

Business Case and Options Appraisal for Offshore Wind Centre of Excellence

The Municipality of the County of Richmond and the Town of Port Hawkesbury

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Quality Information

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Executive Summary

This report presents the Business Case and Options Appraisal for establishing an Offshore Wind (OSW) Centre of Excellence (CoE) in Atlantic Canada, led by the Municipality of the County of Richmond and the Town of Port Hawkesbury. As OSW becomes a pivotal part of the global energy transition, this study lays the groundwork for a made-in-Atlantic Canada solution that will support sustainable development, innovation, and inclusive economic growth in the OSW sector. The proposed OSW CoE is designed to advance technical excellence, environmental and regulatory readiness, regional supply chain development, and Indigenous and community participation ensuring that Atlantic Canada is not just a participant, but a leader in the clean energy economy.

In Atlantic Canada, federal and provincial governments have committed to net-zero emissions by 2050, and provinces such as Nova Scotia and Newfoundland and Labrador have identified OSW as a critical clean energy opportunity. With Nova Scotia targeting an initial licensing call of up to 5 GW of OSW and regional efforts underway to establish regulatory pathways, the conditions are ideal for establishing a CoE to serve as the region's innovation, coordination, and implementation hub for OSW development.

The report employed a mixed-methods approach combining desktop research and global benchmarking to assess leading OSW CoEs from around the world and identify how they were created and how these CoEs have responded to local/regional challenges that the OSW sector has faced in their respective region. Stakeholder engagement was conducted with over 40 different representatives across government, Indigenous and community organizations, academia, and industry. An operational model options appraisal was conducted to assess and identify the most suitable framework for establishing the OSW CoE given the network of existing organizations throughout Nova Scotia as well as the timing of OSW delivery in the province and afar. Finally, a financial model was developed to assess the estimated revenue streams and costs associated with the creation of the OSW CoE.

Key findings from the stakeholder engagement confirmed a strong appetite for this initiative in the region, particularly one that emphasizes applied research and commercialization of novel technologies including floating OSW, integrated environment, Indigenous and fisheries engagement to ensure that co-existence is plausible under the future development models for OSW. Applying a unified voice to raise concerns and discuss options will be crucial moving forward.

Overall, across all workshops and interviews, stakeholders called for a CoE that is not only technically excellent but community-anchored, collaborative and inclusive. There was clear consensus that the CoE must focus on practical problems facing the sector, from grid integration to fisheries co-existence and act as a bridge between regulation, research and commercial development.

To achieve this goal, three areas of focus have been recommended for the OSW CoE, these include:

1. Innovation Catalyst: Accelerate project development and decision-making, promote innovation and technological advancements, foster public trust and community support and create a robust, localized supply chain;
2. Research Hub: Coordinate regional scale studies on environmental, social and economic impacts, co-existence strategies as well as technology advancement to assess and identify the right technologies for the Canadian context; and
3. Testing and Validation Site: support the deployment and evaluation of early-stage technologies and workforce training platforms to evolve into a Testing and Validation Site for technology and research.

Three operational models were considered and scored using criteria related to feasibility, scalability, cost, governance, flexibility and stakeholder alignment:

1. Standalone Entity;
2. Hosted Model; and
3. Phased Approach (Hosted -> Standalone).

The phased approach scored highest due to its ability to leverage existing networks and infrastructure, mitigate early-stage administrative costs and risks and the ability to demonstrate credibility through a respected host institution. This approach balances ambition with pragmatism and enables the CoE to grow in line with the OSW sector.

The financial assessment outlines a 15-year growth trajectory, divided into three phases. At each phase an outline of the projected proposed revenue streams as well as an assessment of the proposed costing profiles including staffing required to achieve certain targets has been conducted. Phases have been broken down into five-year blocks, following the phased approach to growth, where the OSW CoE is scaled up between Phase One and Phase Three.

As most OSW CoEs identified throughout the desktop research and stakeholder engagement process require assistance from funding bodies to establish operations, the financial forecasts estimate that over years 1-10 there will be a financial requirement of approximately \$3.3 million to achieve the goals outlined. To achieve financial self sustainability, a high degree of revenue will need to be generated from the proposed revenue generating operations of the CoE between Years 1-15. The success of this initiative is highly reliant on revenue key performance indicators being achieved across the various proposed revenue streams. With that being said, this assessment has identified a path towards financial self-sustainability by Year 15.

Based on the findings from this assessment, key recommendations moving forward include:

- ◆ Adopt a phased, mission-led organization to align with national and regional energy and economic goals. The organization should leverage the existing regional strengths throughout Atlantic Canada rather than building from scratch.
- ◆ Broaden the assessment of the development of an OSW CoE to include a review of Atlantic Canada for the OSW CoE initiative.
- ◆ Adoption of a phased hybrid approach to growth, whereby the OSW CoE is embedded within an existing organization and as its service offering grows, mature to an independent organization.
- ◆ Work with existing organizations throughout Atlantic Canada to create a collaborative approach to the development of the OSW CoE.
- ◆ Establish initial funding through an available federal grant opportunity such as Natural Resources Canada or the National Research Council of Canada to start the OSW CoE and keep the organization running through Phase 1 of the phased approach to growth. Funding requirements for this phase is approximately \$1,700,000.
- ◆ Establishment of a volunteer board of directors representing key stakeholders for OSW such as Indigenous leadership, federal and provincial governments, community leaders, fisheries industry representation, academia and private industry.
- ◆ Position the OSW CoE as an information hub for global developers and investors seeking to participate in Atlantic Canada's OSW market through the Innovation Catalyst.
- ◆ Support regulatory readiness and policy alignment, offering developers seeking to enter the Atlantic Canada market support.
- ◆ Establishment of the research arm of the CoE to conduct research on the economic, environmental and social considerations of OSW. Leveraging off the existing work conducted throughout Atlantic Canada by the research community, focus efforts on grid integration and energy offtake solutions, floating OSW in the Atlantic Canada context as well as the environmental considerations of OSW.

- ◆ Development of service and consulting arm providing support on research projects throughout Canada and afar.
- ◆ Establishment of a Testing and Validation Site, as this drives the revenue forecasts for the organization, offering access to submerged lands, and real-world conditions for research purposes and access to workforce training opportunities. In addition, metocean data collection is a valuable resource that many groups are likely to require into the future.

With the right structure, partnerships and mandate, the OSW CoE can serve as a cornerstone institution for Atlantic Canada's energy transition. The opportunity to help propel the industry forward and ensure that it charts a path balancing stakeholder and industry needs. Given the relatively large financial commitment this initiative requires, it is important to note that international precedent from comparable CoEs globally, suggests that while a diverse funding base should be the long-term goal, public funding will be a critical catalyst for establishing an OSW CoE in Atlantic Canada, ensuring it has the stability and resources needed to leverage additional industry and regional contributions.

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Acronyms, Terms and/or Abbreviations

ACOA	Atlantic Canada Opportunities Agency
ARROW	Academic Center for Reliability and Resilience of Offshore Wind
BOD	Board of Directors
BOEM	Bureau of Ocean Energy Management
CAD	Canadian Dollars
CanREA	Canadian Renewable Energy Association
CAPEX	Capital Expenditures
CBU	Cape Breton University
CoE	Centre of Excellence
COVE	Centre for Ocean Ventures and Entrepreneurship
CTRI	Clean Technologies Research Institute
CNLOER	Canada – Newfoundland and Labrador Offshore Energy Regulator
CNSOER	Canada – Nova Scotia Offshore Energy Regulator
CNSOPB	Canada – Nova Scotia Offshore Petroleum Board
CVOW	Coastal Virginia Offshore Wind
DARE	Digital, Autonomous and Robotics Engineering
DFO	Department of Fisheries and Oceans
EOWDC	European Offshore Wind Deployment Centre
EIA	Environmental Impact Assessment
EIP	Energy Innovation Program
FLOWIC	Floating Wind Innovation Centre
FORCE	Fundy Offshore Research Centre
GW	Gigawatts
IAAC	Impact Assessment Agency of Canada
IET	Institute of Industry Energy and Technology
KMK	Kwilmu'kw Maw-klusuaqn
LCOE	Levelized Cost of Energy
MOU	Memorandum of Understanding
MRC	Marine Renewable Canada
NIMBY	Not In My Backyard
NOWRIC	Nordic Offshore Wind Research and Innovation Centre
NRCan	Natural Resources Canada
OEM	Original Equipment Manufacturer
ORE	Offshore Renewable Energy
PDA	Potential Development Areas
PPP	Public Private Partnership
RAOWDNL	Regional Assessment of Offshore Wind Development in Newfoundland and Labrador
RAOWDNS	Regional Assessment of Offshore Wind Development in Nova Scotia
REGI	Regional Economic Growth through Innovation
REMP	Regional Ecosystem Monitoring Programme
REP	Renewable Energy Park
R&D	Research and Development
StFX	Saint Francis Xavier University
SREP	Smart Renewables and Electrification Pathways Program
UK	United Kingdom
UNIR	Unama'ki Institute of Natural Resources
U.S.	United States of America
WEAs	Wind Energy Areas

1. Introduction

Within the past twenty years, offshore wind (OSW) has seen a rapid growth in interest from organizations and governments across the globe who are keen on a transition to renewable energy. As global demand for clean, renewable energy sources rises, OSW presents a significant opportunity for many nations, including Canada, to help progress to net zero emissions.

OSW energy is essential for combating climate change by reducing reliance on polluting energy systems, increasing energy security, and supporting the global transition to a clean energy supply while fostering sustainable economic development. Due to Atlantic Canada's vast OSW resources, regional OSW may provide a stronger, steadier, and unobstructed energy supply relative to other renewable sources such as onshore wind and solar energy. (Nicholson, 2024).

As the global energy sector adapts to address climate change, OSW plays an increasingly vital role in national and international energy strategies. Countries such as the United Kingdom (UK), Norway, China, and the United States (U.S.) have already made significant progress in harnessing the power of OSW, contributing to reducing emissions, creating employment opportunities, and driving technological innovation within the sector. With its abundant wind resources, Atlantic Canada¹ has the potential to participate and become a significant player in this global energy transition. Considerable progress has been made towards this sustainable transition, but careful coordination is recommended to ensure that stakeholders, including government, industry, academic research and community stakeholders, work towards the same end goal of progressing to net zero.

This report assesses the feasibility of developing an OSW Centre of Excellence (CoE) to support the growth of the OSW industry with the primary objective of positioning Atlantic Canada as a global leader in the OSW industry. The analysis conducted within this report includes a comprehensive evaluation of potential areas of focus for the OSW CoE initiative and identifies a clear pathway for its sustainable development. By establishing a CoE dedicated to OSW, Atlantic Canada has the opportunity to establish itself as a hub for innovation, research, and industry collaboration to support the region's energy transition goals while promoting economic growth in OSW.

This assessment is grounded in the recommendations of the Regional Assessment of Offshore Wind Development in Nova Scotia and Newfoundland and Labrador, which defines the foundational actions required to establish a sustainable, inclusive, and well-governed OSW industry in Canada. Recommendations across multiple themes emphasize establishing a national framework for research and data sharing to address environmental and socio-economic knowledge gaps and creating a cohesive governance structure to align federal, provincial, and Indigenous decision making, while fostering collaboration amongst government, industry, academia, and communities and promoting workforce development and education to support long term growth of the sector. The OSW CoE responds to these priorities by serving as a central hub for research co-ordination, innovation and knowledge exchange to ensure that OSW development in Atlantic Canada proceeds in an environmentally responsible, economically viable, and socially inclusive manner.

¹ *Disclaimer: In this paper, the term "Atlantic Canada" specifically refers to the Atlantic provinces of New Brunswick, Newfoundland and Labrador, Nova Scotia, and Prince Edward Island. It is important to note that the original scope of the Project primarily focused on evaluating business cases and options appraisal within Nova Scotia. Although there was a preliminary emphasis on opportunities in Nova Scotia, this report ultimately encompasses a broader focus on Atlantic Canada. In order to make this report fully representative of Atlantic Canada, additional stakeholder engagement outside of Nova Scotia would be necessary.*

2. Project Methodology

This report applied a mixed-methods approach, using both qualitative and quantitative data collection methods to assess the vision and feasibility of establishing an OSW CoE. The data collection methods included desktop research, one-on-one interviews, workshops, and focus groups with stakeholders throughout Atlantic Canada. The stakeholders involved in this Project included industry, government, Indigenous Rights holders, and academic experts with an interest in Atlantic Canada's OSW development.

Figure 1: Project Methodology Workplan



2.1 Desktop Research

Desktop research was undertaken to collect insights from existing OSW CoEs globally and to evaluate the geographic and economic context of Atlantic Canada. As part of this process, a jurisdictional scan was conducted to identify and assess best practices from other regions, focusing on case studies of the UK Offshore Renewable Energy Catapult, the European Offshore Wind Deployment Centre, the Nordic Offshore Wind Research and Innovation Centre (NORWIC), the Gulf of Maine Floating Offshore Wind Research Array and other relevant initiatives.

Information was sourced from publicly available materials, including official websites, research publications, industry reports, and government documents related to the selected OSW CoEs.

For each case study, data collection focused on:

- ◆ Governance structures (whether the OSW CoE is a standalone entity, hosted by an organization, or governed by a partnership);
- ◆ Funding mechanisms (public, private, and industry contributions);
- ◆ Research priorities and focus areas (such as technological advancements, environmental assessments, and socio-economic impacts); and
- ◆ Regional needs, strengths and challenges each CoE faces in its operational and research endeavours.

2.2 First-hand Research

AECOM conducted first-hand research with OSW stakeholders to gather feedback on the proposed Atlantic Canada OSW CoE, focusing on its vision, future ambitions, and potential governance and funding models for the proposed organization. Engagement activities included a series of formal workshops with stakeholders and members of the project Steering Committee, designed to facilitate a structured dialogue and collaborative input on the future of the OSW CoE. These sessions were complemented with supplementary one-on-one interviews with key stakeholders, allowing for deeper exploration of individual perspectives and sector specific insights. In addition to this, site visits were conducted to visit and assess potential locations for the proposed OSW CoE throughout Nova Scotia.

The purpose of the stakeholder engagement was to convene OSW stakeholders throughout Nova Scotia to gather insights into their collective vision for the OSW CoE. The sessions aimed to identify priority areas of focus, uncover potential barriers and constraints to the CoE's success, validate key themes, and define critical success factors, as shown in Figure 2.

To create a clear path for gaining insight during the initial stages of stakeholder engagement, AECOM divided the engagement into two stages. Stage One identified what success looked like for the CoE, and Stage Two validated areas of focus and tested CoE scenarios. Further stakeholder engagement was conducted throughout the project, and findings from the various engagement activities were validated and discussed with the Steering Committee and the Project Manager.

Figure 2: Stakeholder Engagement Process

Stakeholder Engagement Workplan

Stage 1: What does success look like?

Stage 2: Validate areas of focus, Test COE Scenarios, Understand steps to success & Identify potential partners.



Engagement Workshops

Stakeholder workshops were conducted between June 10 and June 12, 2024, engaging 39 participants across four primary stakeholder groups. These included Government (n=16), Academia and Research (n=7), Indigenous rightsholders and representatives (n=5), and Industry (n=11). A complete list of participating stakeholders is provided in Appendix A.

These workshops were designed as semi-structured discussions, guided by AECOM representatives who provided participants with discussion prompts to facilitate the conversation. Each session began with a comprehensive overview of the project, including the work conducted to date and the overall goals of the project. These included identifying strategic partners for the CoE, research priorities for the CoE and developing a sustainable governance and funding model moving forward. In addition, a summary of the general objectives of a CoE was shared with participants to provide a thorough understanding of what a CoE is and how it applies to the OSW sector.

A significant portion of each workshop was dedicated to a visioning exercise, where stakeholders were invited to share their perspectives on what a successful CoE would look like in two decades from now. The discussions also delved into opportunities to propel the CoE towards the envisioned future state and constraints or barriers that may need to be addressed. A summary of the workshops can be found in Appendix B.

Ongoing Stakeholder Engagement

In addition to the formalized workshops held, AECOM has supplemented the stakeholder engagement process with a series of one-on-one interviews and site visits with stakeholders throughout Nova Scotia. These have been ongoing throughout the duration of the project.

Data Analysis

To translate insights gathered from the stakeholder engagement process and the findings from the desktop research into an actionable business case, the Project Team developed an options appraisal. This began with identifying the key challenges currently affecting OSW development in Atlantic Canada and defining areas of strategic focus that the OSW CoE could help to address through its actions. A comprehensive desktop review was conducted to assess the existing gaps in the OSW development landscape and determine the potential role of the CoE in filling those gaps, thereby establishing the strategic value the CoE could offer in accelerating the sector's growth. Building on this analysis, an options appraisal was undertaken to evaluate three potential operational models to compare the viability of each one and to identify the preferred approach to the creation of the OSW CoE. These include embedding the CoE within an existing organization established within Atlantic Canada to leverage off existing infrastructure and business processes, establishing a standalone entity, and implementing a hybrid approach by first embedding the OSW CoE within an existing organization with the plans to eventually grow into a standalone entity. Each option was assessed in terms of feasibility, strategic alignment, and associated costs, with detailed costing developed for the preferred option.

2.3 Study Limitations

This project's in-person engagement activities have been confined to Nova Scotia due to funding and scope limitations. However, it is important to note that the strengths, assets, and opportunities in neighbouring provinces such as Newfoundland and Labrador, Prince Edward Island, and New Brunswick have been identified and included through comprehensive desktop research. These insights provide a broader understanding of the regional potential and collaborative opportunities throughout Atlantic Canada.

The collected data may not capture the perspectives of underrepresented or harder-to-reach communities, such as remote communities and smaller fishing groups. Additionally, the engaged stakeholders might have had vested interests at play, which could lead to overemphasizing specific

issues and undervaluing others. This could skew the analysis toward the priorities of particular groups. While stakeholder engagement focused on groups who are most likely to directly engage with the future OSW CoE, public sentiments were not captured in this project. Ultimately, data collection of public perceptions of an OSW CoE in Atlantic Canada was beyond the scope of the project and would benefit from additional scoping to understand local considerations and sentiments from the public about the desired future of an OSW CoE in Atlantic Canada.

3. Case Studies of Global OSW CoE's

3.1 OSW CoE Case Studies

ORE Catapult

Mission

The UK Offshore Renewable Energy (ORE) Catapult is widely recognized as a global leader in offshore renewable energy innovation. Established in 2013, the ORE Catapult's mission is to enable innovation and accelerate the development of offshore renewable energy, grow businesses and create jobs throughout the UK. ORE Catapult offers a comprehensive suite of capabilities, such as leading and collaborating on projects, enabling innovation and providing expertise and services (including physical sites) for testing and validation. This CoE operates to meet a vision of a net zero UK powered by renewable energy. Its success and global leadership presence can be attributed to its strong governance structure, which brings together government, academia, and industry in a collaborative model that encourages innovation.



Figure 3: ORE Catapult Centre in Scotland

Focus Areas & Services

ORE Catapult's key focus areas including research, engineering, testing and validation and supply chain growth. ORE Catapult's services are tailored to work with original equipment manufacturers, developers, small-medium enterprises, government and academia.

By partnering with original equipment manufacturers and developers, ORE Catapult validates designs, manufacturing processes and products themselves, allowing clients to develop reliable products quicker and with greater confidence. Hosting one of the worlds largest indoor test and validation facilities, ORE Catapult assists small-medium enterprises in late-stage commercialization of turbine technology. In addition, working with developers ORE Catapult identifies strategic challenges associated with OSW and works collectively to solve these.

ORE Catapult provides a range of products and services to a network of partners across the OSW supply chain in the UK who are interested in reducing costs, investment risk, improving efficiency and reliability, and creating jobs in the UK. They offer a comprehensive list of products, including research, testing and laboratory facilities for partners interested in turbine blades, electrical networks, LIDAR testing, materials, and robotics. Partners also benefit from specialists who provide expert knowledge on key issues in the OSW space, such as circular economies, decarbonization, and future energy systems, while also providing supportive services in data and digital engineering.

ORE Catapult supports a network within the renewable energy industry in the UK, offering their services and products to owners, operators, developers, original equipment manufacturers (OEMs), developers, small and medium-sized enterprises (SMEs), government agencies, and academia.

ORE Catapults world-leading research capabilities allows the organization to participate in large-scale collaborative developments to identify and build upon new approaches to the development,

implementation and operations of OSW technology. Approaching research from an industry-led perspective, ORE Catapult focuses on Technology Readiness Level 3 and upwards with an emphasis on proof-of-concept and system tests all the way through to demonstration and commercialisation. The research arm of ORE Catapult covers three key areas, including:

1. Testing and validation of new technologies;
2. Operational performance; and
3. Disruptive innovation.

Across the three research areas, are various programmes and projects across knowledge areas such as: Rotors, Powertrains, Electrical Infrastructures, Foundations/Structures, and Wind & Ocean Conditions (including Resource Assessment).

The engineering capabilities of ORE Catapult are utilized to enable innovation and accelerate the development of OSW in the UK. Working with companies within the Innovate UK, the UK's innovation agency, ORE provides engineering services to help develop technical solutions to key challenges facing the future large-scale rollout of OSW in the UK. This is coordinated through three satellite CoE's located throughout the UK, each focussing on a key area of focus, these include:

- ◆ Floating Offshore Wind: The Floating Offshore Wind Centre of Excellence (FOW CoE) to accelerate the commercialization of floating wind within the UK.
- ◆ Operations and Maintenance: The Operations and Maintenance Centre of Excellence (OMCE) is a national hub for enhancing the UK's position in OSW operational performance, acting as a catalyst for innovation, technology and cross-sector collaboration to promote best practice, reduce costs and enhance safety.
- ◆ Robotics and Autonomous Systems: The Digital, Autonomous and Robotics Engineering (DARE) Centre is a part of the National Renewable Energy Centre in Blyth, offering a wide range of testing and validation services, including wind-turbine testing and still water dock testing for controlled robotic trials.

In addition to Research and Engineering capabilities, ORE Catapult offers a wide range of testing and validation services, aimed at de-risking and driving innovation in the OSW sector. These are operated out of three locations.

1. National Renewable Energy Centre, Blyth: A wider renewable energy centre conducting research in areas such as wind energy, photovoltaics, solar and thermal energy, biomass, the energy transition in cities, grid integration, electrical storage and hydrogen. The Wind Turbine Test laboratory is engaged in performing tests and trials on wind turbines and wind turbine components including blade tests, composite materials testing and powertrain test laboratories.
2. The Floating Wind Innovation Centre (FLOWIC) in Aberdeen is an innovation centre focused on the development of OSW. Delivered by ORE Catapult and supported by ETZ Ltd, this centre is home to bespoke offshore floating wind technology allowing for testing and validation of new technologies and products.
3. The Levenmouth Demonstration Turbine, located off the coast of Fife, Scotland allows developers and small-medium enterprises to test and demonstrate new systems and methods for OSW. This open-access OSW turbine is solely dedicated to research and development with the goal of advancing technology and reducing the cost of bringing new technologies to market. The 7MW turbine was purchased from Samsung Heavy Industries in 2016 and has since attracted around 100 different small-medium enterprises.

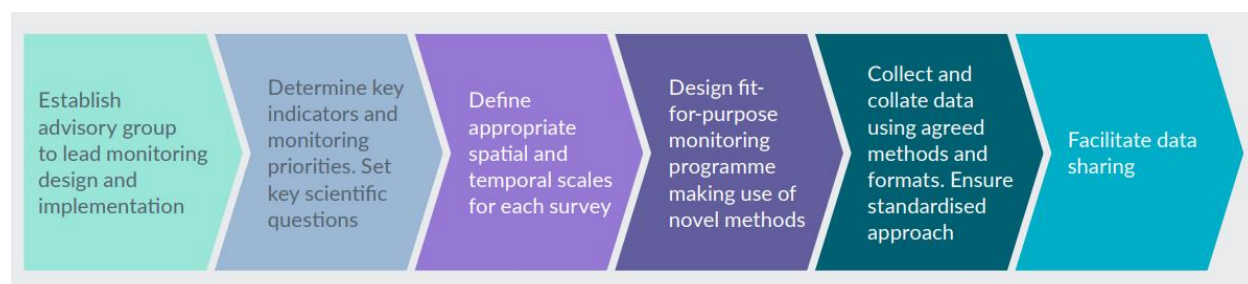
Key Achievements and Challenges

Since 2013, ORE Catapult has worked with over 1,400 SMEs, has contributed to over 740 R&D projects, has supported over 350 companies with product development, has issues over 700 unique publications. Key partnerships with large providers, such as Microsoft, Vilicom, JET Connectivity, and Associated British Ports, to test their equipment and products in real-world conditions, proving that the CoE can bring in big industry players and significant investments (Buljan, 2023).

The challenge for the UK OSW Sector is a combination of various factors, including planning and consent issues, inadequate port infrastructure, grid capacity and management and a skills shortage. While the UK is a global leader for OSW, these challenges if not addressed could lead to a reduction in OSW deployment unless they are resolved. (Simone & Emden, 2024).

ORE Catapult is actively addressing these challenges to the OSW sector through a range of initiatives aimed at accelerating OSW deployment and enhancing the UK's position in the European and global wind energy sector. Recognizing that one of the major challenges facing the OSW sector in the UK are the lengthy consenting processes, ORE Catapult advocates for an innovative approach to impact assessments through the regional approach to environmental assessment. By implementing Regional Ecosystem Monitoring Programmes (REMPs) as opposed to a site-specific monitoring process which can tend to focus on one narrowly defined area of interest and integrating novel monitoring technologies, REMPs have the potential to examine the condition of a marine ecosystem across time and space at the regional level. The development process for the REMP can be found in Figure 4. The proposed REMP can be either government or industry funded, following a similar process for each, with either a relevant existing government department or an independent facilitator coordinating and delivering the program. Key to the process is the collection and collation of data through an agreed process and the facilitation of data sharing through a data portal (ORE Catapult, 2024). By moving towards a modern, technology driven approach to environmental impact assessment (EIA) process, ORE Catapult identifies a range of opportunities including, avoiding duplication of surveys/data through a more strategic regionally consistent approach to baseline data collection, cost reductions through collaborative efforts to baseline data collection, and could help to overcome public concern through demonstrating an appropriate level of preparation through a fit-for-purpose monitoring pan and data sharing through a stakeholder consultation process.

Figure 4: ORE Catapult Regional Ecosystem Monitoring Development Process



Through its FLOWIC, CoE, ORE Catapult focuses on accelerating the commercialization of floating wind technologies. The centre addresses key challenges such as dynamic cable systems, mooring and anchoring solutions, and environmental interactions, aiming to reduce costs and support large-scale deployment of floating wind farms. This initiative is helping to reduce the cost of energy and accelerate the deployment of floating OSW in the UK, create opportunities for UK supply chain and drive innovations in manufacturing, installation and operations and maintenance.

Through its efforts, ORE Catapult is playing a pivotal role in overcoming the challenges facing the OSW sector in the UK. By driving innovation, accelerating technology development and strengthening the domestic supply chain, ORE is playing a crucial role in the OSW sector. The success of ORE Catapult in helping to progress the OSW industry in the UK and globally is a shining example of the benefits that a CoE can have and is a strong example for Atlantic Canada as it develops an OSW CoE.

Governance Model

ORE Catapult operates as a standalone entity with strong ties to the UK government, industry bodies, and academic institutions. Its governance model allows for flexible decision-making, enabling the Centre to respond quickly to industry needs and technological advancements.

ORE Catapult's governance approach is structured in a top-down fashion, with a board of directors responsible for overseeing the conduct of ORE Catapult and setting the overarching strategy for the Executive Team. The Executive Team is responsible for operational decisions of the organization and to keep the Board abreast of meaningful events and issues within the organization. The Executive Team is directly responsible for the Investment Committee, which is responsible for project related funding and capital expenditures.

Managed by the Board of Directors are four separate sub-committees tasked with running the organization. The Projects, Audit and Risk, Remuneration, and Nomination Committees. The Projects Sub-Committee are responsible to strategy and process concerning ORE projects, the Audit and Risk Committee are responsible for internal systems, the Remuneration Committee is responsible for setting remuneration policies, and the Nominations Committee are responsible for appointments to the Board and Senior Executive Office.

Funding Model

ORE Catapult operates under the Catapult Network's "thirds model," which aims to achieve a balanced mix of public, collaborative public-private R&D fundings and commercial/industry income. This is designed to maximize contributions from three primary financial streams to support its operations, research, and the development of projects. The intention of this model is to leverage equal contributions from the following sources:

1. Innovate UK funding, which represents the government's commitment to supporting innovation and research in the technology sector;
2. Income from industry contributions, which includes investments, fees for services, and partnerships with private sector entities interested in the development and commercialization of new technologies; and
3. Other Public Sector Research Funding, which encompasses a broad spectrum of grants and possibly equity funding from various public sector agencies dedicated to research and development.

ORE Catapult's funding model exemplifies a strategic approach to sustaining its position as a leading innovation centre for offshore renewable energy in the UK and it underscores the collaborative effort between the public sector, industry stakeholders, and research communities in advancing the offshore renewable energy sector.

In practice, this is an aspirational target rather than a fixed rule as a 2021 review of the Catapult Network having found that Catapults including ORE Catapult have not consistently achieved the thirds model and remain more reliant on public funding (Department for Business, Energy and Industrial Strategy, 2021).

European Offshore Wind Deployment Centre (EOWDC)



Figure 5: EOWDC's Opening in Scotland

Mission

The European Offshore Wind Deployment Centre (EOWDC), also known as the Aberdeen Bay Wind Farm, is a clustering of 11 8.8 MW wind turbines located between 2 and 5 kilometres off the coast of Aberdeen, Scotland owned by the Aberdeen Offshore Wind Farm Limited joint venture, comprising Vattenfall and the Aberdeen Renewable Energy Group. EOWDC is a commercial OSW farm and test and demonstration facility ("European Offshore Wind Deployment Centre, Aberdeen," 2018). The Centre focuses on deploying and evaluating new technologies in a real-world offshore environment, making it an invaluable resource for the global OSW industry.

The project received official approval from the Scottish Government in 2013 with the first turbine being successfully installed in 2018. The project is expected to be in operation for a period of 20 years.

Focus Areas & Services

EOWDC's core mission is to test and validate new OSW technologies, including larger and more efficient turbines, novel installation methods, and innovative maintenance techniques. EOWDC focuses on reducing the cost of OSW by accelerating the deployment of these technologies, making them more accessible to commercial developers.

As part of this initiative, Aberdeen Offshore Wind Farm Limited, contributes £150,000 per year to the Unlock Our Future Fund for the lifespan of the project. The fund is aimed at supporting local projects with a strong climate focus and with the potential to create a significant legacy of community benefit. Funding is set to increase annually in line with inflation and is administered by Foundation Scotland, an independent grant-making charity. This fund was established as a voluntary commitment from Vattenfall to support local communities in the northeast of Scotland and provide funding for local initiatives that could benefit the region. Over the first five years of operation, the fund has been successful, averaging

approximately 31 applications per year totalling £436,000 and issuing grants to approximately 14 applications for a total of £132,470 per annum.

Funding & Governance Model

EOWDC operates through a partnership model, with funding from both public and private sources including a European Union grant, Aberdeen Renewable Energy Group and Vattenfall Investments. An initial grant of €40 million was awarded to the project under the European Energy Programme for Recovery and is supported by the Aberdeen Renewable Energy Group.

The Scottish government has played a key role in supporting the centre's activities, while private sector partners, including energy companies and technology developers, provide the necessary capital and expertise to carry out research and development projects.

Nordic Offshore Wind Research and Innovation Centre

Mission and Focus Areas

The mission of the Nordic Offshore Wind Research and Innovation Centre (NOWRIC) is to establish a robust platform for collaboration between academia and industry. The overall goal is to generate new knowledge, foster innovation, and create value in the field of reliable and affordable energy while also mitigating risks associated with developing and operating OSW farms. NOWRIC was established to lead research and innovation, and it plays a pivotal role in developing advanced OSW technologies and methodologies.

Focus Areas & Services

NOWRIC focuses on addressing the unique challenges of OSW development, particularly in the deepwater and extreme weather conditions of Nordic countries. The centre's research is centred three main areas of focus:

- ◆ Foundations, Materials, and Marine Operations: Enhancing the structural components and installation processes of OSW turbines;
- ◆ Network Connections, System Integration and Energy Storage: Improving the integration of OSW energy into existing power grids and developing effective energy storage solutions; and
- ◆ Digitization, Operation and Maintenance, and Management Systems: Utilizing digital technologies to optimize the operation, maintenance and overall management of OSW farms.

The harsh maritime environment unique to Nordic countries presents significant challenges for OSW developers, including extreme weather conditions, deep waters, and strong currents. NOWRIC has developed expertise in these areas, conducting cutting-edge research into floating wind platforms that can withstand these conditions while maximizing energy generation.

Governance Model

NOWRIC was created in 2019 to harness the potential of OSW energy in the Nordic region. The centre operates as a collaborative hub through a multi-institution partnership between universities: the Technical University of Denmark, SINTEF (research centre) and the Norwegian University of Science and Technology as research partners together with selected industry partners.

NOWRIC is known for its strong cross-sector partnerships, which include collaborations with international research institutions, energy companies, and government agencies. These partnerships enable NOWRIC to draw on a wide range of expertise and resources, making it a global leader in OSW research.

Gulf of Maine Floating Offshore Wind Research Array

Mission and Focus Areas

The Gulf of Maine Floating Offshore Wind Research Array is an initiative aimed at advancing floating OSW technology in the United States. Established in August 2021 as a collaborative effort between the State of Maine and the Federal Bureau of Ocean Energy Management (BOEM), the project was formalized with the issuance of the first floating OSW research lease in 2024. The Gulf of Maine Floating Offshore Wind Research Array's mission is to develop a floating OSW energy in the Gulf of Maine, US to fulfill objectives including advancing critical research and innovation to development OSW in the region responsibly.

Designed to explore and expand the potential of floating OSW technology in the Gulf of Maine, this initiative reflects a growing interest in renewable energy sources to combat climate change and reduce dependence on fossil fuels. It operates to advance the State of Maine's Offshore Wind Roadmap. Once operational, the Research Array will lease a 15.2 square mile site, approximately 28 nautical miles offshore in the Gulf of Maine to host the nation's first floating OSW research site in federal waters (Governor of Maine's Energy Office, 2021).

The goal of the research array is to optimize co-existence of floating OSW within the human and ecological environment and includes the following specific objectives:

- ◆ Reduce conflicts with existing ocean users, with an emphasis on fisheries;
- ◆ Support Education, workforce and supply chain development;
- ◆ Maintain coastal community culture and heritage while creating socioeconomic opportunities;
- ◆ Monitor ecosystems change at the Research Array and inform future projects by providing recommendations for socially and environmentally responsible development; and
- ◆ Advance floating wind technology and reduce the levelized cost of OSW energy.

Focus Areas & Services

The Gulf of Maine Floating Offshore Wind Research Array focuses on developing and testing floating wind technologies. The centre is part of a broader effort by the U.S. government to accelerate the deployment of floating wind in deepwater environments. The centre is conducting extensive research into the design, deployment, and maintenance of these platforms to reduce costs and improve performance.

Key Achievements & Challenges

The Gulf of Maine Offshore Wind Research Array will focus its research on three core themes: human dimensions, ecosystem and environment, and technology development. What sets the research apart is its focus on the co-existence between marine users and its differentiation from the more established European OSW market.

First, the co-existence research will focus on understanding how wind farms can cooperate amongst various marine users, particularly fishers in coastal communities. This model will explore how wind farm and turbine arrangements can be designed to accommodate different types of fishing activities (Application for an Outer Continental Shelf Renewable Energy Research Lease, 2021). This research is

critical for ensuring that OSW development can coexist with other vital marine industries central to the State's economy.

Second, the Research Array differentiates itself from European OSW initiatives by filling knowledge gaps specific to floating OSW, particularly regarding ecosystem interactions. While Europe has gathered substantial data on fixed-bottom OSW turbines, there is much less information available about the effects of floating turbines on marine ecosystems (Application for an Outer Continental Shelf Renewable Energy Research Lease, 2021, p. 10-11). The Gulf of Maine initiative intends to build on European expertise to generate a new understanding of how to enhance floating wind technology. This involves improving safety, increasing reliability, lowering energy costs, and lessening impacts on the environment and local communities. This effort positions the Gulf of Maine as a leader in this emerging subsector. Being the first of its kind, this small-scale floating OSW research array will provide both the State of Maine as well as the United States of America with a more thorough understanding and hands on experience with offshore floating wind projects.

Governance Model

The project is governed through a collaborative model involving the State of Maine and BOEM by which BOEM has agreed on a research lease with the State of Maine (Maine, 2024) (Governor of Maine's Energy Office, 2024). This partnership ensures that the array's development aligns with state and federal regulations. This process did not follow the competitive auction process, with the State of Maine applying directly to BOEM for the lease in 2021. The lease stipulates that BOEM will retain full regulatory oversight of the site, given its location in federal waters. BOEM has the right to suspend or modify operations if activities on the site pose environmental or interference with ocean users. The State of Maine, through the Governors Office of Policy Innovation and the Future and the Governors Energy Office hold the lease with BOEM and are responsible submitting all site plans, ensuring compliance and coordination with BOEM. The State of Maine has designated Pine Tree Offshore Wind LLC as the operator for the research lease. Pine Tree Offshore Wind LLC is a consortium consisting of Diamond Offshore Wind, the University of Maine's Advanced Structures and Composites Center and the construction firm Cianbro Corporation. The partnerships combine industry expertise, academic research and construction capabilities to drive the project forward.

The University of Maine and Diamond Offshore Wind are key contributors, providing innovative technology and expertise. Additionally, the Maine Offshore Wind Research Consortium plays a vital role in setting research priorities and assessing the environmental and economic impacts of the project. This governance model aims to advance floating OSW technology while balancing energy development with environmental stewardship and economic interests.

