Roadmap and Action Plan for Integrating Offshore Wind into Atlantic Canada's Grid

July 2026 Report

Stantec

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Atlantic Canada Offshore Wind Grid Integration and Transmission Study

ACKNOWLEDGEMENTS

The Atlantic Canada Offshore Wind Grid Integration and Transmission Study is a research project developed and led by Net Zero Atlantic. This research is conducted by Stantec in partnership with Energy and Environmental Economics (E3) and is supported by funding from Natural Resources Canada's Office of Energy Research and Development through its Energy Innovation Program.

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Letter from Net Zero Atlantic

Net Zero Atlantic is pleased to share the findings of the Atlantic Canada Offshore Wind Grid Integration and Transmission Study.

This report helps to identify key actions and recommendations to support the development of offshore wind and its associated transmission infrastructure in Atlantic Canada and outlines a multi-year pathway to support both the first offshore wind project, as well as growth and development of the industry over time.

Support for this work was provided by Natural Resources Canada's Office of Energy Research and Development through the Energy Innovation Program.

We thank consultants Stantec and Energy and Environmental Economics (E3) for their contributions throughout the study. Net Zero Atlantic is also greatly appreciative of the guidance and input provided by provincial governments and electrical utility representatives who participated on the project management and technical committees. We would also like to thank Dr. Lukas Swan of Charged Engineering for his valuable input and review of reports throughout the study.

The study has produced several key deliverables, including the Market Opportunities for Offshore Wind in the Atlantic Provinces report, the Actual Deployment Potential of Atlantic Canada Offshore Wind report, the Visual Interface Tool and associated database, the Evaluating the Electric Grid Impacts of Offshore Wind in the Atlantic Provinces report, the Preliminary Transmission Expansion Needs Analysis to Integrate Offshore Wind in Atlantic Canada report, and several other supporting reports. These resources can be accessed and downloaded through Net Zero Atlantic's website.

Thank you for your interest and engagement throughout this study. We greatly appreciate your support and look forward to continuing the conversation around the opportunities, challenges, and findings identified through this work.

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Revision Record

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While provincial government and utility representatives have participated in this project through the Project Management Committee and Technical Committee, this participation does not constitute a commitment by any individual province or utility to implement the Roadmap and Action Plan. Any decisions with respect to offshore wind development require further jurisdiction-specific analysis by individual provinces and utilities, including confirmation of regulatory requirements, policy direction, and system impacts, which may vary from across jurisdictions.

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List of Acronyms

Acronym	Definition
AC	Alternating Current
DC	Direct Current
HVDC	High-Voltage Direct Current
MOU	Memorandum of Understanding
NZA	Net Zero Atlantic
REOI	Request for Expression of Interest
RFI	Request for Information

Glossary

Term	Definition
Project Management Committee	Provincial government representatives from the Atlantic provinces that provide strategic oversight for the study.
Technical Committee	Utility representatives from from the Maritime Provinces and a system operator with expertise relevant to the project and transmission planning. The Technical Committee also acknowledges the support of Newfoundland and Labrador Hydro which was provided with committee materials and offered feedback.

1 Introduction

This Roadmap and Action Plan is a key deliverable associated with the *Atlantic Canada Offshore Wind Grid Integration and Transmission Study*[1] led by Net Zero Atlantic (NZA) to identify the next steps for the development and integration of offshore wind and associated transmission infrastructure in Atlantic Canada. This report was developed by Stantec, and is informed by engagement with the project sponsor, NZA, additional input from subcontractor E3 based on the modeling they performed, and the technical and project management committees supporting this work. The overall objective of the Atlantic Canada Offshore Wind Grid Integration and Transmission Study is to develop a collection of reports evaluating the technical and market considerations associated with integrating over 1GW of offshore wind into Atlantic Canada's grid.

The development of offshore wind in Atlantic Canada presents a significant opportunity to foster an emerging sector capable of delivering clean energy and economic benefits to the region. Since 2024, steady progress has been made in developing the frameworks and policy structures to support the offshore wind industry. The July 2025 announcement of the first Governments Designated Offshore Wind Energy Areas (French Bank, Middle Bank, Sable Island Bank, Sydney Bight) in Nova Scotia[2] was a critical first step to identifying where the first offshore wind projects could be located.

Outside of the *Atlantic Canada Offshore Wind Grid Integration and Transmission Study* there has been significant work in the region and other organizations and frameworks that have been created that are contributing to the future development of offshore wind. This roadmap acknowledges an inexhaustive list of organizations, regulators or frameworks in place that have already established contributing mandates that could support offshore wind development:

- The *Canada-Nova Scotia Offshore Energy Regulatory* and the *Canada-Newfoundland and Labrador Offshore Energy Regulator* are established to provide regulatory direction to all offshore energy development in each of the respective provinces.
- The *Maine & Atlantic Technical Planning Committee (MATPC)* is an existing and currently functioning technical committee that meets to discuss items of common technical interest and practice.
- *Marine Renewables Canada* has issued multiple reports that have assisted in informing the current state or next steps required for certain elements of offshore wind development and some actions within this report are informed by publications from Marine Renewables Canada.
- The *Northeast Grid Planning Forum* is a cross-border non-partisan advocating for interregional planning and market alignment for investing in clean electricity infrastructure across the Canadian

[1] Net Zero Atlantic, "Atlantic Canada Offshore Wind Grid Integration and Transmission Study," 2026. Atlantic Canada Offshore Wind Grid Integration and Transmission Study | Net Zero Atlantic.
[2] CNSOER, "Governments Designated Offshore Wind Energy Areas," July 2025. Governments Designated Offshore Wind Energy Areas | CNSOER.

and American Northeast. Their publications have informed initial steps and requirements for development of infrastructure that could support offshore wind.

- The *Atlantic Energy Collective* is a pan-Atlantic initiative that brings together governments, utilities, industry participants, and other stakeholders to support dialogue on the future of the Atlantic Canadian energy system. Through its analytical work, the Collective has worked to advance shared understanding of regional electricity system need, interprovincial coordination challenges, and transmission investment considerations relevant to offshore wind development.

There is value in considering how offshore wind deployment scenarios and associated transmission system impacts may unfold across the Atlantic region over time. Building on the techno-economic assessment completed in earlier phases of the *Atlantic Canada Offshore Wind Grid Integration and Transmission Study*, this Roadmap and Action Plan translates those findings into a set of sequenced recommendations and actions to support the continued integration of offshore wind in the region.

1.1 Roadmap and Action Plan Objectives and Scope

The purpose of this Roadmap and Action Plan is to provide forward-looking recommendations and actions to help support the development of offshore wind and associated transmission in Atlantic Canada. It is intended to outline a multi-year pathway that supports both the initiation of a first offshore wind project and the conditions required for subsequent development over time. It identifies priority sectors and action areas that influence offshore integration and delivery, and frames how coordination and sequencing across these areas might evolve as development progresses. In doing so, this report provides utilities, developers, federal and provincial governments, and other stakeholders with a structured set of considerations and recommendations to inform planning, coordination, and decision-making related to offshore wind and associated transmission development.

The Roadmap and Action Plan draws on the full set of outputs from earlier phases of the Atlantic Canada Offshore Wind Grid Integration and Transmission Study, including resource planning portfolios, market opportunity analysis, and assessments of grid integration opportunities and challenges. These study findings are complemented by the project team's global and regional experience, jurisdictional review, and engagement with technical and project management committees, to frame a set of actionable recommendations relevant to the Atlantic Canadian context.

Recommendations are presented within a regional lens, recognizing that offshore wind development and integration will require coordination across jurisdictions while also responding to project-specific roles, responsibilities, and system conditions. Actions identified in this Roadmap and Action Plan are intended to apply to the Atlantic Canadian region, but specific actions may be attributable to individual provinces, utilities, or critical stakeholders. The actions also highlight key prerequisites, dependencies, and sequencing considerations to support an orderly progression from early project development through to a more mature offshore wind sector.

1.2 Timelines and Stakeholders

The timelines laid out in this report help sequence and prioritize key regional milestones to achieve completion of an initial project, accelerate subsequent project build-out, and finally to facilitate a robust offshore wind industry in Atlantic Canada.

This document relies on the following definitions:

- **Short-Term:** An activity that immediately and directly contributes to the successful planning and development of Atlantic Canada's first offshore wind project.
- **Medium-Term**: An action or recommendation that supports an expansion or proliferation of those activities identified in the short-term. Typically, successful completion of the short-term activities is a prerequisite for completion of actions in the medium-term.
- **Long-Term:** These actions are aspirational or dependent on broader changes and are contingent on the successful completion of short-term and medium-term actions. Completion of these activities will support a robust and enduring offshore wind sector in Atlantic Canada.

This timeline approach allows each province to tailor the Roadmap and Action Plan to its own context and adjust as circumstances evolve, while providing flexibility to help manage risk of misalignment with other provincial or federal schedules/publications. It should be noted that each province will be unique in its current position to facilitate offshore wind development, and therefore some recommendations may have more applicability to one project compared to another. By defining the timelines through the lens of a project's development followed by a portfolio of projects, it allows each province to assess the recommendations and determine if they may have been completed to facilitate the short-term, medium-term, or long-term activities if a project or portfolio of projects is initiated in any province.

2 Areas of Significant Importance

The Roadmap and Action Plan is structured around a set of priority areas that influence how offshore wind development and grid integration may progress in Atlantic Canada over time. These areas reflect where early coordination, sequencing of actions, and sustained attention are likely to have the greatest impact on project feasibility, system integration and longer-term industry developments.

Within the techno-economic scope of the *Atlantic Canada Offshore Wind Transmission and Integration Study*, four core areas of significant focus are outlined as follows:

- Policy
- Interregional Collaboration
- Market and Commercial Development
- Transmission System Planning

Several additional sectors are also critical to the development of an offshore wind industry in Atlantic Canada, and have been examined in detail through separate, industry-relevant studies and analysis. These include work undertaken as part of Marine Renewables Canada's *Atlantic Wind Energy Supply Chain*

Assessment[3] as well as NZA's *Assessment of Canadian Ports to Support Offshore Wind Development*[4] and *Offshore Wind R&D Priorities Roadmap*[5]. This document focuses on their impacts or tie-ins to the outputs of the *Atlantic Canada Offshore Wind Grid Integration and Transmission Study*. These action categories are:

- Supply Chain
- Ports
- Workforce
- Innovation, Research & Development

The subsequent Roadmap and Action Plan outlines several recommendations and next steps for each of the action categories identified above. These are summarized in Figure 1 below.

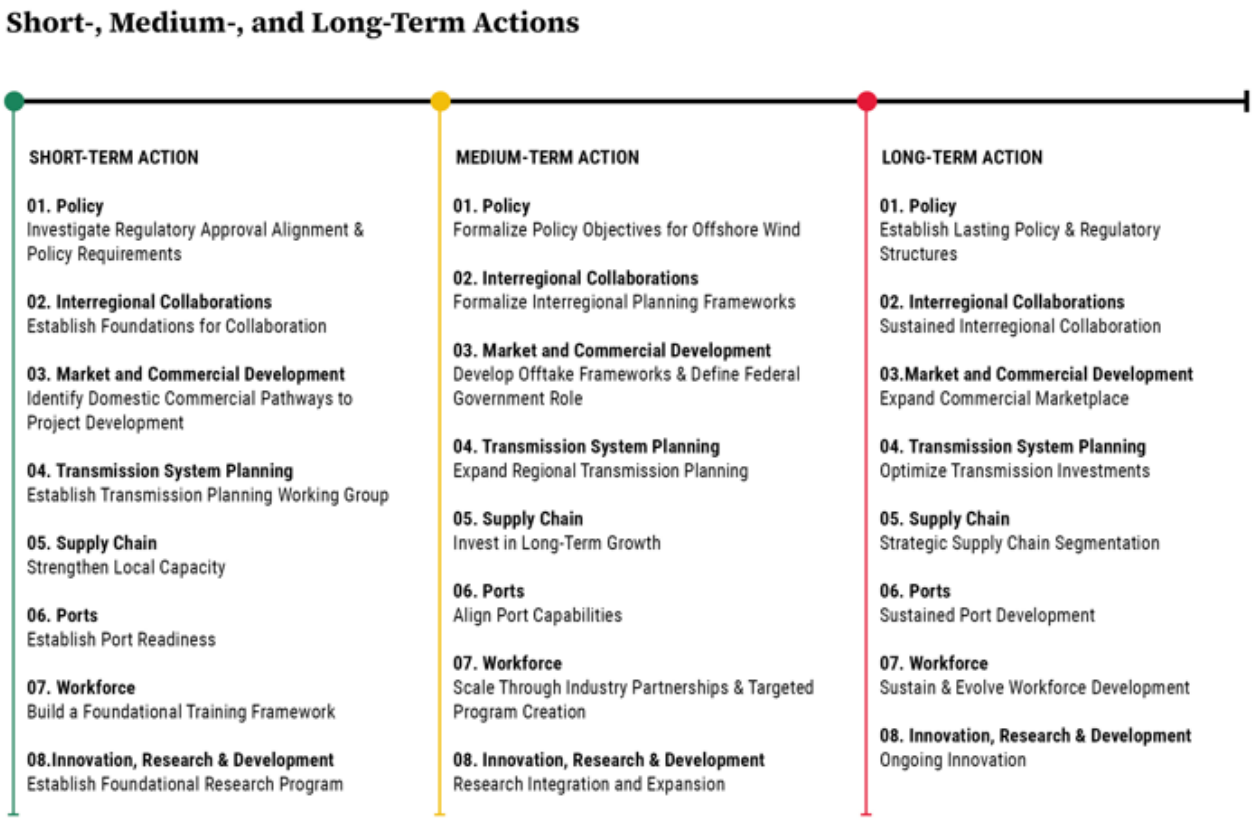

Figure 1: Summary of Short-, Medium-, and Long-Term Recommendations

[3] Marine Renewables Canada, "Atlantic Wind Energy Supply Chain Assessment Final Report," April 2025. Atlantic Wind Energy Supply Chain Assessment & Pathways for Supply Chain Development.
[4] Net Zero Atlantic, "Assessment of Atlantic Canadian Ports to Support Offshore Wind Development," August 2025. Assessment of Atlantic Canadian Ports to Support Offshore Wind Development.
[5] Net Zero Atlantic, "Offshore Wind R&D Priorities Roadmap," August 2025. Offshore Wind R&D Priorities Roadmap.

