

BAY OF FUNDY

# TIDAL ENERGY

*a response to the*  
**Strategic Environmental  
Assessment**



SECTION 1

**3**

**Preface**

Bay of Fundy Tidal Energy

**5**

**Executive Summary**

**6**

**Energy Context**

Energy Strategy

Emissions

Legal Requirements

Production Costs

Carbon Costs

**8**

**Resource Potential**

Bay of Fundy

Minas Channel

World Market Potential

**9**

**Tidal Technology**

In-stream Devices

Questions

Tidal Lagoon

**11**

**Demonstration**

Fundy Tidal Energy Centre

Measures of Success

**12**

**Protection**

Environmental Safeguards

Strategic Environmental Assessment

Environmental Assessment

Regulatory Path for Tidal Projects

One-Window Standing Committee

Monitoring

Removal and Removable

Small Scale

Marine Renewable Legislation

SECTION 2

**18**

**Marine Renewable  
Energy in the  
Bay of Fundy**

Response to SEA  
Recommendations

# Bay of Fundy Tidal Energy

100 billion tonnes of seawater flows in and out of the Bay of Fundy each tide cycle — more than the combined flow of the world’s freshwater rivers.

---

**A** new technology is emerging to harness that sea power: *tidal in-stream energy conversion* (TISEC) devices. Many of these devices loosely resemble underwater windmills.

Research estimates suggest TISEC development in the Minas Channel area of the Bay of Fundy could mean up to:

- 300 megawatts of renewable energy (equal to about 100,000 homes),
- one million tonnes of greenhouse gas displaced per year (equal to about 200,000 cars taken off the road), and
- hundreds of millions (\$) in investment.

While the technology is exciting, Nova Scotians want to better understand its potential effects in the Bay of Fundy. The Province has elected to proceed cautiously:

1. creating a regulatory framework for tidal development
2. inviting developers to participate in a demonstration-scale tidal project
3. commissioning a Strategic Environmental Assessment (SEA)

The following document is a response to the SEA, completed in spring 2008. The document is divided into two sections:

**Section one** contains the executive summary, as well as an overview of Nova Scotia’s specific approach to tidal energy.

**Section two** addresses the Province’s broader approach to marine renewable energy in the Bay of Fundy, with specific responses to each recommendation in the SEA.



# SECTION 1

**Overview**



**Tidal Power Potential**

*100 billion tonnes of seawater  
flows in and out of the Bay of  
Fundy each tide cycle.*

# Executive Summary

In 2007, the Nova Scotia Department of Energy (DOE) commissioned the Offshore Energy Environmental Research Association (OEER) to carry out a Strategic Environmental Assessment (SEA) focusing on tidal energy development in the Bay of Fundy. Completed April 30, 2008, the SEA contains 29 recommendations.

The Province accepts both the direction and the objectives of the SEA. Some recommendations point to immediate action; others will come into play at future decision points.

Generally speaking, the SEA follows the Province of Nova Scotia's strategic direction around energy and climate change – that is, to grow the economy while protecting the environment. The SEA is also closely aligned with the Province's fundamental approach to tidal energy – cautious, incremental development.

Nova Scotians want to understand the potential of this technology on a demonstration basis before considering any large-scale commercial development. Demonstration will also allow for further refinement of many elements, including regulation, technology, and our own expectations. The Bay of Fundy is an important environmental, biological, and socio-economic resource to Nova Scotia, and development must take place responsibly.

## **More specifically, the Province is taking the following actions:**

- providing OEER up to \$2 million for tidal energy research
- providing \$4.7 million to support the creation of a demonstration facility for *tidal in-stream energy conversion* (TISEC) devices, pending environmental approvals, through the federal *Ecotrust for Clean Air and Climate Change*
- providing \$300,000 to support environmental research and monitoring work (also through *Ecotrust* funding)
- ensuring devices are removed in the event of adverse environmental effects
- ensuring developers create compensation agreements with fishermen before proceeding to development, to protect against adverse economic effects
- encouraging local, aboriginal, provincial, national and international collaboration

## **In the near future, the Province will also:**

- create a marine renewable energy demonstration program (covering issues like removal, sharing of technical and environmental data, etc.) before considering other demonstration tidal projects
- create marine renewable energy legislation (including potential opportunities for socio-economic benefits) before considering commercial tidal projects
- create new opportunities for tidal research work

Many of these actions have been directly influenced, informed, or created by the work of the SEA participants. The Province is therefore grateful to everyone involved; their insight will inform Nova Scotia's approach to tidal energy now and in the future.

The Province has also benefited from federal assistance in collecting baseline data and in the SEA process. The Province will look to federal science and research branches to continue to ensure fundamental research questions can be addressed effectively; this may include participation by federal laboratories in the proposed Canadian Marine Energy Research Network (C-MER). Federal labs are staffed by many of the nation's key researchers, with both experience and expertise in the tidal resource.

# Energy Context

## Energy Strategy

In 2007, the Province of Nova Scotia began consultations and policy work on the renewal of the 2001 *Energy Strategy* entitled, “Seizing the Opportunity.” The renewal process recognizes the advances that have been made since 2001 on renewable energy, and the opportunities that remain – especially with respect to tidal technology, if proven commercially viable and without significant adverse environmental impacts.

Consistent with the SEA, the *Energy Strategy* consultations revealed Nova Scotians desire to see a range of policy options, including:

- more green, renewable energy,
- more locally sourced energy,
- opportunities for community development,
- a continued emphasis on research, and
- flexible, broad-public interest legislation.

The Province is currently considering these and other options as part of the *Renewed Energy Strategy*; clearly, tidal energy has the potential to play a role.

## Emissions

In Nova Scotia, electricity generation currently accounts for 46 per cent of all greenhouse gas emissions.

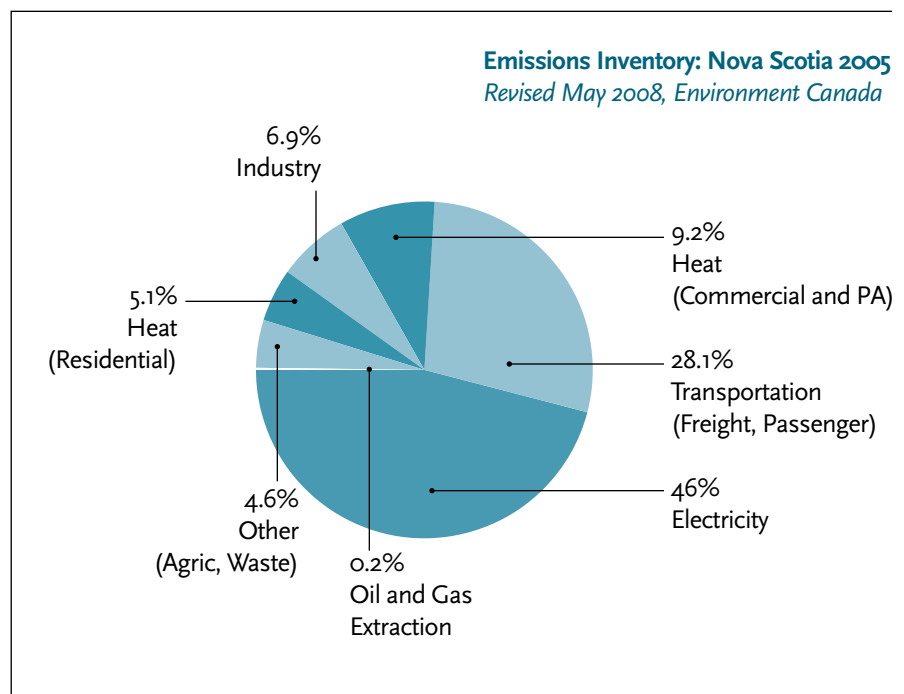
This is primarily because 88% of Nova Scotia’s electric power is fossil fuel based.

