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The Ocean Renewable Energy Group

Fundy Tidal in the World of Ocean Energy Development

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Tidal energy - a fact of Fundy life



- 100 billion tonnes of water
- Twice a day
- Regular as clockwork

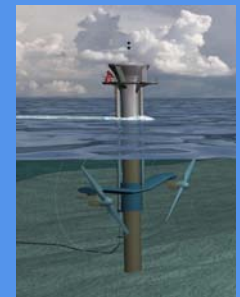
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- A challenge and opportunity for vessels
- A challenge and opportunity for energy production
- A *new* resource to sustain the coastal economy
- The chance to establish a *Fundy Standard*



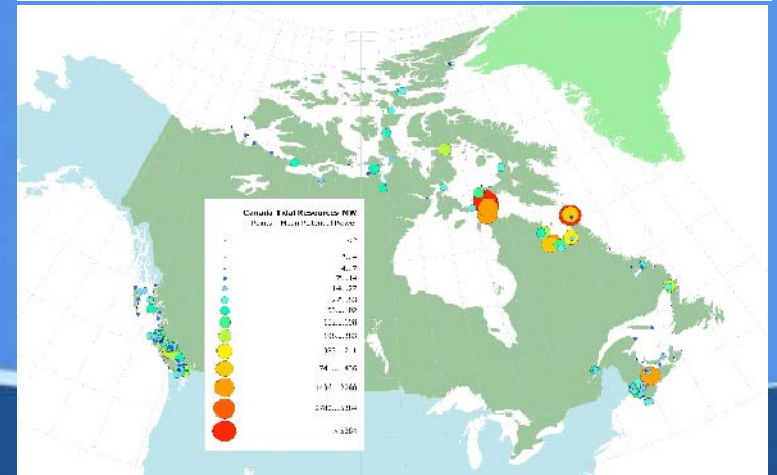
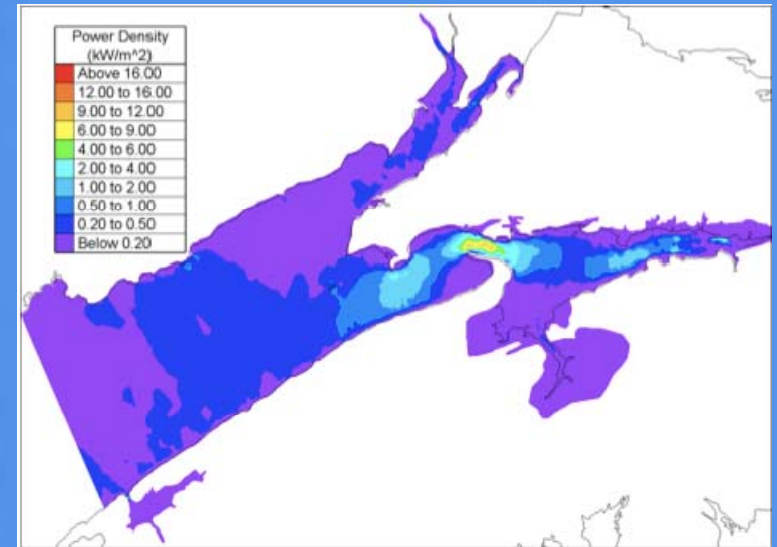
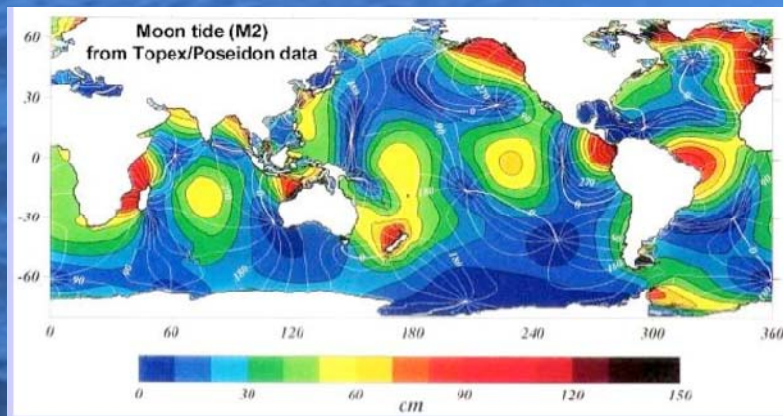
Tidal Energy – long a Fundy dream

- Tidal Mills
 - Port Royal, 1607
 - Passamaquoddy, 1700's
- Tidal barrage
 - Annapolis Royal, 1984
- Modular In-Stream Tidal generators
 - The future



Fundy Tidal – part of something bigger

- 190 sites and ~42,200MW in Canada
- 29 sites and ~3,000MW in the Maritimes





Fundy Tidal at the start of a new industry

- Hammerfest Strom – 2003 - 4 years grid connection at 300 KW
- Clean Current – 2006 – ca 200KW, connected to remote plant **
- Open Hydro – 2008 - 250KW, grid - connected in 2008 **
- Verdant Power – 2006 – array of 35KW devices – local power supply
- New Energy – 2008 – 5 and 25KW grid connected **
- Marine Current Turbines - 2008 – 1.2MW, grid connected **

Still prototypes and typically a single generator

*** - These are all engaged in next steps in Fundy*



Fundy tidal in the world industry

- **More commercial scale demonstration - 2010**
 - Minas Basin will be first 3 module trial
 - The 3 most advanced large-scale tidal generators will be tested to *Fundy Standard*
- **World's first small arrays of large-scale generators – 2012/13**
 - Wales, Scotland, France, and/or
 - Expansion at Minas or pilot farm on one of the 11 sites in NB?



The business of tidal energy

- **2007-2009 Trend**
 - From technology developer, to utilities and industrial players taking lead
 - Governments creating a market for early power using Renewal Obligations, Feed in Tariffs, etc
- **And in the Maritimes?**
 - Nova Scotia Power – investor and project developer
 - Industrial interest in project development
 - Minas Basin Pulp and Power
 - Irving Oil
 - Renewables Obligations in Nova Scotia and in New Brunswick
- **Future**
 - Fundy has joined the lead
 - Fundy must be a part of that 2012/13 move to pilot arrays



The early mover advantage

- **The opportunity for regional marine operations and offshore experience to be integrated**
- **World market opportunity for the first supply and service chain with experience**



The business of tidal energy

- **10 jobs/MW** manufacturing and installed
- **0.03-0.1 jobs/MW** operation and maintenance

- | | |
|---|--|
| <ul style="list-style-type: none">•Engineering•Civil engineering design•Dry-dock facilities, cranes, docks, etc.•Corrosion specialists•Electrical system design•Fundamental research into marine energy (academia)•Hydrodynamic modeling•Mechanical engineering design•Resource assessment, wave monitoring, bathymetry , etc.•Site investigation and surveying•Wave tank testing•Planning | <ul style="list-style-type: none">•Environmental assessment•Financial planning•Legal advice•Planning advice•Operation and installation•Offshore consultancy•Offshore operations, barges, tugs, jack-ups, etc.•Sub-sea inspection, divers•Installation•Offshore operations, barges, tugs, jack-ups, etc.•Sub-sea inspection, divers |
|---|--|

Scottish Enterprise, 2003 – the foundation of their strategy



The business of tidal energy

- How much do we want?
- Can we secure economic opportunities from being a pioneer?
- Can we use the strengths and experience in the region to maintain that pioneer opportunity?
- Will we adopt the tidal energy as a 21st © resource opportunity to sustain the region's economy

Or,

Will we wait and spend our money on imports?

Will the Fundy Standard mean something?



For More...

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