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# Energy Transition and New Economic Models

Perspectives from emerging  
Canadian marine renewable  
energies

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Chris M Campbell Ph.D



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The power to think bigger.

## Reality!



- Strategy exists in the sector association
  - Membership includes governments, utilities, project and technology developers and suppliers
  - We have been an influence on policies and strategies to build an industry at home and abroad
  - Government strategies came after policy initiatives
- Vision has always been creating a new power producing industry



## Energy



- A critical currency
  - It drove the industrial revolution
  - It allows urbanisation
- Fundamental to society
  - Gather around sources of energy, water, food
  - Trade based on transfers of energy or energy-produced products
- Clean and perpetual energy
  - The currency of the 21<sup>st</sup> Century?

## Sustainability of resources



- Fossil fuels
  - Are not created at the rate they are being used
  - Political, supply and cost uncertainties
  - May not be accessible to improve/modernise energy systems
  - Not available to the 2 billion without any or adequate energy
- Focus on long-term solutions
  - Avoid trapping in “traditional” energy pathway by expedient decisions
  - Work toward solutions that can work indefinitely
    - What resources are/will be available locally
    - Be creative about merging existing and future energy systems
    - Skip the traditional and go straight to future energy in developing systems (think mobile phones in Africa!)
    - Give trade access to renewable energy a priority

## Sustainability of economy



- Avoid the either/or discussion
  - The clean energy industry must evolve out of the fossil fuel economy within 35 years
- Pay now or pay later
  - Cheaper: late investment likely coincides with extreme escalation in fossil fuel prices
- Clean energy economy opportunity
  - For the existing energy industry, new winners, but economic activity for someone
  - Invest in fighting supply and price challenges, or renew infrastructure for *Future Energy*
- Community
  - Need protection from energy price and supply risk, or
  - They will not be able to drive the economy

## Sustainability of society



- Health
  - Climate, weather, air and water quality, food and medicine
- Education, infrastructure and services
  - At risk with infinitely escalating energy cost
- Lifestyle
  - Energy is central; inequality of access becoming issue
- Energy as required
  - Affordable energy, now and in future
  - Energy independence
  - Industrial/economy structure

21<sup>st</sup> C industrial revolution, not 19<sup>th</sup> C

## Canadian progress?



- International Conference on Ocean Energy
  - 700 leaders; 120 exhibitors
  - Focus on Canadian initiatives in an emerging world industry
- Engagement of tidal developers
  - All the project developers; all the leading technologies
- Engagement of community
  - Government, communities, utility, industry, research
- Engagement of enablers
  - Ocean technology and marine industry
- Alignment of objectives
  - Energy, economic development and climate action

## Where did this come from?



- Engagement internationally
  - Learn from others, work with the best
- Set a vision or target
  - “Canada to be among the first to demonstrate power generating arrays as power plants”
  - Focus on creating an industry, not a research initiative
- Pursue tactics that build a strategy
  - Build a delivery team one by one
  - Integrate the efforts into pioneer developments
  - Profile success

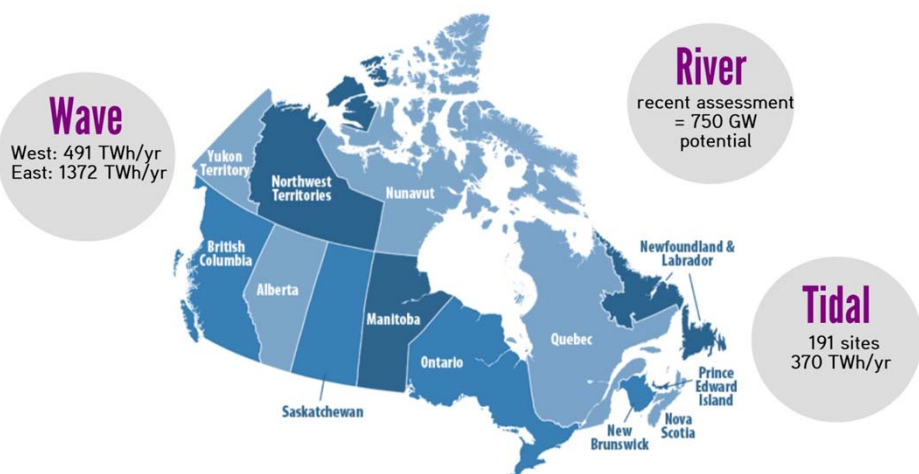
That is what we delivered at ICOE this month!

