An Integral Part of Canada's Clean Energy Future.

marine renewables canada

Marine Renewable Energy Sector Vision 2050

Table of Contents

Acknowledgements 4

About Marine Renewables Canada 4

Message from Elisa Obermann, Executive Director, Marine Renewables Canada 5

Executive Summary 7

The Vision for 2050 8

CHAPTER 1

Marine Renewable Energy - A Key Component in Building Canada's Sustainable Future 12

1.1 Current Context 13

1.2 State of the Marine Renewable Energy Sector in Canada 14

1.3 How Marine Renewables Work 18

1.4 Benefits of Marine Renewable Energy 19

1.5 Resource Potential 24

CHAPTER 2

Supporting Electricity Demand and Driving Clean Energy Growth 29

2.1 Economic Policy Driving Electricity Decisions 31

2.2 Identifying the System Needs: Moving Beyond LCOE 32

2.3 Uncovering the Electricity System Benefits of Marine Renewables 33

2.4 Markets for Marine Renewable Energy 36

CHAPTER 3
Our Vision for Marine Renewable Energy in Canada **43**

Canada as a world leader in tidal energy with expertise in both large- and small-scale projects. 46

Canada is an established market for offshore wind. 48

Canada establishes wave energy as a viable component of its clean energy system. 50

Marine renewable energy powers remote communities and ocean industries. 52

Marine renewable energy delivers reliable, predictable, and integrated generation that supports baseload needs and optimizes energy storage. 54

3.1 The Value of Realizing This Vision 56

CHAPTER 4
Realizing the Vision: Key Factors and Recommendations **58**

4.1 Establishing One Canadian Grid 60

4.2 Dependable Offtake Opportunities 63

4.3 A Path for Indigenous, Northern, Rural, and Remote Communities 66

4.4 Investment Certainty to Drive Cost Reduction 69

4.5 Enabling Infrastructure & Supply Chain 72

4.6 Research and Development 76

4.7 Responsible Development 79

4.8 International Opportunities for Canadian Businesses, Researchers, and Supply Chains 83

Conclusion 85

Supportive Statements 86

Acknowledgements

Marine Renewables Canada wishes to thank its members for their continued support, which has been essential to the development of important initiatives such as the Marine Renewable Energy Sector Vision 2050. A full directory of members is available on the Marine Renewables Canada website.

About Marine Renewables Canada

Marine Renewables Canada (MRC) is the national association for tidal, offshore wind, wave, and river current energy, representing a diverse membership that includes technology and project developers, suppliers, utilities, Indigenous organizations, researchers, and coastal communities.

Since 2004, MRC has been dedicated to advancing Canada's marine renewable energy sector by:

- Advocating for supportive policies and regulatory frameworks;
- Identifying domestic and international business development opportunities for members;
- Facilitating collaboration and knowledge exchange across the sector;
- Providing education, outreach, and public engagement; and
- Delivering timely market intelligence to support informed decision-making.

As part of its mission, MRC actively promotes the role of marine renewable energy in achieving Canada's decarbonization goals - including the production of green fuels such as hydrogen, and the displacement of diesel in remote and coastal communities and marine industries.

Learn more and join today at: www.marinerenewables.ca

Message from Elisa Obermann, Executive Director, Marine Renewables Canada

Elisa Obermann
Executive Director, Marine Renewables Canada

Canada stands at a defining moment in its energy transition. Electricity demand is rising rapidly as transportation, buildings, and industry electrify, while global competition for clean energy investment continues to intensify. At the same time, governments are being called upon to deliver affordable, reliable, and secure energy systems that support economic growth, reconciliation, and climate commitments. In this context, marine renewable energy is no longer a future option - it is a strategic opportunity Canada must act on now.

Over the past decade, Canada has laid important groundwork in marine renewable energy. Tidal demonstrations in the Bay of Fundy, wave research and pilot projects on the West Coast, river current research and demonstrations in Manitoba, Quebec, and the Northwest Territories, and growing momentum behind offshore wind in Atlantic Canada have demonstrated the sector's technical capability, environmental responsibility, and collaborative approach. These efforts reflect the collective contributions of industry, governments, Indigenous partners, researchers, utilities, and coastal communities working together to responsibly harness the power of Canada's oceans, rivers, and coastal winds.

The *Marine Renewable Energy Sector Vision 2050* builds directly on this foundation. It sets out how marine renewable energy can help meet Canada's rapidly growing demand for clean electricity, strengthen grid reliability, reduce reliance on diesel in remote and Indigenous communities, and enable new economic opportunities such as green fuel production, data centres, and clean power exports. Crucially, the Vision recognizes that the value of marine renewables extends beyond energy output alone - offering predictability, system resilience, and long-term affordability in a net-zero electricity system.

The Vision also makes clear that realizing this opportunity will require deliberate, coordinated action. Federal leadership on interprovincial electricity planning, sustained investment in transmission and port infrastructure, dependable offtake mechanisms, and streamlined regulatory processes are essential to unlock private investment and deliver projects. Equally important is a commitment to responsible development - ensuring projects respect marine ecosystems and coexist with fisheries, shipping, and other ocean users. Central to this approach is reconciliation: Indigenous Rights Holders must be meaningful partners in marine renewable energy development, with opportunities for ownership, capacity building, and long-term economic participation.

Marine renewable energy aligns with Canada's strengths: a skilled marine workforce, world-class natural resources, strong research institutions, and a growing clean energy supply chain. With the right policy, regulatory, and investment frameworks in place, Canada can build a globally competitive sector that delivers lasting environmental, social, and economic benefits.

This Vision is a call to action. By working together across governments, industry, Indigenous communities, and stakeholders, Canada can seize this moment to build a clean energy future powered by the tides, waves, winds, and rivers that have always shaped our nation.

Elisa Obermann
Executive Director, Marine Renewables Canada

Executive Summary

Canada's clean energy transition is entering a decisive phase. Electricity demand is projected to increase two to threefold by 2050 as transportation, buildings, and industry electrify, and new markets emerge such as data centres and green fuel production. Meeting this demand while maintaining affordability, reliability, and energy security will require a significant expansion of clean electricity supply and infrastructure.

Marine renewable energy - offshore wind, tidal, wave, and river current - offers Canada a uniquely powerful solution. With vast coastlines, strong winds, and powerful tides, Canada is among the most resource-rich marine renewable jurisdictions in the world. These resources can deliver large-scale, predictable and reliable clean power, strengthen grid resilience, reduce reliance on fossil fuels, and support economic development across coastal, rural, northern, and Indigenous communities.

This *Marine Renewable Energy Sector Vision 2050* sets out a practical, phased pathway for realizing that opportunity. Grounded in government priorities, electricity demand projections, industry engagement, and Canada's marine resource potential, it outlines what can be achieved by 2030, 2040, and 2050 - and the actions required to get there.

The Vision for 2050

Our vision is that by mid-century, marine renewable energy is a key pillar of Canada's clean energy transition - supporting climate action, strengthening energy systems, and fostering resilient communities and sustainable economic growth.

This means that by 2050:

- **Canada is a world leader in tidal energy, with expertise in both large- and small-scale projects.** Canada operates more than 1 GW of tidal capacity, including utility-scale projects in the Bay of Fundy and British Columbia, alongside dozens of small-scale installations supplying remote communities and industrial operations. Canadian companies lead internationally in tidal technology, environmental monitoring, and deployment expertise.

- **Canada is an established market for offshore wind.** Over 30 GW of offshore wind capacity is deployed or under construction nationwide. Offshore wind supplies domestic electricity demand, supports industrial electrification and data centres, enables clean fuel production, and contributes to the decarbonization of offshore oil and gas operations.

- **Canada establishes wave energy as a viable component of its clean energy system.** Installed capacity exceeds 50 MW nationwide, including Canada's first grid-connected wave energy array supplying Vancouver Island, while wave energy continues to serve off-grid and hybrid systems along Canada's coasts.

- **Marine renewable energy powers remote communities and ocean industries.** More than 50 communities and remote industrial sites are powered by marine renewable energy, achieving meaningful diesel displacement, improved affordability, and greater energy sovereignty. Community-led and Indigenous-owned projects generate long-term local benefits and build capacity for participation in larger developments.

- **Marine renewable energy delivers reliable, predictable, and integrated generation that supports baseload needs, optimizes energy storage,** and helps balance variability across Canada's net-zero electricity grid. Canadian marine renewable technologies and expertise are also widely used internationally, positioning Canada as a global exporter of clean energy systems and services.

Canada is a world leader in tidal energy
Delivers reliable, predictable, and integrated generation
The Vision for 2050
Canada is an established market for offshore wind
Powers remote communities and ocean industries
Canada establishes wave energy as a viable component of its clean energy system

Realizing this Vision by 2050 would enable a thriving marine renewable energy sector that generates an estimated $12 billion GDP impact across Canada from construction activity alone.

$12 Billion
in GDP impact

Progress to Date

Canada has already moved from vision to early deployment. Tidal energy demonstrations in Nova Scotia and British Columbia, Indigenous-led community projects, and the establishment of a joint federal-provincial offshore wind regulatory framework have laid critical foundations. Nova Scotia's Wind West Atlantic Energy initiative - identifying over 60 GW of offshore wind potential - signals a nation-building opportunity to supply electricity well beyond Atlantic Canada through strengthened interprovincial transmission.

These advances demonstrate momentum, but scaling marine renewables to their full potential will require coordinated action to address persistent barriers, including regulatory uncertainty, limited transmission and port infrastructure, supply chain constraints, and access to long-term financing.

What is Required

Marine Renewables Canada has identified 14 critical actions to establish the conditions for success and position Canada as a world-leading clean energy superpower.

These actions focus on:

- Federal leadership on interprovincial electricity planning, enabling a more integrated Canadian grid that connects world-class marine resources with growing demand centres.
- Strategic investment in transmission and port infrastructure to reduce costs, unlock private capital, and preserve affordability for ratepayers.
- Clear, long-term procurement targets and dependable offtake pathways that give industry confidence to invest and scale.
- Stable investment frameworks - including long-term tax credits and revenue-stabilization mechanisms - to de-risk private capital and attract global developers.
- Targeted research, development, and demonstration support to accelerate cost reductions and commercialization.
- Streamlined, predictable regulatory processes, including single-window permitting approaches that maintain high environmental and social standards.
- Coexistence with other ocean users and community involvement in marine renewable energy development.
- Meaningful Indigenous partnerships and equity participation, grounded in rights, reconciliation, and shared economic benefits.
- Active international engagement to align with global best practices and expand export opportunities for Canadian companies.

A Call to Action

Marine renewable energy aligns with Canada's strengths: abundant natural resources, a skilled marine workforce, strong research institutions, and a growing clean energy supply chain. The opportunity is significant - but time-limited. Other jurisdictions are moving quickly to secure investment, build supply chains, and establish global leadership.

This Vision provides a clear, practical roadmap. With coordinated action across governments, industry, Indigenous organizations, communities, and investors, marine renewable energy can become a cornerstone of Canada's clean energy transition - delivering reliable power, resilient communities, and long-term sustainable economic growth for generations to come.

CHAPTER

01

Marine Renewable Energy - A Key Component in Building Canada's Sustainable Future

1.1 Current Context

The global focus on the energy transition has fundamentally reshaped the outlook for marine renewable energy. As Canada and other nations decarbonize their economies through electrification and the adoption of sustainable fuels such as green hydrogen, demand for clean, reliable electricity will grow significantly. While traditional renewable sources such as onshore wind and solar will continue to expand, achieving net-zero will require a more diverse energy mix - one that includes the high energy density and predictability of tidal, wave, river current, and offshore wind energy.

Canada already operates one of the cleanest electricity grids in the world, with approximately 80% of generation coming from non-emitting sources.[1] However, meeting federal and provincial 2050 net-zero targets will require Canada to produce two to three times more clean electricity than it does today.[2] Provinces such as Nova Scotia and New Brunswick must replace existing fossil fuel generation, while jurisdictions with relatively clean grids, including British Columbia and Quebec, must accommodate rapid electrification of transportation, heating, industry, and continued economic growth.

Despite Canada's abundant natural resources and generally reliable energy systems, many remote and coastal communities - predominantly Indigenous - continue to rely on diesel generation. These communities face high energy costs, exposure to fuel price volatility, and supply disruptions, while bearing the impacts of noise and local pollution.

Hybrid renewable energy systems that incorporate marine renewable energy can improve energy security, reduce emissions, and create local economic opportunities, while enhancing quality of life. More broadly, the geographic distribution of marine generation and storage assets can strengthen resilience across the wider Canadian electricity grid.

To support this energy transition, federal, provincial, and territorial governments have introduced a range of policies, programs, and legislation to advance renewable electricity, green fuels, and enabling infrastructure. Notably, the *One Canadian Economy Act* (2025) established a framework to accelerate the approval of nation-building projects, including offshore wind and transmission infrastructure. National and regional initiatives - such as the Ocean Supercluster, COVE, and the Centre for Ocean Applied Sustainable Technologies (COAST) - are also driving innovation and growth across Canada's marine industries.

1 Natural Resources Canada (NRCan). Electricity Facts, 2023

2 Canada Energy Regulator (CER). Canada's Energy Future 2023: Energy Supply and Demand Projections to 2050

International demand for clean energy - from coastal and island nations, aquaculture operations, and offshore industries - is opening new markets for Canadian marine renewable energy expertise. At the same time, accelerating global demand for green hydrogen is positioning marine renewables as a strategic enabler of future export-oriented energy production. Realizing these opportunities depends on a capable and experienced supply chain. Marine Renewables Canada (MRC) has supported Canadian companies in accessing international markets by connecting domestic suppliers with global opportunities, with engagement in the northeastern United States (U.S.) already delivering tangible benefits for Atlantic Canadian suppliers, maritime service providers, and ports.

Ultimately, the energy transition in Canada and globally presents significant opportunities for marine renewables and Canadian businesses - but also real challenges. Regulatory uncertainty, limited transmission and port infrastructure, supply chain constraints, and access to financing continue to slow progress. As marine renewable energy remains an emerging sector, greater public awareness and policy integration are needed as governments incorporate it into clean electricity and economic growth strategies. Central to this effort is a continued commitment to reconciliation with Indigenous Peoples and a just transition for communities and workers as part of Canada's broader energy transformation.[3]

1.2 State of the Marine Renewable Energy Sector in Canada

Canada's marine renewable energy resources remain largely untapped, offering potential for hundreds of gigawatts (GW) of clean electricity generation while creating tens of thousands of skilled jobs and economic opportunities for local businesses and communities.[4] With supportive policies, private-sector investment and support for research and development (R&D), the sector is well poised for accelerated growth.

3 NRCan. People-Centred Just Transition Discussion Paper, 2021

4 Marine Renewables Canada. State of the Sector Report, 2018; Power Advisory LLC. Marine Renewable Energy Opportunities for Atlantic Canada, 2020

Tidal Energy

In Nova Scotia, early policy leadership through feed-in tariffs, shared infrastructure, research funding, and dedicated legislation attracted over $200 million in international investment.[5] The Fundy Ocean Research Centre for Energy (FORCE) has hosted multiple technology demonstrations, enabling collaboration among developers, researchers, and suppliers while generating critical environmental and technical performance data.

In 2025, the Province of Nova Scotia issued tidal energy licenses and power purchase agreements through a competitive process for up to 13 megawatts (MW) of additional tidal capacity at FORCE. This procurement and subsequent *Fisheries Act* Authorization follows the work of the *Task Force on Sustainable Tidal Energy Development in the Bay of Fundy* (2024), to overcome long-standing regulatory and infrastructure barriers. This renewed cooperation between industry and all levels of government sets the stage for advancing a sustainable, world-class tidal energy industry in Nova Scotia.[6]

On the west coast, MRC members are working in partnership with First Nations to develop tidal energy solutions to offset diesel use in remote communities. For example, Yourbrook Energy Systems in partnership with the Haida Nation has successfully demonstrated their 500-kilowatt (kW) turbine as part of their 2 MW project aimed at displacing diesel generation in Haida Gwaii, an archipelago off British Columbia's coast.

Work is also underway to develop solutions for small-scale tidal projects in BC. The University of Victoria's Pacific Regional Institute for Marine Energy Discovery (PRIMED) established the Blind Channel Tidal Energy Demonstration Centre to collect critical operational data, and advance environmental monitoring and regulatory engagement. Likewise, COAST is working with the Canadian Coast Guard to pilot rapidly deployable, modular and scalable technologies that reduce diesel dependence at remote sites. These efforts are charting a path to replace diesel with small-scale tidal projects along BC's coast.

The EU has deployed 32 MW of tidal stream capacity since 2010, producing 13.4 gigawatt-hours (GWh) in 2024.[7]

5 Fisheries and Oceans Canada. *Task Force on Sustainable Tidal Energy Development in the Bay of Fundy Interim Report*, 2023. https://www.dfo-mpo.gc.ca/pnw-ppe/ffhpp-ppph/publications/bay-fundy-tidal-interim-report-baie-fundy-marees-rapport-provisoire-eng.html

6 Province of Nova Scotia / Fundy Ocean Research Centre for Energy (FORCE), June 3, 2025

7 Ocean Energy Stats & Trends 2024.pdf

Wave and River Current Energy

In BC, PRIMED continues to lead research on wave and tidal resource characterization, advancing technology readiness while working with community and industry partners to advance community-scale deployments.[8] This includes the Mowachaht/Muchalaht First Nation led Yuquot Wave Energy Project, which would be the first-ever wave project in Canada providing power to an off-grid community.

The Canadian Hydrokinetic Turbine Test Centre (CHTTC) in Manitoba remains Canada's hub for river current technology testing and validation, supporting commercialization for applications in northern and Indigenous communities.[9] River current devices have been demonstrated by industry in British Columbia, Northwest Territories, Quebec, and Manitoba.

