# Guide to Preparing an Application for Permit under the *Marine Renewable-energy Act*

## *Document Information*

## *Disclaimer*

The Guide to Preparing an Application for Permit under the *Marine Renewable-energy Act* is for information purposes only. It is not a substitute for the *Marine Renewable-energy Act* or its regulations. In the event of any inconsistency between this guide and *Act* or regulations, the *Act* or regulations would prevail.

For the most up-to-date versions of *Marine Renewable-energy Act* and regulations, please consult the Department of Justice website.

## *Updates*

This document may be reviewed and updated periodically by the Department of Energy. For the most up-to-date version, please consult the Department of Energy website.

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## *Introduction*

The Nova Scotia Department of Energy is committed to the sustainable development of Nova Scotia's marine renewable energy potential. A permit may be issued for the construction, installation and operation of:

(i) An unconnected generator, including any cable or other equipment or structure owned by the permit holder and used or intended to be used with the generator;

(ii) Any cable or other equipment or structure owned by the permit holder and used or intended to be used with a generator; or to

(iii) One or more connected generators, including any cable or other equipment or structure owned by the permit holder and used or intended to be used with the generator(s) to demonstrate to the Minister the generators' potential or capacity to produce marine renewable-electricity.

Interested parties seeking a permit under the *Marine Renewable-energy Act* are required to submit an application to the Department of Energy. The submission must include the prescribed information set out in the *Marine Renewable-energy General Regulations* – including information about the technology to be deployed, any potential environment and socio-economical effects (positive and negative), potential or capacity to produce marine renewable electricity (if applicable) and should include a discussion of how the permitted activity will advance the responsible development of marine renewable energy.

*Application*

The Department of Energy recognizes the early state of the marine renewable energy sector. The *Marine Renewable-energy Act* and regulations have been drafted to ensure that their application can be flexible and beneficial to concept designs, prototypes under development, pre-production installations, and experimental marine energy projects and activities, as well as to small-scale and large-scale demonstration projects. It is advised that project applicants should contact the Department of Energy early in the planning process for further guidance in preparing a submission for formal review.

*Demonstration Permits*

Under the *Marine Renewable-energy Act*, a permitting regime has been established to facilitate development of innovative demonstration and/or pre-commercial projects. We believe the development of renewable energy from the ocean could be a critical element in the future provincial agenda. Applications for demonstration permits will be reviewed according to the provisions in the *Marine Renewable-energy Act*, including the following:

- The location of the project in that the generator is to be located wholly or partially within an area of marine renewable-energy priority;
- The aggregate nameplate capacity of all of the generators operating under the demonstration permit will not exceed five megawatts;
- The issuance of the demonstration permit will not result in the aggregated nameplate capacity of all generators operating under the program to exceed the program cap of ten megawatts; and,
- The Minister is satisfied that the issuance of the demonstration permit is in the public interest, having taken into account:

- the nature of the generator,
- the extent to which the generator:
  - differs from other generators in respect of which licences or permits have been issued under this Act, and
  - is based on an innovative technology or design,
- the extent to which the approval of the permit supports the public policy goals and objectives of the Government, taking into consideration a projects' potential to contribute to:
  - Nova Scotia's longer-term renewable electricity mix;
  - Reductions in emissions of greenhouse gases and other pollutants;
  - A diverse and more secure mix of energy;
  - Socio-economic community and business development opportunities; and,
  - Sector cost reductions and innovation.
- Is consistent with any policies, plans or strategies of the Government respecting the development of marine renewable-energy resources,
- The effect on electricity rates in the Province and ratepayers,
- Any risk to public safety or the environment, and
- Any other factors the Minister considers relevant.

## *Importance of Early Engagement for Demonstration Permits*

Applicants interested in obtaining a permit for testing and/or demonstrational purposes are encouraged to contact the Department of Energy in the early stages of project planning. The objective of early discussions is to facilitate responsible development and preparation of a complete application in order to support a timely and efficient evaluation process.

Applicants are encouraged to contact the Department of Natural Resources (DNR), Land Services Branch early in the pre-application process to initiate the issuance of a report identifying known encumbrances or conflicting land use in the permit area. The DNR report will be shared directly with the Program Administrator at the Department of Energy. An application for a demonstration permit will be deemed incomplete until the Department of Energy receives this report from DNR.