Funding Model

There is no acquisition fee, rent or revenue sharing requirements for the lease, and the State of Maine funds its own research activities and ensure financial accountability. While other commercial leases would offer the ability to operate the wind farm as a commercial entity, this lease stipulates that operations will be for research purposes only and electricity generated from the operation will be sold to help fund operations. As per LD 336, it is anticipated that the electricity produced by the research array will be sold through mechanisms established by Pine Tree Offshore Wind LLC and its partners, including New England Aqua Ventus LLC. This arrangement aligns with Maine's legislative framework, specifically LD 336, which authorizes the Maine Public Utilities Commission to negotiate contracts for purchasing up to 144 megawatts of energy from the research array. State regulators are currently assessing if a proposed contract for utilities to buy power from the 12-platform wind farm is in the public interest (State of Maine, 2021).

The project is funded through a combination of state and federal resources and private investments. Additionally, federal funding and grants from BOEM will play a significant role in supporting the project (Hilton, 2024). Most notably, the University of Maine's floating platform technology, VoltturnUS, received \$12.5 million in grants through the U.S. Department of Energy's Advanced Research Project Agency-Energy (ARPA-E) to advance the research and development of its VoltturnUS floating turbine technology. Diamond Offshore Wind, a subsidiary of Mitsubishi Corporation and is a part of the related Pine Tree Offshore Wind LLC has invested \$20 million in the project for development of the array.

Academic Center for Reliability and Resilience of Offshore Wind

Mission

Founded in 2024, the Academic Centre for Reliability and Resilience of Offshore Wind (ARROW) is a collaborative initiative led by the university of Massachusetts Amherst. The organization brings together a diverse group of partners including eight universities, three national laboratories, two state level energy offices and numerous industry and stakeholder groups.

The centre focuses on advancing the OSW sector through targeted research, workforce development and strategies to embed equity into the sector. By fostering strong collaboration across education, academia, specialists in the sector, government and industry, ARROW aims to address key challenges in OSW development and contribute to the growth and sustainability of the sector. The overarching objectives of ARROW include:

- ◆ Establish a broadly comprehensive and multi-pronged OSW education and research program designed to prepare the next generation of US OSW professionals and establish global leadership in OSW education;
- ◆ Empower the first cohorts of this next-generation US OSW workforce to seed a reliable and resilient domestically educated, OSW professional workforce;
- ◆ Deliver innovations to accelerate achievement of US goals for OSW levelized cost of energy (LCOE) and deployment and ensure that the OSW system delivers energy in a reliable and resilient manner; and
- ◆ Engage with stakeholder communities to ensure that the energy transition is just, equitable and fair, and that all stakeholders have a voice in the process.

Governance Model

ARROW is led by the University of Massachusetts Amherst and includes seven additional universities, three national laboratories, two state-level energy offices as well as a wide range of industry and stakeholder groups who are involved with the organization. The centre operates with a multi-tiered governance model that includes:

1. Executive Committee: This committee oversees the strategic direction of the organization and overall management of ARROW;
2. Advisory Board: The Advisory Board is comprised of industry experts, government officials, and academic leaders. The Advisory Board provides guidance on research priorities, funding strategies and policy alignment; and
3. Working Groups: The Working Groups focus on specific areas such as research, education, workforce development and community engagement. Each group includes members from various partner organizations to ensure a comprehensive approach to the work undertaken.

Funding Model

The project is funded through a combination of state and federal funding, with the U.S. Department of Energy's Wind Energy Technologies Office providing a grant of \$4.75 million and match funding from the Massachusetts Clean Energy Centre. The state of Maryland, with participation from Johns Hopkins University and Morgan State University are contributing \$1 million from the Maryland Energy Administration. Finally, other universities are contributing \$1.4 million for a total budget of \$11.9 million (the University of Massachusetts Amherst, 2024).

3.2 How CoEs Respond to Challenges in Offshore Wind

Drawing from leading OSW CoEs globally, several key themes can be summarized that are directly relevant to shaping the OSW CoE in Atlantic Canada. Each of the CoEs reviewed was created in response to specific opportunities, and their focus areas provide a roadmap for addressing these opportunities. By adopting a similar approach, the Atlantic Canada CoE can maximize its contribution to the sector and its stakeholders.

Across the CoEs assessed, four key themes are common for how CoEs respond to OSW opportunities and challenges, these include:

1. Innovation and Technology Readiness;
2. Stakeholder and Community Co-existence;
3. Regulatory Challenges; and
4. Regional Supply Chain and Workforce Development.

Innovation and Technology Readiness

The development of OSW will require regional technology readiness for seamless development and integration into the wider network of existing energy infrastructure. Integrating OSW energy into the grid, heavily depends on existing energy infrastructure, the lack of such infrastructure can significantly increase costs associated with OSW development. While other avenues for offtake exist, such as power-to-x opportunities, further assessment of the feasibility of this is required. Additionally, supply chain considerations present further technical challenges to consider (Díaz et al., 2022).

While existing challenges exist, support for the development of transmission integration infrastructure has been confirmed by both the federal and provincial leaders through the proposed East-West electricity grid and the Wind West concept. With grid upgrades having the potential to contribute to economic and energy resiliency for Canada. Grid infrastructure updates have the potential to unlock and integrate large-scale OSW for reliable domestic green energy supply, open export pathways both interprovincially and internationally as well as catalyze investment, job creation and domestic supply chains. As seen in global examples, an OSW CoE is a practical way to help contribute to valuable research and innovation support for grid integration infrastructure.

Example: NOWRIC

NOWRIC is addressing technological challenges related to OSW infrastructure. In collaboration with universities and energy companies, NOWRIC has developed research programs focused on improving grid integration and scaling up supply chains. By investing in technology that improves the transmission of energy from turbines to onshore grids, they have reduced integration costs. Their innovation in floating

wind technologies and improved mooring systems has also advanced the commercial viability of floating OSW, lowering production and maintenance costs.

While OSW is still in its development phase in Canada, there is an explicit benefit in researching innovative infrastructure and technological interventions that would lead to timely development of OSW infrastructure, reduce risk, mitigate impacts, and improve costs needed for investment.

Key stakeholders provided recommendations for a future CoE in Atlantic Canada and acknowledged the need for a CoE to offer the following services to OSW partners: R&D in onshore and grid infrastructure to supply wind energy to markets outside of Canada and R&D for integrated network transmission and priority points of connection to reduce the number of cable landings needed to reduce disruptions to fisheries, derisk investment, and improve costs.

Stakeholder and Community Co-existence

Local community members often worry that OSW projects will harm the environment, disrupt commercial and livelihood activities, and reduce property values (Fast & Mabee, 2015). Resistance frequently stems from individuals whose economic well-being is tied to coastal or ocean-based industries, such as tourism, aquaculture, and particularly commercial fisheries, where there are fears that turbine installations may restrict access to fishing grounds, alter marine ecosystems, or affect fish populations. This opposition is often compounded by Not In My Backyard (NIMBY) attitudes whereby communities generally support renewable energy development in principle but oppose specific projects near their homes or areas of importance due to perceived negative local impacts.

To overcome these challenges and foster public acceptance, it is crucial to engage communities early and meaningfully in the planning and development process. Transparent communication, inclusive decision-making, and proactive collaboration with local social organizations can help build trust and address misinformation. Moreover, offering tangible community benefits such as local job creation, investment in community infrastructure, or shared ownership models can help generate support. Demonstrating environmental stewardship and advancing technologies to improve the recyclability of turbine components are also key to aligning OSW development with broader sustainability and circular economy goals.

Net Zero Atlantic (NZA) is already operationalizing this coexistence agenda through its Smart Renewables and Electrification Pathways (SREP) funded Capacity Building for the Sustainable and Inclusive Development of Nova Scotia's OSW Resources. This program has delivered province wide engagement, with Indigenous, rural and fishing communities translating fisheries, livelihood, cultural and environmental concerns into actionable measures. Findings from this analysis were summarized into seven broad themes and the results of this engagement concluded with four key recommendations which can inform future engagement and capacity building efforts.

1. Enhance Organizational and Community Participation: Building enduring capacity requires continued support and coordinated engagement across organizations and communities;
2. Data Collection and Visualization Approaches in Engagement: Activities collecting public feedback should consider methods that facilitate communication to a wide range of audiences;
3. Timing of Engagement Sessions: Work with communities to assess community-specific needs, including timing of engagement and information dissemination; and
4. Importance of Ongoing Access to Credible Information: Communities and organizations requested in-person return of the Project Team to share relevant information and requested additional methods to access information.

The EOWDC has prioritized community engagement as a central component of its project development. The Aberdeen OWF Community Benefits Fund (2019), also known as the Unlock Our Future Fund, was established as a community-focused initiative to support climate-smart communities in Scotland. The project has provided funding to assist community organizations in installing energy efficient infrastructure. It also aims to educate local groups about renewable energy projects (Vattenfall, 2024). The project ultimately supplies £3m in total distributed throughout Aberdeen City and Shire.

Figure 6: EOWDC's Unlock Our Future Fund Recipients



At its proposal stage, the project involved a three-month consultation process involving the public, community council, and academics to document key issues in renewable energy projects, raise awareness of the OSW industry and share knowledge, survey community views, identify relevant community funding needs, and determine the geographical distribution of proposed funds. The project also contributed to community benefit funds that support local development initiatives, helping to gain public support and mitigate fears of environmental or commercial disruption.

Based on an assessment of community benefits from OSW farms in the UK, a problem with community funding programs is the lengthy and time-consuming application process, which has been noted as inaccessible to local applicants in the UK, especially in low-income communities (Vattenfall, 2024). Research suggests that involving the support of intermediary organizations, such as local application advisors to assist in resolving the problem by providing crucial support to enhance a community's project capability and resilience could help to expedite this process.

There are concerns in Atlantic Canada that the development of OSW may exacerbate marine issues, and communities have expressed interest in understanding what impacts are likely to occur. According to the Report of the Regional Assessment of Offshore Wind Development in Nova Scotia (RAOWDNS), it is expected that a wind farm will be operational in Nova Scotia within seven to ten years (Daborn, Parsons, Whitman, Wilkie, & Wooder, 2025; Gorman, 2024)). The assessment outlined that community engagement is needed to establish community needs before this operational status. The active engagement of Mi'kmaw communities in OSW development is paramount to ensure that the development

process follows the long-term vision of Mi'kmaw communities, emphasizing resilience and shared socio-economic benefit.

The RAOWDNS has highlighted concerns from fishers that OSW development may exacerbate marine displacement and loss of fishing areas already occurring in NS (Daborn, Parsons, Whitman, Wilkie, & Wooder, 2025). Fishers have expressed a need for mitigation plans and offsetting measures, and Mi'kmaw fishers have acknowledged the need for equitable and fair agreements to address the negative impacts on Indigenous rights and resources (Daborn, Parsons, Whitman, Wilkie, & Wooder, 2025). The RAOWDNS Committee recognizes the complexity of these issues and notes that more is needed to assess these opportunities and provide community-level support. As highlighted in the Unlock Our Future Fund example, opportunities to address community-level funds and supportive programming could be seized by intermediary organizations.

Regulatory Challenges

Historically, Atlantic Canada's regulatory environment for OSW was characterized by fragmentation, with overlapping responsibilities between federal and provincial agencies and a complex often protracted, environmental assessment process. This regulatory uncertainty at times may have presented a barrier to investment and hindered the ability for companies to commit to moving into the Canadian market when opportunities for OSW development were seen as more advantageous and streamlined elsewhere.

However, a significant shift occurred in October 2024, when new federal legislation was enacted enabling OSW projects in Atlantic Canada to submit applications through a jointly managed federal-provincial regulatory authority (Government of Canada, 2024). Bill C-49 marked a pivotal step towards regulatory clarity and coordination, providing OSW developers with a single window permitting process. The joint body is expected to streamline approvals, reduce duplication, and improve alignment between the provincial and federal priorities.

While OSW CoEs are not regulatory bodies themselves, international examples show that they can play an enabling role in improving regulatory clarity and efficiency for the private sector. These centres contribute by generating robust environmental and technical data that can help to inform and streamline permitting processes.

ORE Catapult has worked closely with regulatory bodies to streamline OSW permitting processes. Through collaboration with government agencies and developers, ORE Catapult has helped shape policy recommendations to create a more coherent regulatory framework, through the REMP which are aimed at reducing the duplicative documentation during the baseline assessments which may cause delays typically affecting OSW projects. This effort has facilitated faster project approvals and a clearer path for energy developers, improving project timelines and lowering administrative hurdles.

In addition to this, ORE Catapult's participation in the Offshore Wind Sector Deal, part of the UK's broader Industrial Strategy (Department for Business, Energy & Industrial Strategy, 2019). ORE Catapult contributed research and insights that informed recommendations to the UK government. This effort led to policy shifts aimed at reducing regulatory barriers, accelerating consenting processes, lowering costs, increasing visibility of future OSW contracts, increasing representation of women in OSW workforces, increasing investments in OSW, and promoting innovation in the OSW sector. ORE Catapult has advocated for a more integrated approach to OSW development, urging for alignment between energy policy, infrastructure planning, and environmental regulations to ensure that projects can move forward more efficiently.

While this legislation streamlines regulatory processes improving coordination, encouraging investment, and fostering innovation there is still a need to ensure that local communities, particularly those involved in marine activities, continue to have a voice in decision-making.

To ensure community concerns remain central in this new regulatory environment, an organization could act as a bridge and collective voice (such as an organization or service) between this new regulatory system and local communities (with aligned concerns) to support transparent reporting mechanisms and track how community concerns are addressed in decision-making. Furthermore, in the Project Team's engagements, key stakeholders noted a need for the government to revise regulatory implementation to expedite permitting processes to avoid development delays and attract OSW investor and developer support.

CoEs also support regulatory readiness by developing scenario modelling tools and policy simulations. The ARROW Centre in the U.S., for instance, focuses on grid resilience and infrastructure-readiness modelling to help shape regulatory frameworks around OSW deployment. In the Nordic countries, NOWRIC conducts cold-climate performance research to guide turbine safety standards in Arctic waters. These efforts allow regulators to assess the implications of policy choices before enacting new rules an approach that Atlantic Canada could replicate through a CoE that models the cumulative impacts of future floating wind developments in the context of Canadian waters.

Demonstration zones are another mechanism through which CoEs can contribute to regulatory innovation. Centres such as EOWDC in Scotland and the Gulf of Maine Research Array, provide real world conditions for testing new technologies under specific regulatory frameworks. This learning-by-doing approach enables regulators and industry to work together to experiment with certain permitting models in a controlled environment, helping to de-risk future projects as they come forward.

Finally, CoEs often act as impartial sources of truth, enhancing transparency and public trust in the regulatory process. Their independence and technical expertise make them valuable partners to both developers and governments. In the UK, for instance, ORE Catapult's research and guidance are regularly referenced in government briefings and marine planning processes. For Atlantic Canada, establishing a Centre of Excellence with a clear mandate to support regulation through credible science, scenario testing, stakeholder engagement, and trusted facilitation would not only accelerate project approvals but also strengthen investor confidence and community trust in the OSW sector.

Regional Supply Chain and Workforce Development

Leading OSW CoEs globally have recognized that a strong, resilient supply chain and skilled workforce are essential to long-term sector growth. In the UK, ORE Catapult's Fit 4 Offshore Renewables program has been instrumental in preparing small and medium-sized enterprises to enter the OSW market by benchmarking their readiness and supporting capability development in areas such as health and safety, quality assurance and project delivery.

emphasizes the dual importance of workforce development and supply chain readiness, particularly in addressing challenges related to grid connectivity, transmission infrastructure and fabrication capacity. By strategically aligning with federal goals to scale domestic OSW deployment, while ensuring equitable access to new employment opportunities.

NOWRIC, prioritize knowledge transfer between industry and academic. Through these collaborative research approaches, shared facilities and curriculum alignment, NOWRIC has become a regional driver for skills development and innovation in cold-climate OSW.

By supporting local suppliers and helping to train the next generation of OSW professionals, the Atlantic Canada OSW CoE can act as a catalyst for economic development, energy transition, and regional resilience ensuring that the benefits of OSW are not only experienced in regions directly impacted by OSW developments but broadly shared across the Atlantic provinces.

3.3 Takeaways for Atlantic Canada

Atlantic Canada can draw on several practical and strategic takeaways from leading OSW CoE around the world particularly regarding how these centres were established, their operational models, and their areas of focus. These insights can help shape an effective and sustainable OSW CoE for Atlantic Canada. Key lessons from the analysis include:

Foundational Partnerships and Funding Models

Founding a CoE requires credibility, capacity and long-term planning. Creating an organization with a focus on attaining diverse partnerships ensures a balanced perspective from different facets of OSW, can allow for a more diverse range of access to funding streams and can contribute to buy-in across multiple sectors, which is critical throughout political cycles. As seen in the case of ORE Catapult, core public funding is a key aspect to catalyze a project such as this and to bridge the gap between research and commercialization. As examples in the U.S. have shown, layering funding from government, academia and other sources can hedge a CoE against political cycles as we are witnessing today, and ensure independence and scientific integrity. The Atlantic Canada OSW CoE can draw from these experiences by ensuring that a diverse mix of public-private-academic partnerships are embedded in the organization from inception, to maximize credibility, access a diverse range of funding sources and lead on emerging topics such as floating OSW, regional grid integration, and Indigenous equity.

Mission-Led, Problem Focused Operations

As seen in existing CoEs throughout the world, CoEs that focus on solving real industry and community problems through research initiatives can gain faster uptake of their outputs and attract relevant investments, while directly contributing to the growth of the industry. Having a clear mission ensures that resources are aligned and measurable while allowing for flexibility as the industry matures. Comparable CoEs such as ORE Catapult, the Gulf of Maine Research Array and ARROW all share the common trait of having a clear mission.

- ◆ ORE Catapult: Established with a mandate to accelerate the deployment of OSW, innovate and create jobs throughout the UK.
- ◆ Gulf of Maine's Research Array: Created to address ecological and social concerns that could derail commercial floating OSW projects with a focus on co-existence with fisheries and marine ecosystems.
- ◆ ARROW: Established to focus on interdisciplinary research on challenges facing the OSW industry, education opportunities to help advance the next generation of OSW workers and policy needed to accelerate OSW in the U.S.

The Atlantic Canada OSW COE can learn from this and seek to build a mandate around solving localised challenges and building on opportunities for the region. These could be floating wind deployment in deep waters, regional workforce development and reconciliation-based development models. Findings from this analysis speak to the merits of being strategically grounded in solving Atlantic Canada specific barriers to OSW deployment.

Community, Indigenous, Government and Environmental Integration

Relevant to many localities around the world, OSW deployment faces significant public scrutiny. Early engagement, environmental transparency and partnerships focused on co-existence are essential for securing buy in from stakeholders, creating social licenses and avoiding costly delays for projects. Buy-in from industry, community stakeholders, government, Indigenous communities, academia and fisheries will help to create a more well-rounded perception of the CoE.

Comparable CoEs throughout the world have actively worked towards gaining a social license to operate, working in an unbiased manner but always in favour of OSW. The Gulf of Maine Research Array was designed to de-risk commercial floating OSW development by bringing together the State, the fishing community, wildlife experts and many others to study and learn about the potential impacts of floating OSW to inform future commercial development while protecting the interests of all stakeholders. ORE Catapult through their REMP program has supported efforts to streamline the environmental consenting process, a major barrier in the UK for OSW projects. Advocating for regional-scale environmental monitoring, which allows for shared datasets to be used across multiple developers. This research has advocated for a standardized, science-based approach to environmental consenting at the regional scale. Key findings indicate that this has an opportunity to reduce duplication efforts for data collection, speed up the permitting process and lead to an increase in public trust.

Given Canada's commitment to reconciliation and Atlantic Canada's dependence on the fisheries industry, an OSW CoE should embed Indigenous governance, community benefits planning and promote co-existence from day one. This not only strengthens trust but can contribute to the acceleration of OSW deployment in the region.

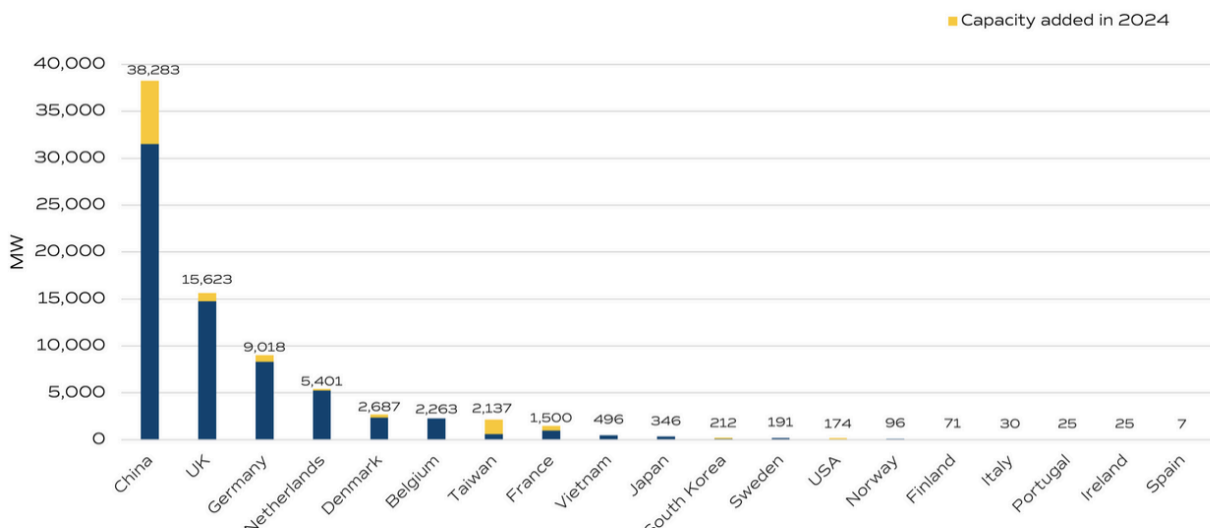
4. Global and Atlantic Canada Offshore Wind Landscape

4.1 Global Offshore Wind Industry

To understand how an OSW CoE could support Canada’s energy transition goals, it is important to situate its potential role within the broader global OSW landscape. Around the world, OSW CoEs have played an important role in accelerating industry growth, advancing innovation, facilitating collaboration between government, academia, and industry and strengthening national competitiveness in the clean energy economy. By examining international models for OSW CoEs, we seek to identify best practices, lessons learned, and governance structures that have proven effective in enabling large-scale OSW deployment. These global examples provide a valuable reference point for shaping a made-in-Canada approach to establishing an OSW CoE that can contribute to the growth of the national OSW sector.

The OSW sector is a rapidly maturing global industry, now entering its fourth decade of development. As of the end of 2024, more than 78.5 gigawatts (GW) of OSW capacity has been installed globally, across 307 active windfarms in 20 countries (World Forum Offshore Wind, 2025) (Figure 7). Originating in Europe in the early 1990s, where a drive for sources of cleaner energy drove investments into OSW technology (World Forum Offshore Wind, 2025).

Figure 7: Installed OSW Capacity as of the end of 2024 by Country



Source: AECOM based on WFO, 2025

Since its inception in 1992, the global OSW market has experienced exponential growth, particularly in the last decade. Contributing to this growth, early public investment in research, infrastructure, and procurement policies has helped to catalyze innovation and de-risk private sector investment. As a result of this initial investment, deployment of OSW projects greatly accelerated, enabling the broad scale development of the regional supply chain and the supported technological advancement of OSW technology, including notable increases in the size of wind turbines from less than 0.5MW in the 1990s to the latest projects which are anticipating the use of turbines of 15 to 20MW (Angel McCoy, 2024, p. 54).

The 40x size increase over the past 30-years has enabled a substantial reduction in the cost of the projects as defined by the LCOE and significantly improved the economics of the sector.

Until recently the industry was entirely based on fixed bottom technology, where the turbine is installed with large heavy lift vessels on a steel or concrete foundation that is fixed to the seabed. This technology is suitable for relatively shallow waters (less than 60 metres) and has facilitated the implementation for most of the installed base to date. In 2016, the first floating OSW farm, Hywind Scotland was constructed by Equinor, opening the door for further development in deeper waters. While this technology is promising, there is still only around 300MW of operating floating offshore wind systems globally and the technology is characterized as pre-commercialized.

In the last decade, OSW has become a critical part of national decarbonization strategies throughout the world. Several countries have launched ambitious targets to build out their OSW and domestic supply chains. Amongst these, China has emerged as a global leader in installed capacity, reaching 38 GW by the end of 2024. China's rapid deployment has been driven by strong industrial policy and the emergence of domestic turbine manufacturers such as Mingyang Smart Energy, Goldwind and Shanghai Electric (Angel McCoy, 2024, p. 52).

In addition, development in the United States has been building over the past decade, with the first U.S. project Block Island, being put into service in 2016 (U.S. Department of the Interior, 2021). Currently there are three projects in operations in the U.S., with a total capacity of 174MW, and another 11GW of OSW projects currently holding regulatory approvals or in some phase of engineering/construction. The three operational projects include Block Island Wind Farm with a capacity of 30MW, Coastal Virginia Offshore Wind (CVOW) with a capacity of 12MW and South Fork Wind Farm with a capacity of 132MW. On January 20th, 2025, The U.S. Government issued an executive order noting the temporary withdrawal of all areas on the outer continental shelf from OSW leasing and the review of federal government's leasing and permitting practices for wind projects (The United States Government, 2025). This order paused all leasing of federal waters for OSW and paused new or renewed approvals for wind projects until the outcome of a comprehensive assessment and review of federal wind leases and permitting practices has been completed. While there will be a large number of projects facing unknown futures as they await federal approvals, this executive order has the potential to cause a significant ripple in the industry and causing gaps in the market where existing projects are either halted or cancelled altogether.

4.2 Provincial Level Strategy

Governments and businesses worldwide are committing to reducing greenhouse gas emissions to net zero by 2050 to keep global warming below 1.5 degrees Celsius relative to pre-industrial levels, as identified by the United Nations Intergovernmental Panel on Climate Change (Intergovernmental Panel on Climate Change, 2018). The Government of Canada and all four Atlantic provinces have aligned with this commitment to achieve net zero by 2050². To achieve the identified targets, a series of climate actions to reduce emissions across the economy are planned for and enacted in each province.

Through the Regional Energy and Resource Tables initiative, all four Atlantic provinces are working with the federal government, Indigenous partners and key stakeholders to identify and advance low-carbon opportunities in the energy and resource sectors. Nova Scotia, Newfoundland and Labrador and Prince Edward Island have identified opportunity areas for collaborative action to move towards net zero. Nova

² Prince Edward Island has set its net zero target date by 2040.

Scotia has identified six opportunity areas as shown in Figure 8. OSW is embedded across three of these opportunity areas, including clean electricity, hydrogen and marine renewables.

Figure 8: Nova Scotia Energy and Resource Roundtable Opportunity Areas



Newfoundland and Labrador have identified four opportunity areas, including critical minerals, wind and hydrogen, electrification and carbon capture, utilization and storage (Figure 9). Similar to Nova Scotia, OSW plays a role in the long-term vision for Newfoundland and Labrador while explicitly indicating its goal to enhance Newfoundland and Labrador's position as a clean energy centre of excellence by developing its abundant and high-quality wind resource, creating a clean hydrogen industry, and taking advantage of its geographic proximity to markets in the United States and Europe.

Figure 9: Newfoundland and Labrador Energy and Resource Roundtable Opportunity Areas



Prince Edward Island has the ambitious goal of becoming Canada's first net-zero province, reaching net-zero emission by 2040. To achieve this, three opportunity areas have been identified including clean electricity and energy storage, clean fuels and clean technology innovation (Figure 10). These opportunity areas not only underscore PEI's commitment to environmental sustainability but also highlight the provinces potential to build and leverage OSW energy as a cornerstone of its clean energy strategy in the future.

Figure 10: Prince Edward Island Energy and Resource Roundtable Opportunity Areas



New Brunswick have joined the roundtable initiative in Phase 2 and areas of focus are still being developed. New Brunswick, through the report *Our Pathway Towards Decarbonization and Climate Resilience*, features three pillars involved in achieving net zero emissions. Government leadership and accountability, reducing greenhouse gas emissions, and preparing for climate change. In this plan, New Brunswick sets out to achieve a 2030 reduction target of 46% below 2005 emission levels and net zero by 2050 (The Province of New Brunswick, 2021). A key component of this will include powering the province with clean and renewable energy, as generating electricity accounts for approximately 23% of New Brunswick's total GHG emissions.

Newfoundland and Labrador have outlined its plan to achieve net zero emissions by 2050 in the report *Maximizing Our Renewable Future: A Plan for Development of the Renewable Energy Industry in Newfoundland and Labrador*. Highlighting the opportunities for undeveloped renewable energy resources such as hydroelectric, wind, biomass, solar, and wave/tidal resources all contributing to the reduction in provincial GHG emissions (The Province of Newfoundland and Labrador, 2022).

The Government of Prince Edward Island aims to achieve net zero emissions by 2040, 10 years earlier than the three other provinces in Atlantic Canada. With already robust renewable energy production capabilities through wind and solar, Prince Edward Island plans to improve its already strong performance. In 2019, approximately 87% of Prince Edward Island's electricity supply came from relatively clean energy sources. Wind energy is a key component in keeping electricity prices low for residents, and continued investment in the industry will be integral for achieving net zero targets (The Province of Prince Edward Island, 2022).

Nova Scotia has legislated its goals to achieve net zero emissions through a combination of renewable energy projects, including wind (offshore and onshore), solar power, energy efficiency programs, and transportation initiatives. These are outlined in the *Environmental Goals and Climate Change Reduction Act* and *Our Climate Our Future: Nova Scotia's Climate Change Plan for Clean Growth* (The Province of Nova Scotia, 2022; The Province of Nova Scotia, 2022). The province has set an interim target to be at 53% below the levels that were emitted in 2005 and, by 2050, be net zero by balancing greenhouse gas emissions with greenhouse gas removals and other offsetting measures. As part of this plan, 80% of electricity in the province will be supplied by renewable energy by 2030.

4.3 Atlantic Canada Offshore Wind Ambitions

The OSW industry in Atlantic Canada is gaining momentum. With waters off Nova Scotia and Newfoundland and Labrador identified as prime locations for future OSW development, each province is laying the necessary groundwork to facilitate growth within the industry and deployment of OSW projects. The region's relatively shallow waters and strong, consistent winds make it ideal for large-scale wind farms, capable of supporting industry growth and achieving economies of scale. The growth in the OSW industry presents an important opportunity for Atlantic Canada to accelerate its transition to a reliable, affordable and low-carbon power system. To advance OSW deployment, the province has published an Offshore Wind Roadmap, with three modules completed.

The first module, which focuses on the regulatory pathway to market, outlines that OSW resource development areas in NS are jointly managed by federal and provincial governments in accordance with the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, SC 1988, c 28 and the *Canada-Nova Scotia Offshore Petroleum Resources Accord and Implementation Act* SNS 1987. However, developers should expect to have access to seabed rights in 2025 for these jointly managed areas, and module one outlines that the first commercial-scale OSW project should be completed in 2030 or shortly thereafter. The module lists four potential markets to bolster OSW development in NS:

1. Provincial demand for clean electricity or green fuels;
2. Regional/national demand for clean electricity or green fuels;
3. Demand for clean electricity from the US; and
4. International demand for low carbon, green fuels, and chemical feedstock.

The second module focuses on the supply chain and infrastructure opportunities for economic growth. It highlights three key goals:

1. Establish a strategy to optimize local participation in the supply chain, including diversification opportunities for existing ocean users;
2. Optimize opportunities for businesses and communities to benefit from OSW development; and
3. Establish an OSW supply chain that creates equitable opportunities for underrepresented and underserved groups.

The second module highlights that to build a strong supply chain, a strong network of port facilities is needed to effectively “manufacture, store, stage, install, and maintain wind turbines” (Nova Scotia Offshore Wind Roadmap Module 2, n.d., p.8).

The third module synthesizes input from the Mi'kmaq and other Indigenous peoples, the fishing industry and other ocean uses, environmental organizations, academia and the research community. The report translates engagement into actionable steps, including advancing designated Wind Energy Areas (WEAs) and a land tenure process for submerged land licenses, developing co-existence and compensation policies, prioritizing cumulative-effects research and monitoring and scaling workforce development with education partners.

In addition to the Offshore Wind Roadmap, the RAOWDNS and the Regional Assessment for Offshore Wind Development in Newfoundland and Labrador (RAOWDNL) are joint initiatives led by the federal and provincial governments to identify where and how OSW projects can be successfully developed. These regional assessments have helped to inform future federal impact assessments and decisions for OSW. Regional assessments assess the positive and adverse effects of the introduction of OSW to Atlantic Canada. The overall goal of these studies was to assess the potential environmental, economic and social impacts of OSW development and inform considerations to be taken forward when engaging in future project-specific federal impact assessments.

The RAOWDNS, published in January 2025 evaluates the potential environmental, socio-economic, and cultural impacts of OSW projects throughout the province, providing a strategic understanding of the opportunities for future OSW development as well as planning considerations that should be taking into account as the build out of OSW occurs. The report identifies eight Potential Development Areas (PDAs) by assessing the existing conditions of the region and examining impact producing factors such as the effects on marine life, fisheries, and cultural heritage sites, seabed disturbances. These impacts were evaluated in relation to the valued components as identified within the RAOWDNS. Key findings include maintaining a 25km buffer zone from the coastline to protect sensitive areas, emphasizing the importance of engaging with key stakeholders including Indigenous communities, fisheries, and environmental organizations and the implementation of monitoring and mitigation measures during all phases of OSW projects.

Final recommendations from the report are summarized into seven distinct themes:

1. Existing Knowledge Gaps and Necessary Research: Identifies areas where further research is needed to better understand the impacts and potential of OSW developments. Acknowledging that the OSW ecosystem is fragmented across numerous knowledge holders in government,

industry and academia, coordinating a collaborative approach to the research agenda could support OSW development;

2. Socio-economic Feasibility and Consequences: Similar levels of uncertainty exist in OSW's impacts on local communities, continuing the research agenda to better understand the potential impacts is crucial to the growth of the industry;
3. Project Development: This includes the identification of a 25km buffer zone as well identifies best practices for planning, permitting and construction of OSW projects;
4. Coexistence and Compensation: This highlights the importance of the fishing industry to the region and explores strategies for ensuring that OSW projects can coexist with other marine activities as well as how compensation has been handled and potential avenues for the adoption of the principle of compensation for economic loss for Nova Scotia;
5. Cumulative Effects: This section acknowledges the physical, ecological and socio-economic effects associated with OSW and proposed considering the combined impacts of multiple OSW projects on areas;
6. Governance: As the industry grows, how best to accommodate OSW developments and provides recommendations for initial actions that can be taken to help progress the OSW sector; and
7. Education and Training: This section highlights importance of developing a skilled workforce to support the OSW industry and key recommendations for the growth of advanced education to promote the future marine workforce of Nova Scotia.

Like Nova Scotia, Newfoundland and Labrador possess significant offshore renewable energy potential, particularly in OSW power. Harnessing this resource can not only help Atlantic Canada and Newfoundland and Labrador achieve its climate change commitments but can contribute to generating local employment and contributing to the global transition to a low carbon energy system.

The final report for the RAOWDNL was published in January 2025. The assessment follows a similar approach to Nova Scotia by defining a Study Area for OSW and overlaying aspects pertinent to the development of OSW such as water depth and other physical constraints to derive potential development areas for OSW.

Relevant recommendations from the RAOWDNL to the scope of work of this report include:

- ◆ Recommend that Statistics Canada collect disaggregated data for information on identity and social factors, to improve GBA Plus considerations in impact assessments;
- ◆ Recommend that the province revisit initiatives to prepare for the introduction of offshore oil and gas development in Newfoundland and Labrador and consider updating and applying these in the context of OSW development. Examples being establishing specialized programs at local colleges and institutes, programs to encourage Canadian ownership of new developments, and offering offshore survival training programs throughout the province;
- ◆ Revisit the Teach Fund and continue to support active industry associations; and
- ◆ That developers work with government agencies to support and collaborate with local communities.

In December 2023, the Government of Newfoundland and Labrador signed a Memorandum of Understanding (MOU) with the Government of Canada to advance OSW development within the province's inland bays. The agreement, stipulated that regulatory authority for the 16 inland bays grants regulatory authority over OSW projects, streamlining the process for land tenure, project life-cycle management and revenue administration (The Government of Canada and the Government of Newfoundland and Labrador, 2023). The MOU aims to attract investment to the region, create

sustainable jobs and supports net-zero commitments, marking a significant step in harnessing Newfoundland and Labrador's renewable energy potential.

The development of OSW in Atlantic Canada has been historically hindered by regulatory uncertainty and the absence of a clear framework for governing OSW projects. A subset of the key regulatory challenges with the development of OSW in Atlantic Canada include:

- ◆ An unclear permitting and leasing process, with no dedicated framework to grant OSW leases, making it difficult for developers to secure project sites;
- ◆ The regulatory landscape involved both provincial and federal agencies, creating uncertainty regarding which level of government had authority over OSW development; and
- ◆ Limited infrastructure planning for OSW grid connections creates additional uncertainty regarding how projects will be integrated into the provincial electricity systems.

The introduction of Bill C-49, which amends both the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act and the Canada-Newfoundland and Labrador Atlantic Accord Implementation Act, represents a significant step towards establishing a structured regulatory framework for OSW in Atlantic Canada. This legislation formally establishes a regulatory framework for OSW projects in areas under federal jurisdiction, addressing the previous uncertainty around leading and permitting. It provides a clear division of responsibilities between federal and provincial authorities, helping to streamline the approval process and reducing conflicts.

Importantly, Bill C-49 enables a structured leasing process that allows developers to competitively bid for OSW development rights. By creating this transparent and predictable regulatory environment, the legislation significantly enhances investor confidence, enabling developers to make long-term commitments to projects in Atlantic Canada.