As of 2024, the EU had installed 13.5 MW of wave energy since 2010 and over 24 MW had been deployed globally.[10]

Offshore Wind Energy

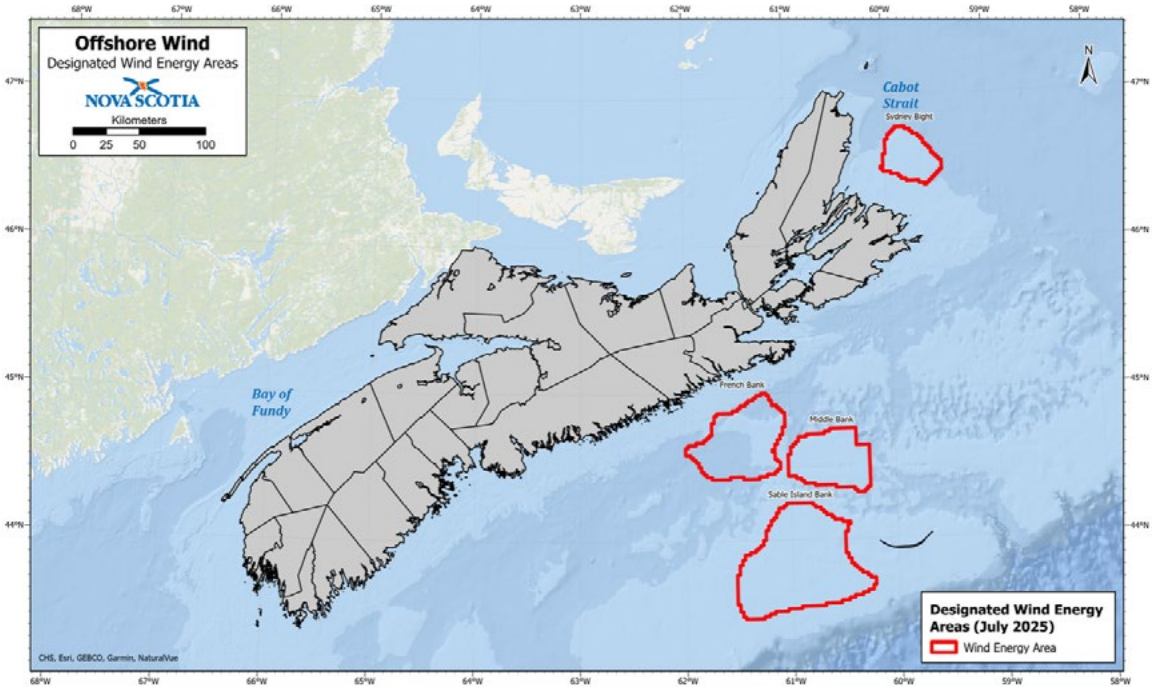
Canada's tremendous offshore wind potential is now moving from concept to reality. The passage of Bill C-49 (2024) amended the *Accord Acts* to include offshore renewable energy, enabling project development in Nova Scotia and Newfoundland & Labrador. Complementary regulations under the *Canada Offshore Renewable Energy Regulations* (2024) have established a framework for project oversight and environmental protection.

Canada's accession to the Global Offshore Wind Alliance (GOWA) in February 2025 underscores its commitment to international collaboration and accelerated deployment.[11] Nova Scotia has designated the country's first offshore wind energy areas and is advancing toward its inaugural call for bids in early 2026.[12] Together, these early actions lay the foundation for a much larger ambition through the Wind West Atlantic Energy initiative, which identifies the potential for more than 60 GW of offshore wind development off Nova Scotia's coasts - positioning Atlantic Canada as a clean energy export hub for domestic and international markets.[13]

8 University of Victoria Pacific Institute for Climate Solutions. Wave Energy: A Primer for British Columbia, 2017
9 Canadian Hydrokinetic Turbine Test Centre, Annual Report, 2022
10 Ocean Energy Stats & Trends 2024.pdf
11 NRCan. Government of Canada Joins Global Efforts to Accelerate the Deployment of Offshore Wind and Help Power Canada's Economy, 2025
12 Province of Nova Scotia, Government of Canada. Canada's First Offshore Wind Energy Areas Designated, 2025
13 Government of Nova Scotia, Wind West

CHAPTER 01

MARINE RENEWABLE ENERGY - A KEY COMPONENT IN BUILDING CANADA'S SUSTAINABLE FUTURE



Government of Nova Scotia, Designated Offshore Wind Energy Areas, 2025.

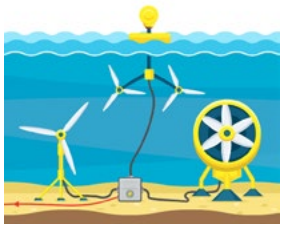
Progress is being reinforced through regional assessments, marine data initiatives, and targeted studies focused on transmission, ports, supply chains, and market development, supported by both public and private investment. In parallel, ongoing engagement with communities, Indigenous Peoples, and other ocean users is helping to ensure responsible development and long-term coexistence.

Globally, offshore wind continues to scale rapidly, with 83 GW of installed capacity worldwide and approximately 8 GW of new capacity added in 2024. China accounts for roughly half of cumulative global installations, followed by the United Kingdom, Germany, and the Netherlands.[14]

14 Offshore wind installed capacity reaches 83 GW as new report finds 2024 a record year for construction and auctions

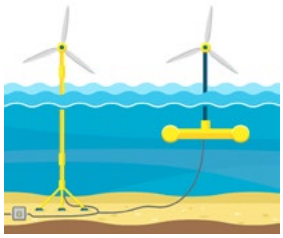
1.3 How Marine Renewables Work

Marine renewable energy harnesses the vast and enduring power of Canada's oceans, rivers, and coastal winds to generate clean electricity. These natural forces - tides, waves, currents, and offshore winds - offer a steady, predictable, and abundant source of renewable power that can help drive Canada's energy transition and economic growth.



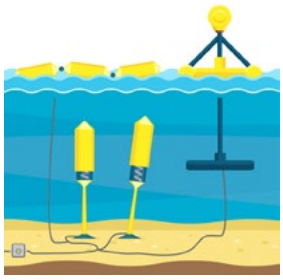
Tidal Energy (Tidal Stream)

Tidal technologies capture energy from the predictable rise and fall of ocean tides which yield fast-moving tidal currents as water is channeled through narrow passages and fjords. Turbines - often similar to underwater wind turbines - are deployed on the seabed or suspended in the water column to convert the kinetic energy of moving water into electricity.



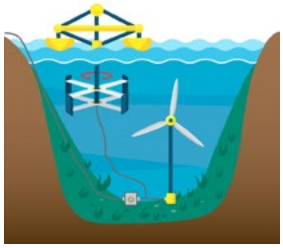
Offshore Wind Energy

Offshore wind turbines harness stronger and more consistent winds found at sea, generating large-scale renewable electricity. Turbines may be installed on fixed-bottom foundations in shallow waters (60 metres or less) or on floating platforms in deeper waters farther offshore expanding access to deep-water resources.



Wave Energy

Wave energy converters turn the motion of ocean waves into electricity. These devices - ranging from point absorbers and oscillating water columns to overtopping systems - complement other renewables by offering consistent, predictable output that is greatest in winter months, often aligning with peak electricity demand.



River Current (Hydrokinetic) Energy

River current systems generate power from the steady flow of rivers and channels without the need for dams or significant alterations to natural waterways. Using similar technology to tidal stream turbines, hydrokinetic systems are particularly valuable for remote and Indigenous communities that depend on diesel, offering an emissions-free, locally available alternative.[15]

Other

Other ocean-based technologies are being explored internationally - including Ocean Thermal Energy Conversion (OTEC), which utilizes temperature differences between warm surface water and cold deep water to produce power; as well as floating solar, which integrates photovoltaic systems on water surfaces to reduce land use.

While these are not near-term priorities, they demonstrate the growing diversity of marine energy solutions. This document will focus on advancing tidal stream, offshore wind, wave, and river current energy. Although river current energy is a freshwater resource, its similarities to tidal technology and shared supply chain make it a recognized component of Canada's broader marine renewable energy sector.

1.4 Benefits of Marine Renewable Energy

Canada's marine renewable energy sector provides distinct advantages that make it an essential part of a resilient, low-carbon energy mix:

Supporting sustainability and net-zero goals across industries

Canada's traditional sectors - including transportation, offshore oil and gas, and heavy industry - are implementing decarbonization strategies that increasingly rely on clean energy integration. Marine renewables can deliver those clean solutions. For example, pairing offshore wind with offshore oil and gas platforms to power operations has been evaluated in Newfoundland and Labrador.[16]

15 NRCan. What is marine renewable energy? https://natural-resources.canada.ca/energy-sources/renewable-energy/what-marine-renewable-energy

16 C-NLOPB 2023 Annual Emissions Reduction Initiative report: https://www.cnlopb.ca/wpcontent/uploads/emrep/emrep2023.pdf

This concept is already operational in Norway where the 88 MW Hywind Tampen wind farm is expected to provide 35 percent of the annual electricity needs for five oil and gas platforms.[17]

Beyond electrification, marine resources can also supply the green hydrogen needed to decarbonize hard-to-abate industries such as steelmaking, marine shipping, and heavy transport, directly supporting the Hydrogen Strategy for Canada.

Marine renewable energy can support Canada's climate goals with a lower footprint than other industrial development. In some cases, marine energy infrastructure can even help restore and protect marine habitats, such as reefs and kelp forests, by reducing human impacts and creating artificial structures that foster biodiversity.

Driving economic growth and job creation

Marine renewable energy development will generate long-term, high-value employment across Canada's regions and supply chains.

Canada's tidal energy initiatives have already engaged more than 500 suppliers, and offshore wind development will significantly expand opportunities in manufacturing, fabrication, and marine services. These projects will increase demand for Canadian steel and aluminum, strengthen shipyards and ports, and help revitalize coastal economies.

Employment impacts will span the full project lifecycle. Near-term growth will come from manufacturing, component supply, transportation, and construction, while long-term operations and maintenance (O&M) will sustain skilled jobs for decades as projects enter service and new capacity is added over time.

Importantly, the geographic distribution of marine renewable resources creates unique economic opportunities for rural, coastal, and remote regions. Projects can reinvigorate marine industries in communities facing economic decline, while generating stable revenues for Indigenous communities and local governments. Access to reliable and affordable clean power will also support existing businesses and enable new industries to emerge, strengthening regional economies and long-term resilience.

17 Hywind Tampen | Tethys

Supporting national electrification goals

To achieve 2050 net-zero targets, Canada will need to produce at least twice as much clean electricity as it does today.[18] Marine renewable energy can help meet this demand while complementing onshore wind and solar.

Because marine resources are more energy-dense and predictable, they can reduce overall requirements for installed capacity, energy storage, and grid infrastructure in a zero-emissions system.[19]

Offshore wind's high capacity factors and tidal energy's predictable output can deliver power during evening peaks and periods of low solar or wind output, while co-locating technologies - such as offshore wind and wave energy - can further enhance the consistency of electricity supply.

Enhancing remote, coastal, and Indigenous community resilience

Canada has over 280 remote communities, many of which rely on diesel or fuel oil for electricity. More than 200 of these communities operate their own fossil-fuel plants, and over 60% of Indigenous Peoples in Canada live in remote or northern regions.[20, 21] Local renewable energy generation - including marine resources where available - can improve energy security, reduce costs, and cut emissions.

Marine renewable energy is especially well suited to coastal and riverine communities, where solar and onshore wind can be intermittent. Hybrid systems combining tidal, river current, wave, wind, solar, and battery storage can significantly reduce or fully displace diesel generation while improving reliability and local control over energy supply.

Indigenous Nations are increasingly leading clean energy development as owners, partners, and proponents, including in marine renewable energy projects. As Rights Holders, Indigenous Peoples have constitutionally protected and treaty-based relationships with the Crown that affirm their rights to self-determination, self-governance, culture, language, and the stewardship and use of resources within their territories.

18 CER. Provincial and Territorial Energy Profiles – Canada: https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-canada.html

19 Offshore wind and wave energy can reduce total installed capacity required in zero-emissions grids | Nature Communications

20 Statistics Canada. Toward a Classification of Communities By Remoteness: A Proposal https://www150.statcan.gc.ca/n1/pub/18-001-x/18-001-x2023001-eng.htm

21 CER. Market Snapshot: Overcoming the challenges of powering Canada's off-grid communities: https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2018/market-snapshot-overcoming-challenges-powering-canadas-off-grid-communities.html#:~:text=Over%20280%20communities%20in%20Canada,liquefied%20natural%20gas%20(LNG).

This leadership is central to an inclusive energy transition - one in which decarbonization and reconciliation advance together. Indigenous-led and equity-owned marine renewable energy projects strengthen energy sovereignty, generate long-term and stable revenues, create skilled employment, and embed Indigenous knowledge and stewardship principles into project design, governance, and long-term operations.

Experience gained through community-scale projects builds local capacity for future participation in larger developments, while proven solutions can be exported to island nations and remote regions seeking resilient, low-carbon energy systems.

Diversifying and strengthening Canada's offshore and marine supply chain

Marine renewable energy requires a technically skilled workforce - an area where Canada already holds a competitive advantage. Companies serving offshore oil and gas, naval, and marine sectors possess transferable expertise in fabrication, subsea engineering, logistics, and operations.

A Marine Renewables Canada commissioned supply-chain study found that about 28% of Atlantic Canadian firms already have highly relevant skills for the offshore wind sector, a figure rising to over 60% when including those with partially applicable experience. Offshore wind's sustained operations and maintenance needs create stable employment long after construction. Modeling for 11.5 GW of offshore wind indicated a requirement for over 2,000 ongoing jobs for technicians and maritime trades during the O&M phase.[22]

Canadian suppliers are already active in international projects. Port of Argentia, Woodside (Port of Halifax), Port of Sheet Harbour, Port of Sydney, Atlantic Canada Bulk Terminal, Strait Superport, and Port Saint John have supported offshore wind logistics such as receiving and staging turbine components and monopiles for projects in the United States (U.S.). These opportunities have arisen partly from the U.S. *Jones Act,* which restricts vessel movements between U.S. ports and thus creates cross-border roles for Canadian facilities. With east-coast offshore wind expected to expand rapidly, these ports - along with proposed developments such as Novaporte Wind Terminal and Energy Park in Sydney - are well-positioned to serve both U.S. and Canadian projects as marshalling, assembly, and maintenance hubs.[23, 24]

22 Xodus Group. Atlantic Canada Wind Energy Supply Chain Assessment, 2025

23 NovaPorte. "Offshore Wind": https://novaporte.ca/offshore-wind/

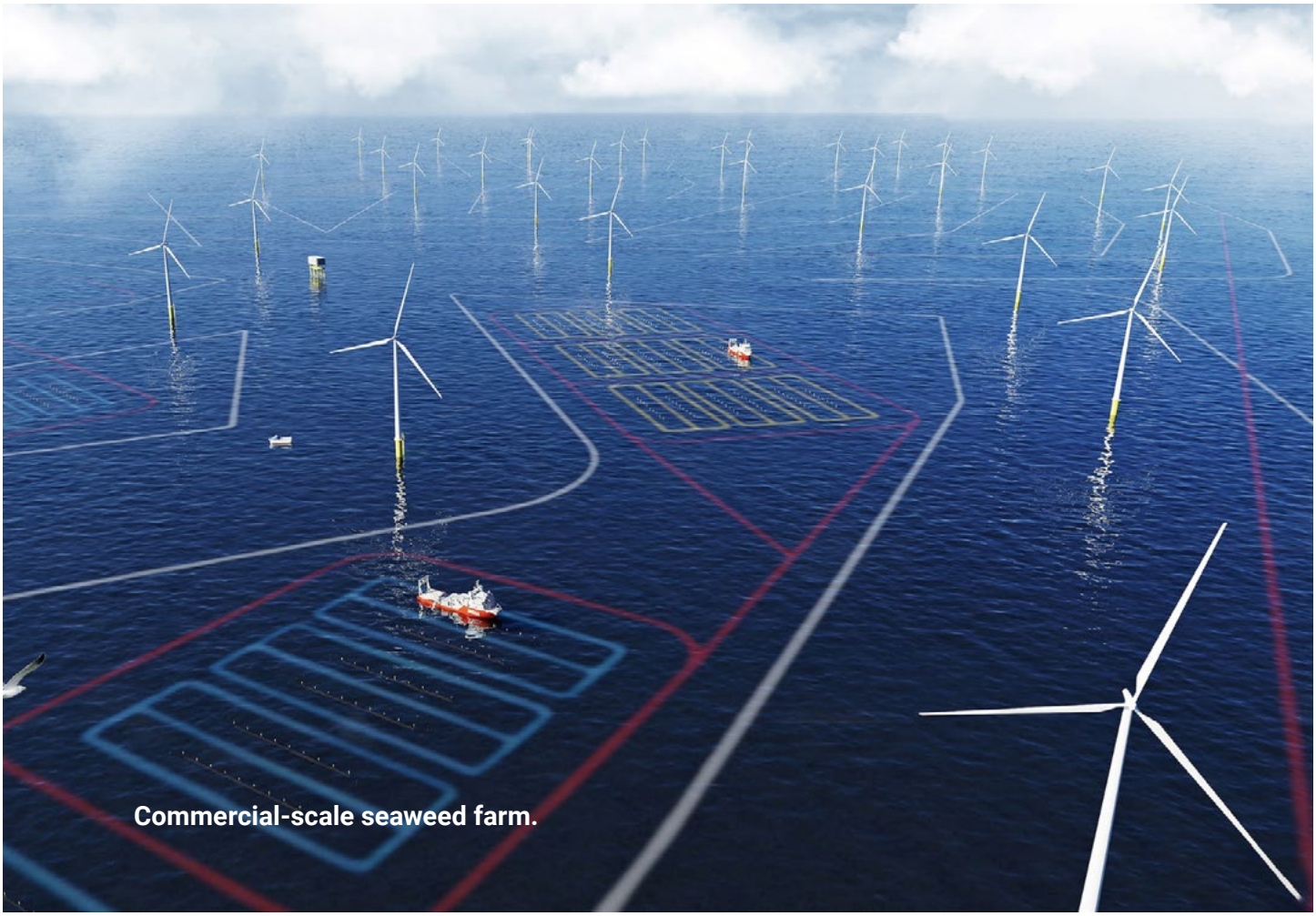
24 DMDE Engineering. Port Development and Port Usage for Regional Assessment Committee, Offshore Wind Development in Nova Scotia, 2024 https://iaac-aeic.gc.ca/050/documents/p83514/159228E.pdf

Enabling co-location and blue-economy synergies

Marine renewable projects can unlock further blue-economy opportunities by sharing infrastructure with other ocean industries.

International examples include seaweed cultivation and aquaculture co-located with offshore wind farms in the North Sea, demonstrating how shared ocean space can maximize economic and environmental value.

