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Is BC's ocean energy policy FIT for purpose?

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Author: Neil Salmond CFA, ISIS, Sauder School of Business, UBC
Editors: Neil Thomson, Dr. Hisham Zerriffi, Robyn Meyer

Issue

The ocean energy industry is at the pre-commercialisation stage globally. As was much the case with the wind industry 15 years ago, the myriad technologies in development are expected to narrow to a few as superior technologies are proven and progress to commercialisation.

The Province of British Columbia (BC) has a stated desire to "put the enormous potential of the tidal resource to work for the economy"[i] and over 8 gigawatts (GW) of potential wave and tidal energy have been identified. If the province is to capture the maximum economic value of the ocean-energy sector, it must compete for private investment with jurisdictions that are also striving to exploit energy from the sea, including Scotland and Nova Scotia. The prize in British Columbia is likely a suite of economic benefits, including diversification of grid electricity sources, replacement of diesel in remote communities, development of an export trade in ocean technologies and services, the creation of high-quality jobs, and supply to the US market of renewable energy from a diverse portfolio of sources. This briefing note examines current policies in BC aimed at encouraging commercialisation of ocean energy, and policies that have attracted industry and investors in other jurisdictions.

Background

British Columbia's Feed-In Tariff (FIT) regulation, if approved, will be intended to support new technologies through to commercialisation, and explicitly not to replace power purchase agreements or research and development funds. This puts BC's ocean energy industry at a competitive disadvantage with more galvanized fossil-fuel-dependent jurisdictions such as Nova Scotia and Scotland. Nova Scotia is in the process of approving its FIT for ocean energy (the draft document suggests a generous feed-in tariff of 78c/kWh for in-stream tidal generation), and Scotland already offers around 27c/kWh through the UK renewable-obligation certificate (ROC) program. BC's regulation is currently in the drafting phase, but is expected to provide a 5-10% annual return on investment (ROI) to ocean energy projects of less than 5 MW capacity over 5 years. Pre-commercial capital grants are provided by the BC ICE fund, the federal SDT Fund and funding may also be available through a Climate Action Energy Fund.

However, current scholarly and industry publications are consistent in claiming that revenue-support mechanisms (such as FITs) and capital grants are not enough to help pre-commercial industries bridge the "valley of death"[ii]. This stage of technology development is characterised by investment costs that are too high for equity or grant financing alone. Meanwhile private capital providers, unfamiliar with the technology and fearing high attrition rates, tend not to lend to companies on the basis of FIT revenue without evidence of one fault-free demonstration year (8000 hours is the usual rule of thumb). This creates a chicken and egg predicament.

Non-financial barriers often delay deployment and can be just as important in adding cost (e.g. transaction) and risk to projects. Logistical impediments (including grid connection infrastructure) and regulatory barriers (such as environmental permitting and policy uncertainty) are regularly cited[iii]. In California, PG&E suspended permitting efforts on the Humboldt WaveConnect Project due to higher than expected costs, specifically in securing government permits, installing the devices and putting in place the transmission infrastructure needed to bring power to shore. Given the already high costs of attrition to grant-providers or investors, as the diversity of technologies is narrowed to a few 'winners', it is vital to minimize these types of barriers in order to support demonstration success, or in some cases failure based on merit rather than other misaligned variables.

Creating a literal "learning space" in which both industry and financiers can learn about technology and the ocean energy resource contributes to learning about the potentials and the barriers. It is both inherent and understood in the R&D and demonstration worlds that some ideas and innovations will fail or go down the wrong path before success emerges. But both successes and failures provide valuable learning, thus leading to improvements in technology and policies. At an industry conference in Vancouver in 2010, attendees praised the ocean energy development centres in Scotland (the European Marine Energy Centre, EMEC) and Nova Scotia (the Fundy Ocean Research Center for Energy, FORCE) for supporting experience-based learning in the sector. Nova Scotia is moving ahead: FORCE has attracted a $20m grant from the federal Clean Energy Fund, over half of which is intended to support installation of offshore cables that will provide 64 MW of transmission capacity. Finally, a recently published Canadian marine renewable energy technology roadmap also stresses the importance of marine incubator spaces for shared learning.

It is worth noting that two major BC-linked multinationals have invested in tidal power and appear willing to invest further. London-listed utility International Power Plc (an investor in the former Knob Hill windfarm) and Morgan Stanley (who made waves in Vancouver by hiring key staff from Powerex and setting up a trading office in the same building) both invested in the 400 MW Meygen plant in Scotland, the world's largest tidal power facility to date. International Power representatives have spoken of a desire not to "miss the boat" on ocean energy (as they perceive they had done on wind energy) and these two companies are unlikely to be alone in their interest in the industry[iv].

Recommendations

While the revenue support provided by BC's FIT will be useful once ocean energy reaches the maturity of wind, most pre-commercial technologies are unlikely to be able to raise bank capital based on FITs for reasons of technical risk. On its own, therefore, a FIT policy is unlikely to kick-start local industry.

In order to attract risk-averse private investors who currently shy from this technology, government could provide credit insurance or fractional capital grants. It is nonetheless important to require that significant parts of the funding be provided by local banks so that area investors have a strong incentive to learn about the technology, gain familiarity and mitigate the perceived risks that act as barriers to future investment. The alternative is for BC to rely on importing financial services from more experienced foreign firms, with far lower local economic benefit.

If the province is serious about developing the industry locally, British Columbia could work to develop an ocean energy development centre in one area on the coast, akin to EMEC and FORCE. Ideally, this would be developed in conjunction with the university sector, within which significant ocean-energy research capacity resides. Testing bays for multiple devices could be provided at the centre, with firms sharing data from successes and failures among each other. Maintenance and repairs, environmental permitting and grid connection costs could all be pooled and thereby lowered through such geographic clustering.

BC could also prepare to build the offshore grid, beginning in the coastal location of the new development centre, in anticipation of technology deployment. BC Hydro could own this key transmission asset and private power producers could be charged for access, as is the case currently for provincial transmission lines on land.

Conclusion

BC has the potential to build on a fertile environment of growth, refinement, and the benefits of commercialization for the next stage of in-water testing for ocean energy technologies. This presents an opportunity to attract international developers and build local professional and trade skills.

Beyond, or even instead of, paying a subsidised rate for ocean-generated electricity (the FIT), the province can best encourage investment by establishing a development centre (akin to EMEC and FORCE), complete with appropriate environmental pre-permitting, grid connection and testing bays to mitigate these typical logistical barriers. This will enable the successful advancement of demonstration projects for winning technologies. Government financing should be contingent on substantial local co-investment, so that local investors gain familiarity with the technology.

Send relevant comments and queries to **picsbp@uvic.ca**.

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Further Reading

OREG. The Ocean Renewable Energy Group aligns industry, academia and government to ensure that Canada is a leader in providing ocean energy solutions to a world market.

EMEC. The European Marine Energy Centre provides wave and tidal testing capabilities, consulting and ancillary services.

FORCE. Located in the Bay of Fundy, Nova Scotia, the Fundy Ocean Research Centre for Energy is Canada's leading research centre for in-stream tidal energy.

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[i] Speech from the Throne 2010 [pdf]

[ii] See Sustainable Development Technology Canada for a clear diagram of the funding gap

[iii] Foxon et al 2005, France 2009, Negro et al 2010

[iv] OREG Annual Conference. *Charting the Course to 2050: Canada's 15 GW Ocean Energy Opportunity*. October 27th and 28th, 2010. Vancouver, BC