



marine  
renewables  
canada

# 2021 ANNUAL REPORT

## WHO WE ARE

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Marine Renewable Canada is the national association for tidal, offshore wind, wave, and river current energy, representing technology and project developers, utilities, researchers, communities, and suppliers. Since 2004, the association has worked to build the industry by advocating for supportive policies, identifying domestic and international business development opportunities, facilitating collaboration amongst its membership and broader ecosystem, and providing education and outreach. As part of its focus on developing the sector, Marine Renewables Canada is active in catalyzing opportunities for how marine renewable energy can contribute to achieving emission reductions through production of green fuels such as hydrogen, as well as displacement of diesel in remote communities and other marine industries.



## OUR TEAM

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### BOARD OF DIRECTORS

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Elisa Obermann Executive Director

Amanda White Operations Director



# LEADERSHIP MESSAGE

As we conclude another year, we've been reflecting on how much has been accomplished in the midst of a global pandemic and how much opportunity there is on the horizon. Marine Renewables Canada has approached another difficult year with optimism and flexibility and focused on how to continue supporting its membership and build this promising sector. Throughout the year, we held a mix of virtual and in-person activities, capped off by our annual conference in Halifax that shed light on just how much opportunity there is for marine renewable energy to help achieve net-zero goals.

We're living during a very critical time as the world grapples with climate change and works to develop and implement solutions. In August, the Intergovernmental Panel on Climate Change (IPCC), issued an eye-opening report about the current and future impacts of human induced climate change, declaring a 'code red' for humanity. It noted that many of the changes we will see are unprecedented, and some are already irreversible.

But, experts involved in the report also noted that there is still time to limit climate change. Strong and sustained reductions in emissions could quickly make air quality better and help stabilize global temperatures.

We know that as countries and industries work towards reducing emissions and meeting net zero targets, renewable energy will play a critical role. In Canada, for example, we will require 3+ times more clean energy than we already have to meet targets for net-zero by 2050.

Canada will need to consider all of its clean energy resources to meet this goal. This is our time to make a difference. Clean energy from our tides, waves, offshore wind, and rivers has been untapped. Harnessing these resources to produce clean energy can provide solutions to meeting net-zero. Our members with decades of experience in offshore and marine industries can help grow this industry here and also support marine renewable energy projects all over the world.



The potential for marine renewable energy to provide clean electricity, assist with decarbonization of other ocean industries and produce clean fuels like green hydrogen has always been there and has always been part of what Marine Renewables Canada is working towards, since 2004 in fact. We've advocated for supportive policies, assisted members in engaging in early domestic and international projects, and built a network of strategic alliances across Canada and internationally. If there was ever a time for our industry to grow and make an impact, it's now. While there have been challenges and setbacks in advancing the sector, there has also been progress and success.

We are entering an exciting time with six tidal energy projects under development in the Bay of Fundy,

community projects being pursued across the country, and a growing interest to make offshore wind a reality here in Canada. We are seeing members lend their expertise to international marine renewable energy projects. Our federal and provincial governments are increasingly supporting and investing in clean technologies – and industry and investors are making decisions based on decarbonizing operations and greening their portfolios.

Marine Renewables Canada has been determined to make this industry a reality for Canada because it holds such potential to contribute to a sustainable future. We truly believe that these coming years are the time we will see this sector grow and we look forward to working with our membership, partners, and collaborators to make that happen.



**The Honourable Michel P. Samson**  
Chair



**Elisa Obermann**  
Executive Director

# SECTOR HIGHLIGHTS

## Project and Technology Development

Marine renewable energy projects and R&D are progressing in Canada, with several tidal energy developers approaching deployments as a next step in 2022, new partnerships to accelerate integration in remote communities, and a growing focus on how to support offshore wind development.

### Tidal Energy

#### Big Moon Power (Nova Scotia)

Big Moon Power announced that it had begun assembly of its first device – one of its eighteen devices planned to be deployed at FORCE. Each will generate roughly 500 kW of electricity.

#### DP Energy (Uisce Tapa Project) (Nova Scotia)

DP Energy developed an environmental monitoring platform as a part of the Offshore Energy Research Association's (OERA) Pathway Program. The platform was designed and underwent harbour testing during 2020. It was further tested and deployed at the FORCE site in 2021. Sensor characterization work continues and will carry into early 2022.

In August 2021, DP Energy signed a Joint Development Agreement with Chubu and K-Line to bring Phase 1 of the 9 MW Uisce Tapa project through the final stages of initial planning. The project has completed final site characterization and final engineering activities are expected to complete in the first half of 2022. Permitting activities are ongoing. The project plans turbine installation in the fall of 2023.

#### Jupiter Hydro (Nova Scotia)

Jupiter Hydro has continued planning for the development of its project in the Bay of Fundy which is in two phases: the testing of a non-grid connected 1 MW prototype and the other for 2MW demonstration.



### NewEast Energy (Nova Scotia)

NewEast Energy has been working towards the deployment of its 800 kW project in the Bay of Fundy's Minas Passage. Four of New Energy's EnviroGen™ Power generators will be installed as part of a floating grid connected array.

### Nova Innovation (Nova Scotia)

Nova Innovation continued the development of its 1.5 MW tidal energy project in Petit Passage, Nova Scotia. The "Nova Tidal Array" will be developed in three separate 500 kW phases, allowing any environmental effects to be carefully monitored and managed. Nova received authorization from the Department of Fisheries and Oceans Canada (DFO) for Phase 1 of the project which will see five 100 kW in-stream tidal turbines installed, beginning with a single turbine. In early 2022, Nova plans to install a Remote Observation Platform (ROP) and instruments for monitoring in advance of first turbine deployment.