The more emissions we release into the atmosphere, the more our climate is likely to change (rising temperatures, rising sea level, increasing frequency of extreme weather).

As well, other air pollutants from burning fossil fuels (such as sulphur dioxide and nitrous oxide) contribute to climate change and poor air quality.

Nova Scotia does not have large hydro resources, and currently has limited grid connections to other regions that might supply cleaner alternatives.

To reduce emissions, Nova Scotia must consider local, renewable energy supply options.



## Legal Requirements

In 2007, Nova Scotia's *Environmental Goals and Sustainable Prosperity Act* (EGSP) came into force. Included in the 21 goals of the Act are the following deadlines:

- by 2013, nearly 20% of total electricity supply must come from renewables
- by the year 2020 greenhouse gases will be reduced to 10% below 1990 levels (roughly 25% below 2005 levels)

Most of the renewable energy commitment is expected to be met with commercial wind development, where the number of turbines will likely grow from 60 to over 300. Tidal power may play a role in fulfilling the 2013 renewable energy portfolio, but to what extent remains unclear.

## Production Costs

The UK Carbon Trust estimates the cost of tidal electricity production at about 35 cents/kWh. This cost may drop with experience, engineering and economies of scale – perhaps, as EPRI estimates, to as low as 6 to 7 cents/kWh, roughly the cost of wind energy today. To reach that level of efficiency, the technology must develop further.

## Carbon Costs

In the near future, there may be a price on carbon emissions. The carbon price may take the form of a tax, a regulatory measure, or a combination of both.

Carbon emitting fossil fuels – like natural gas, propane, coal and home heating fuel – may all be priced by tonne of emission, thereby increasing the costs of fossil-fuel based electricity generation and helping to make tidal technology more cost-competitive.

# Resource Potential

## Bay of Fundy

Research from US-based Electric Power Research Institute (EPRI) identifies the Bay of Fundy as perhaps the most potent site for tidal power generation in North America.

EPRI believes in stream tidal devices could safely extract 300 megawatts of green, emission free energy – enough energy to power close to 100,000 homes – from the Minas Channel alone. The total energy potential of the Bay may be several thousand megawatts (power for up to, or over, 1 million homes) – but this number is difficult to calculate, and depends greatly on the technology used.

## World Market Potential

The market for clean, renewable electrical energy is large. The International Energy Agency estimated in-stream tidal energy has the potential to supply about 4% of the current world electricity demand from ocean currents. This number will grow as river current energy potential is further explored (for example, in-stream developer Verdant Power Canada announced plans in 2008 for a 15 megawatt project in the St. Lawrence River at Cornwall, Ontario).



### Minas Channel

While there are many areas of the Bay with potential for various scales of power generation the greatest concentration of raw tidal power is in the Minas Channel.

The Minas Channel is 50 km long and 75,000 hectares in total. At its westernmost end it is 24 km wide, and 5 km wide at its easternmost end between Partridge Island (near Parrsboro) and Cape Blomidon. Over much of its area, the water depth averages 25 to 50 m at low tide, but the central trench is up to 115 m deep.

### Small-scale Development

An example of the relative dimensions of a single device in the Minas Channel area.



# Tidal Technology

## In-stream Devices

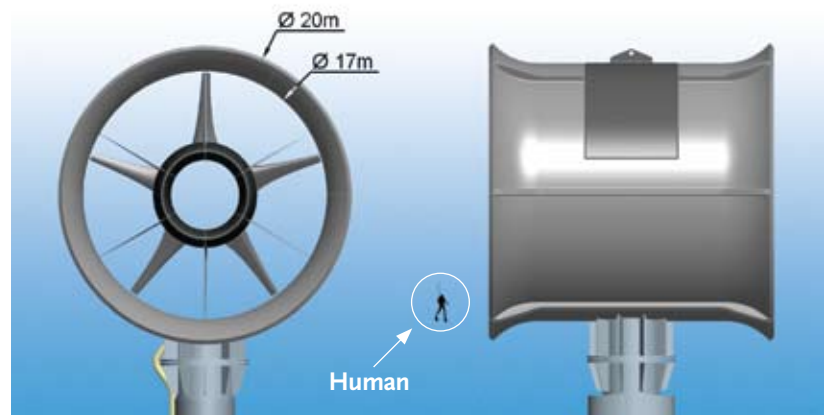
The goal of tidal turbines is to efficiently convert the kinetic energy of tidal currents into electricity that is renewable, predictable and creates no greenhouse gases.

At the moment, the Bay of Fundy only produces about 20 megawatts of power through the Annapolis Power Generating Station. It uses an older barrage technology that has shown some adverse environmental effects, including coastline erosion and sedimentary build-up.

New *tidal in-stream energy conversion* (TISEC) devices, loosely resembling underwater windmills, have the potential to avoid these adverse effects. When fully submerged, TISEC devices have little to no visual impact, and permit surface navigation. Early demonstrations in other regions suggest impact on fish populations may be small to non-existent, but these effects have yet to be validated in Nova Scotia. TISEC devices can be quite large; Clean Current's prototype is about 20 meters in diameter – slightly taller than the George's Island lighthouse in Halifax Harbour.

Tidal power is an untested industry with unproven technologies; this fact demands caution. But new tidal technologies are emerging rapidly, and projects are in planning stages all over the world. Both climate change and rising energy prices will continue to push the pursuit of alternative sources of energy. 70% of the world's surface is ocean; this source of energy may become commonplace in the not-too-distant future.

**Tidal In-stream Energy Conversion Device**  
*An example from Clean Current Turbines.*



## Questions

With this emerging technology comes a series of questions:

- Will these machines work?
- How much power can they deliver?
- Will they have any impact on our communities and the environment, including mammals and fish?
- What impact will the environment have on the machines?
- Can tidal energy contribute to energy supply in a significant way?
- Can tidal energy help meet our climate change goals in a significant way?

To answer these and other questions, the Province began two parallel processes:

- a *strategic environmental assessment (SEA)* and
- a request for proposals to build a multi-user demonstration facility in the Bay.

While both processes moved ahead beside each other, one thing remained certain: no final decisions about the facility, the devices, and their location could be made until after the SEA was complete.

## Tidal Lagoon Technology

Tidal lagoons are an adaptation of barrage or dam technology. Like a barrage, a tidal lagoon uses a head pond to generate power with conventional hydro-turbines.

However, a barrage forms a head pond behind a dam-like structure across a segment of the coastline, restricting the entire tidal flow at that location. A tidal lagoon is a self-contained head pond, appearing as a walled island at low tide. A tidal lagoon would affect tidal flow, but likely less than a barrage.

Although it uses proven turbine technology, the tidal lagoon is a new approach. Its effects on both the environment and tidal flows in the Bay of Fundy are unknown at this point. This presents a challenge, because tidal lagoon technology may be difficult to test at a demonstration scale; unlike TISEC technology, a lagoon is not designed to be scaleable or removable.

The level of environmental assessment review for any tidal energy proposal will be determined by the scope of the project, the potential risks of adverse effects, and the ability to mitigate those effects. Given the likely dimensions and nature of a tidal lagoon project, the Province would support a full environmental review.