2.1 Policy

Offshore wind development in Atlantic Canada will be shaped by policy and regulatory conditions that span multiple jurisdictions, authorities, and legislative mandates. Given the capital intensity, long development timelines, and regional electricity system implications of offshore wind projects, alignment across provincial and federal regulatory regimes will be a critical enabling factor. Policy and regulatory clarity will influence investment confidence, project sequencing, transmission planning, and stakeholder coordination, particularly where offshore and onshore decision-making processes intersect. Without clear and coordinated policy direction, offshore wind development could risk proceeding in a fragmented manner that could increase regulatory complexity and impact the ability to plan infrastructure efficiently at a regional or provincial scale.

At present, Atlantic Canada benefits from its experience in coordinating across provincial boundaries in the electricity sector, supported by existing interties and operational coordination between provincial utilities for reliability management, contingency support, and interprovincial electricity interchanges. This foundation is complemented by evolving institutional frameworks for offshore energy oversight within Atlantic provinces including the establishment of the Canada-Nova Scotia Offshore Energy Regulatory and the Canada-Newfoundland and Labrador Offshore Energy Regulator, expanding existing offshore petroleum regimes to encompass renewable energy development. Furthermore, recent policy actions, most notably Nova Scotia's Government-Designated Offshore Wind Energy Areas, signal increasing regulatory clarity around where and how offshore wind development may proceed. Importantly, while Canada's Atlantic provinces are pursuing different energy transition pathways—reflecting distinct resource and policy contexts—they share broadly aligned decarbonization ambitions. Provinces also share overarching decarbonization objectives and face similar energy transition pressures, even as specific priorities and pathways vary, creating a practical basis for deeper collaboration in addressing shared regional and provincial challenges and opportunities.

Increased policy coordination offers opportunities to streamline offshore wind development as the industry scales and activity spans across jurisdictions. Offshore wind projects will need to navigate multiple approval processes across onshore, offshore, provincial, and federal authorities—each with distinct requirements, timelines, and evidentiary standards. Coordinated approaches to permitting, cost allocation, and infrastructure planning could improve alignment across onshore and offshore approval processes, increase efficiency, and provide greater predictability for developers, utilities, and affected communities. As offshore wind projects move beyond initial construction and begin to interact more directly with provincial and regional transmission systems and serve emerging domestic or export markets, evolving policy frameworks may support more integrated decision-making. Over time, such coordination may help sustain development momentum while supporting broader regional and provincial energy, economic, and decarbonization objectives.

A sequenced approach across the short-, medium-, and long-term can help manage these dynamics and support efficient progression of offshore wind development in Atlantic Canada. Early policy efforts can focus on improving transparency, coordination, and shared understanding across jurisdictions as first projects advance. Over time, policy frameworks can evolve to provide greater durability, consistency, and predictability as multiple projects and transmission investments proceed in parallel. In the longer term, sustained policy alignment can support offshore wind as an integrated component of regional and provincial

electricity systems, enabling ongoing development, interprovincial coordination, and adaptation to changing market and system conditions. Framed in this way, policy plays a central role in linking near-term project delivery with the longer-term maturation of an offshore wind industry in Atlantic Canada.

A summary of the short-, medium-, and long-term policy recommendations is outlined in Figure 2 below.

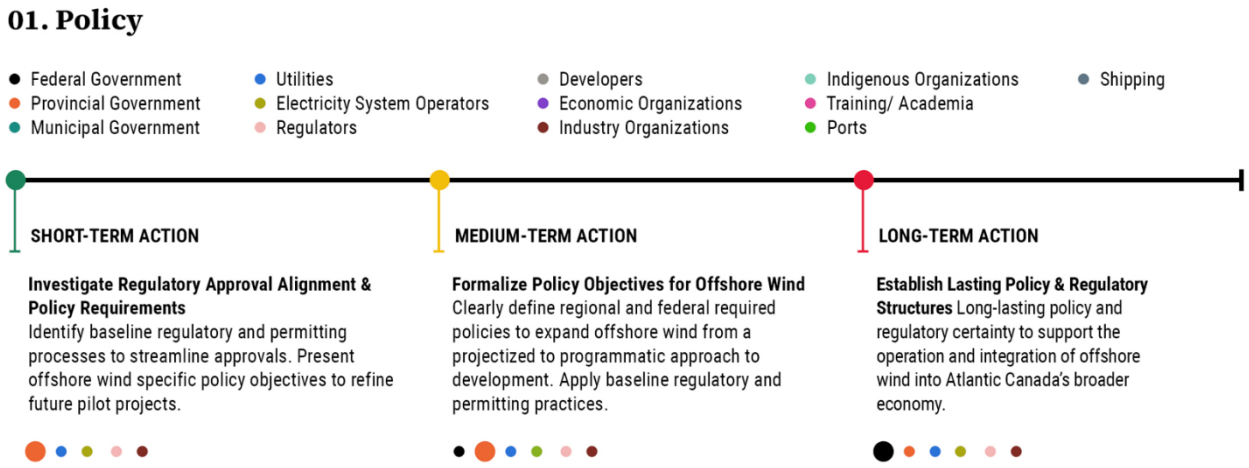

Figure 2: Summary of Short-, Medium-, and Long-Term Policy Recommendations

2.1.1 Short-Term: Investigate Regulatory Approval Alignment & Policy Requirements

Offshore wind and associated transmission development in Atlantic Canada will require projects to advance through multiple, often parallel permitting and stakeholder (municipal, Indigenous, environmental) consultation processes across both onshore and offshore jurisdictions, depending on project location. These processes involve different regulators, legislative requirements, consultation obligations, and approval timelines. As projects scale and complexity increases, procedural alignment across jurisdictions may help reduce red tape through consistent evidence requirements, coordination of timelines, and approvals.

A regionally coordinated permitting and consultation process could provide a structured approach to improving cross-jurisdictional alignment without displacing existing regulatory authority. The process could be used to identify key approval milestones, evidence dependencies, and consultation touchpoints across jurisdictions, and clarify how these processes connect and sequence over time. As offshore wind development progresses, the process can be updated to reflect evolving regulatory requirements, infrastructure needs, and stakeholder input.

In addition, early consideration of cross-jurisdictional cost allocation and cost recovery issues could help reduce investment uncertainty and quantification of impacts to ratepayers and customers where a first project, and future projects in Atlantic Canada, would be located. Identifying the preliminary benefits that may arise from an offshore wind project and how cost considerations could be framed is an important first step to support portfolio development after the first project is initiated in the region. The assessment of cost

allocation benefits and impacts could be applied to the costing of the associated transmission infrastructure and utility upgrades required to connect future projects.

The following steps are proposed to advance this coordinated process in the short term:

1. **Map Regulatory and Permitting Pathways:** Develop a consolidated overview of the- key offshore, onshore, interprovincial, and federal permitting and approval processes relevant to offshore wind generation and its associated infrastructure. This step could help identify responsible authorities, major decisions points, indicative timelines, and areas where permitting processes intersect or rely on one another. The mapping exercise could be used to establish a shared understanding of how approvals progress across jurisdictions and where coordination is most critical.
2. **Identify Opportunities for Procedural Alignment:** Assess where approval timelines, evidence requirements, and review processes can be better sequenced or coordinated across jurisdictions to avoid delays or redundancies. Particular attention could be given to instances where the same studies, information, or consultations may support multiple regulatory decisions. This step is intended to improve efficiency and reduce the risk of duplicative review, rework, or late-stage misalignment, while fully respecting jurisdiction-specific mandates and approval authorities.
3. **Coordinate Consultation Planning:** Develop guidance to improve alignment of stakeholder engagement activities, where appropriate, associated with offshore wind and transmission development. This work could focus on coordinating the timing and scope of engagement, improving transparency and consistency in information sharing, and optimizing consultation across the development cycle. Such an exercise might be tailored towards supporting more effective and respectful engagement practices, while maintaining existing consultation obligations within each jurisdiction. A critical step here could be to assess how consultation requirements have changed over time to ensure coordination is up to date and considers previous consultation practices.
4. **Identify Preliminary Benefits and Cost Allocation Metrics:** During the pre-development, permitting and construction phases of a first project, the region may assess and document an initial set of potential benefit categories and cost considerations that may need to be formalized for future projects. These might include reliability and infrastructure-related considerations, implications for transmission cost allocation approaches, and tariff and legislative changes that may be required, recognizing that such matters are advanced within established regulatory frameworks.

At the regional level, these actions could be advanced collaboratively through joint leadership from provincial energy departments and participation from offshore regulators, provincial and federal permitting authorities, and electricity regulators as appropriate. System operators, utilities, and project proponents could contribute technical input related to infrastructure sequencing and interconnection requirements, while Indigenous and key stakeholders would ideally be engaged early to inform consultation alignment approaches. The Roadmap and Action Plan should be positioned as a coordination and transparency tool, not a substitute for existing regulatory processes.

2.1.2 Medium-Term: Validate Policy Objectives for Offshore Wind

Upon completion of the first offshore wind project in Atlantic Canada a formalization of policy objectives to increase portfolio growth will need to occur to facilitate future projects. In addition, policy changes that have occurred between the first project's initiation to operation could benefit from being assessed to determine what adjustments the sector may need to make based on the evolution of policy objectives. A few key elements associated with the formalization of policy objectives could be signals towards project siting, cost allocation strategy for offshore wind energy production that will require export, and alignment across provincial and federal objectives for development of the sector.

As the region's offshore wind industry expands, it is likely that multiple projects and transmission infrastructure investments may begin to advance in parallel. At this stage, reliance on interim principles developed for early projects may no longer be sufficient to manage cumulative impacts, overlapping infrastructure use, and differing benefit profiles across jurisdictions. Refinement and codification of regional approaches may also provide a solid foundation for moving from project-specific framing toward more predictable treatment as development activity increases.

The medium-term steps that could be undertaken include:

1. **Refining Provincial Offshore Wind Policy Objectives:** Each province can continue to refine and define its specific objectives for offshore wind project development or its role as a facilitator or regional participant in the industry.
2. **Align Cost Recovery with Portfolio Benefits:** The next step could be to investigate cost recovery mechanisms for transmission developments for the initial project that could be applied or adjusted to future projects and assess the ability of benefits to be scaled up as the number of projects increases.

2.1.3 Long-Term: Establish Lasting Policy & Regulatory Structure

Policy and regulatory considerations in the long-term would ideally be intended to establish or address any policy uncertainty that remains to support how offshore wind production in the region could support the growth and collaboration of adjacent industries. As policy and regulatory frameworks may have been established to get a portfolio of offshore wind projects developed in Atlantic Canada the next steps need to support expansion of offshore wind energy production to other industries identified as priorities or opportunities for both Canada and the Atlantic provinces.

2.2 Interregional Collaboration

The development of offshore wind at scale in Atlantic Canada will place new and sustained demands on how electricity systems are planned, regulated, and coordinated across jurisdictions. As offshore wind production expands, the resulting system impacts and benefits are expected to extend beyond provincial boundaries. Key challenges associated with development at scale introduces a more complex set of interdependencies, including the need for regulatory alignment across provincial and federal regimes, as well as coordination of generation development, retirements, and transmission development timelines. Furthermore, expanded offshore wind development will likely necessitate a deeper balancing of system integration, cost allocation, and cost recovery considerations across project life cycles. This dynamic elevates the importance of collaborative frameworks that can operate at a regional scale and support coordinated decision-making across multiple authorities.

The recommendations put forward in this section are intended to compliment and build on prior regional analysis addressing interregional and interprovincial electricity system coordination, planning, and governance. These works include Atlantic Energy Collective and Crux Energy Consulting's *Atlantic*

Canadian Energy Future[6] report, the Northeast Grid Planning Forum and Power Advisory's *Eastern Canada-Northeast US Interregional Transmission Planning Roadmap*[7], and the C.D. How Institute's recent *Powering the Federation: A Blueprint for National Electricity Integration in Canada*.[8]

The region already benefits from several foundational elements that support interregional collaboration in electricity system planning and development. This includes established interprovincial transmission infrastructure such as the Maritime Link along with existing interties connecting New Brunswick with Nova Scotia, Prince Edward Island, and Québec. In addition, the establishment of offshore energy regulators under the Atlantic Accord Acts has created a dedicated institutional framework for oversight of offshore energy development, providing an important regulatory foundation for future offshore wind activity and associated coordination requirements.

As offshore wind activity accelerates, the scale and complexity of anticipated development present an opportunity to evolve collaborative arrangements to better support coordinated planning, sequencing, and development at the scale or scope anticipated in the region. Establishing more structured, formalized mechanisms could help align permitting timelines, optimize infrastructure investments, and provide greater clarity around how shared system benefits, costs, and risks should be addressed across provinces.

Looking ahead, a deliberate and staged evolution of interregional collaboration arrangements could better support emerging planning and delivery needs. In the short-term, structured coordination could be needed to support early offshore wind build-out, align planning assumptions, and manage critical interdependencies as a first-of-its-kind development proceeds. Over the medium-term, as offshore wind actively expands and multiple projects advance at the same time, collaboration mechanisms will need to become more formalized and durable, enabling cumulative system planning and more consistent treatment of shared infrastructure and system impacts. In the long-term, strengthening interregional governance can support the integration of offshore wind into a coordinated, export-capable regional electricity system, allowing development to proceed in a predictable and sequenced manner while supporting long-term reliability, affordability and decarbonization objectives.

A summary of the short-, medium-, and long-term recommendations for interregional collaboration in Atlantic Canada can be found in Figure 3 below.