*Nova Innovation turbine under construction in Nova Scotia for phase 1 of its Petit Passage project (image credit: Nova Innovation)*

### ORPC Canada (Quebec)

ORPC Canada has been working with the Canadian Hydrokinetic Turbine Test Centre (CHTTC) to plan the deployment of an ORPC RivGen® power system. In September 2021, ORPC Canada and Canadian engineering firm CIMA+ were honored with the Association of Consulting Engineers Quebec International Project Award for their collaborative work with the Indigenous community of Igiugig, Alaska, on a marine energy project which features ORPC's RivGen power system, the longest operating marine energy device in all of the Americas. In August 2021, ORPC Canada conducted field work including site resource assessments in Nunavut.

### Sustainable Marine (Nova Scotia)

As part of its project at FORCE, Sustainable Marine launched its second generation platform, the PLAT-I 6.43, in Grand Passage, Nova Scotia. The platform features a 50% increase in power output over the first generation prototype. Construction of a substation for Sustainable Marine's Grand Passage site was completed and its Supervisory Control & Data Acquisition System was also installed. This will enable all aspects of the system (both onshore and offshore) to be tested prior to deployment at the FORCE site.

Sustainable Marine continues to work towards development of its 9MW Pempa'q project at FORCE. As part of this project, construction of the first PLAT-I 6.43 platform was completed and launched in Grand Passage for testing and conditioning before it is deployed at FORCE. Sustainable Marine has also been developing an advanced environmental monitoring system, completed the manufacture of the first rock anchors that will be used to secure the PLAT-I 6.43 at the FORCE site, and commissioned the construction of the Tidal Pioneer, an advanced inshore construction vessel that will perform complex tasks safely in the high-flow project site.



*Sustainable Marine's PLAT-I 6.43 in Grand Passage (image credit: Sustainable Marine)*

### Yourbrook Tidal Energy (British Columbia)

Yourbrook Energy Systems, a British Columbia based tidal energy technology developer, continues to work on its 500 kW Kamdis Tidal Power Demonstration Project in Masset Inlet, Haida Gwaii. Yourbrook gathered data at the site over the course of four months and worked towards refining technical aspects of the project including modelling of dynamic blades and platform design for testing and third party validation.





## Wave Energy

### Yuquot Wave Energy Project (British Columbia)

Mowachaht Muchalaht First Nations (MMFN) in partnership with Pacific Institute of Marine Energy Discovery (PRIMED), is exploring the potential for wave energy to help power its community. The project is viewed as having the potential to assist with cultural resurgence and self sufficiency within the MMFN's traditional home village which is also a Canadian National Historic site being the place of first contact between Indigenous Peoples and colonial explorers in western Canada.

As a first step, PRIMED is assisting with a FEED study to examine the feasibility of a 50-200 kW wave energy device. Other partners include Barkley Project Group, Environmental Dynamics Inc., and INGINE.



*Aerial photo of Yuquot*

## Offshore Wind Energy

### Brezo Energy (Nova Scotia)

Brezo Energy, Inc. is a Canadian Engineering & Marine Contractor with a mission is to build floaters for utility-scale offshore wind developers. Its proposed Sea-Breeze Tech demonstration project entails the establishment of a supply chain in Canada that is aimed at providing the fastest manufacturing rate, while maximizing local content. Brezo's platforms contain a built-in green ammonia production system.

### Northland Power (British Columbia)

In 2021 the province of BC granted Northland Power an Investigative Use Licence to undertake studies related to a prospective offshore wind project area in the Hecate Strait northeast of Haida Gwaii.



## Clean Marine (cleantech in marine and offshore industries)

With many synergies between decarbonization of ocean industries and marine renewable energy, Marine Renewables Canada has been supporting activities in the broader “clean marine” ecosystem. Additionally, the association has several members that are engaged in developing and catalyzing clean marine technologies.

### Glas Ocean Electric (Nova Scotia)

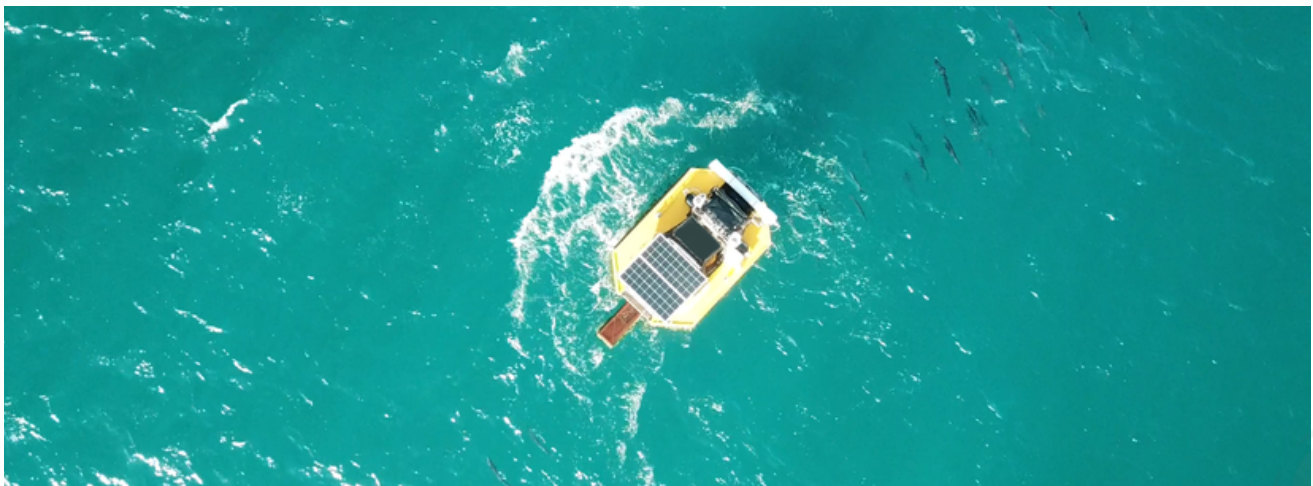
Glas Ocean Electric (GOE) is committed to improving marine intelligence and ecosystem health. It offers electric boat propulsion kits that use boat batteries as dynamic energy storage for power grids and its data collection integrated with in-house artificial intelligence, is used to properly manage and inform fleets of sea states and energy usage. GOE has completed multiple battery electric parallel hybrid vessels in Canada and its marine intelligence and conversion work is being supported by community, industry and military entities in Canada and the USA. GOE is building 10-boat projects with partners in the power delivery industry and is currently building projects in Canada, the USA and the Caribbean.