Applicants are also encouraged to contact the Mi'kmaq of Nova Scotia early in the project planning process. Early engagement will ensure the concerns of the Mi'kmaq are addressed according to the principles set out in the Applicants' Guide: The Role of Applicants in Crown Consultation with the Mi'kmaq of Nova Scotia, as detailed in Section 10.0 below.

## *Public Disclosure*

In accordance with the *Marine Renewable-energy Act*, the Minister of Energy must notify the public of the issuance of a permit by publishing all of the following information on the Department of Energy website:

- the identity and address of the permit holder;
- the permit area; and
- any performance or other requirements that must be satisfied by the permit holder within a specific period.

Please note: The *Freedom of Information and Protection of Privacy Act* (FOIPOP) provides access to most records under the control of the provincial government, while protecting the privacy of individuals who do not want their personal information made public. The Act strives for balance between an individual's right to know and an individual's right to privacy.

The Act supports the belief that every document, record or file held by the government, regardless of format, is subject to release to the general public. Specific and limited exemptions from disclosure are provided for in the Act to protect against the unreasonable invasion of personal privacy; to prevent unfair advantages occurring in commercial or government transactions; to protect law enforcement activities; and to safeguard the business conducted by government.

If there is information in your application package that you consider to be confidential business information which you would prefer to have protected in the event of a FOIPOP request, this information should be clearly identified in your application.

## *Consultation with other Government Departments and Agencies*

When considering issuance of a permit, the Department of Energy may consult with any department of the public service of the Province or of Canada, government agency or agency of the Government of Canada which exercises regulatory authority over any aspect of the activities to be carried on under a permit. In fulfilling this mandate, the application, including all supporting documents, may be circulated to relevant government departments and agencies. A basic overview of the various permits and approvals that may be required for various marine renewable energy projects is provided in Appendix C for reference.

The Nova Scotia Department of Energy has established a One Window Committee comprised of provincial and federal departments and agencies with a mandate or interest in marine renewable energy. The mandate of the One Window Committee is to coordinate the provision of timely advice with regards to the legislative frameworks respecting marine renewable energy and the estimated time for processing permits, approvals and authorizations. The Department of Energy will engage the One Window Committee as part of the application review process.

The Department of Energy will, in respect of an application for a permit, take into account any concerns expressed by other government departments and agencies about the application when deciding whether to approve or deny the application and when prescribing any terms or conditions of the permit. However, before taking into account any concerns expressed about an application, the Department of Energy will inform the applicant of the concerns expressed and provide the applicant with an opportunity to respond to the concerns expressed.

## *Consultation with the Mi'kmaq of Nova Scotia*

The Department of Energy shall consult with the Mi'kmaq of Nova Scotia about all applications pursuant to the *Government of Nova Scotia Policy and Guidelines: Consultation with the Mi'kmaq of Nova Scotia*. See also Section 10.0 below.

## *Climate Change Adaptation*

To reduce project risk associated with climate change, project vulnerability should be considered. It is important to consider how a changing climate may impact the project over its expected lifetime and how this may affect the environment and the on-going physical and financial viability of the project.

One of the most compelling reasons for considering climate change is that climate data play a key role in the planning and design of infrastructure. Under climate change, the use of historic data alone is no longer appropriate to predict future conditions. Conventional uses of historic data such as the exclusive use of climatic normals could render infrastructure vulnerable by leading to designs with insufficient load and adaptive capacity, or by leading to planning decisions that situate projects in environments that become unsafe or difficult to maintain over time.

Aspects of the application where you may want to take climate change into consider include your environmental and risk management plans, device siting considerations, and maintenance and operation costs.

For further information, the applicant can contact Nova Scotia Environment's Climate Change Unit at https://climatechange.novascotia.ca/.

## *Contents of an Application*

*Reminder: An application for a demonstration permit will be deemed incomplete until the Department of Energy receives a report from DNR identifying known encumbrances or conflicting land use within the proposed permit area.*

### *1.0 Applicant Contact Information*

The Department of Energy may need to contact you at different stages of the evaluation process to clarify the information submitted and/or to request additional information. Please identify a primary contact who the Department will use throughout the application review and evaluation process when providing status updates and/or sending requests for more information. In the event that the primary contact cannot be reached, the Department will then contact the secondary contact. There are specific timelines associated with evaluation process, therefore, it is important that you notify the Department in a timely manner if the contact information changes during the evaluation process. A complete application must include the following information:

- Applicant Name;
- Company/Organization;
- Mailing Address;
- Telephone Number; and,
- Primary and Secondary Contact Information.

