USDOE

NW National Marine Renewable Energy Center

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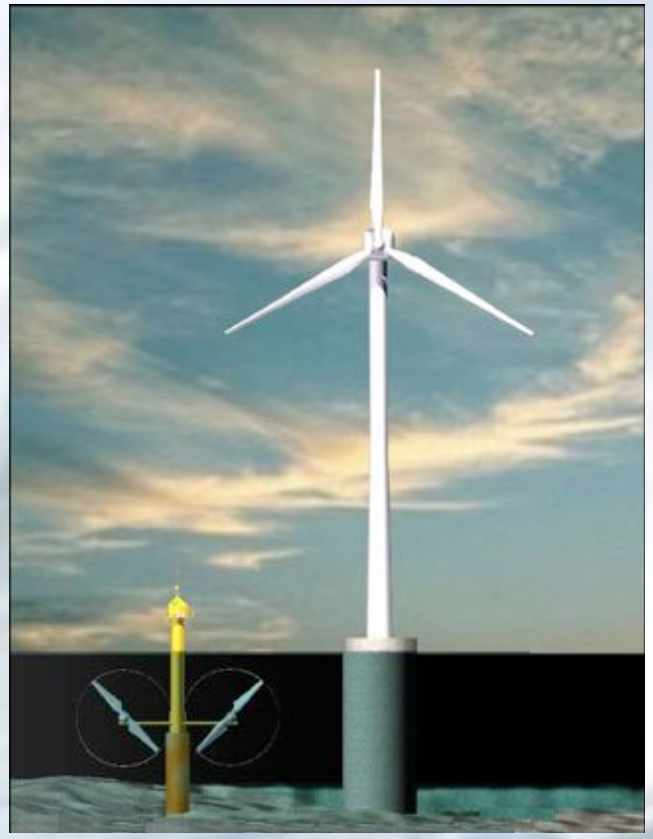
Briefing to the
Society of Naval Architects and Marine Engineers
March 12, 2009

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)

