SUBMISSION| Comments on Regional Assessment of Offshore Wind Development in Nova Scotia Draft Report

Submitted to: Nova Scotia Regional Assessment Committee
Submitted by: Elisa Obermann, Executive Director, Marine Renewables Canada
Date: December 18, 2024

1 Introduction

Marine Renewables Canada (MRC) is pleased to provide a submission regarding the Nova Scotia (NS) Regional Assessment (RA) of Offshore Wind Draft Report (October 31 2024). This submission has been developed based on feedback received by MRC members as well as research and analysis conducted by MRC. The aim of this submission is to provide information to support the RA Committee's work to develop a Final Report.

MRC is the national association for offshore wind (OSW), tidal, wave, and river current energy, representing 180 members including technology and project developers, suppliers, researchers, and communities. Many of MRC's members are focused on realizing OSW development opportunities in Canada, including companies already developing OSW projects internationally, as well as numerous suppliers who have a wealth of experience from working in Atlantic Canada's offshore and marine industries. Through this membership, MRC is the voice for the OSW industry in Canada and has been advocating for a supportive and predictable regulatory path and policies that can both catalyze growth and ensure sustainable development of the sector.

MRC's members are keenly interested in Canada's OSW opportunity, given the world-class and currently untapped OSW resources off the coasts of NS and Newfoundland and Labrador. The RA is a critical initiative for future OSW development in Canada, providing advice, analysis, and information that will inform future project-specific impact assessments and support responsible and sustainable OSW development overall. As this is the first RA ever conducted on OSW in Canada, MRC appreciates the immense task at hand to achieve the goal of the RA as outlined in the Terms of Reference.

2 General Comments

- **Content of Draft Report**
  The Draft Report effectively builds upon the Interim Report issued in March, offering greater context and a clearer rationale for the recommendations, as well as detailed analysis of constraints and information gaps. MRC appreciates the thoughtful and thorough approach the Committee has taken in reviewing and incorporating a substantial amount of feedback from

various parties. The commissioning of studies to address information gaps on socioeconomics and ports was a valuable effort, not only enhancing the assessment and recommendations but also providing new insights that were not previously available to the public.

- **Ongoing Engagement and Clear Communications**
  MRC commends the Committee for the significant amount of engagement they led throughout the process, providing information and education about OSW and the RA process itself. The work done by the Committee and RA secretariat will go a long way in providing foundational information about OSW. Despite this level of engagement, establishing a deeper knowledge base amongst the public about OSW technologies, development activities, potential positive and negative impacts, opportunities, and challenges is essential for this industry to advance sustainably. **MRC recommends that following the publication of the RA final report, provincial and federal governments work with relevant associations and organizations to help support a sustained education and outreach effort about OSW.**

  Furthermore, MRC is concerned that the RA process and nature of the final RA report may not be well understood. The RA Committee's Draft Report states that "*It is important to know that the Committee's recommendations are not binding on the Ministers, and that Ministers have complete discretion to determine if and how the results and recommendations of the Regional Assessment will be used.*"
  While this is clearly stated, it will be important that there is clear communication about how the report will be used by Ministers and for decision-making to avoid confusion that the Final Report is binding or similar to the regulatory outcomes and requirements of an impact assessment. This is particularly important if some recommendations of the Final Report are not adopted or implemented. **MRC recommends that the publication of the RA final report and subsequent communications from the Minister/government departments include clear language about how the content of the report will be used as a tool to inform future decision-making, rather than the result of a decision-making process. It will also be important for government to provide clear rationale for future decisions that is communicated broadly and the result of early engagement and consultation.**

3 Comments on Specific Sections of the Draft Report

4.0 Existing Conditions (p. 86)

MRC is pleased to see a high level summary and consideration of infrastructure required to support OSW development in the Existing Conditions section, namely ports and the electricity system.

- **4.2.2 Water Depth**

  The Draft Report's evaluation of fixed bottom foundations is focused on depths of <60 m, resulting in approximately 2.4% (7,187 km2) of the 300,000 km2 RA Study Area considered suitable for fixed bottom structures. It states that "the Committee assumed that advances in technology over the expected development timeline for 5 GW of leases would potentially push that number to 70 m, and any depths greater than 70 m would be feasible for floating structures."

  Technology advancements for depths up to 70m would be unlikely to be considered based on the current project timeline due to uncertainty with geological conditions that could potentially effect embedment depth of a fixed foundation along with regional specific load cases. Therefore, **MRC recommends that the 2.4% of the RA Study Area with this depth profile should be a priority area for de-risking challenges associated with foundations and should be optimized based on potential project size.** *See related recommendations in section 4, Theme 3 of this submission.*

  Additional Feedback

  Additional considerations for the implications of sea ice, sea spray, ice formation, and future modeling due to climate change would be beneficial. Quantifying potential impacts to installation, operations, maintenance, etc. will be important to overall project economics. Ice formation on turbines can affect aerodynamic performance, and modeling based on precipitation and temperature data will be necessary. While offshore turbines are not as susceptible to these effects, considerations must be given based on the regional climate assessment. Additionally, sea spray and subsequent ice formation can have a major impact on installation, as well as personnel access for operations and maintenance. Mitigation measures for these atmospheric conditions can have an impact on project assessment.

6.0 Potential Development Areas (p. 202)

MRC provided specific feedback on some of the Potential Development Areas (PDAs) identified in the Draft Report:

- **Sydney Bight**
  - It is noted that the 'Red Ground' lobster fishing areas have been substantially avoided for the PDA identification. However, a proposed transmission line from the PDA to

Sydney would transverse this red zone. An understanding of this interface would be required to assess the permitting and stakeholder risks.

- It has been noted that the depth of sediment may be insufficient for monopiles. This will require additional modeling to understand the risks of mobile sea ice for floating foundation types and may impact project concepts and add risk to development. A substrate evaluation would likely be necessary prior to foundation determination.

- **Middle Bank/Sable Island Bank**
  - A greater understanding of the existing natural gas pipeline corridor benefits and routing advantages would be beneficial. This is dependent on a proposed project point of interconnection, and additional geotechnical analysis would be necessary to determine burial depth feasibility along with seabed mobility implications of an export cable route.

  - Middle Bank and Sable Island Bank are sizeable PDAs with capacity for several OSW development projects. An optimization of the area would be beneficial, including avoidance of marine and fisheries habitats to de-risk development opportunities.