### *2.0 Associated Regulatory Approvals*

While no additional permit authorizations or approvals are required, if you have applied for other provincial and/or federal regulatory permits, authorizations or approvals related to the proposed

project, you are encouraged to provide the name of the issuing agency, type of approval, date applied and date of issuance (if issued) in your application.

### *3.0 Project Description*

Include a complete description of the project through all stages of construction, operation and decommissioning and site rehabilitation.

3.1 Indicate the nature of the activity to be permitted (in-stream tidal, wave, wind, lagoon, etc.).

3.2 Provide a description of the project, including infrastructure associated with the project:

- The physical works associated with the project (e.g., piles, gravity bases, substations, control building, transmission or other structures) including their purpose, approximate dimensions, and capacity. Include existing structures or related activities that will form part of or are required to accommodate or support the project.
- If the project or one or more components of the project is an expansion of an existing licensed or permitted project, describe the size and nature of the expansion with reference to the previously licensed/permitted project.

### *4.0 Schedule of Activities*

Include a complete activity schedule of the project through all stages of construction, operation, decommissioning and site rehabilitation.

4.1 A timeline of each phase of the project, including:

a) The expected date each generator intended to be operated under the authority of the permit will be constructed or installed in the permit area.
b) If a connected generator will be operated under the permit, the expected date that the generator will be interconnected with an electrical grid of a public utility or an onshore electricity consumer.
c) The expected date any cable or other equipment or structure intended to be operated under the authority of the permit will be constructed or installed in the permit area.
d) The expected date that decommissioning and site rehabilitation activities will begin.

### *5.0 Location of Proposed Activities*

Accurately describing the location of your project is important for determining if your project is eligible for a permit. It is important to keep in mind that the footprint of the proposed permit area may be used to determine the rent payments under Section 23(3) of the *Marine Renewable-energy General Regulations*. The following information must be included in the description of a project's proposed location:

5.1 Legal survey prepared by a Nova Scotia Land Surveyor depicting the coordinates (i.e. longitude/latitude using international standard representation in degrees, minutes, seconds) depicting the permit area must be provided.

5.2 Site map produced at an appropriate scale that clearly illustrates the proposed location of any connected and/or unconnected generator, cable or other equipment or structure intended to be constructed, installed or operated under the authority of the permit.

5.3 Provide an explanation for the selection of the permit site, including information on any alternative sites considered. If known, include the proximity of the designated project to lands and resources currently or traditionally used by Mi'kmaq, provincial and federal lands, nearby communities, fisheries and fishing areas, and environmentally sensitive areas (e.g., protected areas).

5.4 A description of any special site characteristics that are essential for the activities to be carried on under the permit. If known, include proximity to key linear and other transportation components (e.g. ports, railways, roads, electrical power transmission lines).

*Please note: If you are applying for a permit within the FORCE MREA you may be asked to provide a letter of support from the Fundy Ocean Research Center for Energy (FORCE) during the review process.*

## *6.0 Technical Components*

The technical information you provide will play an important role in the review process, therefore, please provide as much detail as possible about your device.

6.1 A description of each generator intended to be operated under the permit, including at minimum the following technical and operational information:

- Proof of ownership of the proposed technology;
- Technology Readiness Level (TRL) expected at the start and end of the permit period, refer to Appendix B for TRL descriptions;
- Description of any structure or anchor used to maintain the device or technology in place;
- Location of device in the water column;
- Direction and speed of any associated moving parts;
- Energy conversion efficiency;
- Device survivability and reliability strategies; and,
- Nameplate capacity.

6.2 A description of any cable or other equipment or structure intended to be constructed, installed or operated under the authority of the permit, including a description of all on-land ancillary equipment.

## *7.0 Innovation*

The demonstration permitting program was established to foster innovation and support new technology development. We are looking for projects that will test new ideas and concepts for generating marine renewable energy. The extent to which your generator is based on an innovative technology or design will be considered in the review process.

