marinerenewables.ca

Marine Renewable Energy- Progress depends on the vision!

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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
  - Established 2004
  - Offices on Pacific and Atlantic coasts
- Members:
  - 90 members representing technology and project developers, utilities, researchers, and the energy and marine supply chain

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.

Why?

- To provide new sources of electricity
  - Competitive in price
  - Reliable
  - Distributed generation
  - Forecastable or predictable availability
  - Low carbon content
- To secure business and economic activity
  - New activity for marine and electrical industry
  - Participation in a new world market

What?

- Electricity generation from rivers and oceans presents an untapped renewable energy source and is an emerging industrial sector.
- Marine energy is captured from three prime energy sources
  - Tidal current: kinetic energy from the ebb and flow of the tides
  - River current: kinetic energy from the stream flow (no civil infrastructure or barrages)
  - Wave: potential and kinetic energy from ocean waves

Who do we need to impress?

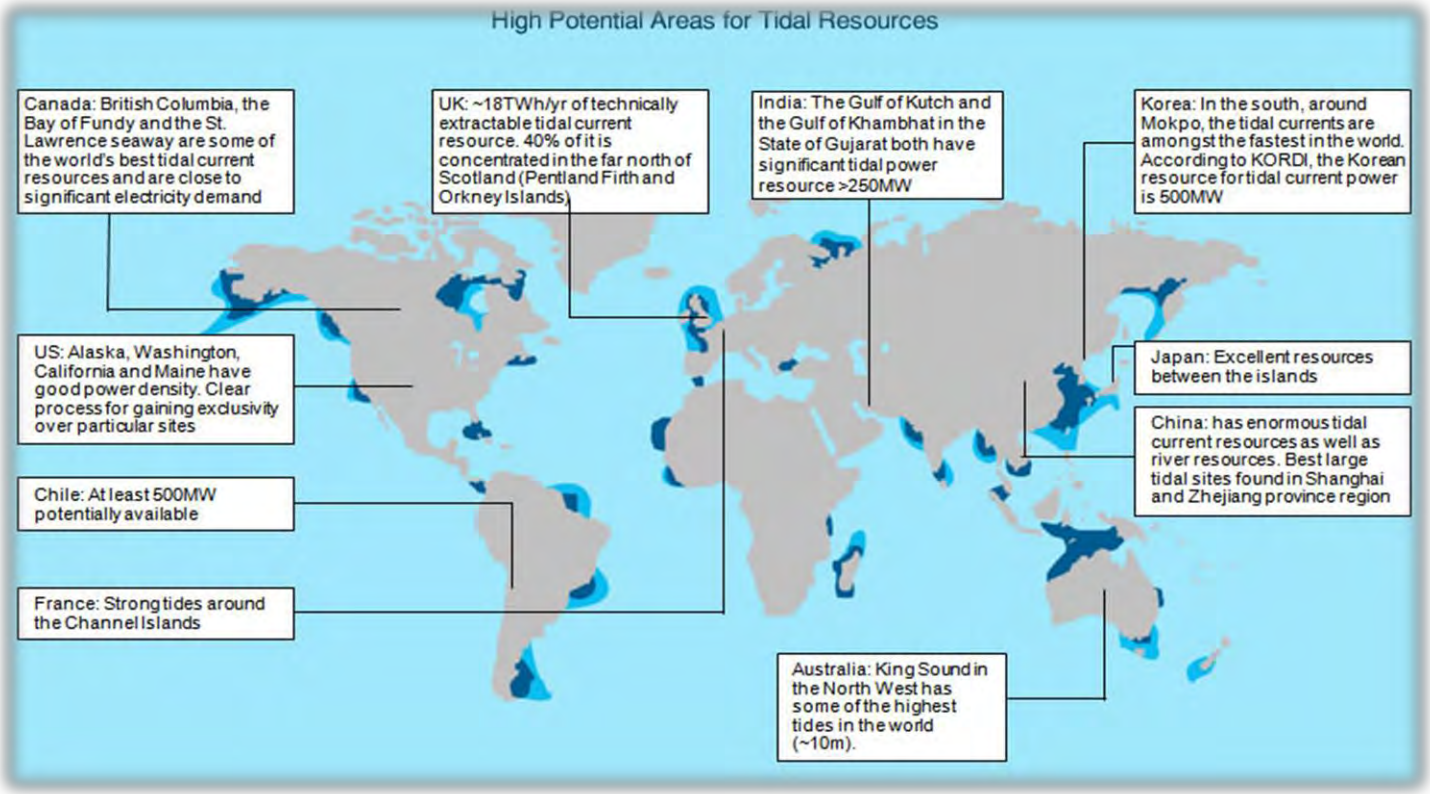
- Purchasers of electrons
- Power project developers
- Supply chain
- Lenders
- Investors
- Certification agencies
- Insurers, etc.

What do they need to see?

- Movement to competitive cost of energy
- Ability to meet in-service dates and reliable energy supply
- Plant scale that meets market needs
- A solution that can be replicated in a larger market

So, it is a project developer story – supported by technology maturation

Global market opportunity



- Resource potential = 10-15% world electricity consumption
- 748 GW of ocean energy by 2050
- 160,000 direct jobs by 2030
- Nearly 200,000 careers by 2030, deploying 5 generators a day
- Save up to 5.2 billion tonnes of CO2 by 2050 (*IEA Ocean Energy Systems)*
- Global expenditure potential: $900-$1,000 billion value by 2050

The Challenge we all face

- We have been at this for 15 years
- We have had major delays on almost all projects
- We have lost some leading technology players
- There has been focus on technology
  - Not reliability, installability, operability
- **It all comes down to project finance**
  - Is it worth it? – Scale.
  - Is it worth it? – electricity market, capital assistance.
  - Who assumes the risk? – warranties, loan guarantees, project team, etc

The Example of Tidal

- UK
  - The Meygen project is financed and moving ahead on phase 1A
  - DP Energy and Atlantis as developers of others
- France
  - EDF and Engie developing at least two projects
- Canada
  - Developers; Emera, Minas Energy, DP Energy and Atlantis
  - Technologies; Andritz, Bluewater, MCT, Open Hydro, Schottel, Tocardo, Nautricity

Canada's Bay of Fundy - strategy

- Safe extraction target >> 2GW
- The right FIT for the first stage
- A supportive Government and public
- Shared infrastructure to reduce costs and risks for the first stage - FORCE
  - Access to installation experience and 64 MW of offshore connection
  - Facilitated permitting, environmental research and monitoring
- Access to transmission capacity
- A strong shareholder owned energy company
  - A vision for a hydro-backed regional resource development, enhanced grid interconnection and electricity market development
- Engagement of the worlds leaders
  - Emera, Atlantis Resources and DP Energy as developers
  - Open Hydro, Andritz Hydro, Marine Current Turbines, Atlantis, Schottel, Bluewater, Tocardo, Nautricity as technology providers

An industrial development strategy – the 300MW prototype!

Canada's Bay of Fundy - timeline

2015	• MRE legislation in effect • Planning for next commercial site underway • FORCE - Open Hydro 2 devices – 4 MW
2016	• FORCE Schottel staged deployment of 2.5 MW • FORCE Atlantis deployment of 1.5 MW • FTI Digby Neck deployments • Potential for new licenses at FORCE
2017	• New Commercial Site area identified • Deployments by Minas Energy, DP Energy + expansions • Potential License Call in new area • FTI Further deployments
2018-2019	• Balance of deployments • 20-50 MW of tidal energy • 50 MW+ Federal EA filing
2020	• Expansion to 300+ MW

An international development happening in Nova Scotia!

GET IN TOUCH

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