[6] Atlantic Energy Collective, "An Atlantic Canadian Energy Future," January 2026. An-Atlantic-Canadian-Energy-Future-Mar2026.pdf.
[7] Northeast Grid Planning Forum, "Eastern Canada – Northeast U.S. Interregional Transmission Planning Roadmap," August 2025. Eastern Canada - Northeast U.S. Interregional Transmission Planning Roadmap.
[8] C.D. Howe Institute, "Powering the Federation: A Blueprint for National Electricity Integration in Canada," October 2025. Powering the Federation: A Blueprint for National Electricity Integration in Canada – C.D. Howe Institute.

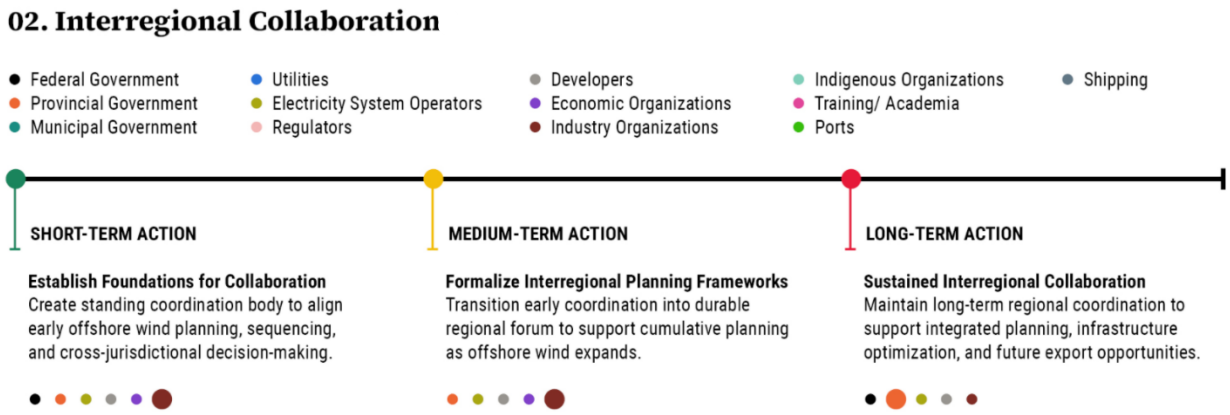

Figure 3: Summary of Short-, Medium-, and Long-Term Interregional Collaboration Recommendations

2.2.1 Short-Term: Establish Foundations for Collaboration

Offshore wind development requires coordination across offshore and onshore regulatory regimes, alignment of generation and transmission timelines, and early management of first-of-kind permitting, system integration, and cost recovery considerations occurring in parallel. Without a standing coordination forum, interregional collaboration risks defaulting to reactive, project-specific approaches, increasing the likelihood of misaligned schedules, inefficient infrastructure development, and unclear accountability.

As an important short-term action, Atlantic Canada might benefit from the establishment of an Offshore Wind Interregional Coordination Consortium as a standing, senior-level forum to support the coordinated planning, sequencing, and delivery of offshore wind projects and their enabling transmission infrastructure. The consortium could bring together provincial energy departments, electricity system operators, and planners, with provincial and federal regulators participating in an observer or advisory capacity where appropriate. Through its mandate and operating model, such a consortium could establish a consistent framework for collaboration by maintaining a shared, system-level perspective on regional offshore wind development goals and transmission implications.

The following steps are proposed to operationalize the consortium and its core functions in the short term:

1. **Establish an Interprovincial Memorandum of Understanding (MOU):** Develop and execute an interprovincial MOU that formally establishes the Interregional Collaboration Consortium with a standing coordination table, defines its mandate and scope, and identifies membership and decision pathways. The MOU might also set out a multi-year outlook, focused on phased offshore wind development and enabling transmission infrastructure.
2. **Define Coordination Functions:** Work collaboratively to articulate and formalize the consortium's ongoing functions. Such functions might include tracking interregional dependencies (i.e., linkages between project sequencing, transmission availability, and regulatory approvals) across development phases, maintaining baseline planning assumptions as new information becomes available, and aligning high-level timelines across offshore, onshore, and interprovincial infrastructure development.
3. **Develop a Rolling, Multi-Phase Critical Path:** Create an evolving, forward-looking coordination framework that reflects short-, medium-, and longer-term offshore wind system development, focusing on the alignment of major milestones, interregional dependencies, and sequencing considerations across generation, transmission, and regulatory processes. This pathway would not

replace jurisdiction-specific planning or approval processes but rather help in identifying timing-related dependencies and early coordination points that could constrain or enable future industry scaling.

4. **Institutionalize Data Sharing and Confidentiality Protocols:** Effective interregional coordination in transmission planning will rely on exchange of detailed system, planning, and infrastructure information among consortium participants. Establishing clear protocols provides the necessary safeguards to allow this information to be shared appropriately.

Primary responsibility for leading the establishment and early coordination of the Interregional Collaboration Consortium would likely rest with an industry-led organization with a regional mandate and demonstrated offshore expertise. Such an organization might be well positioned to convene governments, system planners, and regulators in a neutral, non-adjudicatory, provide technical and analytical support, and facilitate information-sharing across jurisdictions without encroaching on policy authority or regulatory independence. Provincial governments could be used to remain accountable for facilitating the consortium's ongoing relevance and alignment with provincial policy priorities and interjurisdictional objectives. Federal departments could participate where mandates intersect with offshore wind development, interprovincial transmission, or export considerations. Electricity system operators and planners play a critical supporting role by providing technical input, validating assumptions, and applying coordination outputs within existing planning and operational frameworks. Developers may participate, as appropriate, to provide visibility into project sequencing and infrastructure needs, without assuming a governance role.

2.2.2 Medium-Term: Formalize Interregional Planning Framework

With the scaling of Atlantic Canada's offshore wind industry over the medium-term, the associated increase in development proposals is likely to introduce more complex regional electricity system planning considerations. A growing volume of projects entering regulatory, permitting, and system planning processes will necessitate a more holistic consideration of the cumulative transmission requirements, infrastructure prioritization, and sequencing across jurisdictions. These issues become increasingly difficult to address through project-specific assessments alone, particularly where multiple developments proceed over overlapping timeframes. In this context, a more formalized interregional planning framework represents a promising mechanism for ensuring that offshore wind integration continues to be considered in a coordinated and consistent manner as development activity intensifies.

Building on its previously established foundation, the offshore wind Interregional Collaboration Consortium could work to formalize its function as a standing forum, with a shift toward sustaining coordination arrangements through the establishment of defined operating structures, accountabilities, and consistent resourcing. A formalized forum could support ongoing, structured engagement among participating jurisdictions, regulators, system operators, and utilities, enabling coordination practices to mature alongside development activity. This could be facilitated through the establishment of a durable institutional framework, allowing for the codification of shared planning assumptions, integration of new information, and application of lessons learned from early offshore wind projects into subsequent development phases. Over time, this might support more consistent consideration of regional transmission needs, improve transparency around infrastructure priorities, and reduce reliance on ad hoc coordination as offshore wind deployment becomes a more prominent feature of the regional electricity system.

Key steps to advancing this action could include the following:

1. **Transition from Consortium to Standing Forum:** Formalize the transition from the initial coordination consortium to a standing interregional transmission and electricity planning forum with an explicit mandate, governance framework, and clear articulation of roles, regular meeting cadence, and a stable secretariat or coordination function. This transition might help preserve flexibility while providing sufficient structure to support ongoing regional planning needs as offshore wind activity continues to expand.
2. **Refine and Standardize Coordination Processes**: Capture and integrate lessons learned from early offshore wind development and enabling transmission investments, including insights related to permitting timelines, consultation sequencing, system integration challenges, interconnection approaches, and interprovincial coordination processes. These insights could then inform the refinement and standardization of key coordination tools such as shared planning assumptions, common scenario frameworks, and regional development timelines and other recurring planning outputs intended to inform provincial planning and regulatory processes.

Responsibility for advancing this action could remain with the industry-led organization operating the standing interregional forum, with a mandate to support sustained coordination, shared analytical frameworks, and structured information exchange as offshore wind development scales. Provincial governments, in turn, might be accountable for making sure the forum's scope, priorities, and outputs remain aligned with provincial policy objectives, regulatory frameworks, and interjurisdictional planning needs. System operators and developers could play a central role by contributing technical input, participating in forum activities, and applying forum outputs within their own planning and regulatory submissions. Ongoing support might also be required from federal departments and agencies, as well as sector organizations.

2.2.3 Long-Term: Sustained Interregional Collaboration

In the long-term, Atlantic Canada could ultimately aim to embed offshore wind within an integrated, export-capable regional electricity system that supports sustained development and reinvestment. Building on the successful implementation of short- and medium-term coordination and governance actions, offshore wind could be planned and managed within a coordinated regional context as a core energy asset. This might involve enduring alignment of generation and transmission development through established regional coordination mechanisms and interprovincial planning processes while maintaining provincial decision-making powers.

Within this context, Atlantic Canada may consider progressively strengthening cross-border coordination to support clean power trade and export opportunities with neighbouring provinces and the Northeastern United States. In addition, coordination and partnerships with adjacent industries may strengthen the foundation for collaboration as offshore wind development moves from project-based development to optimization and operation of a portfolio of projects. As with early expansion within the Atlantic region, sustained engagement with external electricity system operators, regulators, and policymakers will enable greater alignment of planning assumptions, transmission development pathways, and market access considerations. Through embedding offshore wind within durable and cooperative interregional planning structures, Atlantic Canada can support a resilient offshore wind sector that delivers long-term economic value and enhances energy security across the region. Such efforts can position the region as a competitive participant in an increasingly interconnected North American energy and industrial market.

2.3 Market and Commercial Development

To build a viable offshore wind industry beyond a single project, future offshore wind projects will need to demonstrate that they are cost-competitive and commercially viable. Offshore wind projects could aim to deliver a strategy to meet demand and contribute to policy objectives along with other alternative resource options in the Atlantic region. As described in the Phase 1 *Market Opportunities for Offshore Wind in the Atlantic Provinces*[9] report, high quality offshore wind resources may be a viable part of a clean energy strategy to meet growing electricity demand in the Atlantic Provinces and serve key export markets such New England, Québec, and Ontario. However, large-scale offshore wind delivery requires significant new transmission investments to deliver power from offshore wind to other markets. Developing viable commercial pathways and commercial frameworks for offshore wind projects might be critical to ensuring both initial projects and potential future offshore wind portfolios could be developed in Atlantic Canada.

This section offers a set of short-, medium-, and long-term recommendations and associated next steps for market and commercial development activities that can support an offshore wind industry at scale in Atlantic Canada. These recommendations are summarized in Figure 4 below.

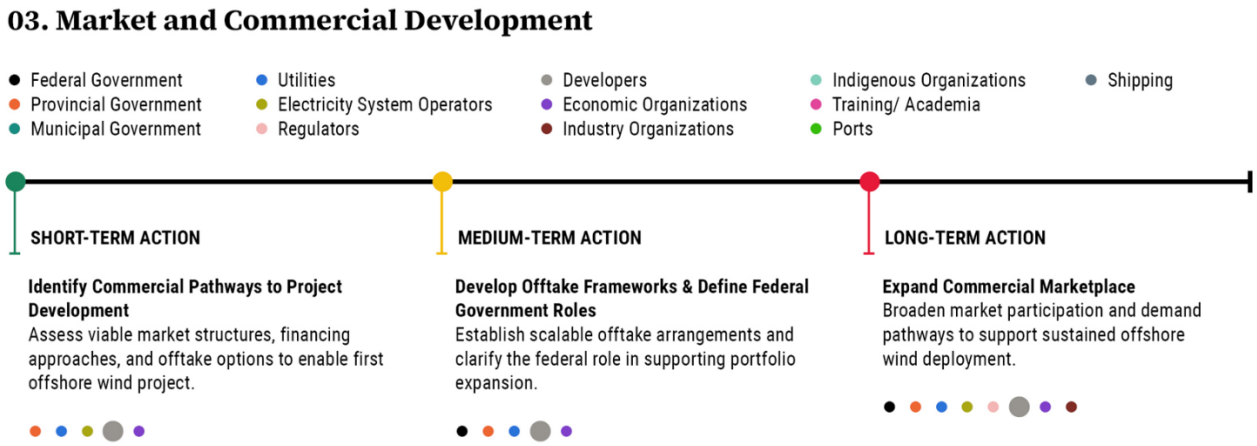

Figure 4: Summary of Short-, Medium-, and Long-Term Market and Commercial Development Recommendations

2.3.1 Short-Term: Identify Domestic Commercial Pathways to Project Development

Markets and offshore wind production offtakers will be central to the development of an offshore wind industry, including the necessary step of building the first project. The Phase 1 report evaluated three types of potential offtakers: (1) domestic markets, (2) export markets, and (3) hydrogen or other large loads. As demonstrated in that report, the Atlantic Provinces alone are a relatively small electricity market (up to 50

[9] Net Zero Atlantic, "Market Opportunities for Offshore Wind in Atlantic Canada," June 2025. Market Opportunities for Offshore Wind in the Atlantic Provinces.

TWh by 2050). This, combined with the cost premium, suggests that domestic markets alone are unlikely to be large enough to absorb all large-scale offshore wind output, particularly given significant land-based wind availability. In either scenario, securing strong, creditworthy partners for long-term offtake will be essential to building projects and an industry; and to meaningfully reduce revenue uncertainty, lower project risk, and improve financing terms.

An important short-term action might be to identify the appropriate offtake arrangements for the first offshore wind project in Atlantic Canada by identifying previously viable commercial pathways for development of offshore wind projects elsewhere in the world. This could include an investigation into the financing, partnership, and electricity production offtake arrangements that were used and supported by policymakers, governments, and developers to get initial projects past the final investment decision and into development.