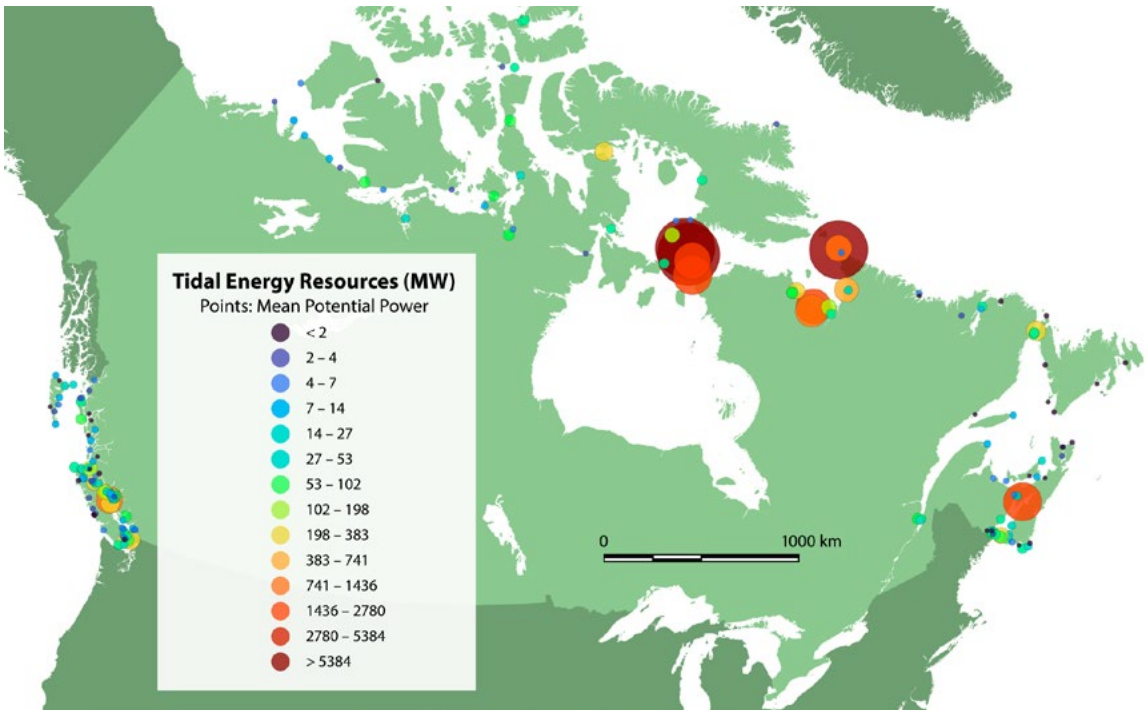
Similar integrated approaches could be replicated in Canada to support sustainable ocean development.



Commercial-scale seaweed farm.

1.5 Resource Potential

Tidal Energy



Inventory of Canada's Marine Renewable Energy Resources, 2006.

Canada is home to some of the world's most energetic tidal resources, with an estimated mean potential of 42,000 MW. Across the country, 191 sites have been identified with mean potential power outputs greater than 1 MW, the majority located in Nunavut, British Columbia, and Nova Scotia.[25]

The Bay of Fundy, recognized for having the highest tides in the world, has been extensively studied and remains Canada's most promising tidal energy region. Estimates suggest that the Minas Passage in the Bay of Fundy contains about 7,000 MW of tidal energy, with refined assessments indicating that about 2,500 MW could be technically and economically viable for development.[26]

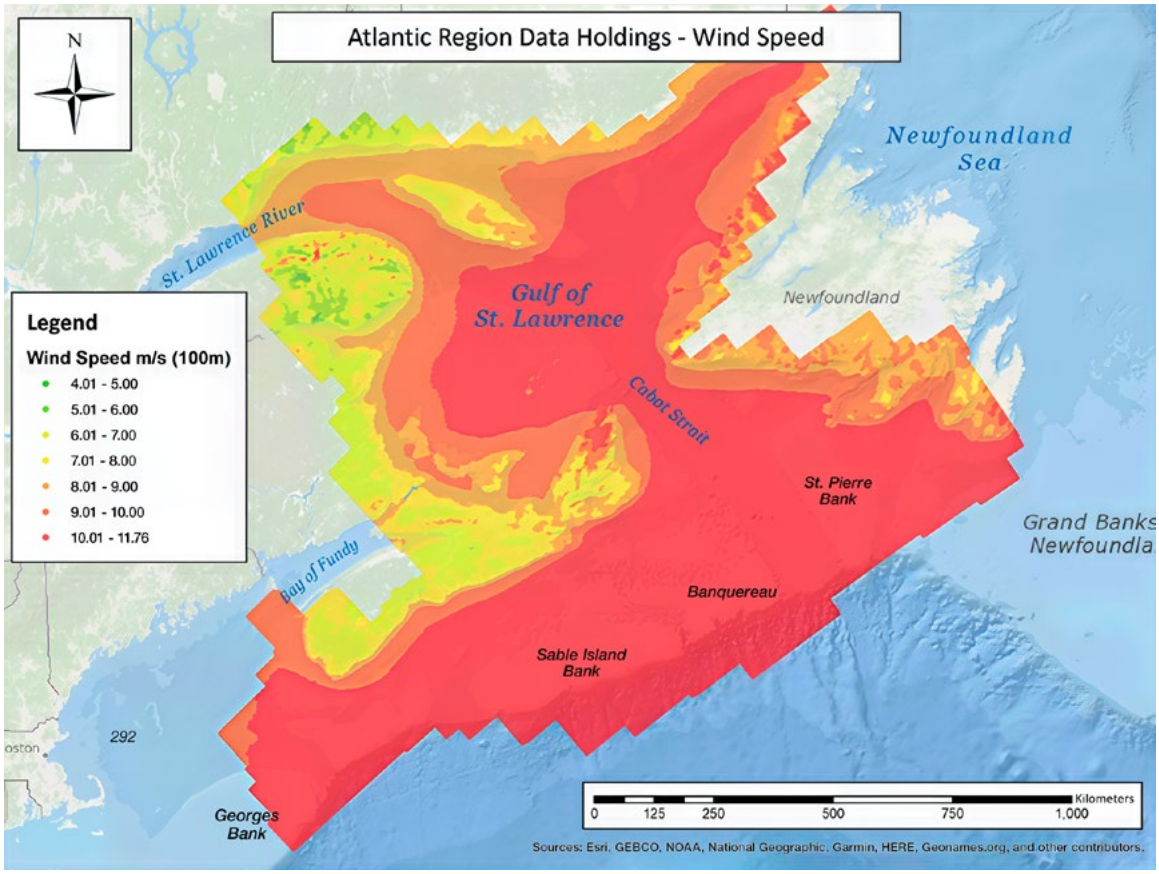
25 Cornett, Andrew. Canadian Hydraulics Centre. Inventory of Canada's Marine Renewable Energy Resources, 2006. https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/canmetenergy/files/pubs/CHC-TR-041.pdf

26 Karsten, R., Greenberg, D., & Tarbotton, M. (2011). *Assessment of the Potential of Tidal Power from Minas Passage and Minas Basin* (Report No. 300-170-09-11). Acadia University; Bedford Institute of Oceanography, Fisheries and Oceans Canada; Triton Consultants Ltd. Submitted November 20, 2011. Available at Fundy Force/Fundy Tidal Energy Research resources.

Offshore Wind Energy

Canada possesses world-class offshore wind resources, with promising locations across its Atlantic, Pacific, and Great Lakes coasts. The most favorable opportunities are found along the Atlantic coast, particularly Nova Scotia and Newfoundland and Labrador, where strong and consistent wind speeds (averaging 9-11 m/s) coincide with suitable shallow-water sites ideal for fixed-bottom turbine deployment and deep-water sites to unlock the full potential of the resource and enable larger supply chain and workforce opportunities.

Recent resource assessments suggest an offshore wind potential of up to 938 GW in Nova Scotia alone, vastly exceeding current national electricity demand.[27] The Great Lakes region also presents major opportunity, with estimates of 160 GW for fixed-bottom installations and approximately 415 GW for floating wind systems, where wind speeds regularly exceed 9 meters per second.[28] In addition, deep-water areas such as the Gulf of St. Lawrence and the Pacific coast have been identified as suitable for emerging floating wind technology.

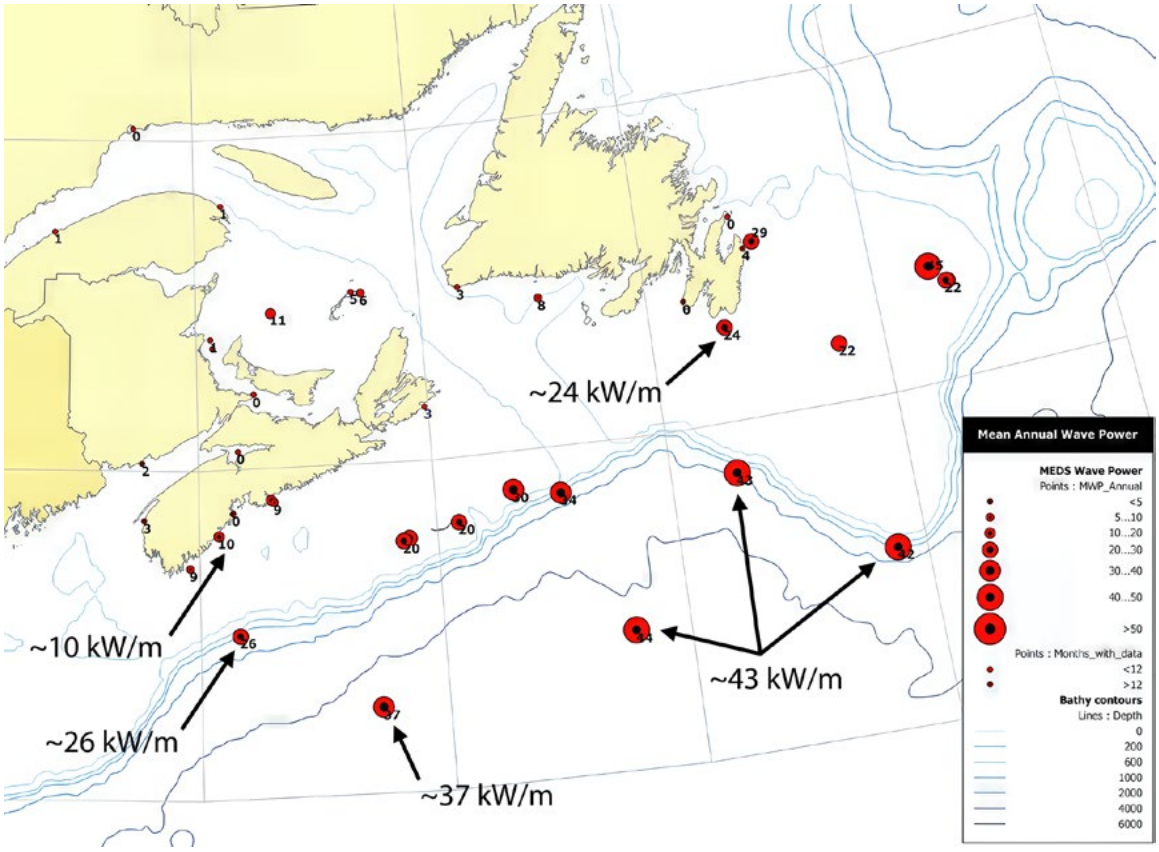


27 Natural Resources Canada. Renewable Resource Assessment: Wind Energy

28 National Renewable Energy Lab (NREL), Exploring Offshore Wind Energy Opportunities in the Great Lakes, 2023: https://www.nrel.gov/news/program/2023/exploring-offshore-wind-energy-opportunities-in-the-great-lakes.html

Wave Energy

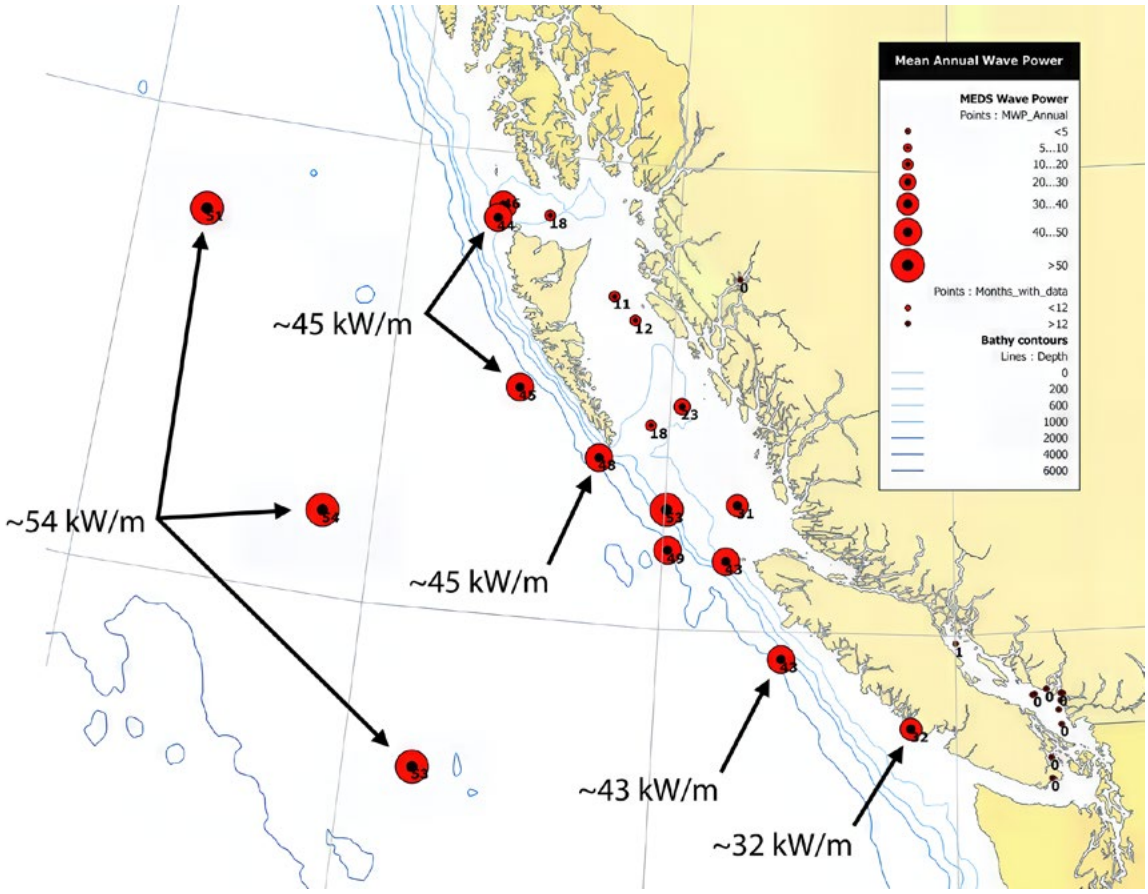
Canada's Atlantic and Pacific coasts hold significant wave-energy potential, with an estimated extractable resource of 10,100 to 16,100 MW. While only a portion of this potential is likely to be practically recoverable due to challenges such as harsh maritime conditions, conversion losses, environmental considerations, and seasonal variability, the resource remains substantial.[29]



East coast wave resource
Inventory of Canada's Marine Renewable Energy Resources, 2006.

29 National Roundtable on the Environment and Economy. Advice on a Long-term Strategy on Energy and Climate Change, 2006. http://collectionscanada.gc.ca/webarchives2/20130322143450/http://nrtee-trnee.ca/publications-2

The coast of British Columbia offers some of the most accessible near-shore opportunities for early demonstration and development, benefiting from robust wave climates, existing research infrastructure, and proximity to local demand.

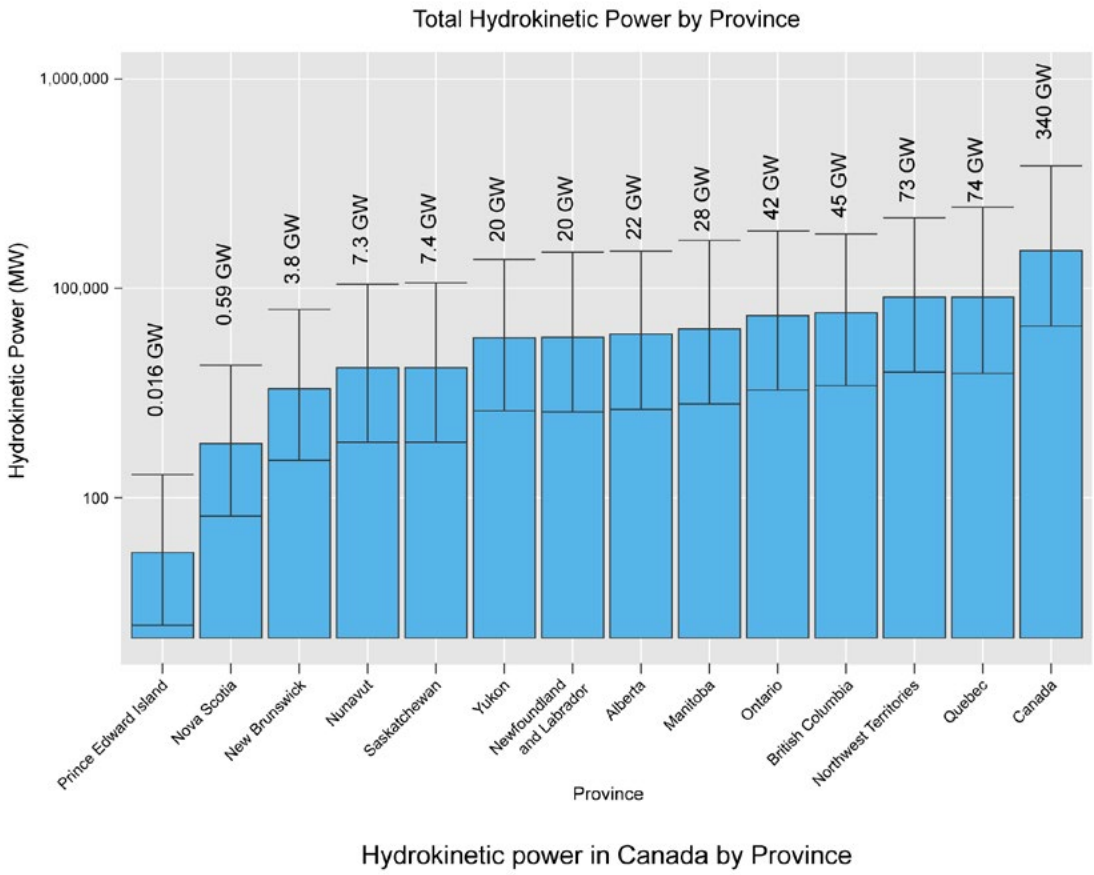


West coast wave resource
Inventory of Canada's Marine Renewable Energy Resources, 2006.