7.0 – 7.5 Cumulative Effects (p. 265 – 283)

The Draft Report sections focused on cumulative effect de*tail approaches, current practices, and a proposed approach going forward for measuring and monitoring cumulative effects of OSW activities.*

MRC agrees with the principle of Cumulative Effects Assessment (CEA) framework. It would be helpful for OSW industry as well as other affected parties, to understand how other projects are categorized for such an assessment. For example, where past projects are mentioned, it would be assumed that this would be just the infrastructure installed rather than accounting for past activities – further clarification would be beneficial.

It would also be helpful to understand how factors such as climate change and other future changes are factored into such an assessment, with a preference for CEAs to focus on other projects that are scoped and are moving forward in the permitting process.

In sections 7.2 and 7.4, some of the descriptions in these sections are overlapping with the definition of inter-related effects and in-combination effects rather than cumulative effects. It would be helpful to provide guidance on those separately for assessments.

7.5.2 Project Related Cumulative Assessment (p. 283)

Related to the feedback above, MRC recommends that OSW developers are engaged and included in any future discussions pertaining to CEA frameworks. It is challenging to account for environmental or socioeconomic factors within a CEA, which is best focused on how impacts can interact between projects. More clarity around CEA monitoring programs, and the implementation of those, would be very

helpful, and developers can assist with that as well. For example, would this be implemented across multiple projects? What would be the best approach to manage data and reporting?

4 Draft Report Recommendations (Section 10)

10.1 Theme 1: Existing Knowledge, Gaps and Necessary Research (p. 316 – p. 324)

The Draft Report identifies data gaps and items potentially requiring more research to help inform future project planning and regulatory decision-making. MRC agrees that filling data gaps and building the knowledge around OSW activities and potential impacts is critical to ensuring the responsible and sustainable development of OSW and an overall industry. Furthermore, it is imperative that the pursuit of additional studies, does not delay any development activities (pre-development activity, call for bids, etc.). Studies can take place in parallel with planning and development activities given the long timelines for OSW development. **A general principle should be that future studies must support and not inhibit growth and progress.**

Overall, MRC is supportive of the recommendations included in Theme 1. The need for a collaborative and coordinated effort to address research gaps is recognized and an effort like the Scotian Shelf Collaborative Research Initiative as recommended in T1-1 would help drive and facilitate critical research. It should be noted that an effort is already underway by Town of Port Hawkesbury and the Municipality of the County of Richmond to develop an Offshore Wind Centre of Excellence (OSWCoE) Business Case and Opportunities Appraisal. As part of its remit the OSWCoE will fulfill the role bringing OSW related research in Atlantic Canada under one umbrella, which seems to be aligned with the Scotian Shelf Collaborative Research Initiative detailed by the Committee.

10.2 Theme 2: Socio-economic Feasibility and Consequences (p. 324 – 330)

- **T2-1 Establish a Port Advisory Group**
  As the Draft Report correctly details, there are several initiatives and studies underway and some already completed to assess existing port capabilities and future needs to support OSW development. Before adopting the recommendation of a Port Advisory Group, MRC recommends reviewing the results of the studies and any recommendations put forward that may either conflict or bolster this recommendation.

- **T2-2 Undertake Class D (conceptual design) cost estimate and model impacts**
  MRC believes that a deeper economic impact study, assessing the impacts of OSW development scenarios in Nova Scotia would help to fill an information gap and provide useful insight for the public, stakeholders, elected officials, etc. MRC's Atlantic Wind Energy Supply Chain Assessment slated to be finalized in March 2025 will provide some of this information.

- **T2-3 Adopt a regional/national planning approach for the provincial OSW Roadmap**
  The Draft Report underscores the need for a regional and national approach to planning to ensure an adequate supply chain and workforce to meet the demands of OSW development. A supply chain assessment, along with recommendations for supply chain development, commissioned by MRC, will serve as a critical study to guide future efforts in supply chain growth and readiness.
  A summary of the study's scope of work and tasks is attached as an appendix to this submission.

10.3 Theme 3: Project Development (p. 330-335)

- **T3-1 Coastal Buffer**
  MRC recognizes the work that went towards revaluating the buffer proposed in the Interim Report and the acknowledgement by the Committee that the sector, technology and potential constraints are evolving. As a result of this analysis, the Committee has proposed a buffer could potentially undergo a request for an incursion or modification.

  While the Committee has outlined rationale for the 25 km buffer, outlining constraints that were identified during the engagement and information-gathering process, the rationale still lacks specific science-based evidence that a blanket coastal buffer of 25 km is necessary. MRC believes that potential risks and/or negative impacts to fisheries, the environment, other ocean users and coastal communities must be mitigated and addressed early, however, the analysis fails to also recognize how much of an impact distance from shore can have for the economics of an OSW project. Every additional kilometre from shore has an economic consequence for projects, investment attraction, and the overall sustainability of a project and the sector.

  At this early stage in establishing an OSW industry, MRC recommends that rather than applying a coastal buffer that could then potentially undergo a request for incursion or modification, that the application of buffers be based on the following criteria:
  - **Determined on a project-by-project basis and unique characteristics of a proposed project (ex. location, type of OSW technology, size of project, etc.)**
  - **Consideration of existing constraints and regulatory requirements to avoid duplication and minimize overly burdensome regulation**
  - **Consideration of international best practices for establishing buffers**
  - **Determination of buffer distance based on science-based, transparent process that also includes assessment of impact on OSW project economics**
  - **If a blanket coastal buffer is viewed as a critical need, determination of the buffer distance and specific details should go through a focused consultation process with relevant parties including the OSW industry**

- **T3-2 Tier1 and Tier2 PDAs**
  MRC is pleased to see more potential development areas (PDAs) identified in the Draft Report given the major OSW potential off the coast of Nova Scotia. As shallower areas (60 metres or less) are suitable for fixed OSW technologies, possibly presenting lower project costs (dependent on distance from land), **MRC encourages further exploration and analysis of these shallower areas, with the aim of maximizing the potential of these areas by possibly expanding them further.**

  The rationale for establishing Tier 1 and Tier 2 PDAs appears to be a practical way of supporting future policy and regulatory decisions, but some MRC members have raised questions of whether it is necessary to categorize areas into two tiers given that industry/developers would be conducting extensive studies and data collection to determine best sites. It is recognized that this categorization is intended to assist future decision-making and identification of specific sites. However, given that governments will engage in additional efforts to determine future Wind Energy Areas following the completion of the RA, the tiers may not be necessary at this time.