Next steps to complete the short-term actions could be:

1. **Research Commercial Offtake Agreements for Previous Initial Projects**: Identify global initial projects in regions where offshore wind has successfully been scaled up and investigate how the commercial arrangements were organized for the first project being built in the region. This research could be applicable to projects developed with a single offtake or multiple partners.
2. **Test Commercial Applicability to Atlantic Canada:** Use the information gathered in the commercial research for previous initial projects to test if the commercial structures could work in the Atlantic Canadian context including offtakes to support domestic load, regional export, national export, or industrial partnerships.
3. **Determine if Multiple Offtakes are Required for an Initial Project:** As the Atlantic Canadian region looks to refine the size, location, and point of interconnection for the first project brought to market in the short-term, these project specifics will determine the preliminary structure and offtake partners that may be required in a commercial agreement. Matching the project's production to the local demand and system capacity will be critical to determining if one or more offtake agreements are required.

Identifying what has previously worked for this technology elsewhere will provide a critical first step in determining the commercial pathways that may work in Atlantic Canada. This exercise can be undertaken through research and coordination between industry organizations and the technical working groups from Atlantic Canada engaging with peer entities in jurisdictions where offshore wind has been deployed. Another alternative to obtain this information or understand interest in the offtake market might be to solicit demand for offshore wind from outside of Atlantic Canada, either through Request for Information (RFI) or Request for Expression of Interest (REOI). This might allow proponents to identify potential unknown offtake partners or jurisdictions that could procure offshore wind energy production. As more offtake pathways are required as an initial project or multiple projects are developed the complexity of the commercial arrangements will increase. The objective of the short-term actions is to refine the size and scale of the initial project such that a commercial offtake agreement or pathway could be properly defined and scoped in such a way it is viable to support a project proceeding to Final Investment Decision.

2.3.2 Medium-Term: Develop Offtake Frameworks & Define Federal Government Role

As the region's offshore wind project portfolio grows a tipping point will be reached where regional offshore wind production could exceed combinations of domestic/provincial load growth, regional/Atlantic load growth, and/or export to other markets. The region will want to find developers eager to build projects as well as identify partners that could facilitate offtake of the growing portfolio of renewable energy production. As developers propose contract structures, the utilities and regional independent system operators will need to work with developers to align on what is workable for all parties. As the Atlantic Canadian offshore wind portfolio moves past an initial project into multiple projects, the Federal government's role as a facilitator or champion of offshore wind development and its support will likely be needed to facilitate and foster commercial arrangements as offtake agreements become more complex.

Next steps to complete the medium-term actions could be:

1. **Engage global offshore wind hubs to identify regional offtake arrangements:** Conduct continued research on global offshore wind hubs to identify how they were commercially developed to scale, including identifying the role federal and state governments played in facilitating commercial agreements, how energy production was mapped to export and offtake markets, and any appropriate mechanisms of action taken by developers.
2. **Formalize the Federal Government's role in supporting commercial development of multiple offshore wind projects:** Using the information obtained in the global assessment for both initial projects and portfolio expansion, engaging the Federal Government to formalize its role in supporting the commercial agreements of future offshore wind projects will provide commercial and policy certainty for portfolio expansion.
3. **Finalize a framework for multi-pathway offtake agreements for offshore wind:** The Atlantic Canadian region could take the outputs of the learnings from the initial project, lessons learned from offshore wind portfolio scaling in other global regions, and a definition for federal government commercial support to finalize a framework on how developers could navigate and define the offtake arrangements for multiple parallel offshore wind projects.

The objective of the medium-term actions is to develop a more robust framework for the commercial pathways of multiple offshore wind projects, such that there are enough offtake pathways to make multiple projects commercially viable. In the medium-term, to facilitate development of a portfolio of offshore wind projects, some involvement or support from the Federal Government might be required within a clearly defined role.

2.3.3 Long-Term: Expand Commercial Marketplace

As a portfolio of offshore wind projects begins to operate in Atlantic Canada and each of the provinces become more intertwined in the impact and benefits of the portfolio, the long-term commercial and marketplace strategy will need to evolve. To sustain the continued investment in and enhancement of projects operating in the region, innovative marketplace solutions may be required as offshore wind production exceeds domestic and regional demand.

As electrification and major industrial advancements occur in parallel to the offshore wind industry's development, identifying those sectors which have significant electricity requirements and potential to utilize

offshore wind production could prove to be beneficial in expanding commercial opportunities for offshore wind energy. Hydrogen production in Atlantic Canada, the industrial evolution of shipping and ports, and Canadian national and nautical defence programs could, potentially, be sectors that have large power requirements, sustainability and emissions targets, and proximity to the Atlantic Canadian offshore wind portfolio's production. Identifying marketplace opportunities for these adjacent sectors could allow for offshore wind developers to expand their commercial opportunities.

One potential next step for completion of the long-term recommendation could include:

4. **Promote Memoranda of Understanding between offshore wind developers and Atlantic Canadian industries:** The long-term actions are intended to initiate the partnership between different sectors. As other energy- and electricity-intensive industries continue to grow and evolve in Atlantic Canada, their energy needs will evolve as well. An operating and growing portfolio of offshore wind projects in the region will provide ample production to support adjacent industries and their growth under the right commercial marketplace structures.

2.4 Transmission System Planning

Realizing the large-scale potential and build-out of offshore wind projects in Atlantic Canada will require extensive planning and a coordinated approach to efficiently integrate and reliably deliver offshore wind generation. Once policy and regulatory decisions have been made with regards to the offshore wind locations, amount of power to be generated, and intended domestic load centers and/or export markets, additional transmission planning studies can be carried out to evaluate where transmission infrastructure may need to be developed or upgraded, while accounting for environmental and permitting considerations. As part of Phase 1 of this project, completed as part of the *Preliminary Transmission Expansion Needs Analysis to Integrate Offshore Wind in Atlantic Canada*[10], which provided an initial indication of potential onshore transmission upgrades under a range of offshore wind development scenarios, with an emphasis on points of injection into the existing grid. As specific offshore wind projects and offtake arrangements are defined, more detailed and project-specific transmission planning and system impact studies will be required to refine infrastructure requirements and investment needs.

Establishment of targeted renewable wind energy areas, with coordinated planned development of the transmission infrastructure necessary to effectively and reliably move power from the wind energy areas to load centers, will greatly help further the development of cost-effective offshore wind. If this is established, the development of coordinated transmission solutions will address the needs of multiple offshore wind farms in an optimized manner. This could reduce the risk of individual projects being solely responsible for the onshore system upgrades required to integrate offshore wind energy projects into the onshore network. This will, however, require close coordination of transmission development with the development of the offshore wind farms to ensure that the transmission is available when the wind farms come online to avoid project-on-project risk that could result in stranded generation.

[10] Net Zero Atlantic, "Preliminary Transmission Expansion Needs Analysis to Integrate Offshore Wind in Atlantic Canada," April 2026. Atlantic Canada Offshore Wind Grid Integration and Transmission Study | Net Zero Atlantic.

Building on these considerations, Figure 5 below presents a summary of potential transmission system actions that can be implemented across the short-, medium-, and long-term.

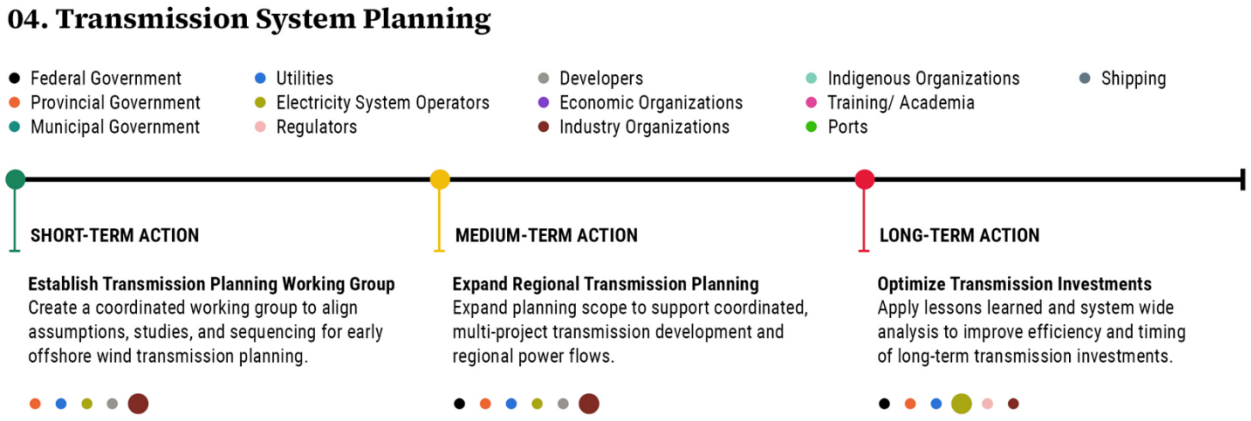

Figure 5: Summary of Short-, Medium-, and Long-Term Transmission System Planning Recommendations

2.4.1 Short-Term: Establish Transmission Planning Working Group

As discussed in earlier sections, close interregional coordination is seen as an important aspect in the development of offshore wind energy in Atlantic Canada. This is especially true for effective transmission planning. Establishment of a working group to coordinate and conduct interregional transmission planning studies on a regular basis will set a strong foundation for an aligned path forward for Atlantic Canada. This working group, while serving under a separate mandate from the recommended Interregional Collaboration forum outlined earlier in this Roadmap and Action Plan, might ideally coordinate findings and planning activities to avoid duplication and optimize information exchange.

Standardized approaches for offshore transmission could be established, similar to the efforts of other groups/entities in Europe, the United Kingdom, and the Northeastern US. An analysis of other jurisdictional approaches is captured in the *Jurisdictional Scan*[11] and *Interregional Collaboration*[12] reports completed as part of Phases 2 and 3this project. Learnings from offshore wind projects and related transmission infrastructure implemented in the European Union, the United Kingdom, and the US could be analyzed and applied where appropriate. Early establishment of standards could potentially facilitate more cost-effective offshore transmission development and facilitate possible future interconnections between offshore wind facilities.

Transmission planning efforts might focus on the system requirements to develop and integrate the first offshore wind project in Atlantic Canada with a broader vision to incorporate early projects in a manner consistent with the ultimate integration of multiple offshore wind projects. Project in-service dates could

[11] Net Zero Atlantic, "Offshore Wind Development: Insights from Leading Jurisdictions," March 2026. Atlantic Canada Offshore Wind Grid Integration and Transmission Study | Net Zero Atlantic.
[12] Net Zero Atlantic, "Interregional Collaboration Study for the Development of Offshore Wind in Atlantic Canada," April 2026. Atlantic Canada Offshore Wind Grid Integration and Transmission Study | Net Zero Atlantic.

consider generation and transmission equipment lead times and project implementation timelines, including permitting, environmental, and other regulatory approval processes. Alternatives for points of injection in the onshore system could also be considered, assessing options for transmission infrastructure that align with permitting and environmental criteria, as well as other planned development and retirement of onshore facilities.

System impact studies would ideally be carried out once project parameters, ratings, and in-service dates have been established. These studies might build on previous work, including the *Required Power System Studies* [13] report completed as part of this project, and include an extensive list of system contingencies that could also assess the loss of wind generation from the project being studied to fully assess the impact of integrating offshore wind into the system. However, longer-term objectives might also be considered in the planning and design of the first project to the extent possible to take possible future integration into account. Examples of possible measures include leaving space on offshore platforms for future cable terminations needed to create offshore meshed networks.

Specific steps to facilitate the short-term actions for transmission system planning could include:

5. **Establish a Transmission Planning Working Group:** As more detailed information about the scope of the first project becomes available, a transmission working group focused explicitly on transmission planning for the integration of offshore wind could be formed. This working group could ensure that consistent planning assumptions, benefits, and strategies are applied at a localized, regional, and interregional basis for transmission studies required for the first project and future project developments. Funding mechanisms would likely need to be identified to support group operations and activities to avoid reactive funding by interconnection customers.
6. **Standardize Offshore Transmission Development:** An activity that could be facilitated through the Transmission Planning Working group could be the standardization of transmission development requirements for offshore wind projects in the Atlantic Canadian region including planning assumptions, technical specifications, and equipment/technology preferences.

2.4.2 Medium-Term: Expand Regional Transmission Planning

Strengthening regional and interregional transmission planning and operational coordination and applying lessons learned from short-term activities may be critical to improve overall system efficiency for the continued expansion of offshore wind development. Identification of additional load and market demands may be needed to meet the build-out of subsequent offshore wind projects. Enhancement and additional upgrades to transmission infrastructure will likely be required to enable better utilization of offshore wind resources. Improved coordination will also facilitate more efficient power flows between provinces and will help to reduce congestion and enhance system reliability.

A key objective during this period is enabling cost-effective, gigawatt-scale transmission to support offshore wind generation. This will require permitting and constructing large-scale transmission infrastructure

[13] Net Zero Atlantic, "Required Power System Studies Throughout Offshore Wind Transmission Project Lifecycle," February 2026. Atlantic Canada Offshore Wind Grid Integration and Transmission Study | Net Zero Atlantic.

capable of delivering offshore wind energy to major demand centers, which may include New England, New York, Québec, and/or Ontario.

A preliminary transmission needs analysis was carried out as part of the *Preliminary Transmission Expansion Needs Analysis*[14] Report, which assessed onshore transmission upgrades required to integrate high penetrations of offshore wind. In addition, recommendations for future power system studies were developed through the *Required Power System Studies*[15] report, which outlines the sequence and scope of studies typically required as offshore wind projects progress from early development through construction and operation. Continued evaluation of offshore wind development and transmission system interconnection and expansion options could be essential as development plans mature, including consideration of transmission needs to support future projects. This will require more intensive and formalized collaboration between regions to make decisions that benefit both the individual provinces/states and the broader region/system. Transmission planning studies are one component that will play a central role in defining the requirements for the evolution of transmission infrastructure to integrate offshore wind power efficiently and reliably.

At the same time, offshore wind development might benefit from alignment with evolving load growth patterns in US markets. This includes monitoring expected shifts from summer peaking to winter peaking demand driven by heating electrification and ensuring that offshore wind projects are timed and scaled to contribute reliably during periods of greatest resource insufficiency. Grid infrastructure development could benefit in advancing through interregional transmission planning that identifies key barriers, assesses the impacts of development timelines, and explores fair cost-sharing mechanisms. Evaluating grid readiness for offshore integration, incorporating strategies such as demand response and energy storage, and developing tools and policy recommendations for grid flexibility and modernization will all be important components of this effort.