River Current Energy

Canada's rivers are one of its best-kept secrets - and among its most abundant renewable resources. Early national assessments estimate a theoretical river-current (hydrokinetic) potential of up to 340 GW - roughly three times Canada's current installed electricity capacity.[30] The highest resource potential is in British Columbia, Quebec, and the Northwest Territories.

To help unlock this potential, the Canadian River Hydrokinetic Energy Database was developed to provide open-access watershed data and identify high-velocity river sections suitable for technology deployment. While river currents differ from tidal streams in that they flow continuously in a single direction, they offer similar advantages in predictability and energy density, making them a reliable and dispatchable renewable option for both grid-connected and remote communities.



Hydrokinetic power in Canada by Province

National Research Council and Natural Resources Canada. Assessment of Canada's Hydrokinetic Power Potential, Phase 3 Report Resource Estimation. 2014.

30 NRCan. River hydrokinetic energy: http://www.nrcan.gc.ca/energy/renewable-electricity/marine-energy/7371

CHAPTER

02

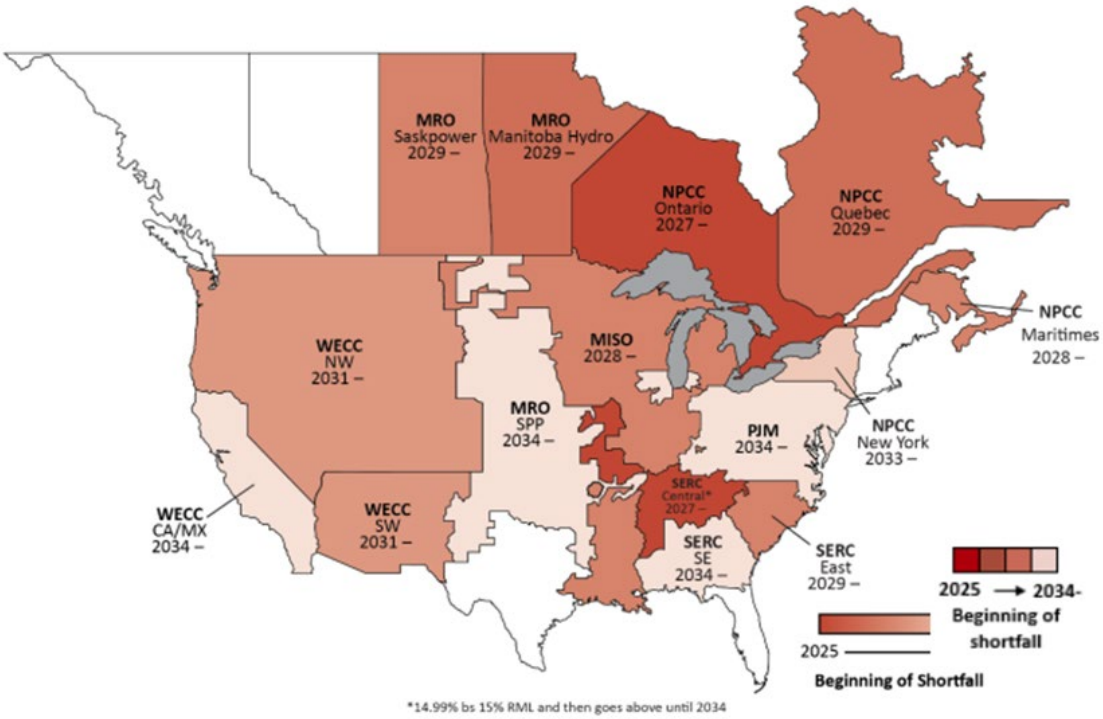
Supporting Electricity Demand and Driving Clean Energy Growth

CHAPTER 02

SUPPORTING ELECTRICITY DEMAND AND DRIVING CLEAN ENERGY GROWTH

Meeting rapidly growing demand for clean electricity across North America will require a diverse mix of energy sources, supported by strong interprovincial and cross-border power trade. By better understanding the complementary strengths of marine renewable energy and aligning the right resources with future system needs, Canada can meet rising demand while strengthening economic growth.

According to the North American Electric Reliability Corporation (NERC), many regions across North America are expected to face periods where electricity supply may struggle to keep pace with peak demand over the next decade, as outlined in its 2024 *Long-Term Reliability Assessment* (reproduced below).[31] This tightening supply outlook creates a strategic opportunity for Canadian provinces and territories. As a result, it is timely to examine all viable long-term supply options - including marine renewables - to ensure a reliable, affordable, and clean electricity system.



Projected Reserve Margin Shortfall Areas with Announced Generator Retirements (Corrected July 2025)

31 https://www.nerc.com/globalassets/our-work/assessments/2024-ltra_corrected_july_2025.pdf

2.1 Economic Policy Driving Electricity Decisions

***Canada's Clean Electricity Strategy* released August 2025[32, 33] projects a need for between 140-190 GW of additional clean electricity generating capacity by 2050 - more than doubling the current installed capacity.[34]**

Historically, clean power growth has been driven mostly by federal environmental policy, supported by varying provincial and territorial measures. Today, shifting geopolitical dynamics are reshaping global energy markets and government priorities. Canada is now entering a new phase of electricity development - one increasingly driven by economic policy focused on affordability, security, and resilience. As governments advance the ambition to make Canada an energy superpower, this Vision outlines a path to support these objectives.

Relationships between the federal and provincial governments are also evolving. In November 2025, the federal government signed a Memorandum of Understanding with the province of Alberta that will suspend the *Clean Electricity Regulations* in the province, while bolstering industrial carbon pricing. Stronger and more consistent industrial carbon pricing across Canada will provide an enhanced incentive for clean energy, including from marine renewables. Meanwhile the federal *Canadian Net-Zero Emissions Accountability Act* remains intact, with an economy-wide net-zero goal by 2050 and interim greenhouse gas (GHG) reduction targets every 5 years.

Reflecting this shift towards economic priorities, the 2025 Federal Budget introduced *Canada's Climate Competitiveness Strategy*,[35] which frames climate action as an *"economic necessity."* The strategy highlights that global clean energy investments reached USD $2 trillion in 2024, nearly double the investment in fossil fuels, and projects the clean technology market will triple by 2035. To remain competitive, Canada must *"reduce its carbon intensity to meet the growing demand from global markets for product with low associated greenhouse gas emissions."* Strengthening industrial carbon pricing is a key pillar of this strategy, and is expected to deliver *"more emission reductions than any other policy, with negligible impacts on affordability for Canadians."*

32 Canada Energy Futures (2021). https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/2021electricity/

33 Natural Resources Canada's Clean Electricity Strategy (August 2025). https://natural-resources.canada.ca/sites/admin/files/documents/2025-08/Clean-Electricity-Strategy.pdf

34 Natural Resources Canada's Powering Canada A Blueprint for Success (May 2024). https://natural-resources.canada.ca/energy-sources/powering-canada-blueprint-success

35 Budget 2025, Climate Competitiveness Strategy (November 2025). https://budget.canada.ca/2025/report-rapport/chap1-en.html#a20

Electricity demand and supply are increasingly shaped by economic, security, and resiliency priorities. At the October 2025 *Atlantic Council Summit on the Future of Energy Security,* Minister of Natural Resources, the Honourable Tim Hodgson stated that *"the lines between economic security, national security and energy security are gone,"* underscoring the need to be *"delivering lower, more predictable energy bills without sacrificing security or climate ambition."*[36] Meeting rapidly growing energy demand will require accelerating clean, firm and flexible supply through an "all of the above" approach which directly aligns with expanding Canada's energy mix to include more marine renewables.

2.2 Identifying the System Needs: Moving Beyond LCOE

Power system planning is guided by three core requirements - capacity, energy, and ancillary services - and seeks to balance reliability, affordability, and sustainability. For marine renewable energy to support Canada's future electricity needs, resource options must align with system requirements beyond energy production alone and deliver value across all three planning pillars. With a focus on ratepayer value, affordability has become increasingly nuanced: what is cost-effective in one jurisdiction may not be in another, depending on system needs and resource characteristics. These system-level complexities are often obscured by simple levelized cost of energy (LCOE) comparisons.

Ontario provides a timely illustration of the limitations of relying on LCOE alone. To meet rising electricity demand, the province is advancing approximately 1,200 MW of nuclear small modular reactors (SMRs). Although SMRs have a comparatively high LCOE, the Ontario Independent Electricity System Operator (IESO) demonstrated that they can deliver greater overall system value under specific conditions by comparing the net present value of portfolios that include renewables, storage, and firm capacity. This analysis highlights the importance of evaluating resources based on their contribution to system reliability and long-term cost outcomes, rather than on LCOE in isolation.

These limitations are further explored in the Clean Air Task Force report *Beyond LCOE: A Systems-Oriented Perspective for Evaluating Electricity Decarbonization Pathways.*[37]

36 https://www.canada.ca/en/natural-resources-canada/news/2025/10/the-honourable-tim-hodgson-remarks-presented-at-the-atlantic-council-energy-security-summit.html

37 Clean Air Task Force report "Beyond LCOE: A Systems-Oriented Perspective for Evaluating Electricity Decarbonization Pathways" (May 2025).

The report identifies several shortcomings of LCOE: it does not reflect system needs; it overlooks generation attributes such as dispatchability, inertia, and flexibility; and it often fails to account for broader system costs, including the transmission and distribution infrastructure required to deliver power to consumers. LCOE also does not capture non-electricity trade-offs - such as land use, health impacts, and local economic benefits - and is highly sensitive to financial assumptions and input-cost volatility driven by supply chain constraints and geopolitical factors.

LCOE remains a useful screening tool for electricity systems with low variable renewable energy (VRE) penetration, limited firm capacity retirements, minimal flexibility requirements, and modest peak demand growth. However, for systems pursuing long-term, economy-wide decarbonization - characterized by high renewable penetration, significant retirements of firm generation, and rapidly growing peak demand - LCOE alone is insufficient. Given Canada's net-zero objectives, forecast electricity demand growth, and planned expansion of clean generation alongside fossil fuel retirements, reliance on LCOE as a sole planning metric presents clear limitations.

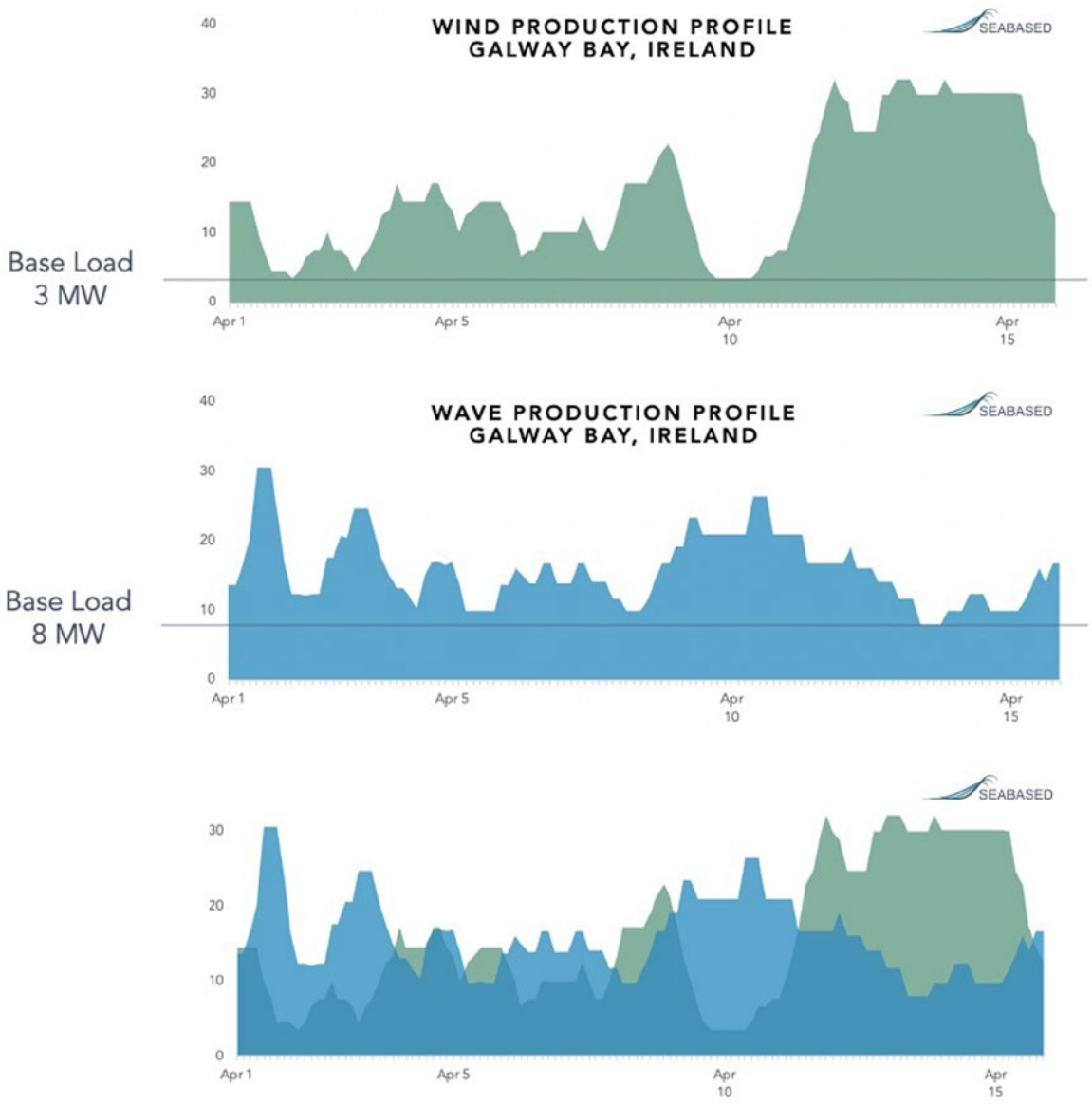
2.3 Uncovering the Electricity System Benefits of Marine Renewables

Marine renewable energy is distinct in its ability to deliver strong, consistent output that aligns well with winter peak electricity demand - characteristics that are particularly well suited to many Canadian jurisdictions.

While LCOE focuses on the average cost of annual energy production, an equally important consideration in resource planning is a resource's contribution to system capacity. In many jurisdictions, this contribution is assessed through effective load carrying capability (ELCC), which measures the extent to which a resource can reliably reduce peak demand. One of the key advantages of increasing resource diversity is the "stacking" effect that occurs when complementary technologies are combined, resulting in a higher overall capacity contribution than individual resources would provide on their own. This system value - captured through ELCC analysis but not reflected in LCOE - illustrates the benefits of diversified portfolios.

The effect is demonstrated below using the example of combined offshore wind and wave energy. Because wind and wave resources tend to peak at different times, their

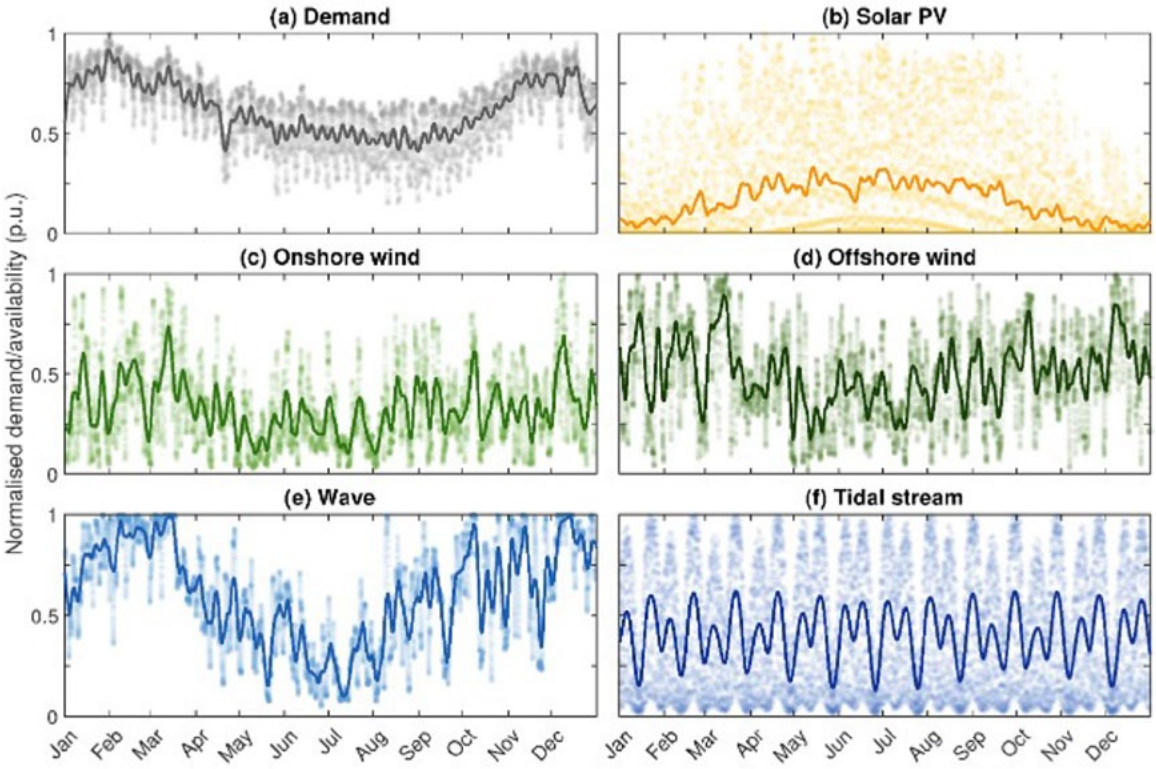
complementary generation profiles smooth overall output, resulting in a combined ELCC that is greater than the sum of the individual resources. This interaction - often referred to as a portfolio or diversity benefit - has been demonstrated in a study by Seabased[38] and confirmed by additional research showing the system advantages of pairing wave energy with other renewable resources.[39]



38 Wave and Wind are the New Hybrid Renewable Energy Source — SEABASED

39 Gonzalez, N., Serna-Torre, P., Sánchez-Pérez, P.A. et al. Offshore wind and wave energy can reduce total installed capacity required in zero-emissions grids. *Nat Commun* 15, 6826 (2024). https://doi.org/10.1038/s41467-024-50040-6 Offshore wind and wave energy can reduce total installed capacity required in zero-emissions grids | Nature Communications

From a resource diversity perspective, marine renewable energy offers valuable and complementary generation profiles. Marine renewables are generally characterized by a high degree of predictability, as demonstrated in a UK-based study that compared the output profiles of multiple renewable resources (shown below).[40] In winter-peaking jurisdictions, offshore wind and wave energy consistently deliver higher output during winter months, aligning well with periods of peak electricity demand. Tidal energy further strengthens the supply mix through its regular, predictable output. Together, marine renewables provide distinct system planning benefits and can help reduce reliance on fossil-fuelled dispatchable generation in both interconnected grids and microgrid applications.