- **T3-3 Bid Criteria**
  The discussion on bid criteria included in the Draft Report is helpful and aligns with feedback MRC has received from its members over the years. However, including this information does seem somewhat out of scope in relation to the RA Terms of Reference and its stated objectives. **MRC recommends that government pursue further analysis and discussions with OSW industry on auction/leasing design and bid criteria to determine the best course of action and elements that are suitable for the unique aspects of the Nova Scotia market.**

  To support work to design an appropriate and balanced auction/leasing approach, MRC collaborated with Canada's Ocean Supercluster and several of its OSW developer members to commission a report focused on how seabed leasing rounds for offshore wind projects may be structured, designed and implemented for the Canadian market. There is growing awareness across markets that seabed leasing (and auction) processes can significantly influence industry direction. The aim of this report is, therefore, to make recommendations as to how to maximise this opportunity to use the leasing round as a mechanism to positively shape the industry as it matures in Canada, and conversely, ensure pitfalls that have been highlighted in other jurisdictions are avoided.

  A summary of the report is attached as an appendix to this submission.

- **T3-5 Security Related to Abandonment and Decommissioning**
  MRC supports the need to establish proper protocols and requirements related to abandonment and decommissioning of OSW projects and technologies and agrees with the Committee's

recommendation that the *"process used to establish the level and type of decommissioning and abandonment security for OSW projects be transparent and that the public be advised of the arrangements put in place."* **MRC further recommends that careful consideration go towards the level of security required, balancing the realities of decommissioning costs to ensure this requirement does not inadvertently negatively impact the economics of the project.**

The Draft Report references feedback on this topic included references of concerns about abandoned tidal energy devices in the Bay of Fundy. MRC believes that it is important to outline that tidal energy devices vary greatly from OSW technologies and that there can be considerable differences in the requirements/methods for decommissioning and removal of OSW versus tidal technologies. As a more mature technology, there are more documented practices for the responsible removal of OSW projects and technologies.

- **T3-6 Potential reduction of existing pipeline corridor exclusion zone**

The Draft Report states that there is a 5NM exclusion zone to protect the abandoned but existing pipeline corridor, but MRC members have pointed out that this is false. The final abandoned pipeline locations (for both Deep Panuke and Sable Offshore Energy Project) were provided **to CHS and locations charted with a note that they are abandoned. No exclusion zone is noted. MRC recommends that this portion of the report be removed or verified with CHS.**

10.4 Theme 4: Coexistence and Compensation (p. 335 – 338)

- **T4-1 Establishment of a Compensation Regime, T4-2 Development of a Compensation Guideline**

  MRC is supportive of actions to foster co-existence and recognition of displacement of fisheries activities or loss of livelihood. At this early stage in establishing an OSW industry, **MRC recommends that rather than establishing a compensation regime or guideline at this stage, that further discussions take place between government and OSW and fisheries industries to establish protocols and guidelines for how fisheries and OSW can co-exist in the marine environment.** A future step would then be to explore and pursue compensation models and practices.

- **T4-3 Establishment of Industry-wide Funding Model**

  MRC views this recommendation to be out of scope with the RA Terms of Reference and associated objectives. **Before any establishment of an industry-wide funding model, MRC recommends that there is extensive collaboration and discussions between government and OSW and fisheries industries.**

10.5 Theme 5: Cumulative Effects (p. 338 – 339)

MRC is supportive of actions recommended via T5-1 and T5-2 to “Recognize that responsibility for cumulative effects assessment is shared and tiered” and “Prepare guidelines and data sources for developers.

10.6 Theme 6: Governance (p. 339 – 342)

MRC is supportive of actions recommended to foster good governance of OSW and in particular, **encourages federal and provincial government to pursue the recommendation to include “First Nation Representation on the CNSOER Board” as detailed in T6-2.**

10.7 Theme 7: Education and Training (p. 343 – 344)

- **T7-1 Work with schools, colleges and universities to develop educational and training programs related to OSW**

MRC is supportive of actions to foster greater education and training related to OSW skills, expertise and knowledge that can address increasing needs for a skilled workforce. **MRC recommends that more emphasis be put on co-op and internship placements with local suppliers and OSW industry as an opportunity and action to support skills development and build the local workforce.**

- **T7-2 Development of new upskilling, retraining and micro-credential programs for current marine workforce**

Recommendation T7-2 should be built upon further by provincial and federal governments in consultation and collaboration with MRC as the association is already supporting local suppliers involvement in OSW domestically and internationally. **MRC recommends that governments explore and support the establishment of a supplier development program for OSW that focuses on strengthening the capabilities and performance of suppliers by providing targeted support, training, and collaboration.** Key components may include capacity building for local suppliers, technical assistance to meet stringent industry standards, and facilitating access to funding or financing options for innovation and scaling. The program could also emphasize improving supply chain resilience through better logistics, quality control, and risk management practices. Collaboration with research institutions, universities, and industry experts to drive technological advancements and sustainability improvements would be crucial. Additionally, fostering long-term relationships between OSW developers and suppliers, alongside promoting knowledge sharing and best practices, could ensure that the entire supply chain is better equipped to meet the growing demands of the offshore wind industry, while driving local economic growth and job creation.

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APPENDIX

1 – Backgrounder | Atlantic Wind Energy Supply Chain Assessment & Pathways for Supply Chain Development

2 – Analysis of Global Offshore Wind Seabed Leasing/Auction Frameworks and Recommendation for the Canadian Context

BACKGROUNDER | Atlantic Wind Energy Supply Chain Assessment & Pathways for Supply Chain Development

Context & Drivers

Atlantic Canada has some of the best offshore and onshore wind resources in the world, with wind speeds exceeding 9 metres per second. Developing even a small fraction of this resource can support net-zero targets, local supply chain development, and clean growth overall. Atlantic Canada is increasing its focus on developing both onshore and offshore wind resources to help green the grid and pursue domestic and export green hydrogen opportunities.

Offshore wind (OSW) and onshore wind present major opportunities for Canada – as a domestic and export resources that could be developed to support increased electrification and green hydrogen production, as well as a supply chain and trade opportunity for local suppliers who have capabilities from experience working in offshore and marine industries.

Offshore Wind

Atlantic Canada's offshore represents a significant untapped renewable energy resource, with wind speeds of 10-11 metres per second and a technical OSW potential of 938 GW in Nova Scotia alone[1].

To support the future development of OSW, federal and provincial governments have been spearheading significant legislative and regulatory processes, including the establishment of a joint management by amending the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act ("The Accord Acts"),* Regional Assessments (RA) for both offshore *Newfoundland and Labrador and Nova Scotia,* and the development of *Offshore Renewable Energy Regulations*. The Province of Nova Scotia has established an initial target of 5 GW of offshore wind leasing by 2030 with the intent to drive industry investment and growth, and Newfoundland and Labrador and the federal Government have entered into a Memorandum of Understanding on offshore wind in 2023 to enable the province to take the regulatory lead on offshore wind projects within 16 provincial inland bays. These initiatives are progressing on ambitious timelines with a goal of beginning OSW leasing in Atlantic Canada this decade, and in Nova Scotia by 2025-2026.