Complementing this federal initiative, Newfoundland and Labrador have passed Bill 90, which establishes the Canada-Newfoundland and Labrador Offshore Energy Regulator (CNLOER). This body will jointly oversee renewable energy alongside its counterpart in Nova Scotia. Together these legislative actions signal strong regional and national alignment and demonstrate clear momentum towards unlocking Atlantic Canada's OSW potential.

Building off the RAOWDNS and following extensive public consultation efforts, the Government of Canada and the Province of Nova Scotia designated four Wind Energy Areas (WEAs) in July 2025. These include the French Bank, Middle Bank, Sable Island Bank, and Sydney Bight, covering a combined some 12,500 km². Next steps following the identification of the WEAs is to provide direction to the regulator to commence the initial licensing round, starting with a call for information and pre-qualification, followed by an initial licensing call of up to 5 GW.

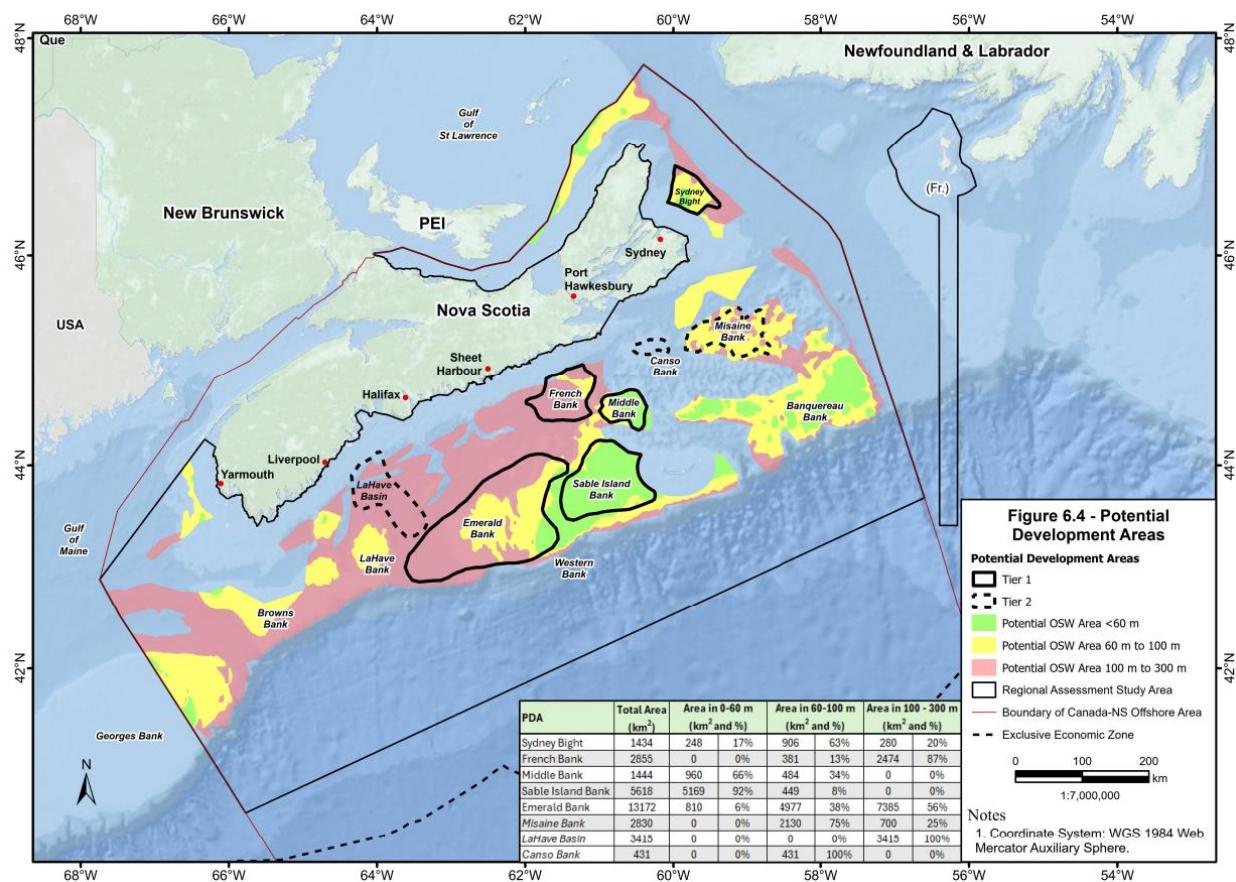
4.4 Atlantic Canada Offshore Wind Potential Development Areas and Wind Energy Areas

Embedded within each of the regional assessments for OSW are proposed potential development areas, identifying preferred areas for future OSW developments in Nova Scotia and Newfoundland and Labrador. These areas have been identified through a robust process of both desktop analysis and stakeholder engagement and take into account the requirements and considerations of a wide range of stakeholders.

The methodology for identifying these areas included, identifying an appropriate study area for the selected province and overlaying a series of variables to identify suitable locations for future potential OSW developments. These included wind speeds, water depths, coastal buffers, icebergs, marine critical habitats, marine protected areas, marine traffic routes and areas with high vessel density, national marine conservation areas, areas surrounding national parks and world heritage sites, high-density commercial fishing areas, and areas identified in the community-based coastal resources inventory,

Within Nova Scotia, the eight PDAs have been assigned as Tier One, or areas recommended for immediate consideration as prospective Wind Energy Areas, and Tier Two, areas requiring additional investigation and/or engagement before being elevated to Tier One (Figure 11). Sydney Blight, French Bank, Middle Bank, Sable Island Bank, and Emerald Bank are all identified as Tier One PDAs, while Misaine Bank, LaHave Basin and Canso Bank are all identified Tier Two, requiring further investigation before being upgraded to Teir One.

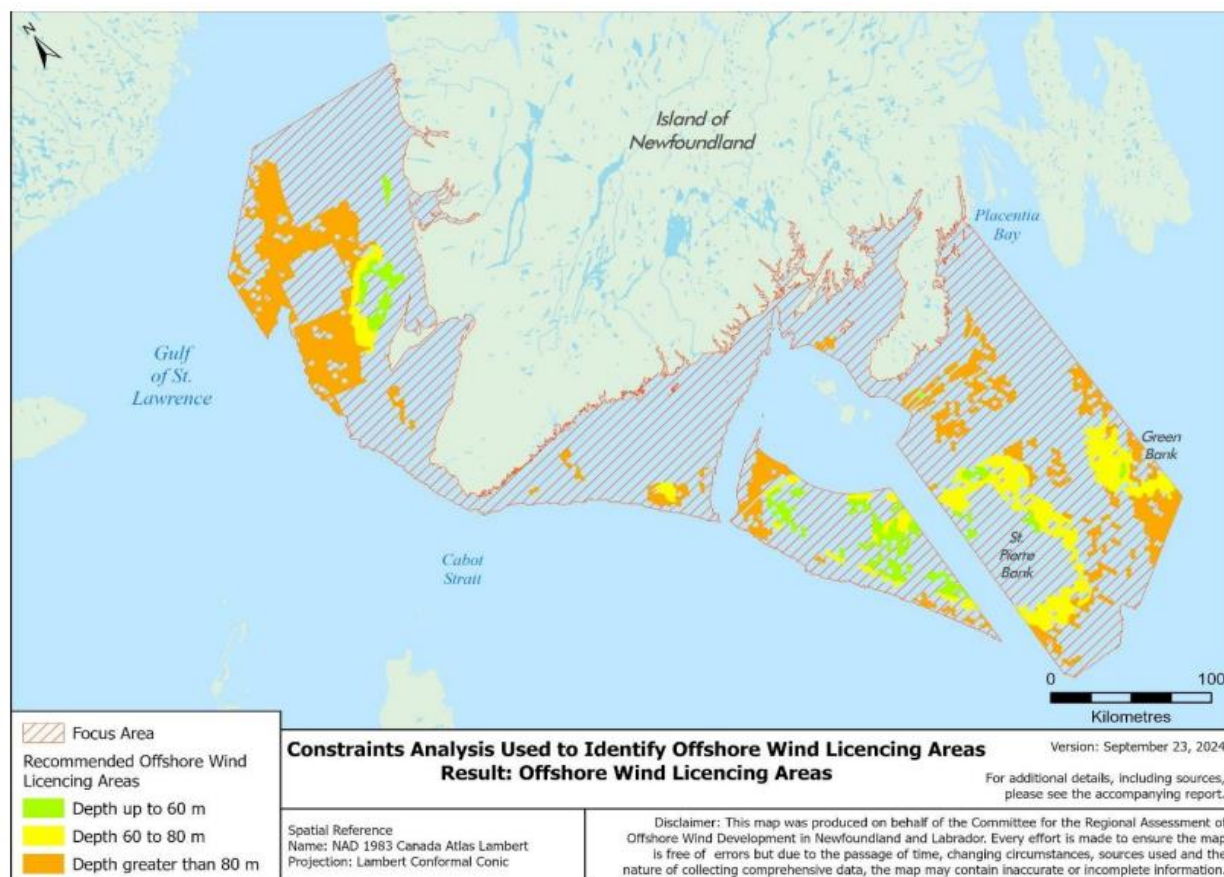
Figure 11: Nova Scotia OSW Potential Development Areas



Source: AECOM based on the Committee for the Regional Assessment of Offshore Wind Development in Nova Scotia

In Newfoundland and Labrador, initial OSW energy licensing areas for consideration have been identified (Figure 12). The map identifies areas based on suitability for different technologies at different water depths, including those 60 metres, 60-80 metres, and greater than 80 metres.

Figure 12: Newfoundland and Labrador Offshore Wind Licencing Areas



In June 2025, all five Tier One areas were designated as WEAs and all Tier Two areas have not been taken forward. The decision to remove Tier Two areas may be revisited after 2030 as Nova Scotia reviews its progress towards the initial round of licensing of up to 5 GWs of OSW.

4.5 Current Challenges in Atlantic Canada

The OSW industry in Canada faces several obstacles as it moves toward large-scale development. As summarized within each of the regional assessments, there is a requirement to further demonstrate a need for OSW in Atlantic Canada, including:

- ◆ The use of electricity (e.g. expansion of domestic energy supply, replacement of domestic energy supplied by fossil fuel, hydrogen production, electrification of offshore oil and gas);
- ◆ Infrastructure readiness, such as grid capacity;
- ◆ The economics behind OSW, including LCOE, market demand, and supply chain readiness; and
- ◆ How OSW can fit into Atlantic Canada's overall energy and economic strategy.

Recent legislative advances, such as Bill C-49, have streamlined the approval process in regions like Nova Scotia and Newfoundland and Labrador, providing a clear regulatory framework for OSW in the region. This bill allows for a more unified approach by enabling developers to work with a single regulatory body rather than navigating provincial and federal authorities.

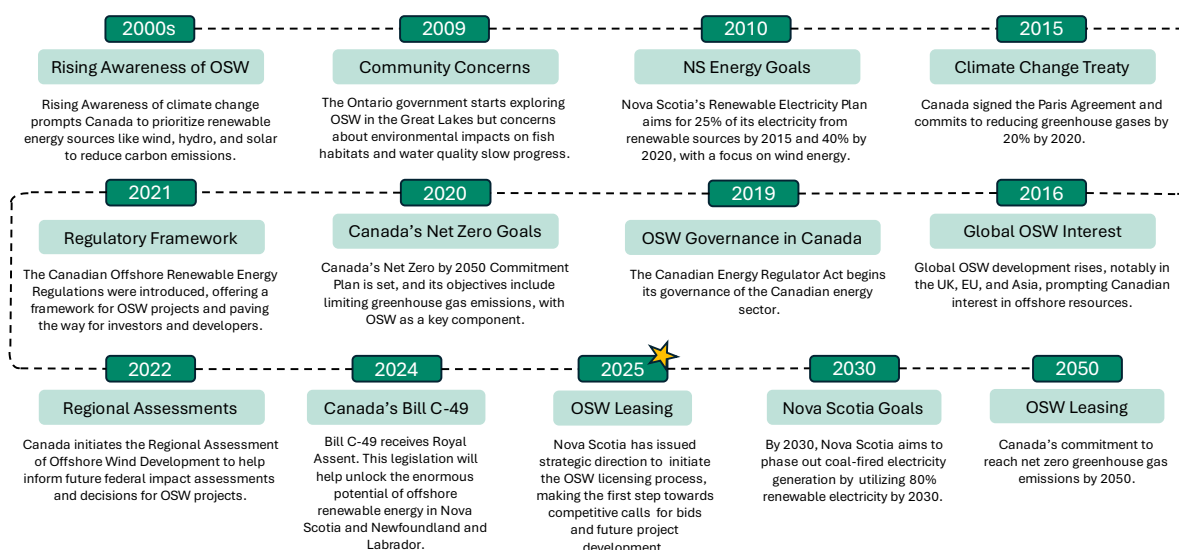
Community and Indigenous rights issues should be considered with utmost attention and care. Local communities' concerns relate to potential environmental impacts, disruptions to commercial activities, and other social and economic effects of wind farm projects. Key stakeholders mentioned the need for community education on OSW, which is crucial. Participants noted that community uneasiness could arise due to the aftermath of oil and gas industry development, which was poorly understood at the time. Moreover, under Canadian law, the Crown has a constitutional obligation to meaningfully consult and accommodate Indigenous peoples whenever projects may infringe upon established or credibly asserted Aboriginal or Treaty rights. Regulatory bodies, including energy regulators, must ensure this duty to consult is upheld, which can delay project approvals. Key stakeholders highlighted that a critical component of effective planning is ensuring that First Nations are consulted early in project stages and that they are adequate contributors to OSW development. They also emphasized a need for diverse perspectives, incorporating the Two-Eyed Seeing³ methodology within the CoE to balance Indigenous and Western knowledge systems.

Lastly, the OSW sector must overcome technical barriers related to regional electricity requirements, grid integration, supply chain readiness, scalability, and economic factors such as high upfront capital costs. The electricity requirements and corresponding transmission infrastructure are modest, limiting the ability to integrate OSW at the scale required to achieve viability. These challenges still pose obstacles to the timely and efficient development of the OSW industry in Canada.

4.6 Timeline

The OSW industry in Canada has been gaining momentum in line such as technological advancements, government policies, environmental pressures and climate goals. The timeline for OSW development is expected to take off once the 2025 call for OSW bids occur.

Figure 13: OSW Timeline



³ Two-Eyed Seeing is a Mi'kmaq principle which encourages the integration of Indigenous and Western knowledge systems, recognizing the strengths of both and applying them together in a respectful and complementary manner to inform decision making.

4.7 Desktop Research Summary

By collaborating with these organizations, institutions, and stakeholders, the OSW CoE could build a robust support network that advances OSW development, increases socio-economic benefits for local communities, and integrate environmental protections into its projects. There is a robust network of existing partners throughout Nova Scotia that are operating within the OSW space at present. By leveraging the existing expertise within the field there is an opportunity for the OSW CoE to embed itself within the existing OSW ecosystem of Atlantic Canada to create an organization bringing together the breadth of expertise across research, academia, industry, government and community stakeholders. Each partner could bring unique expertise and perspectives to support the CoE's operations as a sustainable, inclusive, and regionally beneficial initiative aligned with Atlantic Canada's renewable energy goals.

5. Offshore Wind Centre of Excellence Business Case

The establishment of an OSW CoE in Atlantic Canada represents a strategic opportunity to drive innovation, research, and foster industry collaboration in the OSW sector. This section of the report outlines the business case and rationale for the CoE by outlining the “what and why” for the OSW CoE, summarizing the problem definition for OSW in Atlantic Canada, identifying key areas of focus to address the industry’s future needs and outlining alignment with national and regional ambitions. Findings from this section have been drawn from extensive stakeholder engagement, a full summary of the stakeholder engagement findings can be found in Appendix C.

To build the business case for the OSW CoE, a set of strategic focus areas have been identified that directly respond to the challenges facing OSW development in Atlantic Canada. These focus areas build on the proposed mission of the CoE and provide a framework for guiding research initiatives, industry collaboration efforts and workforce development. Together, they establish a clear rationale for how the CoE can translate stakeholder input into actionable priorities that support both immediate and long-term industry growth.

In summary, a successful OSW CoE in Atlantic Canada will foster collaboration across regional and international institutions, align government and industry efforts, be economically self-sustaining, prioritize environmental stewardship, engage local communities, and respond to market needs.

5.1 Stakeholder Engagement Findings

Key findings from stakeholder engagement activities include:

- ◆ There is a lack of a unified voice within the OSW community. A co-ordinated platform that brings together industry stakeholders including fisheries, industry, government, Indigenous communities and academia would help to align priorities and strengthen advocacy;
- ◆ The economic impacts of the transition to a net-zero economy will be uneven across Atlantic Canada. There is a role to support this transition through workforce development, applied research, and regional economic strategies;
- ◆ The nascent state of the industry leaves many unanswered questions, specifically surrounding the economics behind the development of OSW in Atlantic Canada. There is an opportunity to target resources toward solving these questions in a proactive way, ensuring that all stakeholders benefit from the growth of this industry in an equitable fashion;
- ◆ Existing technologies require adaptation to operate effectively in Atlantic Canada while coexisting with traditional industries and local communities. The CoE can serve as a hub for applied research and demonstration in this area;
- ◆ An inclusive governance model with equitable representation of all affected stakeholders is essential for building trust, achieving coexistence and ensuring long term success of the industry;
- ◆ Long-term funding strategies must balance public funding with self-sufficiency, reflecting on lessons learned from other Atlantic Canadian and global organizations that emphasize the importance of sustainable financial planning; and
- ◆ Ensuring OSW is economically competitive with other energy sources is critical, particularly given the timelines and targets associated with achieving net-zero in Atlantic Canada.

5.2 OSW Problem Definition and Prioritized Opportunities

OSW energy has significant potential to accelerate Canada's transition to a low-carbon economy. However, despite the vast wind resources, several obstacles exist which may limit the growth of the industry. Addressing these challenges is essential for building a competitive and sustainable OSW sector for the region. This section identifies the principal obstacles facing the OSW industry in Atlantic Canada.

Research and Innovation Constraints

A critical barrier impacting the sustained growth of the OSW sector is the absence of a coordinated research and innovation program for Atlantic Canada. While there have been valuable contributions from existing organizations, efforts remain fragmented and lack formal policy integration. Recommendation T-1 from the final RAOWDNS explicitly calls for the creation of a dedicated research organization to address gaps in data.

An OSW CoE could fulfill this function to deliver long-term, policy-linked research while coordinating innovation efforts across government, industry, academia and Indigenous partners. Importantly the CoE could build on existing research momentum being conducted by existing organizations, including:

- ◆ The Nova Scotia OSW R&D Forum and the OSW R&D Roundtable, both by NZA bringing together stakeholders to map priority research areas;
- ◆ NZA's OSW R&D Priorities Roadmap further consolidated these insights, identifying 22 priority areas to guide future research and innovation;
- ◆ Complementary work, such as the NZA Grid Integration and Transmission Study and the NZA Assessment of Atlantic Canada Ports to Support OSW Development;
- ◆ The Municipality of the County of Richmond and the Town of Port Hawkesbury Strait of Canso Sustainable Infrastructure Strategy; and
- ◆ The Atlantic Canada Wind Energy Supply Chain Assessment.

In addition, OSW developers require access to testing and validation infrastructure to ensure turbine performance and infrastructure efficacy. At present, Canada lacks a dedicated OSW technology test site, making it difficult for companies to trial new innovations prior to full-scale deployment and for SMEs and start-up companies to demonstrate and refine their technologies.

Grid Integration and Transmission Constraints

One of the key barriers to OSW development in Atlantic Canada is the lack of grid capacity and transmission infrastructure needed to integrate large-scale OSW projects. Nova Scotia's grid is relatively small, with a peak demand of approximately 2.5 GW, meaning that the province cannot absorb the full potential of OSW without significant expansion. Current interconnections between Nova Scotia, New Brunswick, and the broader North American grid are limited, restricting the province's ability to export the surplus energy elsewhere. Newfoundland and Labrador face similar challenges, with much of its existing transmission capacity allocated to hydroelectric exports from Muskrat Falls and Churchill Fall meaning the majority of OSW in Newfoundland and Labrador would serve export markets. In addition, the Labrador-Island Link and Maritime Link are currently used for hydroelectric exports, further cementing the need for additional transmission infrastructure.

Expanding transmission corridors, whether through updates to the Atlantic Loop project or new subsea interconnections to the U.S. present not only an opportunity to support OSW at scale in Atlantic Canada

but to contribute to nation-building opportunities. However, these investments require long-term planning, regulatory approvals and financial commitments from both public and private sectors.

With that being said, ongoing efforts are being conducted to assess the viability of a subsea cable connecting to New England as a means of supporting OSW generated electricity export. This includes the work being conducted by the New England Maritimes Offshore Energy Corridor initiative, which is exploring a multi-jurisdictional offshore transmission route between Atlantic Canada and the northeastern United States. In addition, NZA is leading a socioeconomic study of a subsea cable from Nova Scotia to the northeastern United States. Together these efforts represent early-stage but critical investigations into how Atlantic Canada could participate in cross-border clean energy transmission, unlocking a broader market for OSW generated electricity.

The Premier of Nova Scotia has recently declared Nova Scotia's ability to power a quarter of Canada's electricity needs, positioning the province as a potential energy superpower amid the rollout of four designated OSW WEAs and the ambitious Wind West initiative targeting up to 40 GW of OSW capacity. This vision emphasizes the opportunity that exists through expanding grid capacity and transmission line infrastructure.

On the federal stage, the Prime Minister of Canada has reinforced this aspiration through the national energy strategy, calling for Canada to become an energy superpower in both clean and conventional domains and reduce dependence on imported energy.

Green Hydrogen Market Uncertainty

Green hydrogen has been proposed as a solution to absorb excess OSW electricity, converting it into a storable and exportable energy carrier. However, the hydrogen economy, relative to OSW remains in its early stages, with limited large-scale demand and no established export infrastructure in Atlantic Canada. While the European Union have expressed interests in importing green hydrogen and ammonia, significant challenges remain, including the high capital and operational costs of electrolysis, complex transportation logistics and the need for long-term offtake agreements.

International Competition

The global OSW industry is in a state of flux. While markets such as the UK and the U.S. once seemed poised for rapid expansion, recent political developments, particularly in the U.S. have slowed growth and created uncertainty. This evolving context reframes competition and may open new strategic avenues for Atlantic Canada.

Specifically, a Presidential Memorandum in January 2025 withdrew all areas of Outer Continental shelf from wind energy leasing, halting new permits and approvals from occurring. In addition, the Department of the Interior de-designated over 3.5 million acres previously targeted for OSW development, effectively halting new OSW leasing in key regions. Ongoing legal and regulatory have created future uncertainty with stop-work orders being issued for Revolution Wind (Orsted, 2025).

As a result, the broader U.S. OSW pipeline has been severely damaged, threatening billions in investments and sacrificing tens of GWs of projected capacity, casting doubts on long-term prospects for the region.

5.3 Areas of Focus Identification

Building on the challenges identified in Section 5.2, this section outlines the proposed areas of focus for an OSW CoE in Atlantic Canada. Whereas Section 5.2 defined the barriers to sector growth including fragmented research efforts, limited testing infrastructure, grid integration constraints, supply chain gaps and international competition, this section sets out how a dedicated OSW CoE could address these challenges and provide the foundation for a competitive, sustainable OSW industry.

Mission and Purpose

Throughout the stakeholder engagement process, participants consistently emphasised the need for an OSW CoE to provide a coordinated, research-driven approach to address technical, environmental, and economic challenges facing OSW development. One that would bring together stakeholders across the industry and act as a common voice to progress the OSW sector while providing robust data-driven research to facilitate progress and to help strengthen the economics and help to mitigate environmental considerations related to OSW.

Findings from the Desktop Research highlighted, successful OSW-focused centres, such as the European Offshore Wind Deployment Centre, ORE Catapult, and NOWRIC, have demonstrated the importance of community engagement, streamlined regulatory frameworks, and technological advancements in helping to progress the OSW industry. These centres have helped reduce project costs, contributed to accelerating development timelines, and have helped to foster technological advancements needed to grow a competitive OSW sector.

It is proposed that the OSW CoE in Atlantic Canada build on these international models by providing targeted research and fostering collaboration between industry, governments and the research community. Through this, the CoE could address the region's unique challenges, ensuring that Atlantic Canada continues on the path to becoming a leader in OSW energy.

The proposed mission of the OSW CoE is to drive the growth and transformation of Atlantic Canada's OSW industry by breaking down barriers, delivering innovative research, and fostering a sustainable, competitive ecosystem. The intention is to create an organization which has the capability to unlock the full potential of OSW energy in Atlantic Canada, accelerate industry development, and position Atlantic Canada as a global leader in OSW energy. To achieve this mission, this report proposes that the OSW CoE initiative offers three core services directly addressing the sector's challenges and opportunities.

Core Areas of Focus

- ◆ **Innovation Catalyst:** To act as a bridge between industry stakeholders, government bodies and potential investors. The facilitator service would bring together diverse partners to share knowledge, collaborate on projects and align efforts toward common goals. By fostering partnerships and facilitating organic growth within the sector, this role would help to build a strong, cohesive OSW community in Canada.
- ◆ **Research Hub:** To drive collaborative research initiatives that tackle key challenges in OSW development. By exploring economic and climate adaptation strategies, there is an opportunity for the OSW CoE to accelerate industry growth by undertaking practical research to build government, community and investor confidence. These research efforts should be designed to unlock the potential of Atlantic Canada's wind energy resources and drive the sector forward.

- ◆ **Testing and Validation Site:** Establishing an OSW testing and validation site in Atlantic Canada would serve as a pivotal catalyst for technological innovation, environmental research and industry collaboration. The site would enable real-world testing and product validation to ensure that existing technologies are suited to Atlantic coastal conditions. It would also provide a critical platform for Canadian innovators to test new projects, such as turbines, accessory components and environmental monitoring equipment under real offshore conditions. This would accelerate data collection and performance validation, helping to advance both domestic technology development and international competitiveness in the OSW sector.

Innovation Catalyst

The OSW CoE's Innovation Catalyst Service in Atlantic Canada will be an essential component, uniting the region's most strategic OSW stakeholders while attracting new developers and investors to the region. Industry partners, government agencies, investors, and community organizations, are not just participants but integral stakeholders contributing to the success of this offering. By providing a structured, ongoing platform for collaboration, technical support, and integrated planning, the Innovation Catalyst will be a critical driver for Atlantic Canada's OSW success. It's more than just a partnership network; it's a dynamic opportunity that strengthens Atlantic Canada's OSW potential and positions the region as a national leader in renewable energy.

In the rapidly evolving OSW industry, partnerships are essential to effectively manage challenges and leverage opportunities. By bridging gaps across sectors and disciplines, the Innovation Catalyst service would provide a structured space for partners to solve pressing issues. This service ensures that Atlantic Canada's OSW ecosystem remains cohesive, competitive, and resilient. It aligns private sector goals, public interests, and community benefits, offering a promising future for the OSW industry.

This service will also allow the OSW CoE to swiftly respond to various industry needs, helping stakeholders tackle barriers such as complex regulatory landscapes, technical hurdles that are encountered throughout the development process, and supply chain gaps. By coordinating these activities, the Innovation Catalyst bring benefits to the industry during the early stages of the OSW industry, such as:

1. **Accelerate Project Development and Decision-Making:** The Innovation Catalyst is a space for direct communication and problem-solving, bringing together technical experts, investors, and policymakers, as well as representation from key stakeholder groups, including Fisheries and Indigenous communities. It's a platform that understands the urgency of timely OSW project development. By streamlining communication and creating a shared resource pool, the Innovation Catalyst accelerates the decision-making process, ensuring that projects move forward swiftly and efficiently.
2. **Promote Innovation and Technological Advancements:** By fostering collaboration on R&D, the Innovation Catalyst promotes the development of new technologies and practices tailored to the region. This focus on innovation, reduces the technical and environmental risks associated with OSW projects, ensuring they are safe, efficient, and sustainable.
3. **Foster Public Trust and Community Support:** By working closely with community organizations, Indigenous groups, and local governments, the Innovation Catalyst will ensure that OSW developments align with community values and contribute to social and economic well-being. This proactive engagement fosters trust and builds public support for OSW, which is essential for the industry's long-term success.
4. **Create a Robust, Localized Supply Chain:** The OSW industry requires a complex supply chain, from manufacturing and logistics to maintenance and technical support. Through coordinated collaboration,

the Innovation Catalyst facilitates the formation of a local supply chain. This supports OSW demands and integrates local businesses, creating a sense of community and economic growth. By anchoring OSW production and services in the province, this approach could create job opportunities and support economic resilience in Atlantic Canada.

5. **Attract Significant Investment:** Investors are more likely to fund projects demonstrating strategic collaboration, robust infrastructure, and high growth potential. The Innovation Catalyst's integrated approach will make the OSW sector in Atlantic Canada an attractive investment destination, combining clear regional advantages with a coordinated support network.

In the bigger picture, the OSW CoE's Innovation Catalyst Service establishes Atlantic Canada as a hub of OSW excellence, driving regional economic prosperity and renewable energy leadership. By fostering an interconnected ecosystem, the Innovation Catalyst ensures that OSW becomes a key driver of Atlantic Canada's economy, delivers high-value job opportunities, and contributes to a sustainable energy future. This area of focus also promotes Atlantic Canada's position on the global OSW stage, demonstrating the regions capacity for collaborative innovation and positioning it as an industry leader prepared to meet the demands of a low-carbon economy.

Innovation Catalyst Operations

The Innovation Catalyst Service for the OSW CoE in Atlantic Canada could draw from successful models both nationally and worldwide, such as the Atlantica Centre for Energy, the UK's ORE Catapult and the EOWDC. These centres have created impactful ecosystems by structuring their operations to prioritize relationship-building, strategic alignment, technical support, and industry-driven research and development.

Based on the assessment of existing OSW CoE's from around the world as well as feedback from the stakeholder engagement component, the proposed approach for the Innovation Catalyst area of focus would be to serve as a strategic facilitator for industry growth. The intention would be to act as a liaison between government, industry and academia, ensuring that OSW development in Canada is efficient, cost-effective and aligned with best practices globally.

The proposed core functions of Innovation Catalyst service are outlined as follows:

- ◆ Collaborative Hubs for Engagement and Partner Relations: Establish virtual hubs where stakeholders can connect, participate in research discussions, and engage in project planning. These hubs would serve as knowledge-sharing spaces where stakeholders can identify shared goals, develop solutions to everyday challenges, and brainstorm new project ideas. Develop outreach programs to educate the public, local communities and Indigenous groups about the benefits of OSW;
- ◆ Strategic Partner Alignment Initiatives: Regularly host workshops and forums focused on crucial OSW challenges and opportunities, where partners work through technical issues, develop project strategies, and contribute expertise to help facilitate growth in the industry;
- ◆ R&D Project Coordination and Technical Support: Provide resources and project management support to coordinate R&D projects to the OSW CoE's Innovation Catalyst partners; and
- ◆ Innovation Funding and Resource Mobilization: Actively engage with funding bodies, investors, and government agencies to secure financial and technical resources. This includes identifying funding opportunities, preparing grant applications, and allocating resources across strategic initiatives aligned with Atlantic Canada's OSW growth goals.

Research Hub

The Atlantic Canada OSW CoE Research Hub would position itself as a transformative organization aimed at facilitating research initiatives within the OSW sector throughout Atlantic Canada. By bringing

together, industry, academia, government, community, fisheries and indigenous stakeholders, this research initiative would address specific research areas that are critical to the region's OSW advancement and essential to unlocking long-term industry growth.

As identified within the Desktop Research and Stakeholder Engagement components of the assessment, the research hub should focus efforts at working towards identifying and overcoming obstacles which may impede the development of the OSW industry. To facilitate and contribute to accelerating the introduction of OSW into the Atlantic Canada market, the assessment has identified initial potential research streams for the OSW CoE. With a focus on the triple bottom line which includes economic innovation, environmental stewardship, and social integration, the Research Hub could contribute to creating a foundation for informed decision-making, promote investment attraction, and enhance the competitiveness of Atlantic Canada's OSW sector through its understanding of the triple-bottom-line approach. The triple-bottom-line approach is identified as:

- ◆ Economic Innovation: Nova Scotia's substantial wind resources offer immense potential, but translating this potential into economic growth requires focused research on sustainable development models, market integration needs and risk mitigation of future projects;
- ◆ Environmental Stewardship: The Research Hub will set a high standard for OSW development in Atlantic Canada by promoting research into best practices for OSW development tailored to the region's unique environmental and climate conditions. This includes evaluating how existing technologies and services can be adapted to the Atlantic Canada environment and climate. In addition, a focus will be placed on ensuring that OSW will be adapted to fit within the Atlantic Canada context ensuring that OSW aligns to operate in harmony with existing maritime industries such as fisheries and marine transportation while proactively mitigating potential environmental externalities; and
- ◆ Social Integration: Research on community engagement and workforce development will emphasize the integration of local communities, particularly Indigenous and coastal stakeholders, into OSW development plans. This research will guide strategies for inclusive workforce training, maximize regional economic benefits, and ensure that OSW initiatives are designed in collaboration with those directly impacted. By promoting inclusivity, the CoE will enhance community support for OSW projects and help create a robust local workforce equipped to support Atlantic Canada's OSW ambitions.

Through these focused research initiatives, the OSW CoE could create an evidence-based roadmap for OSW industry growth in Atlantic Canada, reduce barriers to entry, and promote sustainable practices that can accelerate regional and international investment in OSW. In doing so, the Research Hub would establish a key platform for Atlantic Canada's OSW ecosystem, bridging the gap between industry potential and real-world implementation and setting a foundation for the province's emergence as a leader in OSW energy.

Research Hub Operations

Drawing from both the desktop and stakeholder engagement work, AECOM has identified a key barrier to progress for the OSW sector as the complications surrounding the economic viability of OSW in the future. With competition from other clean energy sources given the timeline to meet net-zero requirements and a relatively lower domestic load requirements to support the scale of OSW development.

As such, the economic component of the Research Hub should focus on addressing the questions derived from how OSW can become a viable sector in Atlantic Canada. This includes exploring the integration of OSW with power-to-x technologies to convert electricity produced by OSW into other forms

of energy. Research in this area will provide insights into potential avenues for how OSW can gain momentum as an industry in Atlantic Canada.

The environmental component of the Research Hub takes a two-pronged approach to understanding how to best deliver OSW infrastructure in the Atlantic Canada environment while ensuring that the Atlantic Canadian environment remains unharmed in the process. Promoting coexistence with existing maritime industries, including fisheries and ensuring that the potential negative environmental externalities are understood and mitigated in a proactive manner.

The social integration component of the Research Hub would understand how the evolving OSW landscape impacts the social component of Nova Scotia and the communities and people living within the regions that will be directly impacted from the introduction of OSW. This ensures that benefits are maximized for the local communities taking a collaborative approach to economic and workforce development.

The proposed areas of focus under the Research Hub include:

Table 1: Research Hub Areas of Focus

Economic	Environmental	Social
What opportunities exist for alternative offtake of OSW power, and how are these models viable?	Research into what OSW technologies are best suited for the Atlantic Canada environment? How can we ensure the environment is left unharmed? Identifying what challenges or impacts will be faced moving forward and exploring ecological offsetting.	How will workforce development be advanced moving forward, and how will industry ensure that employment is sourced locally?

By developing a diverse network of researchers across Atlantic Canada and afar, the OSW CoE would draw upon its membership of research institutions and researchers to help issue and conduct research on the triple-bottom-line effects (economic, environmental and social) of OSW for both industry stakeholders and government seeking answers to their pressing questions.

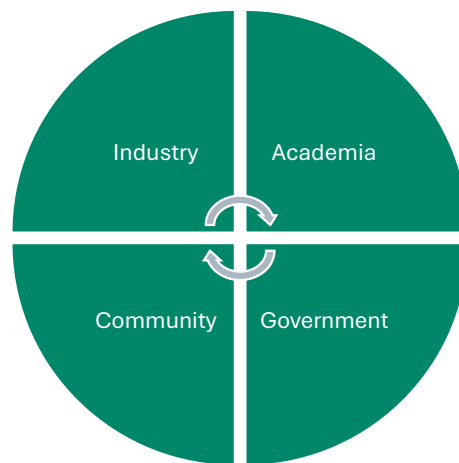
By first building the network of researchers and research institutions under the OSW CoE, the CoE would then engage with OSW industry stakeholders, community stakeholder groups and government bodies to identify topical questions and roadblocks that the industry is facing in the development of OSW in Atlantic Canada. Offering access to the research network, the OSW CoE would be able to provide a coordinated approach to addressing the questions and issues faced by the OSW industry.

While the initial focus for these research hub members should be placed on those operating in Atlantic Canada, there is an opportunity to collaborate internationally where relevant. An example of which, is expanding the mandate of the research to develop collaborative research efforts with institutions located in the United States to further understand the opportunity.

Researchers will not be charged a membership fee to join the Research Hub and will be the backbone of the success of this initiative. Benefits to joining this initiative will include access to research initiatives and funding opportunities for research as well as a peer network. In building the research base, researchers will be organized by specialty (economic, environmental, and social), with each pillar having a research committee to coordinate efforts.

Once the base of researchers is established, the OSW CoE would engage with industry and government to discuss collaborative efforts to tackle the issues identified in developing OSW by industry across the three pillars of the triple-bottom-line. Industry would be required to pay membership fees to access the organization as well as independently fund more nuanced research requirements. In accessing this research, the industry would help to reduce barriers to development, improve development timelines and, in turn, the economic and financial returns on their projects. Public funding would be attained on an ad hoc basis to tackle wider research coordinated through the government to address the macro questions that the government has related to the development of OSW. While the government would not pay a direct membership fee to access the organization's Research Hub, membership would be offered free of charge, with project-specific funding being sourced when available from government grants.

Figure 14: Research Hub Operational Relationship



A long-term vision of the Research Hub would be to expand its offering to integrate a commercialized research and development component to the OSW CoE. As the OSW CoE would be at the forefront of OSW development and would have a robust understanding of how to deliver economically viable projects as well as what infrastructure works best in the Atlantic Canada context, there is a clear opportunity to work with start-ups and SMEs within Atlantic Canada and partnering with larger OSW developers to test nascent technologies within the Atlantic Canada context.