# Demonstration

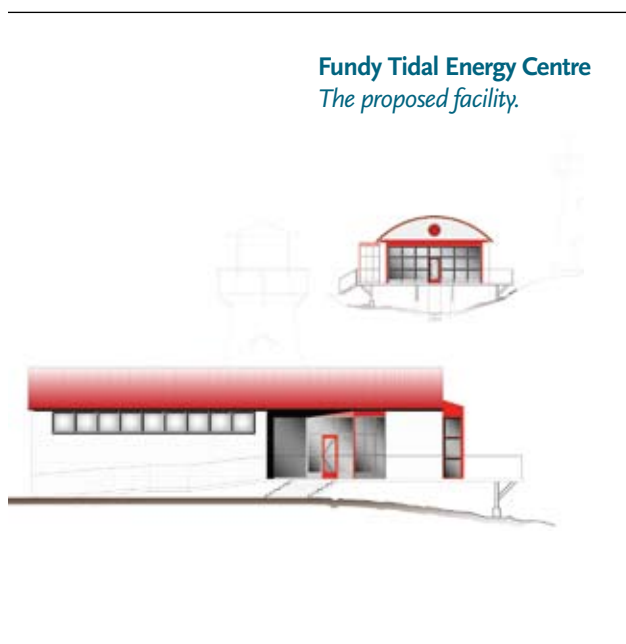
## Fundy Tidal Energy Centre

In August 2007, the Department of Energy issued a call for proposals to build and populate North America's first demonstration centre for TISEC devices.

The proposed facility, the Fundy Tidal Energy Centre (FTEC), would initially have three underwater berths to connect these devices to the power grid. The facility would allow developers to share costs, limit potential impacts, and test under similar conditions.

The facility will be funded by a \$5 million grant from the province's Ecotrust for Clean Air and Climate Change program, a \$3-million zero-interest loan from EnCana Corporation's Environmental Innovation Fund, and significant contributions from each of the successful developers.

The facility would also collect and share information among developers, regulators, and the public. It would monitor environmental impacts and further develop and prove new or innovative uses of technology.

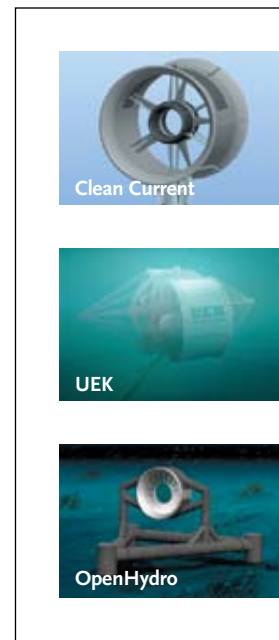


Three candidates, representing technologies from Canada, USA and Ireland, are in negotiations for first occupancy in the proposed facility:

- Clean Current (Clean Current Mark III Turbine)
- Minas Basin Pulp and Power Co. Ltd. (UEK Hydrokinetic Turbine)
- Nova Scotia Power Inc. (OpenHydro Turbine)

Minas Basis Pulp & Power will construct the common facility infrastructure, consisting of submarine cables and a building and equipment so all tidal devices can be connected to the Nova Scotia electric grid. Nova Scotia Power will provide the necessary system upgrade and connection. Upon completion of construction, Minas Basin will turn the facility over to a not-for-profit corporation (now being created) which will own and operate the infrastructure.

Devices could be in the water in late 2009 or 2010.



## Measures of Success

The facility will succeed if it:

1. proves whether (or not) power can be produced for the net benefit of Nova Scotians;
2. advances tidal technology in its efficiency, reliability, and safety; and/or
3. attracts opportunities for Nova Scotia industry involvement and support.

# Protection

## Environmental Safeguards

Nova Scotia requires these devices to adhere to strict environmental safety standards. The Strategic Environmental Assessment (SEA) is an important step in understanding these concerns. Beyond the SEA, the tidal demonstration facility and each device will be required to undergo a *site-specific* environmental assessment(s). The project will also require a number of other regulatory approvals. Finally, the devices will undergo ongoing monitoring while in operation, and may be removed if required.

## Strategic Environmental Assessment

An SEA is an early-stage process for evaluating the environmental consequences of a development idea. Unlike a site-specific environmental assessment, an SEA can integrate a broad range of relevant ecological, economic, social and political considerations.

In 2007/08, the Offshore Energy Environmental Research Association (OEER) carried out a Strategic Environmental Assessment (SEA) focusing on tidal energy development in the Bay of Fundy.

The SEA was led by an OEER Technical Advisory Group, which in turn drew advice and recommendations by a 24 member roundtable. In addition, the OEER received input through community forums, workshops, and written submissions from people around the province.

The objective of the SEA was to:

- assess social, economic and environmental effects and factors associated with potential development of renewable energy resources in the Bay of Fundy with an emphasis on in-stream tidal; and
- inform decisions on whether, when and under what conditions to allow pilot and commercial projects into the water in the Bay of Fundy and under what conditions renewable energy developments are in the public interest over the long term.

Specific responses to the SEA recommendations are in section 2.

## Environmental Assessment

The tidal demonstration project will undergo *site-specific* environmental assessment(s), which will predict potential environmental effects and require measures to avoid or minimize them.

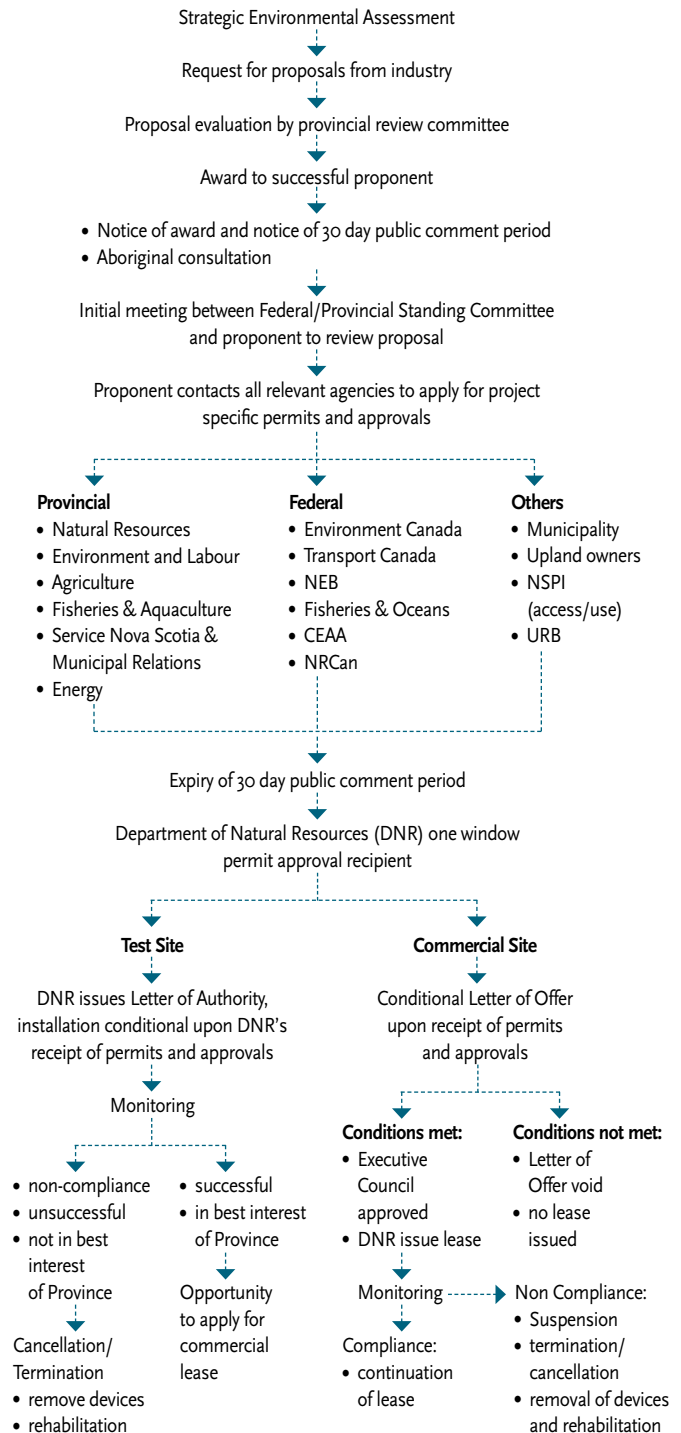
In addition to this site-specific environmental assessment, the Province is reviewing the current *Environmental Assessment Regulations* for all future tidal demonstration projects. In the likely event that a federal environmental assessment is also triggered, the Province will support the creation of a joint federal-provincial environmental assessment review process.