7.1 Describe how your project is innovative and differs from marine renewable energy projects under development in Nova Scotia; and if the project addresses any technical and/or non-technical obstacles(s) facing the marine renewable energy sector. Some aspects in which a project may be innovative include, but are not limited to:

- Developing and deploying effective solutions to sector-wide challenges, including but not limited to, technical, operational, environmental and social issues;

- Cross-sector collaboration involving community organizations, universities, research groups, non-profit societies, government and/or the private sector;
- Low risk approach to the operation and maintenance of marine renewable energy devices;
- Deployment of new methods or concepts that will lower the cost of producing marine renewable energy; and,
- Integration with storage and/or other renewable energy technologies.

## *8.0 Draft Environmental Monitoring Plan*

You are required to prepare and submit a draft environmental monitoring plan detailing the processes and activities to be undertaken to measure effects of the project on the natural environment. The monitoring plan should be designed to describe the existing state of the environment and to monitor changes and/or trends in valued environmental components that may be caused as a result of carrying out the project.

The information detailed in this section is meant to be a brief assessment of the environmental interactions of the project. You should note that environmental studies and monitoring requirements can contribute significantly to overall project costs for demonstration and commercial scale projects. You should engage qualified individuals and/or organizations to support their project's pre-installation and post-installation environmental monitoring and compliance requirements.

8.1 A description of the physical and biological setting, including the physical and biological components in the area that may be adversely affected by the project (e.g., marine and terrestrial ecosystems that may be affected);

8.2 Baseline data for the permit area that is publicly available at the time of submission and any existing information on the interaction between similar infrastructure and marine life;

8.3 An assessment of the effects on the environment of any generator, cable or other equipment or structure to be constructed, installed or operated under the permit and how that infrastructure will interact with the environment, considering all of the following:

a) the physical characteristics of the permit area,

b) the distribution and behavior of the species in the permit area, considering:
   - fish and fish habitat,
   - marine invertebrates,
   - marine mammals,
   - marine and/or migratory birds,
   - acoustics,
   - physical oceanography,
   - currents and waves, and
   - benthic environment(s).

c) changes to the environment that may occur, as a result of carrying out the project, on provincial lands, on lands in a province other than the province in which the project is proposed to be carried out, or outside of Canada.

8.4 A description of known effects on Mi'kmaq of any changes to the environment that may be caused as a result of carrying out the project, including effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

*Please note: Successful applicants will be required to submit a final environmental monitoring plan and obtain Ministerial approval before installing any generator, including any cable or any other equipment or structure owned by the permit holder and used or intended to be used with the generator.*

*Please note: The draft environmental monitoring plan submitted to the Department of Energy does not constitute an environmental assessment under the Environment Act and may not necessarily satisfy the requirements for an environmental assessment, should one be required for the project.*

## *9.0 Risk Management Plan*

You are required to prepare and submit a risk management plan that describes known and potential environmental, social and financial risks of the proposed project, as well as the measures you propose to take to anticipate, avoid, prevent, mitigate or manage the risk. Applicants should apply an ecosystem-based approach when identifying, analyzing and evaluating the risks of the proposed project to the environment, taking into account all life stages of species that may be affected by the project and potential cumulative effects.

A complete risk management plan must, as a minimum, include the following:

9.1 A description of the steps that have been taken to identify, analyze and evaluate any risks relating to the activities to be carried on under the permit, including any of the following:
   a) risks to the environment and public safety,
   b) operational or technical risks,
   c) risks posed to activities that are or may be undertaken by other persons in the proposed permit area,
   d) financial risks;

9.2 A description of any risk identified by the applicant, an assessment of the probability that the risk will occur and, for each risk identified,
   a) a qualitative and quantitative assessment of the probability that the risk will occur,
   b) a qualitative and quantitative assessment of the consequences of the risk occurring, and
   c) a description of the measures that the applicant proposes to take to anticipate, avoid, prevent, mitigate or manage the risk;

9.3 A description of how the applicant will inform all individuals directly affected by any identified risk of the risk and the measures that the applicant proposes to take to anticipate, avoid, prevent, mitigate or manage the risk;

9.4 A description of how the applicant will monitor compliance with the risk management plan, including any audits, inspections, data collection and analysis.

If your application is successful, your submitted risk management plan will receive approval and be considered final, however, plan updates may be requested by the Department throughout the duration of your project.

## *10.0 Applicant Engagement*

We encourage you to initiate early and open communication with the Mi'kmaq of Nova Scotia and the public. While the information provided will not be used in the evaluation process, it will inform you in the planning and design phase of your project.