In this way, marine renewable energy can meet growing electricity demand in a manner that uniquely supports power system planning and delivers value for ratepayers - particularly when integrated into a larger, diversified interprovincial grid.

40 https://www.mdpi.com/1996-1073/18/14/3717

2.4 Markets for Marine Renewable Energy

Marine renewable energy development in Canada is well positioned to support domestic net-zero objectives and sustainable economic growth while opening access to rapidly expanding global markets. From utility-scale grid integration to off-grid and ocean-based applications, these markets highlight the versatility, resilience, and long-term value of marine renewable technologies within an evolving energy system.

Across Canada, electricity demand and capacity requirements are expected to grow substantially, driven by the electrification of transportation, buildings, and industrial processes. More recently, the rapid expansion of data centres has emerged as a key planning challenge, as their near-term timelines and large, concentrated power demands reshape how loads are integrated into electricity systems. At the same time, emerging industrial opportunities - such as green fuel production - are adding further momentum, and uncertainty, to long-term demand projections.

As these new loads increasingly encounter constraints within existing transmission and generation infrastructure, off-grid and hybrid energy solutions are gaining attention as viable pathways. In this context, marine renewable energy offers a compelling means of meeting growing and diverse energy needs, reinforcing its role as a flexible, resilient, and forward-looking contributor to Canada's clean energy future.

Utility-Scale and Baseload Power
Desalination
Markets for Marine Renewable Energy
Remote Communities and Coastal Regions
Power at Sea (Off-Grid Applications)
Data Centres
Green Fuel Production

Utility-Scale and Baseload Power

Marine renewable energy offers a compelling pathway to deliver reliable, utility-scale clean electricity by combining predictability, scale, and strong alignment with Canada's future power system needs. Offshore wind, tidal, and wave energy together form a complementary portfolio capable of providing bulk electricity, supporting baseload requirements, strengthening grid resilience, and advancing decarbonization.

As noted, a defining advantage of marine renewables is their reliability. Tidal energy follows highly predictable daily generation cycles and wave energy is forecastable days in advance and typically peaks during winter months, aligning well with periods of highest electricity demand in many Canadian jurisdictions.

Offshore wind, the most commercially mature marine renewable technology, delivers high-capacity factors and can supply electricity at the gigawatt scale, making it well suited for large-scale deployment. The Wind West Atlantic Energy initiative, led by Nova Scotia, identifies the potential for more than 60 GW of offshore wind, with the objective of supplying major electricity markets beyond Atlantic Canada and up to 27% of Canada's total electricity demand.[41] By prioritizing interprovincial transmission integration, Wind West positions offshore wind as a nation-building resource while enabling broader clean energy development.

This opportunity comes at a critical time. As power systems across Canada face rapid demand growth, Atlantic Canada's abundant offshore wind resources stand in contrast to emerging supply constraints elsewhere. Recent studies highlight increasing vulnerability to extreme weather and rising demand - particularly in provinces such as Québec - and underscore the role that enhanced interprovincial interties can play in reducing energy deficits.[42] Offshore wind, connected through strengthened transmission networks, can directly address these challenges.

41 Government of Nova Scotia. Wind West: A nation-building project. https://novascotia.ca/wind-west/docs/wind-west-strategic-plan-en.pdf

42 https://www.nerc.com/pa/RAPA/Documents/NERC_ITCS_Canadian_Analysis_2025.pdf

Remote Communities and Coastal Regions

Remote and island communities in Canada and globally face some of the highest electricity costs and energy security risks due to heavy reliance on diesel generation and long, vulnerable fuel supply chains. Marine renewable energy offers a practical alternative by harnessing local tidal, wave, offshore wind, and river current resources to deliver clean, resilient, and locally produced power.

In Canada, approximately 280 remote and Indigenous communities rely on about 600 MW of electricity supply, with roughly three-quarters generated from fossil fuels, primarily diesel. Electricity costs can reach $2/kWh, and electrifying heating could increase demand by up to 50%.[43] These communities depend on costly fuel deliveries, with climate change further threatening reliability through impacts such as deteriorating ice roads.

Hybrid energy systems combining marine renewables with wind, solar, and energy storage can significantly reduce - or fully displace - diesel generation while improving affordability, reliability, and resilience. Marine renewables' predictable, consistent generation profiles reduce balancing requirements and strengthen microgrid performance. Where resource availability aligns with community needs, marine energy can help stabilize costs and improve energy security.

Beyond electricity supply, marine renewables support energy sovereignty and economic participation. Expanding access to these technologies can help remote, coastal, and Indigenous communities build technical and operational capacity, strengthen local economies, and share expertise with other coastal and island regions seeking energy independence and climate resilience.

43 https://natural-resources.canada.ca/energy-sources/renewable-energy/reducing-cost-isolated-networks

Data Centres

The rapid expansion of data centres has become a central challenge in Canadian energy planning, with the potential to significantly accelerate electricity demand and strain access to low-cost clean energy resources such as onshore wind, solar, and storage. While this growth presents economic opportunities, it also raises concerns about system costs, grid capacity, and impacts on ratepayers. In this context, data centres may both drive the need for new generation and emerge as a strategic market for marine renewable energy, particularly where grid constraints limit conventional supply options.

These constraints are reshaping how large electricity loads are integrated into the power system and are creating space for alternative supply models that can deliver reliable, low-carbon power outside traditional grid pathways.

In response, governments and regulators are reassessing how large data centre loads are managed. Québec's Bill 69 requires government approval for electricity allocations above 5 MW based on economic, environmental, and policy considerations.[44]

British Columbia's *Energy Statutes Amendment Act* limits electricity supply to AI data centres, cryptocurrency mining, and hydrogen production for non-domestic use, prioritizing benefits to British Columbians.[45] Ontario's Bill 40, the *Protect Ontario by Securing Affordable Energy for Generations Act,* similarly proposes conditions on new grid connections, moving away from automatic, non-discriminatory access for large loads.[46]

Uncertainty is also growing around cryptocurrency-related demand. Newfoundland and Labrador has exempted its utility from firm supply obligations to crypto-related data processing loads[47] - a position upheld on appeal - while New Brunswick data centres may face constraints under existing restrictions on cryptocurrency operations.[48]

44 https://www.quebec.ca/nouvelles/actualites/details/raccordement-des-projets-dune-puissance-de-5-mw-et-plus-les-criteres-danalyse-pour-loctroi-dun-bloc-delectricite-rendus-publics-47778

45 https://free.bcpublications.ca/civix/document/id/bills/billscurrent/gov31-1_43rd1st

46 https://www.ola.org/en/legislative-business/bills/parliament-44/session-1/bill-40

47 Newfoundland & Labrador Orders in Council, OC2022-266 (November 10, 2022). https://www.exec-oic.gov.nl.ca/public/oic/details?order-id=20484

48 New Brunswick, 2023, c.37 – An Act to Amend the Electricity Act (December 13, 2023). https://laws.gnb.ca/en/document/as/2023,%20c.37

As scrutiny of grid-connected data centres increases, some proponents are exploring alternative models, including remote or self-supplied facilities. Emerging examples, such as underwater data centres that reduce cooling energy requirements, point to new approaches. Over the longer term, pairing offshore or subsea data centres with marine renewable energy could offer an innovative pathway to manage data-driven demand while supporting marine renewable deployment as costs continue to decline.

Green Fuel Production

Green hydrogen and other sustainable fuel production represent a significant opportunity for Canada's marine renewable energy sector. Offshore wind, wave, and tidal power can provide surplus clean electricity for hydrogen production through electrolysis, enabling zero-carbon fuels for domestic use, industrial applications, and export.

International examples demonstrate the viability of this model. Tidal-powered hydrogen production at Scotland's European Marine Energy Centre and offshore wind-to-hydrogen projects in the North Sea illustrate how marine renewables can support fuel production in coastal environments - an approach well suited to Canada's extensive marine resources.

Green fuels could drive substantial electricity demand growth in Canada, supporting domestic decarbonization and international clean energy partnerships. *The Hydrogen Strategy*[49] has accelerated momentum since 2020, with projects underway across the country, provincial strategies in place, international agreements signed, and emerging green fuel hubs.[50] Federal support continues through the *Clean Hydrogen Investment Tax Credit,* which covers up to 40% of eligible project costs.[51]

Despite this progress, large-scale green fuel development faces economic and policy challenges. As of 2025, green ammonia produced in Canada remains more costly than international alternatives, even when powered by low-cost onshore renewables. At the same time, concerns over ratepayer impacts have led to constraints on the use of onshore wind for export-oriented hydrogen production, notably in Nova Scotia. These dynamics strengthen the strategic case for offshore wind and other marine renewables as dedicated, scalable energy sources for green fuel production.

49 https://natural-resources.canada.ca/energy-sources/clean-fuels/hydrogen-strategy

50 https://natural-resources.canada.ca/energy-sources/clean-fuels/hydrogen-strategy/hydrogen-strategy-canada-progress-report

51 https://www.canada.ca/en/revenue-agency/services/tax/businesses/topics/corporations/business-tax-credits/clean-economy-itc/clean-hydrogen-itc.html

Power at Sea (Off-Grid Applications)

"Power at sea" represents a rapidly growing global opportunity for marine renewable energy, providing off-grid, zero-emission power to ocean industries that often face high energy costs due to remote operations. Research by the U.S. Department of Energy, Ocean Energy Systems (OES), and the International Renewable Energy Agency (IRENA) shows that tidal, wave, and offshore wind can deliver reliable and cost-effective electricity for applications such as aquaculture, marine robotics, ports, ocean observation platforms, subsea operations, and the decarbonization of offshore oil and gas facilities.

Canada's offshore waters offer particularly strong potential for these applications. Marine renewables can support aquaculture and port electrification in Atlantic Canada and British Columbia, enable ocean observation in northern and Arctic waters, and reduce emissions from offshore oil and gas operations in Newfoundland and Labrador. By replacing costly diesel and fossil fuels, these technologies can lower operating costs, cut emissions, and strengthen the blue economy - positioning Canada as a leader in sustainable offshore and ocean-based energy solutions.

Desalination

As global demand for freshwater increases, seawater desalination is becoming increasingly important for industrial, agricultural, and domestic use - particularly in regions such as the Middle East and North Africa.[52] Today, most desalination systems remain heavily reliant on fossil fuels.

Marine renewable energy offers a low-carbon alternative by directly powering desalination processes. Wave- and tidal-powered systems, for example, can pressurize seawater for reverse osmosis without the need for separate electricity generation,[53] reducing both emissions and operating costs. By addressing one of the largest cost drivers in desalination, marine renewables present an opportunity to improve the affordability and sustainability of freshwater production.

52 IRENA, 2020b.
53 US Department of Energy, 2019.

CHAPTER

03

Our Vision for Marine Renewable Energy in Canada

Our Vision is clear: Marine renewable energy as a key pillar of Canada's clean energy transition - supporting climate action, strengthening energy systems, and fostering resilient communities and sustainable economic growth.

Realizing this Vision by 2050 could generate an estimated $12 billion GDP impact across Canada from construction activity alone.[54]

Grounded in government priorities, industry engagement, electricity demand projections, and Canada's marine renewable resource potential, the following vision outlines what can be achieved by 2030, 2040, and 2050.

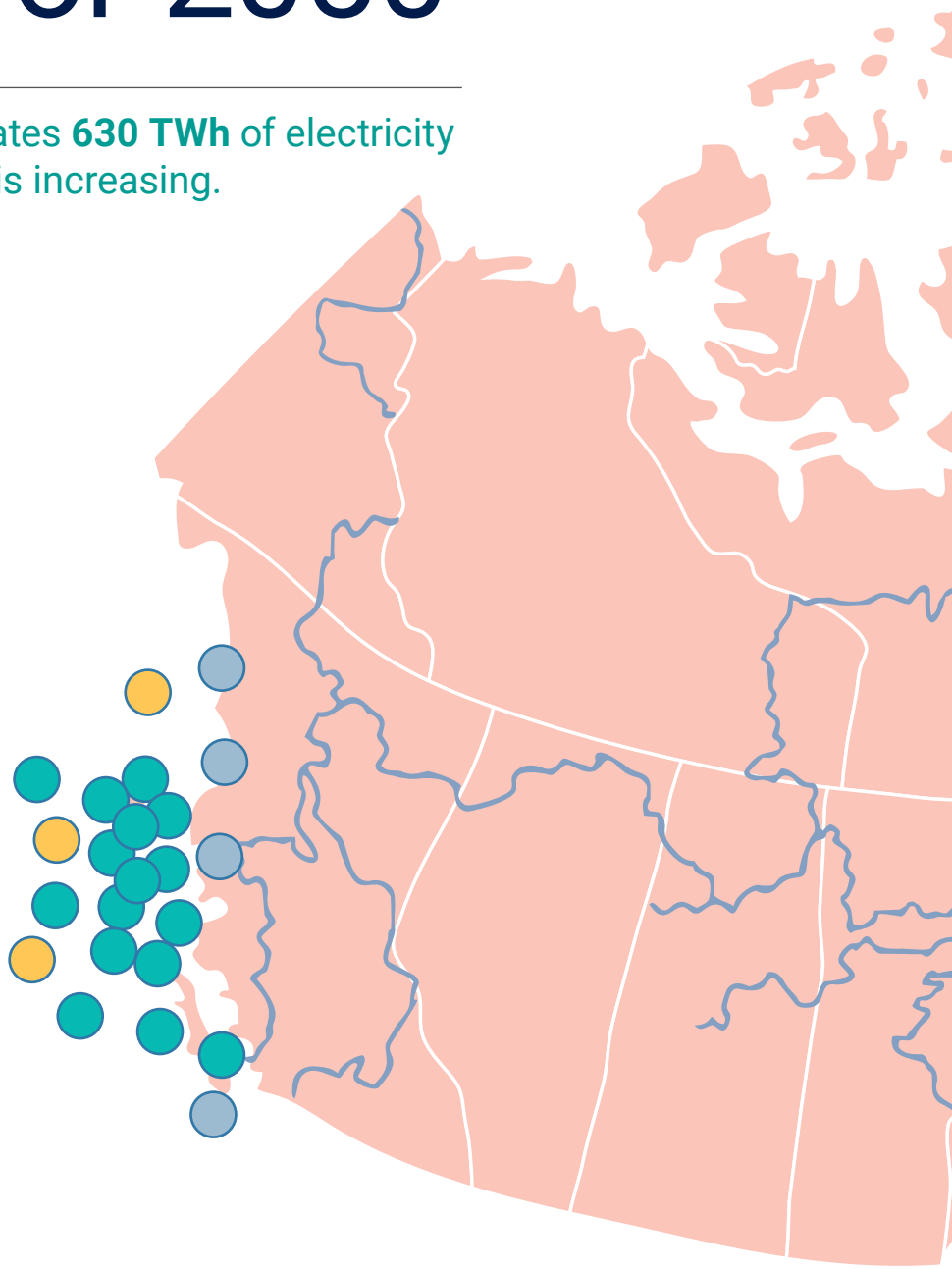
54 The jobs and GDP impact estimates for offshore wind energy were derived using data from the Regional Assessment of Offshore Wind Development in Nova Scotia, and the jobs and GDP impact estimates for wave and tidal energy were derived using data from the Jobs and Economic Development Impact Model from the National Laboratory of the Rockies (formerly National Renewable Energy Laboratory).

Vision for 2050

Canada currently generates **630 TWh** of electricity each year, and demand is increasing.

