

Tidal and Wave Energy: Some Thoughts on Project Development in the U.S.

Michael Murphy

Director of Renewable Energy – Alternative Technologies



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

Excitement About the Industry

Very positive outlook for Tidal & Wave

- Clean, Renewable Energy**
- Increasingly Cost Competitive**
- Climate Change – carbon neutral**
- High Growth Potential**

U.S. Tidal & Wave Energy Projects A Quick Snapshot

- **Currently 49 preliminary permits issued by FERC, 31 more applications in pipeline**
- **One license issued – Makah Bay**
- **Highly visible projects – national press attention**
 - **Verdant Power RITE Project**
 - **OPT Reedsport, Oregon Wave Park**
 - **Snohomish PUD Tidal Projects**

Moving A Project Forward in the U.S.

Main Licensing Requirements

– Federal

- Preliminary Permit (3 year period)
- Preliminary Application Document (PAD) or Pilot License Application.
- License Application
- License Issued
- Endangered Species Act, Marine Mammal Protection Act

– State

- Water Quality Certification
- Coastal Zone Consistency
- Submerged Land Lease

Challenges on Pioneer Projects

Some of the issues encountered in developing a new ocean or tidal project in the U.S.....

- **Regulatory Framework**
 - the process is evolving
 - still establishing clear regulatory agency authorities

- **Environmental Impacts**
 - uncertainty regarding the full range of the effects of the new technologies
 - limited existing information for some sites

- **Balancing Competing Uses of the Marine Resource**
 - integrating with historical and traditional uses
 - quantifying the effects

Implications for Project Development

These issues can

- Result in added caution by permitting authorities**
- Lengthen the timeframe for permitting**
- Increase project cost**

Responding to the Challenges

We're Finding

- **Early Stakeholder Involvement is Key**
 - Define the project, the issues, and necessary information (e.g., Oregon Solutions Process)

- **A Team Effort - Build Trust**
 - Establish resource working groups to address issues
 - Maintain regular contact with regulators- keep them informed

- **Think Creatively**
 - Consider solutions which aren't yet typical

Responding to the Challenges (cont.)

We're Finding

- **Remain Flexible**
 - Consider the trade-offs (e.g., Adaptive Management)

- **Take An Active Policy Role**
 - Become involved with the legislative/regulatory process

- **Sources of Funding**
 - Identify local and federal funding mechanisms to help offset costs