### Oneka Technologies (Quebec)

Oneka has been focused on producing and commercializing autonomous desalination units providing drinking water from the ocean using only waves as an energy source. The Oneka team has had some great success over the past year, being named a finalist in the United States’ Waves-to-Water Prize competition and a Semi-Finalist for the Ocean Innovation Prize from the Blue Climate Initiative.

Oneka’s P-class unit that was tested in Nova Scotia last year had extensive testing in Florida in 2021. With positive results from the trial, the technology is being prepared for use in Chile in 2022 where it will provide water delivery near Chile’s coast.

Oneka has also been developing an Iceberg class unit and has plans to deploy the technology in Florida in early 2022.



*Oneka Technologies' P-class unit at sea (image credit: Oneka Technologies)*



# Research, Innovation, and Demonstration

## Canadian Hydrokinetic Turbine Test Centre (CHTTC) (Manitoba)

CHTTC has been working on several initiatives to help support the progression of community-scale marine renewable energy projects in Canada. R&D activities led by CHTTC have included:

- Deployment of five Waterotor turbines and assisted with the design, manufacture, and installation of a Waterotor micro-grid system to power an electric boat for the Canadian Navy.
- Assistance with the design and build of a 5-kW BMT microgrid system that integrates the BMT machine interface unit, a repurposed Nissan-battery pack, gasoline generator, 5-kW New Energy turbine, and solar PV panels. Testing of the BMT controller was performed at the CHTTC.
- Assistance with the design and build of a 500-kW BMT microgrid system to be installed in Grand Passage, Nova Scotia that integrates the BMT machine interface unit, a three-phase battery, diesel, Sustainable Marine PLAT-I platform, and solar PV panels. Testing of the BMT controller was performed at the CHTTC.
- Installation of a SmartHydro turbine in Sagkeeng First Nation.
- Conducting of flow measurement on Cochrane River, Manitoba, Garden Hills First Nation, and Baffin Islands.
- Supply of data to NRCan to validate a novel satellite method to identify open areas in rivers that do not freeze in winter.

## Fundy Ocean Research Centre for Energy (FORCE) (Nova Scotia)

FORCE is Canada's primary centre for the demonstration of in-stream tidal energy technologies and continues to lead various research and initiatives to gather knowledge about tidal energy and support technology and project demonstration.

In 2021, FORCE, Mi'kmaw Conservation Group, and the Ocean Tracking Network began building the largest fish data set ever collected in the Bay of Fundy, as part of a research program to reduce uncertainty around potential marine life impacts. FORCE also worked with the Fishermen & Scientists Research Society and a local fisher to complete a baseline lobster study to assess catchability in Minas Passage.

Tidal energy projects led by Sustainable Marine, BigMoon Power, and DP Energy also continued to advance, achieving key project development milestones.



### **National Research Council (NRC) (Ontario/National)**

The National Research Council Canada (NRC) has developed a Marine Energy Resources Atlas Canada (MERACAN) application to map, retrieve and view marine renewable energy resource data stored online. The graphical interface of the application makes for an easy, efficient way for researchers, students, and stakeholders, as well as developers of marine energy projects, to access or analyze marine resource data, which is both temporally and spatially resolved - this avoids specialized tools that would otherwise be needed to query and visualize. NRC is planning to incorporate new datasets and tool functionalities to the Atlas app and will continue to collaborate with University of Victoria, University of Ottawa, University of Dalhousie, University of Laval, Polar Knowledge Canada, and Natural Resources Canada.

### **Natural Resources Canada (NRCan) - CanmetENERGY (Ontario/National)**

NRCan/CanmetENERGY-Ottawa continued collaborative research projects in advancing river current energy with NRC, academia, industry and CHTTC. A pre-feasibility level study of a potential river current energy project in a community in the Northwest Territories (NWT) was carried out to assess the techno-economic feasibility of deploying turbines based on the community demand. As part of this work, a high-level project lifecycle cost analysis including the levelized cost of energy (LCOE) analysis was conducted for leading technologies showing that the river current energy is competitive with the current cost of the diesel-generated electricity.

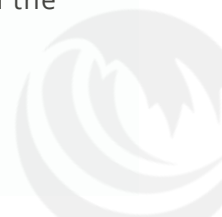
In collaboration with Laval University and NRC, CanmetEnergy developed simplified models of river current turbines to provide preliminary turbine array guidelines for deployment in rivers and channels with low and high blockage ratios.

CanmetENERGY, in collaboration with University of Manitoba and NRCan's Canada Centre for Remote Sensing, also initiated a project that would establish a database of attractive river current energy sites which will enable project developers to better identify, plan and implement river projects in Canada.

### **Sustainable Oceans Applied Research (SOAR) (Nova Scotia)**

In 2021 Sustainable Oceans Applied Research (SOAR) focused on advancing methods for working with remote Indigenous community to conduct tidal energy site assessments and developing effective methods for evaluating interactions between tidal devices and marine animals. This work was supported by Natural Resources Canada's (NRCan) Clean Growth project (in partnership with the CHTTC) and the Pathway Program (supported by NRCan and led by OERA).

