

MARINE RENEWABLES CANADA



marine
renewables
canada

2017 ANNUAL REPORT



ABOUT US

Marine Renewables Canada is the national association for wave, tidal, and river current energy, representing technology and project developers, utilities, researchers, and the energy and marine supply chain. Since 2004, the association has worked to identify and foster collaborative opportunities, provide information and education, and represent the best interests of the sector to advance the development of a marine renewable energy industry in Canada that can be globally competitive.



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LEADERSHIP MESSAGE



Elisa Obermann
Executive Director

As work towards a low carbon future increases in Canada, but also globally, the marine renewable energy sector can play an important role. As an emerging sector, it poses new industrial and economic benefits. As an energy resource, it has attributes that can complement other renewable energy sources – predictability, reliability, and high power densities – making it an important contributor to our energy future. While movement in the sector can feel slow, there has never been a better time to forge ahead and affirm Canada as a world leader in the emerging global marine renewable energy industry.

Over the past year, a number of milestones in the Canadian sector have been reached – the first grid-connected in-stream tidal device was deployed and successfully retrieved in the Bay of Fundy, small-scale projects are being commissioned in remote communities, and foundational activities in wave energy resource assessment and modeling have provided enough detailed information to start developing and demonstrating devices in the ocean. Our sector has been growing the experience, innovating, and building a supply chain of companies and researchers that can provide solutions here and abroad. The challenge that lies ahead is how we get from this stage to the next one where multiple devices are being deployed and a true industry ecosystem emerges.

Marine Renewables Canada has been working to support its members in meeting that challenge. In the past year, we have been deeply involved with policy discussions and development at national and provincial levels to ensure that marine renewable energy is not only eligible under new programs, but viewed as an important contribution to Canada's clean growth and low-carbon future. We have strengthened our alliance with other renewable energy associations through the Canadian Council on Renewable Electricity (CanCORE) and participated in national dialogues about Canada's energy strategy. At the international level, Marine Renewables Canada has launched a very focused international business development strategy, with the intent of supporting our members trade, export, and collaboration efforts – and keeping Canada on the map of leaders in the industry.

To continue sector momentum, strategic alliances and accessing new markets will be vital. The focus on diesel displacement in remote communities and Indigenous clean energy partnerships may create new opportunities for marine renewable energy. An increased interest in offshore wind in North America may offer synergies and new service, supply, and research opportunities for our members. As 2017 comes to a close and we embark on 2018, Canada's marine renewable energy sector has many of the pieces falling into place that could propel us forward to the next stage. We look forward to working with our membership, partner organizations, and government to ensure Canada's marine renewable energy industry plays an important role in our future.



Dana Morin
Chair

SECTOR HIGHLIGHTS

Project and Technology Development

Tidal Energy

Beginning in late 2016 and over the course of 2017, some important milestones and industry firsts have taken place for tidal energy in Canada. From the deployment of the first grid-connected in-stream tidal device to commissioning projects in remote communities, Canada's sector is making advancements that also support global market development:

- [Cape Sharp Tidal](#) (a joint venture between Emera and OpenHydro) deployed its first turbine at the Fundy Ocean Research Center for Energy (FORCE) in November 2016. It is the first grid-connected in-stream tidal turbine in Canada, marking a huge milestone in the industry. The turbine was retrieved in June 2017 to allow for upgrades to its turbine control centre (TCC). This was the first time OpenHydro's pioneering TCC technology has been used anywhere in the world, an important step in advancing the ability to generate electricity from multiple turbines at sea and export to shore via a single export cable. Plans are underway for Cape Sharp's next deployment and a demonstration array of two interconnected 2 MW turbines.



Since the turbine deployment, [Cape Sharp](#) and [FORCE](#) have issued three environmental monitoring reports based on their Environmental Effects Monitoring Programs (EEMP). The reports will help further knowledge about the environmental effects of in-stream tidal energy in the Bay of Fundy, advancing the scientific understanding at the FORCE site, and assisting industry, government, and stakeholders in future planning regulatory and planning decisions.