A critical component of ensuring sustainable growth of OSW in Canada will be the establishment of a capable and competitive supply chain to support industry requirements. Atlantic Canada has the advantage of many experienced suppliers and services that have worked in offshore and marine

[1] Aegir Insights, 2023. *"Value Mapping Nova Scotia's Offshore Wind Resources."* https://netzeroatlantic.ca/sites/default/files/2023-04/Value%20Mapping%20Nova%20Scotia%20Offshore%20Wind%20Resources.pdf

industries for decades, with some already working in the international OSW market. However, OSW is a relatively new industry for many businesses. Even those currently working in OSW elsewhere, may face challenges in terms of capacity and competitiveness when it comes to domestic development. The capabilities of the local supply chain will also factor into OSW developers' decisions on supplier contracts and partnerships and investment in the region, as well how project/leasing bids are structured.

At this early stage in OSW industry development there is general uncertainty about the scope of a domestic supply chain, the timeframes needed to build critical resources, the level of investment required, the potential benefits to local workers and communities, and the significance of gaps in the existing suppliers/services (ex. manufacturing, port, vessels, workforce, etc.). Therefore, a robust analysis of regional supply chain strengths and gaps is integral to successful industry development and ensuring local economic benefits. Supporting a domestic pipeline of OSW projects, as well as the opportunities posed by international OSW development, warrants the need for a study to: 1) better understand supply chain demand 2) assess existing strengths and gaps and 3) create an action plan to facilitate local supply chain development that will help maximize local benefits from OSW projects.

Onshore Wind

While onshore wind has been developed over the years in Atlantic Canada, this growth is expected to increase, driven by targeted plans launched by provincial governments over the past year. In 2022, Newfoundland and Labrador lifted its moratorium on onshore wind development and launched a competitive Crown Lands Call for Bids for Wind Energy Projects, placing approximately 1.7 million hectares of Crown Lands up for competitive development. As a result of that process, in August 2023, Newfoundland and Labrador announced over $60 billion of private-sector onshore wind projects.

Although the onshore wind sector is more mature in Atlantic Canada than OSW, the increase in activity will require a skilled supply chain that has the capacity to deliver on project requirements. Provinces have been setting targets and undertaking policy initiatives for onshore wind development that must be met to meet clean electricity, net zero, and economic development goals:

- New Brunswick's clean energy strategy *Powering our Economy and the World with Clean Energy – Our Path Forward to 2035*: 1400 MW of new wind energy development by 2035
- Newfoundland and Labrador's Renewable Energy Plan; removal of a moratorium on onshore wind development; and design and implementation of a process for Crown Land for Wind Energy Projects: Four wind-to-hydrogen projects announced totalling over 14 GW of wind energy
- Nova Scotia's 2030 Clean Power Plan: 1000+ MW of new wind energy development by 2030
- Prince Edward Island Energy Blueprint and new strategy are under development and signal the need for more wind energy (onshore and possibly offshore)

Project Overview

Marine Renewables Canada (MRC), with funding support from the Atlantic Canada Opportunities Agency (ACOA), Nova Scotia Department of Natural Resources and Renewables, and Prince Edward Island Energy Corporation commissioned a study **to help support an overall goal of developing a Canadian offshore wind (OSW) supply chain and further growing capacity in the onshore wind supply chain in time to meaningfully support the installation of future OSW and onshore wind projects that will be in the pipeline** – onshore projects are already in queue and the OSW pipeline will begin with Nova Scotia's leasing targeted for 2025-2026. Xodus Group and its partners Angler Solutions, Envigour Policy Consulting were selected to conduct the study, supported by an expert team of local industry advisors.

This project is intended to help industry, suppliers, governments, and other stakeholders strategically plan how to invest in local resources to both de-risk future deployments, establish a sustainable and self-sufficient industry and ultimately realize the significant benefits that can be achieved through an offshore and OSW industry in Atlantic Canada.

Project Objectives

- Define the scope of offshore and onshore wind supply chain (with a focus on development and production).
- Establish an understanding of the current status and capabilities of the Atlantic Canadian wind supply chain.
- Provide an analysis of industry requirements for domestic OSW and onshore wind development and associated supply chain needs.
- Deliver an assessment of the OSW and onshore wind supply chain opportunity for Atlantic Canada to inform an action plan to enhance the regions OSW supply chain position.
- Develop strategies and actions to:
    - Address supply chain gaps and challenges.
    - Support existing Atlantic Canadian OSW and onshore wind companies.
    - Engage regional companies not already engaged in OSW and/or onshore wind.
    - Develop a strategy for partnership building between companies and workforce and the OSW and onshore wind industry.

Project Scope Summary

Recognizing that there are significant differences between OSW and onshore wind supply chains, the project consists of two parts, focused on OSW and onshore wind, and a final part focused on results dissemination and supply chain engagement.

PART 1: Offshore Wind Supply Chain

The OSW supply chain assessment and analysis is broken into three main phases:

1) OSW Industry Requirements and Supply Chain Demand

2) OSW Supply Chain Assessment (Regional/Atlantic Canada)
3) Pathways to Develop Atlantic Canada's OSW Supply Chain

PART 2: Onshore Wind Supply Chain

The onshore wind supply chain assessment and analysis is broken into three main phases:

1) Onshore Wind Industry Requirements and Supply Chain Demand
2) Onshore Wind Supply Chain Assessment (Regional/Atlantic Canada)
3) Pathways to Develop Atlantic Canada's Onshore Wind Supply Chain

PART 3: Knowledge and Results Dissemination

The outcomes of the study will be included in a final report targeted for March 2025. In April, MRC will host workshops in each Atlantic province to share the results of the study, provide research and assessment insights, and discuss the report recommendations.