Specific activities to support the completion of the medium-term actions could be:

1. **Additional Transmission Planning and System Impact Studies:** As the industry moves from a first project to a regional portfolio, continued and expanded system impact studies can help to build an understanding of the localized and regional impacts to the transmission system from incremental offshore wind development. Studies could be conducted upon major development milestones of each new offshore wind project in Atlantic Canada.
2. **Expand the Mandate of the Transmission Planning Working Group:** As exports to markets outside of Atlantic Canada become a critical component to the development of offshore wind in Atlantic Canada, the Transmission Planning Working Group established in the short-term could expand its mandate to coordinate broader regional transmission planning and interregional development requirements.
3. **Monitor Canadian and Northeastern US Load Growth & Supply Adequacy:** As electrification, load growth, supply adequacy, and long-term plans evolve in both Atlantic Canada and the

[14] Net Zero Atlantic, "Preliminary Transmission Expansion Needs Analysis to Integrate Offshore Wind in Atlantic Canada," April 2026. Atlantic Canada Offshore Wind Grid Integration and Transmission Study | Net Zero Atlantic.
[15] Net Zero Atlantic, "Required Power System Studies Throughout Offshore Wind Transmission Project Lifecyle," February 2026. Atlantic Canada Offshore Wind Grid Integration and Transmission Study | Net Zero Atlantic.

Northeastern US, the Transmission Planning Working group could monitor and assess shifts in load forecasts, generation retirements, and system peaking scenarios across regions.

2.4.3 Long-Term: Optimize Transmission Investments

In the long-term, stakeholders could continue to work collaboratively and to apply lessons learned from previous planning and projects to optimize the integration of offshore wind and related transmission infrastructure requirements both within Atlantic Canada and in neighbouring jurisdictions. This includes identifying optimal offshore sites that combine high-quality wind resources with optimal transmission requirements both onshore and offshore to improve cost efficiency. Transmission planning will look to identify the requirements to enable the long-term integration of additional offshore wind projects. The transition to the long-term optimization of transmission investments could be contingent on continued policy certainty and the effective establishment of the commercial pathways, be it within the region or inter-regionally. Alignment with adjacent industries could provide collaborative planning efforts for the next phase of transmission infrastructure required to service growth in the region.

2.5 Supply Chain

Offshore wind and associated transmission development is tied to the availability, readiness, and coordination of specialized suppliers, infrastructure, and services that facilitate its implementation. Large-scale offshore wind projects rely on multiple, inter-connected supply chain components, from manufacturing to ports, vessels, engineering, and operations. In the early stages of industry development, where much of these elements are not locally available or configured to support the offshore wind industry, developers are likely to rely more extensively on international supply chains. In Atlantic Canada, early project delivery may therefore draw on established offshore wind supply chain capacity in the United States and other international markets, where geographic proximity, existing industry experience, and shared operating conditions can support near-term needs. At the same time, these early projects create opportunities to build knowledge, relationships, and capabilities within the region, allowing lessons learned from initial reliance on external suppliers to inform more targeted regional participation over time.

Over the medium- and long-term, Atlantic Canada is unlikely to independently support all segments of the offshore wind supply chain. Continued reliance on established international suppliers is therefore expected for certain components, particularly highly specialized or capital-intensive equipment. However, as development activity scales and demand become more predictable, opportunities may emerge to localize specific elements of the value chain, including selected manufacturing activities, final fabrication or assembly, marine services, and operations and maintenance functions. A deliberate, segmented approach to supply chain development may help manage exposure to global capacity constraints, cost escalation, and scheduling risk, while supporting realistic and durable regional participation as the industry matures.

While Atlantic Canada is positioned to build off existing supply chain capabilities, several structural factors are likely to shape the pace and scale of regional offshore wind supply chain development. Currently, the region has limited large-scale, high-throughput manufacturing capabilities for key components like turbine towers, blades, transmission equipment, and subsea cables, which limits the extent to which major segments of the value chain can be localized. Existing fabrication shops, while technically capable, are not

yet configured, certified, or scaled to support the required volume of offshore wind production. Infrastructure-related considerations further influence these dynamics. As initial projects proceed through Final Investment Decision and a portfolio of offshore projects begins to take shape, opportunities to enhance regional supply chain capacity are likely to emerge. At the same time, this early phase of market development creates an opportunity for governments, developers, and industry to take a coordinated approach to supply chain planning, enabling regional capabilities to be strengthened in a deliberate and sequenced manner as the industry scales.

The actions and recommendations presented in this section have been informed by Marine Renewable Canada's *Atlantic Canada Wind Energy Supply Chain Assessment*[16], which provides a foundational understanding of Atlantic Canada's offshore wind supply chain capabilities, constraints, and development opportunities. These actions are structured across the short-, medium-, and long-term to reflect varying degrees of market maturity, demand certainty, and infrastructure readiness. Figure 6 below provides a summary of possible supply chain actions across the short-, medium-, and long-term that can be implemented to support the build-out of Atlantic Canada's offshore wind industry.

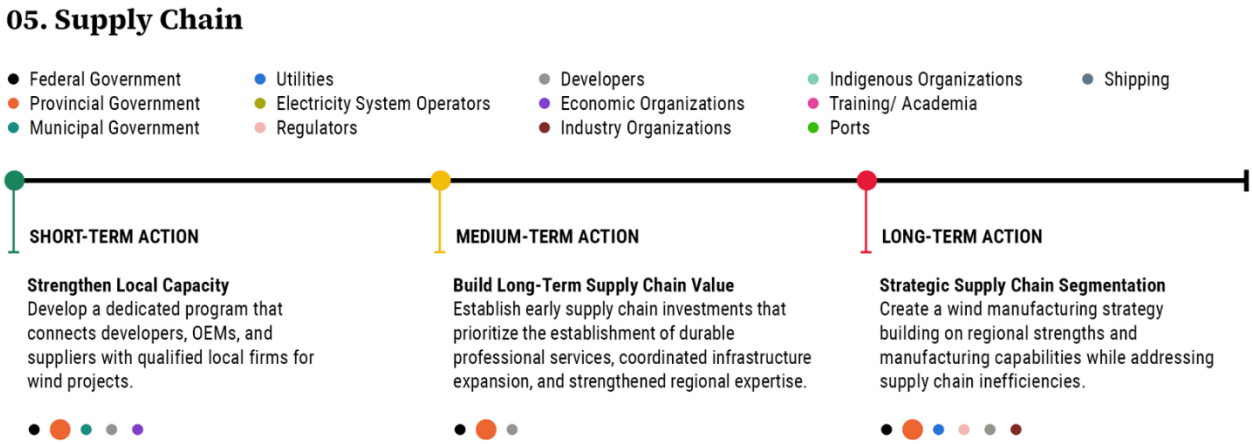

Figure 6: Summary of Short-, Medium-, and Long-Term Supply Chain Recommendations

2.5.1 Short-Term: Strengthen Local Capacity

Identifying local capacity represents a critical early action that will determine whether Atlantic Canada can meaningfully anchor its domestic offshore wind supply chain or be required to defer to international providers. The region has meaningful experience in marine construction as well as professional environmental and operational services. However, this expertise is not yet matched to the specific, project-ready technical, regulatory, and logistical requirements of a national offshore wind industry. As identified through prior regional supply chain assessments, including work led by Marine Renewables Canada, this transition will take time and targeted coordination. In the near term, it may be supported through selective use of complimentary international offshore wind supply chain elements, such as those within the

[16] Marine Renewables Canada, "Atlantic Wind Energy Supply Chain Assessment Final Report," April 2025. Atlantic Wind Energy Supply Chain Assessment & Pathways for Supply Chain Development.

Northeastern United States, where proximity and existing, preliminary industry experience may serve to benefit early project delivery while regional capabilities continue to mature.

To unlock regional potential, this action proposes the creation of a dedicated, Atlantic-wide supplier engagement mechanism supported by an expanded and regularly updated supplier database that could be populated throughout development and completion of the first offshore wind project. This mechanism might build on and operationalize the foundational supply chain mapping and analysis undertaken by Marine Renewables Canada, shifting focus toward ongoing supplier engagement, readiness tracking, and coordination. This program could also consolidate detailed information on regional firms and map them against specific offshore wind requirements. It might also give local companies clearer visibility into qualification requirements, certification pathways, and realistic market opportunities, while fostering more consistent technical and regulatory coordination between developers, suppliers, and other stakeholders. Where appropriate, the engagement mechanism could also account for the role of U.S. offshore wind supply chains in supporting early project delivery, while maintaining a clear focus on strengthening Atlantic Canada-based suppliers over time.

To achieve this, several core elements may need to be established or strengthened:

1. **Establish a Host Entity with a Clear Mandate and Operational Capacity:** A lasting and effective program will require a clearly designated host entity, ideally an existing, regionally mandated organization with demonstrated offshore renewable energy expertise. The host entity could be responsible for administering the supplier engagement program, maintaining the supplier database, coordinating engagement with offshore wind developers, and tracking and reporting supplier readiness. This entity could serve as the main point of contact for both suppliers and project proponents, facilitating the consistent flow of information and clear communication of regional capacities. There currently exists an entity in the region whose focus in this regard can be strengthened.
2. **Develop a Robust Governance Structure:** Clear governance may be essential to setting and maintaining standards for data quality, verification processes, update cycles, and how suppliers are entered or advanced within the system. As such, a governance framework might be created that clearly defines accountability and reporting expectations for the established host entity, including how program performance, supplier readiness, and market participation are communicated to participating federal or provincial governments. This clarity could provide developers with confidence that supplier information is accurate and current, while providing suppliers with a transparent pathway to demonstrate their capabilities and project-readiness.
3. **Secure Multi-Year Funding:** Maintaining a well-functioning, lasting supplier engagement program will rely on long-term financing. Establishing reliable funding arrangements, for instance with the federal government, will help the host entity to maintain the database, undertake regular supplier outreach, develop training and guidance materials, and stay aligned with evolving regulatory and industry needs.

The establishment and early implementation of this program, as led by the host entity, may require a coordinated effort across all Atlantic provinces. Provincial governments could play a central role by aligning the program with their individual economic priorities, workforce strategies, and long-term development targets, while federal partners could be tasked with providing national policy alignment and stable multi-year funding support. Developers and industry organizations might best support delivery through defining technical expectations for suppliers and providing practical insights into evolving standards and procurement needs. Other supporting entities, such as Indigenous organizations and municipal governments could contribute targeted expertise and coordination where relevant to program delivery.

2.5.2 Medium-Term: Invest in Long-Term Growth

In transitioning Atlantic Canada's supply chain from early participation towards sustained, large-scale project delivery, the focus in the medium-term must shift from building capabilities to establishing shared systems that enable repeated execution at scale. At this stage of market development, the focus shifts towards addressing the inherent gaps in coordinated port capacity, scalable technical and advisory services, and offshore-specific expertise that individual companies cannot achieve on their own. Regional assessments and supply-chain specific guidance reports have acknowledged the strong presence of transferable capabilities across marine services, fabrication, logistics, and technical consulting. At the same time, they consistently identify shortfalls in the existence of dedicated marshalling infrastructure, serial delivery processes, and offshore certifications that limit the region's ability to support multiple projects reliably. Without targeted investments to address these shared constraints, developers are likely to continue to rely on international supply chains, affecting regional value that could be captured in the long run.

As such, it is recommended that provinces and relevant stakeholders direct investments towards strengthening service capacity in a way that can support continuous delivery of offshore wind projects. By investing in offshore specific service capabilities and aligning public efforts around shared supply chain priorities, Atlantic Canada could potentially reduce delivery risk for developers, improve project certainty, and create a more stable environment for regional firms to scale their operations with confidence. Sequencing supplier development in line with offshore wind areas where planning and regulatory processes are advancing also helps ensure that investments in skills, systems, and organizational capacity are made when there is a clear pathway to short- and medium-term demand. This approach could strengthen regional competitiveness, increase value capture, and position Atlantic Canada to optimize retention of expertise, attract follow on investment, and participate more actively in domestic and global offshore wind markets.

The following conditions will lay a strong foundation for achieving this:

1. **Establish Dedicated Funding Mechanisms:** Successful build-out of Atlantic Canada's offshore wind supply chain will rely on the creation of dedicated funding tools that can assist service-oriented firms to transition their suite of existing marine and energy experience into offshore-wind capabilities. Outside of existing regional expertise, the additional training, certifications, and internal systems required for offshore wind development are expensive and many firms may not be able to finance these independently. Focused funding can help offset these costs by supporting safety training, quality and management system upgrades, and preparation for developer procurement processes. Tying support to clear outcomes will help ensure investments translate into tangible project results.
2. **Align Public Investment Actors:** It may be important to align public investment decision-making across developers, governments, utilities, and regulators to build consensus on supply chain priorities and send consistent investment signals to industry. Alignment may be reinforced through transparent regulatory measures, such as defined local participation expectations, expedited approvals for qualifying supply-chain investments, and tax incentives for offshore wind component manufacturing and specialized services. Clear guidance on supply chain readiness requirements and eligibility criteria will help reduce duplication, provide predictable requirements, and strengthen the conditions for sustained private-sector participation as the offshore wind industry develops.
3. **Prioritize Initial Offshore Wind Development Areas:** In planning for large-scale investments, it may be necessary to direct supplier engagement and capability-building toward offshore wind areas where planning, regulatory, and engagement processes have progressed far enough to indicate short- to medium-term project demand. These efforts can build on designated and emerging wind

development areas identified through previous assessments[17] as well as findings from Phase 2 of this project. This will allow supplier development efforts to align with defined regulatory pathways and anticipated project sequencing. Anchoring investment in these areas will also support efficient use of private and public resources, reduce investment uncertainty for firms, and improve supplier readiness as projects move towards procurement and delivery.