Testing and Validation Site

Building off the long-term vision for the Research Hub, an aspiration of the OSW CoE could be to play a lead role in the development of an OSW testing and validation site for Atlantic Canada. The testing and validation site would contribute to advancing OSW technology by providing the necessary space, infrastructure and expertise to test and validate OSW technology in the Atlantic Canadian context.

By playing a role in the development of an OSW testing and validation site, the CoE would contribute to the growth of the industry for Atlantic Canada through the following points:

- ◆ **Technological Advancement:** A testing and validation site would contribute to driving innovation in OSW technology for Atlantic Canada, providing a physical location suitable for testing OSW in the context of Atlantic Canada, but also providing a location for national OSW companies to develop and test new technologies for the industry, reducing costs for projects and barriers to entry for new companies;

- ◆ **Data Collection:** A testing and validation site would contribute to efforts concerning data collection including additional wind resource data, seabed data, oceanographic data, fisheries data, environmental data as well as grid connection and transmission data. By have a dedicated site where OSW components can be tested, and more diverse data can be collected across a wide range of subjects;
- ◆ **Supply Chain Development:** A testing and validation site would support the local supply chain and create opportunities for national businesses to innovate and ensure quality assurance by testing products and gaining detailed performance data helping suppliers improve their products and processes leading to more reliable supply chains;
- ◆ **Workforce Development:** By collaborating with regional universities and colleges, research institutions, and industry partners, a testing and validation site could lead to shared knowledge and improved practices within the industry. In addition to this, the testing and validation site would allow for the next generation of OSW workforce to gain real world experience in OSW; and
- ◆ **Environmental and Regulatory Compliance:** A testing and validation site would play a crucial role in conducting further research and testing on the environmental impacts of OSW in Atlantic Canada and would help to ensure that technology is aligned with OSW regulatory compliance within Atlantic Canada.

As the operator and manager of the testing and validation site, the OSW CoE would offer a suite of offerings to a range of groups that would benefit from access to a real-world testing and validation site, these include:

- ◆ **Industry:** The testing and validation site would provide the real-world facilities for testing and certifying wind turbine components, such as blades drivetrains under realistic conditions in Atlantic Canada waters, as well as allow small to medium enterprises to develop and test new OSW components on a real site. In addition, adjacent industries related to the OSW industry would have an opportunity to work and test their methods and components under real-world conditions. This would benefit industry by helping manufacturers identify potential weaknesses, help to reduce time to market and save on potential warranty claims and downtime costs. In addition to this, by offering real-world testing capabilities the testing and validation site would support in the development of the next generation of Canadian OSW companies in testing and validating their products in the Atlantic Canada context.
- ◆ **Academia:** The testing and validation site would serve as a hub for academic research, enabling universities and research institutions to conduct studies on wind energy technologies, environmental impacts and grid integration, including power-to-x capabilities. In addition, students from institutions offering wind technician programs such as the Nova Scotia Community College would gain hands on experience, preparing them for careers in the OSW industry in Atlantic Canada. Pairing this aspect of the OSW CoE, the testing and validation site provides post doctoral students with an area where they can conduct cutting edge research in the field.
- ◆ **Government:** The testing and validation site would provide valuable data to inform government policies and regulations on the OSW sector. The site would help to support local workforce and contribute to regional economic development while helping to achieve national and provincial renewable energy targets.
- ◆ **Fisheries and Environmental Groups:** The testing and validation site would lead to further real-world research in the context of Atlantic Canada to understand how OSW technology can coexist with local fisheries. Continuous monitoring and research on the impacts of OSW on marine wildlife and the wider environment would help to provide valuable data to help inform in the mitigation efforts of the negative environmental externalities that OSW farms may contribute to.

As identified, this initiative would help to facilitate a collaborative approach to OSW development between industry, academia, government and local communities, fostering a holistic approach to the development of OSW in Atlantic Canada.

Testing and Validation Site Operations

Through our research, AECOM is proposing two separate models for the testing and validation site development and operations.

Testing and Validation Site Model A would include the OSW CoE gaining access to a seabed rights to establish a testing and monitoring site with a focus on data collection and oceanographic research, as well as OSW component testing without the need for the development of full turbines. This model prioritizes lower-cost implementation while still providing valuable infrastructure for technology validation and environmental monitoring. Testing and Validation Site Model B builds upon the foundation of Model A by incorporating active turbines in the water, enabling real world testing of full systems and power generation. This would provide greater insight into turbine performance in Atlantic Canadian conditions but also involves significantly higher capital and operational costs.

Given the similarities between the two models, the proposed governance structure for each model does not vary greatly, while nuances in operations have been identified. The two models are being proposed to reflect the significant cost differential associated with installing and maintaining OSW turbines. Model A represents a lower-risk, lower-cost entry point, while Model B represents a longer-term, capital-intensive opportunity for full-system validation and power production. Both offer valuable contributions to building a robust OSW innovation ecosystem in Atlantic Canada.

The development of a testing and validation site is complex in nature. Throughout Atlantic Canada, seabed rights for offshore projects are generally managed through a leasing process rather than outright purchasing agreements. This process is governed by federal and provincial regulations, particularly under the new legislation Bill C-49 which expands the mandate of offshore boards to include renewable energy projects. With that being said there is a clear distinction between provincial waters, federal waters and jointly managed waters. As Nova Scotia and Newfoundland and Labrador are the furthest along in terms of OSW development, the assessment for the development of a testing and validation site has been confined to these provinces.

Establishing a testing and validation site for the OSW CoE involves several key steps to ensure it is established in a manner to meet the needs of the industry and achieve the overall objective of helping to progress the OSW industry in Atlantic Canada. The following steps introduce the considerations assessed in establishing the operational components of the testing and validation site. Drawing from best practice from the UK and Danish models, this assessment is intended to provide a high-level summary of what a testing and validation site would be created to achieve, who the main partners would be, as well as a preliminary site selection narrative. A further assessment of testing and validation order of magnitude costs have been provided in Section 7.4.

A testing and validation site for OSW in Atlantic Canada would serve as a dedicated research area where seabed is primarily used for data collection, environmental monitoring and technology validation. Model B would follow the same ambitions of Model A, with the integration of a full-scale turbine for further testing and validation. The site would facilitate the testing of OSW components such as foundations, mooring systems, subsea cables and anchoring technologies, in real-world marine conditions. Additionally, it would support environmental and fisheries research, allowing stakeholders to study the interactions between OSW infrastructure and marine ecosystems, including seabed conditions, biodiversity impacts and oceanographic patterns. By gathering high-quality geotechnical, metocean and ecological data, the

site would help to de-risk future OSW projects, inform regulatory frameworks and advance Atlantic Canada's leadership in OSW energy. Overall, Model A of the testing and validation site would include gaining access to seabed in Atlantic Canada for research and development purposes whereby data can be collected on a range of topics pertinent to the industry, OSW components can be tested, and environmental impacts can be assessed. Building upon this baseline framework for Model A, Model B would incorporate all aspects of Model A with the introduction of operational turbines, allowing for additional testing to occur and data to be collected.

Once the development plans have been confirmed at the policy level for the development of a testing and validation site, a project committee should be established with the key stakeholders directly involved and/or impacted by the project. This group would be established to address the major uncertainties associated with the development of this site as well as identify and work to solve future obstacles and resistance regarding the project. Following the establishment of the planning and permitting phase for a testing and validation site, the project committee would shift focus to overseeing the construction and operations of the testing and validation site. Acting as a project management committee, the roles and responsibilities would shift of each member of the project committee to work towards the development and operations of the site. The proposed project committee would include the following key stakeholders:

- ◆ OSW CoE (Project Lead);
- ◆ Government partners;
- ◆ Community and stakeholder groups such as Indigenous partners and Fisheries;
- ◆ Industry partners;
- ◆ Local supply chain partners; and
- ◆ Academic and research partners.

Value Delivered to Partners

Through the expertise and operations of these three components, each model of the OSW CoE testing and validation site would deliver immense value to its partners:

- ◆ **Reduced Technical Barriers:** Industry partners benefit from having direct access to technical experts and shared resources, lowering costs associated with R&D and infrastructure;
- ◆ **Robust Database:** Government, industry partners and academia gain from having access to testing and validation site, where data is being collected across a range of topics pertinent to the OSW sector;
- ◆ **Accelerated Innovation:** Government and academia gain from facilitated research partnerships and funding opportunities that drive OSW innovation forward, developing the sector more efficiently;
- ◆ **Enhanced Economic Impact:** The CoE's workforce development and supply chain integration initiatives generate local economic benefits for the community and Indigenous partners; and
- ◆ **Streamlined Regulatory and Investment Processes:** Cohesive industry collaboration benefits government and investors and demonstrates Atlantic Canada's commitment to OSW.

Drawing from similar global centres' success, these roles and activities would establish a strong foundation for collaboration, advancing Atlantic Canada's OSW potential and making the OSW CoE a central force for regional innovation and development.

Value Proposition

The OSW CoE will distinguish itself as a focused organization with a specialization in OSW. While comparable organizations such as NZA, Marine Renewables Canada and COVE, cover a broad spectrum of marine renewable energies, including tidal, wave, and river current energy, the OSW CoE's research activities will concentrate exclusively on the OSW sector. This focused approach allows for deeper expertise of OSW and tailored solutions specific to Atlantic Canada. By right-fitting OSW to Atlantic Canada, the OSW CoE can tailor solutions to Atlantic Canada's specific conditions and needs, ensuring optimal outcomes for the industry and regional stakeholders.

The OSW CoE can serve as a pivotal catalyst for the Atlantic Canada's emergence as a key player in the global OSW industry. By fostering cutting-edge research and facilitating collaboration amongst industry stakeholders, the CoE could play a role in accelerating progress within the sector and ensuring that the growth of the OSW industry is embedded across Atlantic Canada.

Through strategic partnerships with key industry stakeholders, the CoE could promote research and development and spurring regional innovation and collaboration for the OSW industry. With an aim of tackling the most challenging problems related to the growth of the industry, the OSW CoE could help to overcome barriers to growth and in turn contribute to attracting top-tier talent and investment to the region, while driving economic growth and job creation for Atlantic Canada. By emphasizing coexistence, collaboration and economic development, the CoE would bring together key stakeholders from throughout the region to promote and facilitate growth within the industry.

In addition, the CoE could play a crucial role in information dissemination, ensuring that stakeholders have access to the latest research findings, technological advancements, and best practices. This will facilitate informed decision-making and foster a collaborative environment within the OSW sector. Regarding economic development, the OSW CoE will focus on community readiness, ensuring local communities are prepared to participate in and benefit from OSW projects. This includes engaging with community members, addressing their concerns, and highlighting the economic opportunities that OSW development can bring including workforce readiness. In summary, the OSW CoE will be comprised of a wide range of stakeholders throughout Atlantic Canada, working together to achieve the shared goal of growing the OSW industry in Atlantic Canada.

6. Potential Strategic Partners

As part of this study, AECOM engaged with stakeholders across Nova Scotia and the wider Atlantic Canada region to gather insights on the future of the OSW industry and the development of the OSW CoE. Engagement activities were primarily conducted through stakeholder workshops and one-on-one interviews, focused on understanding perspectives related to the vision and potential mandate of the OSW CoE, as well as governance and funding considerations. While broader regional outreach was considered, engagement activities were limited to Nova Scotia due to funding and scope constraints. A full summary of the stakeholder engagement findings can be found in Appendix C.

Building on this stakeholder input, AECOM conducted an appraisal of potential strategic partners that could support or collaborate with the OSW CoE in the future. A structured scoring matrix was used to evaluate each organization's capabilities, mandates and alignment with the proposed functions of the OSW CoE. The assessment is intended to highlight the distinct value proposition that numerous firms offer throughout Atlantic Canada, ranging from post secondary institutions, and Indigenous organizations to existing research centres and regional economic development agencies could offer in shaping and supporting the OSW CoE as it matures. In addition to this, key physical locations have been appraised throughout Nova Scotia. This approach seeks to recognize the diverse and complementary roles that partners will play in the growth of the OSW CoE in establishing a successful and inclusive CoE.

6.1 Strategic Partner Suitability

To ensure an objective, transparent and high-impact process for identifying strategic partners suitable for involvement in and contributions to the OSW CoE, a data-driven approach has been employed. Building on the identification of the potential partner landscape in Atlantic Canada, a preliminary list of partner organizations has been developed. Due to the scope of this exercise, the current analysis has been limited to organizations based in Nova Scotia. As the initiative advances, expanding this assessment to include stakeholders from across all Atlantic Canada provinces will be critical to ensuring that the CoE reflects the full breadth of regional capacity, expertise and opportunities for collaboration.

Leveraging qualitative and quantitative metrics, AECOM has evaluated and scored the identified potential partners across five variables (Table 2). Each organization is assessed on a binary scale of Yes (1) and No (0) to identify if it achieves the criterion. Each of the five scores across the scoring matrix have been totaled to provide an overview of the potential partners in Nova Scotia. This exercise is intended to provide a pathway for identifying potential partners

Table 2: Strategic Partner Criteria

Criteria	Description
Expertise and Experience	Does an organization have relevant expertise in OSW, marine renewables or a related field?
Infrastructure and Resources	Does an organization have facilities labs, test sites, intellectual assets, or other physical assets that support innovation and contribute to renewable energy development that could be beneficial to an OSW CoE in the future?

Industry Influence	Is the organization involved in major industry partnerships, advocacy, or decision-making that affects policy and investment in renewable energy?
Research and Innovation Focus	Is the organization involved in cutting-edge research, pilot projects, or technology development?
Policy and Advocacy Roles	Does the organization directly influence policy, funding or regulatory frameworks?

Using the binary scoring approach, each organization has been evaluated based on a Yes/No for each criterion above. The results of this assessment can be found in Table 3.

Table 3: Strategic Partner Assessment

Organization	Expertise and Experience	Infrastructure and Resources	Industry Influence	Research and Innovation	Policy and Advocacy Role
Acadia University	✓	✓	✗	✓	✗
Atlantica Centre for Energy	✓	✗	✓	✓	✓
Bear Head Energy	✓	✓	✓	✓	✓
Canadian Renewable Energy Association (CanREA)	✓	✗	✓	✓	✓
Cape Breton Partnership	✓	✗	✓	✗	✓
Cape Breton University	✓	✓	✗	✓	✗
Clean Foundation	✓	✗	✓	✓	✓
COVE	✓	✓	✓	✓	✓
Dalhousie University	✓	✓	✓	✓	✓

The Municipality of the County of Richmond and the Town of Port Hawkesbury
Business Case and Options Appraisal for Offshore Wind Centre of Excellence

Organization	Expertise and Experience	Infrastructure and Resources	Industry Influence	Research and Innovation	Policy and Advocacy Role
Department of Fisheries and Oceans	✓	✓	✓	✓	✓
Discovery Centre	✗	✓	✗	✗	✗
DP Energy	✓	✓	✓	✓	✓
Everwind Fuels	✓	✓	✓	✓	✓
FORCE	✓	✓	✓	✓	✓
Invest Nova Scotia	✓	✗	✓	✓	✓
Marine Renewables Canada	✓	✗	✓	✓	✓
Mi'kmaq Rights	✓	✗	✓	✓	✓
Natural Resources Canada	✓	✓	✓	✓	✓
Net Zero Atlantic	✓	✓	✓	✓	✓
Northland Power	✓	✓	✓	✓	✓
Nova Scotia Community College	✓	✓	✓	✓	✓
Nova Scotia Fisheries Alliance for Energy Engagement	✓	✗	✓	✓	✓

The Municipality of the County of Richmond and the Town of Port Hawkesbury
Business Case and Options Appraisal for Offshore Wind Centre of Excellence

Organization	Expertise and Experience	Infrastructure and Resources	Industry Influence	Research and Innovation	Policy and Advocacy Role
Nova Scotia Independent Energy Operator	✓	✓	✓	✗	✓
Nova Scotia Power	✓	✓	✓	✓	✓
Reventus Power	✓	✓	✓	✓	✓
Saint Francis Xavier University	✓	✓	✗	✓	✗
Saint Mary's University	✓	✓	✗	✓	✗
Simply Blue Group	✓	✓	✓	✓	✓
SMB Offshore	✓	✓	✓	✓	✓
The Government of Nova Scotia	✓	✓	✓	✗	✓
Unama'ki Institute of Natural Resources	✓	✗	✓	✓	✓
Universite Sainte-Anne	✓	✗	✗	✓	✗
University of Kings College	✓	✗	✗	✓	✗
Verschuren Centre	✓	✓	✓	✓	✗
WEICan	✓	✓	✓	✓	✓

6.2 Atlantic Canada Partner Landscape

A successful OSW CoE will rely on strong partnerships with organizations across Atlantic Canada. The recommended services for the CoE, will be greatly enhanced by the support of strategic partners, whose contributions will be pivotal in leveraging specialized expertise, infrastructure, and local insights. These partnerships will be essential to ensuring the CoE initiative is responsive to regional needs and capable of delivering meaningful impact.

Strategic partners can add value in several ways, including providing applied research capabilities, marine testing capabilities or infrastructure, environmental monitoring, workforce training, regulatory engagement as well as community and stakeholder engagement, particularly with fisheries and Indigenous communities.

This section identifies and summarizes the various organizations conducting work directly in the OSW sector as well as those adjacent sectors. Given the province's early leadership in OSW, Nova Scotia provides a strong foundation for this initial assessment. Organizations assessed include innovation, academic and research organizations, regional enterprise and industry organization, Indigenous partners as well as government bodies and regulatory bodies.

While the overview focuses on Nova Scotia, a more comprehensive partnership strategy across Atlantic Canada will be critical to realizing the full regional potential of the CoE initiative. Identifying and engaging partners at the regional scale should be considered as a necessary next step in the development of the OSW CoE initiative.

Innovation, Academic and Research Organizations

Acadia University

Acadia University has developed deep expertise and strategic research partnerships across the wind energy sector, supporting both onshore and future offshore development in Nova Scotia. Building on decades of leadership in tidal energy research, Acadia is advancing innovative, environmentally responsible approaches to wind energy that align with Nova Scotia's clean energy goals.

Our researchers are engaged in a wide range of wind energy initiatives, from studying wind resource potential and grid integration, to addressing regulatory, ecological, and community considerations. Acadia has contributed to the success of onshore wind projects across the province and is now helping shape the early development of OSW.

In partnership with Dalhousie University and NZA, Acadia recently co-hosted the Nova Scotia OSW R&D Roundtable, convening more than 60 participants from academia, industry, government, and Indigenous organizations to define research priorities. Acadia researchers also contributed to the 2024 OSW R&D Forum, where Dr. Graham Daborn, Professor Emeritus and Chair of the RAOWDNS, delivered a keynote address.

Acadia University is also actively exploring international best practices in OSW energy development, with a focus on Scotland, Australia, and the U.S. Eastern Seaboard. This work is critical to guiding responsible policy and investment decisions that protect our coastal and terrestrial ecosystems while unlocking the full potential of wind energy in Nova Scotia.

Looking ahead, Acadia University could play a pivotal role in the OSW CoE by contributing its applied research expertise, strong community connections, and international networks. The university is well positioned to contribute to collaborative research streams on ecological monitoring, community engagement and regulatory frameworks.

Cape Breton University

Cape Breton University (CBU), located just north of Sydney, Nova Scotia and known for its strong focus on community engagement, sustainability and applied research capabilities. CBU has a reputation for innovation in renewable energy and environmental sciences by fostering programs that support green industries, including the second largest engineering department in Nova Scotia. CBU has demonstrated a strong commitment to sustainability through various initiatives. Most notably CBU has invested in a 6.9MW wind farm at Gardiner Mines which generates more electricity than the university consumes.

CBU's strategic location in Cape Breton, ideally places it amongst the communities that will be directly impacted by OSW. By leveraging its existing expertise in the field of community development, CBU could play a role in both future outreach and applied research in this field. Additionally, CBU's ties to Indigenous communities and local industry could facilitate collaboration on supply chain development, environmental impact assessments, and training programs for future OSW professionals. By integrating academic research with real-world applications, CBU could play a key role in advancing OSW innovation and workforce readiness in Nova Scotia. Researchers at CBU's School of Science and Technology are currently conducting a feasibility study of OSW installation in Nova Scotia with an emphasis on Cape Breton Island, with the goal of investigating the economic feasibility of an OSW facility and marshall yard in Cape Breton.

Centre for Ocean Ventures and Entrepreneurship (COVE)

COVE is a global hub for marine innovation located on the Halifax waterfront in Nova Scotia. It brings together industry, government, and research partners to accelerate the development, testing and commercialization of technologies essential to the future of the broader marine economy.

COVE hosts more than 65 resident companies, ranging from high-growth start-ups to global leaders that drive economic growth through innovation, job creation and investment. Its programs engage over 400 organizations worldwide, creating a global network that strengthens Canada's position in the marine technology value chain.

With direct access to deepwater wharves, subsea infrastructure and real world testing environments, COVE enables companies to quickly design, test and validate technologies just steps from their workspaces. This capability reduces risk, shortens development timelines, and accelerates the deployment of solutions to global markets.

COVE leads initiatives across five key sectors: offshore sustainable energy, fisheries and aquaculture, marine transportation, marine tourism and marine defence and security. (COVE, 2025). Its core programs support innovation, commercialization and workforce development:

- ◆ **Test + Validate:** Provides infrastructure for in-harbour and offshore testing, including instrumentation, mooring systems and digital harbour tools.
- ◆ **Incubate + Accelerate:** Supports business growth for startups and small and medium enterprises, including Indigenous-led initiatives like the Samqwane'jk project.
- ◆ **Research + Commercialize:** Helps transform academic research into commercially viable technologies.

- ◆ Hub + Spoke: Connects regional, national and international innovation networks to support scaling and market entry.
- ◆ Work + Learn: Builds workforce capacity through experiential learning, internships and career pathways.
- ◆ Reports + Insights: Produces sector analysis, including the biennial *Canadian Ocean Enterprise Whitepaper*.

COVE could serve as a strategic partner for the OSW CoE by leveraging its advanced infrastructure, deep expertise and extensive global network. It could play a critical role in shaping research priorities, facilitating collaboration across sectors and providing essential testing capabilities that accelerate technology development. Through these contributions COVE empowers Atlantic Canada to lead the OSW sector, driving innovation and positioning the region to meet rising global demand for clean energy.

Clean Foundation

The Clean Foundation supports environmental initiatives and sustainability education throughout Nova Scotia, with a strong emphasis on renewable energy, climate action, and community engagement. Their expertise in community outreach, public education, and sustainability programs is invaluable for fostering a deeper understanding of renewable energy and its socio-environmental impacts. Clean Foundation is particularly skilled in producing public-facing information on renewable energy projects, including their effects on Indigenous communities and public health, which is essential for promoting informed discussions and building trust with local stakeholders. Clean Foundation supports the fair transition to a cleaner economy and greener society and works to reduce energy poverty, promote social equity and support historically marginalized communities, develop the clean economy workforce, protect the natural environment, and educate and promote action on climate change. The Clean Foundation runs several projects aimed at informing the public in Nova Scotia about energy efficiency and promoting the clean economy. A notable project includes the Indigenous Energy Project, which aligns Indigenous job seekers with clean energy opportunities; in addition, the foundation's *Clean Energy & Equity Initiatives* program aims to support underserved and underrepresented communities in Nova Scotia to succeed in Atlantic Canada's growing clean economy.

The Clean Foundation's established expertise in public outreach has the potential to enhance the OSW CoE's capacity to engage communities effectively, address public concerns about OSW, and promote workforce development. For the Clean Foundation, this collaboration offers a valuable opportunity to contribute to the advancement of the OSW industry in Atlantic Canada, thereby positioning the organization as a prominent advocate for supporting Nova Scotian communities to participate and succeed in the growing clean energy sectors. The OSW CoE could facilitate programming to understand the necessary skills and tools needed for underserved and underrepresented communities in Nova Scotia to thrive in future OSW-related job markets. This research could be in collaboration with Clean Foundation and/or support the facilitation of Clean Foundation's future programming.

Dalhousie University

Dalhousie University is home to leading research programs in oceanography, engineering, and environmental science, making it a key institution for OSW R&D. Its engineering programs, particularly in mechanical and environmental engineering, could address technological challenges like turbine design, energy storage, and grid integration.

Dalhousie's Oceanography Department and research centres, such as the Ocean Frontier Institute, lead studies on marine ecosystems, making the university well-positioned to support environmental assessments, ocean data collection, ocean-related technologies, and the development of sustainable

practices in OSW and fishing practices. Collaboration with Dalhousie would bolster the CoE's research capacity in both environmental and technological innovations, as well as sustaining fisheries and other marine activities. Furthermore, Dalhousie leads the Clean Technologies Research Institute (CTRI), which focuses on developing renewable energy and energy storage systems. CTRI also identifies and designs technical, operational, and policy provisions to encourage industries and communities to implement sustainable energy options. CTRI's R&D focuses on many areas, such as photovoltaics, solar fuels, biofuels, thermoelectric, and tidal, and energy storage systems such as batteries, supercapacitors and thermal energy. Notably, CTRI produces R&D on grid and transmission to manage renewable energy. CTRI focuses on the policies and management of renewable energy, addressing the socio-economic, management, and policy issues this expanding sector presents.

Dalhousie's involvement with the OSW CoE could be beneficial as Dalhousie University could gain access to specialized OSW projects, enhancing its research capabilities and providing real-world applications for its engineering and environmental science programs. This collaboration could attract students particularly interested in the technical and socioeconomic aspects of the OSW industry. Conversely, the OSW CoE could benefit from Dalhousie University's extensive oceanography, engineering, and environmental science expertise, bolstering its research capacity and innovation in OSW technologies and strengthening future labour markets with student involvement. Together, they could drive advancements in sustainable practices and technological solutions.

Discovery Centre



Figure 15: Discovery Centre's Nova Scotia Power Energy Gallery

The Discovery Centre in Halifax, a not-for-profit hands-on public science museum, is dedicated to promoting science education and innovation. Its mission is to stimulate interest, enjoyment, and understanding of science and technology through curriculum-based workshops, educational outreach, and interactive exhibits. As a well-established hub for STEM education and public engagement, the Discovery Centre offers significant potential to enhance public engagement. Throughout AECOM's stakeholder engagement process, public awareness and community education emerged as critical opportunities to address misconceptions, capture community concerns, and build support for OSW development. By partnering with organizations that promote science education, such as the Discovery Centre, the OSW CoE could leverage the Discovery Centre's experience to create dynamic, tailored educational programs and exhibits focused on the science behind OSW technology and its environmental and community impacts. These programs could raise awareness about OSW but also serve to engage diverse audiences, from students to community leaders, fostering a more informed and supportive public. This partnership could also benefit the Discovery Centre by enabling it to expand its programming to include cutting-edge renewable energy topics, such as OSW, reinforcing its position as a leader in STEM

education in NS. Collaborating with the OSW CoE could provide the Discovery Centre with opportunities to showcase NS's leadership in renewable energy innovation.

Fundy Ocean Research for Energy (FORCE)

The Fundy Ocean Research Center for Energy (FORCE) is a leading research facility in Canada and provides infrastructure, environmental monitoring and applied research for tidal energy testing and reliability programs. FORCE has a test site in the Minas Passage, Bay of Fundy; it supplies both offshore and onshore electrical equipment to connect devices to the power grid and monitors and conducts research on potential environmental effects. This permitted site provides a service used by turbine developers to test and observe electrical infrastructure and connect to NS's power grid. In addition to this hosting service, FORCE also conducts independently reviewed environmental effects monitoring programs and applied research programs related to tidal stream energy technology.

With its extensive infrastructure and expertise in underwater turbine testing, environmental monitoring, and data collection, FORCE is uniquely positioned to support the OSW CoE in addressing key challenges and opportunities in OSW development.

FORCE's experience in validating marine renewable energy technologies, including assessing marine impacts and developing mitigation strategies in high-flow environments, provides a valuable foundation for addressing concerns raised by OSW stakeholders. During stakeholder engagement, several community concerns were voiced, including potential impacts on commercial fisheries, marine ecosystems, and traditional Mi'kmaw fishing practices. FORCE's marine impact and monitoring research programs, including the Environmental Effects Monitoring Program Quarterly Review for January- March 2024, provide valuable updates on environmental monitoring. This research summarizes FORCE's updated research on how fish interact with tidal stream energy devices. The monitoring activities conducted by FORCE could be instrumental in helping the OSW CoE and its strategic partners carry out targeted studies that address these concerns.

Additionally, FORCE's focus on tidal energy aligns with the goals of the OSW CoE, as both aim to advance marine renewable energy. As OSW development accelerates, FORCE's established expertise in test facility sites for turbine development, environmental frameworks, and community-focused research could be reinterpreted (through the OSW CoE) and applied to OSW. By partnering with the OSW CoE, FORCE could capture opportunities to enhance its role in the broader marine renewable energy sector. Together, FORCE and the OSW CoE could address critical community concerns, advance sustainable practices, and drive innovation in NS's clean energy future.

Net Zero Atlantic (NZA)

NZA is a leading non-profit energy research organization made up of scientists, engineers, and program managers committed to promoting clean energy solutions and achieving carbon neutrality in Atlantic Canada, aligning with Canada's goal of net-zero emissions by 2050. NZA offers direct support to projects and collaborates with other experts as necessary. NZA leads applied research, provides services, and coordinates projects for a range of energy sectors in areas including but not limited to, hydrogen, OSW geothermal energy, carbon capture and storage, solar energy, net-zero building, research and development, and energy system modelling. A few notable projects include:

- ◆ **Atlantic Canada Offshore Wind Grid Integration and Transmission Study:** This study is funded by the Energy Innovation Program (EIP) and examines the opportunities and challenges of integrating OSW into the electricity grid in Atlantic Canada, focusing on both provincial and regional aspects, including domestic use and export potential. It will create a public database and visual interface to present

findings, aiding further research and development of OSW. Additionally, the study will develop a multi-year roadmap and action plan to help the Atlantic provinces move toward net zero and effectively incorporate OSW into the electricity system;

- ◆ NS-USA Subsea Cable Socioeconomic Study: This study, organized through NZA in support of NS's Department of Energy, will assess the socioeconomic impact of an OSW transmission corridor between the USA and NS for the province. The findings may guide program and project decisions while supporting the Sustainable Development Goals Act and enhancing the province's socioeconomic and environmental well-being;
- ◆ Socioeconomic Impact of OSW Development in Nova Scotia: This ongoing study in partnership with the Nova Scotia department of Energy and the Atlantic Canada Opportunities Agency, aims to deliver a comprehensive applied assessment of the OSW sector's economic, social, workforce and community implications. The study will assess multiple scenarios of development and quantify the economic benefits, evaluate impacts on coastal communities and marine users, assess workforce and supply chain readiness and propose a Nova Scotia implementation strategy that ensures local equitable benefits across phases of development.
- ◆ Assessment of Atlantic Canadian Ports to Support Offshore Wind Development: This assessment, conducted in partnership with Northland Power, Simply Blue Group, and Nova East Wind, aims to evaluate the availability of port infrastructure in Atlantic Canada to identify necessary upgrades for supporting the emerging OSW industry. The study will ultimately assess the current OSW industry and its market conditions, compare available and proposed port infrastructure, and forecast demand for port services; and
- ◆ Capacity Building for the Sustainable and Inclusive Development of Nova Scotia's Offshore Wind Resource: This project began in 2022 and aims to enhance the capacity for Nova Scotian communities to meaningfully participate in discussions regarding offshore development. The project objectives include building capacity at two Mi'kmaq organizations, the Confederacy of Mainland Mi'kmaq and the Unama'ki Institute of Natural Resources (UINR). These organizations will facilitate educational forums and workshops to raise awareness, foster relationships, and create and implement a community outreach plan. During this project, over 133 participants were engaged with over 454 recorded comments and questions received, indicating the high interest in this project.

Given NZA's history of accomplished project support and facilitation, the OSW CoE could benefit from NZA's extensive experience in building collaborative clean energy research and development and community engagement programming. Under a mutually beneficial partnership structure, the OSW CoE could leverage NZA's expertise in streamlining project development, supporting sustainable solutions, and fostering public engagement for projects focused on OSW.

Nova Scotia Community College (NSCC) –Strait Area Campus

Figure 16: NSCC's Nautical Institute



NSCC offers extensive maritime education and training across multiple campuses, including the Nautical Institute and the Marine Training Facility. NSCC's programs provide practical training in marine operations, safety, and navigation, with specific expertise in nautical and marine engineering. Marine

courses offered include commercial safety, navigation, engineering, fisheries, and leadership and management, which focus on careers at sea. NSCC's applied research focus complements the OSW CoE's mission of promoting innovative training, addressing skills gaps, and supporting the transition to OSW.

Facilities and training spaces are critical in developing a skilled offshore workforce and supporting research on logistics and workforce readiness for the OSW industry. A partnership between the NSCC Nautical Institute, Marine Training Facilities, and the OSW CoE could yield significant mutual benefits. NSCC's expertise in maritime education and training could help cultivate a workforce tailored to the specific demands of the OSW industry. Meanwhile, the OSW CoE could facilitate opportunities for NSCC students to engage in innovative research and development projects, preparing future workers to navigate the unique climate conditions and scenarios of OSW development in Atlantic Canada. Additionally, with NS's roadmap outlining plans to offer leases for OSW farms by 2030, such a partnership could position NSCC students to access OSW-specific training and research developments, equipping them to seize emerging job opportunities in the sector. This collaboration could address skills gaps, enhance advanced training solutions and facility access, and support Atlantic Canada's transition to OSW.

Saint Francis Xavier University

Saint Francis Xavier University (StFX), located in Antigonish, Nova Scotia, is an institution recognized for its commitment to academic excellence and community engagement. The university offers a diverse range of programs across arts, sciences, business and education. In addition, innovative research spans across all four academic faculties. The Brian Mulroney Institute of Government is a research institute at StFX which focuses on research concerning Canada-US relations, Arctic and Marine Security, and Democracy and Governance. These overarching themes contain a number of subfields, such as Indigenous governance, community resilience, shipping, maritime security and safety, defence, environmental protection, natural resources management, and sovereignty. To this end, the Institute supports new and innovative research in this area through policy-relevant publication, teaching, public engagement, and the development of new partnerships across government, academia, and industry.

Saint Mary's University

Saint Mary's University (SMU), located in Halifax, Nova Scotia is a leading institution known for its strong focus on business, science and the humanities. The university is deeply committed to research and innovation, with notable contributions in areas such as sustainable chemistry, environmental science, and co-operative management. SMU actively integrates sustainability into its research initiatives, including studies on renewable energy, materials science, and sustainable business practices. Its recent investment in solar-integrated infrastructure and environmental programs reflects its dedication to green energy solutions. With a strong emphasis on community engagement and interdisciplinary research, SMU plays a key role in fostering knowledge that supports industry development and sustainable innovation.

Verschuren Centre

The Verschuren Centre is an independent clean technology development and deployment facility specializing in sustainable energy research, environmental science, and technology development. The Centre offers a range of advanced services, including but not limited to rapid process and media optimization, analytical testing, energy net-zero mapping, polymer extrusion and processing, and lab equipment training. These capabilities position Verschuren as a leader in clean energy innovation and technical expertise.

The Centre's shared-use facilities support small to medium-sized enterprises (SMEs) in advancing their clean technology initiatives. Verschuren Centre's "Nova Scotia Community of Interest" (COI) bridges gaps between industry and innovation by aligning technology solutions with corporations' long-term strategic objectives, ensuring measurable economic development and reduced greenhouse gas emissions. While the COI service shares some similarities with the OSW CoE in its goal of bridging the gap between industry and innovation, it has a distinct focus on accelerating the adoption of next-generation materials. In contrast, the OSW CoE will act as an intermediary between various stakeholders engaged in OSW, addressing community concerns, sharing information, and creating opportunities for stakeholders in Atlantic Canada's OSW sector. In addition, in collaboration with Invest Nova Scotia, the Centre's "AscendBio" program also provides scientific, technical, and business support to companies in the industrial biotech and agritech sectors. For example, Verschuren Centre's AscendBio is the main beneficiary of Gaia Refinery, an NS-based startup focused on bio-energy-driven direct air capture with wind-assisted technology that captures air and converts it into high-value natural gas (Gaia Refinery, n.d.)

A partnership between Verschuren Centre and the OSW CoE could be mutually beneficial. Verschuren Centre could seek opportunities to support innovative OSW R&D through the OSW CoE's ecosystem and strategic partner network. In turn, the OSW CoE could support Verschuren Centre's activities by facilitating collaboration and programming with OSW CoE stakeholders with similar objectives to Verschuren Centre, who require Verschuren Centre's various technical services, facilities, and business development support. This collaboration could enhance workforce readiness, industry innovation and local economic growth.

Universite Sainte-Anne

Universite Sainte-Anne is a Francophone university with campuses across Nova Scotia. Strengths of the institute include environmental sciences, engineering and community-based research. In the context of the OSW CoE initiative, Universite Sainte-Anne could contribute across multiple fronts. Its expertise in marine ecosystem research and environmental monitoring through its lobster research centre could support baseline studies and contribute to the engagement with the fisheries industry. In addition to this, given its Francophone specialization, the institute is well positioned to help cultivate bilingual workforce development.

Regional Enterprise Networks, Industry Associations and Industry

Bear Head Energy

Bear Head Energy is a private energy development company based in Nova Scotia, Canada, focused on advancing large-scale clean energy solutions, including producing green hydrogen and green ammonia. Bear Head Energy is wholly owned entity of Buckeye Partners, an energy infrastructure and logistics provider headquartered in Texas, USA. Bear Head Energy's flagship Bear Head Hydrogen and Ammonia Project, located in Point Tupper, Nova Scotia, aims to use renewable energy to produce clean fuel for domestic and global markets. To power its hydrogen and ammonia production facility, Bear Head Energy is exploring the development of wind farms in Pictou and Guysborough Counties, with a combined generating capacity of 1,000 MW.