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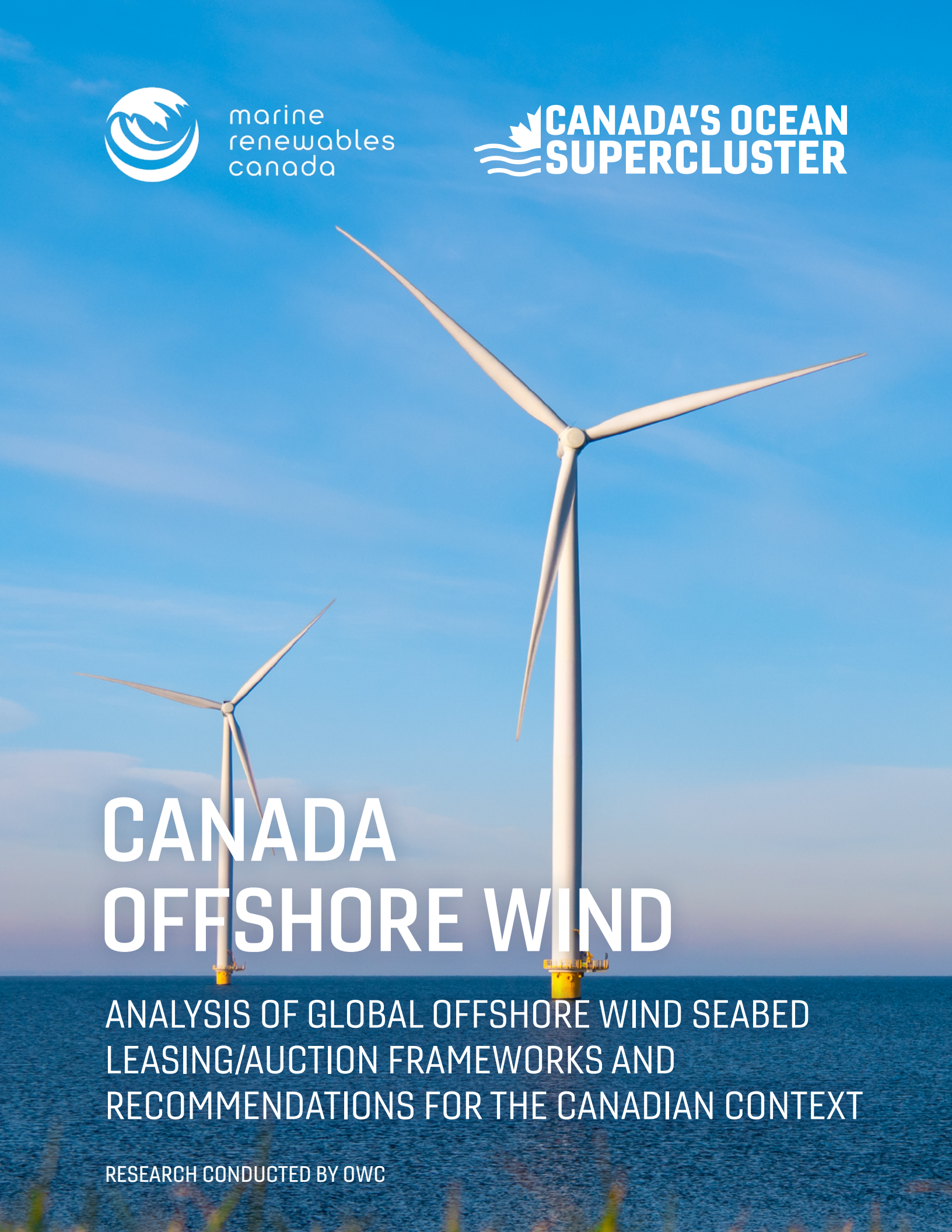
CANADA'S OCEAN SUPERCLUSTER



CANADA OFFSHORE WIND

ANALYSIS OF GLOBAL OFFSHORE WIND SEABED LEASING/AUCTION FRAMEWORKS AND RECOMMENDATIONS FOR THE CANADIAN CONTEXT

RESEARCH CONDUCTED BY OWC

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GROWING CANADA'S OCEAN ECONOMY

AMBITION 2035

AMBITION 2035

GROWING CANADA'S OCEAN ECONOMY BY 5X TO $220B BY 2035

In 2016, the OECD evaluated the growth of the global ocean economy, projecting it would double in size by 2030 to $4 trillion dollars Canadian and outpace the broader economy's growth by 20 per cent. In the context of this global ocean potential and in developing ocean solutions that are urgently needed, Canada can achieve transformative growth with significant opportunities for Canadian businesses and workers from coast-to-coast-to-coast. This requires a collective approach and being bold in our ambition.

In the fall of 2022, Canada's Ocean Supercluster (OSC) released a discussion document introducing Ambition 2035 - a 5X growth potential for Canada's ocean economy by 2035. Informed by more than 400 stakeholders and leaders from across the country as well as economists, it was developed to provide an ambition for all of Canada's ocean network to rally behind and consider the role they play in delivering on it.

Following the discussion document in May of 2023, more than 200 leaders in ocean came together in Ottawa with a shared ambition to grow Canada's ocean economy to $220 billion by 2035.

Canada's achievement of this goal will require innovation in new sectors and the growth and evolution of existing industries. This report provides a context for the discussion around the successful development of renewable energy in Canada, and Canada's participation in the Global Offshore Wind market.

