Tidal energy – current thinking on the value proposition

Michael Gardner, Gardner Pinfold
Project manager

May 21, 2014

Study objectives

- Determine the value proposition of tidal energy development – provincially, regionally, nationally
  - Supply chain opportunities and industry development
  - Economic impact – GDP, employment and income
  - Benefits from reduced GHG emissions

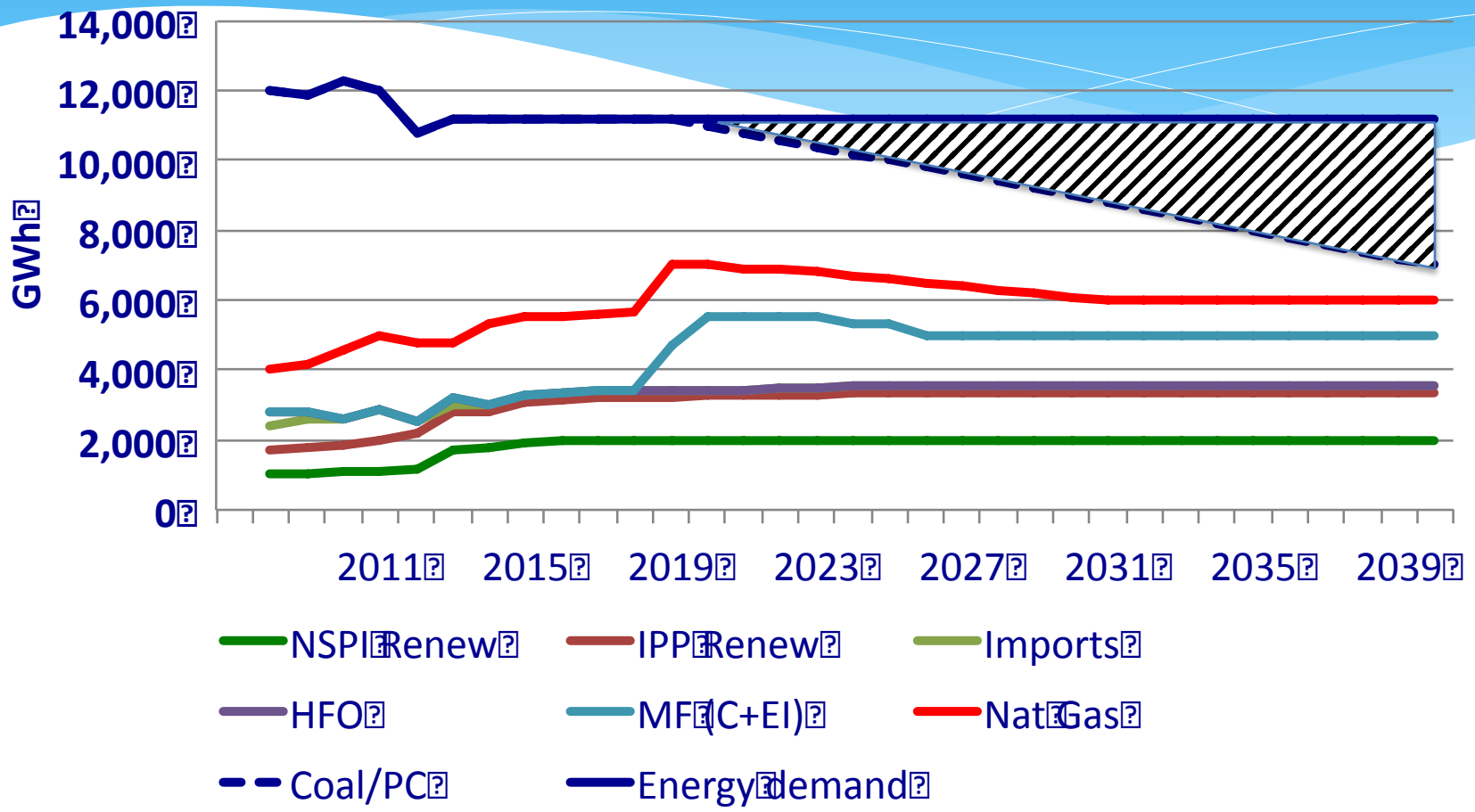
Value proposition - global

- Vision
  - Massive ocean energy potential to replace fossil fuels
  - Wide range of capacity/energy estimates to 2050
  - Basis for a multi-billion dollar industry
- EU
  - Reducing GHG emissions/hitting RES targets
  - Industry development/export potential
  - Employment/income

State of play - global

- EU
  - Grant funding – national and EU – device/test site
  - FIT to support commercial arrays – expected in 2015-2017
  - Future forms and levels of support unclear
  - Strong industry lobby to continue support to bring down costs
- Canada
  - Grant funding – device/test site (FORCE)
  - FIT (NS) to support commercial arrays
  - Forms and levels of support unclear after ±20MW

Basis for NS tidal energy – reduce GHG



Global challenges

- Bringing down costs to level competitive with other renewables (wind/solar) – from ±$450 to ±$150/MWh
- Driving down costs requires installation of several hundred MW in large arrays by 2025; several thousand MW by 2040
- Securing on-going public support (funding) to continue development that brings costs down
- Creating local infrastructure – facilities/logistics- essential to build-out/operations and low cost energy
- Electrical system integration – grid/balance – tidal industry can grow no faster than access to demand
- Securing financing at acceptable risk – environment/technology/market

Value proposition - domestic

- Potential in Nova Scotia, region, Canada
  - Over 6,000 MW tidal potential on three coasts
  - Examining large-scale and small-scale tidal opportunities
  - Developing three plausible tidal development scenarios
  - Context is crucial – drivers & constraints
  - Reducing GHG emissions is key driver in Nova Scotia
  - Factors affecting installed capacity – resource/cost/integration
  - Industrial opportunity – technology requires high local content
  - Positive industry response to local and global opportunity is contingent on level of certainty