Bear Head Energy is committed to addressing energy needs on both a global and local scale by:

- ◆ Supplying clean energy to Canada and allies like Germany, adhering to stringent European Union standards for green hydrogen and ammonia;
- ◆ Developing a facility at a scale competitive in global markets, enabling low-cost hydrogen and ammonia availability for local and international markets; and
- ◆ Supporting cost-effective distribution of renewable energy across Canada and worldwide.

Bear Head Energy recognizes the importance of community readiness and involvement. As noted in the Bear Head Energy Green Hydrogen and Ammonia Production, Storage and Loading Facility Environmental Assessment Registration, produced by Stantec (2023), there are expected social and community benefits of the project as well as environmental benefits due to supporting Nova Scotia and Canada's climate goals (Stantec, 2023). However, Bear Head Energy acknowledges the need to continue working with local communities and Mi'kmaq in Nova Scotia to understand community concerns, such as foreign corporate involvement and supplying green energy to foreign markets, environmental impacts, property value impacts and land access issues, and mitigate potential adverse socio-environmental effects of the project.

A partnership between Bear Head Energy and the OSW CoE could offer mutual benefits by combining expertise, resources, and networks to advance clean energy development in Atlantic Canada. Partnering with the OSW CoE could amplify the impact of Bear Head Energy's initiatives and contribute to the growth of Atlantic Canada's renewable energy sector. The OSW CoE's research and innovation ecosystem could provide Bear Head Energy with insights into OSW technology and socio-environmental strategies, enhancing the efficiency and feasibility of their wind projects. Through collaboration with other strategic partners and leaders in OSW, Bear Head Energy could access tailored strategies to engage local communities, building trust and gaining more insight into increasing social and environmental benefits with local communities (Baxter, 2024).

Canadian Renewable Energy Association (CanREA)

The Canadian Renewable Energy Association (CanREA) is a national industry group formed in 2020 through the merger of the Canadian Wind Energy Association and the Canadian Solar Industries Association. CanREA advocates for wind, solar, and energy storage solutions to help Canada achieve its climate goals by transitioning to a cleaner, more sustainable energy mix. The association provides its members with services such as community collaboration, policy advocacy, market insights, networking opportunities, and industry events. CanREA also educates the public and policymakers on the economic, environmental, and social benefits of renewable energy and storage. Its mission is to support the growth and development of the renewable energy sector in Canada.

While both organizations seek to foster collaboration, the OSW CoE's specialized focus on OSW could provide CanREA access to research and insights specific to OSW development. This would allow CanREA to better serve its members engaged in OSW projects, strengthening its position as a comprehensive renewable energy advocate. Conversely, CanREA's extensive network of members across various renewable energy sectors could benefit from the OSW CoE's focused ecosystem of OSW stakeholders, creating opportunities for cross-sector collaborations.

EverWind Fuels

EverWind Fuels is a leading developer of green hydrogen in North America and the first to secure environmental approval for a large-scale green hydrogen project on the continent. The company is advancing the design, engineering, and development of its green energy projects and production facility, which will convert renewable energy into green hydrogen and ammonia. EverWind Fuels also operates the deepest ice-free berth on North America's East Coast, providing exceptional access to rail, roads, and pipelines. Key projects include developing a state-of-the-art facility to convert renewable energy into green hydrogen and ammonia, addressing the domestic and global demand for clean energy and developing 10 GW of onshore wind and 2.5 GW of solar energy to produce green energy and ammonia.

A partnership between EverWind Fuels and the OSW CoE could deliver mutual benefits by leveraging shared expertise, resources, and networks to accelerate clean energy development in Atlantic Canada. Collaborating with the OSW CoE could enhance EverWind Fuels' initiatives and strengthen the region's renewable energy sector. The OSW CoE's focus on research and innovation in OSW could provide EverWind Fuels with advanced insights into socio-environmental strategies, optimizing the development and operation of their green hydrogen and ammonia projects. Through the OSW CoE's network of strategic partners and leaders in wind energy, EverWind Fuels could access specialized strategies for community engagement, fostering trust and maximizing social and environmental benefits in collaboration with local communities in Atlantic Canada.

Marine Renewables Canada (MRC)

Marine Renewables Canada (MRC) is a national industry association that represents and advocates for the marine renewable energy sector in Canada, encompassing OSW, tidal, wave, and river current energy. MRC collaborates with its approximately 180 members to build the industry in a sustainable way, supporting the acceleration of the global clean energy transition. By uniting businesses, organizations, and stakeholders, MRC works to advance shared policy goals, catalyze new business opportunities, and accelerate the development of marine renewable energy both domestically and internationally. MRC's core activities include:

- ◆ Advocacy, such as policy development, government relations, and policy briefings tailored for members;
- ◆ International Business Development, which includes providing market intelligence reports, trade missions, workshops, and webinars to members and facilitating international connections;
- ◆ Supply Chain Development, which includes providing members access to a supply chain database, workshops and webinars and facilitating business opportunities and connections to members; and
- ◆ Education and Engagement, which entails facilitating conferences and special events tailored to members on updates in the marine renewable energy industry.

Given its comprehensive scope of services and extensive member base, MRC is uniquely positioned to partner with the OSW CoE to advance OSW development in Atlantic Canada. MRC's established expertise in marine renewables could complement the OSW CoE's specialized focus on OSW, enabling both organizations to accelerate project development, foster innovation, and streamline decision-making

in this growing sector. A partnership with the OSW CoE could allow MRC to leverage the OSW CoE's focused OSW research and collaboration opportunities to expand its influence and services within the OSW market. In turn, the OSW CoE could benefit from MRC's robust advocacy capabilities and proven track record in community and stakeholder engagement, as well as facilitating collaborative activities.

Northland Power

At the time of writing, the Province of Nova Scotia has not awarded any seabed licenses for OSW development. Accordingly, any OSW developer that has participated in or contributed to this report does not currently hold a license to explore or develop OSW projects within Nova Scotia's jurisdiction.

Northland Power is a global power producer focused on clean and renewable energy. Founded in 1987 and headquartered in Toronto, Canada, it develops, owns, and operates power infrastructure in Asia, Europe, Latin America, and North America. With over 35 years of experience, Northland Power generates electricity from clean natural gas and renewable sources such as wind and solar. Northland Power operates onshore and OSW facilities in Canada and Europe, with a total annual production of more than 5,000 GWh. The company's onshore and OSW wind farms include major projects like the Hai Long and Baltic Power OSW farms, and it has a strong presence in the North Sea and New York.

A partnership between Northland Power and the OSW CoE could provide mutual benefits by combining Northland Power's extensive OSW development experience with the CoE's local expertise and focus on Atlantic Canada.

Nova Scotia Power

As the province's main utility provider, Nova Scotia Power is key to integrating renewable energy into the grid. Nova Scotia Power could partner with the CoE to work on grid integration strategies, operational planning, and reliability studies. This partnership could allow both parties to work toward renewable energy goals and grid modernization, leveraging OSW as a stable energy source. Nova Scotia Power is already committed to renewable energy integration through the Nova Scotia Clean Power Plan.

Nova East Wind

At the time of writing, the Province of Nova Scotia has not awarded any seabed licenses for OSW development. Accordingly, any OSW developer that has participated in or contributed to this report does not currently hold a license to explore or develop OSW projects within Nova Scotia's jurisdiction.

Nova East Wind is a proposed renewable energy project focused on developing the first floating OSW farm off the coast of Nova Scotia, specifically 25 kilometres off Goldboro on the province's Eastern Shore. The proposed project would be a joint venture between SBM Offshore, a global ocean energy services company, and DP Energy, an energy developer based in Ireland. The initiative aims to generate up to 400 MW of electricity, replacing power from coal-fired plants in Nova Scotia as part of the province's transition to cleaner energy sources. The electricity would be transmitted to the grid via an undersea cable intended for domestic use rather than export. With that being said, the results of the initial licensing round will play a decisive role in determining the outcome of the proposed project led by Nova East Wind.

A partnership between Nova East Wind and the OSW CoE could offer significant mutual benefits by combining resources, expertise, and networks to accelerate the development of the first OSW farms in Canada. For Nova East Wind, partnering with the OSW CoE could provide access to specialized research and insights into the regulatory and socio-environmental challenges of OSW. The OSW CoE's ecosystem of strategic partners could help Nova East Wind navigate local conditions and optimize the design and implementation of its floating wind turbines. Additionally, the OSW CoE's focus on community

engagement could assist Nova East Wind in building relationships with local stakeholders, ensuring that the project aligns with NS's energy goals and meets social and environmental expectations. Overall, this partnership could strengthen both organizations' efforts to accelerate the growth of OSW in Atlantic Canada, promote local economic development, and contribute to the region's transition to clean energy.

Regional Enterprise Networks

The Cape Breton Partnership is the regional economic development organization for Cape Breton, working to promote investment, support local business growth and drive strategic sector development across the region. The Cape Breton Partnership plays a key role in workforce development and planning, infrastructure promotion and community engagement, while aligning with broader provincial and regional priorities.

Notable regional enterprise networks throughout Nova Scotia include, Western Regional Enterprise Network, Strait Area Regional Enterprise Network, and the Annapolis Valley Regional Enterprise Network.

A partnership with the Cape Breton Partnership as well as other regional enterprise networks could help to ensure that the development of the OSW sector reflects local strengths, priorities and opportunities, particularly in the rural communities and regions where OSW development will impact communities the most. The existing relationships that the Cape Breton Partnership has with local businesses, municipalities and academic institutions positions it as a valuable connector supporting the growth of the industry.

Reventus Power Limited

At the time of writing, the Province of Nova Scotia has not awarded any seabed licenses for OSW development. Accordingly, any OSW developer that has participated in or contributed to this report does not currently hold a license to explore or develop OSW projects within Nova Scotia's jurisdiction.

Reventus Power Limited is involved in the development, investment, and long-term management of OSW projects worldwide. It serves as the global OSW platform for the Canadian Pension Plan Investment Board and specializes in the development, asset management, financing and legal, and operation of clean energy initiatives. Reventus Power collaborates with strategic partners to offer in-house expertise in technical, origination, financial, energy markets, and commercial aspects of the projects.

Reventus Power projects encompass everything from early-stage development to fully operational wind farms, utilizing cutting-edge technology to maximize efficiency and sustainability. Reventus Power possesses extensive technical knowledge in OSW project development, covering site selection, environmental assessments, construction, and grid integration. This expertise would be invaluable in establishing best practices and training frameworks within a CoE. Their wind project portfolio totals 7GW: 1GW operational, 0.5GW under construction, and 5.5GW in development. A few notable projects include:

- ◆ Golden State Wind is a floating OSW project in the early stages of development off the coast of California, USA. Once fully developed, the project is anticipated to generate up to 2 GW of OSW energy. This will assist California in achieving its goal of 100% clean electricity by 2045 and will also contribute to the U.S. aim of producing 15 GW of floating OSW energy by 2035; and
- ◆ Gippsland Skies OSW is a proposed 2.5GW fixed bottom project located off the coast of Victoria, Australia. This project is set to be among Australia's first OSW developments to reach commercial operation and is expected to contribute to Victoria's targets of 2 GW by 2032 and 4 GW by 2035.

With established connections throughout the international OSW supply chain, Reventus Power could assist in identifying and engaging with key markets. Reventus Powers' experience in financing large-scale offshore projects could provide the OSW CoE with insights into innovative financing structures and risk mitigation strategies, helping Canada's emerging OSW sector attract and manage investment effectively and ultimately attract investments to meet Atlantic Canada's net zero goals. By partnering with a Canadian CoE, Reventus could gain more insights into Canada's OSW market and regulatory environment, positioning it to expand its operations in this potentially high-growth market.

Simply Blue Group

At the time of writing, the Province of Nova Scotia has not awarded any seabed licenses for OSW development. Accordingly, any OSW developer that has participated in or contributed to this report does not currently hold a license to explore or develop OSW projects within Nova Scotia's jurisdiction.

Simply Blue Group is committed to developing renewable energy projects focusing on OSW, sustainable fuels, marine energy, carbon dioxide removal, and low-impact aquaculture. Simply Blue Group aims to create economic opportunities for coastal communities across the globe, supporting sustainability and environmental stewardship across all projects. They are headquartered in Cork, Ireland, with six offices across the UK, EU, and Canada (Nova Scotia).

Simply Blue Group's goals in OSW project development highlight their efforts to contribute to international decarbonization efforts. A few notable projects that Simply Blue Group supports include:

- ◆ IberBlue Wind (EU) is a joint venture to design, develop, and manage floating OSW farms in the Iberian market. This project will help Spain and Portugal progress to their net zero goals, with the Spanish government's target of one to three GW of installed OSW by 2030 and to the Portuguese government's target of 10 GW of installed OSW by 2030;
- ◆ Salamander Floating Wind (UK) is a pre-commercial sized project, with a capacity of up to 200 MW, located in Scotland. The project focuses on developing the local supply chain. Salamander aims to prepare the local supply chain for future commercial projects, mitigate risks of floating wind technologies, and help Scotland maximize the financial benefits of its OSW resources. This project will generate long-term jobs for local communities and support the UK government's target of achieving 1 GW of operational floating OSW capacity by 2030; and
- ◆ Simply Blue Group's current activities in Nova Scotia include the Renewable Energy Park (REP) which will be a facility that produces clean fuels (sustainable aviation fuel and renewable methanol). The REP will be powered by renewable electricity generated from both solar and wind farms. 100-130 wind turbines are expected to be constructed for the project. Construction is expected to start in 2026 and operational in 2029. The Simply Blue group claims that the REP will create long-term jobs and generate tax revenue for communities in Nova Scotia.

Partnering with the OSW CoE could allow Simply Blue Group to leverage local research and collaborative opportunities within the OSW CoE ecosystem to advance their Canadian-based initiative. Given Simply Blue group's active projects in Nova Scotia, which aim to create local jobs and support communities, the OSW CoE could facilitate collaborative activities for Simply Blue Group to understand the local context, needs, and challenges of Nova Scotia's labour market and community needs. In return, the CoE could benefit from Simply Blue Group's experience in successfully developing OSW farms and adjacent projects, helping to adapt these strategies to Atlantic Canada's unique conditions. Simply Blue Group's interest in engaging with businesses, suppliers, investors, educators, and students with shared goals aligns closely with the OSW CoE's mission to foster innovation and collaboration in the OSW sector.

The OSW CoE could play a key role in helping Simply Blue Group gain a deeper understanding of Nova Scotia's unique challenges and identify opportunities within its OSW ecosystem. Simply Blue Group could align its project to address regional priorities and deliver meaningful benefits to Nova Scotian communities, based on the local expertise and research capabilities of existing Nova Scotia-based organizations. This partnership could bridge the gap between the company's global experience and the local needs in Atlantic Canada, ensuring that the project contributes positively to the province's economic, social, and environmental landscape.

The OSW CoE initiative would benefit from a partnership with OSW developers, supply chain company, industry associations and regional enterprise networks in Atlantic Canada.

Indigenous Organizations

Confederacy of Mainland Mi'kmaq

The Confederacy of Mainland Mi'kmaq is a tribal council representing eight Mi'kmaq First Nations communities across mainland Nova Scotia. The organization provides technical, advisory and capacity-building services to its member communities, with a strong focus on governance, natural resources, environment, economic development and education. In addition to this, the Confederacy of Mainland Mi'kmaq has played a significant role in contributing to the NZA Capacity Building project.

The organization could play a critical role in the OSW CoE initiative as both a strategic partner and knowledge holder. Their engagement would help ensure that the development of the OSW sector respects Mi'kmaq rights and integrates Indigenous knowledge, supporting meaningful participation of Indigenous communities.

Kwilmu'kw Maw-klusuaqn (KMK)

Kwilmu'kw Maw-klusuaqn (KMK) is a Mi'kmaq Rights Initiative organization in NS. KMK takes direction from the Assembly of Nova Scotia Mi'kmaq Chiefs in their work on behalf of the Mi'kmaq of NS, with the Province of NS and the Government of Canada on the discussion of Rights Implementation. KMK supports Mi'kmaq in NS in the protection and implementation of their Treaty Rights, title, and governance. KMK serves as a liaison and negotiator on behalf of Mi'kmaq with governments and other stakeholders, addressing issues related to land, resources, and governance, seeking to ensure Indigenous inclusion in economic activities.

KMK has a long history of accomplishments in advocating, researching, developing consensus, and facilitating public and community awareness on issues in various fields, including archaeology, benefits, child family, culture, energy, fish, forestry, governance, parks, lands, tourism, transportation and shipping and wildlife. A few notable accomplishments in energy-related projects include:

- ◆ Obtaining the Mi'kmaq Renewable Energy Development Fund, a \$5 million loan fund administered by Ulnuweg Development Group, which supports major resource and energy projects for Mi'kmaq communities in NS;
- ◆ Obtaining equity for the Assembly's wind companies;
- ◆ KMK is collaborating with both the federal and provincial governments to advocate for Mi'kmaq participation in the commitment that any fossil fuel-based electricity generation used by the federal government in NS will be offset by renewable energy development by 2025. This initiative will involve approximately 30 MW of renewable energy in NS; and

- ◆ KMK consulted with the Impact Assessment Agency of Canada on the Newfoundland Offshore Regional Assessment. KMK also helped develop a follow-up program that will include an Advisory Committee to ensure Indigenous Knowledge Systems guide the Regional Assessment.

Partnering with KMK could allow the OSW CoE to support meaningful engagement and collaboration among Mi'kmaw communities in NS to understand and integrate needs, interests and community aspirations within OSW. KMK's involvement and support in the OSW CoE could support upholding Indigenous interests, including land, livelihood, and resource interests, within the OSW CoE's activities.

Unama'ki Institute of Natural Resources (UINR)



Figure 17: UINR's Research

The Unama'ki Institute of Natural Resources (UINR) represents Mi'kmaw communities and advocates for their natural resource and environmental priorities. Representing the five Mi'kmaw communities in Unama'ki/Cape Breton (Eskasoni, Membertou, Potlotek, Wagmatcook, We'koqma'q), UINR is a vital voice in promoting Mi'kmaw governance, traditional knowledge, and environmental stewardship.

UINR is dedicated to sustainable resource management, conservation, and collaboration with different levels of government. Among its various programs, the Aquatic Research & Stewardship initiative focuses on researching

species that are important to Mi'kmaq. The Commercial Fisheries program aims to gather scientific, resource, commercial, and market information necessary for the co-management of fisheries. Additionally, the Education and Outreach program develops educational materials to address public interest and concern.

By partnering with UINR, the OSW CoE could support UINR's goal of governance by ensuring the participation of Mi'kmaw communities in the R&D decision-making processes of the OSW CoE and its related programming. Additionally, the OSW CoE could embrace the principle of Two-Eyed Seeing by integrating Mi'kmaw's traditional knowledge and scientific research into its environmental and technological research. In addition, collaborative activities between UINR's existing programs, such as Education & Outreach, Commercial Fisheries, and Aquatic Research & Stewardship, and the OSW CoE could create opportunities for funding and development of collaborative research and policy and advisory-based recommendations for marine co-existence (between existing fishers and OSW parties), marine ecosystem health, and educating the public about OSW. Together, UINR and the OSW CoE could work to address community concerns about OSW in Nova Scotia and beyond.

Government and Regulatory Bodies

Municipal Bodies

Local governments are critical players in regional economic development and community planning. Municipalities of Nova Scotia, and regional bodies across Atlantic Canada can play an important role in supporting with the OSW CoE. As frontline actors in economic development, infrastructure planning and community engagement, municipalities are well positioned to identify local opportunities and challenges related to the development of OSW. Their participation can help to ensure that OSW initiatives through the OSW CoE align with local planning priorities, and workforce readiness goals. Through the OSW CoE initiative, local governments could contribute to input on municipal land use planning and compatibility,

housing and service needs and help to connect local businesses to supply chain opportunities. In addition to this, municipalities can act as intermediaries, facilitating dialogue between local residents and industry.

Provincial Bodies

Provincial bodies could partner with the OSW CoE to drive renewable energy targets and support policy alignment. Nova Scotia's Department of Energy oversees energy development and renewable resources in the province, including OSW. It plays a regulatory role and would be a necessary partner to understand the necessary permitting, guidelines, and environmental standards. The department is advancing OSW to diversify the province's energy mix and reduce greenhouse gas emissions. Wind energy is a key component of Nova Scotia's renewable energy strategy, contributing to the province's goal of achieving 80% renewable electricity by 2030.

Nova Scotia's Department of Growth and Development could support the OSW CoE by collaborating on job creation frameworks, local infrastructure development, and socio-economic planning. The CoE could benefit from municipal and regional input across Atlantic Canada to identify workforce development needs and ensure OSW aligns with local economic priorities.

The Nova Scotia Independent Energy System Operator is a newly created independent non-profit organization responsible for overseeing and managing the province's electricity system. The goal of the organization is to enhance transparency and accountability and manage the connection of clean energy projects to the grid and be responsible for system planning and procuring new energy sources. The province has funded this organization with \$2.5 million to support the organization's transition planning and early startup costs associated with hiring new staff and developing a budget (The Government of Nova Scotia, 2025).

Invest Nova Scotia, a provincial business development agency dedicated to promoting economic growth and community economic development would be a suitable partner for the CoE. Invest Nova Scotia has four main focuses:

1. Business Development Support: Offering programs and services design to encourage and sustain economic growth;
2. Investment Attraction: Undertaking investment attraction operations and programs, promoting Nova Scotia's strategic location and educated workforce. The organization is already undertaking a range of services promoting companies to do business in Nova Scotia, specifically within the Ocean Technology sector;
3. Export Development: Invest Nova Scotia supports businesses in increasing sales outside of the province and improving competitiveness. This support could be crucial as companies within the OSW industry are created within Nova Scotia as the sector grows; and
4. Collaboration and Networking: By fostering collaborations between industry, academia, and government, Invest Nova Scotia can help to create a robust ecosystem in the OSW industry.

Newfoundland and Labrador's Department of Industry, Energy and Technology (IET) has a strong history and interest in advancing wind energy development, particularly with the potential for green hydrogen production. The province is well-positioned to competitively produce and export green hydrogen due to its abundant renewable resources, such as wind, water, and land, its highly renewable grid, its skilled workforce, and its strategic location with access to deep-sea ice-free ports and proximity to Europe. IET has also established two key land reserves: the Wind Energy Contingency Land Reserve in April 2024 for Pattern Energy, which could support a 300 MW wind project, and the Wind Hydrogen Hub Land Reserve in July 2024 for North Atlantic Refining Limited, facilitating the development of a wind hydrogen hub.

These efforts reflect the province's ongoing commitment to wind energy and hydrogen initiatives, positioning it as a leader in the renewable energy sector.

New Brunswick's Department of Renewable Energy and Deployment is focused on advancing the province's renewable energy resources, emphasizing wind energy. Wind energy has been a key area of focus as the province works to improve wind forecasting and integrate wind energy more efficiently into the electrical grid. The variable nature of wind requires backup generation sources to maintain a constant electricity supply, but technological advancements are expected to reduce costs and technical challenges, enabling further wind development. New Brunswick's renewable energy strategy is designed to increase energy independence, reduce greenhouse gas emissions, and support local industries.

Prince Edward Island's Department of Environment, Energy, and Climate Action has overseen the development of several onshore wind farms, contributing to the province's renewable energy capacity. Notable installations include the Eastern Kings Wind Farm, the North Cape Wind Farm, and the Hermanville/Clear Springs Wind Farm. In addition to infrastructure development, the department is actively involved in policy formulation and public engagement to integrate wind energy into the province's energy mix. This includes initiatives aimed at increasing the share of renewable energy and exploring new technologies to enhance energy efficiency and sustainability.

Federal Bodies

Natural Resources Canada (NRCan) is a federal department responsible for overseeing Canada's natural resources and energy policies. It plays a critical role in ensuring the sustainable development of Canada's energy, minerals and forestry sectors while working towards advancing the transition to a low-carbon economy. NRCan collaborates with provincial governments, Indigenous communities, industry stakeholders and international partners to implement policies and programs that promote innovation and environmental stewardship.

As part of NRCan's operations they are directly supporting the creation and adoption of clean technologies for key sectors including energy, mining and forestry. In addition, NRCan directly supports innovation in Canada's clean technology sector and is working towards increasing the creation and adoption of clean technologies in key sectors of the Canadian economy. NRCan's mandate spans across multiple strategic areas, including:

- ◆ Renewable Energy Development and Grid Modernization;
- ◆ Decarbonizing Industry and Energy Efficiency;
- ◆ Hydrogen and Low-Carbon Fuels;
- ◆ Electrification of Transportation and Clean Mobility;
- ◆ Critical Minerals and Battery Supply Chain;
- ◆ Indigenous and Community-Led Clean Energy Projects; and
- ◆ Research, Development and Innovation.

NRCan provides several funding opportunities to support the development of clean energy projects, including OSW. Key programs include:

- ◆ Smart Renewables and Electrification Pathways Program: The SREP launched in 2021 is a \$4.5 billion program designed to support the deployment of grid modernization, energy storage and renewable energy technologies across Canada; and
- ◆ Clean Fuels Fund: The Clean Fuels Fund is a \$1.5 billion program aimed at providing Indigenous-led projects with cost-shared, conditionally repayable funding to support the development of new clean fuel production facilities or retrofits/expansion of existing facilities in Canada. The fund aims to grow

the domestic production capacity for clean fuels (clean hydrogen, advanced biofuels, natural gas and sustainable aviation fuel) and offering new opportunities for Canada's energy sector to produce cleaner sources of energy supporting the federal efforts to reach net-zero by 2050.

In addition, NRCan is directly involved in progressing the OSW sector through the Offshore Wind Predevelopment Program. This program aims to help create the enabling conditions for Canada's OSW energy development off the coasts of Nova Scotia and Newfoundland and Labrador by conducting science-based activities and supporting engagement with Indigenous and coastal communities. The aim of this program is to assist Indigenous and coastal communities' in accessing technical and professional support to carry out engagement activities within the OSW industry, including regulators, public sector and others as necessary.

The Department of Fisheries and Oceans Canada (DFO) is the federal agency responsible for managing Canada's fisheries, oceans, and waterways, ensuring their sustainability and viability. Their involvement includes conducting environmental assessments, monitoring marine species, and providing scientific research and advice. The DFO has four core responsibilities:

1. Fisheries: Protecting and managing Canada's fisheries, including aquaculture and support Indigenous participation in fisheries;
2. Aquatic Ecosystems: Protection of oceans and freshwater ecosystems from the negative impacts of humans and invasive species;
3. Marine Navigation: ensuring that Canada's waterways are safely navigable; and
4. Marine Operations and Response: Operations of the Canadian Coast Guard

DFO operations in Nova Scotia includes the Bedford Institute of Oceanography, located in Dartmouth Nova Scotia, the Bedford Institute of Oceanography is Canada's largest ocean research centre, conducting marine research related to fisheries, climate change and offshore energy production.

Transport Canada plays a vital role in OSW development in Atlantic Canada by overseeing marine safety, environmental protection, and the regulation of shipping routes. Their involvement ensures that OSW projects comply with national and international maritime regulations, minimizing conflicts with fisheries and other marine activities (Marine Transportation, 2024). Transport Canada's expertise in managing marine traffic and infrastructure is crucial for the safe and efficient deployment of OSW installations. A partnership between Transport Canada and the OSW CoE would be mutually beneficial. The OSW CoE would benefit from Transport Canada's regulatory expertise and support in navigating the complex maritime environment. This collaboration would streamline project development and ensure compliance with safety standards, ultimately advancing the OSW sector in Atlantic Canada. Including Transport Canada as a strategic partner is essential due to its critical role in ensuring the safe and efficient integration of OSW projects within existing maritime frameworks. Their involvement would help address potential regulatory and logistical challenges, making them an invaluable ally in the successful development of OSW energy.

The Impact Assessment Agency of Canada (IAAC) plays a crucial role in OSW development in Atlantic Canada by conducting comprehensive environmental assessments to ensure that projects are sustainable and minimize negative impacts on marine ecosystems and fisheries. Their involvement includes evaluating projects' potential environmental, social, and economic effects and providing recommendations to mitigate any adverse impacts. The OSW CoE would benefit from IAAC's extensive expertise in environmental assessments and regulatory processes to better understand potential impacts and mitigation methods. This collaboration would streamline project approvals, foster public trust, and support the growth of the OSW sector in Atlantic Canada. Their involvement would help address potential

environmental and regulatory challenges as well as leveraging their recent expertise in the sector as they have initiated both regional assessments for OSW in Nova Scotia and Newfoundland and Labrador.

Regulatory Bodies

The Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) has served as the regulator for oil and gas activities in Nova Scotia's offshore area since 1990. It was established as an independent joint agency by the Governments of Canada and Nova Scotia. The CNSOPB's responsibilities encompassed oversight of all activities throughout the lifecycle of offshore oil and gas projects, including exploration, development, production, and decommissioning. Its role was grounded in the Canada-Nova Scotia Offshore Resources Accord Implementation Acts, which provide the legislative framework governing offshore oil and gas activities. The CNSOPB ensured that companies adhered to legislated requirements, focusing on safe, environmentally responsible exploration and development of offshore resources.

As part of the broader transition to a clean energy economy, the CNSOPB has now evolved into the Canada-Nova Scotia Offshore Energy Regulator (CNSOER). This change reflects its expanded mandate to regulate offshore renewable energy projects, such as OSW. The transition aligns with commitments by the federal and provincial governments to diversify their economies, support the transition to net-zero emissions, and create sustainable jobs. This modernization leverages the regulatory bodies' existing technical and regulatory expertise to oversee renewable energy development in a manner consistent with best practices in Canadian and international energy regulation. Similarly, the CNLOER oversees offshore energy activities in Newfoundland and Labrador. Like CNSOER, CNLOER is deeply invested in managing and regulating offshore energy resources, including renewable energy projects. Its role includes ensuring regulatory compliance, environmental stewardship, and socio-economic benefits for local communities.

CNSOER and CNLOER recognize the potential of OSW to advance decarbonization goals, complement traditional energy sources, and contribute to regional economic growth. These regulatory bodies are uniquely positioned to support the development of OSW in Atlantic Canada. Their expertise in compliance, environmental management, and economic planning makes them invaluable partners in fostering a sustainable OSW sector. Partnering with the OSW CoE could enable CNSOER and CNLOER to further support the growth of the OSW sector while promoting responsible practices, community benefits, and adherence to regulatory standards. Such collaborations could harness OSW energy to boost local economies, diversify job opportunities, and develop a skilled workforce across the Atlantic region. By ensuring that OSW development is economically, socially, and environmentally responsible, these partnerships would contribute to the long-term well-being of the area.

6.3 Physical Assets in Atlantic Canada

In addition to the identification of the potential strategic partners, to support in the assessment of an Atlantic Canada OSW CoE, a summary of physical assets throughout Nova Scotia that have the potential to contribute to the OSW CoE once established has been conducted.

Physical assets will play a crucial role in enabling research, innovation, training, and industry collaboration for the OSW CoE. Their role can be categorized as follows:

- ◆ Academic and Training Institutions;
- ◆ R&D and Community Facilities;
- ◆ Ports and Marine Infrastructure;
- ◆ Industrial and Manufacturing Sites;
- ◆ Government/Innovation Support Hubs.

Throughout Nova Scotia, there are several locations that would be well suited to host the OSW CoE as a co-located initiative embedded within an existing academic or marine research facility, such as at COVE, NZA, NSCC's Strait Area and/or Sydney Waterfront campuses, or one of the provinces universities. These locations offer access to marine expertise, applied research, and workforce training, all of which are foundational pillars for the Centre's R&D and stakeholder coordination activities. Co-location will enable the CoE to tap into existing programming, facilities and partnerships during the initial phase of growth, avoiding high upfront capital costs associated with the creation of a new organization, while allowing it to build credibility and deliver early value through collaborative projects.

A summary of the physical assets assessed can be found in Figure 18.

Figure 18: Physical Asset Inventory in Nova Scotia

Name	Address	Postal Code	City	OSW Lifecycle Role
NSCC - Cumberland	1 Main Street	B0M 1X0	Springhill	Academic and Training
NSCC - Annapolis	295 Commercial Street	B0S 1P0	Middleton	Academic and Training
NSCC - Lunenburg	75 High Street	B4V 1V8	Bridgewater	Academic and Training
NSCC - Shelburne	1575 Lake Road	B0T 1W0	Shelburne	Academic and Training
NSCC - Burridge	372 Pleasant Street	B5A 2L2	Yarmouth	Academic and Training
NSCC - Irvay	80 Mawio'mi Place	B2Y 0A5	Dartmouth	Academic and Training
NSCC - Akerley	21 Woodlawn Road	B2W 2R7	Dartmouth	Academic and Training
NSCC - Institute of Technology	5685 Leeds Street	B3K 2T3	Halifax	Academic and Training
NSCC - Truro	36 Arthur Street	B2N 1X5	Truro	Academic and Training
NSCC - Pictou	39 Acadia Avenue	B0K 1S0	Stellarton	Academic and Training
NSCC - Strait Area	226 Reeves Street	B9A 2A2	Port Hawkesbury	Academic and Training
NSCC - Sydney Waterfront	500 Esplanade Street	B1P 1B1	Sydney	Academic and Training
NSCC - Centre of Geographic Sciences	50 Elliot Road	B0S 1M0	Lawrencetown	Academic and Training
NSCC - Digby Learning Centre	87 Warwick Street	B0V 1A0	Digby	Academic and Training
NSCC - Kingstec	236 Belcher Street	B4N 0A6	Kentville	Academic and Training
NSCC - Amherst	147 South Albion Street	B4H 2X2	Amherst	Academic and Training
Cape Breton University	1250 Grand Lake Road	B1M 1A2	Sydney	Academic and Training
Verschuren Centre	1250 Grand Lake Road	B1M 1A2	Sydney	Academic and Training
Dalhousie University - Halifax	6299 South Street	B3H 4R2	Halifax	Academic and Training
Dalhousie University - Truro and Bible Hill	62 Cumming Drive	B2N 2C6	Bible Hill	Academic and Training
Dalhousie University - Yarmouth	58 Vancouver Street	B5A 2P4	Yarmouth	Academic and Training
Saint Francis Xavier University	4130 University Avenue	B2G 2W5	Antigonish	Academic and Training
Saint Mary's University	923 Robie Street	B3H 3C3	Halifax	Academic and Training
Acadia University	15 University Avenue	B4P 2R6	Wolfville	Academic and Training
Mount Saint Vincent University	16 Bedford Highway	B3M 2J6	Halifax	Academic and Training
Universite Sainte-Anne - Pointe-de-l'Eglise	1695 Highway 1	B0W 1M0	Church Point	Academic and Training
Universite Sainte-Anne - Halifax	1589 Walnut Street	B3H 3S1	Halifax	Academic and Training
Universite Sainte-Anne - Petit-de-Grat	3433 Highway 206	B0E 2L0	Petit-de-Grat	Academic and Training
Universite Sainte-Anne - Saint-Joseph-du-Moine	12567 Cabot Trail	B0E 3A0	Saint-Joseph-du-Moine	Academic and Training
Universite Sainte-Anne - Tusket	1 Slocomb Crescent	B0W 3M0	Tusket	Academic and Training
University of Kings College	6350 Coburg Road	B3H 2A1	Halifax	Academic and Training
Atlantic Canada Opportunities Agency - Halifax	1801 Hollis Street	B3J 3N4	Halifax	Government/Innovation Support Hubs
Cape Breton Partnership	285 Alexandra Street	B1S 2E8	Sydney	Government/Innovation Support Hubs
Bear Head Energy - Head Office	1969 Upper Water Street	B3J 3R7	Halifax	Industrial and Manufacturing Sites
Bear Head Energy - Point Tupper	4090 Industrial Park Road	B9A 1Z6	Point Tupper	Industrial and Manufacturing Sites
Everwind Fuels - Head Office	1969 Upper Water Street	B3J 3R7	Halifax	Industrial and Manufacturing Sites
Everwind Fuels - Point Tupper	4090 Industrial Park Road	B9A 1Z5	Point Tupper	Industrial and Manufacturing Sites
Port of Halifax	1215 Marginal Road	B3H 4P8	Halifax	Ports and Marine Infrastructure
Port of Sheet Harbour	Sheet Harbour Industrial Park	B0J 3B0	Sheet Harbour	Ports and Marine Infrastructure
Port of Sydney (NovaPorte)	60 Esplanade	B1P 1A1	Sydney	Ports and Marine Infrastructure
Port of Mulgrave	15 Mill Street	B0E 2G0	Mulgrave	Ports and Marine Infrastructure
Strait of Canso Superport	Strait Superport Corporation	B9A 2A2	Port Hawkesbury	Ports and Marine Infrastructure
Port of Canso / Melford Terminal	Melford Terminal Site	B0H 1T0	Guysborough County	Ports and Marine Infrastructure
Point Tupper Industrial Park	Industrial Park Road	B9A 1Z6	Point Tupper	Ports and Marine Infrastructure
Port of Yarmouth	Water Street	B5A 1L5	Yarmouth	Ports and Marine Infrastructure
Port of Digby	Admiral's Walk	B0V 1A0	Digby	Ports and Marine Infrastructure
Unama'k Institute of Natural Resources	4102 Shore Road	B1W 1M4	Eskasoni	R&D and Community Facilities
Fundy Ocean Research Centre for Energy	1156 West Bay Road	B0M 1S0	Parrsboro	R&D and Community Facilities
Clean Foundation	126 Portland Street	B2Y 1H8	Dartmouth	R&D and Community Facilities
COVE	27 Parker Street	B2Y 4T5	Dartmouth	R&D and Community Facilities
Net Zero Atlantic	1209 Marginal Road	B3H 4P8	Halifax	R&D and Community Facilities
Discovery Centre	1215 Lower Water Street	B3J 3S8	Halifax	R&D and Community Facilities
Mi'kmaq Rights Initiative	75 Treaty Trail	B6L 1W3	Millbrook	R&D and Community Facilities
Marine Renewables Canada	1690 Hollis Street	B3J 1V7	Halifax	R&D and Community Facilities
Ocean Innovation Centre	3 MacSween Street	B9A 2H5	Port Hawkesbury	R&D and Community Facilities
Strait Area Chamber of Commerce	609 Church Street	B9A 2X4	Port Hawkesbury	R&D and Community Facilities
Cape Breton Regional Chamber of Commerce	50 Dorchester Street	B1P 5Z1	Sydney	R&D and Community Facilities

Source: AECOM

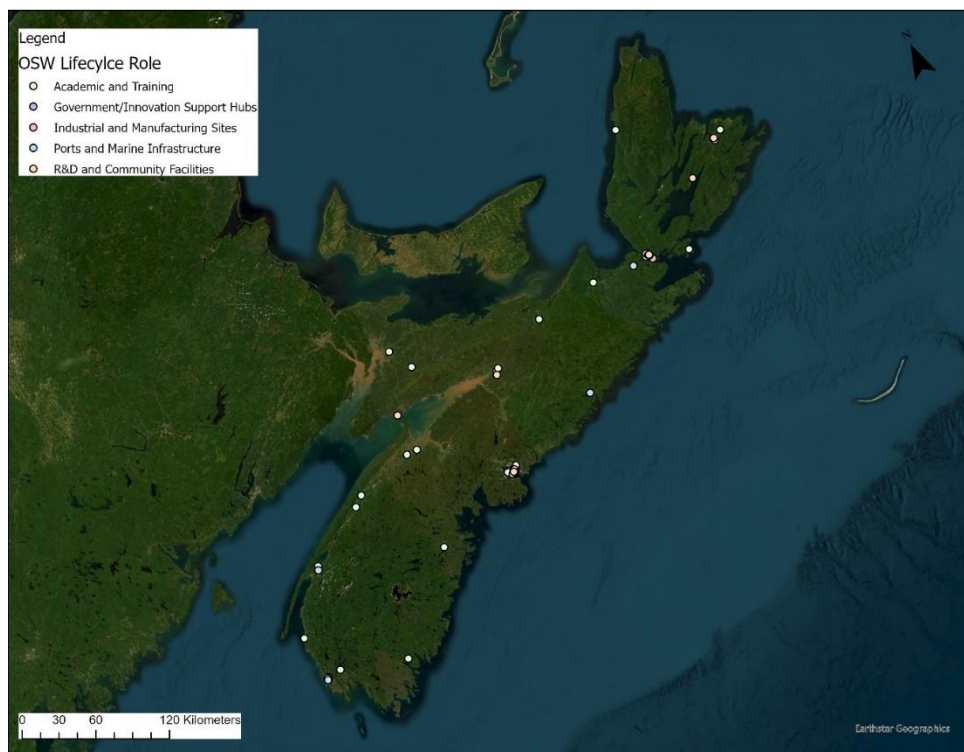
The Strait of Canso presents a strategically advantageous location for a future physical hub of the OSW CoE. Situated in Cape Breton, it is proximate to the majority of Nova Scotia's identified PDAs for OSW, making it an ideal site for staging, coordination, and long-term operations. The Strait of Canso is a deepwater, ice-free port with industrial capacity, well suited for turbine marshalling, deployment, and servicing. Point Tupper, located within the same industrial corridor, is already home to two active hydrogen production firms, positioning the area as a future Power-to-X innovation cluster where OSW power can be directly linked to hydrogen production. The NSCC Strait Area Campus, located within the town, houses a Nautical Institute that provides specialized marine training, supporting workforce development tailored to OSW operations. Additionally, the nearby Ocean Innovation Centre on the Port Hawkesbury waterfront offers a flexible and collaborative space for technology demonstration, start-up incubation, and applied research. This confluence of industrial assets, educational institutions, and clean energy development potential makes Port Hawkesbury a compelling location for phased expansion of the Centre's physical footprint.