Advancing these actions will depend on sustained collaboration across Atlantic Canada, with primary involvement from federal and provincial governments and offshore wind and transmission developers. Federal and provincial governments will play a central role in shaping and sustaining funding mechanisms that support service-sector growth, working in alignment with federal programs and Indigenous economic development initiatives. Developers could contribute by increasing transparency around anticipated project needs and timelines, allowing suppliers to plan and scale with greater certainty. Regulators and Indigenous organizations might play a supportive role in facilitating developer alignment with evolving regulatory frameworks and engagement processes, while municipalities support implementation through land-use planning, local infrastructure, and workforce readiness.

2.5.3 Long-Term: Strategic Supply Chain Segmentation

Over the long-term, Atlantic Canada's role in offshore wind may be shaped by whether it can anchor meaningful manufacturing activity in the region or remain constricted to their current areas of delivery. Across global markets, tight manufacturing capacity, concentrated supply of key components, and fluctuations in costs have made project delivery more expensive and less predictable. These pressures create an interesting opportunity in Atlantic Canada.

By advancing a structured offshore wind manufacturing strategy, Atlantic Canada could position itself to capture a greater share of project value, reduce exposure to international supply constraints, and improve cost and schedule certainty for developers over multiple project cycles. Such a strategy could identify a targeted set of manufacturing activities where the region can remain competitive over time, informed by anticipated offshore wind development pathways, regulatory maturity, and credible demand signals. Aligning these opportunities with appropriate federal and provincial funding mechanisms, including clean energy tax credits, grants, financing tools, and economic development programs could be important for improving investment conditions and supporting projects through higher-risk development stages.

Delivering a long-term offshore wind manufacturing strategy will require coordinated leadership across all Atlantic provinces. Federal and provincial governments will play a central role in setting strategic direction, aligning policy and funding tools, and ensuring regulatory frameworks support manufacturing investment at scale. Utilities and regulators may be involved in providing clarity on system requirements, permitting pathways, and timelines that shape manufacturing feasibility, while developers and industry organizations will translate project pipelines and procurement needs into actionable insights.

[17] Previous assessments include the Regional Assessments of Offshore Wind Development in Nova Scotia and Newfoundland and Labrador, the Proposed Wind Energy Areas for the Canada-Nova Scotia Offshore Discussion Paper.

2.6 Ports

A dependable and robust ports system will be an important enabling condition for large-scale offshore wind deployment in Atlantic Canada. Ports across the region are expected to continue playing a central role in the infrastructure required to support the industry's development by providing suitable locations for the movement, staging, and handling of major offshore wind components like turbines, foundations, and associated equipment. Ports also serve as key interfaces between marine and landside activities. Currently, Atlantic Canada has several ports with relevant marine and industrial experiences. That said, port readiness for offshore wind varies significantly across the region, with limited capability to support full build-out of an industry at scale.

Ports serve a critical function in the offshore wind supply chain, acting as logistical hubs for project build-out. The installation efficiency for offshore wind projects is directly influenced by the logistical and operational capabilities of the utilized port infrastructure. Fixed-bottom and floating offshore wind projects each have distinct port requirements. Fixed-bottom offshore wind projects primarily rely on marshalling ports for component delivery, staging, preassembly and install vessel loadout, while floating offshore wind projects necessitate additional port functions such as foundation assembly, turbine integration, and turbine pre-commissioning. In both cases secondary ports also play an important role by supporting specialized functions and long-term operations.

As noted within NZA's *Assessment of Atlantic Canadian Ports to Support Offshore Wind Development*[18], evaluating offshore wind readiness depends on a clear understanding of current port capabilities, strengths, and limitations. Primary ports are generally characterized by their size and ability to accommodate large-scale activities. These characteristics include sufficient upland area, adequate bearing capacity to support heavy components, wharf configurations that allow for simultaneous loading and unloading, and marine access that can accommodate large installation vessels. Water depth, turning basins, and navigational conditions are also relevant considerations. Secondary ports tend to be more specialized and focused on a single function rather than handling the full range of offshore wind logistics. These functions include operations and maintenance, subsea cable storage and loadout, anchor handling, and manufacturing support. Each of these activities has its own infrastructure requirements. Recognizing the complementary roles of primary and secondary ports is an important consideration in planning for offshore wind development in Atlantic Canada.

The actions and recommendations set out in this section are informed by the NZA *Ports Assessment*, which provides a regional evaluation of port readiness and investment needs in relation to offshore wind deployment. Figure 7 below provides a summary of potential port actions across the short-, medium-, and long-term that can support the establishment of an offshore wind industry at scale for the Atlantic Canadian region.

[18] Net Zero Atlantic, "Offshore Wind Potential: Assessing Ports in Atlantic Canada," August 2025. Offshore Wind Potential: Assessing Ports in Atlantic Canada | Net Zero Atlantic.

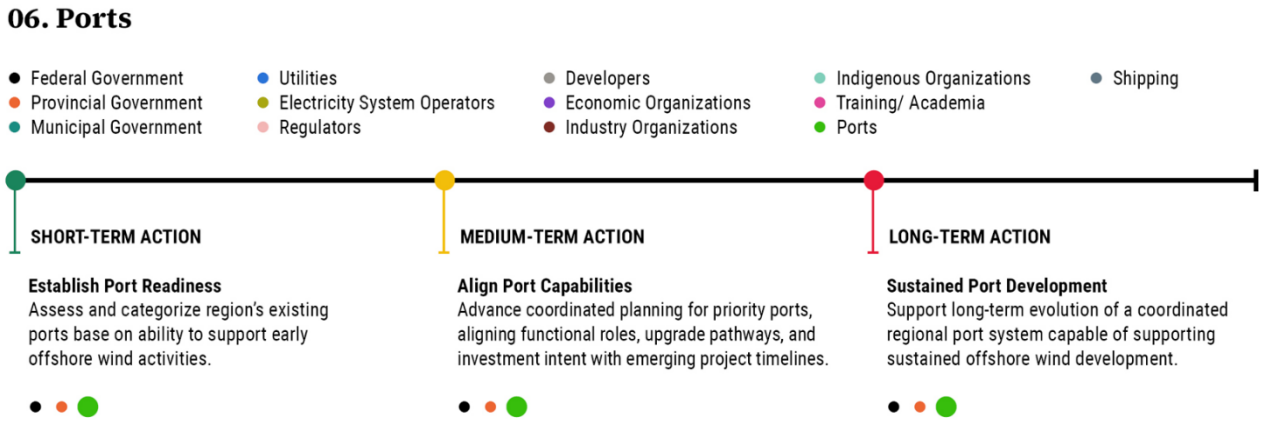

Figure 7: Summary of Short-, Medium-, and Long-Term Ports Recommendations

2.6.1 Short-Term: Establish Port Readiness

In the short-term, the focus might be on leveraging and operationalizing existing port readiness analysis to support early offshore wind development within the region. NZA's *Assessment of Atlantic Ports to Support Offshore Wind Development* has already established a robust regional evidence base with respect to port capabilities, constraints, and potential roles. Building on this foundation, near-term efforts might focus on translating established findings into actionable guidance that supports early project planning, coordination with port authorities and local communities, and alignment with anticipated development timelines for offshore wind development in the region.

Short-term actions could therefore focus on prioritizing early project needs, clarifying near-term port functions as the region prepares for its first offshore wind project, and identifying practical pathways to establishing port readiness in the medium- and long-term. This work could provide a basis for informed decision making, supporting alignment between subsequent investments, project sequencing, and anticipated offshore wind requirements

Next steps associated with this recommendation could include:

1. **Establish Near-Term Development Priorities:** Building on the findings of NZA's *Assessment of Atlantic Ports to Support Offshore Wind Development*, it will be important to establish a clear set of near-term port development priorities to support the development of offshore wind within the region. This involves identifying which port functions and capabilities are most relevant to anticipated early offshore wind activity and where focused attention is warranted to support initial project development. Prioritization at this early stage will provide clarity on where coordination, planning, and early interventions will have the greatest impact.
2. **Define Planning Assumptions to Guide Port System Development:** With near-term priorities established, the next step could be to define the planning assumptions that will guide port system development over time. These assumptions may address the anticipated sequencing of port roles, coordination requirements across ports and jurisdictions, and how port functions are expected to evolve as offshore wind activity scales. Establishing these assumptions can help to create a coherent planning framework that facilitates consistency across stakeholder groups while providing a foundation for roadmap development.

3. **Develop a Port Development Roadmap and Action Plan:** Translate the ports development priorities and planning assumptions into a Port Development Roadmap and Action Plan setting out how port roles, capabilities, and coordination needs are expected to evolve in support of offshore wind development. The roadmap could account for short-term requirements associated with the build-out of initial projects while also supporting full-lifecycle offshore wind development over the medium- and long-term. It could also identify sequencing considerations between early and future phases of development and flag decision points where additional planning or investment may be considered. The purpose of this roadmap and action plan could be to provide a coherent, forward-looking framework that aligns early project needs with longer-term port system development in the region.

Responsibility for advancing these actions would ideally rest primarily with provincial governments and port authorities. Provincial governments could play a central role in setting direction, convening coordination, aligning port-related planning efforts with offshore policy and development timelines. Port authorities could be responsible for providing site-specific input on infrastructure capabilities, constraints, and operational considerations. They might also be responsible for participating in the development and implementation of the Port Development Roadmap and Action Plan. Other stakeholders, including regional interest groups, Indigenous organizations and industry participants, may provide supporting input as needed to inform planning and coordination.

2.6.2 Medium-Term: Align Port Capabilities

In the medium-term, port-related actions could expand on the short-term assessment and classification, moving from identification to alignment and prioritization. At this stage, the objective is to ensure that port planning, investment intent, and project sequencing are aligned as offshore wind development progresses in the region.

Medium-term actions could focus on translating the Roadmap and Action Plan into clear planning pathways for priority ports, while reinforcing differentiated roles across the regional port system. This includes advancing more detailed planning for ports, expected to play a recurring role in offshore wind development and ensuring that secondary ports are positioned to support specialized functions as activity scales. Coordination across provinces, port authorities, and governments becomes increasingly important during this phase to avoid fragmented investment and support efficient use of shared infrastructure.

Next steps associated with this recommendation might include:

1. **Advance Planning for Priority Port Upgrades:** For identified primary ports, more detailed planning and feasibility work might be advanced to refine upgrade needs, sequencing, and indicative costs. This step focuses on improving readiness and investment clarity, rather than committing to construction, and is meant to align with anticipated development timelines.
2. **Reinforce Functional Roles Across Ports:** Operationalize roles identified in Roadmap and Action Plan classification by working with port authorities and governments to reinforce primary and secondary port functions. This includes ensuring that secondary ports are positioned to support operations, maintenance, and other specialized activities. This will reduce pressure on primary ports and, ideally, improve overall system efficiency as offshore wind development advances.
3. **Align Port Planning with Offshore Wind Project Pathways** Coordinate port development planning with emerging offshore wind project pipelines, regulatory milestones, and supply chain readiness. This could help facilitate port capability expansion that is sequenced to match

development trajectories, reducing the risk of stranded or underutilized infrastructure while supporting timely and efficient project delivery.

Responsibility for implementation would likely be shared across port authorities, provincial governments, and investment partners, Port authorities will likely take a more active role in advancing detailed planning and feasibility work for priority upgrades, while provincial governments will need to support alignment across jurisdictions and facilitate coordination with offshore project development pathways. At this stage, collaboration with developers, utilities, stakeholders, and supply chain participants becomes more important, allowing port planning to reflect evolving project needs and sequencing requirements. Federal participation may also be relevant where funding programs, trade considerations, or cross-provincial coordination support targeted infrastructure development.

2.6.3 Long-Term: Sustained Port Development

Over the long-term, Atlantic Canada's ports system could be positioned to support sustained offshore wind activity across the full lifecycle, including construction, operations and maintenance, repowering, and eventual decommissioning. Building on short- and medium-term planning and alignment efforts, ports development efforts will likely transition from enabling early projects to operating within an established regional port system that supports repeat deployment and long-duration offshore wind activity.

Long-term ports development will need to focus on maintaining clearly defined functional roles across the regional ports system and advancing capacity in a manner that reflects demonstrated demand and operational experience. In practice, this might involve sequencing infrastructure investments across primary and secondary facilities to align with credible offshore wind development pathways, technological advancement, and evolving standards requirements. To support this transition, it will be important to establish a structured approach to monitoring port system performance, utilization, and emerging capacity needs over time, providing an evidence base to inform adjustments to planning assumptions and investment priorities. Embedding port planning within broader regional energy, supply chain, and workforce strategies can help make sure that port infrastructure continues to deliver value as the offshore wind industry scales, while also allowing flexibility to respond to market shifts, technology advancement, and future export opportunities.

Within this context, responsibility for port development becomes more distributed and embedded within broader regional governance and market structures. Port authorities could continue to assume a lead role in managing and evolving port assets over the offshore wind cycle, informed by long-term demand signals and operational experience. Governments could continue to play an enabling role by maintaining policy alignment and supporting coordination across provinces. To monitor progress, their role would likely include periodic review of port system performance, utilization, and alignment with offshore wind development trajectories to inform future planning and investment decisions.

2.7 Workforce

Offshore wind projects are capital-intensive, technically complex, and highly schedule-sensitive endeavors that are highly dependent on the availability and utilization of highly skilled, specialized, and diverse services. Domestically, even within conservative build-out scenarios, offshore wind build-out could generate thousands of new positions. Without an established and reliable local workforce, developers are compelled

to set their sights on international procurement options, introducing project delivery risks, potential cost escalations, and limiting the region's ability to capture long-terms economic value. In this context, a coordinated approach can help reduce potential construction bottlenecks, support more consistent use of local labour resources, and strengthen the region's ability to attract and retain a skilled workforce over time.

As the sector matures, workforce planning will need to address persistent labour market pressures, including an aging trades workforce, competition for marine and technical skills, and the challenge of sustaining employment across dispersed coastal communities. Without long-term workforce structures, early training investments risk being lost as workers cycle out of the sector between development phases or seek opportunities elsewhere.