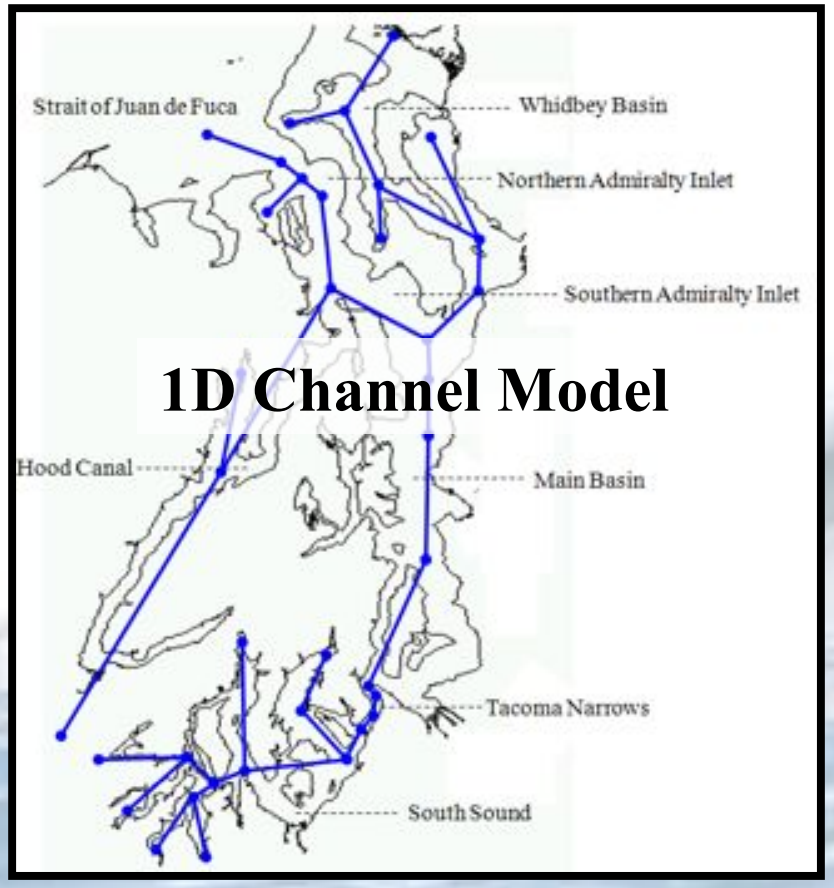
Not a barrage

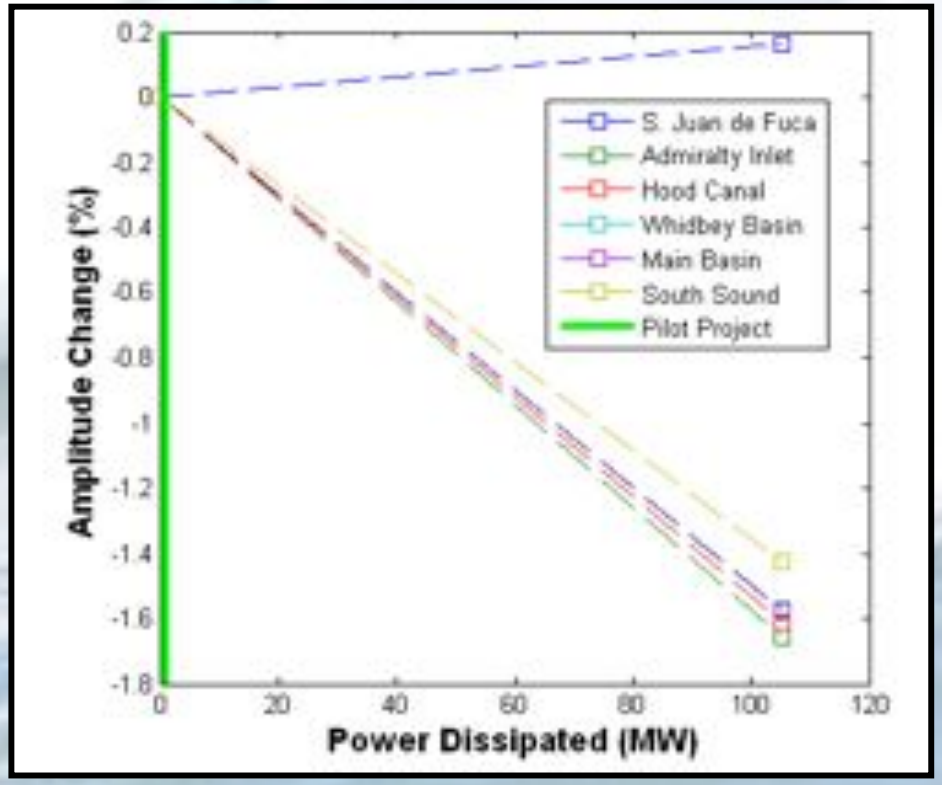


… but rather a turbine
(1 MW shown)

Area 1: Impact modeling

B. Polagye (UW-ME), M. Kawase (UW-SO)





Area 2: Mobile testing

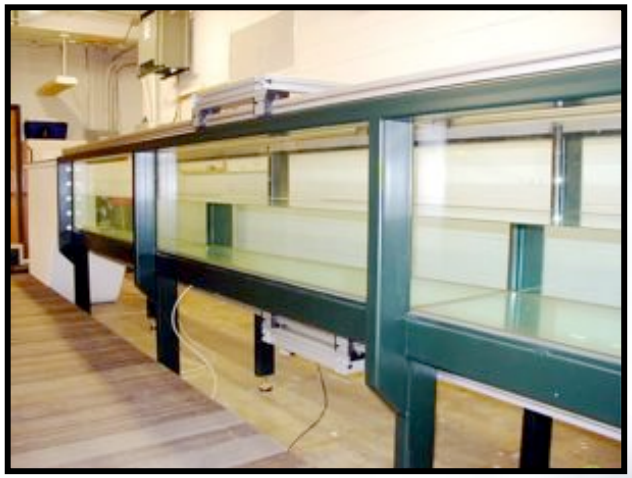
J. Thomson (UW-APL), B. Polagye (UW-ME)

Field measurements (surveys + stationary) to inform:

- Site developers: cost & power projections
- Device developers: wakes, efficiency
- Regulators: potential effects

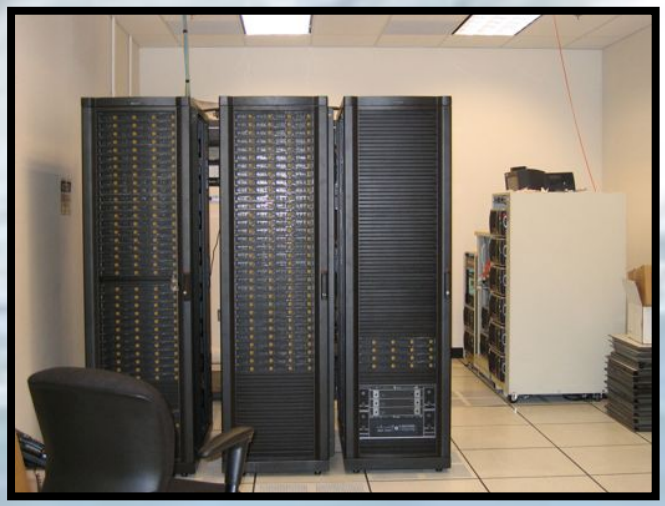
Area 3: Array optimization

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).