SOAR's research with remote Indigenous communities was conducted on the Pacific coast of Canada in collaboration with University of Victoria, Northern Labrador in collaboration with the Nunatsiavut Government, and Nunavut in collaboration with Ocean Renewable Power Company (ORPC). SOAR's primary focus has been on providing cost effective, reliable, and





user-friendly tools for oceanographic data collection to local knowledge holders for direct participation in site assessment as needed to evaluate resources and inform Community Energy Plans at diesel reliant communities.

Research on environmental monitoring led by SOAR focused on use of multibeam imaging sonars and has demonstrated the Tritech Gemini to be effective for target detection and tracking in the Grand Passage and Minas Passage (FORCE-area) environments. Experiments have been conducted with artificial (controlled) targets, as well as data collection around several species of marine animals including white sharks, humpback whales, dolphins, mackerel, herring, mola mola, and cod. Ongoing work is focused on automation of target detections in collaboration with MarineSitu and North Highland College.

### **Offshore Energy Research Association (OERA) (Nova Scotia)**

The Offshore Energy Research Association (OERA) continued to make progress with the Pathway Program over the course of 2021. The Pathway Program is a \$2 million collaborative environmental effects monitoring research program aimed at reducing regulatory uncertainty and compliance costs for tidal energy projects. This project is supported by the Government of Canada and the Province of Nova Scotia. In 2021, the software tools that uses machine learning algorithms to analyze post-processed hydroacoustic data collected by echosounders was developed as part of the project. The tool can be used to analyze echosounder data collected near tidal turbines and to automatically populate tables and figures that can demonstrate frequency, abundance, and distribution of fish in a standardized format to regulators. The Pathway Program's subsea monitoring platform was also successfully redeployed at the Minas Passage testing site. The various sensors on the platform – including imaging sonar and echosounder devices – will be used to collect data that will be sent to shore through the subsea cable and monitored in real-time.

OERA also facilitated a number of studies focused on offshore wind including: an assessment of economic and policy conditions that could be established to minimize investor risk and attract investment in Nova Scotia for offshore wind developments; investigation of how the Port of Sheet Harbour, located along the Eastern Shore of Nova Scotia, could support activities in the US offshore wind market; and a possible public engagement plan. Preliminary internal research on the levelized cost of electricity for offshore wind was also conducted, showing that offshore wind might become economically feasible in near-term future.



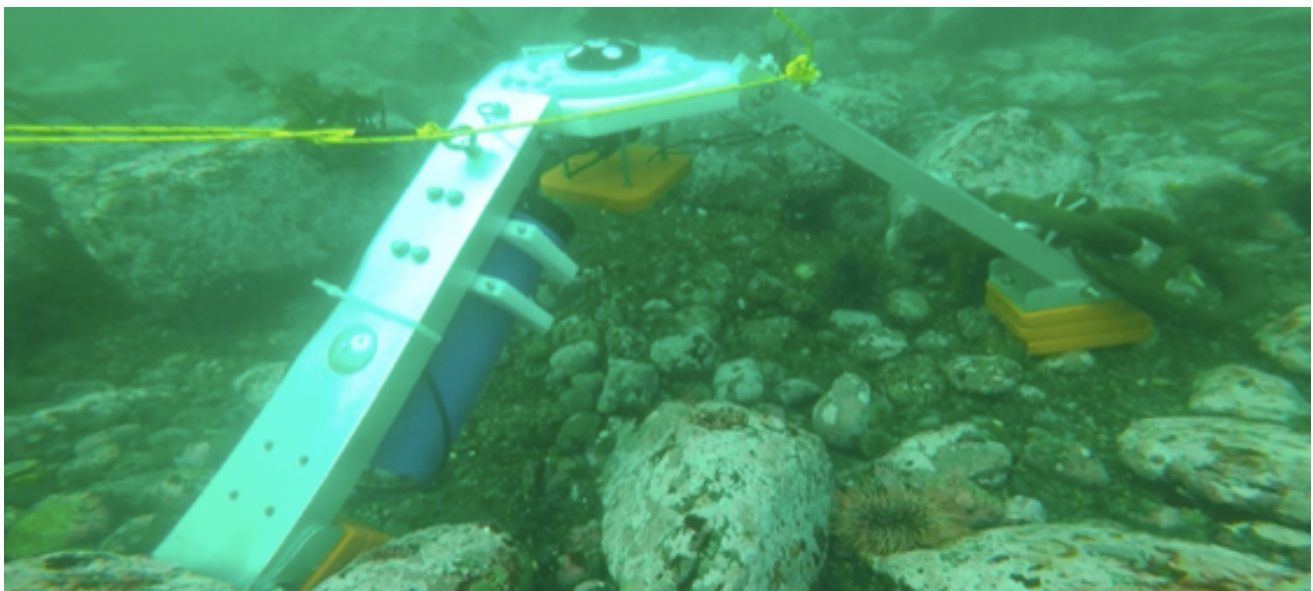
## University of Victoria (IESVic)/ Pacific Regional Institute of Marine Energy Discovery (PRIMED) (British Columbia)

The University of Victoria (UVic) made progress leading several projects and initiatives focused on wave energy and clean energy for remote community development working with local suppliers, industry, researchers, and Indigenous communities. UVic continues to lead this work through PRIMED which is aimed at eliminating the uncertainty and risk for “first-of-a-kind” community based marine renewable energy projects.

Key projects and activities over 2021 included:

- Progress on FEED study to examine the feasibility of wave energy devices to power Yuquot and facilitate Mowachaht Muchalaht First Nations (MMFN) desire for a community resurgence.
- Tidal energy resource assessment and electricity demand side analysis for potential future Blind Channel Tidal Test Centre.
- Building and testing of a standardized smart grid integration solution for marine renewable energy generators.
- Testing and validation of a novel Floating Light Detection and Ranging platform for collecting wind, atmospheric data, and current speeds.