### *The Mi'kmaq of Nova Scotia*

The Government of Nova Scotia prioritizes the continued development of a relationship with the Mi'kmaq of Nova Scotia which includes greater opportunities for Mi'kmaq participation in social and economic development, and meaningful consultation with the Mi'kmaq on decisions that impact land and natural resources. Experience has shown that there are significant benefits of engagement by applicants with the Mi'kmaq of Nova Scotia early in the planning and design phases of a proposed project.

Additionally, the Province is committed to meeting its legal obligations to consult with the Mi'kmaq about potential impacts to Aboriginal or treaty rights. Early engagement by applicants provides an opportunity to learn about Mi'kmaq interests and concerns and identify ways to avoid or mitigate potential impacts early in the project's development. Addressing these considerations early will improve project design and reduce the potential for future project delays and increased costs. Provide the following information to the extent that it is available. However, if you have not undertaken any engagement activities, indicate this in your application.

10.1 A description of the engagement activities carried out to date with the Mi'kmaq of Nova Scotia, including:
   a) specific committees, communities and/or organizations engaged to date with regard to the project and a summary of the information shared;
   b) date(s) of engagement or discussion(s); and,
   c) means of engagement or discussion(s) (e.g., community meetings, mail or telephone, etc.).

10.2 An overview of key comments and concerns expressed and an overview of any responses provided to each of these comments or concerns, and if applicable, a summary of changes made to the proposed project.

10.3 A description of all steps taken or proposed to be taken to address any concerns expressed.

It is expected that a successful applicant will continue engaging with the Mi'kmaq of Nova Scotia for the duration of their project. An engagement plan outlining proposed and ongoing engagement or discussion activities and general schedule for these activities may be requested.

The duty to consult lies with the Crown. However, the Department will accept relevant information and documentation from applicant engagement processes, and will use it, along with other relevant information, to inform the duty to consult. Nonconfidential information provided in the project application will be shared with the Mi'kmaq and used to facilitate Crown consultation in relation to the project. Minimal applicant engagement may result in delays in completing the Crown's consultation process as well as requests for additional information to support consultation.

Additional guidance about consultation with the Mi'kmaq of Nova Scotia is available from the Nova Scotia Office of Aboriginal Affairs and applicants are encouraged to contact the Department of Energy for additional information.

### *Public Engagement*

You are encouraged to engage with community members and stakeholders to discuss the potential effects of your project, as well as identify and address concerns. In your application,

provide the following information to the extent that it is available. However, if you have not undertaken any engagement activities, you must indicate this in your application.

10.4 An overview of ongoing or proposed stakeholder engagement activities, including:
   a) specific committees, communities and/or organizations engaged to date with regard to the project and a summary of the information shared;
   b) date(s) of engagement or discussion(s); and,
   c) means of engagement or discussion(s) (e.g., community meetings, mail or telephone, etc.).

10.5 An overview of key comments and concerns expressed to date by stakeholders and any responses that have been provided.

10.6 A description of all steps taken or proposed to be taken by the applicant to address any concerns

## *11.0 Financial Information*

***Only applicable to applicants applying for a demonstration permit (connected generator).***

You must provide the following financial information to support the calculation of an appropriate rate for the Power Purchase Agreement (PPA).

11.1 The cost of designing, constructing and installing any generator, cable or other equipment or structure which are required to carry out the permitted activity. Please include, at minimum, the costs associated with the following items:
- permitting and environmental compliance;
- site assessment;
- project development;
- project design and engineering;
- manufacturing;
- installation, including transport;
- associated infrastructure;
- interconnection;
- operations and maintenance;
- contingencies;
- insurance;
- administration; and,
- environmental monitoring.

11.2 Any costs or revenues relating to the operation of any generator, cable or other equipment or structure which are essential in carrying out the permitted activity for the duration of the proposed period during which the permit will be valid.

11.3 Estimated cost of site restoration and decommissioning of any generator, cable or other equipment or structure intended to be constructed, installed or operated within the permit area.

11.4 A list of all sources of financing (e.g., grants, debt, equity), including a list of investors, a list of any grants and loans you have applied or will be applying, and a list of the grants and loans which you have or expect to receive.