The scope and requirement of the EA and consequent monitoring conditions will depend on the risks associated with scale, duration and location of the project.

Greater risks will require more rigorous assessment, monitoring, and mitigation. This will require all parties involved to engage in ongoing dialogue during the project.

The EA process will ensure that site decisions recognize and avoid any significant adverse environmental effects, including effects on other users of the ocean or on the marine environment.

## Regulatory Path for Marine Renewable Energy Projects



## One-Window Standing Committee

The Nova Scotia and federal governments have agreed to ensure that the regulatory process for offshore renewable energy demonstration projects is coordinated, effective, and as efficient as possible. A “One-Window” Standing Committee has been established consisting of key federal and provincial regulators and government departments including the following:

### Federal

- Natural Resources Canada (NRCan),
- Environment Canada (EC)
- Fisheries and Oceans (DFO)
- Canadian Environmental Assessment Agency (CEAA),
- Transport Canada (TC)

### Nova Scotia

- Environment (NSE)
- Labour (NSL&WD)
- Energy (DOE)
- Fisheries & Aquaculture (DFA)
- Department of Natural Resources (DNR)

The proponents have met with the standing committee to discuss and review the project. They will submit an application to each of the regulators noted (including other applicable regulators as noted in the regulatory framework).

Provincial legislation that may be applicable to these types of projects or portions of them include the

- Crown Lands Act,
- Environment Act,
- Beaches Act,
- Endangered Species Act,
- Parks Act,
- Integrated Resource Management (IRM) Review,
- Fisheries and Coastal Resources Act,
- Electricity Act,
- Public Utilities Act;
- Municipal Government Act
- Assessment Act,
- Sustainability Act.

Federal legislation that may be applicable includes the

- Fisheries Act;
- Migratory Birds Convention Act;
- Oceans Act;
- Species at Risk Act;
- Navigable Waters Protection Act;
- Canadian Environmental Assessment Act;
- Canadian Environmental Protection Act;

## Monitoring

The Province is taking a cautious approach to tidal development – demonstrating the technology on a small scale, in a monitored environment, to gather local environmental data.

The tidal demonstration facility will enable researchers, regulatory agencies, and tidal power proponents to observe interactions of tidal technology with the natural environment. This information will help Nova Scotians better understand the potential full scale and longer term environmental effects of the technology.

Regulators will establish monitoring requirements as a result of the site-specific environmental assessment process. These requirements will include monitoring parameters, frequency and reporting. Precise monitoring conditions imposed on developers will vary between devices, projects and sites.

In addition to monitoring environmental effects, the demonstration facility also provides an opportunity to learn more about the technology and resource potential in the Bay of Fundy. This will further help clarify how tidal power may contribute to Nova Scotia's renewable energy targets.

## Removal and Removable

Devices must be removed if a regulator orders it, following the terms of the approval or permit. They may also be removed if the operator is not pursuing the demonstration program diligently.

Device operators agree to remove their devices at the end of four years.

Operators will be required to maintain financial guarantees to ensure proper decommissioning of their device. The facility will maintain public liability insurance and financial guarantees to decommission the facility and any remaining devices.

## Small Scale

The demonstration facility will host up to three individual devices for periods of up to 4 years.

Operators have an opportunity to demonstrate their devices in the extreme conditions of the Bay of Fundy – to regulators, to local communities, to Nova Scotians, and to the world. Device operators do not acquire any legal rights to advance to commercial production. Although a large-scale commercial project might host up to 300 tidal devices, no such project is planned at the demonstration facility.

The demonstration will be useful in any future assessment of larger projects, but offers no guarantees to such a project.

## Marine Renewable Legislation

Unlike natural resources with an established market value (such as petroleum, minerals, and fisheries), there is no regulatory scheme for tidal energy in Nova Scotia or anywhere in Canada. If tidal power proves to have commercial potential, legislation should be developed. Following other natural resources, the legislation might include features like:

- Crown title in the resource in its natural state
- licensing requirement for exploration
- subject to regulatory compliance and plan approvals, the right of an explorer to move to commercial production
- royalties and/or benefits representing the economic value of the resource in its natural state
- operational oversight to ensure compliance with laws, permits, and obligations.

The tidal energy resource in Nova Scotia is provincial Crown property. But before Nova Scotia regulates its use, Nova Scotians must be sure they want tidal power used at all.

The SEA and the proposed FTEC facility are part of figuring that out.



# SECTION 2

**Marine Renewable Energy  
in the Bay of Fundy:**  
*response to SEA recommendations*

# Response to the SEA Report

## Recommendation 1: Sustainability Principles

OEER recommends that the Province of Nova Scotia adopt the following ten sustainability principles to guide marine renewable energy development in the Bay of Fundy. These principles should be incorporated as appropriate into:

- provincial policy on marine renewable energy development or coastal zone management;
- any new legislation regarding marine renewable energy development;
- guidelines for all environmental assessments of marine renewable energy proposals;
- terms of reference for future phases of the SEA; and
- terms of reference for any ongoing research, integrated management, or stakeholder involvement body or process.

### 1.1

The marine renewable energy resource in the Bay of Fundy should remain under public control and management.

The Province believes the marine renewable energy resource in the Nova Scotia portion of the Bay of Fundy should remain under provincial crown control and management the same as other valuable natural resources in the Province.

### 1.2

Marine renewable energy developments should be planned, approved and managed within a strategic context that will ensure net reductions of Nova Scotia's greenhouse gas emissions.

The Province's legislated target of reducing greenhouse gas emissions by 10% below 1990 levels by the year by 2020 is the strategic goal. The Province's *Renewed Energy Strategy and Climate Change Action Plan*, as well as other documents and instruments described or referred to below, will establish the strategic context.

### 1.3

Nova Scotia, New Brunswick and the Government of Canada should collaborate in the management of the marine renewable energy resource to ensure protection of the entire Bay of Fundy ecosystem.

The Province believes all three levels of government should continue to work collaboratively. Examples of current collaboration include:

- The One-Window Standing Committee on Offshore Renewable Energy
- Working with New Brunswick on the SEA
- National Ocean Energy Group

The Province is collaborating with New Brunswick; the Province will examine ways to enhance collaboration in all aspects of the management of marine renewable energy resources in the Bay of Fundy.

### 1.4

Commercial application of marine renewable energy developments should go ahead only when a proponent can demonstrate that there will be no significant adverse effects on the fundamental hydrodynamic processes of the Bay of Fundy tidal regime (energy flow, erosion, sediment transportation and deposition) or on biological processes and resources.

Prior to commercial development being approved, a project will be required to undergo a site-specific (also referred to as a project-specific) environmental assessment which will include a stringent review to ensure the project creates no significant adverse effects on the environment.