Offshore wind:
32 GW

Tidal Energy:
1 GW



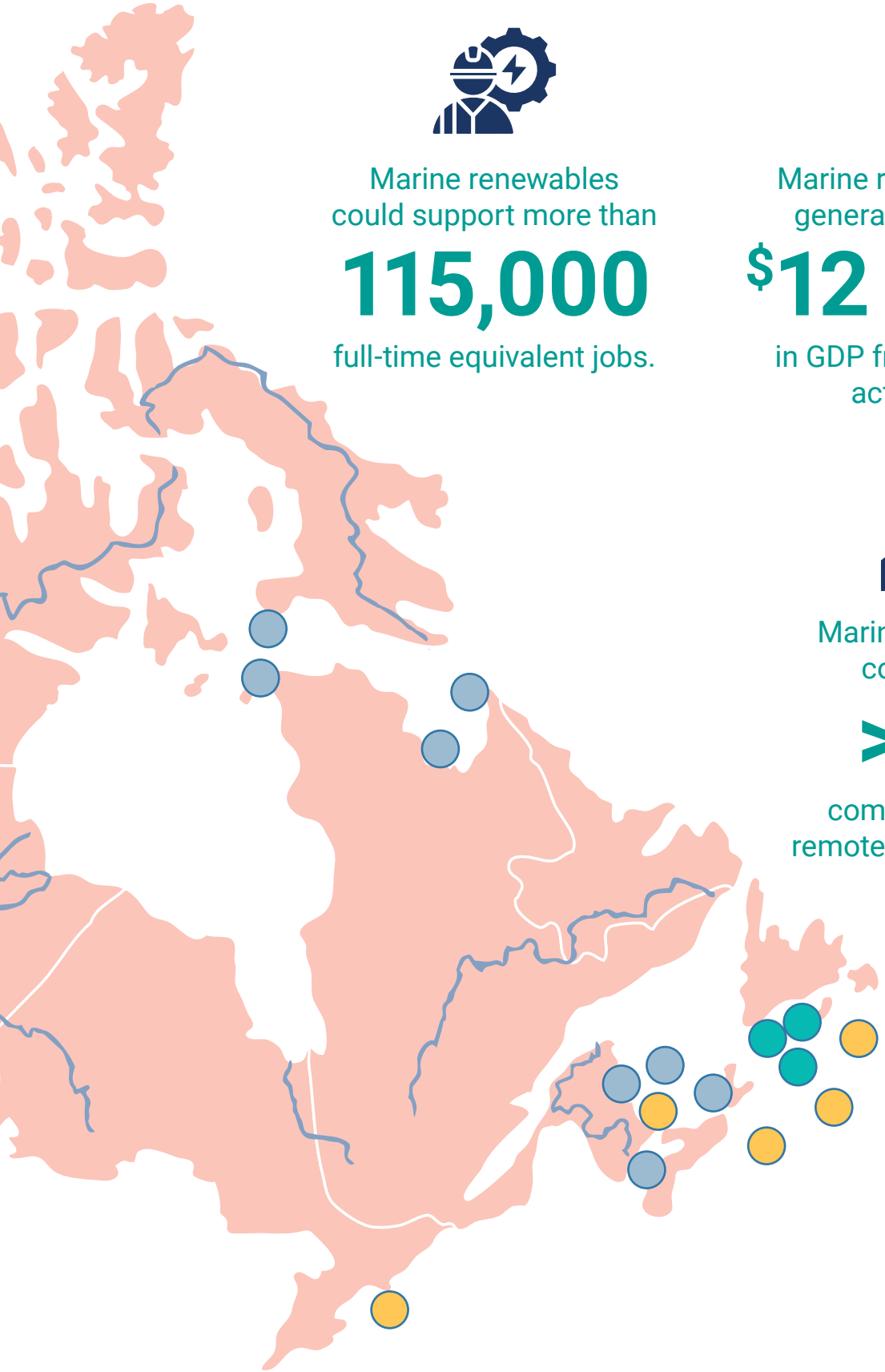
Marine Renewable Energy Across Canada*

- Wave Energy
- Tidal Energy
- Offshore Wind Energy
- River Current Energy

** For illustrative purposes only, areas not to scale*

CHAPTER 03

OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA



Marine renewables could support more than

115,000

full-time equivalent jobs.

Marine renewables could generate an estimated

$12 Billion

in GDP from construction activity alone.

Marine renewables could power

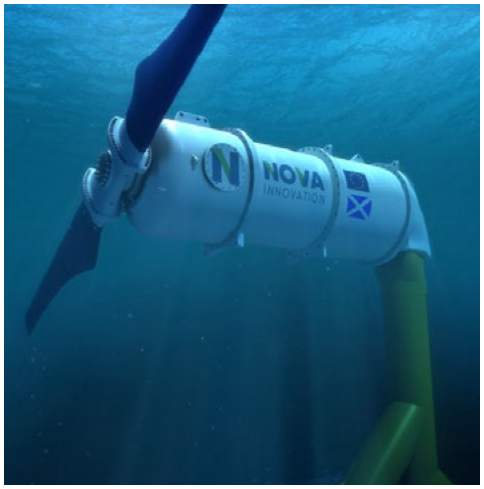
> 50

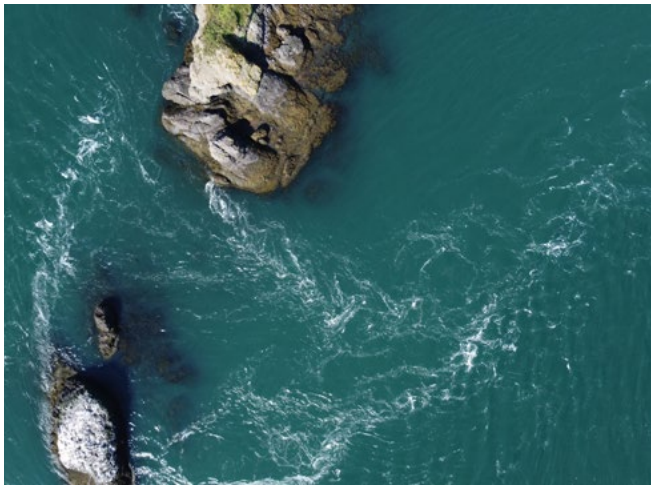
communities and remote industrial sites.

Canada as a world leader in tidal energy with expertise in both large- and small-scale projects.

By 2030

- 30 MW of projects are planned and permitted at FORCE and other Nova Scotia sites, contributing reliable electricity to the grid and driving cost reductions.
- Multiple community-scale projects are operational or planned in British Columbia, contributing to CleanBC's goal of reducing diesel reliance by 80% by 2030.
- Tidal energy is recognized in BC Hydro's Resource Options Database as an eligible technology in Calls for Power.
- Indigenous communities, local suppliers, and small businesses benefit from new ownership and participation opportunities in tidal development.
- Environmental interactions are well understood and responsibly managed through ongoing research, monitoring, and adaptive management, contributing to international knowledge-sharing efforts led by Ocean Energy Systems (OES).
- Canadian companies apply their experience and technologies to access emerging international tidal energy markets.





CHAPTER 03

OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

By 2040

- FORCE reaches full capacity, with 64 MW of tidal generation in operation, planning, or development.
- Tidal energy supports power supply for several of British Columbia's 44 remote off-grid communities, as well as off-grid sites such as eco-lodges, research stations, and industrial camps.
- Tidal energy becomes a viable utility-scale option supporting industrial growth in northern British Columbia and rural Nova Scotia.
- Projects expand into additional jurisdictions, including New Brunswick, Newfoundland and Labrador, and Nunavut.
- Growth in installation, maintenance, monitoring, and marine services drives sustained employment and business development in rural coastal regions.

By 2050

- Canada operates more than 1 GW of tidal energy capacity, with additional projects at various stages of development, including utility-scale projects in the Bay of Fundy and British Columbia, alongside dozens of small-scale projects serving remote communities and industrial operations across Canada.
- Tidal energy is fully integrated into regional electricity systems on both coasts, demonstrating the value of predictable, baseload clean power within diversified grids.
- Canada is internationally recognized as a leader in tidal innovation – comparable to Denmark's early leadership in wind energy – having built a domestic industry that supports thousands of jobs and a competitive global export market.

CHAPTER 03
OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

Canada is an established **market for offshore wind.**

By 2030

- 5 GW of offshore wind leases are awarded and under development in Nova Scotia.
- Foundational research, marine data collection, and Regional Assessments support responsible offshore wind development in Atlantic Canada.
- Offshore wind regulatory frameworks are established in British Columbia, New Brunswick, and Ontario, enabling future leasing and permitting.
- Canadian ports with high potential to service projects are upgraded to support offshore wind construction, assembly, and operations.
- A growing Canadian supply chain emerges across engineering, fabrication, environmental monitoring, and marine logistics.

CHAPTER 03

OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

By 2040

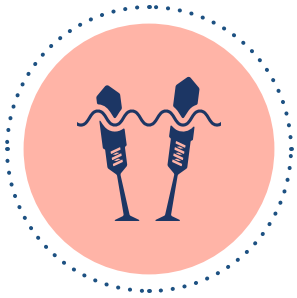
- Ontario's first 800 MW of offshore wind capacity becomes operational, with an additional 1,500 MW under development.
- Over 18 GW of offshore wind capacity is operational or under construction nationwide, with additional projects in development.
- Interprovincial markets for renewable energy are well established, with offshore wind supplying clean electricity across Eastern Canada and supporting cross-border energy trade.
- Green hydrogen production from offshore wind becomes a significant export-oriented industry.
- Atlantic ports expand to meet demand for staging, integration, and O&M services, driving sustained employment and regional economic growth.

By 2050

- Ontario's offshore wind capacity reaches 3 GW, with additional projects in various stages of development.
- Over 30 GW of offshore wind capacity is deployed or under construction nationwide with additional projects in various stages of development.
- Offshore wind energy supplies domestic electricity demand, supports industrial electrification and data centres, and enables export opportunities, including electricity and sustainable fuels.
- Offshore wind installations provide renewable power to offshore oil and gas platforms, supporting decarbonization.
- Expanded port capacity and a specialized maritime workforce generate long-term economic benefits for Atlantic Canada and the national economy.

CHAPTER 03
OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

Canada establishes **wave energy as a viable component** of its clean energy system.

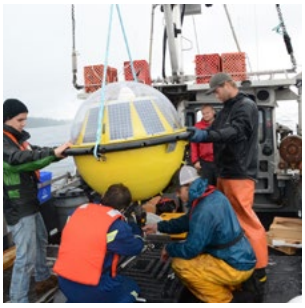


By 2030

- Canada's first wave energy device is operational, supplying electricity as part of a hybrid renewable energy system.
- British Columbia's wave energy resources are mapped and quantified, enabling identification of strategic development areas that respect existing ocean uses and environmental values.
- A clear and predictable regulatory pathway is established for wave energy projects, attracting proven technologies for deployment in Canada.

CHAPTER 03

OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA



By 2040

- Wave energy supplies electricity to at least five off-grid coastal communities, commercial facilities, or remote stations, significantly reducing diesel use.
- Continued technology refinement and cost reductions enable recognition of wave energy in BC Hydro's Resource Options Database and support development of Canada's first grid-connected wave energy project in British Columbia.
- Indigenous communities, local suppliers, and small businesses benefit from new ownership and participation opportunities in wave energy development.

By 2050

- Canada's first grid-connected wave energy array is operational in British Columbia, supplying clean electricity to Vancouver Island.
- Wave energy reaches a cumulative installed capacity exceeding 50 MW nationwide, contributing reliable, low-carbon power to both grid-connected and off-grid applications.

CHAPTER 03
OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

Marine renewable energy **powers remote communities and ocean industries.**

By 2030

- Multiple remote and Indigenous communities demonstrate marine renewable energy as a viable solution to displace diesel use.
- Canada completes national resource atlases identifying marine renewable potential in remote and coastal regions, facilitating project feasibility assessment for communities.
- Government programs support development of marine renewable energy in Indigenous, coastal, and remote communities, enabling integrated community energy planning.

CHAPTER 03

OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

By 2040

- More than 20 remote communities and off-grid industrial sites across Canada are powered by marine renewable energy.
- Ocean industries - including aquaculture, offshore oil and gas, marine transportation, and research operations - adopt marine renewable energy solutions to reduce emissions.
- Indigenous Development Corporations participate as partner in utility-scale marine renewable projects, building on experience gained through community-scale deployments.
- Marine renewable energy development supports local employment, energy sovereignty and security, and long-term economic opportunity in coastal and remote regions.
- Wave and tidal technologies supply reliable power to navigation aids, monitoring platforms, and ocean data collection systems across Canada's marine spaces.

By 2050

- Over 50 communities and remote industrial sites are powered by marine renewable energy, achieving meaningful diesel displacement and energy independence.
- Canadian marine renewable energy technology and supply chain companies compete successfully in global markets, exporting solutions to island nations, off-grid industries, and remote regions seeking reliable decarbonization pathways.

CHAPTER 03
OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

Marine renewable energy **delivers reliable, predictable, and integrated generation** that supports baseload needs and optimizes energy storage.

By 2030

- Informed by marine spatial planning and GIS multi-criteria decision-making, Canada further refines resource assessments and national atlases for marine renewable energy potential.
- Marine renewable energy is included in all provincial and utility long-term electricity plans.
- Interprovincial grid integration advances, with new transmission links under construction between Atlantic and Central Canada and planning underway to expand capacity across Western Canada.
- New interprovincial agreements between utilities and system operators support pan-Canadian grid integration, aligning generation, transmission, and storage planning to improve system reliability and enable efficient renewable energy flows.

CHAPTER 03

OUR VISION FOR MARINE RENEWABLE ENERGY IN CANADA

By 2040

- Renewable energy project designs routinely integrate complementary technologies - such as offshore wind energy with wave energy or tidal generation paired with battery storage - improving system performance, increasing renewable penetration, and reducing overall costs.
- Marine renewables deliver predictable, reliable energy that helps reduce transmission requirements in remote and coastal areas.
- Interprovincial and pan-Canadian grid integration enables greater electricity sharing and exports opportunities, supporting increased renewable energy deployment.
- Marine vessel service and supply chains expand across Canada to support the installation and operations and maintenance of marine renewable energy projects, creating new economic opportunities in rural and coastal communities.

By 2050

- Marine renewable energy delivers predictable, scheduled generation that helps balance variability across Canada's net-zero electricity grid.
- Marine renewable technologies are widely deployed internationally, positioning Canada as a global exporter of clean energy systems, services, and expertise.

3.1 The Value of Realizing This Vision

Realizing this Vision by 2050 would enable a thriving marine renewable energy sector delivering substantial economic and employment benefits across Canada. Over a 24-year development period, marine renewables could support more than 115,000 full-time equivalent (FTE) jobs and generate an estimated $12 billion in GDP from construction activity alone. Of this total, wave and tidal energy development would contribute approximately $1 billion through construction and installation.

Offshore wind represents the largest source of these benefits. Harnessing Canada's offshore wind potential could support approximately 6,400 jobs by 2040, with employment sustained over decades through successive waves of development. These are high-quality, skilled jobs spanning manufacturing and component supply, transportation, construction and installation, and long-term operations and maintenance. Additional economic benefits would flow from required investments in port infrastructure and the broader marine sector.

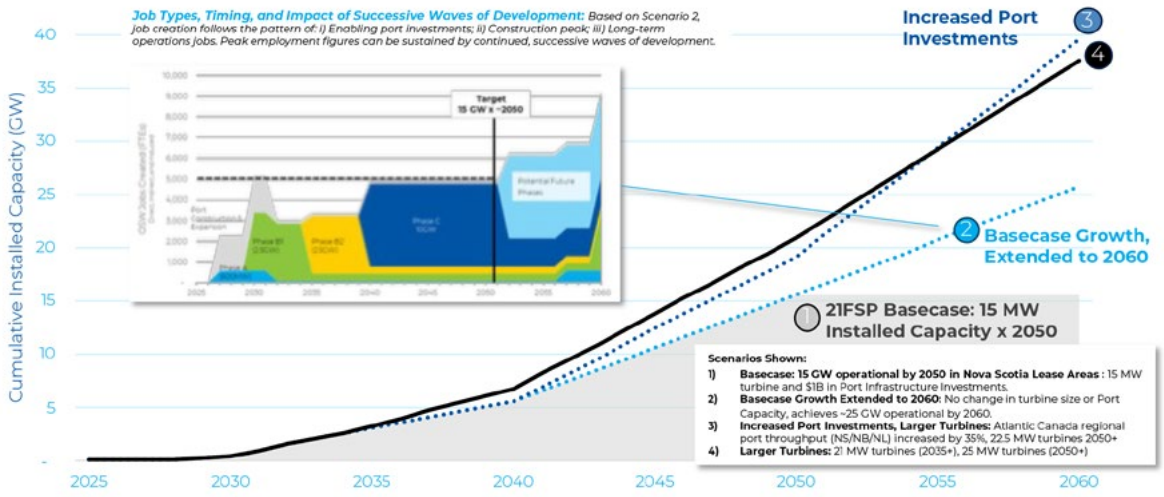
To illustrate this opportunity, Marine Renewables Canada examined potential offshore wind development pathways in Nova Scotia. Scenarios show how achieving 20 GW of operational offshore wind capacity by 2050 - with an additional 5 GW under construction and further projects in development - could sustain thousands of jobs across Atlantic Canada. Development at this scale would leverage port infrastructure throughout the region, generating widespread economic benefits.

Achieving this pace of development will require timely upgrades to Atlantic Canada's port infrastructure, consistent with findings from the *Assessment of Atlantic Canadian Ports to Support Offshore Wind Development*.

These outcomes underscore the importance of acting now. Strategic investment, policy alignment, and predictable long-term procurement are essential to unlock Canada's marine renewable energy potential. The actions required to achieve this Vision are set out in the following chapter.

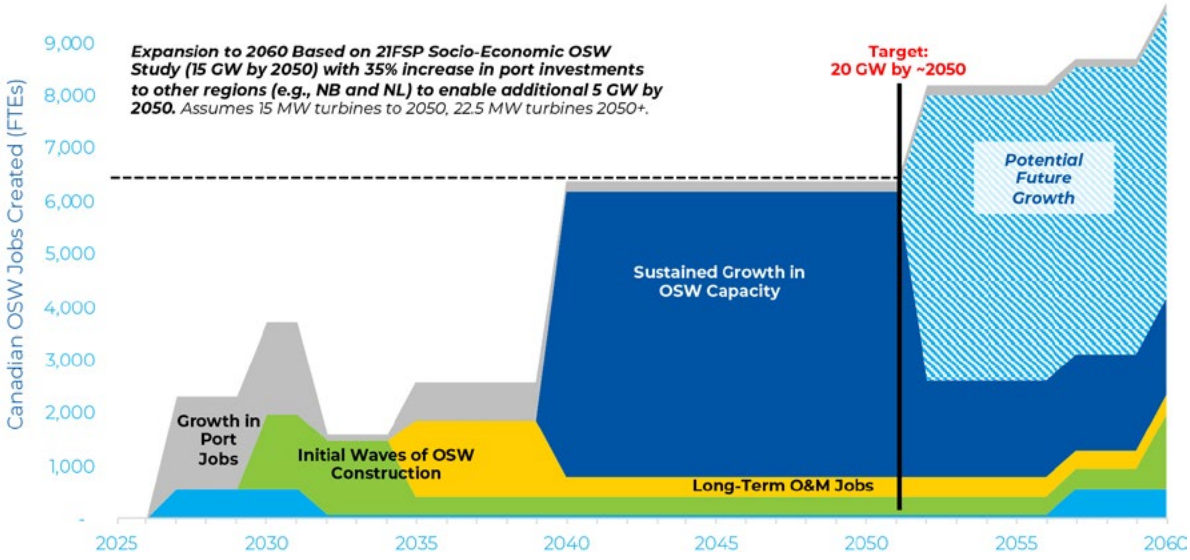
Offshore Wind Development Pathways

Atlantic Canada: Increased Leasing, Port Investment, Larger Turbines



Offshore Wind Development Pathways in Atlantic Canada.
Source: Power Advisory, scenario and employment analysis prepared for Marine Renewables Canada (2026).

