinated or joint federal-state funding process
- Issues to consider:
  - Scope of projects recruited
  - Level of public support
  - Eligible costs
  - Timeline
  - Evaluation criteria
  - Level of cost sharing between state/fed/developer
  - Lessons learned from similar technology partnership programs
  - Create active state/federal dialogue with developers
  - Set requirements for performance and cost data sharing among projects- IP management, etc.

# Soliciting Your Involvement

- Identify agencies or organizations interested in participating
- Identify individuals or organizations for Advisory Committee to guide project
- Recommendations on funding concepts
- Input on technology status and cost reduction opportunities

# METAP SURVEY: PURPOSE

- Assess relative importance of hydrokinetic technologies to state energy futures
- Assess current state interest and progress in hydrokinetic technology activity:
  - Regulatory & policy frameworks
  - Environmental assessments
  - Feasibility studies
  - Funding prototype & test facilities
- Assess future state plans for hydrokinetic activities
- Assess interest in Federal/State partnership



# METAP Survey Schedule

- After May 13 webinar, survey will be sent out by CESA, NASEO and ASERTTI to interested contacts
- Contacts include members, webinar attendees, developers, and others working in hydrokinetic technology development
- Web-based survey, approximately 10-15 minutes to complete
- Clean Markets will perform analysis and report of findings
- Results will inform METAP focus areas for Federal/State partnerships

# Project Team Members

- NASEO:
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