### 1.5

Until near and far-field effects of marine renewable energy are well understood and deemed to be acceptable, development should take place incrementally, supported by an effective and transparent research and monitoring program, installation should be removable, and clear thresholds should be established to indicate when removal would be required.

Near and far field effects need to be well understood and so we will take an incremental approach to development. All development projects will be supported by environmental research and monitoring programs, and there will be removal requirements established in permits by regulators.

### 1.6

Adverse effects on the fishery or on aquaculture by energy developments should be avoided, or should be minimized. If displacement takes place, or if adverse environmental effects occur, compensation must be addressed.

Adverse effects on the fishery or aquaculture should be avoided or minimized to the extent possible. In the event that displacement or adverse environmental effects impacting the fisheries occur, an acceptable compensation agreement must be established by the proponent.

### 1.7

Development of marine renewable energy should be planned and managed to ensure lasting stewardship of the resource in order to deliver durable socioeconomic benefits to present and future generations in Nova Scotia.

The *Environmental Goals and Sustainable Prosperity Act* (2007) aims to protect Nova Scotia's economy and environment, and decisions around tidal energy will be made within this legislative context. As well, socioeconomic benefits will be addressed in the *Renewed Energy Strategy*.

### 1.8

Nova Scotia's marine renewable energy development strategy should strengthen local community development capacity, through measures such as access to the resource, encouragement of community-scale technology developments and uses, or revenue sharing.

Initially, the Province must focus on the demonstration facility. As the SEA recommended demonstration program is implemented, the Province will consider proposals to demonstrate community-scale developments consistent with that framework. The *Renewed Energy Strategy* is expected to provide context for community-scale renewable energy developments.

### 1.9

Marine renewable energy development should be part of an Integrated Coastal Zone Management approach for the Bay of Fundy, including the informed participation and cooperation of all stakeholders in order to balance environmental, economic, social, cultural and recreational objectives, within the limits set by ecosystem dynamics.

The Province is developing a coordinated and strategic approach to coastal and ocean management. The Coastal Management Framework (CMF) will guide the Government of Nova Scotia in working towards achieving this task. (Please see Recommendation 25)

#### 1.10

Research, monitoring and decision making related to marine renewable energy should be carried out in an open and transparent manner. The public should have access to all environmental information. The public should have access to resource assessment information, respecting the need to keep certain commercial information confidential. Requests by proponents to keep information confidential should undergo stringent review.

The Province's current guidelines require research, monitoring and decision-making related to marine renewable energy to be carried out in an open and transparent manner, while respecting the confidential nature of certain proprietary data. Public-sourced funding through research and environmental effects monitoring grants from the OEER or its sister association, the OETR, include requirements for publishing and disclosure.

## Recommendation 2: Allowing the Demonstration of TISEC Technologies

OEER recommends that the Province of Nova Scotia give the necessary approvals, contingent on satisfactory completion of a project-specific environmental assessment, to allow demonstration of a range of TISEC technologies in the Bay of Fundy. The purpose of demonstration projects should be to determine (a) operational feasibility, (b) the extent of environmental impacts, and (c) the effectiveness of mitigation approaches. Demonstration projects and facilities should be subject to conditions specified in this Report.

#### RESPONSE

Subject to the proponents obtaining and observing all necessary site-specific regulatory approvals, the Province will enter into an agreement with Minas Basin Pulp & Power to construct a demonstration facility and, together with Clean Current and Nova Scotia Power Inc, to demonstrate TISEC technologies in the Bay of Fundy.

While this facility will be the initial focus, the Province will develop a program to enable other demonstration projects and facilities (see response to recommendation 8).

All demonstration projects will be subject to the conditions addressed in this response to the SEA report.

## Recommendation 3: Marine Renewable Energy Legislation

OEER recommends that, before large-scale commercial development proceeds, the Province of Nova Scotia enact legislation respecting the renewable energy resources in the Bay of Fundy. The legislation should incorporate the Sustainability Principles in Recommendation 1 and provide a framework for the testing and development of offshore renewable energy that will, among other things:

- Encourage the development of marine renewable energy resources in a safe and environmentally sound manner;
- Require interested parties to obtain licenses for the rights to develop. Such licenses should be conditional on undertaking activity that will promote timely development;
- Provide for immediate disclosure of all environmental information and, after appropriate confidentiality periods, disclosure of technical information related to the resource;
- Provide for the Province to receive revenues from the licensing and/or development of the resource;
- Provide opportunities for affected communities to benefit from the development; and
- Provide incentives for the net reductions of greenhouse gases in the Province.

### RESPONSE

Ocean energy is a public resource and, if it is to be the subject of commercial development, must be managed in an orderly and safe manner the same as other natural resources.

The elements listed in Recommendation 3 are common in mineral and petroleum resource legislation and can be anticipated in any tidal regime but the precise way in which they should apply to tidal power will be the subject of consultation and consideration – and contingent on whether the demonstration program shows the commercialization of tidal energy to be desirable and practicable. Specific legislation that relates to marine renewable energy will be considered as part of the *Renewed Energy Strategy*.

## Recommendation 4: Research Program

OEER recommends that the Province of Nova Scotia facilitate the development of a collaborative research program for marine renewable energy development in the Bay of Fundy. The research agenda would address:

- immediate needs related to demonstration projects;
- longer term requirements relating to the development of an integrated management approach to the commercial development of marine energy renewables;
- consideration of non-TISEC technologies;
- the understanding, prediction, mitigation and monitoring of far-field and cumulative effects; and
- the eventual determination of ecosystem carrying capacity limits.

The design of the research program should include all levels of government, Aboriginal peoples, research institutions, and stakeholders.

### RESPONSE

The Province created the OEER with a mandate to develop ocean energy research. The OEER has an existing Research Advisory Committee with representation from academia, DFO science, fisheries, and others to carry out work related to tidal energy. Representation on the Advisory Committee can be adjusted to meet the needs of the research effort. The Province believes OEER is ideally suited to coordinate the research agenda, with funding from a portion of the Crown Share Adjustment payment. The Province would like to minimize the number of entities that oversee this research.

Whatever shape it may take, the research program should proceed in a logical sequence, tailored to the address the highest priorities and risks.

## Recommendation 5: Mi'kmaq Ecological Knowledge Study

OEER recommends that the Province of Nova Scotia ensure that a Mi'kmaq Ecological Knowledge Study is carried out before marine renewable energy projects proceed in the Bay of Fundy, either as part of the research program identified in Recommendation 4 or as a requirement for project specific environmental assessment.

### RESPONSE

The builder of the proposed demonstration facility, Minas Basin Pulp & Power, has already engaged a consulting firm to conduct an MEK in respect of that facility. Furthermore, the province recommends that all future developers with a site-specific project conduct an MEK to ensure that impacts on Mi'kmaq are considered as part of the EA process.

## Recommendation 6: Provincial Standard for Ecological Data

OEER recommends that the Province of Nova Scotia require all marine renewable energy proponents and their consultants to ensure that ecological data is geo-referenced and metadata compiled in accordance with the relevant provincial standard. This should be completed in consultation with the Nova Scotia Geomatics Centre and other provincial centers, where relevant.

### RESPONSE

The Province provides a corporate approach to geographic information standards development through the GeoNOVA Program and recognizes the importance of ensuring that ecological data gathered from baseline studies and ongoing monitoring is recorded and organized so that it can be accessed, managed and analyzed in an effective and efficient manner. The GeoNOVA Program, in cooperation with key Provincial Departments, will work with proponents to ensure that appropriate geographic data management standards are followed.