Sustained Employment Through Successive Waves of Development



Offshore wind development pathways and sustained employment through successive waves of development.
Source: Power Advisory, analysis prepared for Marine Renewables Canada (2026).

CHAPTER

04

Realizing the Vision: Key Factors and Recommendations

Marine Renewables Canada has identified 14 critical recommendations to lay the foundation for Canada's leadership in marine renewable energy and its emergence as the world's leading clean energy superpower.

Key Factors

Establishing One Canadian Grid

Enabling Infrastructure & Supply Chain

Dependable Offtake Opportunities

Research and Development

A Path for Indigenous, Northern, Rural, and Remote Communities

Responsible Development

Investment Certainty to Drive Cost Reduction

International Opportunities for Canadian Businesses, Researchers, and Supply Chains

4.1 Establishing One Canadian Grid

Canada currently generates approximately 630 TWh of electricity each year. Demand is forecasted to increase substantially in every province and territory as industries electrify, domestic manufacturing expands, and the digital economy grows.

Marine renewable energy is well positioned to help meet this need - but realizing its potential will require sustained, coordinated public and private investment in new generation capacity, transmission infrastructure, and grid modernization.

A more integrated Canadian economy must include a more interconnected electricity grid. Recent federal commitments to interprovincial transmission represent an important step forward. Continued federal leadership will be essential to align long-term planning, interprovincial electricity trade, and infrastructure development across provinces, utilities, and regulators.

International experience supports this approach. Jurisdictions such as the U.S., Australia, and the United Kingdom have established regional or national planning bodies that integrate generation, demand, and infrastructure needs, enabling efficient system development while balancing regional strengths with national priorities.

A more interconnected grid would unlock significant renewable energy opportunities - particularly in Atlantic Canada, which has world-class offshore wind and tidal resources but limited local demand. Strengthened transmission links to larger markets in central Canada are essential to enable large-scale offshore wind development.

To attract the private capital required, investors must have confidence that:

- Electricity markets will be accessible and competitive;
- Transmission infrastructure will connect new supply with demand;
- Planning and regulatory processes will be independent and transparent; and
- Regulatory frameworks will be coordinated, efficient, and predictable.

A clear and credible path to market is essential to ensure investment certainty and deliver clean electricity at the scale and pace required for Canada's energy transition.

Recommendation 1

Federal leadership on regional energy system planning.

Removing interprovincial trade barriers must extend to electricity markets. The federal government should use its convening power to advance regional electricity system planning in support of the national interest. Over the longer term, Canada should establish a formal mechanism to coordinate interprovincial transmission, electricity trade, and market development - while respecting provincial jurisdiction and aboriginal and treaty rights - to unlock the investment needed to meet rapidly growing demand for clean electricity.

IMMEDIATE ACTION

The federal government convenes Eastern Canadian provinces, utilities, system operators, and industry to secure an agreement on interprovincial renewable electricity markets, including a clear path to market for Nova Scotia's first 5 GW of offshore wind.

ONGOING EFFORTS

The federal government works with provinces and territories to establish a formal framework for coordinated regional electricity system planning, trade, and market coordination - beginning with Atlantic Canada and Québec as a model for national expansion.

Recommendation 2

Support investment in interjurisdictional electricity transmission infrastructure.

Interprovincial transmission is essential to fully realize the value of marine renewables. Initiatives such as Nova Scotia's Wind West Atlantic Energy demonstrate the scale of opportunity, but delivering these projects will require significant and timely investment from both public and private sources. Expanded interconnections will enable high-quality Canadian renewable electricity to flow across provincial boundaries, optimizing the national energy mix and strengthening system reliability, flexibility, and resilience.

IMMEDIATE ACTION

The Major Projects Office (MPO) prioritizes interprovincial transmission infrastructure and supports the coordination and structuring of financing from the private sector, provincial and territorial partners, and the federal government - including through the Canada Infrastructure Bank, Canada Growth Fund, and the Canada Indigenous Loan Guarantee Corporation.

ONGOING EFFORTS

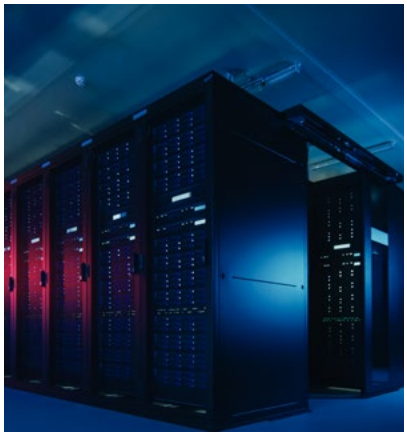
The Canada Energy Regulator (CER) works with provinces, territories, and industry to develop a multi-jurisdictional framework for cost allocation and benefit sharing that supports equitable and timely investment in transmission infrastructure.

4.2 Dependable Offtake Opportunities

While transmission infrastructure creates a pathway to market, industry also requires clear and durable demand signals - how much renewable electricity will be needed, where, and when. Sustained development of new generation depends on predictable procurement cycles and a clear long-term trajectory that aligns the priorities of system planners, industry, Indigenous governments, and municipalities.

British Columbia provides a timely example. The province has launched a historic build-out of electricity generation through regular Calls for Power. Driven by electrification, industrial growth, and population increases, electricity demand is forecast to rise by 22–41% by 2040.[55] While renewed procurement is a positive step, a more comprehensive approach - with clear targets, timelines, and development areas - is needed to sustain renewable deployment at the required scale and pace.

Beyond provincial grids, emerging sectors such as green hydrogen production and artificial intelligence (AI) data centres are creating significant new demand for clean electricity. These industries could provide the stable, long-term offtake required for large-scale offshore wind development. However, a sequencing challenge remains: generation cannot proceed without guaranteed demand, and new industrial loads cannot develop without assured clean power supply.



55 Pembina Institute, 2025: https://www.pembina.org/media-release/bc-hydro-advances-efforts-meet-growing-energy-demand-clean-power

Recommendation 3

Set realistic long-term procurement targets for marine renewable energy.

Establishing long-term procurement targets for marine renewable energy is essential to provide developers, investors, and supply chain partners with the confidence to invest and plan. Transparent targets with a credible path to market reduce risk, signal government commitment, and enable informed investment decisions.

IMMEDIATE ACTIONS

Provincial governments establish clear, predictable marine renewable procurement targets:

- Nova Scotia establishes targets and timelines for offshore wind and tidal energy procurement.
- British Columbia sets a 15-year clean energy development target, with biennial milestones aligned to demand forecasts and proactive transmission planning.
- Newfoundland and Labrador and New Brunswick define clear offshore wind procurement targets to signal market readiness.

ONGOING EFFORTS

Provincial governments establish enabling policy and regulatory frameworks - including incentives, mandates, and procurement models such as power purchase agreements - to link renewable energy supply with growing demand from data centres, sustainable fuel production, and industrial electrification.

Recommendation 4

Recognize the offshore wind potential of the Great Lakes by lifting barriers to development in Ontario.

The Great Lakes represent one of Canada's most promising offshore wind opportunities, capable of delivering reliable, affordable, and utility-scale clean electricity to support Ontario's long-term energy security and decarbonization goals. Harnessing this potential will require clear policy direction, targeted research, and proactive alignment with national and provincial offshore renewable energy initiatives.

IMMEDIATE ACTION

The Government of Ontario shows that it is open for business by removing outdated barriers to offshore wind development in the Great Lakes to enable responsible project development.

ONGOING EFFORTS

The Government of Ontario and the federal government collaborate to establish enabling policies and regulatory frameworks aligned with national offshore wind initiatives, leveraging existing research, supply chain studies, and international best practices.

4.3 A Path for Indigenous, Northern, Rural, and Remote Communities

Nearly three-quarters of Canada's approximately 280 remote communities continue to rely on diesel generators for electricity. Many of these communities are located along Canada's coastlines - close to world-class marine renewable energy resources. Transitioning to clean, locally generated energy in these areas offers immense potential to improve energy security, affordability, and sovereignty, while advancing national reconciliation and climate objectives.

However, to achieve these outcomes, communities require:

- Accurate resource assessments and real-world performance data to evaluate the viability of marine technologies under northern and coastal conditions;
- Long-term, stable funding mechanisms that support project planning, ownership, and operations; and
- Streamlined access to programs that reduce administrative burdens and overlapping reporting requirements.

Currently, many federal and provincial funding programs are oversubscribed and fragmented, forcing communities to assemble small grants from multiple sources with inconsistent requirements and timelines. This approach increases project complexity, raises costs, and delays first-of-a-kind projects.

Recommendation 5

Federal leadership to reduce diesel reliance in Indigenous, Northern, rural, and remote communities.

Strong federal leadership is needed to provide the clarity, coordination, and confidence required to transition away from diesel generation. This leadership should integrate improved data and mapping, stable funding, and aligned policies across jurisdictions, enabling community-led clean energy development that reflects local priorities and delivers lasting benefits.

IMMEDIATE ACTION

Natural Resources Canada (NRCan) partners with provinces and territories, Indigenous organizations, and research institutions to enhance national mapping and resource assessments for wind, tidal, wave and river current energy.

ONGOING EFFORTS

- NRCan supports community energy planning and technology assessments to identify viable marine renewable energy opportunities.
- NRCan works with provinces and territories to establish clear diesel-reduction goals, modeled on CleanBC's 80% reduction by 2030.
- Provincial governments align community energy funding programs with diesel-reduction goals to ensure communities can access sufficient capital with minimal administrative burden.

Recommendation 6

Support Indigenous partnerships, equity opportunities, and participation in marine renewable energy development.

Building a sustainable marine renewable energy sector relies on meaningful partnerships with Indigenous Nations and genuine reconciliation efforts. This requires recognizing Indigenous Nations as Rights Holders, and adopting new approaches to project planning, governance, and benefits sharing.

Community-led marine renewable energy projects can help reduce the costs, noise and emissions of diesel generation while improving energy security and unlocking new economic development opportunities. These projects also build local expertise and governance capacity, enabling Indigenous and remote communities to later scale up or partner in larger utility-scale developments.

At utility scale, marine renewables present significant opportunities for Indigenous equity participation and ownership, enabling communities to play a direct role in the clean energy transition. By participating as co-owners or equity partners, Indigenous groups can secure long-term revenue streams, develop skilled employment, and enhance economic self-determination.

IMMEDIATE ACTION

The federal government renews and expands federal support programs such as Wah-ila-toos, whose mission is to fund renewable energy, energy efficiency, and capacity-building projects in Indigenous, rural, and remote communities.

ONGOING EFFORTS

- Provincial governments protect and expand community-scale clean energy programs that enable local ownership and reinvestment.
- Marine Renewables Canada and Indigenous organizations continue collaborating on the development of resources for developers and suppliers with guidance on Indigenous Rights, governance structures, equity structures, partnership models, and cultural alignment in business practices.

4.4 Investment Certainty to Drive Cost Reduction

Marine renewable energy projects are often located in harsh, high-flow marine environments where deployment and operating costs are high. For newer technologies, these costs are challenging to offset as technology evolves, deployment scales remain small, and supply chains mature. However, international experience shows that as deployment increases, costs fall significantly - as they have for onshore renewables.

Learning from Global Cost Reduction Curves

The UK's Offshore Renewable Energy Catapult has shown that tidal and wave energy can follow a cost reduction trajectory similar to offshore wind through incremental innovation, operational experience, and deployment at scale. Modeling for tidal energy suggests that cost reductions can be achieved over a relatively modest level of installed capacity:

- LCOE of USD $260/MWh at 100 MW,
- USD $225/MWh at 200 MW, and
- USD $155/MWh at 1 GW,[56]
- with further reductions to approximately USD $110/MWh by the early 2030s.

Wave energy is expected to follow a similar path, reaching USD $260/MWh by 2025 and USD $200/MWh by 2030.[57]

Offshore Wind Costs and Competitiveness

In Canada, offshore wind currently carries a higher cost than onshore alternatives with greater variability. Aegir Insights modeling for Nova Scotia's Wind Energy Areas indicates LCOEs ranging from USD $65-90/MWh, depending on factors such as wind speed, water depth, distance to port and grid connection, and regulatory costs. Globally, long-term development is driving dramatic cost declines: BloombergNEF reports a global benchmark LCOE of USD $78/MWh, with top-performing projects in Denmark and the Netherlands reaching USD $53-64/MWh (excluding transmission).

56 Offshore Renewable Energy Catapult, 2018. Tidal Stream and Wave Energy Cost Reduction and Industrial Benefit. https://ore.catapult.org.uk/app/uploads/2018/11/Tidal-Stream-and-Wave-Energy-Cost-Reduction-and-Industrial-Benefit.pdf

57 International Renewable Energy Agency (IRENA), 2020a. Innovation Outlook: Ocean energy technologies. https://www.irena.org/publications/2020/Dec/Innovation-Outlook-Ocean-Energy-Technologies

Despite this up-front cost, offshore wind's predictability, large-scale generation potential, and higher capacity factors make it a cost-effective contributor to system stability and decarbonization in the long run. Likewise, this scale and consistency enable strategic benefits - such as producing green hydrogen, powering data centres, and reducing the need for new baseload fossil generation.

The Role of Contracts for Difference (CfDs)

One of the most effective mechanisms to provide investor confidence while reducing long-term costs is the Contract for Difference (CfD) model. Widely adopted in the United Kingdom and European Union, CfDs underpin offshore wind and tidal energy deployment. A Canadian CfD model could help de-risk early marine renewable projects and attract international developers familiar with the model.

Under a CfD, electricity generators and a government-backed counterparty agree on a fixed "strike price" for electricity: generators are compensated when market prices fall below this level and return excess revenues when prices rise above it. This stability lowers the cost of capital and enables more competitive auction bids, benefiting both investors and consumers.

Canadian Approaches to Broadening Access to Capital

Complementary mechanisms are critical to mobilize diverse forms of investment and ensure equitable participation. Programs such as Indigenous loan guarantees and financing through the Canada Infrastructure Bank (CIB) and Canada Growth Fund can provide vital support for both large-scale and community-based projects.

Between 2010 and 2021, LCOE for onshore wind in Canada declined by 73%, driven by economies of scale, improved turbine efficiency, and increased competition. Similar cost reductions are expected for offshore wind as the sector scales and benefits from technological advances and larger turbine sizes.

To accelerate this progress, Canada's Clean Economy Investment Tax Credits (ITCs) - including the Clean Technology ITC and Clean Electricity ITC - are vital in offsetting the high upfront capital costs of offshore wind and other marine renewables. These incentives support not only generation projects but also the transmission and distribution infrastructure required to bring electricity to market.

However, offshore wind projects typically require 7 to 10 years from lease to operation. With more than 30 jurisdictions worldwide competing for clean energy investment, Canada must provide stable and predictable policy signals to remain competitive. Given

the timelines for regulatory development, environmental assessments, and major infrastructure buildout, Nova Scotia's first 5 GW of offshore wind capacity is unlikely to come online in time to fully benefit from current ITC windows, underscoring the need for long-term policy certainty.

Recommendation 7

De-risk private capital investment using international best practices and tailored solutions for the Canadian market.

Canada's renewable energy transition will span decades, and its investment framework should reflect this long-term horizon. Extending the Clean Economy ITCs through to 2040 will give investors, developers, and utilities the confidence needed to advance large-scale offshore and marine renewable energy projects across the country.

As clear paths to market and transmission infrastructure are established, price certainty and access to capital become critical to de-risk private investment - particularly for emerging sectors such as marine renewables - ensuring projects can secure financing at competitive rates.

IMMEDIATE ACTIONS

The federal government extends the Clean Economy ITCs through 2040 to reduce investment risk and align incentives with expected project development timelines.

ONGOING EFFORTS

- Canada Growth Fund and the Canada Infrastructure Bank address demand risk through mechanisms such as guaranteed offtake arrangements and blended finance as regional markets mature.
- Provincial governments adopt regionally appropriate fixed-price Contracts for Difference (CfDs) or feed-in tariffs to stabilize revenues and reduce financing risk for renewable energy projects.

4.5 Enabling Infrastructure & Supply Chain

Leveraging Canada's marine renewable energy resources will require new investment in infrastructure, supply chains, and workforce development. These investments, however, will deliver broad benefits well beyond the marine energy sector. Expanded transmission and interconnection capacity will support the deployment of all renewable resources and enable the growth of electricity-dependent industries. Upgraded ports and marine facilities will reduce economic bottlenecks and strengthen multiple sectors, while the development of marine supply chains and a skilled workforce will create long-term employment opportunities across Canada's blue economy and export markets.

Strategic investment in marine renewable energy infrastructure can therefore deliver lasting economic benefits, supporting innovation, competitiveness, and growth across the Canadian economy for decades to come.

Recommendation 8

Invest in electricity transmission infrastructure and interconnection capacity to reduce costs, attract investment, and preserve affordability for ratepayers.

Electricity transmission infrastructure remains a significant barrier in many coastal and rural regions. Developing marine renewable energy often requires grid upgrades, new cabling, subsea transmission, and energy storage to integrate variable and distributed generation. Because interconnection costs are among the largest components of project development, targeted public investment in enabling infrastructure can reduce project risk, attract substantial private capital, and improve affordability for ratepayers.

Reducing transmission costs also supports Canada's sustainable fuel ambitions. Electricity prices are a key determinant of the economics of green hydrogen and other clean fuels; lowering the cost of renewable power is therefore essential to enabling competitive production and positioning Canada as a global clean energy leader.

IMMEDIATE ACTIONS

Provincial and federal governments proactively invest in transmission and interconnection capacity to connect new renewable projects, support electrification, and accommodate growing generation volumes.

ONGOING EFFORTS

Provincial governments convene industry stakeholders to address procurement and cost-allocation challenges and identify mechanisms to finance subsea transmission and interconnection infrastructure to reduce investment risk and limit impacts on ratepayers.

Marine Facilities and Ports

Marine and port infrastructure are essential to the deployment, operation, and maintenance of tidal and offshore wind projects. A recent study, *Assessment of Atlantic Canadian Ports to Support Offshore Wind Development,* found that at least one primary port - potentially up to three - will be required to meet Atlantic Canada's offshore wind targets, building on ports that are already supporting offshore wind activity in the northeastern United States.[58]

Early, targeted investment can position Canadian ports to capture both domestic and international opportunities in the growing offshore wind market. Conversely, limited port capacity and competition for infrastructure can increase project costs, delay timelines, and create construction bottlenecks. Long-term planning and coordinated investment are therefore critical to support large-scale marine renewable development.