WE HAVE BIG AMBITION FOR OCEAN IN CANADA

$220 BILLION

5X GROWTH

BY 2035

SUMMARY

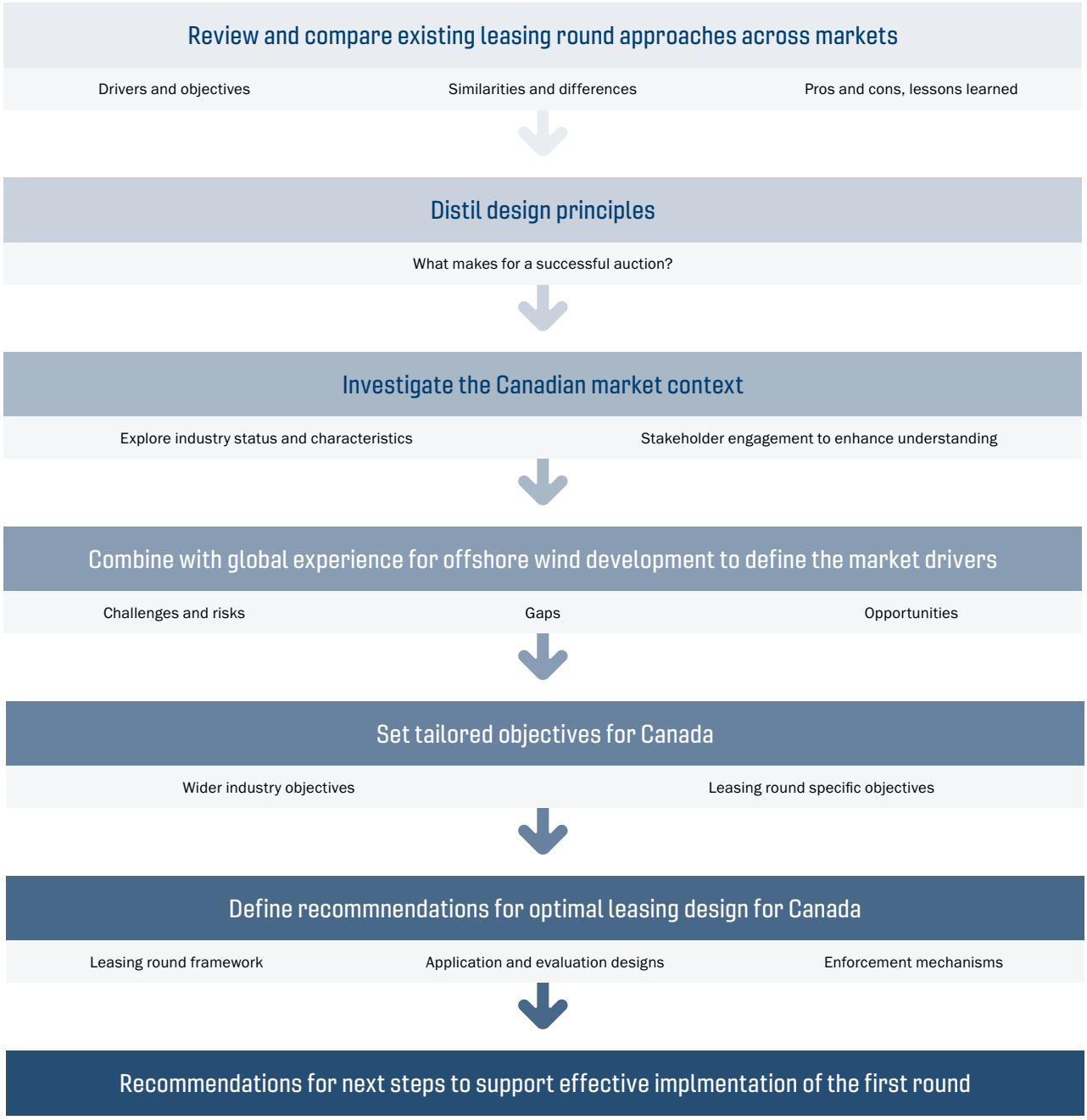
Canada's Ocean Supercluster and Marine Renewables Canada commissioned OWC, a specialist global offshore wind consultancy, to prepare a detailed report on how seabed leasing rounds for offshore wind projects may be structured, designed and implemented for the Canadian market.

There is growing awareness across markets that seabed leasing (and auction) processes can significantly influence industry direction. The aim of this report is, therefore, to make recommendations as to how to maximise this opportunity to use the leasing round as a mechanism to positively shape the industry as it matures in Canada, and conversely, ensure pitfalls that have been highlighted in other jurisdictions are avoided.

The intended aaudience for this report is primarily the government, regulatory bodies, and industry organizations that have roles to play in providing strategic direction and/or designing the leasing round itself. However, it is also intended for a wider audience across the stakeholder groups, as a useful resource on the intricacies of leasing round design to promote better understanding of the issues and help support more meaningful future engagement activities.

STUDY APPROACH

The approach followed to undertake this study is summarised below.



GLOBAL COMPARISON

To create a strong evidence base for the recommendations set out in this report, OWC began by completing a thorough review of seabed leasing and auction processes in different jurisdictions. The OWC team has extensive experience working with regulators and with developers to design and navigate a wide variety of leasing formats within very different market contexts.

The comparison focuses on the US, UK, French and Dutch markets as these cover the full spectrum of approaches from price focused to experience and capability based. This set also captures some of the earlier design approaches and the progression of these in the most established offshore wind markets, enabling more extensive insights to be offered. The core comparison is complemented by the inclusion of specific details from other jurisdictions, where these have employed interesting alternative or additional requirements, such as in Australia, Germany and Norway.

The comparison explores the market context and how these steer key drivers depending on the policy/regulatory, site/physical, supply chain, social, environmental and economic characteristics of the market, that in turn shape the objectives for the industry and for the leasing round. Objectives across the markets covered a wide range of aspects as follows:

INDUSTRY OBJECTIVES FROM A VARIETY OF MARKET CONTEXTS:

- Fully establish an offshore wind industry
- Be a leader in floating wind
- Ensure projects actually get built
- Demonstrate profitability of offshore wind
- Showcase feasibility of short timeline implementation
- Stimulate economic growth and create jobs
- Kick-start supply chain development
- Strengthen local supply chain
- Foster innovation for floating wind
- Encourage ecological innovation and minimise impact
- Enhance energy security

RANGE OF ASSOCIATED LEASING ROUND OBJECTIVES:

- Ensuring an attractive offering to developers and investors/generating interest in the market
- Generating a strong pipeline of projects
- A process that is transparent, objective and fair for applicants
- Be open to new market entrants
- Demonstrate technical feasibility and financial viability of offshore wind
- Fast-track projects
- Identifying and mitigating project risk
- Realising value inherent in the seabed asset

GLOBAL COMPARISON

Components of the leasing/auction round frameworks were then considered, including the timing, duration and integration with other aspects of the project development process including route to market/subsidies, grid connection and environmental consenting. The steps in the application process were detailed, including qualification and eligibility requirements, award method, balance between price and non-price based criteria, site boundary selection process and level of competitiveness of the round. Key similarities and differences between the approaches are discussed.

The application designs in terms of the specific questions and content were reviewed and summarised into common themes alongside their more specific criteria. Similarly, the evaluation methods and key T&Cs are discussed to capture the range of approaches and reasoning for these.

he comparison concludes with analysis of the outcomes of the leasing rounds, whether these met the objectives set out for the round, key pros and cons of the designs and lessons learned:

AIGNMENT WITH OBJECTIVES

Yes, except for:

- UK – unlikely to meet targets on time due to the long duration of the leasing round and consenting processes, and project delays relating to grid connection dates and supply chain constraints
- US – Supply chain development has not been as successful as hoped
- US – Profitability of projects has not been demonstrated

PROS

- Some rounds were particularly attractive for developers with high levels of participation
- Qualitative evaluation approach encourages developers to be more thoughtful and critical about their development strategy
- Provision of clear guidance and consultation with developers in some rounds
- Tailoring of the round to the current global technoeconomic climate
- An established process that is consistent over multiple rounds

CONS

- Lack of non-price criteria in some rounds
- Lack of enforcement mechanisms
- Easily achievable non-price and price criteria in some rounds making it difficult to distinguish between applicants

