Offshore wind: Canada’s future as a clean energy superpower

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Canada, with its vast coastline stretching over 243,000 kilometers, possesses immense potential for offshore wind energy development. Despite this natural advantage, the country has been slow to harness its offshore wind resources compared to other nations. However, recent initiatives and policy changes indicate a growing interest in this renewable energy sector.

Current status

As of 2024, Canada has no operational offshore wind farms. The country's wind energy sector has primarily focused on onshore development, with over 16,900 MW of installed capacity as of Dec. 31, 2023 accounting for approximately 5.8 per cent of electricity generation. There are three major regions in Canada for offshore wind energy. Atlantic Canada, particularly Nova Scotia and Newfoundland and Labrador, are at the forefront of offshore wind development due to their strong wind resources and shallow continental shelves. In British Columbia, the Pacific coast offers significant potential, although deeper waters may require floating turbine technology. There is also the Great Lakes, which boast 3800 km of freshwater coastline. Ontario has in the past explored the possibility of offshore wind in the Great Lakes, which could provide clean energy to densely populated areas proximate to the shores. Specifically, the Greater Toronto and Hamilton Area, which is home to close to one third of Canada’s population, borders Lake Ontario.

Offshore wind is being developed internationally at a rapid pace. China dwarfs the rest of the world, with close to 38,000 MW of installed capacity. The U.K. and Germany are behind, at 14,751 MW and 8,311 MW respectively. With 0 MW installed, Canada does not show up in the rankings. Federal and coastal provincial governments have begun to recognize the untapped potential of offshore wind and are taking steps to facilitate its development. Recent developments in Nova Scotia, Newfoundland and federal Bill C-49 are recent examples that point to progress.

Nova Scotia

Nova Scotia is one of the top three wind regimes in the world and has a large continental shelf that is ideal for both floating and fixed wind platforms. The Nova Scotia government also cites its deep but underused ports, its geographic advantage for international shipping and wealth of experience from the oil and gas industry as key advantages. The Nova Scotia Offshore Wind Roadmap was released in 2023 and consists of three Modules, of which two have been published to date. In the roadmap, various routes-to-market are considered, including provincial, regional, national and international demand for clean electricity and green fuels. The roadmap includes plans to offer leases for 5,000 MW of offshore wind energy by 2030, with a first call anticipated in 2025. The Nova Scotia government has signaled its intention to focus on areas jointly managed with the federal government before considering waters under solely provincial jurisdiction.

In September 2024, the province advanced legislative changes via an omnibus bill that would, among other things, allow bids to open for offshore wind projects next year. These changes are independent of Ottawa's mirror legislation (discussed below) and aim to accelerate the development of offshore wind projects.

There is currently one project under development, being the Nova East Wind project, a partnership between SBM Offshore and DP Energy Canada. The project will be built with floating turbines and will be between 300 – 400 MW of capacity. The project will cost approximately $2 billion, however it is unclear as to whether the costs of on-land connections are also included. The developers recently announced a Memorandum of Understanding (MoU) with the Assembly of Nova Scotia Mi'kmaw Chiefs (Assembly) regarding the development, installation, and operation of the Nova East Wind Project, reflecting a desire to develop the project in a sustainable and environmentally responsible manner while respecting the views and rights of the Mi'kmaq.

Newfoundland

On Dec. 6, 2023, the Governments of Canada and Newfoundland & Labrador signed a Memorandum of Understanding (MOU) that enables the province to take the regulatory lead on offshore wind projects within its inland bays and sites 16 offshore areas in particular. Importantly, the MOU states that the governments of Newfoundland & Labrador and Canada recognize the province as the "principal beneficiary of renewable resources off its shores, as if these resources were located onshore, include that the province will design the revenue regime applicable to such resources and receive the revenues as if those resources were located onshore within the province".

The MOU was entered into while Bill C-49 was in the legislative approvals process and to some extent, has been superseded by the Act. As noted below, the Act requires each of Nova Scotia and Newfoundland & Labrador to enact mirror legislation to implement the joint initiative.

Federal Bill C-49

In 2023, Natural Resources Canada released a framework for offshore renewable energy regulations. The follow-on result of such framework was Bill C-49, which was introduced in May 2023 and received royal assent on Oct. 3, 2024. The resulting legislation is *An Act to amend the Canada—Newfoundland and Labrador Atlantic*

Accord Implementation Act and the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act (the Act).

The summary in the legislation provides a good synopsis of the main points covered by the Act and includes:

- changing the names of the Canada–Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board to the Canada–Newfoundland and Labrador **Offshore Energy Regulator** and the Canada–Nova Scotia Offshore Energy Regulator, respectively (the Regulators);
- establishing the Regulators as the regulating bodies for offshore renewable energy projects;
- establishing **a land tenure regime** for the issuance of **submerged land licences** to carry out offshore renewable energy projects, as well as the revenues regime associated with those licences and projects;
- expanding the application of the safety and environmental protection regime and its enforcement powers to include offshore renewable energy projects, including providing that the Governor in Council may make regulations to prohibit the commencement or continuation of petroleum resource or renewable energy activities, or the issuance of interests, in respect of any portion of the offshore area that is located in an area that has been or may be identified as an area for environmental or wildlife conservation or protection;
- authorizing negotiations for the surrender of an interest, the cancellation of an interest if negotiations fail and the granting of compensation to an interest owner for the surrender or cancellation;
- establishing the regulatory and liability regime for abandoned facilities relating to petroleum-related works or activities or offshore renewable energy projects;
- providing that the Governor in Council may make regulations to regulate access to offshore infrastructure, including to enforce tolls and tariffs; and
- specify that the Crown may rely on the Regulators for the purposes of consulting with the Indigenous peoples of Canada and that the Regulators may accommodate adverse impacts to existing Aboriginal and treaty rights recognized and affirmed by section 35 of the *Constitution Act, 1982.*

See BLG's earlier article published shortly after the introduction of Bill C-49 in the House of Commons in 2023, provides an analysis of the provisions of the proposed Bill C-49 at the time for further background.

Challenges ahead

Cost is the biggest challenge for offshore wind. Development of offshore wind also faces additional challenges in eastern Canada, where there is a serious lack of supporting infrastructure to get the energy to market.

Offshore wind projects typically have 2-3 times higher capital costs due to more complex installation processes, specialized equipment, and robust designs to withstand marine environments. However, the gap is narrowing due to technological advancements and economies of scale. Capacity factor, which refers to the actual energy output compared to theoretical maximum output, also must be considered when comparing onshore to offshore. According to the Norwegian Ocean Industry Authority, onshore wind capacity factors hover around 35 per cent, while the most modern

offshore wind turbines can reach as high as 55 per cent. These higher capacity factors for offshore wind help offset higher installation costs. The wind resource is also typically steadier offshore. As technology improves and more projects are developed, the cost gap between onshore and offshore wind is expected to narrow further.

Future outlook

While Canada is behind other countries in offshore wind development, the sector shows promise for rapid growth in the coming years. With supportive policies, technological advancements, and increasing investor interest, Canada could become a significant player in the global offshore wind market by 2030, supplying clean electricity to power the development of green hydrogen and the Eastern Seaboard. Canada should grasp its opportunity to become a clean-energy superpower.

If you have any questions about offshore wind development in Canada, please reach out to any of the authors or key contacts below.

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