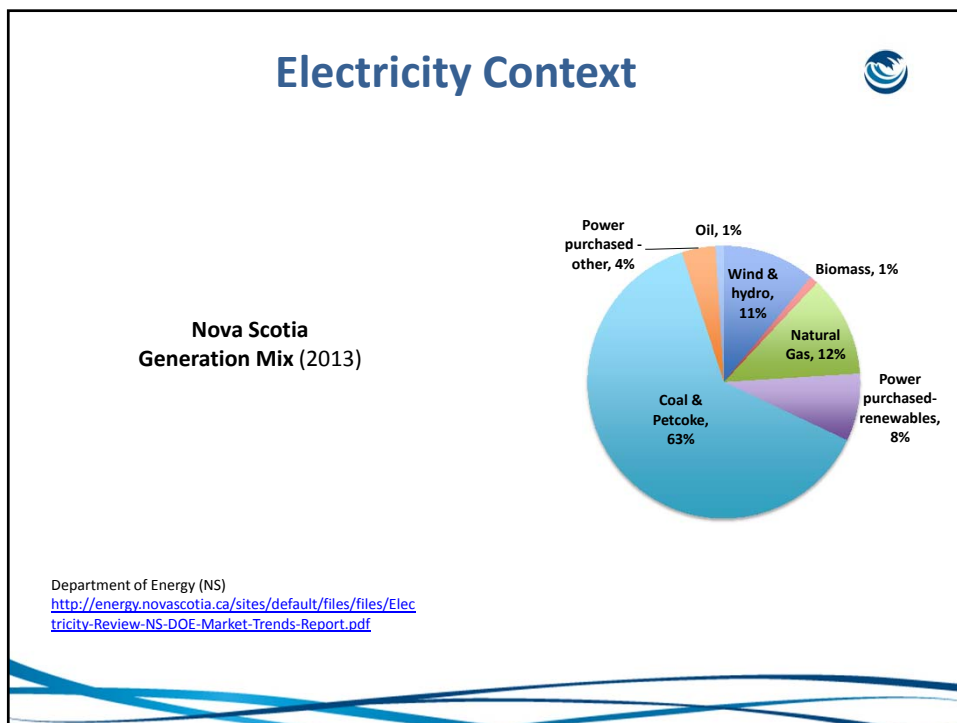
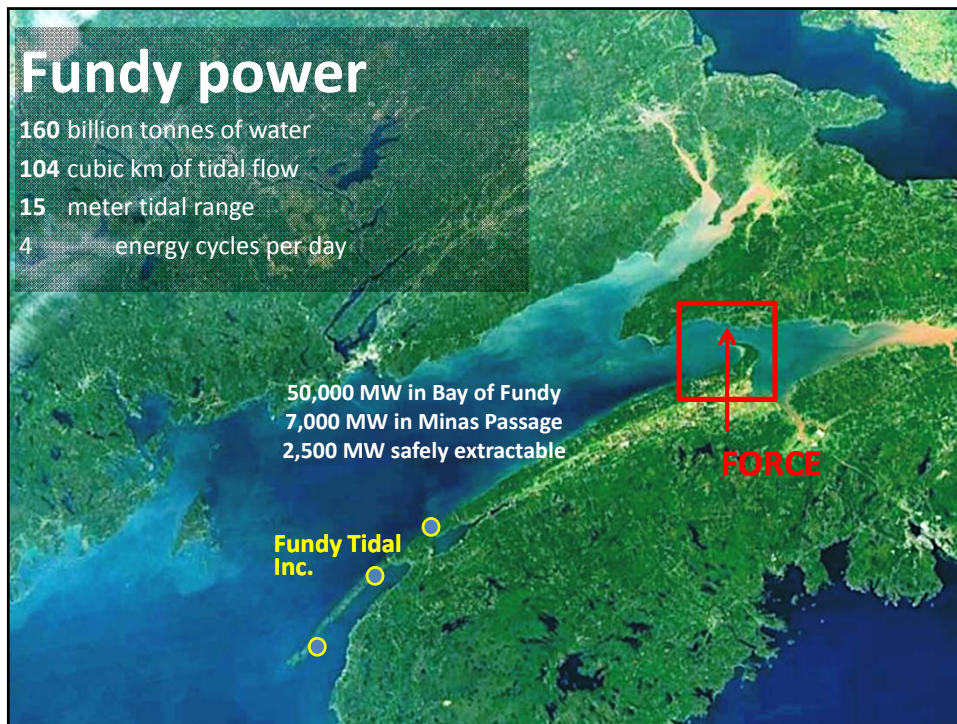
## Fundamentals



- Marine Renewables are not yet competitive with others, but,
  - Their energy density is 50-100x higher
  - They are at the steepest part of the cost reduction curve
- Marine Renewables will be cheap and widely available
  - Need to recognise they will be part of the energy and marine industry future
  - Need to engage early to
    - Learn about the potential
    - Get local industry ready to take a part
    - Plan for its integration into energy systems

## Canada's marine renewable resources









## Balance?

- Drivers for policy
  - Electricity mix: Energy diversity & security; need for clean, local resources
  - Economy: Rural economy declining; opportunities in developing solutions for world market
  - Environmental: GHG emission regulations – 10% below 1990 levels by 2020
- Challenges for social acceptability
  - Environmental uncertainties
  - Displacement of other industries
  - Impact to electricity rates
  - Costs vs. realizing local industrial benefits
  - “Why bother?”

## Lessons?



- Identify drivers
  - Managing supply, cost, transition, climate action
- Identify local and regional resource options
  - To address drivers
- Set a long-term goal or vision
  - for the energy system; for the energy economy
- Identify a potential pathway
  - Reinforce any actions that are close to that path

## Final points



- You can deliver a strategy even if not fully articulated
- You can build the team, even if all are not ready at the same time
- You can advance the thinking incrementally
- You can grow commitment step by step

But, someone has to provide the strategic backbone





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## GET IN TOUCH

**Chris Campbell**,  
Email:  
[chris@marinerenewables.ca](mailto:chris@marinerenewables.ca)  
Phone: 250-616-3780

**Elisa Obermann**, *Executive Director*  
Email:  
[elisa@marinerenewables.ca](mailto:elisa@marinerenewables.ca)  
Phone: 902-817-4317



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