## Recommendation 7: Bay of Fundy Socioeconomic Background Study

OEER recommends that the Province of Nova Scotia undertake a socioeconomic background study, as soon as possible to describe fully the communities, economies and cultures of the Bay of Fundy region and Mi'kmaq communities with fishing interests in the Bay; to address in more detail how development of marine energy renewables would interact with the socioeconomic environment; and to identify opportunities, constraints and risks. The study process should engage communities and stakeholders.

### RESPONSE

The Province agrees with the need to conduct a socioeconomic background study as the tidal energy industry evolves. The Jacques-Whitford study commissioned by OEER as part of the SEA is a first step in these efforts, but also shows the difficulty of assessing the potential effects of an emerging technology. The Province is not convinced another study immediately on the heels of the SEA and Jacques-Whitford report will yield much more information. However, there are a number of activities coming up in this area:

- the Department of Energy will identify and fill gaps in the Jacques-Whitford background report
- the Province will inventory and catalogue existing skills, community resources, and commercial opportunities in Nova Scotia for tidal energy development.
- the Province will convene a meeting of Regional Development Authorities in the fall of 2008 to discuss socio-economic issues and opportunities.

The Province is taking a cautious approach to tidal development. Large scale projects – and the benefits that may accompany them – are not certain at this point, nor will they be for some time into the future.

## Recommendation 8: Marine Renewable Energy Demonstration Program

OEER recommends that the Province of Nova Scotia establish a Marine Renewable Energy Demonstration Program to (a) encourage the development of a range of tidal energy and other marine renewable technologies, applicable at different scales of application and in different operating environments, (b) gather knowledge about environmental and socioeconomic impacts and benefits, and (c) initiate longer term research needed to predict cumulative and far-field effects in the commercial phase. The Development Program should establish a Stakeholder Advisory Board to review proposed demonstration projects, advise on research and monitoring required, review monitoring results, and address requirements for the transition to commercial projects.

Demonstration projects will include, but not be limited to, the proposed demonstration facility. The Demonstration Program will be guided by the Sustainability Principles outlined in Recommendation 1 and will provide provincial (and possibly federal) assistance in an equitable manner to a range of projects that meet appropriate criteria. The Program should also ensure that demonstration projects are assessed, implemented, and monitored in an environmentally

### RESPONSE

The Province has identified the participants for the demonstration facility. They developers may now, informed by the SEA, move forward to identify a site and apply for approvals. If approved, the facility will be operated by a not-for-profit corporation and will hopefully grow into a long-term centre of excellence in marine renewable energy.

While the demonstration facility will be critical to demonstrating the technologies and their effects on the marine environment, the Province recognizes that other demonstration projects will be proposed from time to time. The Province will develop a demonstration program; this program will provide a strategic context within which to evaluate any future proposals.

## Recommendation 9: Siting Demonstration Projects

OEER recommends that the Province require proponents to consult with local fishers, other marine resource users including marine transportation stakeholders, and adjacent communities in the selection of sites for demonstration projects and to avoid or compensate the displacement of productive fishing activity. In addition, the Province of Nova Scotia and proponents should consult broadly with science advisors, including DFO, and fishers on the issue of interference with migration patterns and consider this advice in (a) selecting a location that will have a low risk of impact, (b) developing mitigation measures including determining time periods when construction should not take place, (c) designing a monitoring program for this issue, and (d) determining a threshold effect level that would require devices to be removed from the water.

### RESPONSE

Broad consultation with science advisors and fishers will be required for any project and the Province is confident the results of these consultations will be considered in the process for site selection, developing mitigation measures, designing a monitoring program, and determining removal requirements.

Regulators must first consider these matters; it would be inappropriate for the Province to be actively involved except as provided by the relevant statutory authorities.

## Recommendation 10: Environmental Assessment of the Demonstration Facility

OEER recommends that the Province of Nova Scotia amend the provincial Environmental Assessment Regulations to designate tidal energy projects that produce 2 megawatts or more of energy as Class I undertakings. In the case of the proposed demonstration facility OEER recommends that the provincial Minister of Energy require a provincial project-specific environmental impact assessment (EIA), including the production of an environmental-assessment report. The EIA should provide ample opportunity for adjacent communities and stakeholders to be informed and to express their views, concerns and suggestions, through a process involving early consultation and community meetings. Stakeholder perspectives should also be obtained through the involvement of the Stakeholder Advisory Board (see Recommendation 8).

### RESPONSE

The tidal demonstration project will be subject to site-specific environmental assessment(s). Project proponents will be expected to consult with the public as part of the EA process. As well, the Province is reviewing the current *Environmental Assessment Regulations* and their application to tidal power projects.

## Recommendation 11: Fundy Tidal Energy Research Committee

OEER recommends that the Province of Nova Scotia initiate the formation of a federal-provincial Fundy Tidal Energy Research Committee, also involving the Province of New Brunswick, if interested, to determine baseline research requirements and to develop research and monitoring requirements for demonstration and future commercial projects. This Committee should have a close relationship with the Stakeholder Advisory Board, to help identify research questions relevant to stakeholders. Non-government participants from other institutions, or agencies carrying out relevant research, should also participate as appropriate. The Research Committee should also play an active role in helping to determine the broader research program (see Recommendation 4).

### RESPONSE

The Province recognizes the importance of working collaboratively with the Government of Canada and Government of New Brunswick. The Province has been working through the OEER Research Advisory Committee (RAC) on identifying research priorities for ocean energy. OEER is a not-for-profit corporation dedicated to fostering offshore energy and environmental research and development including examination of renewable energy resources and their interaction with the marine environment. The federal government is represented on the advisory committee and so works collaboratively with Nova Scotia through this forum.

In addition, Canada's marine research community is in the process of establishing the Canadian-Marine Energy Research Network (CMER). This network includes researchers from universities across Canada (including Nova Scotia and New Brunswick), the National Science and Engineering Research Council (NSERC), the National Research Council (NRC), Sustainable Development Technology Canada (STDC), Ocean Renewable Energy Group (OREG), and tidal developers.

## Recommendation 12: Commercial Development Framework

Recognizing that the Bay of Fundy is one resource shared by two provinces, OEER recommends that the Province of Nova Scotia work with New Brunswick and the Government of Canada to develop a commercial development framework for marine renewable energy, either through an expansion of the existing SEA process, or through a new process that includes stakeholder involvement. The commercial development framework should be guided by the sustainability principles included in Recommendation 1, and should address the transition from demonstration to commercial, scales of development, research and modeling needs, and the capacity of the Bay of Fundy marine ecosystem to absorb different energy extraction levels without significant cumulative environmental effects, taking the Precautionary Principle into consideration.

### RESPONSE

The Minas Passage and the southern half of the Bay of Fundy is clearly within the Province of Nova Scotia but there is only one bay and, if energy is to be extracted from it commercially, it must be done carefully and in a coordinated fashion. We have shared the SEA process with New Brunswick.

Prior to any commercial development, Nova Scotia will continue to work with the governments of New Brunswick and Canada as we create a development framework for marine renewable energy projects of a commercial nature.

## Recommendation 13: Incremental Development and Removability

OEER recommends that larger commercial developments be required to develop incrementally in stages with an appropriate effects monitoring program; that all installations be designed in such a way that the machines, their footings and all cables can be completely removed if necessary and the site remediated to close to its former condition; and that effect thresholds be established at which the proponent would be required to remove some or all of the machines from the water if unacceptable adverse effects are observed.

