USDOE

NW National Marine Renewable Energy Center

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Briefing to the
Society of Naval Architects and Marine Engineers
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A partnership of OSU and UW to support wave and tidal energy development

- **Oregon State University:**
  - Headquarters and Director (Bob Paasch)
  - Focus on **Wave Energy**
  - College of Engineering, Oceanography, Hatfield Marine Sciences Center

- **University of Washington:**
  - Co-Director (Phil Malte)
  - Focus on **Tidal Energy**
  - Mechanical Engineering, Oceanography, Applied Physics Laboratory

- **Industry Partners:**
  - Snohomish PUD, BioSonics, PNWER, Verdant Power, EPRI, Sound & Sea Tech.
Tidal In-Stream Energy Conversion (TISEC)

Not a barrage

… but rather a turbine
(1 MW shown)
Area 1: Impact modeling

B. Polagye (UW-ME), M. Kawase (UW-SO)
Area 2: Mobile testing
J. Thomson (UW-APL), B. Polagye (UW-ME)

Field measurements (surveys + stationary) to inform:
- Site developers: cost & power projections
- Device developers: wakes, efficiency
- Regulators: potential effects
Area 3: Array optimization

A. Aliseda (UW-ME), J. Riley (UW-ME)

Wave-Current Flume: Experimental studies of tidal turbine wakes.

Computer Cluster: Parallel simulations of tidal turbine wakes using commercial software package (Fluent).
Area 4: Reliability/Survivability

M. Tuttle (UW-ME)

Composite materials for use in tidal energy systems:

- Identification of commercial composite material systems that minimize bio-fouling and corrosion
- Estimation of long-term durability effects due to saltwater exposure
- Studies of composite structural design options
- Fabrication and testing of prototype composite structures
Local projects

- Snohomish PUD (pilot)
- Navy (demonstration)
- Verdant turbine
- OpenHydro turbine
Navy-Verdant project
Engineering by Sound & Sea Technologies

Lowered installation, gravity base w/ secondary anchors
SnoPUD-OpenHydro project

Lowered installation, gravity base
Current activities: siting and permitting

• Marine life
• Water quality
• Ambient Noise
• Geotechnical
• Existing use
• Resource assessment

Data collected by Evans-Hamilton for SnoPUD
Questions?

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