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Marine Renewable Energy & the Environmental Assessment Process

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EA Review Expert Panel
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marine renewables canada

The power to think bigger.

Marine Renewables Canada

- National industry association for marine renewable energy
  - Covering wave, tidal, and river current energy
  - 80 members: device developers, project developers, utilities, researchers, municipal government, marine & energy supply chain
- What we do
  - Foster communication and collaboration
  - Lead education, outreach, and engagement activities
  - Support members and industry – identification of business development opportunities

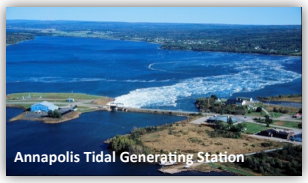
Mission:

Marine Renewables Canada aligns industry, academia and government to ensure that Canada is a leader in providing ocean energy solutions to a world market.

Marine renewable energy technologies

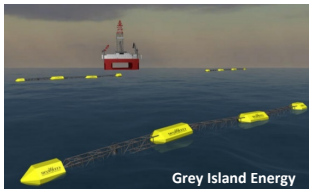
Tidal current (in-stream)

Kinetic energy from the outgoing (ebb) and incoming (flow) of tides; module deployment



Tidal range

Extracts energy from tides using the actual rise and fall of the tide; technologies use holding basin



Wave

Created by the wind passing over the surface of the ocean

River

Devices generate power from kinetic energy of moving water

Benefits of Marine Renewable Energy

- Contributes to Canada's climate action and clean growth goals
  - National climate plan + commitments under the Paris Agreement
  - North American Climate, Clean Energy, & Environment Partnership
  - Mission Innovation
  - Canadian Energy Strategy + provincial mandates
- Attractive energy resource -- predictable, high power densitites

- New global market estimated $900 billion value by 2050
  - Canada's share could = $4-5 billion even if capturing just 10% of market
- New jobs & careers
  - $1.7 billion GDP + 22,000 jobs over 25 years in Nova Scotia alone
- Activity occurring in rural communities

- Wave, tidal, river current resources across the country
- Range of project application options (lg. scale to community-scale)
- Northern & remote community opportunities to offset diesel use

State of the industry in Canada

Tidal

- Nova Scotia
  - Leading tidal energy/marine renewable energy development in Canada
  - Fundy Ocean Research Center for Energy hosting 5 in-stream tidal projects = ~22 MW; no turbines deployed to date
  - Fundy Tidal Inc. leading 3 community-scale projects = ~2.95 MW; in planning stage
- British Columbia
  - Canoe Pass Tidal Project = 500 kW
  - A few remote community, small-scale tidal projects in planning phase

Wave

- Development of some prototype technologies on west coast
- West Coast Wave Initiative (University of Victoria) conducting resource assessments & foundational applied research

River Current

- Canadian Hydrokinetic Turbine Testing Centre (Manitoba) deployment of over 10 turbines
- Industry pursuing remote community & First Nation opportunities

Environmental Issues

- Working in high-flow marine environments can be challenging (ex. limited tools to work in environment; complexities in data collection)
- Emerging marine renewable technology = potential challenges under EA process due to limited experience
- Requires device deployments in order to fully understand interaction with the environment
- Given size of resource, concerns about large impacts cannot be measured until larger projects emerge

Responsible development of tidal energy in NS

- **Approach to development**
  - Adaptive management principle
  - Incremental deployment/development
- **Building the knowledge**
  - Research & data collected for first joint EA at FORCE
  - Ongoing research – 93 studies in Nova Scotia to date
    - International research knowledge-sharing (IEA's Ocean Energy Systems' "State of the Science Report" shows no instances of collisions with marine life)
  - Environmental monitoring programs by FORCE & developers
- **Focus on engagement & environmental issues—tools & regulatory framework**
  - ***Early Engagement & Assessment****:* Strategic Environmental Assessments required by Nova Scotia (4 done to date)
  - ***Indigenous Engagement:*** Early engagement; Mi'kmaq Ecological Knowledge Studies
  - ***Legislation:*** Nova Scotia *Marine Renewable Energy Act*
  - ***Regulatory oversight*****:** One Window Committee (federal/provincial regulators)
  - ***Risk mitigation:*** Pathway of Effects framework (DFO, Acadia University)
  - ***Industry guidance:*** Statement of Best Practices (NS Government + Marine Renewables Canada)
  - ***Education & Participation:*** Community Toolkit (Acadia Tidal Energy Institute)

EA and evolution of the industry

- In-stream tidal energy under CEAA 2012 *Regulations Designating Physical Activities*
  - Allows for incremental deployment, operational monitoring, and adaptive management
  - Scale of development critical for industry to gather data and information on potential impacts
  - Provides predictability for industry

Conclusion

- Tidal energy/marine renewable energy is an emerging technology requiring an adaptive management approach.
- Safe, responsible development of tidal energy has been supported through the federal EA process combined with provincial (Nova Scotia) policies and legislation.

- Recommended Actions:
  - Maintain EA process under CEAA to support experience & data gathering
  - Ensure efficient & effective EAs through joint EA process
  - Encourage and enhance DFO engagement in science and monitoring
  - Support responsible adaptive and staged growth through clean technology funding (ex. Innovation in sensor, monitoring technologies)

GET IN TOUCH

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