As it stands, Canada's offshore wind development workforce is at the early stages of development. That said, the region possesses a roster of relevant capabilities derived from adjacent sectors, making the region well-placed for offshore wind-related workforce development activities. These have been identified through previous offshore wind supply chain and workforce assessments such as Marine Renewables Canada's *Atlantic Canada Wind Energy Supply Chain Assessment*.[19] They include offshore oil and gas, marine services, shipbuilding and repair, port operations and logistics, onshore wind construction, electrical and mechanical trades, and professional services such as engineering, environmental assessment, and project management. Atlantic Canada also benefits from an emerging education and training ecosystem that can be leveraged and expanded to support offshore wind workforce development. For instance, Nova Scotia Community College will be launching a one-year Wind Turbine Technician program in the fall of 2026[20]. While primarily geared toward onshore development, this program is intended to be tailored towards offshore deployment over time. Similarly, the College of the North Atlantic in Newfoundland and Labrador offers a one-year Wind Turbine Technician program as well as additional hydrogen-related programming.[21] Meanwhile, Holland College in Prince Edward Island offers a wind technology program paired with BZZE certification and New Brunswick is looking to add adjacent capacity through a Wind and Solar Energy Technician pathways at New Brunswick Community College.[22] [23]

While the region has a strong foundation to build from, several factors may influence Atlantic Canada's ability to develop a workforce aligned with the needs of an evolving offshore wind industry. Many existing training programs are designed for onshore wind or are geared toward adjacent industries and do not yet fully reflect the technical, safety, and operational requirements of offshore environments. In addition, current training programs have limited enrolment capacity. Most related technical programs offered across Atlantic Canada are designed for small groups, which will limit the speed and efficiency at which talent availability can be increased to meet peak construction demand. Finally, workforce development efforts are not yet fully coordinated between provinces, with training programs, funding arrangements, and industry

[19] Marine Renewables Canada, "Atlantic Wind Energy Supply Chain Assessment Final Report," April 2025. Atlantic Wind Energy Supply Chain Assessment & Pathways for Supply Chain Development.
[20] NSCC, "Wind Turbine Technician," 2026. Wind Turbine Technician | Programs | NSCC.
[21] CAN, "Wind Turbine Technician," 2026. Wind Turbine Technician-College of the North Atlantic.
[22] Holland College, "Wind Turbine Technology," 2026. Holland College | Wind Turbine Technology.
[23] BZZE Network, "Holland College." Holland College.

engagement activities primarily advanced through individual provinces or institutions. Improved alignment will help promote more consistent and balanced workforce development across the region.

Figure 8 below provides an illustrative overview of workforce-related recommendations over the short-, medium-, and long-term that can support the build-out of Atlantic Canada's offshore wind industry.

Figure 8: Summary of Short-, Medium-, and Long-Term Workforce Recommendations

2.7.1 Short-Term: Build a Foundational Training Framework

The future build-out of Atlantic Canada's offshore wind industry will rely on specialized technical skills and offshore-specific safety certifications that are not widely embedded in existing energy or marine training programs. In the short term, establishing a foundational training framework alongside mechanisms for facilitating interprovincial coordination will be important for aligning and strengthening provincial development efforts. Over time, this will enable Canada's Atlantic region to build a more cohesive workforce that can adapt to the evolving pace and scale of offshore wind development.

While foundational training frameworks are needed to support offshore wind, Atlantic Canada already benefits from established offshore safety training and certification capacity, including specialized programs delivered by institutions such as the Marine Institute's Offshore Safety and Survival Centre. These existing resources provide a strong base for expanding workforce readiness as offshore wind activity grows and could be leveraged and integrated into future training initiatives.

Delivering on this short-term recommendation involves several immediate steps:

1. **Conduct a Multi-Sector Workforce Study:** To inform targeted workforce training, a region-wide, multi-sector workforce assessment could be undertaken that builds upon prior studies and existing labour market analysis. This assessment might focus on identifying anticipated workforce demand associated with offshore wind development at the occupational level, referencing National Occupational Classification codes and mapping these needs to project timelines. By leveraging completed studies and supplementing them with updated, sector-specific insights, the action will provide a clear baseline for program development and avoid unnecessary duplication. Where gaps remain, the study will engage industry, training providers, and Indigenous organizations to validate priority skills and adaptive capabilities. Skill development pathways may include voluntary upskilling and micro-credentials for workers from adjacent sectors.

2. **Formalize Agreements Between Training Entities:** A regional offshore wind workforce cannot be optimized if developed through isolated institutional efforts, particularly given the specialized nature of offshore training. As such, it will be prudent for Atlantic Canada provinces to formalize collaboration efforts among training institutions to facilitate the establishment of shared competency standards, coordination of enrollment targets based on evolving regional labour demand and distribute specialized training offerings across provincial training campuses in a way that is both deliberate and targeted to regional strengths. The creation of structured training agreements or workforce consortiums could allow institutions to focus on their distinct areas of strength while ensuring programs collectively meet the full range of offshore wind and workforce needs.
3. **Secure Funding for Training Programs:** Once the workforce needs have been established, regional entities could shift focus to securing dedicated funding pathways to support curriculum development and boost the capacity of educational institutions to delivery on necessary training and certification programs. To do this efficiently, Atlantic Canada provinces could benefit from coordinating to use existing provincial and federal such as those geared towards the development of clean energy skills and sustainable job programs, sector-based workforce initiatives, apprenticeship and reskilling funds, and post-secondary and trades training budgets. Coordinated use of these funding mechanisms can accelerate access to resources, reduce duplication across similar programs, and ensure public investments are directed toward complementary training offerings that collectively strengthen regional workforce capacity.

Successful implementation of these recommended actions will be led primarily by provincial governments, who will be responsible for defining the regional orientation of education and labour policies, facilitating collaboration among training institutions, and directing provincial funding toward offshore wind workforce priorities. The federal government will need to support these efforts through the expansion and sustainment of available workforce funding programs and national skills initiatives while enhancing regulatory clarity with respect workforce sector development. Training and academic institutions will translate these signals into practice by working together to design and deliver offshore-specific curricula and adapting existing programs to meet emerging industry standards. Supportive stakeholders, including developers, industry organizations, Indigenous organizations, and community representatives, will contribute through validation of workforce requirements, work-integrated learning opportunities, and input to help make sure training pathways are inclusive, relevant, and grounded in anticipated project demand.

2.7.2 Medium-Term: Scale Through Industry Partnerships & Targeted Program Creation

As Atlantic Canada's offshore wind sector advances beyond early planning, the region's workforce must evolve from foundational capacity building and begin directly supporting industry delivery at scale. In the medium-term, the focus shifts to aligning workforce development needs within industry delivery models, allowing training pipelines to be more responsive to real project needs and timelines. Strengthening partnerships between industry and training providers and expanding targeted programs will help labour availability to keep pace with project timelines and increasing technical complexity. Industry-embedded training pathways will also reduce uncertainty for developers, improve the predictability of workforce supply, and support more efficient construction and operations planning as multiple projects progress concurrently.

Putting this recommendation into practice necessitates a series of actions focused on scaling targeted programs and establishing the structures needed to translate workforce planning into sustained, project-ready capacity as offshore wind development advances. As such, the recommended next steps are as follows:

1. **Establish Partnerships Between Original Equipment Manufacturers, Developers, and Training Institutions:** As offshore wind projects advance toward procurement and construction, workforce requirements will increasingly be shaped by overlapping project schedules, differing technology choices, and the need to support multiple projects moving through construction and operations concurrently. Preparing for this reality will require closer coordination between developers, equipment suppliers, and training institutions so that workforce planning reflects the cumulative demands of a growing project pipeline. These partnerships might wish to establish ongoing feedback mechanisms to ensure that evolving project timelines and market scenarios are communicated to training institutions, supporting timely program launches, enrolment planning, and instructor capacity decisions. Establishing structured partnerships will allow key industry representatives to communicate expected skill profiles, timing of labour demand, and evolving technical requirements, while training providers will be able to evolve and adjust program content and delivery in accordance with industry needs. These partnerships will also play a critical role in workforce attraction by signalling clear employment pathways, strengthening the visibility of offshore wind careers, and anchoring offshore wind as a stable, long-term employment pathway.
2. **Launch Regional Certification and Training Programs:** Expanded offshore wind development in Atlantic Canada will generate workforce demand shaped by overlapping projects and simultaneous activity across construction, commissioning, and operations. Delivering offshore wind training and certification programs at scale, therefore, requires coordinated decision-making within and between relevant provincial institutions with respect to program scope, intake volumes, delivery schedules, and areas of specialization. Flexible program design, including micro-credentials and modular upskilling, will enable workers from adjacent sectors to participate in offshore wind opportunities as the industry grows. As such, regional- specific workforce needs are translated into offshore wind-specific programs and credentials, sequencing program start dates to align with anticipated project timelines, and scaling enrolment to reflect cumulative demand rather than individual project requirements. During program development, it will be important to structure training delivery in a way that is sufficiently flexible to accommodate evolving sector requirements.
3. **Develop Indigenous-led Program Development Initiatives:** Indigenous organizations and businesses could be actively engaged partners in the design, governance, and delivery of offshore wind workforce training programs. Embedding Indigenous leadership within workforce strategies can strengthen regional labour capacity, support the growth of Indigenous enterprises, and help workforce investments to be grounded in sustained, inclusive, and self-deterministic economic participation.

Responsibility for advancing these actions will rest primarily with training institutions, developers, provincial governments, and Indigenous organizations. Training institutions could be responsible for overseeing program delivery and coordination, working closely with developers and equipment manufacturers to shape curriculum content, respond to evolving workforce needs, and align programs with industry requirements. Provincial governments could support alignment across jurisdictions, facilitate collaboration in program development, and provide policy direction to help scale workforce initiatives. Indigenous organizations could be actively engaged throughout program design, helping to make sure that training pathways are inclusive and provide meaningful access to employment and business development opportunities. Other stakeholders, such as industry associations, municipal governments, and community groups, may provide additional input or coordination as needed to strengthen program delivery and workforce outcomes.

2.7.3 Long-Term: Sustain and Evolve Workforce Development

As Atlantic Canada's offshore wind industry becomes more established, workforce development must evolve to support both long-term operations and continued project development over time. As such, this recommendation focuses on sustaining and evolving the region's offshore wind workforce so that skills,

experience, and institutional capacity are retained locally as projects progress, expand, and mature. An established offshore wind sector will require a stable and committed workforce capable of operating and maintaining assets over decades, while also supporting additional construction, potential repowering, and technology upgrades as new projects come online and existing facilities evolve.

Achieving sustained workforce readiness will require the creation of lasting structures that foster continuity, quality, and adaptation over time. As the offshore wind sector matures, the focus will shift toward embedding workforce retention and advancement as a permanent, sector-wide practice. This includes establishing coordinated apprenticeship and mentorship programs across employers and training institutions, with clear standards for paid placements, supervised hours, and career progression. Ongoing upskilling could be supported through advanced certifications, micro-credentials, and specialized training modules that are accessible to workers in coastal and remote communities. These might include flexible delivery formats, financial supports, and partnerships with local institutions.

A regional workforce council will be important for monitoring labour market outcomes, updating training targets, and coordinating learning opportunities as project activity evolves. Long-term workforce readiness will also depend on durable policy and funding structures, including multi-year supports for instructor capacity, facility upgrades, and retention measures such as incentives for apprenticeship completion and tools to help employers maintain skilled workers between project phases (e.g., wage subsidies, retraining grants, or flexible scheduling). Periodic review of these mechanisms will help ensure alignment with changing labour demand as the sector transitions from development to sustained operation.

Responsibility for implementing these actions is shared across provincial governments, training institutions, and industry organizations. Provincial governments will be accountable for setting workforce policy direction, supporting funding mechanisms, and facilitating regional coordination. Training institutions will remain accountable for the continued delivery of high-quality training programs, maintaining instructor capacity, and adapting curricula to evolving sector needs. Industry partners, such as developers, operators, and employers, will be important for providing apprenticeship placements, mentorship opportunities, and input on workforce demand and retention strategies. Supporting stakeholders, such as Indigenous organizations, sector associations, and community groups, may contribute to inclusive program design, help identify barriers to participation, and provide guidance on accessibility and community priorities as the sector evolves.

2.8 Innovation, Research & Development

The development and integration of large-scale offshore wind in Atlantic Canada introduces a distinct set of technical, operational, and system planning considerations. It introduces high-capacity, variable resources in locations that are often remote from existing load centres and connected through long transmission corridors. While the region has experience in managing variable renewable energy resources and operating in offshore and marine environments, the scale and configuration of offshore wind contemplated for the region introduce new conditions that place additional demands on transmission infrastructure, system operability, and planning approaches. The recommendations in this section build on analytical work completed through Phase 3 of the *Atlantic Canada Offshore Wind Grid Integration and Transmission Study*,

as well as broader regional system planning perspectives, for instance as outlined and NZA's *Offshore Wind R&D Priorities Roadmap*.[24]

Atlantic Canada also presents a unique physical and operational environment that will shape how offshore wind technologies are designed, deployed, and integrated. Offshore wind development in the region is expected to take place in deep, highly active marine environments, characterised by strong winds, complex seabed conditions, cold water temperatures, and exposure to seasonal weather variability. These conditions are particularly relevant for the application of floating offshore wind technologies, marine installation practices, and long-term operations and maintenance strategies. At the same time, the region's history of offshore activity, research, and innovate provides a strong and practical foundation. As such, Atlantic Canada represents a valuable setting for applied innovation and learning, where offshore wind solutions can be tested, adapted, and refined in ways that are both responsive to challenging operating conditions and supportive of scalable, long-term development.

Targeted innovation and research efforts are warranted to address emerging technical and planning questions associated with higher penetrations of offshore wind, concurrent project development, and evolving transmission configurations. These include understanding system operability under high levels of inverter-based generation, evaluating alternative transmission and interconnection approaches, and improving analytical tools and planning methods to reflect offshore wind development pathways. Without continued investment in applied research and knowledge development, there is a possibility that planning and infrastructure decisions could be made with incomplete information, increasing long-term cost and integration risk.