- [Tribute Resources](#) acquired 100% control of Dutch tidal device developer, [Tocado](#) after having acquired a 46.5% stake in July 2016. The short-term objective for the company will be a first



deployment in the Bay of Fundy in late 2018 of Tocardo's semi-submersible Universal Foundation System equipped with five turbines.

- [Mavi Innovations](#) is approaching full commissioning of its Blind Channel tidal project in BC that will integrate its Mi1 turbine along with batteries into an existing diesel grid to power a remote lodge. In June, Mavi installed its mooring system, lay the cable, and began work to commission the hybrid power system.



Mavi Innovations in Blind Channel, British Columbia

- [Offshore Energy Research Association \(OERA\)](#) has supported a number of research studies and initiatives, facilitating tidal energy development:
 - An update to the (2011) Marine Renewable Energy Infrastructure Assessment to bring to current, projected needs for the tidal industry relating to port options around the Bay of Fundy;
 - New research on the [financial support mechanisms](#) available to project developers to aid in the growth of the Canadian tidal sector (Acadia University);
 - New [software development in tug propulsion systems modeling](#) for use in optimizing tidal energy marine operations (DSA);
 - Improved understanding of the probability of encounter between striped bass populations and a turbine in the Bay of Fundy (Acadia University);



- New [findings on how striped bass behave](#), move and respond to an operating turbine in a (controlled) laboratory environment (Dalhousie University);

OERA has also collaborated with government and agencies to support research including a partnership with Natural Resources Canada for \$1 million in funding as well as Innovacorp and Nova Scotia Department of Energy to fund tidal energy technology innovation.

- The [Acadia Tidal Energy Institute \(ATEI\)](#) at Acadia University, along with Dalhousie University, University of New Brunswick, and Memorial University, was recently funded to lead a project for state-of-the-art field equipment and high-end computing infrastructure for instream tidal energy environmental monitoring, modelling, and forecasting.

ATEI also continues to work on projects focused on risk reduction and informed decision-making including:

- Preparation and provision of model data to assist with Cape Sharp Tidal marine operations, drifter-ADCP surveys for tidal energy resource assessment, with Luna Oceans & Dalhousie;
- Drifter-hydrophone system design and proof of concept testing in Minas Passage/Channel for detection of harbour porpoises;
- Analysis and interpretation of active hydroacoustic datasets collected with fish detection sonars housed on a FAST platform at the FORCE test site;
- In-depth analysis of fish tracking datasets for the determination of fish – turbine encounter probabilities at FORCE.

Wave Energy

With huge wave energy potential on the coasts of Canada, activities are underway by researchers and technology developers to prepare and pave the way for future development.

- [West Coast Wave Initiative \(WCWI\)](#) out of University of Victoria is spearheading work to eliminate the uncertainty and risk for “first-of-a-kind” community based marine renewable energy projects. In November, WCWI received \$1.4 million from Western Economic Diversification (WD) for the Pacific Regional Institute for Marine Energy Discovery (PRIMED). PRIMED will make use of extensive wind, wave and tide data and consolidate it with new data gathered by sensors on the





new Canadian Pacific Robotic Ocean Observing Facility (C-PROOF). Using simulations, PRIMED will provide detailed predictions of energy supply prior to the deployment of devices.

In April, the WCWI released a co-authored report with the Pacific Institute for Climate Solutions, [Wave Energy: A Primer for British Columbia](#), summarizing key research findings about the magnitude of BC's wave energy potential and the challenges and opportunities of the sector. Funding through NSERC was also received to support further work with a number of wave-technology companies and modeling of the wave energy resource in British Columbia. Through WCWI's work over the past years, there is now enough detailed information on the height, frequency and direction of its coastal waves to start developing and testing energy converters in the ocean.

- College of the North Atlantic's (CNA) [Wave Energy Research Centre \(WERC\)](#) in Newfoundland has begun sea trials of its wave pump, a device intended to provide a flow of sea water to an onshore aquaculture farm. Over the last 6 years of developing the project, it has engaged over 200 college and university students and at least 20 scientists, technicians and faculty.