## *12.0 Supporting Documents*

As part of the application review process, the Department of Energy will provide a 30-day public comment period for all projects applying for permit. A separate file must be submitted with the following information:

12.1 A brief project summary that includes the name of the applicant, an image of the proposed technology, a general description of the proposed technology and the project location on a map the shows the following:

a) the location of the project is in relation to key features of the area, such as natural landmarks, buildings, roads, ports and electrical power transmission lines; and,

b) a general site plan that shows the location of any generator, cable or other equipment or structure intended to be constructed, installed or operated under the permit.

### *13.0 Voluntary Information*

Statements in relation to supply chain and/or employment opportunities associated with the proposed project are not required, but if you believe your project may generate such things, you may submit a written explanation detailing how your proposed project will generate economic benefits. The information provided will not be used in the evaluation of your project, but will be used to inform the Department of Energy about the state of the sector and sector development, including opportunities for sector growth.

### *How to Submit an Application*

The provision of timely and complete information is necessary to facilitate an efficient and predictable decision-making process. In accordance with the *Marine Renewable-energy Act*, the Minister will inform you within 90 days of receiving your application if it is incomplete and what additional information is required. Upon receiving a complete application, the Minister shall approve or deny your application no later than 90 days after receiving a complete application.

The Department of Energy requires all applicants applying for a Permit under the *Marine Renewable-energy Act* to submit an electronic copy of all submission information to the Program Administrator. Applicants are asked to establish a File Transfer Protocol (FTP) site with files separated according to Section Number (1-12). The site is to be maintained for a period of at least 14 days following notification to the Program Administrator and submission of all applicable fees. Login information is to be shared with the Program Administrator.

To download an application for a permit under the Marine Renewable Energy Act for evaluation under the *Marine Renewable-energy Act*, please visit the Nova Scotia Department of Energy website.

For alternate means of submitting a project description or other enquiries, please send an e-mail to the Program Administration at marinerenewables@novascotia.caor call 1.902.424.7090.

## *APPENDIX A – Concordance Table*

Please provide a concordance table with your application, a sample concordance table is provided below.

| Concordance Table to Location in Application | | |
|---|---|---|
| **Regulatory Requirement** | **Description** | **Reference section and page number in Application** |
| An application for a demonstration permit under clause 35(1)(a) or (b) of the Act must include the following: | | |
| 9(a) | Applicant name, address, email address and telephone number. | |
| 9(b) | A schedule and description of the activities to be carried on under the authority of the permit. | |
| 9(b)(i) A | The expected date for the construction or installation in the permit area of any generator intended to be operated under the authority of the permit. | |
| 9(b)(i) B | The expected date for the construction or installation in the permit area of any cable or other equipment or structure intended to be used with a generator. | |
| 9(b)(ii) | The expected date that decommissioning and site rehabilitation activities will begin. | |
| 9(c) | A description of each generator intended to be operated under the authority of the permit, including technical and operational information and its nameplate capacity. | |
| 9(d) | A description of any cable or other equipment or structure intended to be constructed, installed or operated under the authority of the permit. | |
| 9(e) | The proposed permit area with surveyed coordinates prepared by a Nova Scotia Land Surveyor. | |
| 9(f) | A plan showing the proposed location of any generator, cable or other equipment or structure intended to be constructed, installed or operated under the authority of the permit. | |
| 9(g) | Information on any alternative sites considered by the person applying for the permit and an explanation of why the proposed site was selected over the alternative sites. | |
| 9(h) | A description of any special site characteristics which are essential for the activities to be carried on under the authority of the permit. | |
| 9(i) | If the permit is for a generator that the applicant believes uses an innovative technology or design, or takes an innovative approach to the production of marine renewable electricity or | |