PRIMED has been leading the development of the **Blind Channel Tidal Test Centre** – a facility that would allow companies to test technologies at a site with local demand. The project aims to demonstrate the front-end engineering design, commissioning, and operation, over 2+ years, of a Tidal Energy Converter hybrid energy system at Blind Channel Wilderness Resort - a remote off grid commercial venue that is currently entirely reliant on diesel fuelled electricity generation. The site will serve as a demonstration centre enabling firsthand observation by community leaders who will be able to identify opportunities for mirror projects in their communities.



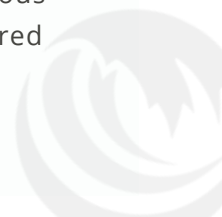
*PRIMED ADCP Deployed at Blind Channel as part of resource assessment work.*



## Policy, Legislation and Enabling Activities

The Government of Canada continues to roll out initiatives and programs that are focused on achieving its net-zero by 2050 targets, as well as sustainable economic development. Several initiatives in 2021 were launched with relevance and importance to the marine renewable energy sector.

- **Blue Economy Strategy:** In February 2021, the Government of Canada launched its consultation to develop a Blue Economy Strategy. Canada's vision for a sustainable blue economy supports the growth of ocean sectors through innovation. Consultation included a focus on "ocean-based energy," recognizing that to take full advantage of oceans-based energy opportunities will require collaboration from all levels of government, as well as significant private sector investments to encourage investor funding, demonstrate projects, and enable commercialization.
- **Offshore Renewable Energy Regulations (ORER) Initiative:** The Government of Canada also continued efforts to develop its offshore renewable energy regulations through the Offshore Renewable Energy Regulations (ORER) Initiative. The ORER initiative aims to develop safety and environmental protection regulations that will apply to exploration, construction, operation and decommissioning activities related to renewable energy projects and power lines in Canada's offshore areas. The ORER will be under the *Canadian Energy Regulator Act*. This legislation enables the Canada Energy Regulator to review and authorize activities related to offshore renewable energy in Canada's offshore areas. These regulations will not apply to tidal energy projects in the Canada's Bay of Fundy, as these tidal projects fall primarily under the jurisdiction of the provincial government of Nova Scotia. Phase Two of engagement on the ORER was initiated in late 2021 and focused on soliciting feedback on the technical requirements and proposed structure of the regulations.
- **Smart Renewables and Electrification Pathways Program (SREPs):** Under its climate action plan, "A Healthy Environment and a Healthy Economy:," the Government of Canada launched the Smart Renewables and Electrification Pathways Program (SREPs) – a program providing up to \$964 million over four years (from April 2021 to April 2025) for smart renewable energy and electrical grid modernization projects. This program is targeted at significantly reducing greenhouse gas emissions by encouraging the replacement of fossil fuel generated electricity with renewables that can provide essential grid services while supporting Canada's equitable transition to an electrified economy. Marine renewable projects are eligible for this program, and registrations and applications are currently open. SREPs supports marine renewable energy projects under an "Emerging Technologies" program stream. Projects must have a 4MW capacity or greater. If the project is Indigenous-owned the minimize size requirement is 500 kW. Up to 30% of project costs can be covered under SREPs to a maximum of \$50 million.



# OUR WORK: ADVANCING THE SECTOR

Marine Renewables Canada's primary goal is to help build the market for a marine renewable energy industry in Canada. Engagement and advocacy play a critical role in how the association achieves this goal. Advocacy with government and stakeholders, international business development, knowledge-building workshops, and ongoing support for members as they pursue opportunities are key elements of Marine Renewables Canada's sector-building efforts.

## Engagement, Advocacy, and Education

### Communications & Education – Our Current Future Initiative

With support and engagement from several members, Marine Renewables Canada launched the "Our Current Future" Campaign on October 28th. The collaborative effort was developed to provide education on tidal and river stream technologies – with the intent to help the general public understand the benefits and unique characteristics of "stream" technologies.



The campaign was a first step at educating the broader public and those interested in climate change solutions, renewable energy, etc. Marine Renewables Canada's objectives for this campaign were to: 1) Further educated climate-engaged Canadians about how marine renewable energy is an important solution to the clean energy transition – alongside wind, solar, and hydro; 2) Equip a broader base of supporters with information and facts to help counter misinformation; and 3) Increase the "buzz" around tidal and river stream technologies to facilitate more recognition in media.

## Policy Advocacy

As the focus on economic recovery and energy transition converge, it is clear that marine renewable energy has a role to play in building a sustainable future. Marine Renewables Canada wants to ensure that there is broad understanding of how marine renewable energy can contribute to climate action and achieving net zero. Over the course of 2021, the association focused on advocacy that would help to establish enabling conditions for offshore wind, address needed regulatory predictability and pathways, and support both domestic and international market entry. Input and engagement efforts included a number of federal and provincial government initiatives:

- *“Enabling Conditions for Offshore Wind” Roundtable discussion with Natural Resources Canada (February 2021)*
- *Joint submission via Canadian Council on Renewable Electricity (CanCORE) to Government of Canada on the Clean Fuel Regulations (March 2021)*
- *Joint submission via Canadian Council on Renewable Electricity (CanCORE) on the Review of the Government of Canada OBPS Regulations (March 2021)*
- *Input to NRCan regarding the SREP program criteria (March 2021)*
- *Meeting with Nova Scotia Premier Iain Rankin (May 2021)*
- *Blue Economy Strategy Consultation Roundtable with Government of Canada Blue Economy Secretariat and senior officials (June 2021)*
- *International Renewable Energy Agency (IRENA) Meeting on the Collaborative Framework on the Ocean Energy/Offshore Renewables Intervention (June 2021)*
- *Joint submission via Canadian Council on Renewable Electricity (CanCORE) for the Pre-Budget Consultations in Advance of the Upcoming 2022 Federal Budget (July 2021)*
- *Submission for the Pre-Budget Consultations in Advance of the Upcoming 2022 Federal Budget (August 2021)*
- *Submission to Newfoundland and Labrador’s Renewable Energy Plan Consultation (November 2021)*

## Engagement in the Blue Economy Strategy Consultation

A major endeavour in 2021 was engagement in the federal government’s Blue Economy Strategy Consultation. Marine Renewables Canada participated and co-hosted roundtables and engaged in numerous meetings with government, members, and other ocean and energy industry organizations to develop a substantial submission to the process. The submission detailed the unique benefit marine renewable energy has in providing a clean energy solution to climate change while also having the capability of building the blue economy. Investments and support for the sector can help achieve both priorities. Marine Renewables Canada’s submission included a vision for the sector, 6 overarching recommendations, and 29 actions to achieve the vision.