Students performing QA/QC on critical welds during construction of WERC pump



WERC's Wave pump being prepared for deployment

In the fall, Atmocean, a US-based wave energy developer, deployed their wave powered pump at WERC for a month of preliminary testing. WERC and Atmocean are also exploring deployment of wave pumps to power a water production and aquaculture facility in Peru.



River Current Energy

As a focus on decreasing diesel use in remote communities increases, river current energy continues to be a renewable electricity option across Canada. Over 2017, several Canadian companies and organizations have continued their efforts to realize the potential of river current energy:

- [Canadian Hydrokinetic Turbine Test Centre \(CHTTC\)](#) tested and connected New Energy Corporation's 25 kW device to the Manitoba Hydro grid in preparation for deployment at Sagkeeng First Nation. CHTTC also conducted long-term flow measurements and further developed a procedure to characterize the flow at CHTTC.
- [New Energy Corporation](#) partnered with Sagkeeng First Nation in Manitoba to install a 25 kW hydrokinetic turbine in the Winnipeg River. In July, work commenced to test and install the turbine. The project is aimed at helping Sagkeeng become more energy self-sufficient.



CHTTC: Flow characterization at 8 Foot Falls



New Energy 25 kW on route for testing and installation at Sagkeeng First Nation, Manitoba



Enabling Policies and Activities

Federal Government

In late 2016, the [Pan-Canadian Framework on Clean Growth and Climate Change](#) was launched by federal, provincial and territorial governments, laying the foundation and strategy for future policy and program development. Actions under the framework have potential to provide support for the marine renewable energy sector. Over the course of 2017, Marine Renewables Canada has been engaging with the federal government on a number of programs and policies under development. These include:

- [Budget 2017](#): The 2017 federal budget had a significant emphasis on clean technology and innovation, tackling climate change and building a low-carbon economy – through a mix of new funds and fleshing out previous commitments. Many of the commitments could support renewable energy development including: \$21.9 billion in green infrastructure (including millions for clean energy in remote communities and renewable energy commercialization); \$1.4 billion in increased financing support for clean technology available through the Business Development Bank (BDC) and Export Development Canada (EDC); \$400 million over five years to recapitalize the SD Tech Fund led by SDTC; \$1.26 billion to a five-year Strategic Innovation Fund; and \$21.4 million over four years starting in 2018-19 to Indigenous and Northern Affairs Canada to support the deployment of renewable energy projects in communities that rely on diesel.
- *Support for emerging renewables and remote communities*: Included in the federal budget is support that may specifically assist with marine renewable energy advancement and remote community projects with \$200 million allocated to the deployment of emerging renewable energy technologies nearing commercialization and \$220 million to reduce the reliance of rural and remote communities and support the use of more sustainable, renewable power solutions.
- [Generation Energy](#): Natural Resources Canada led an initiative over 2017 aimed at gaining insight to Canada's energy future leading up to 2050. Input received through workshops, submissions, an online forum, and conference will be incorporated into a report that will inform Canada's future energy policy.

British Columbia

- *Joint technology fund*: The governments of British Columbia (BC) and Canada partnered to [establish a \\$40 million joint fund](#) with contributions from BC's [Innovative Clean Energy \(ICE\) Fund](#) and the SD Tech Fund managed by [Sustainable Development Technology Canada \(SDTC\)](#).
- *BC Marine Energy Centre Roadmap*: The Ministry of Energy & Mines worked with the University of Victoria's West Coast Wave Initiative to develop a [roadmap](#) that would support a vision for a BC-based scientific and technology hub dedicated to advance the level of understanding, innovation, and business of marine-to-wire renewable energy. Release of the roadmap is forthcoming.



Nova Scotia

The Government of Nova Scotia continues to enable development of tidal energy by implementing enabling mechanisms. In the fall, amendments to Nova Scotia's Marine Renewable Energy Act were introduced ([Bill No. 29](#)). The amendments are aimed at allowing for the demonstration of in-stream tidal energy technology in additional areas of the Bay of Fundy – outside of the FORCE berths. The amendments provide a new development pathway, allowing for new entrants into Nova Scotia's tidal energy market, with the flexibility to propose a range of project sizes so long as they are 5 MW or less.