As identified in Figure 19, Cape Breton has a relative clustering of physical assets, beneficial to the OSW CoE. These include key ports with the Strait of Canso Superport and the Atlantic Canada Bulk Terminal Sydney. In addition to this, key organizations including UINR, the Cape Breton Partnership and The Verschuren Centre are all located in Cape Breton. Physical assets suitable for hosting the OSW CoE once an office space is required also exist in Cape Breton, with the Ocean Innovation Centre in Port Hawkesbury. This building would be suitable for hosting workshops, seminars and meetings and given its proximity to future OSW sites and the surrounding communities; it makes for an ideal location for a physical asset should there be a requirement for a location in the future.

In addition, the Halifax region has a relative clustering of institutional and research assets that would be beneficial to the OSW CoE initiative. These include major port infrastructure through the Port of Halifax, as well as strong research capacity through the major academic institutions throughout the City and afar. In addition, key organizations including COVE and Net Zero Atlantic are based in region. Given Halifax's central role in political governance, its research ecosystem, and proximity to supply chain actors, it presents an ideal location for establishing the OSW CoE initiative.

As the OSW Sector progresses, it is likely that ports and associated marine infrastructure will likely play a key role in helping to facilitate the development of OSW across Atlantic Canada. As the sector matures, ports across Atlantic Canada that are engaging in the OSW sector can be engaged with further. While Cape Breton and the Halifax region offers a wealth of physical assets, suitable for the OSW CoE initiative, we would like to acknowledge that additional facilities throughout Atlantic Canada could likely play a role in the OSW CoE initiative, but due to scope constraints they have not been included in this analysis.

Figure 19: Physical Assets in Nova Scotia



7. Operating Model Options Appraisal

To achieve the areas of focus identified for the OSW CoE, AECOM has conducted an analysis of the various governance and funding models for the OSW CoE to assess the optimal model that would best support the growth of the organization and achieve long-term sustainability of the OSW CoE.

The goal of this exercise is to establish the optimal governance and funding models to achieve a self-sustaining organization. Establishing a robust governance structure for the OSW CoE ensures its operational efficiency, long-term sustainability, and ability to achieve strategic goals. Governance mechanisms influence how the CoE operates internally and interacts with external partners, funding bodies, research institutions, and industry stakeholders.

7.1 Operating Model Assessment

The options appraisal assesses the optimal operating model to achieve the areas of focus for the OSW CoE. To conduct this, AECOM has completed an options appraisal, comparing three separate approaches to the creation of the OSW CoE, including:

- ◆ **Operating Model 1:** Embed within an Existing Organization: Hosting the OSE CoE within an established entity in Atlantic Canada;
- ◆ **Operating Model 2:** Independent Organization: A newly created standalone entity operating autonomously, governed by a board representing industry, academia, government, and key stakeholders such as Indigenous partners and fisheries; and
- ◆ **Operating Model 3:** Hybrid Model: Initially embedded within an existing organization that aligns with the OSW CoE's objectives and areas of focus, with a structured transition plan for evolving into an independent entity as the OSW industry matures in Atlantic Canada.

Each of the three proposed operating models have been evaluated against the identified key determinants of a successful CoE, to assess the suitable operating model for the OSW CoE. The objective of this assessment is to identify a suitable and tested path forward, identifying an optimal governance model and a path towards financial sustainability for the OSW CoE. Ultimately, the options appraisal will provide a robust foundation for the OSW CoE, enabling it drive innovation, foster collaboration amongst industry stakeholders while contributing to the growth of the OSW sector.

Standalone Entity

Key Features

The OSW CoE would operate independently as its own legal entity, with a dedicated governance and operational structure that can be fully tailored to OSW priorities in Atlantic Canada. With its own board of directors, management, and staff, the centre would function autonomously, allowing it to target industry-specific needs and local community concerns without influence from other institutional objectives.

Local Priorities

This model would enable the OSW CoE to focus on Atlantic Canada's OSW goals, including economic viability, workforce development, environmental sustainability, and alignment with the Net Zero commitments. The standalone structure would facilitate quicker responsiveness to OSW developments in Atlantic Canada, directly addressing emerging industry needs like port readiness, supply chain integration, and adopting new technologies. Local stakeholder needs, including Indigenous Rightsholders,

could be better prioritized due to the centre's independence and ability to focus resources directly on regional challenges and economic opportunities.

Operational Logistics

Launching a standalone organization would require a comprehensive operational framework, including staffing, budgeting, facilities, and resources dedicated to Atlantic Canada's OSW sector. This approach would demand substantial initial investment and a clear, phased funding plan, and would require starting with public funding or government grants, before scaling up with private and industry-backed resources or other income streams.

Funding Consideration

Funding for this model would be sourced from a mixture of both public and private investment, including grants and partnerships with industry stakeholders. Given the relatively high capital costs required in the early years of a standalone organization, it is likely that early funding would be entirely sourced via public funding opportunities.

Advantages

Total autonomy allows the OSW CoE to focus entirely on its mission without being constrained by the objectives or governance of another institution. A new entity can build a culture of innovation and adaptability from the ground up. The centre can quickly adapt to changes in the OSW industry and regional needs, fostering innovation and flexibility. Being independent may enhance trust amongst a broader range of stakeholders, including Indigenous communities and industry stakeholders.

Disadvantages

Establishing a standalone entity can be expensive and time-consuming, requiring significant initial capital and organizational development. The centre may encounter challenges in securing sustained funding and stakeholder buy-in without the immediate support of an established institution.

Hosted by an Existing Organization

Key Features

In this model, the OSW CoE would be embedded within an established institution in Atlantic Canada. The host organization would provide support services, administrative resources, and infrastructure, allowing the OSW CoE to leverage the resources already established within the existing organization while building its OSW-specific operations under the umbrella of the existing organization. Governance would be partially shared, with oversight from the host organization and the OSW CoE's leadership.

Local Priorities

The hosted model would align the goals of the existing organization with the goals of the OSW CoE, emphasizing academic research, knowledge-sharing, and regional innovation. This model may limit the centre's flexibility if the host's objectives differ from regional OSW development needs, though it could still enable community-oriented projects, such as workforce development initiatives.

Potential Hosts

Potential host research institutions include a university in Atlantic Canada or an existing industry organization with a strong focus on marine renewables and OSW. These organizations have strong ties to Atlantic Canada's renewable energy and marine sectors, offering a natural fit for an OSW research centre.

Hosting the organization in a university or college provides a robust foundation for research, innovation and workforce development. Academic institutions offer established infrastructure, access to academic expertise and strong research networks that are vital to the establishment of this organization. In addition, this would allow for cutting-edge studies to be conducted on OSW, leveraging dedicated facilities and established funding mechanisms for applied research. The presence and access to students would ensure a pipeline of skilled professionals, while interdisciplinary research would foster collaboration across a range of topics.

Hosting the OSW CoE within an existing industry organization such as a port authority, a regional economic development agency or a renewable energy association offers a more market driven and commercially focused approach to the development of an OSW CoE. This model provides direct engagement with supply chains, small to medium enterprises engages in OSW development and product commercialization and OSW project developers. An industry-led OSW CoE would be more agile in responding to market needs, facilitating real-world testing for OSW components and coordinating with government and private sector stakeholders on key issues such as the economic, environmental and social aspects of OSW development.

Operational Logistics

Leveraging the host's infrastructure would simplify setup and lower operational costs. The host would provide administrative and support functions (e.g., HR, finance, and facility management), reducing the need to build these capabilities independently. The OSW CoE could also access the host's networks, facilitating partnerships and accelerating funding access during the initial stages of growth.

Funding Consideration

Funding for this model would allow for growth in a phased approach in line with the growth of the OSW industry. Funding would be sourced from government entities to establish the organization, and a phased approach would allow for the organization to grow in line with forecast revenue growth.

Advantages

This model would offer cost efficiencies by leveraging the host organization's infrastructure and corporate services. The centre could benefit from the reputation and credibility of a well-established institution, making it easier to attract funding and industry interest or offer an avenue for industry networking. Access to expertise within the host institution could enhance the centre's research capabilities.

Disadvantages

The OSW CoE may have less autonomy, as it must align its goals and priorities with the host organizations'. Decision-making could be slower due to the layers of governance and bureaucracy inherent in larger institutions. Additionally, the host's goals may not always match the OSW CoE's objectives, particularly if the host's priorities shift away from OSW-specific needs.

Hybrid Model

Key Features

The Hybrid Model envisions the OSW CoE operating as a semi-autonomous unit within a host institution, with its own dedicated governance structure, branding, staffing, and operational mandate, with the key distinction of benefiting from shared services and infrastructure provided by the host. This model combines the independence and mission-focused flexibility of a standalone entity with the administrative efficiency and institutional credibility of a hosted arrangement. While the CoE would retain strategic and operational autonomy, core services such as HR, finance, legal and IT could be shared through the host institution.

Local Priorities

The Hybrid Model enables the OSW CoE to remain agile and responsive to regional needs, such as supply chain readiness, environmental stewardship and workforce development, while still operating within an established institutional ecosystem. It allows the CoE to maintain its own advisory and governance boards, enabling direct accountability to industry, government, Indigenous Rightsholders and community stakeholders. The hybrid model is well suited to balance both research and commercial mandates with regional development priorities, ensuring alignment with Atlantic Canada's OSW ambitions and decarbonization targets.

Potential Hosts

Potential hosts include a university in Atlantic Canada, an existing research institute, or industry organization, provided that there is a clear framework for operational independence. Examples might include one of the many universities throughout Atlantic Canada, Net Zero Atlantic or a marine research institute with relevant decarbonization and/or OSW expertise.

Operational Logistics

Under this model, the CoE would develop its own branding, strategic plan, leadership team, and stakeholder engagement framework. However, it would leverage the host institutions infrastructure for core operational functions, helping to reduce startup costs and avoid administrative duplication. Clear service-level agreements could be established to define roles, responsibilities and expectations between the host organization and the OSW CoE.

Funding Consideration

The Hybrid Model offers flexibility in funding structure. Initial setup could be supported through public funding, but the CoE would maintain its own budget and financial planning processes. This allows for a phased approach to growth based on revenue generation and grant funding opportunities while maintaining financial accountability separate from the host organization.

Advantages

The Hybrid Model offers a strong balance between autonomy and institutional support. By operating semi-independently within a host organization, the OSW CoE can maintain its own governance and strategic direction while benefiting from existing infrastructure, administrative services and networks. This arrangement would reduce the initial costs associated with startup as well as ongoing operational costs, help to accelerate implementation timelines and provide credibility through association with a recognized organization. At the same time, the CoE would retain the flexibility to respond directly to the evolving

needs of the OSW sector in Atlantic Canada, while fostering trust among stakeholders through a dedicated, mission-drive structure.

Disadvantages

Despite its strengths, the Hybrid Model has inherent disadvantages associated with this route. The centre's flexibility may be limited by reliance on shared services which could slow the decision-making process as dual accountability and shared services can result in ambiguity without a clear agreement and strong communication plan in place. Successfully implementing this model requires a clear framework for establishing this, ensuring that the CoE's autonomy is preserved while leveraging the advantages of the host institutional framework.

7.2 Determinants of a Successful Offshore Wind Centre of Excellence

A successful OSW CoE will depend on several key factors, as identified in Appendix D. Seven key factors have been identified, and each of the three models has been scored against each criterion to help guide in the decision-making process for the selection of the optimal model for launching the OSW CoE. Scoring has been structured on a 1-10 scale with 10 being the highest score, indicating the best model for achieving the determinant of a successful CoE.

Hosting the CoE within an existing organization would allow the initiative to benefit from established administrative systems, networks and resources, supporting a faster start up and lower operational costs. However, this approach may limit the CoE's independence and visibility as a dedicated OSW entity. Alternatively, a hybrid model would establish the CoE as a distinct initiative with its own identity and governance framework, while drawing on the institutional capacity and infrastructure of a host organization.

In determining the most appropriate governance model for the Atlantic Canada OSW CoE, we have considered the CoE's long-term objectives, the needs of critical rights holders and stakeholders, and the practical realities of the OSW industry in the region. AECOM has outlined the three different operational models to assess the advantages and disadvantages of each, informing a preferred way forward. The scoring matrix can be found in Table 4.

Table 4: Determinants of a CoE Scoring

Criteria	Weight (%)	Embedded Model	Independent Model	Hybrid Model
Financial Sustainability	20%	7	5	8
Industry Engagement	15%	8	6	9
Research and Innovation Capacity	15%	7	9	8

Criteria	Weight (%)	Embedded Model	Independent Model	Hybrid Model
Policy and Regulatory Capacity	10%	8	7	9
Workforce Development	15%	7	8	9
Operational Efficiency	10%	9	6	8
Decision-Making and Governance Flexibility	15%	6	9	8
Total Score	100%	75	70	83

A summary of each variables scoring is as follows:

Financial Sustainability

- ◆ Model 1: Benefits from existing funding streams but may have limited ability to secure independent funding or industry funding depending on the final organization.
- ◆ Model 2: Requires significant upfront capital, making it the most financially risky option, requiring funding to create every aspect of the organization.
- ◆ Model 3: Gains access to initial funding stability through an existing organization while maintaining flexibility to develop independent sources of funding over time, in line with industry growth.

Industry Engagement and Partnerships

- ◆ Model 1: Established existing network to facilitate engagement and collaboration but may be constrained by the host organization's priorities.
- ◆ Model 2: Independent engagement is possible but requires effort and robust funding to establish credibility and relationships.
- ◆ Model 3: Leverages an existing network while building autonomy and expanding the CoE's relationships in line with industry growth.

Research and Innovation Capacity

- ◆ Model 1: Benefits from the host organization's resources but may have limitations in setting up independent research agendas.
- ◆ Model 2: Highest degree of control over research direction and innovation with the ability to set the research agenda of the organization in collaboration with the established network of stakeholders.
- ◆ Model 3: Gains initial support and resources while ensuring flexibility to expand research capabilities as a more robust understanding of OSW in Atlantic Canada is established.

Policy and Regulatory Influence

- ◆ Model 1: Established presence aids policy influence but may require alignment with the host organization's stance.

- ◆ Model 2: Independent positioning allows for direct policy engagement but requires time to establish credibility.
- ◆ Model 3: Combines the existing organizations influence with the potential for independent advocacy over time.

Workforce Development and Training:

- ◆ Model 1: May provide existing training and workforce development frameworks but may not align entirely with the OSW sectors needs.
- ◆ Model 2: Full control over training initiatives but requires time and investment to establish these new programs.
- ◆ Model 3: Leverages existing training programs while gradually developing tailored OSW focused initiatives as the industry grows.

Operational Efficiency and Governance:

- ◆ Model 1: Higher efficiency due to established administrative processes but may face bureaucratic constraints.
- ◆ Model 2: Faces potential operational inefficiencies due to the need to build governance and processes from scratch.
- ◆ Model 3: Balances initial efficiency with a gradual shift towards independent governance.

Decision-Making and Governance Flexibility

- ◆ Model 1: Limited flexibility due to reliance on a host organization's governance structure.
- ◆ Model 2: Full autonomy in decision-making and governance.
- ◆ Model 3: Gains initial governance support with the ability to transition to full independence.

Governance Model Recommendation

Based on the findings from the options appraisal of the three proposed operational models, it is recommended that the OSW CoE be established through a phased governance approach of embedding within an existing organization to start and grow the OSW CoE in line with industry to eventually graduate to a standalone entity if needed once a mature industry is formed.

A phased approach following the hybrid model balances immediate feasibility with long-term strategic vision. The hosted model enables the OSW CoE to launch quickly, minimize initial costs, and access critical infrastructure and networks during its formative years. This approach provides a stable environment to build foundational capabilities and demonstrate value through early projects. As the OSW CoE matures (due to the OSW sectors' expected milestones) and secures stable funding, expands partnerships, and develops operational capacity, transitioning to a standalone model could support autonomy. This shift could allow the OSW CoE to focus exclusively on Atlantic Canada's OSW priorities, with the flexibility to scale its operations and adapt to emerging challenges and opportunities.

Overall, the hybrid operational model works for the Atlantic Canada context as it leverages existing strengths within the network of organizations to access funding, expertise and industry networks. It can work to mitigate early-stage risks with the establishment of the organization by ensuring operational efficiency while reducing the financial burden of launching an entirely new organization. By positioning the organization for long-term independence through a phased approach to growth, the development of governance, research and workforce programs are expected to result in a seamless transition to full autonomy.

7.3 Organizational Framework & Timeline for Growth

It is proposed that the OSW CoE should be developed to support Atlantic Canada's transition to clean energy and to help establish the region as a leader in the sector. Establishing the OSW CoE in Atlantic Canada through a phased, hybrid approach involves strategic collaboration with existing organizations and a focus on key development stages to growth in the three areas of focus as identified. This method ensures that the OSW CoE evolves in tandem with the OSW industry growth in Atlantic Canada. AECOM has prepared an assessment of the proposed timeline for growth of the organization, outlining a phased approach to growth, including a description of actions, timeline and proposed responsibilities over the next ten years.

Phase 1: Establishment and Integration (Years 1-5)

The initial phase of the growth trajectory focuses on embedding the OSW CoE within an established organization, securing funding, and launching early-stage innovation programs to support in the growth of enabling conditions for Canada's OSW development. Key milestones for Phase 1 of the timeline for growth include:

1. Embedding the OSW CoE within an existing organization to leverage expertise, existing governance structures, spread funding requirements across existing staff and access industry networks through an established organization.
2. Gauge interest from industry leaders, government agents, academia, Indigenous and fisheries representatives in joining the Board of Directors. Screen and select candidates after an extensive selection process.
3. Board of Directors to select and hire an Executive Director after an extensive selection process.
4. The OSW CoE Board of Directors and Executive Director to establish and approve the overarching direction of the OSW CoE. This includes a review of the operational budget and direction to ensure that the organization is established as a self-sustaining organization, growing in line with revenue streams.
5. Executive Director in partnership with the Advisory Board to hire an Innovation Lead and Research Lead for OSW, with the goal of establishing the Innovation Catalyst and Research Hub arms of the organization.
6. Launch a formal Innovation Catalyst initiative to drive early-stage technology development, facilitating industry engagement and promote coexistence of OSW with key stakeholders including Indigenous communities and fisheries.
7. Launch a formal Research Hub initiative to promote collaborative research efforts across stakeholders in Atlantic Canada.
8. Development of a regulatory roadmap given Bill C-49 and how to navigate the Canadian regulatory framework.
9. Conduct wider stakeholder engagement with Indigenous groups throughout Atlantic Canada.

Governance Structure

To ensure effective oversight, a volunteer Advisory Board will be established to oversee the organization. This board should include representatives from industry, academia, Indigenous Groups, fisheries and other marine users and government to align with regional and national OSW priorities. The Advisory Board will provide strategic guidance and assist in securing long-term funding for the OSW CoE while setting the strategic direction of the organization.

To initiate the OSW CoE with flexibility and efficiency, a small team will be established in Phase 1 of the project including an Executive Director an Innovation Lead and a Research Lead tasked with leading the Innovation Catalyst role of the organization.

Following the growth establishment of the Innovation Catalyst service, the proposed framework for the Research Hub has been modelled off the ARROW program recently established in the U.S., leveraging existing work conducted throughout academic institutions in Atlantic Canada, ensuring that research is aligned with practical OSW applications. Giving the timing of planned growth for the OSW industry in Atlantic Canada it is proposed that the Research Hub be established shortly following the establishment of the Innovation Catalyst role to play a role in research and innovation in the coming years for the industry as it progresses. This would involve:

- ◆ Establishing dedicated research chairs in partner universities throughout Atlantic Canada for OSW research.
- ◆ Forming industry advisory groups to guide research priorities.
- ◆ Hosting Conferences and Events: Hosting OSW specific events or workshops which can be monetized through participation fees or sponsorships.
- ◆ Creating shared research infrastructure between universities, government and industry partners.

Phase 2: Expansion and Capacity Building (Years 6-10)

During this phase, the OSW CoE should focus on expanding its research and innovation capacity establishing itself as a recognized hub for OSW studies while progressing towards a transition to a fully independent entity with a dedicated governance structure, world-class infrastructure and a growing international reputation in OSW. Key milestones in Phase 2 of the timeline for growth include:

1. Expansion of research activities under the Research Hub initiative, increasing collaboration with industry and securing additional funding.
2. Through the Research Hub, expansion into collaborative projects engaging in joint research and development initiatives with industry and academia to innovate and improve OSW technologies for the context of Atlantic Canada.
3. Development of feasibility studies to assess the development of a testing and validation site in partnership with government and industry.
4. Evaluate the demand for a testing and validation site with industry, government, fisheries and Indigenous partners.
5. Launch of testing and validation site pilot project, providing industry partners with opportunities to evaluate and test novel turbine components and OSW systems under semi-controlled conditions.
6. Transition to full independence with the establishment of an autonomous governance model.
7. Begin data collection process at the testing and validation site, offering data subscription services by continuously collecting data on a range of turbine components as well as marine data offered to the public through a subscription-based model.
8. Participation in the data collection for the OSW industry.
9. Research into alternative offtake and the interplay with the Atlantic Canada hydrogen industry;
10. Work with the Fisheries organizations to further understand how OSW may impact the established industry and establish models of coexistence.
11. Offer sublease of seabed rights at the Testing and Validation Site for research purposes.

Governance Structure

In Phase 2 of the timeline for growth of the OSW CoE, the proposed OSW CoE would begin its transition into an autonomous organization. This transition would be aligned with an increasing role as a formalized and accountable organization, requiring a governance structure that can make strategic decisions, oversee financial sustainability, and ensure compliance with regulatory and industry compliance. During this phase of operations, the OSW CoE would remain semi-independent within the host organization, a being a phased transition to autonomous operations.

To build on the work conducted in Phase 1 of the projected growth of the organization, two additional staff members would be required including an OSW Testing and Validation Lead and a Project Coordinator.

Phase 3: Full Independence (Years 11-15)

In the final phase of the assessment, it is proposed that the OSW CoE can transition to a fully autonomous entity, expanding its role in the OSW technology validation, workforce training and industry partnerships. Moving to a more sustainable model of self-sufficiency, it is proposed that the OSW CoE would increase its revenue generating streams as the organization matures. Leveraging its understanding of the Canadian OSW market as well as the operational OSW testing and validation site there is an opportunity to expand the offering of the OSW CoE to provide a testing and validation site for workforce training purposes by establishing training and workforce development programs with fee-based certification for OSW, leveraging the testing and validation site as a test site for workforce training.

In addition to these, there are proposed additional avenues for additional income to be achieved in the future:

- ◆ Consulting Services: Offering specialized expertise, advise, and guidance to external clients in the OSW sector within Canada and Internationally; and
- ◆ Research and Development Contracts: Partnering with private industry or academic institutions to conduct research and development and commercialization of novel OSW turbine components. Leveraging the testing and validation site to provide access to real-world conditions for applied research.

Key milestones for this phase include:

1. Transition to a full autonomous entity in line with the creation of an OSW testing and validation site.
2. Establishment of operational testing and validation site and associated revenue generation streams through data collection and research leases.
3. Provision of advanced workforce development programs, including OSW technician training and certification to strengthen the industry's national labour force.
4. Partner with local academic and training institutes such as NSCC to leverage the testing and validation site and provide advanced workforce development programs, including OSW technician training and certification programs to strengthen the industry's labour pipeline.

Governance Structure

As the OSW CoE grows, the transition to a fully independent organization will involve the formal separation from the initial host organization. To facilitate this, the OSW CoE will require the establishment of its own legal entity, and the execution of a long-term financial sustainability plan. To facilitate this growth, it is assumed that three additional staff members will be required at this stage, a Finance Office, an OSW Testing and Validation Site staff and a Manager of Operations.

The transition is expected to be in line with the diversification of revenue streams whereby testing and certification offerings, data subscription and sales as well as ongoing grants are already established. By maintaining strong governance, strategic partnerships and financial independence the OSW CoE will be positioned as a self-sustaining global leader in OSW innovation.

7.4 Operational Cash Flow Estimations

To assess the estimated costs associated with the establishment and ongoing operations of the OSW CoE, AECOM has developed a comprehensive funding model that outlines the estimated capital and operating costs related to both the establishment and ongoing operations of the proposed OSW CoE in relation to the forecast revenues that may be generated through operations. This model provides a phased development approach mapping out the financial requirements from initial setup through to long-term operations, with the goal of achieving a self-sustaining organization under a “best case” scenario. It incorporates detailed cost and revenue projections tie to staffing, infrastructure, programming and administration for the proposed path forward under a hybrid operational model and is based on key assumptions regarding the achievement of financial milestones and revenue targets over time.

Overall assumptions used within the model include:

- ◆ Total compensation per job sourced from Statistics Canada data on Provincial Labour Statistics;
- ◆ Annual wage and revenue growth rate assumed at 3.0% per annum over a 15-year period based on Nova Scotia growth for All Industries between 2019 and 2023;
- ◆ Federally mandated employee contributions such as Canadian Pension Plan, Employment Insurance and Workers Compensation included;
- ◆ Insurances estimated for Non-profit establishment on an annual basis;
- ◆ Non-profit establishment costs included;
- ◆ Additional costs assumed including employee benefits costs estimated at \$215/employee/month and technology costs estimated at \$2,000/annum/employee; and
- ◆ General overhead assumed at 10% of employee costs (excluding insurances, employee benefits and technology costs).

A cash flow forecast technique has been employed to estimate the costs associated with establishment of the CoE as well as the estimated ongoing costs associated with operations in each phase of development. To assess the funding requirements for the organization and to chart a path towards the development of this initiative, an assessment of the potential revenue generating sources relative to the estimated costs associated with the establishment and ongoing operations of the organization has been conducted. The delta between the two figures provides an estimated profit/loss for the organization at each phase of growth. This allows us to identify the funding delta to derive the amount of funding that is required from either public or private partners to establish and sustain the organization. This assessment is intended to provide a framework for establishing and growing the organization and highly dependent on the revenue forecasts associated with this assessment, as the uncertainty surrounding the nature of the industry, these are estimates based on the best available data to date, and is subject change based on the evolving economic and regulatory framework. Assumptions for each of the three phases include the following.

During Phase 1, while the organization is established and the Innovation Catalyst and Research Hub services are growing in notoriety, it is expected that the OSW CoE will have limited opportunities for revenue streams. Focus will be placed on building credibility and the name of the organization as it operates under a host organization. At this phase of operations, it is proposed that the OSW CoE begins to engage in research services, with an expected ramp up in revenue from Year 1 onwards. The forecasts

costs associated with this phase are directly related to three main staffing requirements which include an Executive Director, Innovation Lead and Research Lead as well as all associated costs with these employees such as employee benefits, technology costs and insurances.

In Phase 2 of the timeline for growth, the OSW CoE it is proposed that the OSW CoE grow its revenue generating services in line with the growth of the Research Hub and the initiation of the testing and validation site in Year 6. Forecast growth in this phase includes revenues associated managing approximately three consulting projects per year through the Research Hub. Forecast for this assume that approximately 30% of the total budget for a typical research project costing approximately \$200,000 or accounting for a total of \$60,000 per project or \$180,000 per annum if three projects are completed. In addition to this, the second identified revenue source is related to the initiation of the testing and validation site, and the associated data that will be collected at the site. It is proposed that the OSW CoE in partnership with the Provincial Government and Industry offer access to a metocean database. Based on comparable offerings such as 4C Offshore and Environics Analytics which both offer subscription-based accounts for access to data the estimated value for access to the data would be approximately \$7,000 per annum. The proposed commercial terms for accessing the data (subscription/one time purchase) would be based on market demand and best practice at the time of initiation. Between Years 6-10, the sale of data is expected to start at 5 sales totalling approximately \$42,000 in year 6 and is estimated to grow by 5 additional sales per annum, in line with industry growth to a total of 25 sales in Year 10, or a total of \$235,000. The third proposed revenue stream is sub-leasing submerged lands to organizations seeking access to areas for conducting OSW testing and validation as well as additional research on fisheries and environmental components of OSW. Based on identified commercial leases from the U.S. for OCS-A 0541 indicate that commercial leases for the period prior to the development of wind farms are approximately \$3 USD per acre (United States Department of the Interior Bureau of Ocean Energy Management, 2022). As such it is reasonable to assume that based on the foreign exchange rate to promote research and attract demand would be \$4 CAD per acre for submerged lands at the testing and validation site for research purposes. Assuming the testing and validation site is of similar size to the proposed Canso Bank of 431 square kilometres or approximately 106,457 acres, 25% of these lands or approximately 26,000 acres will be leased for research purposes at \$4 an acre for a total of approximately \$106,500 per annum. In Year 11, it is assumed that a second 25% parcel is leased out for additional research purposes. While the introduction of the testing and validation site will require significant funding to establish, this line item has been omitted from the operational forecast and is assumed to be assessed as a capital funding requirement during the development phase. For reference, WEICan developed a 10 MW Wind R&D Park with an energy storage system in 2013 for a total project cost of approximately \$25 million (Natural Resources Canada, 2014). In addition to funding for the development of a testing and validation site, insurances are expected to significantly increase at this stage, covering property and equipment insurance, general liability, marine liability professional indemnity insurance and other insurances. Insurance for a testing and validation site presents a high degree of complexity, reflecting the intersection of marine operations, offshore structures and environmental liability. Benchmarking against other facilities suggest that premiums can be prohibitively high if borne entirely by the OSW CoE or industry users and the structure of the coverage is evolving with the OSW industry. In examples of testing and validation sites elsewhere, these risks have been mitigated through public underwriting or pooled-risk arrangements, with government assuming part of the liability to ensure access to the site remains affordable. Given the uncertainty surrounding this, the increase in insurance premiums have been excluded from this forecast and are assumed that these costs will be incorporated into the capital funding package or addressed through a dedicated risk-sharing mechanism.

In Phase 3 of the timeline for growth, it is proposed that the OSW CoE transitions to an independent entity bringing on a Finance Office, a Manager of Operations and an additional Testing and Validation Employee. In addition to this, revenues are expected to be scaled at this stage, increasing the number of

consulting/service-oriented projects to five per annum and introducing a workforce training component at the testing and validation site. This proposed revenue stream is intended to complement the already robust network of academic institutions throughout Atlantic Canada by leveraging its network and facilities in partnership with an existing academic institution to offer a hands-on workforce training component. Recommendation 35 from the MRC Supply Chain identified that creating upskilling opportunities to allow workers to transition from offshore oil and gas, onshore construction, mining, and other relevant sectors to help meet workforce bottleneck challenges while also creating opportunities for the region's existing workforce (Marine Renewables Canada, 2025). In addition, workforce demand for Maritime Trade Workers is expected to remain robust into the future, with peaks of over 2,000 job opportunities for building and maritime trade workers (Marine Renewables Canada, 2025). Between years 11 and 15, it is assumed that approximately 400 individuals would be trained, averaging approximately 80 trainees per year. At an estimated \$2,500 per trainee this equates to \$200,000 in annual training revenues. This assumption is broadly consistent with precedents identified in comparable CoEs. ORE Catapult in partnership with the Engineering Construction Industry Training Board and the Global Wind Organization offers a wind turbine maintenance technician cross-skill programme, designed to retrain individuals with transferable skills in electrical, mechanical and instrument control working in the oil and gas sector (The Engineering Construction Industry Training Board, 2025). Importantly, the proposed training initiatives are not intended to duplicate or compete with existing programs offered by NSCC, COVE, or other post-secondary institutions, but rather complement and build upon them. As the OSW industry matures, the CoE would seek to work collaboratively with existing organization to identify emerging skills gaps and design programs that align with existing curriculums and capacity. In doing so, the CoE would enhance co-ordination across the existing training ecosystem, ensuring that workforce development efforts are mutually reinforcing and responsive to industry needs.

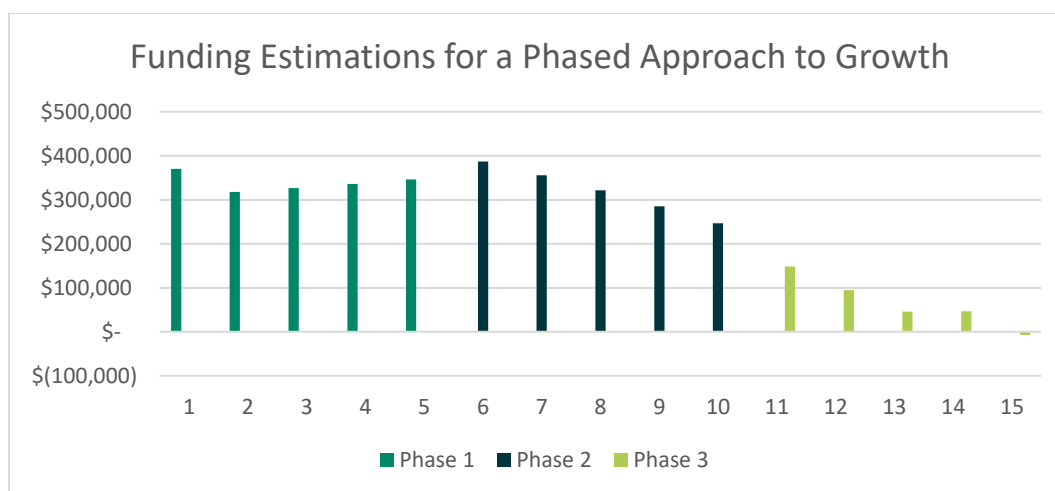
Table 5: Timeline for Growth Funding Requirements

Phase	Total Forecast Revenue	Total Forecast Costs	Delta
Phase 1	\$594,400	\$2,291,600	\$1,697,200
Phase 2	\$2,494,800	\$4,090,800	\$1,596,000
Phase 3	\$7,388,500	\$7,715,700	\$327,300

Note: Negative figures indicate a funding deficit, and numbers have been rounded to the nearest hundred.

Funding requirements have been estimated for each phase of growth of the OSW CoE as found in Figure 20.

Figure 20: Phased Funding Estimations



Note: Negative figures indicate revenues surpass costs, indicating financial self sustainability.

Following the phased approach to growth, Phase 1 funding is estimated to total approximately \$1,700,000 for Years 1-5. Year 1 funding requirements is estimated to total approximately \$370,200 and reduces to an estimated \$346,200 by Year 5. This small team is intended to operate the organization as lean as possible to minimize staffing the operational costs of the organization. By embedding the OSW CoE within an existing organization, it is expected that the majority of operational components will be leveraged from the existing frameworks established within the existing organization, reducing forecasts costs for this period.