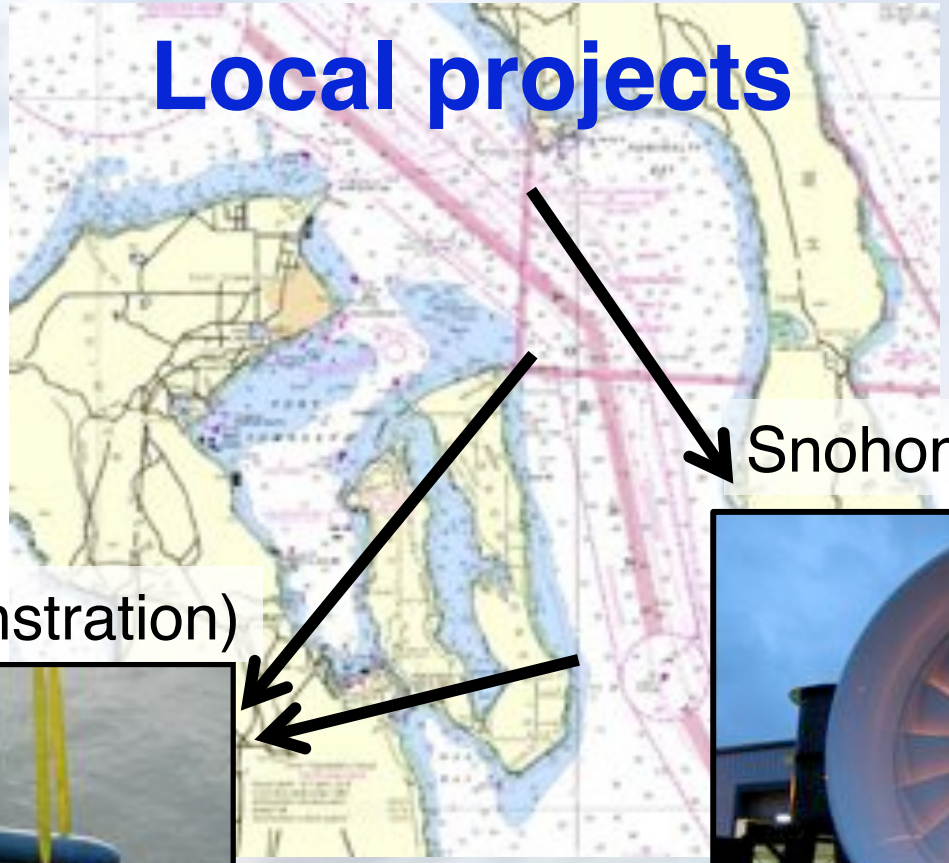
Area 4: Reliability/Survivability

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)

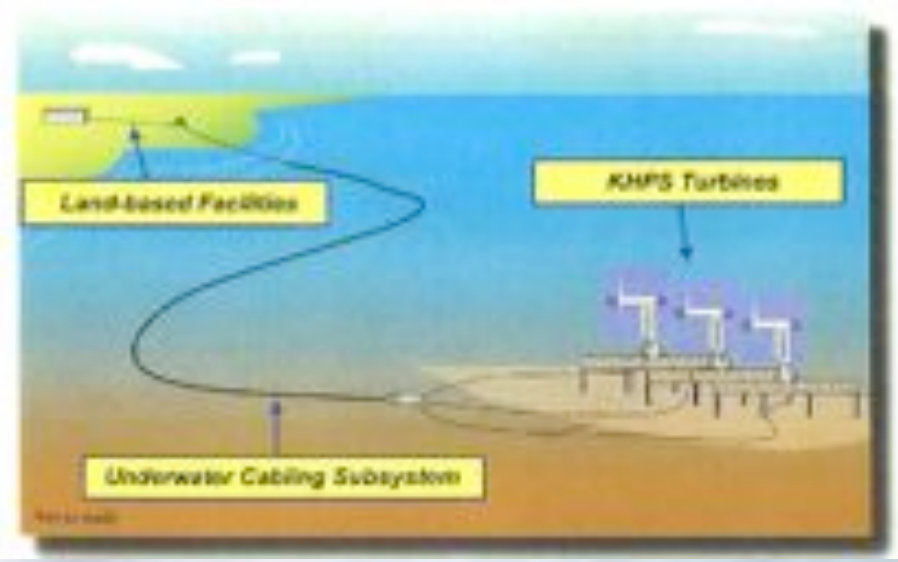
(OpenHydro turbine)

Navy (demonstration)

(Verdant turbine)