To support ongoing exploration of system integration, planning methods, and technology pathways associated with offshore wind development in Atlantic Canada, Figure 9 summarizes possible actions across the short-, medium-, and long-term.

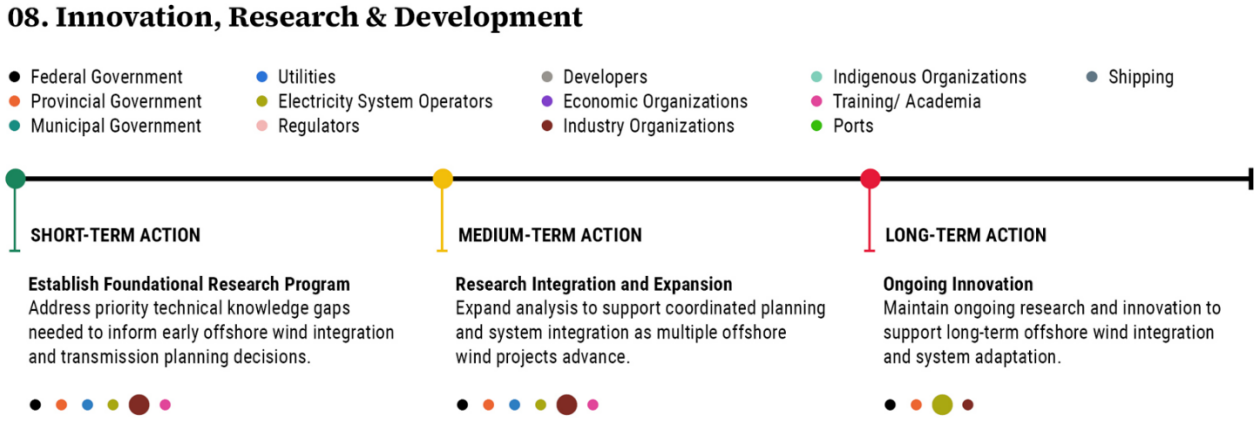

Figure 9: Summary of Short-, Medium-, and Long-Term Innovation, Research & Development Recommendations

[24] Net Zero Atlantic, "Offshore Wind R&D Priorities Roadmap," August 2011. Offshore Wind R&D Priorities Roadmap.

2.8.1 Short-Term: Establish Foundational Research Program

Atlantic Canada is entering a critical early phase of offshore wind development in which decisions about transmission configuration and system integration for initial projects are still being defined. Offshore wind introduces generation at scales and locations that differ from existing resources, resulting in changes to power flow patterns, contingency behaviour, and operating conditions under certain system states. Analysis of offshore wind integration scenarios indicates that higher offshore injections can increase loading on specific transmission corridors, affect system response to single-element outages, and increase the proportion of inverter-based generation during high output periods. As offshore wind development progresses, these dynamics underscore the importance of continuing to develop a robust technical evidence base to support early planning assumptions and infrastructure decisions.

In the short-term, this necessitates developing an improved understanding of alternative integration approaches that may be relevant under higher penetration scenarios, including High-Voltage Direct Current (HVDC)-based transmission configurations, hybrid alternating current/ direct current (AC/DC) solutions, and other system-strength considerations. Further targeted analysis and validation at this stage can help reduce uncertainty, improve analytical consistency, and support early transmission and integration decisions by building confidence in assumptions, methodologies, and scenario evaluation where system knowledge continues to evolve.

Associated next steps for this action could include:

1. **Launch a Technical Transmission Research Program:** Set up a dedicated, technically focused research program to support detailed offshore wind transmission planning in the Atlantic Canadian region. This program might be intended to build on and align with existing regional and national research initiatives, including work supported by Natural Resource Canada, provincial programs, utilities, system operators, and academic institutions, along with NZA's *Offshore Wind R&D Priorities Roadmap*[25]. The program could be structured to close priority knowledge gaps identified in early integration studies and preliminary transmission assessments, and to strengthen analytical capability and methodological consistency ahead of major transmission commitments. Efforts facilitated through this program might be undertaken in alignment with the efforts of the Transmission Planning Working Group to build consistency and practical relevance while avoiding duplication in efforts.
2. **Advance Targeted Technical Studies:** Use analysis undertaken as part of the research program to establish a set of targeted technical studies that directly inform future transmission decisions. Studies could be structured to complement ongoing transmission planning activities. This work might prioritize issues such as offshore–onshore interconnection configurations, technology choices, system operability, resilience, and sequencing of transmission investments as offshore wind evolves. As part of this effort, studies may include the identification and high-level screening of technically feasible transmission expansion options, including AC-based and HVDC-enabled configurations, to understand their potential applicability, benefits, constraints, and system interactions under a range of plausible development scenarios. The program might also integrate new data, modeling improvements, and methodological advances into a consistent analytical framework that can be applied across proposed scenarios and jurisdictions.

[25] Net Zero Atlantic, "Offshore Wind R&D Priorities Roadmap," August 2011. Offshore Wind R&D Priorities Roadmap

3. **Synthesize Findings:** Consolidate the outputs of the technical research program into a comprehensive transmission research report that clearly documents methods, findings, and implications for offshore wind transmission development in Atlantic Canada. The report could identify remaining uncertainties, outline credible transmission pathways under different development scenarios, and highlight priority considerations for future planning, regulatory engagement, and investment decisions. This report could be designed to inform utilities, governments, regulators, and other stakeholders ahead of major transmission commitments.

These actions might ideally be advanced through a collaborative effort led by industry-focused research organizations and bolstered through the academia community. Such organizations might be well-placed to manage the research program and support integration of results across technical workstreams. System planners and electric utilities might also be actively integrated throughout this effort, contributing data, input on system assumptions, and operational insight to help align priorities, methodologies, and outputs to system planning needs. Federal and provincial governments might play an enabling role by facilitating coordination across jurisdictions and providing access to funding or innovation programs that can help sustain and scale the work over time.

2.8.2 Medium-Term: Research Integration and Expansion

As offshore wind development progresses, the transmission system is expected to transition from accommodating isolated injections to managing multiple large-scale projects developed in parallel.

In this context, the medium-term focus shifts from understanding integration challenges to identifying transmission expansion options capable of managing concurrent offshore wind development in a coordinated manner. HVDC infrastructure represents one potential class of expansion options that may be well suited to managing aggregated power transfers, controlling flow distribution, and supporting operability as offshore wind deployment scales. That said, the applicability of HVDC solutions will be influenced by interactions between multiple offshore wind projects and the existing AC network, the geographic sequencing of development, and the evolution of system performance requirements as overall penetration increases. As a result, further work is required to examine HVDC expansion options within an integrated system planning framework.

Associated next steps for this action could include:

1. **Assess System Integration and Performance:** Evaluate how HVDC options identified as part of the short-term actions will interact with the existing and planned AC transmission system under concurrent project operation. This might focus on such factors as power flow control, interface loading, contingency performance, and implications for system operability and stability.
2. **Screen Options for Strategic Relevance:** Conduct a comparative screening of HVDC expansion options to identify technical advantages, constraints, dependencies, and key uncertainties, with the objective of narrowing the set of options that merit more detailed consideration in subsequent transmission planning and regulatory processes.

Progress in these efforts could be enabled through a coordinated initiative led by proponents of the established Technical Research Program and backed by expanded funding. Technical evaluation and integration could continue to be supported by industry-oriented research bodies and academia, informed by advisory input from system planners and, where relevant, electric utilities on issues such as system interactions, operability, and planning constraints.

2.8.3 Long-Term: Ongoing Innovation

Over the long-term, sustaining large-scale offshore wind development in Atlantic Canada will require a deliberate focus on ongoing innovation, applied research, and technology demonstration so that transmission and system integration solutions continue to evolve in step with the scale and complexity of deployment. As offshore wind penetration increases and system conditions change over time, long-term success will rely on the ability to incorporate advancements across electrical systems and offshore wind technologies. This includes ongoing innovation related to transmission and grid integration, as well as developments in turbine technology, blade and tower design, floating foundation systems, offshore substations, and energy storage solutions that may support system flexibility and reliability. Continued progress in areas such as HVDC system design, grid-forming and power-electronic capabilities, protection and control systems, and digital tools for system monitoring and operation support adaptive planning and operational practices as the Atlantic offshore wind sector matures.

A long-term emphasis on sustained applied research, development, and demonstration can support continued adaptation and progression of transmission and integration approaches as offshore wind deployment expands and matures. Ongoing investigation of advanced transmission concepts and system integration techniques, informed by operational experience, industry best practices, and evolving system needs can help ensure that planning and investment decisions remain robust under changing conditions. Remaining innovation-oriented over time will enhance the region's continued ability to support system resilience, reduce long-term integration risk, and enable incorporation of technological advances as they become available.

Responsibility for advancing long-term innovation and applied research related to offshore wind integration will rest primarily with electricity system operators, supported by provincial governments, helping to make sure that emerging technologies and system solutions are grounded in evolving operational, planning, and reliability needs. Supportive stakeholders such as academic and research institutions, federal government, industry organizations, and technology providers, will contribute through research delivery, funding programs, technical collaboration, and knowledge transfer to help inform system planning and future investment decisions.

3 Summary of Recommendations

This Roadmap and Action Plan presents a coordinated set of recommendations intended to support the development and integration of offshore wind in Atlantic Canada from the first project through to large-scale industry buildout. The actions reflect a range of planning, regulatory, technical, market, and coordination considerations that can significantly influence how offshore wind projects progress in the region.

Across the three time horizons, short-term actions are focused on establishing foundational capabilities, improving information availability, and strengthening coordination across jurisdictions. Medium-term actions build on this foundation and are oriented toward advancing planning alignment, refining policy and market frameworks, and supporting project development activity as the industry advances. Longer-term actions are meant to remain adaptive, recognizing that future needs will depend on the pace of development, market conditions, and technology evolution. These actions are summarized in Figure 10 below.

Short-, Medium-, and Long-Term Actions

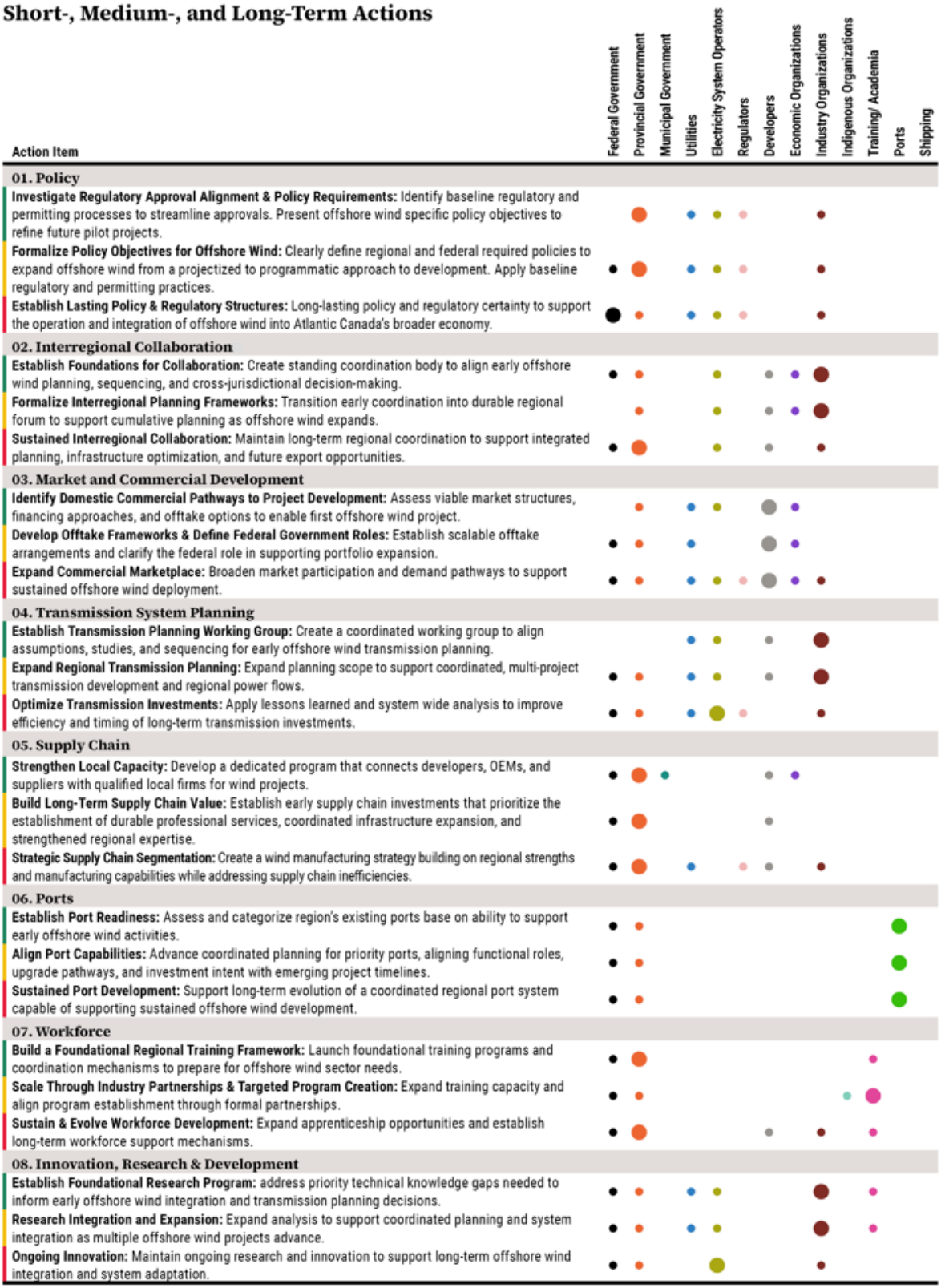

Figure 10: Short-, Medium-, and Long-Term Recommendations