



oreg

The Ocean Renewable Energy Group

A Canadian Marine Energy Perspective and Roadmap

An R&D focus on moving ocean energy
forward

Chris M Campbell Ph.D
OREG Executive Director

The reality – part 1

- The potential to exploit tidal energy has been obvious to coastal residents for years
- Technology research intensified 5 years ago
- The sector cannot develop without operating experience:
 - To prove reliability,
 - To refine technology choices,
 - To reduce costs,
 - To demonstrate the value of tidal power, and
 - To define or mitigate environmental risks



oreg

The Ocean Renewable Energy Group

The reality – part 2

Nova Scotia may lead the world in having
a multi-modular tidal energy
demonstration plant in 09/10

Regulators, technology and project
developers have been watching the
SEA and intend to learn from this Nova
Scotian experience



oreg

The Ocean Renewable Energy Group

Some of the challenges

“The unit broke free and ended on the beach”

“The structure had to be rebuilt because of fatigue”

“The blades failed”

“The buoy flooded and sank”

“The biofouling was worse than expected”

“This ridiculous plan sum it all up in one word? Greenwash.”

“We need to get test turbines in the water, as this is the only way to find out what will happen”

At this stage there are no failures - they are all learning experiences and a focus for R&D



oreg

The Ocean Renewable Energy Group

Some of the concerns

Fish and mammal interaction with devices

Impacts of energy extraction

Disturbance of traditional uses

Scaling of interactions with larger installations

Risks to installations

The opportunity is to learn from any of the pilot projects.

Doing nothing does not help!

Sharing the learning does help!



oreg

The Ocean Renewable Energy Group

Some of the benefits

Low carbon perpetual energy

New marine industry

Habitat enhancement

Refuge areas

The challenge is to develop the context for this industry

The Context?

- How do we assess environmental impacts?
 - Species at Risk vs climate change risk to species!
 - Phased development with monitoring as an input to ICZM?
- Where does newly emerging renewable ocean energy fit with other users?
 - Priority for existing use vs urgency of renewable energy transition?



oreg

The Ocean Renewable Energy Group

So where should the research community focus?

- Technology?
- Environment?

Building the knowledge base around technology developments

- Common ground among resource assessment models
- Bringing in marine experience from other domains
- Looking for common elements (PTO's, materials, coatings, moorings, etc)
- Looking for potential step-change design, construction, installation or operation opportunities

Not a focus on creating new inventors!

Supporting environmental assessments

- Use assessment experience from other marine works to prioritise
- Build the *baseline*: identify key indicators, trends, variability
- Refine adaptive management approaches
- Assessment context of 21st C: Climate Change; Low-C energy
- Develop stakeholder engagement mechanisms
- Develop monitoring approaches around early pilots:
 - To refine future assessments
 - To consider scaling
 - To refine longer term monitoring

Let's optimise scarce research resources

- Build on the hypothesis that renewable ocean energy can be developed sustainably – how to do it best?
 - Focus on critical knowledge gaps
 - Collaborate regionally, nationally and internationally
 - Create *Interest/Task Groups* of researchers around contentious issues eg extraction limits



oreg

The Ocean Renewable Energy Group

For

- Additional information
 - Contacts
 - Bi-Weekly updates
- Membership (research is under-represented!)

www.OREG.ca