LESSONS LEARNED

- Low price caps can be easily met and render a price criteria irrelevant
- Easily achievable non-price criteria result in these becoming requirements that all developers sign-up to and cannot be differentiated on
- Criteria enforcement is key to ensuring the accountability of applicants and ensure plans set out in the application are met
- Difficult to encourage supply chain development without clarity on project pipeline
- Auction (price) only formats do not allow the government to influence

GLOBAL COMPARISON

The conclusions were distilled into a set of requirements to drive successful leasing design regardless of the specific market context and objectives. Some key considerations reflecting the parameters that can be varied to shape the design are also offered, providing the basis from which recommendations for Canada can be confidently developed. A summary of the requirements and variables is as follows:

REQUIREMENTS FOR SUCCESS:

- Appropriate timing of the process with respect to the jurisdiction's economic climate
- A strong understanding of the current market context and future trends to derisk the application design
- Development of specific and strategic objectives is critical to ensuring that both the jurisdiction and the developer benefit from the seabed leasing round
- Designing a process that can definitively and appropriately differentiate between applicants
- Striking the right balance between price and nonprice elements
- A process that understands key risks across parties and seeks to support risk reduction
- Having a clear route to market in place and strong alignment with the permitting process

VARIABLES TO SHAPE THE DESIGN:

- Low bar versus high bar approach and thus how accessible the round is to new applicants as well as having the potential to promote differentiation between applicants
- Quantitative versus qualitative application and evaluation approaches
- Use of experts in the evaluation process
- Level of effort required in the application and evaluation
- Level of flexibility in the application and evaluation processes
- Level of transparency in the evaluation
- Putting in place suitable enforcement or monitoring mechanisms post-application to promote accountability

MARKET CONTEXT

The second element to developing strong recommendations with respect to an optimal leasing design for Canada was to develop a good level of understanding of the Canadian market context, including government policy, existing regulations, other offshore industries, site conditions, routes to market, grid and port infrastructure and supply chain constraints.

To enhance this understanding and delve deeper into the nuances of the industry and the challenges, risks and opportunities, a selection of stakeholders from key groups as well as rights holders were engaged with. A questionnaire was developed, tailored to each stakeholder group. The findings were collated to draw out common themes whilst maintaining confidentiality for the stakeholders. Note that this was not designed to be an exhaustive stakeholder mapping and engagement exercise. Instead, it should be viewed as an initial activity to help inform and validate the report findings.

Key themes were as follows:

- A real need to do everything possible to speed up (without compromising on quality) the development timeline to deployment of the first operational projects for Canada to maximise realisation of the opportunities available
- Concerns around route to market uncertainty and associated constraints for grid and PPAs, lack of maturity for hydrogen
- Developers are very keen to have input to site selection
- A general level of dissatisfaction with some international markets favouring applicants with the greatest financial means
- Clear legislation and subsidy support were identified as particular needs for developers
- Concerns around supply chain readiness and development needs to overcome constraints, strong preference for local content to maximise opportunities but in balance with cost effectiveness and international trade considerations
- Local benefits and compensation as a genuine opportunity for local groups, and as a mechanism for developers to promote project success with stakeholders
- A willingness by all stakeholder groups to be involved in the process, and a recognition that there will be challenges that need to be addressed with the support of key stakeholder groups

CHALLENGES AND OPPORTUNITIES

The Canadian context research, stakeholder engagement activity and the team's extensive prior experience with offshore wind developments in global markets were combined to define the main challenges and opportunities for Canada:

KEY CHALLENGES AND RISKS IN CANADIAN CONTEXT

- Presence of high uncertainty and risks throughout the development phase
- Developing and enacting effective risk mitigation strategies
- Lack of best practice and formal procedures to follow risking suboptimal project delivery
- Floating wind technology and industry maturity
- Designing appropriate fixed foundation solutions for large WTGs at shallow water sites in a harsh environment
- Supply chain capability and capacity building
- Grid constraints
- Establishing a route to market
- Complexity of logistics and installation for large components and projects, including navigating weather window constraints (especially important for geographies with strong metocean conditions)
- Major component replacement especially for floating wind, in strong metocean conditions

BROADER CHALLENGES AND RISKS TO TAKE INTO ACCOUNT

- Substantial project expenditure required prior to securing route to market
- Establishing effective resourcing plans given resource shortages in the industry
- Integration of supply chain, innovation plans and engineering/delivery strategy
- Achieving alignment and defining suitable decision making processes to avoid project delays/suboptimal delivery when working in Joint Ventures/partnerships
- Risks associated with not defining costs and developing a realistic cost reduction strategy early enough in the project
- Design challenges include strong environmental loading, designing with large WTGs, minimising foundation size/weight, assembly and integration challenges relating to floating wind level of maturity
- Lack of operational data for floating wind and for new WTG models increases operational risk

POTENTIAL OPPORTUNITIES OFFERED BY THE CANADIAN CONTEXT

- Good wind resource characteristics leading to high capacity factors
- Fairly extensive areas that are potentially technically suitable for development, possibly leading to sizeable market for Canada if route to market and other constraints/challenges can be overcome
- Opportunity to establish new approaches to developing projects more sustainably
- Opportunity to become an offshore wind hub including for floating wind and hydrogen (and/or derivatives) production
- Associated high potential for job creation and economic growth
- Opportunity for skills transfer from O&G, power line maintenance and onshore wind
- Export opportunities such as power to the US

OBJECTIVES

These act as the core drivers to feed the setting of objectives for the seabed leasing round, and OWC has developed a set of recommended objectives with respect to the aspirations for the industry as well as focused on the first leasing rounds, justified by the contextual analysis:

KEY OBJECTIVES FOR DEVELOPING AND ESTABLISHING AN OFFSHORE WIND INDUSTRY IN CANADA

- Utilise offshore wind as one of the key enablers to achieving Canada's climate targets (as part of a broader integrated energy strategy)
- Convert the potential opportunities for establishment of an offshore wind market in Canada in an optimal way
- Support growth of electrification and green hydrogen production
- Generate local development opportunities for communities and businesses
- Drive industry investment and growth
- Ensure a long-term economically and socially sustainable industry
- Develop an inclusive OSW industry in Canada

LEASING ROUND DESIGN SHOULD PROMOTE THE FOLLOWING TO ALIGN WITH THE OVERARCHING OBJECTIVES

- Inclusive, sustainable and collaborative development ethos
- Timely project delivery, taking into account appropriate management of the risks and external influencing factors
- Assured, competent and committed delivery
- Integrated industry development
- Proactive knowledge sharing
- Generate a strong level of interest in the seabed leasing round in Canada, leading to attractive applicants/bids