Under the amendments, a new permit system will be put in place for demonstration permits up to 5 MW, with no more than 10 MW of total power authorized under the Act. Projects that receive a permit can also receive a power purchase agreement (PPA) at a price set by the Minister of Energy. Any utility in Nova Scotia will be required to procure all electricity under the PPA.

OUR WORK: ADVANCING THE SECTOR

As the association continues to support the advancement of the sector and building of a new industry in Canada, activities aimed at building knowledge and support for the sector, identifying new market opportunities, and supporting the needs of our membership continue to be developed and rolled out. Over the course of 2017, Marine Renewables Canada led a number initiatives aimed at growing the sector and securing Canada's place in the global marine renewable energy market.

Engaging in the global market – international business development

International Strategy

Early in 2017, Marine Renewables Canada released its 2017-2019 International Business Development Strategy, with an aim of profiling and supporting supply chain and research strengths that can engage throughout the international industry supply chain. A key focus is on demonstrating capabilities in the first industrial-scale projects at home, in the UK, and in Europe, as well as seizing market niche opportunities in remote community electrification and collaborating on necessary technology innovation. The strategy identifies tactical actions and target markets for engagement including: Asia, Chile, the European Union, and the United States.

The strategy supports Marine Renewables Canada's continued work in carving out a role for Canada in the global sector, and provides a framework for future activities such as trade missions, workshops, market studies, and international collaboration.

International Business Workshops

To assist members working or looking to work internationally, Marine Renewables Canada held workshops focused on strategies and tactics for conducting business internationally:

- **Breaking into the International Market: Opportunities & Strategies (March 8th):** Explored international marine renewable energy market opportunities, Canadian international trade success stories, and tactics for gathering market intelligence for export market entry decisions.
- **Doing Business Internationally – Focus on the EU (August 9th):** Provided a framework for doing business in the EU (with specific focus on Ireland and France) including procurement systems, the Canada European Trade Agreement (CETA), market entry strategies, cultural difference in international trade, and how to maximize tradeshow participation.

International Market Webinars

Over the course of 2017, the association held several to highlight progress and opportunities in key international markets, as well as programs and policies to support international trade and collaboration. Presentations were provided by industry leaders, including:

- Wales: Marine Energy Wales, Nova Innovation, Wave-tricity
- Ireland: Marine Renewables Industry Association, Sustainable Energy Authority of Ireland, Lir National Ocean Test Facility, and Ocean Energy
- Europe and France: Ocean Energy Europe, France Energies Marine



International Alliances

In 2016, Marine Renewables Canada entered a MOU with [Marine Energy Wales](#), an industry association very similar to Marine Renewables Canada, who brings together technology developers, the supply chain, academia and the public sector to establish Wales as a global leader in sustainable marine energy generation, making a significant contribution to a low carbon economy.

Over the course of 2017, the associations have been working very closely under this MOU – sharing information and knowledge about the sector, participating in joint webinars, and participating in respective conferences. The agreement demonstrates the commitment to a worldwide marine energy industry and the economic and low carbon opportunities associated with the emerging sector. The MOU marks an important step towards positive collaboration between the two countries, both of which are leading the way in supporting marine energy development.

Supporting TC114 Standards Development

Marine Renewables Canada has continued to administer the TC114 International Electrotechnical Commission (IEC) Canadian sub-committee, in a reduced role given the conclusion of ecoEI funding in March 2016.

In the last year, there have been several developments including two new standards published relating to enhanced wave resource assessment and also design requirements, bringing the total number of standards published to 8. Another draft standard on guidance for wave energy prototype development is in final stage of voting for publication. In addition, a new team was formed to begin drafting a standard on measurement of mechanical loads. This means there are a total of 8 draft standards in active development.