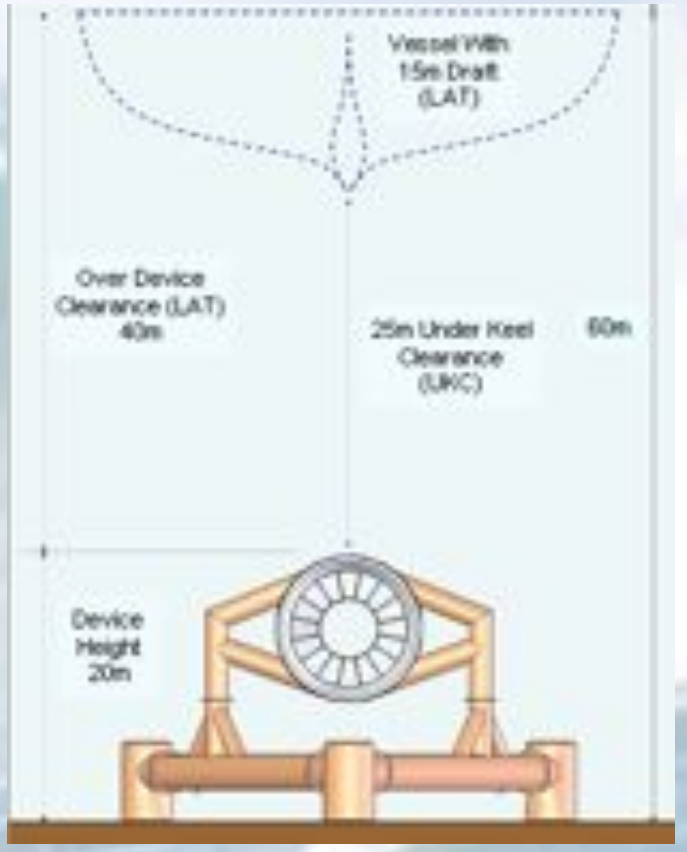
Navy-Verdant project

Engineering by Sound & Sea Technologies



Lowered installation, gravity base w/ secondary anchors

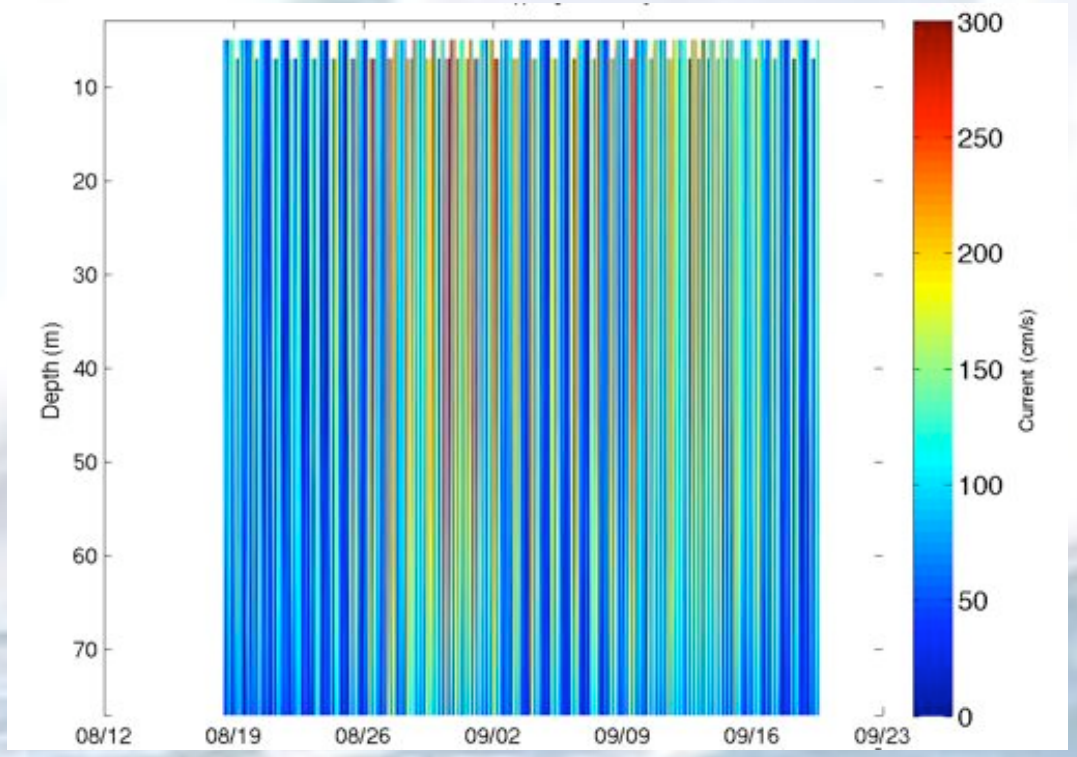
SnoPUD-OpenHydro project



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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