Throughout Phase 2 of the growth model, the OSW CoE the cost estimations incorporate the introduction of a Project Coordinator and an OSW Testing and Validation Lead in Year 6, costs are expected to increase by approximately 58% to circa \$771,000, or a total of approximately \$4,090,800 for Phase 2 of operations. In this phase of growth, partnerships with provincial governments will be crucial to the growth of the organization to assist with establishing the testing and validation site. Two new proposed revenue streams begin in Phase 2 of operations, which following the phased approach to growth.

Growth in Phase 3 of operational costs are expected to increase by approximately 68% for the operations of the OSW CoE. While the CAPEX and OPEX costs of the testing and validation site are separated from this assessment, annual wage growth as well as the hiring of a Finance Officer, an OSW Testing and Validation Site and a Manager of Operations have been included in the assessment. Revenue is expected to increase in this phase of growth with the introduction of a workforce training initiative at the testing and validation site.

Table 6 shows the cash flow forecasts for the assessment of the integration of revenue generating streams for the OSW CoE. As noted, there is a path to financial self-sufficiency through the integration of the OSW testing and validation site, offering submerged lands sub-leasing for research purposes, integrating a robust data collection of metocean, environmental and fisheries data that would be beneficial to the OSW industry in supporting its growth. A more detailed cash flow analysis can be found in Appendix E.

Table 6: Cash Flow Projections for OSW CoE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Forecast															
Revenue	\$61,800	\$127,300	\$131,100	\$135,100	\$139,100	\$383,800	\$438,400	\$495,900	\$556,500	\$620,200	\$1,312,000	\$1,401,500	\$1,494,900	\$1,539,700	\$1,640,400
Forecast															
Costs	\$432,000	\$444,900	\$458,000	\$471,400	\$485,300	\$771,000	\$793,800	\$817,500	\$841,800	\$866,700	\$1,460,100	\$1,496,300	\$1,540,400	\$1,586,100	\$1,632,900
Profit/Lo															
ss	\$370,200	\$317,600	\$326,900	\$336,300	\$346,200	\$387,200	\$355,400	\$321,600	\$285,300	\$246,500	\$148,100	\$94,800	\$45,500	\$46,400	\$7,500

Table 7: OSW CoE Funding Requirements

Phase of Growth	Total Funding Requirements
Phase 1:	\$1,697,200
Phase 2:	\$1,596,000
Phase 3:	\$327,300

Given the uncertainty surrounding developer and manufacturer demand for a testing and validation site, it is recommended that the development of a turbine is not a cost-effective approach to the testing and validation site, but rather by incorporating a wide range of services including metocean data collection, workforce development and training, and environmental monitoring are pursued in an effort to keep costs at a minimum.

The development costs associated with a testing and validation site have been included in the assessment. The total costs of the development of a 15MW testing and validation site with a 2035 start date is estimated to be approximately \$259 million for a fixed bottom site, or approximately \$17.27 per MW assuming a single 15MW turbine is installed. While it is probable that floating technology will be the preference for development, the costs associated with floating technology are estimated to increase by approximately 58% to circa \$411 million or \$27.39/MW (Figure 21).

Figure 21: Testing and Validation Site Turbine Cost Estimates

Cost Estimates for a Testing and Validation Site, 2035 Start Date (\$mCAD)

Component	Fixed Bottom (\$mCAD)	Floating (\$mCAD)
Development to FID	42	51
Turbine Supply	24	35
Turbine Installation	16	0
Foundation Assembly & Turbine Integration	0	19
Foundation Supply	33	100
Foundation Installation	28	0
Floater Installation	0	15
Mooring and Anchoring Supply	0	20
Mooring and Anchoring Installation	0	16
Export Cable Supply	53	106
Export Cable Installation	28	19
Onshore Connection	13	1
Construction phase insurance	1	1
Contingency & Construction Management	23	30
Total	259	411

Source: AECOM based on 4C Offshore

Sensitivity Analysis

An additional financial assessment has been conducted based on a scaled-back model for the OSW CoE, which excludes all cost and revenue streams associated with the testing and validation site. This adjustment reflects the significant scale, complexity, and uncertainty surrounding the implementation of the testing and validation component. By removing it from the core financial analysis, the model presents a more conservative scenario that isolates the feasibility of the CoE's core programming and operations. This approach to sensitivity provides a realistic range of financial outcomes, offering flexibility to stakeholders and decision-makers as the vision for the OSW CoE continues to evolve.

By isolating for the core components of the OSW CoE, the financial estimates indicate that the OSW CoE would require approximately \$300,000 less in funding over the 15-year forecast period. A full assessment of the detailed cash flow can be found in Appendix E.

In addition to a scaled back model, there is an opportunity to the OSW CoE to generate revenue through a combination of membership fees and an annual OSW conference. We recognize that several organizations in Atlantic Canada are already active in this space, delivering services comparable to those envisioned for the CoE. By enveloping these existing organizations within the OSW CoE framework, there is potential to consolidate efforts and expand revenue streams from conferences and membership fees, while avoiding duplication or detracting from the value these groups already provide. By integrating these components into the financial model, additional revenues could be generated, further cementing the ability for the OSW CoE to operate as a self-sustaining organization.

Grant and Income Producing Opportunities

The funding strategy for the OSW CoE follows a phased approach, aligning with the staged development of the initiative across phases 1-3. It is proposed that funding will be secured through a combination of sources, including government grants, industry partnerships, academic collaborations and private sector investments, evolving as the centre matures.

In the initial phase, it is proposed that foundational funding be sourced from public sector sources, including federal and provincial grants to establish the organization embedded within an existing organization to establish the core infrastructure and innovation catalyst service.

As the CoE progresses into Phase Two, partnerships and research collaborations will play a critical role in securing investment to ensure long-term financial sustainability while integrating revenue generating services including metocean data collection as well as consulting services aligned with the Research Hub. Finally in the expansion phase, revenue-generating activities, strategic partnership and private capital will further support the CoE's operations and innovation pipeline with the Testing and Validation Site. The following section outlines the key funding sources available at each phase of growth.

Federal and Provincial Government Grants.

Through Budget 2023, the Government of Canada has committed to significant investments aimed at harnessing OSW potential in Nova Scotia and Newfoundland and Labrador. The Offshore Wind Predevelopment Program, in an initiative through Natural Resources Canada aimed at fostering development in OSW projects in Nova Scotia and Newfoundland and Labrador. With a total budget of \$61.4 million the program seeks to establish the foundational conditions necessary for the advancement of the OSW industry. Through the Indigenous and Coastal Communities Grant Funding, financial support of up to \$10,000 annually is provided to support engagement with the OSW industry, regulatory bodies and governmental agencies. The funds are intended to support community meetings, workshops and the acquisition of technical expertise pertinent to the OSW sector. This funding stream is applicable to Phase 1 of the OSW CoE to support the growth of the Innovation Catalyst arm.

Natural Resources Canada through the Office of Energy Research and Development, delivers a suite of initiatives under the Federal Internal Energy R&D program. This program funds research and development activities across federal departments and agencies to advance clean energy innovation. Its objectives include improving energy efficiency and industrial processes to reduce emissions from energy end use, accelerating electrification, and enhancing the benefits of renewable energy. The program also supports the development of cleaner fuel pathways and aims to reduce reliance on diesel fuels in rural, remote, and Indigenous communities. Federal departments are encouraged to collaborate with private sector partners, other funding bodies, academic institutions, provincial and municipal governments, research organizations, and international stakeholders to maximize impact and knowledge transfer.

Under Natural Resources Canada, the Energy Innovation Program is aimed at helping Canada maintain an affordable energy system and transitioning to a low-carbon economy. The program supports energy research, development and demonstration projects and other science-related activities by investing in the work of federal labs, Canadian businesses, utilities, Indigenous communities and other organizations working on developing novel clean energy technologies. To apply for this funding opportunity, an expression of interest would be submitted to the Energy Innovation Program in response to one of the live funding streams. Select projects meeting the criteria will then be selected for conducting a more thorough due diligence process. Whereby the financial, legal, regulatory compliance and technical aspects of the project will be evaluated ensuring that each project demonstrates they can fulfill requirements across each component. Upon successful completion of due diligence, selected projects are selected to move

forward with funding opportunities. Depending on the call for proposals that are live during the time of implementation, this would be a worthwhile funding stream to explore.

The Regional Marine Data Collection Campaign aims to fill data gaps and establish the necessary baseline data to set the enabling conditions for OSW development. Running until 2028, this program offers funding for two streams of data collection, Stream 1: Campaign and Data Management and Stream 2: Data Collection. While funding may not be directly applicable, close collaboration with this program would be mutually beneficial for both the OSW CoE as well as the program itself.

The National Research Council of Canada supports collaborative research and development through a suite of offerings under two distinct streams, collaborative R&D programs and funding breakthrough ideas. Under collaborative R&D programs, there are two separate programs including the challenge programs, as well as cluster support initiatives supporting each of the five innovation clusters. Under funding break ideas stream, the Ideation Fund supports exploratory research with academia and industry.

The Challenge Programs offers multi-year, mission driven funding for R&D initiatives designed to bring together researchers, businesses and academia to address high-impact technological challenges. Each program under this arm typically runs for up to seven years and focuses on areas of national importance, such as AI for productivity, electric vehicles, decarbonizing the construction sector and the oil and gas sector. The program aims to de-risk innovation, accelerate commercialization and generate breakthrough solutions aligned with Canada's long-term economic and environmental goals. While there is currently no stream that is related to OSW, as the program evolves it will be prudent to track this program as it evolves to identify opportunities for the OSW CoE.

Canada's Global Innovation Clusters is a program led by Innovation, Science and Economic Development Canada within NRC and is investing up to \$2 billion over 10 years across five industry-led clusters. The clusters are aimed at bringing together academia, business, Indigenous partners and government to jointly develop, commercialize and advance technologies that boost economic growth, create jobs, and position Canada as a global innovation leader. Under this program, the Ocean Cluster, administered through Canada's Ocean Supercluster is bringing members together to accelerate the development and commercialization of globally relevant ocean solutions and advancing Canada's position as a global leader in ocean development. Bringing together academia, investors and regional innovation hubs there are two program streams applicable to the OSW CoE including Scaled Ocean Energy and Ecosystem Development. Through the Ocean Supercluster, there are two funding streams, Technology Leadership Project Program and the Innovation Ecosystem Projects and Activity Program.

The Technology Leadership Project Program funds collaborative initiatives that drive technology development and commercialization in marine industries. The project must be industry led, but involve collaboration from multiple partners such as businesses, research institutions and Indigenous groups. As part of the application, projects must have a minimum project size of \$3 million and be co-funded by industry with 50% of the project costs coming from private sector partners. Given the nature of this funding opportunity, this is applicable for Phase 3 of the OSW CoE.

In addition to this, the Ocean Supercluster offers a second funding arm the Innovation Ecosystem Projects and Activity Program. This program focuses on non-commercial initiatives to build a robust ecosystem, growing ocean companies and expanding networks and partnerships. The OSC invests up to 75% of eligible project costs with the remaining funds sourced from other contributions or delivery partners. Eligible partners include post secondary institutions, government agencies, non-profits and industry groups. Project sizes are flexible and eligible costs include:

- ◆ Actual gross wages and salaries incurred and include all non-discretionary benefits that the employer must pay such as CPP, EI or provincial workplace injury insurance. This includes subcontractor costs.
- ◆ Costs related to equipment rental.
- ◆ User fees including subscription/license fees directly related to projects.
- ◆ Materials and supplied consumed by the project.
- ◆ Costs related to rent facilities to support conferences.
- ◆ Travel costs.
- ◆ Communications and marketing costs.

The Ideation Fund empowers NRC researchers to pursue exploratory R&D in collaboration with external partners such as academia and industry. As of May 2025, this program has funded 319 projects across 89 partner organizations, totaling approximately \$17.15 million in grants and contributions. There are two streams under this program, these include:

- ◆ New Beginnings supporting single researchers up to \$25,000 for 18 months to conduct research; and
- ◆ Small Teams, funding multi-year projects for up to three years with up to \$1 million in operational funding and \$1 million in grant and contribution funding for small team initiatives with NRC researchers and external collaborators who have complementary capabilities.

Given the phased approach to the OSW CoE, it is worth noting that the initial Phase 1 and 2 of the OSW CoE would be well suited to the Ocean Supercluster Innovation Ecosystem Projects and Activity Program while Phase 3 of the project including the Testing and Validation Site would be applicable to the Core Technology Leadership Program.

Through the Regional Economic Growth through Innovation (REGI) program, the Atlantic Canada Opportunities Agency is providing support to businesses and non-profit organizations to develop a stronger, inclusive economy. The program offers two options for funding:

- ◆ Business Scale up and Productivity; and
- ◆ Regional Innovation Ecosystems.

Through the second funding stream, ACOA provides funding to non-profit organizations that support businesses at various stages of development and supports in making business support networks stronger for under-represented groups. These include women, Indigenous peoples and young entrepreneurs.

Through this stream, non-repayable contributions are provided for:

- ◆ Strategic clusters and groups that help businesses build on regional strengths to scale up and bring new ideas to markets;
- ◆ Business accelerators and incubators that support entrepreneurs, start-ups and innovative companies with high-growth potential; and
- ◆ Other innovation-oriented organizations that help businesses be more productive, compete globally and attract new investment and recruit talent.

In addition to this, ACOA in partnership with other funding partners offers funding through the Economic Development Initiative to help Acadian and francophone communities in Atlantic Canada grow the economy. Non-profit organizations must serve Acadian or francophone communities in Atlantic Canada to foster research and development, boost innovation, improve productivity and support business growth. To receive Economic Development Initiative funding, projects must support economic development of an Acadian or francophone community, help businesses grow and become more competitive and secure at least 25% of funding from other sources. Through this stream, non-repayable contributions can be

provided for eligible projects, although the Economic Development Initiative is a relatively small funding stream and is unlikely to be a viable option for the OSW CoE.

Invest Nova Scotia is a potential funding source for the OSW CoE, through the Early-Stage Commercialization Fund, Invest Nova Scotia supports the commercialization of research from Nova Scotia universities, colleges and hospitals. Funding is available of up to \$50,000 per project. While generally focused on private sector growth, Invest Nova Scotia may provide funding through the Early-Stage Commercialization Fund as the CoE progresses into commercialized R&D projects.

The funding strategy for the OSW CoE follows a phased approach, in line with the approach to growth. By leveraging public sector grants, industry partnerships, academic collaborations and private investments, the CoE will establish itself as a leading hub for OSW development, innovation and research and commercialization.

At the establishment phase of growth, funding will primarily come from governmental grants, such as the Natural Resource Canada's Offshore Wind Predevelopment Program and Ocean Superclusters Innovation Ecosystem Project and Activity program. These sources will support early-stage growth, research and capacity building.

During the Expansion and Long-Term Sustainability Phase, the Centre will establish revenue-generating activities, including consulting services, training programs, and technology commercialization. Funding will transition towards external funding opportunities such as long-term industry sponsorships. Exploring public-private partnerships (PPPs) will be explored to support large-scale deployment efforts and infrastructure development.

By adopting this phased funding approach, the OSW CoE will secure the financial support needed to drive innovation, collaboration, and economic growth in Canada's OSW sector. This strategic mix of public and private funding ensures long-term sustainability, positioning the Centre as a leader in advancing clean energy solutions in Atlantic Canada.

8. Conclusions

The findings from this business case and options appraisal confirm that establishing an OSW CoE in Atlantic Canada is not only feasible with the right investments and adoption but represents a timely and strategic investment in the region's clean energy future.

The establishment of an OSW CoE represents a strategic opportunity to propel Canada's OSW sector forward. Through comprehensive research, in-depth stakeholder engagement and an evaluation of core areas of focus, this business case illustrates the immense value that a centre such as this could contribute to advancing renewable energy capabilities, economic growth for Atlantic Canada and environmental stewardship for the region.

The desktop research conducted for this assessment highlight that a CoE can play a pivotal role in overcoming key barriers to OSW deployment, including regulatory uncertainty, infrastructure readiness, R&D Capacity, and the need for stronger alignment across stakeholders. Lessons from international CoEs underscore the importance of mission-driven mandates, multi-sector collaboration and a focus on real world challenges in technology, workforce development and environmental stewardship.

The stakeholder engagement component of the assessment has been a pivotal aspect in shaping the findings of the business case. By providing a holistic view of the industry's aspirations, challenges and opportunities across academia, industry, government and indigenous communities, the stakeholder engagement component was able to uncover key components to be taken forward for the organization. Dialogue across the sector has underscored the demand for a standalone organization that takes a unified approach to progressing the OSW industry in Canada. Drawing from the findings in this component of the project, three key areas of focus are proposed for the inception of the organization. These being a Research Hub focused on the triple-bottom-line effects of OSW development in the Canadian context, an Innovation Catalyst role helping to bring stakeholders together across varied industries with an interest in OSW to foster collaboration and innovation and the development of a Testing and Validation Site for metocean data collection and R&D.

The proposed governance and funding model to achieve the identified areas of focus supports an accountable, resilient and sustainable structure. The model balances transparency and efficiency, encouraging participation across public, private and academic sectors to build consensus. By adopting a phased approach to growth, the OSW CoE would minimize risk and funding requirements while embedding itself in an established organization. As the organization matures, a phased approach to the creation of an independent entity is recommended.

Financial projections indicate that Phase 1 of the OSW CoE would require approximately \$1.7 million in funding for the first five years of operations. Leveraging the diverse funding opportunities through both federal and provincial funding sources would help to achieve the necessary funds required to kickstart this initiative. As the organization grows, additional funding streams and partnerships will be sourced for years 6-15 of operations including partnerships with industry and academia. The introduction of additional revenue streams in line with the Testing and Validation Site are expected to reduce the funding requirement to approximately \$100,000 for the second phase of growth as revenue generated is expected to offset the growth in forecast costs to a total of \$1.6 million over years 6-10. In Phase 3 of the timeline for growth, operations surrounding the Testing and Validation site are expected to increase, charting a path to financial self sustainability by Year 15.

The review of CoEs globally, highlights that most rely on significant government support for both establishment and sustained operations. International experience demonstrates that dedicated public

funding is often required to establish the organization and build credibility through ongoing operations. For example, the assessment of the UK Department for Business, Energy and Industrial Strategy review of Catapult Centres found that Catapults designed to operate on a thirds model of funding combining one third core government funding, one third collaborative R&D and one third commercial revenue were generally unable to achieve this target. While some Catapults such as the High Value Manufacturing have come closer, the ORE Catapult requires heavier public subsidization due to the nascent state of the industry and thinner commercial returns. Although industry engagement and revenue generation has grown over the years, stable public funding remains indispensable to sustain operations.

This precedent suggests that while a diverse funding base should be the long-term goal, public funding will be a critical catalyst for establishing an OSW CoE in Atlantic Canada, ensuring it has the stability and resources needed to leverage additional industry and regional contributions.

Key recommendations based on this assessment include:

- ◆ Adopt a phased, mission-led organization to align with national and regional energy and economic goals. The organization should leverage the existing regional strengths throughout Atlantic Canada rather than building from scratch.
- ◆ Broaden the assessment of the development of an OSW CoE to include a review of Atlantic Canada for the OSW CoE initiative.
- ◆ Adoption of a phased hybrid approach to growth, whereby the OSW CoE is embedded within an existing organization and as its service offering grows, mature to an independent organization.
- ◆ Work with existing organizations throughout Atlantic Canada to create a collaborative approach to the development of the OSW CoE.
- ◆ Establish initial funding through an available federal grant opportunity such as Natural Resources Canada or the National Research Council of Canada to start the OSW CoE and keep the organization running through Phase 1 of the phased approach to growth. Funding requirements for this phase is approximately \$1,700,000.
- ◆ Establishment of a volunteer board of directors representing key stakeholders for OSW such as Indigenous leadership, federal and provincial governments, community leaders, fisheries industry representation, academia and private industry.
- ◆ Position the OSW CoE as an information hub for global developers and investors seeking to participate in Atlantic Canada's OSW market through the Innovation Catalyst.
- ◆ Support regulatory readiness and policy alignment, offering developers seeking to enter the Atlantic Canada market support.
- ◆ Establishment of the research arm of the CoE to conduct research on the economic, environmental and social considerations of OSW. Leveraging off the existing work conducted throughout Atlantic Canada by the research community, focus efforts on grid integration and energy offtake solutions, floating OSW in the Atlantic Canada context as well as the environmental considerations of OSW.
- ◆ Development of service and consulting arm providing support on research projects throughout Canada and afar.
- ◆ Establishment of a Testing and Validation Site, as this drives the revenue forecasts for the organization, offering access to submerged lands, and real-world conditions for research purposes and access to workforce training opportunities. In addition, metocean data collection is a valuable resource that many groups are likely to require into the future.

In conclusion, establishing the OSW CoE would position Atlantic Canada as a national leader in the clean energy transition, while helping to drive economic development for the region and promoting innovation. The CoE's anticipated contributions to the OSW sector span beyond that of simply helping to progress the development of OSW in Atlantic Canada and seeks to develop the industry in a cohesive, sustainable

manner representing all stakeholders. With focused investment, collaborative governance and a commitment to inclusivity, the CoE stands poised to catalyze a transformative shift within Canada's renewable energy landscape, setting a benchmark for future energy initiatives.

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Appendix A. Stakeholder List

List of Stakeholders:

- ◆ Acadia University
- ◆ Atlantic Canada Opportunities Agency
- ◆ Atlantica Energy
- ◆ Canadian Coast Guard College
- ◆ Cape Breton Partnership
- ◆ Cape Breton University
- ◆ CBNA Construction
- ◆ CNSOER
- ◆ COVE
- ◆ Dalhousie University
- ◆ DP Energy
- ◆ Envigour
- ◆ Eskasoni First Nation
- ◆ FORCE
- ◆ Invest Nova Scotia
- ◆ Kwiilmu'kw Maw-Klusuaqn
- ◆ Marine Renewables Canada
- ◆ Municipality of the County of Richmond
- ◆ Municipality of the District of Guysborough
- ◆ NEMOEC
- ◆ Nova Scotia Community College
- ◆ Nova Scotia Department of Energy
- ◆ Nova Scotia Department of Natural Resources
- ◆ Nova Scotia Fisheries Alliance for Energy Engagement
- ◆ Nova Scotia Power
- ◆ Novaport
- ◆ Port of Sydney
- ◆ Potlotek First Nation
- ◆ Reventus Power
- ◆ SBM Offshore
- ◆ Simply Blue Group
- ◆ St. Francis Xavier University
- ◆ Strait Area Chamber of Commerce
- ◆ Strait of Canso Superport Corporation
- ◆ Town of Port Hawkesbury
- ◆ Université Sainte Anne
- ◆ Verschuren Centre
- ◆ Wind Energy Institute of Canada

Appendix B. Workshop Summary

B.1 Workshop 1 Executive Summary

AECOM Canada Ltd. (AECOM) is completing a project to explore the need and feasibility of an offshore wind centre of excellence (COE). This COE study is sponsored by the Department of Natural Resources and Renewables (DNRR), Atlantic Canada Opportunities Agency (ACOA), the Municipality of the County of Richmond (MOCR), and the Town of Port Hawkesbury. The project is guided by a Project Steering Committee, made up of representatives from DNRR, ACOA, MOCR, the Town of Port Hawkesbury, Potolek First Nation, Net Zero Atlantic, and Marine Renewables Canada.

The COE is envisioned as a pivotal organization bringing together representatives across the industry to integrate information and break down silos within the offshore wind (OSW) sector. By COE, we refer to a network of organizations and institutions throughout Nova Scotia that together can make up the components of a COE.

As part of this project, AECOM engaged OSW stakeholders throughout the province to gain feedback on the vision of the COE, future ambitions of the COE as well as potential governance and funding opportunities. A first round of stakeholder engagement was held with 39 respondents through workshops with Government (n=16), Academia/Research (n=7), Indigenous rightsholders and representatives (n=5) and Industry stakeholders (n=11) between June 10th and June 12th, 2024.

This summary provides an overview of the key themes and trends discussed. As part of ongoing stakeholder engagement efforts, AECOM will hold supplementary stakeholder engagements with primary stakeholders throughout July and August 2024.

B.2 Workshop Methodology

The goal of the stakeholder engagement workshop was to bring together OSW stakeholders throughout the province to gain insight into their view of a vision for the OSW COE and to uncover stakeholders' views on future areas of focus as well as potential barriers and constraints to the COE. To conduct this, AECOM held separate workshops with the following four key stakeholder groups:

- ◆ Industry;
- ◆ Government;
- ◆ Indigenous Rightsholders; and
- ◆ Academia/Research.

The workshops were held as open-ended discussions guided by AECOM representatives, who provided participants with discussion prompts to facilitate the conversation. The discussion started with a comprehensive overview of the project, including the work conducted to date and the overall goals of the project. These include identifying strategic partners for the COE, research priorities for the COE and developing a sustainable governance and funding model moving forward. Coding conducted by researchers is subjective and offers general insight into themes heard in discussions. No descriptive statistics were gathered.

In addition, a summary of the general objectives of a COE was shared to provide a more thorough understanding of what a COE is and how it applies to OSW. A summary of this can be found in the figure below.

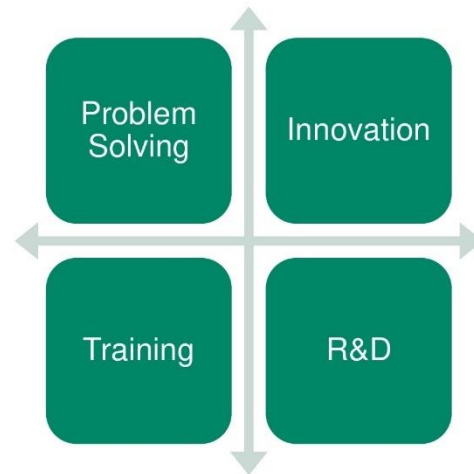
COE Objectives

Problem Solving: Involves experience and expertise to solve the identified problems in the present.

Innovation: A forward-looking organization which intends to identify or develop what could become mainstream in 5-10 years.

R&D: Intends to solve a problem that requires further research before a solution can be identified. New materials, new technology development etc.

Training: Development of technical or professional standards, objective classification and rating system or conceptualizes training requirements for a profession.



A significant portion of the workshop was dedicated to a visioning exercise, where stakeholders shared insights on what a successful COE would look like in two decades. The discussions also delved into opportunities to propel the COE towards the envisioned future state and constraints to be navigated.

B.3 Key Findings

Collaboration and infrastructure were frequently discussed topics in the four workshops with Industry and Academics and Government and Indigenous Rights holder representatives. Cross-cutting themes include:

5. **Information Integration:** Stakeholders emphasize the COE's role as a central hub for consolidating and disseminating information across the OSW sector. The COE was envisioned as a hub to showcase existing initiatives already operating in Nova Scotia, preventing duplication of efforts and promoting information sharing across the sectors. Participants highlighted the value of collaboration, emphasizing the concept of mimicking successful strategies from other regions rather than reinventing them.
6. **Learning from Global Leaders and Best Practices:** Despite Nova Scotia's acknowledged 20 to 25 years lag behind global OSW leaders, respondents view this gap as an opportunity to leverage international best practices and established expertise within a local context. Strategic partnerships with global regions are crucial for accelerating development in Nova Scotia while adapting solutions to local contexts.
7. **Overcoming Capacity Challenges:** Government delays, labour shortages, funding, grid integration considerations and limited regional capacity pose significant barriers to OSW development in Nova Scotia. Respondents suggest addressing these through market expansion to Northeast US states as well as through hydrogen production, exporting innovations, enhancing government support, and fostering coexistence planning. The COE could be a neutral mediator among fishers, government entities, the public, and developers to build trust and facilitate relationship-building. Respondents also emphasized the importance of drawing insights from diverse industries, including oil and gas, to gain a comprehensive understanding of local capacity challenges and community concerns within the energy sector, and ultimately strategize best practices for OSW development in Nova Scotia.
8. **Supply Chain Considerations:** 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. Respondents discussed how existing businesses can be transitioned to support the OSW industry, such as aggregate producers, etc. In addition, success of the OSW industry will be reliant on collaboration amongst stakeholders in the industry to share resources, studies and to avoid replication of certain studies moving

forward. The COE has the potential to act as a leading body in bringing together the OSW industry to achieve this.

9. **Sustainability and Regulatory Alignment:** Ensuring that OSW development aligns with environmental stewardship, regulatory frameworks, and robust community engagement is important. Understanding regional implications, including environmental impacts and stakeholder interests such as those of First Nations and fishers, was envisioned as an essential mandate of the COE. Respondents argued that environmental stewardship and community engagement should guide sustainable OSW development practices.

Industry Summary: Most of the conversation centred around collaboration and expanding infrastructure.

Participants stressed the importance of establishing a solid business model for the COE, working with pre-existing networks, and expanding the scale of OSW development beyond Nova Scotia to include Canada and the US. Recommendations included supplying wind energy to new markets and developing innovative infrastructure and marine science solutions.

Rightsholder Summary: Most of the conversation focused on collaboration and infrastructure. Contributors emphasized the need to review existing programs for ideas, support, and direction while focusing on local priorities and issues. The main issues discussed were adequate First Nation contribution, co-existence planning, and community education.

Academia Summary: During discussions, collaboration, infrastructure, and community were the most frequently referred-to topics. Themes regarding international collaboration and local priorities and needs were highlighted.

Government Summary: The conversation primarily focused on collaboration and infrastructure. Respondents emphasized that the COE could facilitate collaboration between the federal government and industry to create pathways to the market, promote knowledge-sharing across sectors, and support the integration of environmental, social, and economic interests. This support can help fill critical knowledge gaps and promote sustainable development. Additionally, respondents highlighted the opportunity to form strategic partnerships to avoid duplicating processes.

Appendix C. Stakeholder Engagement

C.1 Stakeholder Workshops

As part of the stakeholder engagement phase of the project, AECOM engaged with stakeholders throughout NS to gain feedback on the future vision of the CoE. A first round of stakeholder engagement was held with 39 respondents through workshops with Government (n=16), Academia/Research (n=7), Indigenous rightsholders and representatives (n=5) and Industry stakeholders (n=11) between June 10th and June 12th, 2024.

The goal of the stakeholder engagement workshop was to bring together OSW stakeholders throughout the province to gain insight into their view of a vision for the OSW CoE and to discover stakeholders' views on future areas of focus as well as potential barriers and constraints that the CoE may face.

The workshops were held as open-ended discussions guided by AECOM representatives, who provided participants with discussion prompts to facilitate the conversation. The discussion started with a comprehensive overview of the project, including the work conducted and the overall end goals of the project. These included identifying strategic partners for the CoE, identifying research priorities and developing a sustainable governance and funding model moving forward.

The workshops were organized in two stages: vision and validation. Key stakeholders were asked questions to understand what a successful CoE would look like (Stage One) and to validate the Centre's areas of focus, test CoE scenarios, understand steps to success, and identify potential partners (Stage Two), as shown in the figure below. The workshops were divided into stakeholder groups.

Stakeholder Engagement Workplan

Stakeholder Engagement Workplan

Stage 1: What does success look like?

Stage 2: Validate areas of focus, Test COE Scenarios, Understand steps to success & Identify potential partners.



Workshop-Specific Findings

This section outlines the key cross-cutting themes across the four stakeholder groups industry, Indigenous Rightsholders, academia, and government that emerged during the workshops. The central focus was on the importance of collaboration and expanding infrastructure to support OSW development. Across all groups, participants stressed the need for the CoE to leverage existing networks, foster strategic partnerships, and address local priorities while expanding OSW projects beyond Atlantic Canada to include other regions in Canada and markets in the US.

Industry

The workshop with industry leaders centred around collaboration and expanding infrastructure. Stakeholders stressed the importance of establishing a solid business model for the CoE, working together with pre-existing networks, and expanding the scale of OSW development beyond Atlantic Canada. Recommendations included supplying wind energy to new markets and supplying innovative infrastructure and marine science solutions. Highlighted insights are noted below:

- ◆ **Impartiality and Conflict of Interest:** Stakeholders suggested that there are often conflicts of interest when OSW proponents hire external consultants to build relationships with stakeholders such as fisheries, leading to distrust among local communities. It was suggested that a service is needed for the CoE to act as an impartial party to connect stakeholders effectively.
- ◆ **Leveraging Existing Programs and Local Priorities:** Stakeholders emphasized the importance of avoiding *reinventing the wheel* and instead suggested that OSW stakeholders in Canada should look to existing programs for guidance and support while also focusing on priorities and issues local to NS. Stakeholders noted that a CoE could provide a service to share knowledge.
- ◆ **Learning from Other Jurisdictions:** Stakeholders noted that a CoE could observe how more established jurisdictions, such as those in Europe and the US, have developed their OSW industries, with the goal of creating effective international collaborations. Additionally, stakeholders noted the importance of drawing parallels with the oil and gas industry to understand conflict resolution with traditional industries like fisheries.
- ◆ **Building the Future Workforce:** Stakeholders noted a need to leverage the strong local high school and university networks to develop the next generation of OSW workers.
- ◆ **Contrasting Opinions on the Industry Scale:** Some stakeholders argued that expanding the reach of OSW and building infrastructure capacity to supply wind energy to other regions, such as in the Northeast US, is essential. To achieve this, they suggested focusing the CoE on the following key areas:
 - ◆ **Building Priority Connections:** Establishing essential connections to facilitate energy transfer.
 - ◆ **Shared Infrastructure:** Developing shared infrastructure, such as shared landings and fewer cables, which may reduce costs and minimize fishers' disruption (e.g., shared cables to avoid multi-cable developments).
 - ◆ **Exporting Innovations:** Prioritizing research based on regional components of Atlantic Canada (e.g., sea ice) and exporting marine science data and innovations to other interested jurisdictions with similar climates and concerns.

Indigenous Rightsholders

The workshop with Indigenous Rightsholders mostly focused on overarching themes such as collaboration and infrastructure. The main issues discussed were First Nation contribution, co-existence planning, and community education.

- ◆ **First Nations Involvement.** Stakeholders emphasized the need to ensure First Nations are adequate contributors to OSW development. Stakeholders also emphasized a need for diverse perspectives,

incorporating the *Two-Eyed Seeing*⁴ methodology within the CoE to balance Indigenous and Western knowledge systems.

- ◆ **Public Perception and Education:** Addressing concerns about public perception and the need for community education on OSW was noted as crucial. Stakeholders highlighted that community uneasiness could arise due to the aftermath of oil and gas industry development, which was poorly understood at the time. Collaborative activities, such as using art for OSW community education, were proposed to build future, interest, acceptance, and understanding of OSW.
- ◆ **Project Scale and Local Expertise:** Discussions about the scale of OSW projects and fears related to the lack of local expertise and workforce in Atlantic Canada took place.
- ◆ **Co-existence and Government Involvement:** Interest was expressed in fostering co-existence between government entities, OSW developers, and fisheries to ensure a collaborative approach to OSW development. Other important topics stakeholders noted regarding co-existence and government involvement include:
 - ◆ **Multi-level Government Participation:** Involving federal, provincial, municipal, and Mi'kmaq governments collectively in the OSW industry development.
 - ◆ **Regulatory Measures:** Implementing Environmental Impact Assessments (EIA) for selected sites and ensuring the duty to consult with First Nations, allowing communities significant influence in the process.
 - ◆ **Inter-Industry Balance:** Stressing that one industry should not jeopardize another, advocating for balanced development strategies.

Academia

The workshop with representatives from academic institutions focused on themes regarding international collaboration and local priorities and needs.

- ◆ **Collaboration and Innovation:** Stakeholders highlighted the value of collaboration, emphasizing the concept of mimicking successful strategies from other regions rather than reinventing them. The CoE was envisioned as a hub to showcase existing initiatives already operating in NS, preventing duplication of efforts and promoting information sharing across sectors.
- ◆ **Building Networks:** Stakeholders noted the importance of building collaborative networks with regional and international organizations focused on OSW development. Suggestions included leveraging the CoE to integrate international innovations and research into local contexts while considering NS's unique regional scale. While some stakeholders advocated for integrating international expertise and data into local initiatives, others stressed the importance of prioritizing NS's specific challenges and opportunities to meet local needs effectively. Some stakeholders mentioned that the CoE's strategic direction should balance the aspiration to connect with larger, more established organizations globally with a deep commitment to addressing local priorities.

Government Summary

The workshop with government officials focused on opportunities to facilitate collaboration between the federal government, local governments, and industry to create pathways to the market, promote knowledge-sharing across sectors, and support the integration of environmental, social, and economic interests. Stakeholders articulated potential key functions of the CoE, noted below:

- ◆ **Research and Innovation:** Conduct research to support OSW development, focusing on technological advancements, environmental impact assessments, and market integration.
- ◆ **Knowledge Sharing:** Provide a platform for sharing success stories, case studies, and best practices globally to local interested parties.

⁴ *"Two-Eyed Seeing refers to learning to see from one eye with the strengths of Indigenous ways of knowing and from the other eye with the strengths of Western ways of knowing and to using both of these eyes together"* (Bartlett et al., 2012)

- ◆ **Capacity Building:** Develop local expertise and workforces through training programs, workshops, and collaborative projects.
- ◆ **Policy and Regulatory Support:** Work closely with government bodies to streamline regulatory frameworks and ensure efficient project implementation.
- ◆ **Strategic Partnerships and International Collaboration:** Recognizing the importance of international collaboration, stakeholders emphasized that the CoE should be a tool to establish international partnerships with global entities to access diverse funding, expertise, and market opportunities. This collaborative approach could accelerate learning and development within NS's OSW sector.
- ◆ **Stakeholder Engagement and Alignment:** Stakeholders emphasized identifying OSW champions from government, industry, and academia to align interests and drive the CoE's success. Engaging stakeholders such as DFO, and academic institutions will ensure comprehensive sectoral representation and support.
- ◆ **Regional Considerations and Sustainability:** Understanding regional implications, including environmental impacts and stakeholder interests such as those of First Nations and fishers, should be integral to the CoE's mandate. Stakeholders noted that environmental stewardship and community engagement will guide sustainable OSW development practices.
- ◆ **Funding Model & Financial Independence:** Some stakeholders emphasized that the CoE must be funded by private investments and capable of generating income internally. Relying solely on public funding is deemed unsustainable and insufficient for long-term viability. Developing a funding model early on is vital to the CoE's long-term operations.