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| | the development of marine renewable-energy resources, an explanation of the basis for this belief. | |
| 9(j) | A draft environmental monitoring plan. | |
| 9(k) | A risk management plan. | |
| 9(l) | A description of all steps taken to identify the concerns of the public and aboriginal people with respect to the proposed generator and any cable or other equipment or structure intended to be constructed, installed or operated under the authority of the permit. | |
| 9(m) | A list of all concerns expressed by the public and aboriginal people with respect to the proposed generator and any cable or other equipment or structure intended to be constructed, installed or operated under the authority of the permit. | |
| 9(n) | A description of all steps taken or proposed to be taken by the applicant person to address concerns of the public or aboriginal people identified. | |
| In addition to the above, an application for a demonstration permit under clause 35(1)(c) of the Act must include the following: | | |
| 10(b) | The expected date that the generator will be interconnected with an electrical grid of a public utility or an onshore electricity consumer. | |
| 10(c) | The cost of designing, constructing and installing any generator, cable or other equipment or structure which are required to carry out the permitted activity. | |
| 10(d) | A list of all sources of financing, including a list of investors, a list of any grants and loans for which the person has applied or will be applying, and a list of the grants and loans which the person has or will receive. | |
| 10(e) | The projected costs and revenues relating to the operation of any generator, cable or other equipment or structure which are essential in carrying out the permitted activity for the duration of the proposed period during which the permit will be valid. | |
| 10(f) | Estimated cost of site rehabilitation and decommissioning of any generator, cable or other equipment or structure intended to be constructed, installed or operated within the permit area. | |

# *APPENDIX B – Technology Readiness Level*

*Adapted from NREL's Marine and Hydrokinetic Technology Development Risk Management Framework (2015).*

| Relative Level of Technology Development | Technology Readiness Level (TRL) | TRL Definition | Description |
|---|---|---|---|
| System Operations | TRL 9 | Actual system operated over the full range of expected mission conditions. | The technology is in its final form and operated under the full range of operating mission conditions. Examples include using the actual system with the full range of wastes in hot operations. |
| System Commissioning | TRL 8 | Actual system completed and qualified through test and demonstration. | The technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental testing and evaluation of the system with actual waste in hot commissioning. Supporting information includes operational procedures that are virtually complete. An Operational Readiness Review has been successfully completed prior to the start of hot testing. |
| | TRL 7 | Full-scale, similar (prototypical) system demonstrated in relevant environment. | This represents a major step up from TRL 6, requiring demonstration of an actual system prototype in a relevant environment. Examples include testing full-scale prototype in the field with a range of simulants in cold commissioning.1 Supporting information includes results from the full-scale testing and analysis of the differences between the test environment, and analysis of what the experimental results mean for the eventual operating system/environment. Final design is virtually complete. |
| Technology Demonstration Technology Development | TRL 6 | Engineering/pilot-scale, similar (prototypical) system validation in relevant environment. | Engineering-scale models or prototypes are tested in a relevant environment. This represents a major step up in a technology's demonstrated readiness. Examples include testing an engineering scale prototypical system with a range of simulants.1 Supporting information includes results from the engineering scale testing and analysis of the differences between the engineering scale, prototypical system/environment, and analysis of what the experimental results mean for the eventual operating system/environment. TRL 6 begins true engineering development of the technology as an operational system. The major difference between TRL 5 and 6 is the step up from laboratory scale to engineering scale and the determination of scaling factors that will enable design of the operating system. The prototype should be capable of performing all the functions |

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| | | | that will be required of the operational system. The operating environment for the testing should closely represent the actual operating environment. |
| | TRL 5 | Laboratory scale, similar system validation in relevant environment. | The basic technological components are integrated so that the system configuration is similar to (matches) the final application in almost all respects. Examples include testing a high-fidelity, laboratory scale system in a simulated environment with a range of simulants1 and actual waste.2 Supporting information includes results from the laboratory scale testing, analysis of the differences between the laboratory and eventual operating system/environment, and analysis of what the experimental results mean for the eventual operating system/environment. The major difference between TRL 4 and 5 is the increase in the fidelity of the system and environment to the actual application. The system tested is almost prototypical. |
| Technology Development | TRL 4 | Component and/or system validation in laboratory environment. | The basic technological components are integrated to establish that the pieces will work together. This is relatively "low fidelity" compared with the eventual system. Examples include integration of ad hoc hardware in a laboratory and testing with a range of simulants and small scale tests on actual waste.2 Supporting information includes the results of the integrated experiments and estimates of how the experimental components and experimental test results differ from the expected system performance goals. TRL 4-6 represent the bridge from scientific research to engineering. TRL 4 is the first step in determining whether the individual components will work together as a system. The laboratory system will probably be a mix of on hand equipment and a few special purpose components that may require special handling, calibration, or alignment to get them to function. |
| Research to Prove Feasibility | TRL 3 | Analytical and experimental critical function and/or characteristic proof of concept. | Active research and development (R&D) is initiated. This includes analytical studies and laboratory-scale studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative tested with simulants.1 Supporting information includes results of laboratory tests performed to measure parameters of interest and comparison to analytical predictions for critical subsystems. At TRL 3, the work has moved beyond the paper phase to experimental work that verifies that the concept works as expected on simulants. Components of the technology are validated, but there is no attempt to integrate the components |