Looking forward, new challenges TC114 faces include aligning standard documents that interact with each other for ease of use as well as collecting feedback from industry and conformity assessment processes to generate second edition standards. Furthermore, TC114's strategic business plan has been recently updated that identifies priorities for new standards including subsea cables, connectors, and lay procedures among other priorities.

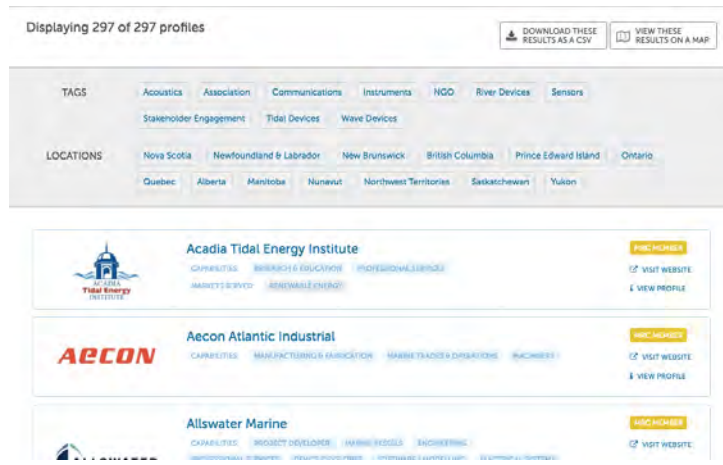
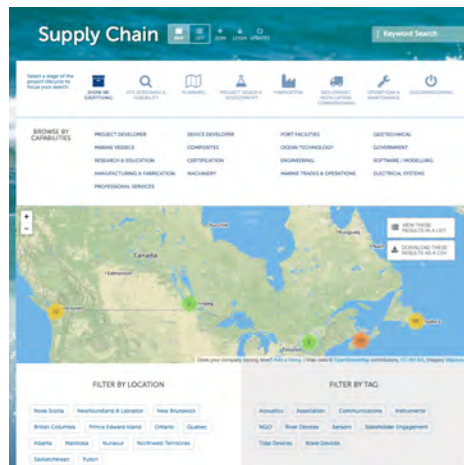
Supply Chain Engagement & Development

As part of Marine Renewables Canada's core mandate to develop the sector, supply chain engagement, development, and support continues to be a key focus.

In late 2016, with support from the Atlantic Canada Opportunities Agency (ACOA) and Nova Scotia Department of Energy, the association launched Canada's first database solely focused on the supplier capabilities for marine renewable energy projects. Through a publicly accessible online platform, the

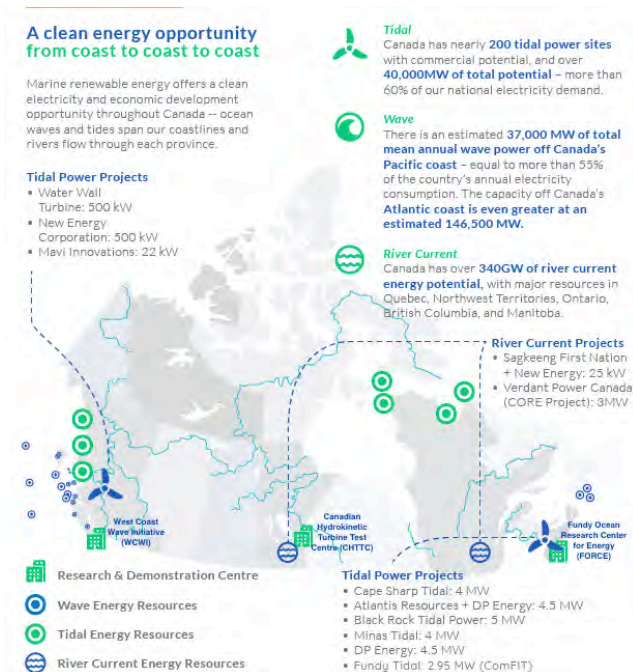


database assists in identifying, assessing, and engaging businesses and organizations with capabilities that can aid in the advancement of the marine renewable energy sector. It also helps to ensure that Canada's supplier strengths are profiled amongst other jurisdictions that are putting significant investment and resources into building their marine renewable energy supply chain and have developed similar tools.