Workshops Summary

The workshops revealed key insights that have shaped the recommendations throughout this report. A summary of the key insights are noted below.

- ◆ **Information Integration:** Across all workshops, stakeholders highlighted the CoE's role as a central hub for sharing knowledge and preventing duplication, supporting the need for a research hub to lead collaborative research on technical, logistical, environmental, and economic challenges in NS.
- ◆ **Global Best Practices:** The workshops revealed a significant opportunity to leverage international expertise and best practices to help NS catch up with global OSW leaders. This calls for the CoE to provide a facilitator service to foster partnerships among industry players, government agencies, investors, and community stakeholders, aligning efforts to catalyze OSW development.
- ◆ **Capacity Challenges:** Stakeholders highlighted that the CoE could serve as a neutral intermediary and collective voice to address these challenges by coordinating multi-sector efforts, underscoring the importance of research and innovation services to enhance local capacity and expand OSW market opportunities.
- ◆ **Supply Chain Collaboration:** Establishing a competitive OSW supply chain reinforces the CoE's role in coordinating stakeholders and sharing resources.
- ◆ **Sustainability & Regulatory Alignment:** Ensuring OSW development aligns with environmental stewardship and regional needs, particularly those of Indigenous and fishing communities, was a recurring theme. This finding suggests the need for R&D in addressing environmental and regulatory challenges while fostering community engagement.

C.2 Supplementary Interviews and Workshops

To supplement the stakeholder engagement workshops, AECOM has held additional one-on-one interviews, site visits and supplementary workshops with key stakeholders throughout NS. The intention of this wider stakeholder engagement process was to reach a wider network of stakeholders to incorporate diverse perspectives and ensure that all relevant voices, including those local communities, industry experts and indigenous rightsholders were heard. In addition to this, AECOM sought to disseminate information throughout NS to ensure that as many stakeholders throughout the region were aware that the development of an OSW CoE was being explored.

These efforts have led to several key meetings, including discussions with regional energy stakeholders, offshore regulators, key industry representatives, each contributing valuable input to help shape the development of the CoE and shape the strategic direction of the organization.

Innovation Academia & Research Organizations

Acadia University

AECOM met with Acadia University to better understand how Acadia University could contribute to the CoE. Acadia University has a long history of establishing marine renewable energy research organizations and was a first mover in the tidal energy space with the Bay of Fundy FORCE and the Acadia Tidal Energy Institute. Noting their experience in this sector and playing a key role in helping to initiate and progress FORCE.

The Office of Sustainability at Acadia University has indicated that they are interested in being a member of the research-oriented component of the OSW CoE and have expressed not only their experience in running and managing an organization such as this but the research capabilities that exist within Acadia University that can be leveraged.

Cape Breton University

AECOM has held ongoing engagement with Cape Breton University (CBU) to understand how existing programs and research being conducted within the university could contribute to the OSW CoE.

Cape Breton University is a public post secondary school located in Sydney, NS. It is the only post-secondary institution on Cape Breton Island. AECOM attended meetings at CBU to meet with contacts at the university and to tour the campus. The campus is strategically located, just north of Sydney Nova Scotia, between Sydney and Glace Bay. The campus is directly onshore from the identified Sydney Bight potential OSW development area, providing convenient access to potential future OSW developments in this area.

Discussions with representatives from CBU have indicated their interest in playing a key role in the OSW CoE contributing to both research initiatives as well as physical space for an OSW CoE.

Key research areas include:

- ◆ Opportunity to embed Indigenous ownership and student training throughout CBU's Unama'ki College;
- ◆ Engineering Research: CBU has a group of researchers with experience in offshore petroleum, geology and seabed drilling who are currently exploring the possibilities in predictive modelling for OSW. Several papers have been submitted and are currently under peer review;
- ◆ Engineering Education: Existing program streams including Chemical, Electronics and Controls, Environmental Studies. Manufacturing and Petroleum have shown an interest in OSW career training through the Bachelor of Engineering Technology program. Overlaps with NSCCs offer an opportunity for combined pathways for education between the two organizations.
- ◆ Supply Chain and Sustainable Marine Supply Chain Research: The business school of CBU is the largest school by academic staff and number of students. There is a relatively recent Post-Baccalaureate in Supply Chain Management which has a number of active researchers interested in expanding their areas of focus to include OSW.
- ◆ The Master of Business Administration Community Economic Development differentiates itself by including its community development perspective. The MBA focuses on the interaction of for-profit business, not-for-profit and community organizations, and government policy to explore comparative models of development. Initial discussions have been held as to how the Applied Research Program for students could be targeted towards the OSW industry.

- ◆ The School of Arts and Social Science currently has active research in the economic and social dimensions of post-industrial communities, such as Cape Breton during the energy transition. There has been an expression of interest into expanding this research into the renewable energy transition, including OSW.

Overall, CBU has expressed a strong interest in creating an OSW CoE. University representatives have provided a detailed account of the existing and future research focuses and programs by which CBU would bring value to the CoE. In addition, being the only post-secondary facility within Cape Breton, there is a potential for CBU to offer value at the community and regional level through its local presence and partnerships with NSCC for regional workforce development.

COVE

AECOM met with COVE to discuss the role of an OSW CoE and how COVE may play a role in helping to progress the CoE. COVE is an organization that works with start-ups, small businesses, multinationals and research institutions throughout the marine industry to help develop, test and commercialize marine technology. With a large waterfront facility in Halifax, the organization predominantly works on commercialized research and development to help turn ideas into commercial solutions.

Given its existing network of start-ups and SMEs in the marine sector, as well as its experience in helping to build organizations, COVE has expressed a great deal of interest in the OSW CoE and sees itself playing a role in assisting the organization grow as it is created.

Dalhousie University

AECOM held a number of discussions with Dalhousie University to both understand the contribution that Dalhousie could make to the OSW CoE as well as discuss best practices from Dalhousie's experience in establishing comparable research organizations.

Dalhousie has an extensive history of leading cutting-edge research organizations across various disciplines, most notably through the Ocean Frontier Institute. In addition, there are a large number of researchers working within the various Dalhousie University departments who would be valuable to the future efforts of an OSW CoE.

Departments of interest include the School for Resource and Environmental Studies, the Department of Mechanical Engineering and the Department of Humanities.

Leveraging the existing expertise across multiple disciplines within Dalhousie University is paramount to the success of the OSW CoE, as it is crucial to have one of the largest research institutions in NS with specializations across marine research as a key member of the OSW CoE. In addition, ensuring that the OSW CoE explores the potential opportunity to collaborate with Dalhousie's existing efforts to create an OSW research conglomerate would help to propel this initiative.

Net Zero Atlantic

AECOM visited the NZA offices in Halifax, Nova Scotia to discuss the existing work that is being conducted by NZA in the OSW space, the capacity for an organization such as this to host an OSW CoE and to meet with the founder of the Building to Zero Exchange to discuss how the organization was founded.

NZA has been a leading voice for OSW in NS, championing the transition toward renewable energy by facilitating research, stakeholder engagement and strategic planning throughout the province. By working closely with government agencies, indigenous communities and private industry, NZA has developed initiatives that lay the groundwork for a robust OSW industry in the province. Their work includes leading community information sessions throughout the province and leading a project, Capacity Building for the Sustainable Inclusive Development of Nova Scotia's Offshore Wind Resource, with partners in rural NS and Mi'kmaw communities.

In addition to speaking with NZA representatives, AECOM held discussions with the Building to Zero Exchange, a collaborative initiative bringing together industry, government and others to grow the number of net-zero buildings in NS. The CoE will showcase leadership in the field while promoting collaborative efforts across the industry. The CoE was created under NZA, which acts as the secretariat for the organization with foundational partnerships with the Construction Association of Nova Scotia, Dalhousie University, NSCC, the Province of NS, the Clean Foundation, Efficiency NS and HaliAct. Further discussion with the founder of the Building to Zero Exchange indicated that developing an organization such as this requires strong leadership to gain traction within the industry, and there is merit in working with an existing organization with a strong reputation, such as NZA, which has been beneficial to the formation of this initiative. Not only from a brand name perspective but also from a resource perspective, as NZA has the existing organizational framework established, including office spaces, as well as the required corporate services framework established, including accounting, legal and IT. Partnering with an organization such as this not only offers a strong brand name to partner with in the early stages of the organization but also the resources crucial to helping the organization progress. Representatives from the Building to Zero Exchange identified that securing funding during the early stages of development is a key success factor in creating a CoE.

Nova Scotia Community College

AECOM held three engagement meetings with Nova Scotia Community College (NSCC) to discuss and gain insight into how NSCC would play an active role with the OSW CoE. The first meeting was a site visit of the new Sydney Waterfront Campus in Sydney, NS, the second meeting was held at the Strait Area Campus and the third meeting was held with the Research Department.

AECOM toured the NSCC Strait Area Campus and held meetings with the principal to continue discussions with the organization to identify how NSCC could play a role in the OSW CoE. Building off the findings from the initial site visit, the Strait Area Campus offers specialized training for marine related industries through its Nautical Institute. This institute provides Transport Canada-approved marine training for a range of professions through its unique marine training facilities. This includes a wave pool, lifeboats, simulators and a fire school. Programs offered include:

- ◆ Bridge Watch Rating;
- ◆ Marine Engineering Management Technology;
- ◆ Marine Engineering Technology;
- ◆ Marine Foundations: Marine Emergency Duties;
- ◆ Marine Geomatics;
- ◆ Marine Navigation Technology; and
- ◆ Oceans Technology.

By leveraging the skilled trades training conducted at the NSCC Sydney Campus as well as the Strait Area Campus, NSCC has the opportunity to play a significant role in OSW specific workforce development as the industry progresses. Involvement with the OSW CoE would place NSCC at the forefront of this and would provide the opportunity to work directly with industry partners to plan for the future.

A final meeting was held with NSCC representatives involved in applied research and workforce development identified the progress in which NSCC is making in terms of applied research in the energy and sustainability sectors. NSCC's research community is currently progressing applied research in the energy sector through its applied research on hydrogen as a sustainable fuel for use in sea bearing vessels. In addition to the work currently underway in the green hydrogen fuel space, the NSCC research team are actively engaged in the OSW space for movement in the industry.

The applied research team have pointed to capabilities and experience the applied research space, partnering with industry to explore practical uses with nascent technologies. In addition to the applied research component, NSCC could offer local workforce development through both its Strait Area and Sydney Waterfront Campuses, drawing on close connections with communities throughout Cape Breton to help ensure community benefits are derived locally. Given these traits, NSCC would be an ideal partner for the OSW CoE moving forward.

ORE Catapult

Key Findings from the discussions with ORE Catapult include:

- ◆ Origins of ORE Catapult come from a legacy organization formed in 2003 (NARIC) involved primarily in wave and tidal energy. The knowledge gained within this organization was taken forward and transitioned into the formation of ORE Catapult;
- ◆ Original funding model was established around a 1/3rd model in which 1/3rd of funding came from government grants, 1/3rd from commercial funding and 1/3rd from collaborative R&D;
- ◆ There have been difficulties in achieving this 1/3rd model, and ORE Catapult has been heavily reliant on UK Government funding;
- ◆ The organization focuses on four key pillars: delivering products and services across research, innovation, testing and validation and supply chain growth;
- ◆ Within R&D and given the nature of where the OSW industry is going, it is more advantageous to focus on a niche supply chain component moving forward;
- ◆ ORE Catapult acknowledges Canada's strengths coming out of NS in marine robotics and high-value, exportable components; and
- ◆ ORE has not had a significant contribution to skills development throughout the UK but rather works directly with companies to help them upskill.

Université Sainte-Anne - Campus de Petit-de-Grat

AECOM met with representatives at the Université Sainte-Anne - Campus de Petit-de-Grat campus to tour the facilities and discuss how the organization could contribute to and be involved with the OSW CoE. While the university is one of the smaller ones in NS, its strategic location in Cape Breton makes it a candidate for involvement in the CoE. In addition to their strategic location, there are specialist researchers out of the Université Sainte-Anne focusing on the fields of policy analysis related to the management of natural resources, fisheries and oceans. Ensuring that existing research regarding fisheries management and natural resource management out of Cape Breton would be a welcomed addition to the CoE to help diversify the research capacity and breadth. ‘

Verschuren Centre

AECOM toured the Verschuren Centre, located within Cape Breton University to assess the existing capabilities of the organization. The tour indicated that while the Verschuren Centre is predominantly focused on biotech and materials science, there is a deep knowledge of commercialized research and development within the organization. The Verschuren Centre currently provides external support to small and medium enterprises to develop their technologies without the risk of IP dilution. This framework and existing knowledge of the operational components of commercialized research and development would be useful for the OSW CoE in the future as it progresses into

Academia and Research Organizations Findings

Overall, AECOM has met with a range of innovation, academic and research organizations throughout NS to gain insight into the capabilities and breadth of research that is currently being conducted. Findings indicate that there is an appetite for a research component of an OSW CoE to help advance the industry and contribute to proactive problem-solving as the industry grows. As the OSW CoE is created, it is recommended that all academic and

research organizations throughout NS interested in participating in the OSW CoE are included in the initiative to increase the breadth of research topics and maximize the potential impact of the organization.

Business and Industry Organizations

Atlantica Centre for Energy

AECOM has held meetings with key representatives from the Atlantica Centre for Energy. Discussions were focused on understanding how a comparable organization such as Atlantica Energy have been structured from a governance and funding perspective.

Atlantica Energy is a membership-based non-profit organization representing industry, government and community stakeholders. Funding is mainly sourced from its payment structure, where paying industry members are allocated a seat on the board of directors (BOD) and are the only members who pay for access to the organization. Government and community members, while attaining representation, do not vote on the BOD to avoid perceived conflicts of interest. The BOD oversees the organization, and there is an executive committee that reports monthly to the BOD. Members of the organization are all directly related to energy production, distribution, and consumption, sharing a similar mandate to represent industry stakeholders. Atlantica Energy does not actively solicit for memberships, and rather, when taking on a new member, recommendations must come from an existing member via a recommendation process.

The main values of the organization allow members to have direct access to one another and to learn what is going on across the industry. Bringing industry and government to the table allows industry members to engage directly with the government and vice versa. The organization is relatively lean, with three full-time staff members and a roster of project staff members who assist with projects as needed.

Kwilmu'kw Mae-Klusuaqn

AECOM has held meetings with key representatives from Kwilmu'kw Maw-Klusuaqn to discuss the OSW industry and how an OSW CoE could benefit the region. The overall consensus from the discussions identified that there is a need for a CoE that can bring all stakeholders together to collaboratively work towards growing the sector in an equitable manner.

Key notes from the discussion include:

- ◆ Fisheries are a key stakeholder that should be included in the organization moving forward. This is a ground that will be impacted by future OSW infrastructure and should have a voice in the growth of the industry;
- ◆ A labour force component would be a useful output of the CoE. Ensuring that best practice is drawn from comparable industries to ensure the smooth transition of workers into the net-zero energy sector;
- ◆ To align with KMK's long-term community goals and vision, ensuring that local communities are involved with the growth of the industry; and
- ◆ The Mi'kmaq in NS should play a role in the CoE moving forward with potential avenues established through KMK's Energy Department.

Marine Renewables Canada (MRC)

The discussion with MRC was focused on the business model of research organizations within NS, to identify best practices in the establishment of comparable organizations such as MRC. MRC noted that establishing a dedicated organization to lead OSW development is warranted within NS and Atlantic Canada. Regardless of the multitude of existing organizations, an organization that has a dedicated mandate to progress OSW development and the

industry is lacking. As such, a research organization focused on progressing the OSW industry would be well received in the province.

A focus on generating private funding paired with accessing public funding opportunities is paramount to the success of an organization such as this. There are multiple options to attain private funding, such as membership fees, advocacy and industry engagement with groups such as fisheries.

Nova Scotia Fisheries Alliance for Energy Engagement

The Project Team held two in-person workshops with the Nova Scotia Fisheries Alliance for Energy Engagement (NSFAEE). The organization was represented by key stakeholders throughout the fisheries industry. The NSFAEE is a membership-based group representing a collective voice across the fisheries supply chain. The organization's mandate is to promote the responsible development of offshore energy resources that can coexist with a sustainable and prosperous fishing industry. The NSFAEE is seen as a crucial partner in ensuring equitable growth of the OSW industry and a partner in ensuring the growth of the industry. Key findings from the workshops include:

- ◆ One organization to represent key stakeholders and promote the equitable growth of OSW is paramount to the organization's success;
- ◆ Key themes including cohesiveness and alliance with balanced representation across all stakeholders to ensure strategy co-existence. There is an interest for all stakeholders to work together and coexist in the future;
- ◆ There is a rhetoric that public influence on organizations can result in certain agendas being pushed forward without a balance of voices;
- ◆ The use of a sub-board strictly for funding can maximize efficiency within an organization and help to ensure funding is attained;
- ◆ The selection process of the board of directors should be equal, and the fisheries community is open to starting a new organization such as the OSW CoE;
- ◆ Social license is a key component of moving the industry forward, ensuring that trust is gained across all interested stakeholders. In building this industry, there is an opportunity to provide unbiased research that helps to progress the industry and forms coexistence across all those impacted by the introduction of OSW; and
- ◆ There is a concern over the potential residual effects of OSW on adjacent industries such as fisheries; more research should be undertaken to better understand the impact that OSW will have on the wider economy.

Nova Scotia Power

AECOM met with Nova Scotia Power (NS Power) to discuss the OSW sector and to identify how NS Power plans to integrate OSW into the energy supply in the future. Key findings from the discussion include:

- ◆ The timing of net-zero ambitions within Atlantic Canada and, more specifically, NS, has made planning for OSW difficult at present, and there are no identified plans to integrate this into the grid moving forward;
- ◆ Grid integration questions remain unsolved; and
- ◆ There are potential other paths to market including Power-to-X and energy export.

Wind Energy Institute of Canada (WEICan)

AECOM engaged with the Wind Energy Institute of Canada (WEICan) to discuss how the organization was formed and is managed today to gain insight into the creation of the OSW CoE.

WEICan is a not-for-profit centre of excellence in wind energy research, development and education located in Prince Edward Island (PEI). Created in 1981, the organization was originally formed as a partnership with the University of PEI, conducting research into island energy economics focusing on PEI and Atlantic Canada through the Atlantic Wind Test Site located in the North Cape of PEI as an experimental wind turbine test site. Throughout

the 1980s and 1990s WEICan led Canada's research activities in wind energy. Over time, the organization moved more into wind energy research as the island sought to capitalize on its strong wind resources, contributing to the economic success of the island. As such, WEICan moved into wind energy, operating a test site in the northern cape of PEI. WEICan was a crown corporation with a board of directors with wind energy backgrounds focusing on the engineering aspects of wind energy. Funding was provided annually from the federal government to support the research in wind energy.

In 2006, the organization underwent a rebrand, and a new non-profit was created with a volunteer board of directors. Funding was sourced from research and development and federal funding, but the organization has noted the difficulties in attaining consistent funding over time. As core funding has declined for the organization, WEICan now sells approximately \$3,000,000 in energy per annum to support its operations.

An important note from the discussions identified the difficulties with running a wind energy test site, as economic fluctuations in energy prices and the associated costs to operate a test site of this size are quite difficult to make the economics work. Given the inherent size of test sites, there are difficulties in achieving economies of scale which drive prices for labour and parts up. With fluctuating energy prices, an organization such as this is entirely reliant on the economics of a site of this size.

Relevant Industry Organizations Findings

Overall, AECOM has met with various relevant industry organizations throughout NS to gain insight into how these organizations are structured and the considerations that should be taken forward. Key findings include:

- ◆ Given the difficulties facing OSW development on NS, there are several ways forward that are being explored as to how to make OSW a viable industry. These include grid integration, energy demand and Power-to-X opportunities. These should be researched further to support OSW development;
- ◆ The OSW CoE should have a wide-spanning membership base, with equal representation shared across key stakeholder groups. Both fisheries and Indigenous communities should be included within the organization to ensure a broad spectrum of voices are heard and the promotion of a coexistence framework moving forward; and
- ◆ There are comparable models within NS, including Atlantica Centre for Energy as well as the Building to Net-Zero Exchange, which offer valuable insight into the governance and funding structure. Ensuring funding is secured in the early stages of development is a key success factor.

Industry Representative Meetings

Atlantic Towing

AECOM has held discussions with Atlantic Towing to understand how a Testing and Validation Site could benefit their organization and to understand the level of demand from their sector. Findings indicate that there are a number of technical questions that still require testing, including how the equipment is to be maneuvered around the port and towed out to OSW sites as well as the boats that are used to haul the floating chains. Given the weight of these chains there are very few boats that can handle this in the world. Atlantic Towing has contributed to OSW projects in the past and is interested in building this aspect of their business and a testing and validation site could benefit their operations.

Bear Head Energy

AECOM held discussions with Bear Head Energy, out of Point Tupper in Port Hawkesbury to discuss the operating model of Bear Head Energy and the future of OSW. Key Findings from the discussions with Bear Head Energy include:

- ◆ Bear Head Energy has created a business plan that includes energy generated from OSW in the future, so it is reliant on the future growth of the OSW industry;
- ◆ Potential growth in the opportunities to connect with the northeastern United States for future energy transmission; and
- ◆ Major concerns include the threat of future local employment because the Hydrogen and OSW industries are filled from outside of NS.

Simply Blue

AECOM met with Simply Blue at its Halifax office to discuss the OSW industry and how Simply Blue plans to progress within NS. In addition, the discussion was focused on how an OSW CoE could benefit Simply Blue in progressing its development efforts to identify areas of focus from an industry perspective.

The discussion highlighted the difficulties from an economic perspective of developing OSW in NS. Key notes surrounding energy demand and pricing, alternative offtake solutions and how the industry will move forward surrounding the uncertain regulatory framework.

Simply Blue noted that while many individuals currently working in the OSW industry within NS come from a background in the offshore petroleum industry and are familiar with the regulatory framework which exists in that industry, there would be a role for integrating research into how the industry can navigate the unforeseen regulatory framework and how communities can be involved throughout the planning and development process of OSW to ensure that a broad spectrum of voices is heard.

Reventus Power

AECOM held discussions with Reventus Power to understand the demand for Testing and Validation Sites in Nova Scotia waters. The discussion focused on the potential development of a 15MW turbine in Nova Scotia waters to understand from the perspective of Reventus Power if this would be of interest their organization. Findings from the assessment underscored having a clear path to understanding what it is you are trying to test and validate prior to developing the infrastructure. Noting that a number of turbines have been developed in waters directly south of Nova Scotia in the northeastern United States, in relatively similar conditions. In addition to this, Reventus Power noted the economics of these sites are generally quite difficult to achieve feasibility.

C.3 In-Person Steering Committee Workshop

AECOM held an in-person workshop on July 25th, 2024, at the Ocean Innovation Centre in Port Hawkesbury with members of the project steering committee. The workshop's objective was to work through, in a group setting, a vision statement for the OSW CoE, potential areas of focus and governance structures for the organization.

The workshop was structured around creating an open environment where the steering committee and the Project Team could discuss and brainstorm ideas as a group, with AECOM recording notes as the workshop progressed. The workshop began with a discussion surrounding the vision statement for the organization with the goal of identifying a mandate for the CoE and workshop a robust value proposition for the OSW CoE. Key aspects from the discussion include:

- ◆ It is difficult for a CoE just to be focused on research, being flexible has value but can also add to confusion. It is crucial to establish what the CoE is and what it isn't;
- ◆ Self-sustainability is an important factor, and generating income for future sustainability is an important factor;
- ◆ As the sector grows, developers will require resources, and there is an opportunity for the CoE to act as an innovation catalyst for the community;

- ◆ Community development is a key component of building community awareness and understanding through unbiased research; and
- ◆ The OSW CoE should be mission-based and hold a pro-OSW stance, providing robust research with a high level of integrity.

Following the vision statement discussion, three areas of focus were introduced. These were Co-Existence, Delivery and Innovation. These broad themes are meant to encapsulate various topics and allow for flexibility with the mandate for the CoE. In turn, this allows for the CoE to grow with the industry.

- ◆ The workshop included breakout tables to discuss the potential areas of focus, key discussion topics included:
- ◆ The CoE could play a role as a connector between industry, government, and academia/research to help progress the industry and contribute to contextualized innovation;
- ◆ The CoE could play a role in proactively identifying areas for innovation and research in Atlantic Canada;
- ◆ The CoE could hold an agnostic perception of the politics of OSW but always act in favour of progressing the industry forward and delivering OSW infrastructure;
- ◆ Involvement across key stakeholders is crucial;
- ◆ The CoE could play a role in assisting the industry in navigating regulations; and
- ◆ The CoE could play a role in connecting industry and educational facilities throughout Atlantic Canada to help prepare the next generation of the OSW labour force.

Appendix D. Operational Model Assessment

A summary of the metrics used to conduct the operational model assessment are as follows.

Financial Sustainability: Each operational model has been evaluated against the ability to secure funding from government, industry, and research grants. A successful OSW CoE must ensure long-term financial stability beyond the initial seed funding phase.

- ◆ High Scoring (9-10): Diverse funding sources are secured with strong industry and/or government commitments.
- ◆ Medium Scoring (6-8): Reliant on a limited or single source of funding.
- ◆ Low score (1-5): Uncertain funding sources with a high risk of financial instability.

Industry Engagement and Partnerships: Each operational model has been evaluated against the ability to actively collaborate with industry, wider supply chain, academia, government community, Indigenous and fisheries stakeholders.

- ◆ High Scoring (9-10): Strong formalized partnerships with key industry players and direct involvement in industry initiatives.
- ◆ Medium Scoring (6-8): Moderate engagement with key stakeholders, but partnerships are not well-defined. Would be limited in its ability to expand and grow partnerships.
- ◆ Low score (1-5): Has limited ability to conduct industry engagement, reducing its long-term influence and effectiveness.

Research and Innovation Capacity: The OSW CoE should support applied research, technology innovation and knowledge transfer to advance the development of the OSW sector in Atlantic Canada. This includes an assessment of experience in managing research initiatives and ability to drive technological advancements.

- ◆ High Scoring (9-10): Has direct access to world-class research facilities, industry driven R&D programs and strong academic ties.
- ◆ Medium Scoring (6-8): Has some research initiatives in place but these are limited with infrastructure or confined to certain sectors.
- ◆ Low score (1-5): Has no dedicated research facilities or programs.

Policy and Regulatory Influence: The OSW CoE should have the ability to inform, shape and align government support with industry needs.

- ◆ High Scoring (9-10): Recognized as a key advisory body with strong government relationships.
- ◆ Medium Scoring (6-8): Some influence over policy but lacks formal integration with regulatory bodies.
- ◆ Low score (1-5): Minimal engagement in policy discussions, limiting its ability to drive change for the OSW sector.

Workforce Development and Training: The OSW CoE should play a key role in training the future workforce for OSW, collaborating with educational institutions and industry partners to align training programs with the needs of the future.

- ◆ High Scoring (9-10): Established training programs, partnerships with universities and workforce planning initiatives.
- ◆ Medium Scoring (6-8): Some workforce development activities but lacks a structured training approach.
- ◆ Low score (1-5): Minimal workforce engagement, limiting its ability to address future industry labour needs.

Operational Efficiency and Governance: The OSW CoE should have a clear direction and governance structure to ensure decision making is streamlined and adaptable to industry needs as the sector grows and matures in Atlantic Canada.

- ◆ High Scoring (9-10): Clear governance structure, efficient decision-making with strong leadership.
- ◆ Medium Scoring (6-8): Some governance mechanisms are in place but with potential inefficiencies.
- ◆ Low score (1-5): Lack of clarity in governance, leading to decision-making delays and operational challenges.

Decision-Making and Governance Flexibility: The OSW CoE should have the ability to set the strategic direction, make independent decisions and adapt governance structures as needed to best fit the growth of the CoE.

- ◆ High Scoring (9-10): Clear governance structure, efficient decision-making with strong leadership.
- ◆ Medium Scoring (6-8): Some governance mechanisms are in place but with potential inefficiencies.
- ◆ Low score (1-5): Lack of clarity in governance, leading to decision-making delays and operational challenges

Appendix E. Detailed Financial Forecasts

The following cash flow analysis outlines the estimates for the model including the testing and validation site and the associated revenues.

Item	Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Research Services	Revenue	\$ 61,800	\$ 127,300	\$ 131,100	\$ 135,100	\$ 139,100	\$ 214,900	\$ 221,400	\$ 228,000	\$ 234,900	\$ 241,900	\$ 498,300	\$ 513,300	\$ 528,700	\$ 544,500	\$ 560,900
Data Subscription Revenue	Revenue						\$ 41,800	\$ 86,100	\$ 133,000	\$ 182,700	\$ 235,200	\$ 242,200	\$ 299,400	\$ 359,800	\$ 370,600	\$ 436,200
Seabed Sub-lease	Revenue						\$ 127,100	\$ 130,900	\$ 134,900	\$ 138,900	\$ 143,100	\$ 294,700	\$ 303,600	\$ 312,700	\$ 322,100	\$ 331,700
Workforce Training	Revenue											\$ 276,800	\$ 285,200	\$ 293,700	\$ 302,500	\$ 311,600
Total Revenue		\$ 61,800	\$ 127,300	\$ 131,100	\$ 135,100	\$ 139,100	\$ 383,800	\$ 438,400	\$ 495,900	\$ 556,500	\$ 620,200	\$ 1,312,000	\$ 1,401,500	\$ 1,494,900	\$ 1,539,700	\$ 1,640,400
Executive Director	Salary	\$ 163,900	\$ 168,800	\$ 173,900	\$ 179,100	\$ 184,500	\$ 190,000	\$ 195,700	\$ 201,600	\$ 207,600	\$ 213,900	\$ 220,300	\$ 226,900	\$ 233,700	\$ 240,700	\$ 247,900
Innovation Lead	Salary	\$ 98,000	\$ 101,000	\$ 104,000	\$ 107,100	\$ 110,300	\$ 113,600	\$ 117,000	\$ 120,500	\$ 124,200	\$ 127,900	\$ 131,700	\$ 135,700	\$ 139,700	\$ 143,900	\$ 148,300
Research Lead	Salary	\$ 98,000	\$ 101,000	\$ 104,000	\$ 107,100	\$ 110,300	\$ 113,600	\$ 117,000	\$ 120,500	\$ 124,200	\$ 127,900	\$ 131,700	\$ 135,700	\$ 139,700	\$ 143,900	\$ 148,300
Project Coordinator	Salary						\$ 75,700	\$ 78,000	\$ 80,400	\$ 82,800	\$ 85,300	\$ 87,800	\$ 90,400	\$ 93,200	\$ 96,000	\$ 98,800
OSW Testing/Validation Lead	Salary						\$ 148,900	\$ 153,300	\$ 157,900	\$ 162,700	\$ 167,600	\$ 172,600	\$ 177,800	\$ 183,100	\$ 188,600	\$ 194,200
Finance Officer	Salary											\$ 112,700	\$ 116,100	\$ 119,600	\$ 123,200	\$ 126,900
OSW Testing/Validation Emplo	Salary											\$ 152,600	\$ 157,200	\$ 161,900	\$ 166,800	\$ 171,800
Manager of Operations	Salary											\$ 206,900	\$ 213,100	\$ 219,500	\$ 226,100	\$ 232,800
Employee Benefits	Benefits	\$ 26,800	\$ 27,400	\$ 28,000	\$ 28,600	\$ 29,200	\$ 49,500	\$ 50,700	\$ 52,000	\$ 53,200	\$ 54,400	\$ 89,000	\$ 91,100	\$ 93,200	\$ 95,400	\$ 97,600
Technology Costs	Company Costs	\$ 6,200	\$ 6,400	\$ 6,600	\$ 6,800	\$ 7,000	\$ 11,900	\$ 12,300	\$ 12,700	\$ 13,000	\$ 13,400	\$ 22,100	\$ 22,800	\$ 23,500	\$ 24,200	\$ 24,900
General Overhead	Overhead	\$ 36,000	\$ 37,100	\$ 38,200	\$ 39,300	\$ 40,500	\$ 64,200	\$ 66,100	\$ 68,100	\$ 70,200	\$ 72,300	\$ 121,600	\$ 125,300	\$ 129,000	\$ 132,900	\$ 136,900
Insurance	Legal	\$ 3,100	\$ 3,200	\$ 3,300	\$ 3,400	\$ 3,500	\$ 3,600	\$ 3,700	\$ 3,800	\$ 3,900	\$ 4,000	\$ 4,100	\$ 4,200	\$ 4,300	\$ 4,400	\$ 4,500
Incorporation	Legal											\$ 7,000				
Total Costs		\$ 432,000	\$ 444,900	\$ 458,000	\$ 471,400	\$ 485,300	\$ 771,000	\$ 793,800	\$ 817,500	\$ 841,800	\$ 866,700	\$ 1,460,100	\$ 1,496,300	\$ 1,540,400	\$ 1,586,100	\$ 1,632,900
Total P&L Pre-funding		\$ (370,200)	\$ (317,600)	\$ (326,900)	\$ (336,300)	\$ (346,200)	\$ (387,200)	\$ (355,400)	\$ (321,600)	\$ (285,300)	\$ (246,500)	\$ (148,100)	\$ (94,800)	\$ (45,500)	\$ (46,400)	\$ 7,500

Notes: Numbers have been rounded to the nearest hundred.

Source: AECOM based on research concerning cost and revenue forecasts

The Municipality of the County of Richmond and the Town of Port Hawkesbury
Business Case and Options Appraisal for Offshore Wind Centre of Excellence

The following cash flow analysis outlines the estimates for the model excluding the testing and validation site.

Item	Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Research Services	Revenue	\$ 61,800	\$ 127,300	\$ 131,100	\$ 135,100	\$ 139,100	\$ 214,900	\$ 221,400	\$ 228,000	\$ 234,900	\$ 241,900	\$ 498,300	\$ 513,300	\$ 528,700	\$ 544,500	\$ 560,900
Total Revenue		\$ 61,800	\$ 127,300	\$ 131,100	\$ 135,100	\$ 139,100	\$ 214,900	\$ 221,400	\$ 228,000	\$ 234,900	\$ 241,900	\$ 498,300	\$ 513,300	\$ 528,700	\$ 544,500	\$ 560,900
Executive Director	Salary	\$ 163,900	\$ 168,800	\$ 173,900	\$ 179,100	\$ 184,500	\$ 190,000	\$ 195,700	\$ 201,600	\$ 207,600	\$ 213,900	\$ 220,300	\$ 226,900	\$ 233,700	\$ 240,700	\$ 247,900
Innovation Lead	Salary	\$ 98,000	\$ 101,000	\$ 104,000	\$ 107,100	\$ 110,300	\$ 113,600	\$ 117,000	\$ 120,500	\$ 124,200	\$ 127,900	\$ 131,700	\$ 135,700	\$ 139,700	\$ 143,900	\$ 148,300
Research Lead	Salary	\$ 98,000	\$ 101,000	\$ 104,000	\$ 107,100	\$ 110,300	\$ 113,600	\$ 117,000	\$ 120,500	\$ 124,200	\$ 127,900	\$ 131,700	\$ 135,700	\$ 139,700	\$ 143,900	\$ 148,300
Project Coordinator	Salary						\$ 75,700	\$ 78,000	\$ 80,400	\$ 82,800	\$ 85,300	\$ 87,800	\$ 90,400	\$ 93,200	\$ 96,000	\$ 98,800
Employee Benefits	Benefits	\$ 26,800	\$ 27,400	\$ 28,000	\$ 28,600	\$ 29,200	\$ 39,600	\$ 40,500	\$ 41,600	\$ 42,500	\$ 43,500	\$ 44,500	\$ 45,500	\$ 46,600	\$ 47,700	\$ 48,800
Technology Costs	Company Costs	\$ 6,200	\$ 6,400	\$ 6,600	\$ 6,800	\$ 7,000	\$ 9,600	\$ 9,800	\$ 10,100	\$ 10,400	\$ 10,800	\$ 11,100	\$ 11,400	\$ 11,700	\$ 12,100	\$ 12,500
General Overhead	Overhead	\$ 36,000	\$ 37,100	\$ 38,200	\$ 39,300	\$ 40,500	\$ 49,300	\$ 50,800	\$ 52,300	\$ 53,900	\$ 55,500	\$ 57,200	\$ 58,900	\$ 60,600	\$ 62,500	\$ 64,300
Insurance	Legal	\$ 3,100	\$ 3,200	\$ 3,300	\$ 3,400	\$ 3,500	\$ 3,600	\$ 3,700	\$ 3,800	\$ 3,900	\$ 4,000	\$ 4,100	\$ 4,200	\$ 4,300	\$ 4,400	\$ 4,500
Incorporation	Legal											\$ 6,900				
Total Costs		\$ 432,000	\$ 444,900	\$ 458,000	\$ 471,400	\$ 485,300	\$ 595,000	\$ 612,500	\$ 630,800	\$ 649,500	\$ 668,800	\$ 695,300	\$ 708,700	\$ 729,500	\$ 751,200	\$ 773,400
Total P&L Pre-funding		\$ (370,200)	\$ (317,600)	\$ (326,900)	\$ (336,300)	\$ (346,200)	\$ (380,100)	\$ (391,100)	\$ (402,800)	\$ (414,600)	\$ (426,900)	\$ (197,000)	\$ (195,400)	\$ (200,800)	\$ (206,700)	\$ (212,500)

Notes: Numbers have been rounded to the nearest hundred.

Source: AECOM based on research concerning cost and revenue forecasts

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