### RESPONSE

This is new technology and many questions remain unanswered. Risks must be managed through research and incremental, reversible development. As Nova Scotia gains more experience and knowledge with this technology, other risk management strategies and techniques may be more appropriate, but given this early stage the Province is taking a cautious approach to tidal development. (Please see recommendations 1, 4, and 8)

## Recommendation 14: Nova Scotia Energy Priorities

OEER recommends, in accordance with Sustainability Principle 1.2, that the Province of Nova Scotia takes steps to maximize the benefits of commercial marine renewable energy projects to Nova Scotia. The Province's first priorities should be to (a) satisfy provincial, national and international greenhouse gas reduction commitments and (b) improve provincial energy security. Projects that are proposed primarily to export electricity should not be considered until these priorities have been met. Proposed export projects should be required to go through a public consultation process, and to guarantee significant benefits to Nova Scotia.

### RESPONSE

Nova Scotia has a legislated goal of reducing greenhouse gas to 10% below 1990 levels by the year 2020. To help meet that goal, the Province created a *Renewable Energy Standard* (RES), which forces utility companies to increase renewable electricity supply to nearly 20% by 2013. Most of this increase will be met with wind. RES requirements may be reviewed in the future, particularly if tidal energy proves commercially viable, and the Province already provides a legal assurance that renewable electricity supply will nearly double in five years (the Nova Scotia Department of Energy's *Wind Integration Study* predicts Nova Scotia renewable supply will in fact reach 22% by 2013).

In addition, allowing the import/export of electricity actually helps increase Nova Scotia's ability to balance variable power generation, thereby allowing the province to incorporate more renewables and reduce more greenhouse gas emissions. Other factors that will influence Nova Scotia's ability to incorporate more renewables include:

- location of new wind projects
- transmission system upgrades
- regional interconnections (including N.B., N.L., and U.S.A.)
- back-up supply issues
- technological innovation

The role of tidal energy in Nova Scotia's energy future depends on its future commercial viability. The *Renewed Energy Strategy* will place tidal energy in context with other renewable energy opportunities for Nova Scotians.

(Please see recommendations 16, and 17)

## Recommendation 15: Conservation, Efficiency and Carbon Credits

OEER recommends that the Nova Scotia Renewed Energy Strategy and Climate Change Action Plan (a) place high priority on conservation and efficiency measures, and (b) implement a carbon credit trading scheme, or comparable measures, to strengthen the economic viability of the tidal energy industry.

### RESPONSE

The *Renewed Energy Strategy and Climate Change Action Plan*, currently under development, will address issues such as energy conservation, energy efficiency, and other measures relating to carbon emissions.

## Recommendation 16: Grid Capacity

OEER recommends that the Province of Nova Scotia study (a) the advantages and disadvantages of developing more decentralized generation, (b) the current capacity of the grid to support additional renewable energy developments, and (c) required upgrades and how these should be financed.

### RESPONSE

The Province of Nova Scotia recently completed a *Wind Integration Study* that examined the possible impacts of incorporating more renewable energy onto the grid.

The study provided the following estimates for the year 2013:

- 22 per cent total electricity supply will come from renewables,
- 581 megawatts of energy will come from wind supply (equal to power for about 175,000 homes),
- 1.3 megatonnes of greenhouse gas will be reduced (equal to taking about 240,000 cars off road),
- the *Renewable Energy Standard* supply target can be met, but possible transmission upgrades and new operational demands may increase costs, and
- the system will experience greater demands, requiring actions such as: imports of electricity, starting and stopping slow-response thermal units (units may take days to shut down and re-start), management of interruptible load, and curtailment of wind generation.

Beyond 2013, (at renewable supply levels of 781 megawatts and higher), the study estimates:

- there may be significant infrastructure costs; further experience and study will be required, and
- overall system stability and costs will depend greatly on how the system evolves in the next several years, particularly Nova Scotia's interconnections to neighbouring regions.

The study also concludes that more detailed studies of the high voltage transmission system (referred to as dynamic stability studies) are needed in advance of 2013 to identify any possible transmission upgrades necessary.

(Please see recommendations 14 and 17)

## Recommendation 17: End Uses

OEER recommends that the Province of Nova Scotia study alternate uses of marine renewable power generation to maximize benefits. The study should address small-scale applications, on and off-grid, new energy applications such as hydrogen, storage methods, and how the current regulation of electricity contributes to both opportunities and constraints.

### RESPONSE

As mentioned previously, Nova Scotia's current electricity system may need to adapt significantly in order to increase renewable energy capacity. Many factors will come into play, such as:

- location of new wind projects
- transmission system upgrades
- regional interconnections (including New Brunswick, Newfoundland and Labrador, and U.S.A.)
- back-up supply issues
- technological innovation, and
- the commercial viability of tidal energy

The last factor – commercial viability – is an important basis for any benefits study; the commercial viability of tidal energy is not yet clear.

(Please see recommendations 14 and 16)

## Recommendation 18: Fisheries Database

OEER recommends that the Province of Nova Scotia (a) assist DFO to develop and maintain a geo-referenced database of fisheries resources and activities to be used to determine where tidal energy development would have least impact on the fishery and other marine resource uses, and (b) develop a detailed study of potential tidal energy exclusion zone requirements by type of activity (including different types of gear use), potential impacts and possible mitigative strategies.

### RESPONSE

The Province agrees that a database of fisheries resource and activities would be a useful tool in planning tidal energy development projects and it will undertake to work with DFO to maintain a geo-referenced database.

The Province also supports the initiative to study potential exclusion zone requirements for tidal energy developments.

## Recommendation 19: Compensation and Liability

OEER recommends that the Province of Nova Scotia facilitate the development of a preliminary mitigation process to address compensation for fisheries displacement, damage to gear, and other environmental impacts, and limits to liability before any demonstration project proceeds. Before any commercial scale development proceeds, this process should be evaluated, and adjusted if necessary for application to future commercial developments. The mitigation process should ensure that compensation, if required, goes to resource users who have a demonstrated dependency on and investment in the area in question. The mitigation process should also address the potential for impacts in other areas if fishing activity is relocated.

### RESPONSE

The Bay of Fundy is a rich marine environment for a number of commercial fisheries. Displacement and compensation issues are considered during the Environmental Assessment of the demonstration facility. A lease will not be finalized until the regulatory process is complete and, without presuming on the outcome, could contain conditions to provide for removal, mitigation and compensation in the event of adverse effects. These factors will also be considered prior to any commercial project, and as the Province develops any future marine renewable energy legislation.

## Recommendation 20: Aboriginal Fisheries

OEER recommends that the Province of Nova Scotia require marine renewable energy proponents to engage with aboriginal communities at an early stage of project development to address issues and concerns, and facilitate discussion and information sharing. This engagement would be in addition to, and would not replace, the Province's duty to consult with First Nations.

### RESPONSE

The Province has been consulting with the Mi'kmaq of Nova Scotia through the Mi'kmaq-Nova Scotia-Canada Terms of Reference Consultation Process. The Department of Energy engages in Crown consultation with the Mi'kmaq on all energy-related projects, including the tidal demonstration project and SEA, through the Energy Consultation Table. The Province also recommends that proponents engage with aboriginal communities during early stages of the project.

As well, the Crown will carry out its duty to consult on specific projects once they are established.

## Recommendation 21: Fisheries Consultation and Involvement Protocol

OEER recommends that the Province of Nova Scotia work with marine renewable energy proponents, local fishers and other fisheries interests to develop procedures and protocols to ensure that fishers and fisheries stakeholders are informed and consulted at every stage of tidal development, both by the Province and by proponents.

### RESPONSE

Commercial fisheries and local fishers have a strong and longstanding interest in activities in the Bay of Fundy.

The Province will develop a set of procedures and protocols to ensure that fishers and fisheries stakeholders are informed and consulted at every stage of tidal development.