## Collaborative Initiatives and Projects

- **Risk Assessment Program (RAP):** Marine Renewables Canada is a project partner in the FORCE-led Risk Assessment Program (RAP) for tidal stream energy – a project designed to create a detailed, credible assessment tool to gauge the probability of fish encountering a tidal device. This project will help to support greater regulatory clarity around tidal project development. Over the past year, Marine Renewables Canada has assisted with outreach and engagement to industry to educate about the development of the tool and gain input that will inform future phases of project work.
- **Vitality:** Vitality is a collaborative project supported by the Ocean Supercluster with a focus on developing new, applicable data streams for OSC members, private sector companies, Indigenous organizations, and anyone who participates in Canada's blue economy as well as the development of necessary tools to manage those streams, and software that lowers the barrier to entry for the application of these data. As a project partner, Marine Renewables Canada has been assisting with industry outreach and information-gathering, as well as exploring how data from marine renewable energy projects may be transferred and shared using the Canadian Integrated Ocean Observing System (CIOOS).
- **Best Practices and Lessons Learned for Offshore Wind Engagement:** Marine Renewables Canada conducted extensive research on engagement practices and outcomes of engagement processes to develop a stakeholder engagement report for OERA. The report included a summary of best practices and lessons learned from US offshore wind development and past regional stakeholder engagement processes in various energy and ocean industries, and engagement tools.
- **Supporting TC114 Standards Development:** Marine Renewables Canada has continued to administer the TC114 International Electrotechnical Commission (IEC) Canadian sub-committee. With the support of NRCan, the Canadian sub-committee commissioned two studies in 2021 to provide feedback on the use of the TC-114 technical standards in real world situations to evaluate their usability and to identify any gaps in the current standards.



## Alliances and Strategic Partners

In working to support the development of a new industry, collaboration and partnerships continue to play a key role in Marine Renewables Canada's efforts. As the world works towards energy transition, it has become even more important to collaborate for the benefit of members and the sector. In addition to working with existing partners, Marine Renewables Canada established new alliances and collaborations in 2021:

- **Electricity Alliance Canada (EAC):** Marine Renewables Canada formalized its collaboration with five other associations representing the leading suppliers of electricity to consumers and markets in Canada – Electricity Canada, Waterpower Canada, Canadian Renewable Energy Association (CanREA), Electricity Human Resources Canada (EHRC), and Canadian Nuclear Association (CNA) – to establish Electricity Alliance Canada (EAC). EAC's mandate is to enable, promote and advocate for the increased use of electricity throughout the Canadian economy to help achieve Canada's net-zero emissions target. As a founding member, Marine Renewables Canada has been working closely with these associations to develop strategic activities that help achieve this mandate.
- **Smart Grid Innovation Network (SGIN):** While the predictability and reliability of marine renewable energy can complement the use of other forms of renewable energy like wind and solar, integration of different renewable energy resources can be a challenge. Smart grid technology can provide a solution to integrating all renewable resources and optimizing their value to the electricity system. Marine Renewables Canada entered into a formal alliance with the Smart Grid Innovation Network to support respective memberships' efforts including collaboration on developing integrated systems that can be used by remote communities and utilities.
- **BC collaborators:** As an association headquartered in Halifax with a national mandate, Marine Renewables Canada has aimed to keep an effective presence in BC where opportunity for marine renewable energy development is immense. In 2021, the association worked to build and strengthen relationships with organizations in BC by partnering with several of them on events held in November 2021 including Clean Energy BC, Vancouver Centre for Climate Change, Centre for Ocean Applied Sustainable Technologies (COAST), and the Association of British Columbia Marine Industries (ABCMI).
- **Canadian Council on Renewable Electricity (CanCORE):** As a founding member of CanCORE, Marine Renewables Canada continues to work closely with its partners – Waterpower Canada and CanREA through CanCORE to provide advice and education on how renewable electricity can play a significant role in meeting GHG reduction targets and overall climate change goals.
- **Existing partnerships and collaborations:** Marine Renewables Canada continued work with existing partners and collaborators on projects, membership connections/business development, advocacy, and events throughout 2021 including: WIRE, Business Network for Offshore Wind, Marine Energy Wales, and FORCE.

# Engaging in the Global Market – International Business Development

Although 2021 continued to present challenges for engaging in international business development, Marine Renewables Canada developed plans and activities that could help identify international market opportunities, develop market intelligence, provide information to members, and connect members with potential business prospects.

## International Market Intelligence Webinars

Several webinars were developed to provide information about emerging and growing market opportunities in regions that have been previously identified in Marine Renewables Canada's International Business Development Strategy as being of strategic significance:

- *Latin America (Brazil) Inside Insights: Opportunities in Marine Renewable Energy* (February)
- *Marine Energy Wales Meets Marine Renewables Canada: A joint webinar promoting shared learning across the marine renewable energy sector (including presentation from members, DP Energy, Nova Innovation, and FORCE)* (December)

## US Offshore Wind Market Engagement Services and Support

With the Northeast US offshore wind market growing and posing numerous opportunities for suppliers with existing experience in marine, offshore, and energy industries, Marine Renewables Canada spearheaded a strategy in 2018 to assist members in identifying and engaging in business opportunities. In addition to one-on-one advice and information-sharing for members, the association developed and delivered a number of targeted services in 2021 to assist members with engaging in US offshore wind development.