RECOMMENDATIONS

A set of recommendations for the process design, application content, evaluation method and enforcement measures were then developed to align with these objectives, bearing in mind the broader Canadian context and using the principles developed from the global leasing round review. These are supported by a set of recommended enabling actions that need to be completed to realise the full potential of the leasing round:

- Develop a vision for the industry to set expectations and guide developer decisions with respect to project concepts and timelines. This vision should accommodate a wide range of approaches given the current high levels of uncertainty in terms of the optimal direction for the market, and it should take into account supply chain capabilities and realistic growth projections as well as desired targets for offshore wind deployment numbers over time
- Develop holistic network plan for upgrades to accommodate grid connected projects
- Provide connection date and location to projects as soon as possible (where grid is to be the offtake)
- Develop plan for alternative offtakes to supplement domestic grid option
- Introduce a subsidy scheme (at least for the earlier projects in the pipeline)
- Combine this with guaranteed route to market (i.e. some form of PPA)
- Ensure regulatory system is clear and streamlined in terms of obtaining the necessary approvals (already being developed for NL and NS)
- Encourage efficient and pragmatic approach to environmental impact assessment and licencing requirements

PROCESS	APPLICATION	EVALUATION	ENFORCEMENT
GE-1: 2 stage process with separate seabed leasing round first followed by route to market auction later in the project development timeline to mitigate risk and encourage appropriate project timelines **GE-2:** A coordinated approach to defining a full pipeline of leasing rounds from the outset to enhance investor confidence **GE-3:** Striking the right balance between government, regulator and developer led activities to facilitate industry development	**AP-1:** Use a mix of tick box and written free text responses to reduce complexity where possible whilst supporting an effective evaluation method **AP-2:** Application structured into clearly demarcated sections with specific topic areas and evaluation objectives stated for each **AP-3:** Pragmatic approach to page limits across the application **AP-4:** Comprehensive guidance notes alongside the application form in support of an effective communication strategy	**EV-1:** Develop a clear and thorough evaluation process that promotes fair differentiation between applicants **EV-2:** Invest in independent, subject specialists to complete the evaluation of each application section **EV-3:** Use of simple pass/fail criteria to cover eligibility and due diligence elements of the application **EV-4:** Build in metric-based consistency and credibility checks across the application	**EN-1:** Stronger enforcement measures should be included in the T&Cs than have previously been seen in other jurisdictions' leasing rounds, but these must be cognisant of external factors **EN-2:** Use a competitive subsidy/route to market scheme later in the development process as a secondary enforcement measure to promote a sound delivery approach through construction and operation

RECOMMENDATIONS

PROCESS	APPLICATION	EVALUATION	ENFORCEMENT
GE-4: A coordinated approach to site boundary specification that offers freedom to developers to optimise projects whilst promoting efficient use of the seabed **GE-5:** Provide upper and lower bounds to project capacities but maintain flexibility for applicants to select the remaining project characteristics **GE-6:** Include non-price criteria as a major component in the seabed leasing application process as these provide a key opportunity to direct industry progression, which is especially important in a new market **GE-7:** Price should be used at most only as a secondary differentiator in the application and should be capped **GE-8:** Ensure the application process is reasonably simple and concise to improve attractiveness and prevent delay to the project development timeline **GE-9:** Provision of comprehensive information on the process, structure, requirements and dates as early as possible **GE-10:** Encourage diversity of applicants and awards in support of lowering overall development risk **GE-11:** Review and revision of objectives and approach for future leasing rounds	**AP-5:** Succinct reporting of basic information to give confidence in compliance with rules and eligibility requirements from the outset of the application **AP-6:** Inclusion of project description to underpin the subsequent application sections rather than as a direct differentiator between applicants **AP-7:** Inclusion of a section about the applicant's development ethos, with sustainability, collaboration, ethics, equity and co-use principles rewarded **AP-8:** Inclusion of section that assesses ability to deliver an efficient project timeline with strong awareness of risks and effective mitigation planning **AP-9:** Inclusion of section to assess competence of the applicant as a critical aspect to meeting the timely delivery objective within a new market **AP-10:** Include section that assesses commitment to delivering the project to provide assurance that the developer will go through with their delivery plan **AP-11:** Include section on contribution to industry development, with benefits to the project as well as to the wider industry being demonstrated **AP-12:** Include section on knowledge sharing and lessons learned, rewarding applicants that demonstrate a proactive approach	**EV-5:** Use a weighting system across the application sections to establish the desired balance and make clea **EV-6:** Use a relative ranking system between applicants to promote a fairer assessment **EV-7:** Create a detailed marking system to evaluate application responses and support the ranking process **EV-8:** Eliminate the possibility of ties in the process which lead to arbitrary resolution and selections **EV-9:** Quality assurance and ensuring consistency in marking is critical to the approach being accepted by the industry **EV-10:** A balanced approach to transparency with respect to the information about the evaluation methodology that is supplied to applicants	

NEXT STEPS

Finally, the critical next steps were identified to support effective implementation of the first leasing round:

1. Set clear objectives for the industry and consequently for the first leasing round
2. If the opportunities that are offered through collaboration on data collection are to be realised (especially with respect to the long duration aerial surveys for ornithology and marine mammals), the relevant stakeholders need to proactively engage and develop the details of the site survey specifications and requirements as soon as possible
3. Early and extensive engagement with all stakeholder groups prior to the leasing round to ensure stakeholders have the right tools to be able to properly engage. This should reduce the risk of delays during the seabed leasing round and set a precedent for positive engagement during the project developments in the longer term
4. Development of overarching supply chain plan, including capacity assessment and capacity building projections. Use this to help determine a suitable size (in terms of total capacity) and timeline for the first and subsequent leasing rounds
5. Assessment of LCoE/project economics across the RA areas, review of seabed pricing trends in other jurisdictions and impact assessment of different fees and fee structures on projects to select preferred pricing model.
6. The Federal Government Directive on the first seabed leasing round should be drafted and provided as soon as possible so that the relevant entities (e.g. local govt departments, Regulator) have enough time to input to, design and implement an effective seabed leasing round. Seek specialist advice on application and evaluation designs.
7. Detailed mapping and options analysis to develop viable route to market(s) options for the full project pipeline and development of strategy and implementation plan (e.g. considering alternative offtakes such as export to US, hydrogen/derivatives production)
8. Grid strategy development and implementation plan ensuring a coordinated approach to defining capacity targets, connection locations and timelines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