In addition, the *Offshore Renewable Energy Generation Regulatory Flow-Chart for Industry Initiated Test and Commercial Sites* (see “Regulatory Path for tidal projects” in **section one** under **Protection**) requires a period of consultation during the regulatory permitting process.

As well, environmental data will be available to local fishers and other members of the public. The Province’s current guidelines require research, monitoring and decision-making related to marine renewable energy to be carried out in an open and transparent manner.

## Recommendation 22: Marine Renewable Energy Benefits Strategy

OEER recommends that Nova Scotia develop a Nova Scotia Marine Renewable Energy Benefits Strategy to ensure that the people of Nova Scotia benefit substantively from the development of these technologies. The Strategy should include (a) a flexible system of economic rents linked to profitability, (b) mandatory developer benefits agreements with requirements for Nova Scotia content, and (c) programs or incentives to promote the development of Nova Scotia owned and developed technology and expertise.

### RESPONSE

The potential economic benefits to the province are an important driver for the development of all energy resources, including the deployment of tidal technologies in Nova Scotia waters. The issue of benefits from all energy developments is a central part of the *Renewed Energy Strategy*.

At this early stage, the tidal demonstration facility will be owned and operated by a not-for-profit corporation, and will not pay a resource rent (it is being subsidized financially by the Province).

If commercial development proceeds at some point in the future, resource rents may be part of the marine renewable energy legislation, and local content could be part of that calculation.

Nova Scotia-content factored into the Province’s evaluation of the first candidates for the demonstration project (although technological viability factored higher).

There are several federal and provincial programs that can assist in the development of ocean technologies in Nova Scotia.

(Please see recommendation 3)

## Recommendation 23: Community Participation and Benefits

OEER recommends that the Province of Nova Scotia, in consultation with municipalities, community development organizations, and other stakeholders, develop a Marine Renewable Energy Community Participation and Benefits Strategy to ensure the delivery of lasting socioeconomic benefits in the Fundy Region. The Strategy should be completed well in advance of any commercial projects receiving approval. The Strategy should address measures such as:

- mechanisms to ensure access to the tidal resource by municipally or community owned entities or investment funds, either independently or in partnership with other tidal developers, in order to participate in and benefit from tidal development,
- allocating a portion of economic rents to adjacent municipalities,
- local access to and participation in related business and employment opportunities, and
- encouragement of eco-tourism opportunities related to marine renewable energy development.

### RESPONSE

The Province is exploring community and economic benefits as part of the Renewed Energy Strategy. These benefits will also be considered prior to any commercial project, and as the Province develops any future marine renewable energy legislation. (Please see recommendation 3)

## Recommendation 24: Offshore Wind, Wave and Tidal Lagoon Technology

OEER recommends that the Province of Nova Scotia should apply the Sustainability Principles in Recommendation 1 to consideration of all types of marine renewable energy technology. Because tidal lagoon technology is not proven from an environmental perspective for use in the Bay of Fundy context and because it is not amenable to either incremental implementation or removability, the Province should support a full Federal-Provincial panel review for any proposed tidal lagoon project.

### RESPONSE

Unlike TISEC technology, tidal lagoons:

- use conventional technology, and
- are not amenable to incremental installment or removal.

The level of environmental assessment review for any tidal energy proposal will be determined by the scope of the project, the potential risks of adverse effects, and the ability to mitigate those effects. Given the likely dimensions and nature of a tidal lagoon project, the Province would support a full environmental review.

## Recommendation 25: Integrated Coastal Zone Management

OEER recommends that the Province of Nova Scotia develop an Integrated Coastal Zone Management Policy for the Bay of Fundy before large scale commercial marine renewable energy developments are allowed to proceed. The Province should involve communities and stakeholders in the development of the policy and the Province should undertake to resource that involvement.

### RESPONSE

The Province recognizes that the current and future prosperity of Nova Scotia depends on our ability to develop, manage, and protect our coastal areas and resources over the long term. The Provincial Oceans Network (PON) consisting of twelve departments and agencies with a mandate or interest in coastal management has developed a Coastal Management Framework (CMF) which defines a common vision, mission, goals, and strategic thrusts for the government in regard to coastal management, aligning closely with current provincial priorities and strategies.

The CMF represents a commitment by the Government of Nova Scotia toward a more coordinated and strategic approach to coastal management. In simple terms, the CMF lays a foundation for governments and citizens to work together to ensure the sustainable use and protection of our coastal areas and resources. It builds upon existing provincial and departmental commitments, mandates and capacities, while recognizing the fundamental importance of collaboration with other levels of government, stakeholders and interest groups.

The CMF was adopted by Executive Council on February 14th, 2008, an important first step toward realizing a more integrated approach to coastal zone management. Formal public consultation is planned following the release of a “State of Nova Scotia’s Coast” discussion paper in spring 2009, and will inform the development of a Sustainable Coastal Development Strategy by 2010.

## Recommendation 26: Geo-Referenced Tools to Indicate Opportunities and Constraints

OEER recommends that Nova Scotia, New Brunswick and Canada collaborate to prepare and maintain geo-referenced tools to indicate opportunities and constraints for the full range of marine renewable energy technologies, to support the allocation of marine renewable resources within the context of an Integrated Coastal Zone Management Policy.

### RESPONSE

The Province recognizes the importance of developing a set of geo-referenced tools to provide siting guidance for the allocation of marine renewable resources in the Bay of Fundy. The Province will pursue the development of those tools in collaboration with New Brunswick and the Federal government.

## Recommendation 27: Municipal Involvement

OEER recommends that the Province of Nova Scotia consult with the Union of Nova Scotia Municipalities to develop procedures and protocols to ensure that municipalities are informed and consulted at every stage of tidal development, both by the Province and by proponents.

### RESPONSE

The Province will consult the Union of Nova Scotia Municipalities and also municipalities in the immediate project area on ways to ensure municipalities are informed and consulted.

## Recommendation 28: Public Education and Awareness

OEER recommends that the Province of Nova Scotia work with marine renewable energy proponents, research institutions and environmental and community organizations involved in sustainability education, to develop a strategy for public education and awareness about marine renewable energy technologies. The strategy should enable the public to access and contribute to a database of up-to-date information.

### RESPONSE

The Province remains committed to work with the many interested parties in tidal energy at local, provincial, national, and international levels. Specifically, the Province will continue its collaborative effort with:

- Nova Scotia communities, to encourage the ongoing participation of people around the Bay of Fundy initiated by the SEA process;
- the research community, to help solve the complex scientific and technical challenges that face this nascent technology, as well as monitor its operations;
- industry, to realize the opportunities that exist for Nova Scotia business to profit at home and around the world from developing tidal energy; and
- the renewable energy sector, to improve awareness of the potential positive impacts of tidal energy and other marine renewables

## Recommendation 29: Long-term Integrated Management in the Bay of Fundy

OEER recommends that the Province of Nova Scotia, partnering if possible with New Brunswick, Canada, and the Gulf of Maine Council, study ICZM requirements, approaches and experiences, to provide the background for a major workshop to be held in 2009 to examine integrated management issues and organizational options.

### **RESPONSE**

The Province recognizes its critical role in developing integrated approaches to coastal management in the Bay of Fundy. As an active member of the Gulf of Maine Council and the Regional Committee on Oceans Management (RCOM), the Province is working closely with state, provincial and federal governments to advance integrated coastal and ocean management in the region. The Province will continue to ensure that integrated management in the Bay of Fundy remains a priority.





**CONTACT**

**Nova Scotia Department of Energy**

tel: 902.424.4575

[www.gov.ns.ca/energy](http://www.gov.ns.ca/energy)