- **US Offshore Wind Webinar Series**

Early in 2021 Marine Renewables Canada launched the "US Offshore Wind Webinar Series" in partnership with the Consulate General of Canada to the United States in Boston as a way to disseminate vital and timely information to Canadian companies on the developing US offshore wind industry. Four webinars were developed and hosted:

- *US Jones Act and its implications for Canadian companies in the offshore wind supply chain* (June)
- *US Offshore Wind Market Entry: Opportunities, Analysis, and Insights* (July)
- *Crowley Maritime Corporation: Activities in the US offshore wind market* (October)
- *Maine: Pathway to US Offshore Wind Market* (November)





- ***US Offshore Wind Navigator – Market Intelligence Bulletin***

To assist members and Canadian firms, Marine Renewables Canada developed a subscriber-based monthly bulletin with the intent of curating and sharing information that can help Canadian suppliers engage in new market opportunities. It is curated and developed with the Canadian context in mind. The news, market intelligence and events that are included each month is information that can assist members and Canadian suppliers with developing their market strategies and business in the US offshore wind market.



- ***Additional international events participation and speaking engagements***

Marine Renewables Canada participated in several international conferences providing presentations on the state of the marine renewable energy sector and the strengths of the Canadian industry:

- *Maritime Hydrogen and Marine Energy Conference “Marine Renewable Energy in Canada” – Virtual/Norway (October 2021)*
- *Greening the Islands e-Convention “Ocean energy global trends, projects and technologies for islands. Empowering remote and island communities: the Canadian case study” – Virtual/Italy (October 2021)*
- *AREG Webinar – Virtual (November 2021)*

# Association-led Events & Outreach

## Member Roundtables – *Virtual* (January, May, October)

Marine Renewables Canada hosted several Member Roundtables throughout 2021 with the aim of providing members an opportunity to learn about association plans that could assist their business, provide input on activities that could be pursued, connect with other members, provide updates about activities/projects in the sector, and discuss opportunities, challenges, and priorities. Each Roundtable focused on a specific area/topic, including - community & off-grid applications and opportunities, offshore wind, and marine renewable energy in British Columbia.

## Summer Nautical Networking Event on the Tall Ship Silva – *Halifax, Nova Scotia* (August 2020)

Despite ongoing public health restrictions, Marine Renewables Canada was able to hold its annual summer event on Halifax Harbour. The 2021 Nautical Networking Event on the Tall Ship Silva again sold out quickly having a capped capacity of 75 people. It included sit-down food and beverage service and live music during the two-hour cruise through Halifax Harbour. This event could not have been possible without the support of its sponsors and partners: Halifax Offshore Consulting (HOC) (Presenting Sponsor), Bourque Industrial, Spar Marine, and Atlantic Towing.

## Annual Golf Tournament – *Halifax, Nova Scotia* (September 2021)

The Marine Renewables Canada 2nd Annual Golf Tournament, hosted at the Grandview Golf & Country Club, proved to be another success creating opportunities to make connections and build relationships with professionals across marine, offshore, and energy industries. With COVID protocols still in effect, a capped capacity crowd enjoyed a safe and fun-filled day of golf, followed by a post-tournament BBQ and live entertainment.

This event could not have been possible without the support of its sponsors and partners: McKeil Marine (Presenting Sponsor), as well as event sponsors Halifax Offshore Consulting (HOC), Bourque Industrial, Atlantic Towing, Canadian Maritime Engineering, Logistec, Cox & Palmer, Cherubini, Sustainable Marine Energy, Mersey Consulting, and The Westin Nova Scotian.



## **Marine Renewables Canada East-to-West Mission to British Columbia – Vancouver, British Columbia (November 2021)**

To connect members and opportunities on east and west coasts – and – support members' collaboration that could assist with entering international markets, Marine Renewables Canada developed and led an in-country mission between Atlantic Canada and British Columbia. In addition to creating an opportunity for new business connections, Marine Renewables Canada also aimed to provide information about the market potential and progress in marine renewable energy across Canada. To accomplish objectives of the mission, Marine Renewables Canada collaborated with local trade organizations – ABCMI, Clean Energy BC, COAST, and the Vancouver Maritime Centre for Climate, which also ensured that mission delegates were exposed to opportunities and connections in other related sectors (marine, offshore, ocean technology, renewable energy). Highlights of mission included:

- Marine Renewables Canada booth at the ABCMI exhibition, showcasing association and delegate capabilities and strengths.
- Hosting of an East-to-West Marine Renewable Energy Business Connector and Reception that featured presentations from mission delegates (BC and Atlantic Canadian expertise in marine renewable energy) and organizations having a role in catalyzing ocean and energy industry development in BC, as well as an opportunity for all attendees to connect and identify business opportunities.

## **WiRE & Marine Renewables Canada Joint Networking Event – Halifax, Nova Scotia (November 2021)**

Marine Renewables Canada teamed up with Women in Renewable Energy (WiRE) to host a networking event in conjunction with the Marine Renewables Canada's Annual Conference. Over 60 attendees had the opportunity to network, make connections, hear from women working in the marine renewable energy sector and learn more about how and why they got involved in the sector and what they view as the opportunities and challenges. Guest speakers featured were association members – Anne-Marie Belliveau of Projectable Consulting and Sarah Thomas of DP Energy.