View Canada's Supply Chain Database at supplychain.marinerenewables.ca

Marine Renewables Canada also developed a number of materials including a national sector brochure, supplier case studies, and delivery of tradeshow to profile the strength of Canada's marine renewable energy sector (see Association-led Events section for more information about the association's outreach activities).



Brochure: Sector Activity Map

Supplier Case Study: Dynamic Systems Analysis

Dynamic Systems Analysis (DSA)

New Sector, New Opportunities

Dynamic Systems Analysis (DSA) emerged from a need for the marine industry to understand how technologies and equipment would respond to currents, wind, and waves. As marine renewable energy technologies are deployed in some of the most extreme conditions, working in the marine renewables sector has always been a natural fit for DSA.

Carving Out a Role

Over the years, DSA has developed various roles within the marine renewable energy sector – service provider, partner, promoter and risk mitigator. Their unique software has allowed users to create virtual prototypes of any vessel or equipment they are deploying to understand how the equipment will react under various weather and ocean conditions. Key benefits of DSA's software include:

- Application of industry best practices for installation and maintenance
- Accurate analysis of equipment response in various environmental conditions
- Reduction of physical prototyping and testing, saving time, money, and providing assurance that the designed equipment can withstand the expected ocean conditions

Quick Facts

- Locations:** Victoria, British Columbia & Halifax, Nova Scotia
- Company Size:** 8 employees
- Business Type:** Ocean Engineering Consultant & Software Developer
- dsa-td.ca**

Supplier Case Study (pilot project)



Engagement & Advocacy

Input to government consultations

Marine Renewables Canada is dedicated to advocating for the sector, working to inform policy development and identify issues that affect marine renewable energy development. After developing relationships with the new federal government over the course of 2016, the association has been leading a focused effort to provide information about sector opportunities and needs and engage in strategic conversations and policy development initiatives. In 2017, Marine Renewables Canada was involved in a number of federal and provincial government initiatives:

- [Submission to Natural Resources Canada regarding the Offshore Renewable Energy Legislative Framework](#) (March 2017)
- [Submission to the House of Commons Standing Committee on Natural Resources: Clean Technology in Canada's Natural Resource Sectors](#) (May 2017)
- Engagement in the development of Natural Resources Canada's Emerging Renewable Power Program
- [Witness at the House of Commons Standing Committee on Natural Resources: Strategic Electricity Inter-ties](#) (September 27)
- [Generation Energy](#): Co-hosted [workshop with the Canadian Council on Renewable Electricity \(CanCORE\)](#) and participated in panel discussion on renewable energy at the Generation Energy Event (September – October 2017)

The association continues to advocate for supportive policies for marine renewable energy development in BC. In April, Marine Renewables Canada met with several BC ministries and federal government to discuss the path forward including Energy & Mines, Skills Development, Labour, and Technology, International Trade, and Western Economic Diversification. As BC now has a new NDP government, the association is working to develop a positive relationship and envisions a strategic outreach effort to commence in early 2018.

Association-led Events

Atlantic Petroleum Show (St. John's, NL – June 2017)

Marine Renewables Canada participated in the newly added "Renewable Energy" section of the Atlantic Canada Petroleum Show, which takes place in Conjunction with the NOIA Conference. This provided an opportunity for the association to meet with Newfoundland-based service & supply companies involved in or looking to get involved in the marine renewable energy industry in Canada.



2nd Annual Nautical Networking Event (Halifax, NS– August 2017)

Marine Renewables Canada held its second tall ship networking event over the summer, targeted at bringing together businesses and organizations working marine, offshore, and energy industries. It brought together 120 attendees from the offshore, energy, and marine sectors.

Trade Mission to the European Wave and Tidal Energy Conference (EWTEC) (Cork, Ireland – September 2017)

Building on the success of EWTEC 2015 in France, in highlighting Canada’s strengths in the marine renewable energy sector, Marine Renewables worked with the Atlantic Canada Opportunities Agency (ACOA), Global Affairs Canada and the Nova Scotia Department of Energy, to lead a successful mission to [EWTEC 2017](#). The mission delegation consisted of 32 people, representing 16 organizations across Canada.