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| | | | into a complete system. Modeling and simulation may be used to complement physical experiments. |
| Basic Technology Research | TRL 2 | Technology concept and/or application formulated. | Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are still limited to analytic studies.<br>Supporting information includes publications or other references that outline the application being considered and that provide analysis to support the concept. The step up from TRL 1 to TRL 2 moves the ideas from pure to applied research. Most of the work is analytical or paper studies with the emphasis on understanding the science better. Experimental work is designed to corroborate the basic scientific observations made during TRL 1 work. |
| | TRL 1 | Basic principles observed and reported. | This is the lowest level of technology readiness. Scientific research begins to be translated into applied R&D. Examples might include paper studies of a technology's basic properties or experimental work that consists mainly of observations of the physical world. Supporting Information includes published research or other references that identify the principles that underlie the technology. |

# *APPENDIX C – Relevant Provincial and Federal Permits and Approvals*

The following provides a basic overview of the various permits and approvals that may be required for various marine renewable energy projects. This is not an exhaustive list of permits and approvals, but a general overview to assist applicants in thinking about their project from a regulatory perspective.

*Provincial Environmental Assessment*
All projects with a production rating of 2 MW or larger will require site specific Environmental Assessments (EA) in accordance with the Environment Act and Environmental Assessment Regulations. Developers are encouraged to obtain copies of the Act and regulations and contact the EA Branch before beginning an EA. At the initial stages of project development, the EA Branch works with proponents in identifying and addressing environmental concerns.

For more information on the EA process, please visit the EA Branch website at https://www.novascotia.ca/nse/ea/ or contact the EA Branch by phone (902-424-3600) or email (EA@novasocita.ca). Applicants can also refer to the Department of Environment's Proponent's Guide to Environmental Assessment, available on the website.

*Parks Canada*
If all or part of a proposed project would occur on or over federal land owned by Parks Canada, or if it has the potential to affect a national park, national park reserve, national historic site, historic canal or national marine conservation area, the applicant is advised to contact the office administering the park(s) or site(s) in question.

*Federal Canadian Environmental Assessment*
A federal Environmental Assessment (under Canadian Environmental Assessment Act) may be required when a federal authority provides financial assistance to the applicant; sells, leases, or otherwise disposes of federal lands; or issues a permit, license, or any other approval as prescribed in the *Law List Regulations*.
Applicants must provide levels of data for the EA that are proportionate to the risk and scale of potential environmental effects. Where greater risks are identified, assessment requirements will be more rigorous, and any mitigation measures and monitoring requirements will be more onerous. The EA process ensures that site decisions are made in a way that recognizes and avoids any significant adverse environmental effects of projects, including effects on other users of the ocean or on the marine environment. If a federal Environmental Assessment is triggered, projects may undergo a joint EA process between Nova Scotia and the federal government to avoid duplication.
Basic information on the federal EA process can be found through the Canadian Environmental Assessment Agency.

*Canadian Environmental Protection Act*
The disposal of wastes and other matter at sea within Canadian jurisdiction is prohibited, unless the disposal is done under a permit issued by the Minister of Environment and Climate Change Canada. Permits are granted on a case-by-case basis after an application and review process. Applicants for a disposal at sea permit must provide detailed disposal data, proof that the applicant published a notice of intent in a local newspaper, any required samples and analyses and payment of fees. A permit for disposal at sea will be approved only if it is the environmentally preferable and

practical option. Basic information on the Canadian Environmental Protection Act can be found through the Canadian Environmental Protection Act Environmental Registry.

*Fisheries Act*

Projects that pose a risk to fish and fish habitat must submit a Request for Review to their regional Fisheries Protection Program office. The review will consider the project plans to determine the project's likely impacts on fish and fish habitat. If the applicant cannot design and plan their project so that serious harm to fish is unlikely to occur, a Fisheries Act authorization may also be required. More information on the Fisheries Protection Program's regulatory review and authorization requirements can be found here.

Additional federal legislation that may be applicable includes:

- Migratory Birds Convention Act;
- Navigation Protection Act;
- Oceans Act; and
- Species at Risk Act.