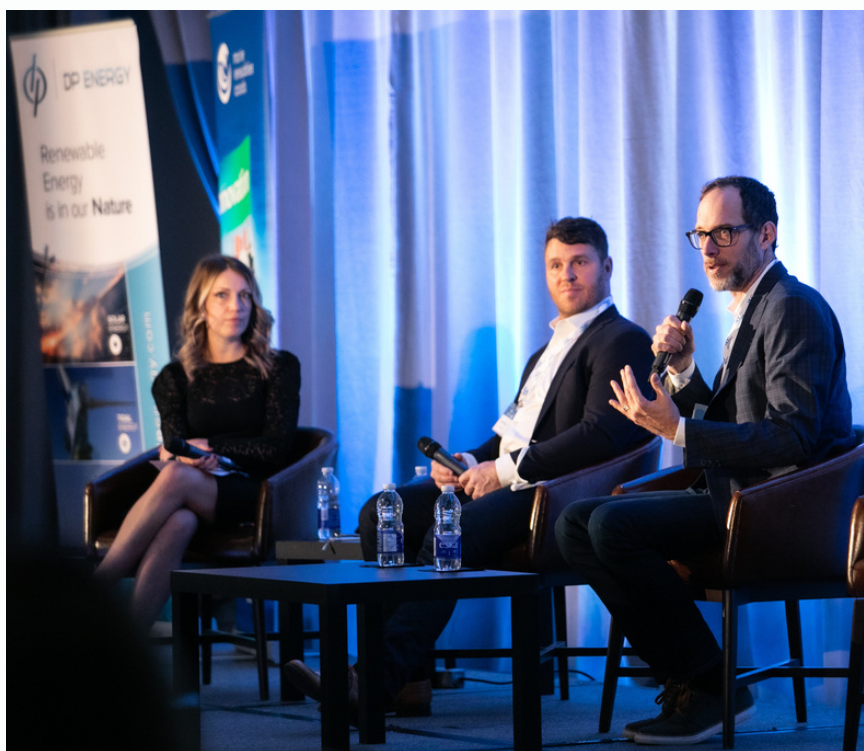


## Marine Renewables Canada 2021 Annual Conference "Marine renewables + Energy transition" – *Halifax, Nova Scotia* (November 2021)

With COVID restrictions easing, Marine Renewables Canada was thrilled to host its traditional two day in-person annual conference. It attracted over 200 industry leaders and experts and featured over 30 local, national, and international speakers providing information on key issues of importance to Canada's marine renewable energy sector, such as supplier opportunities in the US offshore wind sector, environmental monitoring and policy initiatives for tidal energy development, insights on the energy transition and the role marine renewable energy will play in Canada, opportunities for marine renewable energy in green hydrogen production, and strengthening relationships and engagement with Indigenous peoples.

This first fully in-person conference since the onset of the pandemic was integral to getting members back together and helping industry connect. It could not have been possible without the support of its sponsors and partners: DP Energy (Presenting Sponsor), Nova Scotia Department of Natural Resources & Renewables, Northland Power, Sustainable Marine, ECO Canada, Atlantic Towing, Bourque Industrial, Cox & Palmer, The Welsh Government, Halifax Offshore Consulting, Taut Solutions, HydroQuest, Strait of Canso Superport Corp., ORPC Canada, COVE, Cherubini, DOF Subsea, Nova Innovation and Stantec.





## Additional events participation and speaking engagements

The association participated in a number of conferences, workshops, and events delivering presentations that provided education on the opportunities of Canada's marine renewable energy sector, industry progress, and strengths of members and the supply chain:

- *CEO Forum: Environmental Technology and Opportunities in the Ocean Economy – Virtual (July 2021)*
- *COVE Offshore Wind Connector – Virtual (July 2021)*
- *COAST Talks: Tidal Power – Virtual (October 2021)*
- *Canadian Nuclear Association 2021 Conference panel “Electricity Alliance Canada” – Virtual (September 2021)*
- *PRIMED Mowachaht/Muchalaht First Nation Wave Project Regulatory Workshop presentations on wave energy and regulatory lessons learned – Virtual (September 2021)*
- *Association of British Columbia Marine Industries Marine Innovation Panel – Vancouver, BC (November 2021)*





## Increasing Diversity, Equity and Inclusion

Marine Renewables is committed to working towards greater diversity, equity, and inclusion (DEI) within the association and across the sector. As one part of its strategy to accomplish this, Marine Renewables Canada joined the 50/30 Challenge – an initiative of the Government of Canada aimed at increasing the diversity of organizations. The voluntary Challenge asks

organizations to set aspirational goals to reach 50% gender parity and 30% representation from under-represented groups (including racialized persons, those who identify as LGBTQ2, people living with disabilities, as well as First Nations, Inuit and Métis peoples) at the board and senior management levels.

In 2022, the association will be working on additional actions that will foster increased diversity in the organization and looks forward to working with its membership on these initiatives.





# OUR MEMBERS

Marine Renewables Canada is pleased to welcome new members who have joined the association in 2021:

AtlanticXL, Bear Head Energy, Bellemare Heavy Haul & Rigging, CanPac Marine Services, Dalhousie University/Ocean Frontier Institute, DOF Subsea, Erika Pineo (student), Environmental Services Association of the Maritimes (ESAM), Fagioli Canada, Gareth Stuart, Geoforce Group Limited, George Osmond (George Osmond & Associates), Joe Fitzharris (QS Atlantic), Kenneth Dan Adele (student), Kleinschmidt Canada, Inc., Maersk Supply Services, Misty MacDonald (Strait Area Chamber of Commerce), Mohamad Alikhani (student), New Energy Corporation, New Energy Marine Organization (NEMO) Ltd., Peter England, RINA Tech Canada Ltd., Strait of Canso Superport Corp, SubC Imaging, Waterford Energy Services Inc., Worley Canada Services Ltd, WSP Canada Inc., XOCEAN.

As always, thank you to all members for your dedication, support, and perseverance. We look forward to working with you in 2022!

## 2021 Marine Renewables Canada Members





marine  
renewables  
canada

[marinerenewables.ca](http://marinerenewables.ca)