The delegation had broad representation including utilities, service providers, consultants, technology developers, project developers, ocean technology manufacturers, research associations, academia and NS provincial government. Canadian representation included:

The Mission and associated activities included a pre-mission workshop for all participating companies focused on “Doing Business Internationally”, pre-mission webinars focusing on Ireland and the UK, pre-mission and onsite briefings, tradeshow pavilion, marketing/promotional materials, matchmaking services including post-mission aftercare, and a Nova Scotia Government hosted evening reception.

Highlights of the EWTEC Mission included:

- Organization and realization of 150+ meetings for 12 Canadian companies by matchmaking consultants
- Great interest from all EWTEC delegates in the Canadian delegation and high traffic at the booth
- Nova Scotia/Canada Reception was very well attended (100+)
- 12 Canadian speakers participated in the conference sessions

2017 Annual Conference (Ottawa, ON – November 8-9, 2017)

The association is holding its annual conference in Ottawa, providing opportunity to connect with federal government partners and profile the marine renewable energy sector in the nation’s capital. This year’s conference theme, “A time to lead – advancing Canada’s marine renewable energy industry,” recognizes that many as climate change policy becomes more widespread and investment increases in renewable energy and clean tech, the opportunity for marine renewable energy advancement is also growing. The conference will explore the path forward and what the strategy could be shaped.

The conference includes presentations from over 40 industry leaders, government officials, and research experts, as well as a keynote addresses from Parliamentary Secretary to the Minister of Natural Resources, Kim Rudd and Geoff MacLellan, Nova Scotia Minister of Energy. Over 150 delegates are expected and the association also welcomes 10 international delegates from Wales, Scotland, Ireland, Chile, Singapore and the USA, and 15 industry showcase participants. Marine Renewables Canada is very appreciative of our sponsors for helping to make these annual conferences a success year after year.



In conjunction with the conference, the association is also holding a number of engagement and connector events including:

- *International Roundtable:* With support from Global Affairs Canada and ACOA, the association is hosting international delegates from key markets. The international roundtable roundtable/connector event is designed to connect and inform the Canadian sector (and vice-versa) of international market opportunities, best practices/lessons learned in other jurisdictions, potential partners, etc.
- *Reception on Parliament Hill:* Building on continuous engagement and relationship-building efforts, Marine Renewables Canada is co-hosting a reception on the Hill with Bill Casey MP and Senator Terry Mercer. This reception will provide a forum for updates on the opportunities and progress of the marine renewable energy sector and connect federal government officials with the marine renewable energy industry.



OUR MEMBERS

Marine Renewables Canada is pleased to welcome new members who have joined the association in 2017:

Blu-tility Wave Power Inc., Dalhousie University – Department of Oceanography, Glas Ocean Electric, London Offshore Consultants (Canada) Ltd., Mersey Consulting, Nova Innovation, Operational Excellence Consulting, Scotrenewables Tidal Power Ltd., Stapleton Environmental Consulting, Viking SeaTech Canada

Acadia Tidal Institute tidalenergy.acadiau.ca

Aecon Atlantic Industrial Inc. aecon.com

Allswater - allswater.com

Andritz Hydro Canada Inc. andritz.com/hydro

Arthur J. Gallagher Insurance & Risk Management ajgcanada.com

ASL Environmental aslenv.com

Atlantic Towing atlantictowing.com

Atlantic Centre for Energy atlanticaenergy.org

AXYS Technologies axystechnologies.com

BGC Engineering Inc. (BGC) bgcengineering.ca

Beth Dickens (Quocean Ltd.)

Bigmoon Power bigmoonpower.com

Black Rock Tidal Power blackrocktidalpower.com

Blumara blumara.com

Blu-tility Wave Power Inc. blu-tility.com

Bourque Industrial Ltd. bourqueindustrial.com

Canadian Hydrokinetic Turbine Testing Centre (CHTTC) chttc.ca

Canadian Seabed Research Ltd. csr-marine.com

Cascadia Coast Research Ltd. cascadiacoast.com

Charles Wood (Seawood Designs Inc.)