58 Moffatt & Nichol. 2025. Assessment of Atlantic Canadian Ports to Support Offshore Wind Development. https://netzeroatlantic.ca/sites/default/files/2025-08/250813%20Final%20Report%20Assessment%20Atlantic%20Canadian%20Ports%20Support%20Offshore%20Wind%20Development.pdf

Recommendation 9

Make strategic and timely investments in port infrastructure.

Governments should prioritize upgrades to marshalling, staging, and operations and maintenance port infrastructure to support marine renewable energy deployment. Funding should focus on enhancing heavy-lift capacity, quayside space, and onshore assembly areas - yielding long-term benefits for local economies and maritime industries.

IMMEDIATE ACTIONS

Transport Canada builds on existing assessments by undertaking detailed, site-specific studies of Atlantic Canadian ports to identify infrastructure gaps, upgrade requirements, and delivery timelines.

ONGOING EFFORTS

- The federal government coordinates with industry to align port upgrades with project timelines and supply chain development.
- Federal and provincial governments support ports that are well positioned to facilitate marine renewable energy development by investing in equipment such as cranes, heavy-lift assets, and storage facilities to support offshore construction and O&M.

Recommendation 10

Develop a comprehensive supply chain development strategy.

A strong domestic supply chain and skilled workforce are critical to realizing Canada's marine renewable energy potential. Building the necessary infrastructure, expertise, and capacity will take time - and requires a clear, predictable project development outlook to justify long-term investment.

Large-scale development will demand new vessels, fabrication facilities, and skilled trades, as well as professional services in engineering, finance, law, and environmental management. Early planning and targeted investment in supply chain readiness will ensure that Canadian businesses - particularly those in rural and coastal regions - capture the economic benefits of this growing sector.

For example, while Nova Scotia's target of 5 GW of offshore wind provides a strong foundation for regional growth, major manufacturing investments (such as turbine blade or tower fabrication) typically require a consistent project development rate of 1-2 GW per year to be commercially viable. Strategic coordination across provinces will therefore be essential to sustain supply chain growth and attract private investment.

IMMEDIATE ACTIONS

Provincial governments work with Marine Renewables Canada, municipalities, Indigenous organizations, and economic development agencies to deliver educational and readiness programs for Canadian businesses.

ONGOING EFFORTS

- Provincial governments collaborate with trade unions, professional associations, and post-secondary institutions to design specialized training, apprenticeships, and certification programs aligned with industry needs.
- Economic development agencies support early-stage investment in professional and technical services that leverage Canada's existing strengths and lower entry barriers for local firms.
- Provincial governments develop a phased and realistic supply chain roadmap to guide infrastructure, manufacturing, and workforce investments based on projected industry growth.

4.6 Research and Development

With sustained and coordinated innovation, marine renewable energy can follow a cost-reduction trajectory similar to offshore wind in Europe and onshore wind and solar in Canada. Achieving these reductions requires focused research, development, and demonstration (RD&D), combined with commercialization support that accelerates learning, deployment, and investment.

Demonstrating multiple devices in arrays is particularly important for tidal, wave, and river current energy. These projects generate the data, operational experience, and investor confidence needed to drive down costs. Governments play a critical role by aligning funding programs, regulatory pathways, and risk management frameworks with each stage of technology maturity.

Financing the Path from Innovation to Deployment

The high upfront capital requirements of tidal, wave, and river current projects, combined with limited early-stage deployment, create barriers to private financing. To bridge this gap, targeted support for RD&D is essential.[59] Like other clean technologies, marine renewables require stage-specific financing mechanisms - from grants and capital support in the RD&D phase, to stage-gate funding and revenue support mechanisms in later stages.[60]

The transition from demonstration to commercial deployment - often referred to as the *valley of death* - is a critical juncture for innovative technologies. Government co-funding and policy signals can help overcome this hurdle. For example, in Canada, a combination of federal grants and provincial revenue support in Nova Scotia has de-risked tidal projects, attracting private sector participation. Continued, coordinated investment is necessary to ensure these early successes evolve into a viable industry.

59 International Renewable Energy Agency (IRENA), 2020a. Innovation Outlook: Ocean energy technologies. https://www.irena.org/publications/2020/Dec/Innovation-Outlook-Ocean-Energy-Technologies

60 International Renewable Energy Agency (IRENA), 2020a.

Learning from Global Leaders

Several countries have already established dedicated programs to accelerate marine renewable energy innovation. The U.S. Department of Energy's Water Power Technologies Office supports multiple R&D and commercialization initiatives,[61] while the UK's Offshore Renewable Energy Catapult, Energy Technologies Institute, and Carbon Trust[62] have each managed structured funding programs that bridge research, demonstration, and market adoption.

Canada, by contrast, has not yet established a dedicated marine renewable energy funding program. As a result, projects are often evaluated against criteria suited to more mature renewable technologies like onshore wind and solar. A targeted funding approach - recognizing the unique characteristics, scale, and timelines of marine energy - would enable faster cost reductions and bring Canadian technologies to market readiness sooner.

Recommendation 11

Provide targeted support for marine renewable energy research, development, and demonstration (RD&D).

To accelerate commercialization and scale, governments should implement tailored financing mechanisms that reflect the capital intensity and innovation profile of marine renewables. NRCan is well positioned to lead this work across federal departments and agencies, positioning marine renewable energy as a strategic pillar of Canada's clean energy transition.

Much of the RD&D required can take place at test and demonstration facilities, such as FORCE, the Canadian Hydrokinetic Turbine Test Centre, and Blind Channel Tidal Energy Demonstration Centre. These are essential incubators for technology and project development, applied research, environmental monitoring and stakeholder engagement. Supporting these facilities is crucial as tidal, wave, and river current technologies progress toward commercialization.

61 US Department of Energy Water Power Technologies Office. "Water Power Funding Opportunities." https://www.energy.gov/eere/water/water-power-funding-opportunities

62 Offshore Renewable Energy Catapult: https://ore.catapult.org.uk; Energy Technologies Institute: https://www.eti.co.uk/programmes/marine; The Carbon Trust: https://www.carbontrust.com/resources/marine-energy

IMMEDIATE ACTIONS

The federal government ensures marine renewable energy is eligible within programs targeting emissions reduction, ocean technology, and renewable energy innovation, with scale-appropriate thresholds and funding criteria reflecting its distinct capital needs and development characteristics.

ONGOING EFFORTS

- NRCan leads coordination across federal departments and agencies to align funding and regulatory frameworks across the full innovation continuum - from early demonstration to commercial deployment.
- The federal government establishes dedicated funding for marine renewable energy innovation and expands capital cost support for key project needs, including instrumentation, grid connections, environmental monitoring tools, and support vessels.
- Federal and provincial regulators enable Canadian test centres to operate as “regulatory sandboxes” to simplify permitting pathways for pre-commercial and experimental projects.
- The federal government supports expanded baseline data collection in priority regions and creates open-access databases to improve transparency and accessibility for decision-makers, Rights Holders, researchers, and industry.
- Federal and provincial governments and test centres coordinate streamlined data-sharing mechanisms to improve efficiency and consistency in regulatory and planning processes.

4.7 Responsible Development

A clear, predictable, and coordinated regulatory framework is essential to unlock Canada's marine renewable energy potential. Developers and investors need transparent processes, defined timelines, and clarity on permitting requirements to plan effectively and access financing. Regulatory uncertainty is one of the greatest risks for the sector - delays or inconsistent application of rules can undermine investment confidence and disrupt supply chains.

A comprehensive regulatory roadmap - detailing permitting pathways, departmental responsibilities, and inter-jurisdictional coordination - would ensure developers have the information needed to navigate approvals efficiently. It would also strengthen investor confidence by demonstrating that Canada's permitting system can deliver projects on time while maintaining high environmental and social standards.

Progress Toward a Modernized Framework

Recent steps have laid important groundwork. Amendments to the *Accord Acts* have established a regulatory framework for offshore renewable energy on federal seabeds in Atlantic Canada, while new regulations under the *Canadian Energy Regulator Act* provide clarity for offshore wind. Similarly, the Task Force on Sustainable Tidal Energy Development in the Bay of Fundy has established a revised, staged permitting approach under the *Fisheries Act* and greater transparency in risk assessment.

These initiatives enhance predictability, but further clarity is still needed - particularly around how the *Impact Assessment Act (IAA)* will apply to marine renewable energy projects. Consistent interpretation and streamlined coordination across federal and provincial jurisdictions will be crucial to reduce redundancy, delays, and uncertainty.

Toward Streamlined, Single-Window Approvals

Bill C-5 introduces a positive shift by reframing project approvals around "how to build projects in the national interest," rather than "if they should proceed." While most marine renewable energy projects may not meet the "national interest" threshold, the concept of a single-window permitting process - such as through the Major Projects Office - could be broadly applied to renewable energy projects to reduce administrative burden.

Provinces are already adopting similar models. For example, British Columbia has expanded the authority of the BC Energy Regulator to act as a single-window permitting agency for renewable projects and streamlined provincial environmental assessments. Replicating this approach nationwide would simplify Canada's regulatory landscape while maintaining rigorous environmental safeguards and upholding Indigenous rights.

Recommendation 12

Implement a single-window approach to renewable energy project approvals.

All levels of government should adopt a coordinated approach to project approvals that consolidates regulatory processes, reduces duplication, and provides clear guidance to proponents.

IMMEDIATE ACTIONS

The federal government advances the implementation of the Major Projects Office and broader regulatory reform to streamline permitting and achieve a single-window approach for all renewable projects.

ONGOING EFFORTS

- Provinces develop similar single-window permitting systems, ensuring streamlined approvals while maintaining environmental stewardship and respect for Indigenous rights.
- All levels of government ensure regulatory requirements are appropriately scaled to the stage of technology (e.g., demonstration versus commercial deployment).
- Federal and provincial governments tailor regulatory approaches to reflect the lower ecological footprint of kinetic technologies such as tidal and wave energy, while mitigating potential impacts and addressing remaining uncertainties through adaptive management.

Supporting Coexistence with Coastal Communities and Other Ocean Users

Marine renewable energy development does not occur in isolation. Projects are situated within living communities, working waterfronts, and culturally significant marine environments, and must coexist with other ocean users such as fisheries, aquaculture, shipping, tourism, recreation, and offshore industries. Responsible development requires transparent, evidence-based decision-making that protects ecosystems, respects Indigenous rights, and enables equitable coexistence among all users of ocean space.

When developed responsibly, marine renewable energy can deliver lasting social, cultural, and economic benefits for Indigenous, rural, and coastal communities across Canada. Aligning project development with community priorities and enabling meaningful participation can advance reconciliation, create high-quality jobs, and strengthen coastal economies - while supporting Canada's broader clean energy transition.

Communities closest to project sites often experience the greatest environmental and social impacts. Ensuring these communities directly benefit from development is therefore essential to long-term success. Tangible benefits such as local employment, skills training, supply chain participation, and revenue sharing can enhance regional resilience and build enduring local support.

Strong partnerships with Indigenous Nations are fundamental to this approach. Reconciliation requires recognizing Indigenous Peoples as Rights Holders and integrating Indigenous knowledge, priorities, and economic objectives into project planning, governance, and benefit-sharing. Respect for constitutional and treaty rights, alongside the principles of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), ensures Indigenous communities have a meaningful role in decisions affecting their lands, waters, and cultures.

Recommendation 13

Promote coexistence with other ocean users and facilitate community involvement in marine renewable energy development.

As marine renewable capacity expands, clear and consistent processes for coexistence will be essential to building trust and minimizing conflict. Early engagement, transparent communication, and equitable benefit-sharing are critical to successful project delivery.

IMMEDIATE ACTIONS

- Federal, provincial, and territorial governments collaborate on marine spatial planning and comprehensive resource assessments to identify high-potential sites that balance development with existing and traditional ocean uses.
- Industry works in partnership with Indigenous communities to integrate Indigenous knowledge, priorities, and economic goals into project development.

ONGOING EFFORTS

- NRCan works across sectors and levels of government to establish coexistence frameworks with fisheries, aquaculture, shipping, and other ocean users.
- Provincial and territorial governments reinvest revenues from marine renewable development into local coastal and rural infrastructure, including housing, ports, and community services.
- Federal, provincial, and territorial governments provide sustained funding and capacity-building support to enable Indigenous organizations, businesses, and economic development agencies to participate in marine renewable energy planning and development.

4.8 International Opportunities for Canadian Businesses, Researchers, and Supply Chains

International collaboration, business development, and the adoption of global best practices are critical to accelerating the growth of Canada's marine renewable energy sector. As countries around the world advance offshore wind, tidal, river current, and wave technologies, Canada can learn from their experiences - adapting proven regulatory, technical, and policy frameworks to its own context while avoiding common pitfalls.

Global engagement also offers opportunities for Canadian businesses and researchers to participate in international projects, attract investment, and form strategic partnerships that drive innovation, competitiveness, and supply chain growth. By staying actively connected to international initiatives, Canada can strengthen its leadership in sustainable ocean industries and position itself as a key contributor to the global energy transition.

Recommendation 14

Grow Canada's marine renewable energy sector by fostering and supporting international collaboration.

IMMEDIATE ACTIONS

Federal and provincial governments continue supporting Marine Renewables Canada's efforts to engage Canadian companies, researchers, and supply chains in international marine renewable energy projects and markets.

ONGOING EFFORTS

- Marine Renewables Canada continues to support NRCan's participation in the International Renewable Energy Agency (IRENA) Collaborative Framework on Ocean Energy/Offshore Renewables and the International Energy Agency's Ocean Energy Systems (IEA-OES).
- NRCan establishes a mechanism for continuous monitoring and adoption of international best practices, ensuring Canada's regulatory, environmental, and technical standards remain globally competitive.
- Marine Renewables Canada engages with the UN Sustainable Blue Finance Initiative to inform global investment frameworks for the marine renewable energy sector.
- Global Affairs Canada collaborates with international development banks to match Canadian technologies and expertise with clean energy needs in developing regions.

Conclusion

Marine renewable energy represents one of Canada's most compelling and underutilized strategic advantages. With abundant offshore winds, powerful tides, dynamic waves, and the longest coastline in the world, Canada is uniquely positioned to harness marine resources to meet rising electricity demand, strengthen energy security, and advance its net-zero commitments. When developed responsibly, marine renewables can deliver reliable, predictable clean power while supporting reconciliation, regional economic development, and long-term competitiveness.

As outlined in this Vision, marine renewable energy offers benefits that extend well beyond electricity generation. It can reduce reliance on diesel in remote and Indigenous communities, improve grid resilience through predictable and complementary generation profiles, enable the growth of new electricity-intensive industries such as green fuels and data centres, and create durable employment across ports, shipyards, fabrication facilities, and marine services. These outcomes contribute directly to affordability, resilience, and sovereignty in Canada's energy system.

Realizing this potential will require deliberate, coordinated action. Clear policy direction, dependable offtake pathways, strategic infrastructure investment, streamlined regulatory processes, targeted innovation support, and meaningful Indigenous partnerships are all essential. The 14 actions identified in this Vision provide a practical and achievable roadmap to move from early deployment to scale - ensuring that Canada remains competitive as global investment in marine renewables accelerates.

Marine Renewables Canada offers this Vision as a guiding reference for federal and provincial governments, Indigenous Nations, industry, investors, suppliers, and communities. It is intended to inform decision-making, align priorities, and provide clarity and confidence over the coming decades. By using this Vision to guide policy, planning, and investment, Canada can unlock the full value of its marine resources.

With sustained leadership and collaboration, marine renewable energy can become a cornerstone of Canada's clean energy transition, powering communities, strengthening the economy, and positioning Canada as a global clean energy superpower for generations to come.

Supportive Statements

"The need for predictable, reliable renewable energy to meet rising demand and decarbonization objectives has never been greater. Canada's abundant marine renewable resources from coast to coast to coast hold a transformative opportunity to develop the grid of the future. Sustainably harvesting these resources requires a coordinated approach across communities, the private sector, government, and academia – which is exactly why PRIMED supports Marine Renewables Canada's sector vision."

Dr. Brad Buckham,
Co-Director of Pacific Regional Institute of Marine Energy Discovery (PRIMED)

"Developing marine renewable energy in Canada represents a significant economic, social and environmental opportunity. DP Energy is proud to be part of this effort, working alongside industry, government and communities to help establish Canada as a global leader in next-generation, clean and sustainable power generation. With clear policy frameworks and strong collaboration, marine renewables can deliver lasting benefits for the economy, the environment, coastal communities and wider Canadian society."

Simon DePietro,
CEO, DP Energy

"The Atlantic Canada Bulk Terminal supports Marine Renewables Canada's 2050 Sector Vision. The vision provides informed and meaningful insight into the future of Canada's marine renewable energy mix as we move toward a cleaner, more resilient energy future. The ACBT is committed to supporting this vision and helping Canada reach these goals and ensuring our coastal communities continue to thrive in a low-carbon economy."

Richard Morykot,
VP Strategic Development & Execution, Atlantic Canada Bulk Terminal (ACBT)

"You can set your watch by it: four times a day, tidal energy delivers clean, predictable power at scale. With nearly two decades of operating experience in the world's highest tides at FORCE, rigorous environmental monitoring, and steadily advancing technology performance, Canada has built a credible foundation for global leadership in tidal power by 2050. This Marine Renewable Energy Sector Vision 2050 provides a roadmap for tidal energy to scale responsibly through clear policy direction, sustained infrastructure investment, and meaningful partnership with Indigenous Rights Holders - delivering firm, clean power and positioning Canada as one of the world's most compelling markets for renewable energy investment."

Lindsay Bennett,
Executive Director, Fundy Ocean Research Centre for Energy (FORCE)

"Clean energy is often talked about in abstract terms, but it is built in real places and uses the land, air, and water that communities depend on, with effects felt long after construction ends. From our experience, renewable energy projects done well can create jobs, support local economies, and reflect community priorities. That is why the Marine Renewable Energy Sector Vision 2050 matters. By setting clear direction and pathways for how this sector can grow, the Vision helps establish the conditions for marine renewables to move forward in ways that include Indigenous participation and ownership, and that can support coastal communities for generations to come."

Glooscap Energy

marine
renewables
canada