College of the North Atlantic – Burin Campus cna.nl.ca/Campus/BU

Cumberland Energy Authority cumberlandcounty.ns.ca/cumberland-energy-authority

Dalhousie University – Department of Oceanography dal.ca/faculty/science/oceanography

Dasco Equipment Inc. dascoei.ca

Deborah Boone

Digby Development Agency digbydistrict.ca

DNV GL dnvgl.com

DP Marine Energy Limited dpenergy.com

Dynamic Systems Analysis, Ltd. dsa-ltd.ca

Emera emera.com

Enginuity enginuityinc.ca

Envigour envigour.ca

Fundy Ocean Research Center for Energy (FORCE) fundyforce.ca

Glas Ocean Electric glasocean.com

Go With the Flow Technologies Inc. sifet.ca

Halifax Port Authority portofhalifax.ca

Hatch hatch.ca

Horizon Maritime horizonmaritime.com

Hughes Offshore & Shipping Services Inc. hughesoffshoreservices.ca

Hydro Group Plc hydrogroupplc.com

Institute for Ocean Research Enterprise (IORE) iore.ca

Instream Energy Systems Corp. instreamenergy.com

International Marine Energy internationalmarineenergy.com

Irving Equipment irvingequipment.com

Jessica McIlroy



John Woods

Jupiter Hydro Inc. jupiterhydro.com

Knight Piesold knightpiesold.com

Lengkeek Vessel Engineering Inc. lengkeek.ca

London Offshore Consultants (Canada) Ltd. loc-group.com

Luna Ocean Consulting lunaocean.ca

MacArtney Inc macartney.com

Marine Institute of Memorial University mi.mun.ca/mi_international

Martin Tampier

Mavi Innovations mavi-innovations.ca

McInnes Cooper mcinnescooper.com

McKeil Marine mckeil.com

Mersen ep-ca.mersen.com

Mersey Consulting mersey.ca

Minas Tidal minastidal.com

National Research Council nrc-cnrc.gc.ca

New Energy Corp newenergycorp.ca

Nova Innovation novainnovation.com

Nova Scotia Department of Energy gov.ns.ca/energy

Ocean Renewable Power Company (ORPC) orpc.co

Offshore Energy Research Association (OERA) oera.ca

OpenHydro Technology Canada Ltd. openhydro.com

Operational Excellence Consulting operational-excellence.ca

Port Saint John sjport.com

R.J. MacIsaac Construction Ltd. rjmiconstruction.ca



Rockland Scientific International rocklandscientific.com

ROMOR Atlantic Limited romor.ca

SCHOTTEL schottel.de

Scotrenewables Tidal Power Ltd. scotrenewables.com

Sea Mammal Research Unit (SMRU) smru.st-and.ac.uk

Seaforth Geosurveys seaforthgeosurveys.com

SRM Projects srmprojects.ca

Stanley Smith

Stantec stantec.com

Stapleton Environmental Consulting stapletonenvironmental.com

Strum Consulting strum.com

Superport Marine superport.ns.ca

Tony Tung

Ulnooweg Development Group ulnooweg.ca

UVic IESVic www.iesvic.uvic.ca

Viking SeaTech Canada vikingseatech.com

Waterford Energy Services Inc. wesi.ca

Paul Waldoch (Newterra)

Yourbrook Energy Systems yourbrookenergy.com

Affiliate Members

Canadian Hydropower Association canadahydro.ca

Canadian Solar Industries Association (CanSIA) cansia.ca

Canadian Wind Energy Association (CanWEA) canwea.ca

Clean Energy BC cleanenergybc.org



Marine Energy Wales marineenergywales.co.uk

Maritimes Energy Association (MEA) maritimesenergy.com

Ocean Technology Council of Nova Scotia (OTCNS) otcns.ca

Pacific Ocean Energy Trust (POET) pacificoceanenergy.org