



**Commentary: Marine Renewable Energy
Legislation for Nova Scotia**

**Submitted by the
Ocean Renewable Energy Group (OREG)**

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Introduction

Over the past five years, the Ocean Renewable Energy Group (OREG) has provided a forum for the discussion of the opportunities, challenges and needs of the renewable marine energy sector in Canada. OREG's 100+ members include technology and project developers, utilities, researchers and the energy and marine supply chain. While clearly focused on opportunities for Canada, 20% of OREG's members are the international leaders in the sector, and OREG regularly participates in international discussions of the pathway that renewable marine energy must follow for development success. OREG has adopted the target of 15,000 MW of ocean energy installed capacity by 2050, with about 1,000 MW to be developed by 2020. Notionally, it seems likely that Nova Scotia may have the opportunity to meet 10% of these challenges. OREG's comments are offered based on these contexts, with two caveats: the challenges in building an industry capable of offering a renewable marine energy electricity solution are uniquely difficult, and; early indications are that environmental impacts from these installations may be insignificant within the highly energetic and variable marine environment, and project phasing, siting and spacing may ensure this at later stages of development. With these caveats in mind OREG believes that renewable marine energy legislation for Nova Scotia should focus on ensuring that the sustainable development of these resources is possible. It should encourage responsible pioneer activity, provide certainty for early stages of expansion and set the framework for directing or constraining later sustainable developments, and extracting resource rents in the following decades.

“Legislation should serve to provide clear, predictable, and efficient processes to support the sustainable growth of the sector. Development of the industry would, in turn, help the province reduce greenhouse gas emissions and other air pollutants and generate more electricity from renewable sources of energy.”

This quote from the Discussion Paper perhaps comes closest to the context in which this new legislation should be developed. It should be a legislative framework that enables the development of a strategic renewable resource in a sustainable manner. As such it should facilitate access to a work space, create mechanisms to avoid conflict between successive developments and to resolve conflicts with those holding privilege and historical uses, provide for a resource rent regime that will evolve over time as a significant resource development comes into play in perpetuity, and ensure that sector and project assessments are addressing the broadest sustainability agenda.

In the Discussion Document the following five *Issues* were identified:

Regulation: *The best way to regulate the sector to protect the environment, keep people safe, and sustain the industry.*

Development: *The framework created to support development of the industry and reach commercialization.*

Balance of interests: *The balancing of traditional offshore interests (fishing, aquaculture) with marine renewable energy projects.*

Support: *The best way to encourage development of this new industry.*

Public Benefit: *Ensuring Nova Scotians benefit from development of a new resource.*

Is it possible that their definition, and indeed the phrasing of some of the document's questions might predetermine some responses? OREG is offering some reordering and adjustment that might help provide a context for our comments and in the discussion or evaluation of other feedback:

Public Benefit: Ensuring that an additional perpetual and renewable resource is developed to meet the energy and economic sustainability of the province, its businesses and its coastal communities.

Balance of interests: Ensuring that emergent marine renewable energy is allocated an equal opportunity with traditional offshore interests (fishing, aquaculture, shipping, tourism etc) in project reviews and approvals, planning such as the Coastal Management Framework, and in legislation and regulation designed to meet Nova Scotia's economic and energy challenges.

Support: The best way to facilitate the development of the early stages, and the needed experience development for an opportunity that can become a new industry for Nova Scotia.

Development: The framework created to foster development of the industry, maximize the opportunity for economic benefits and accelerate the emergence of renewable marine energy as a significant contributor to Nova Scotia's transition to renewable electricity.

Regulation: The best way to advance regulation of the sector to protect the environment, keep people safe, optimize resource and crown lands use to provide certainty to pioneers and a sustainability for the industry being developed in the longer-term.

The background paper provides a broader consideration than the discussion paper which raises the concern that many respondents may be reacting solely to the discussion paper and its questions. Commentary is now provided around each of the Discussion Paper questions, hopefully capturing the choices and discussion from the larger paper.

OREG has recently released a discussion around the feed-in tariff discussions (The Role of Feed-in Tariffs: Moving Ocean Energy Ahead in Canada). Aspects of that discussion inform the context in which these marine energy legislation and regulations will be developed, particularly with respect to the need for a stimulatory environment for much of the coming decade.

SECTION 2: The Opportunity

What in your view are the most important opportunities for Nova Scotia? What are the values that government should focus on when developing legislation that will impact the viability of these opportunities?

This is the **WHY?** question; additional context beyond the papers will help. Marine energy can help with the renewable electricity challenge, perhaps as much as 5% of supply in a decade and maybe 20% or more later. If it is to be a major solution for Nova Scotia, it merits the special attention being shown in the policy, regulatory and legislative agenda. If the opportunity is major there is reason for the legislation to create a level playing field for this strategically important new entrant.

The charismatic nature and scale of Nova Scotia's tidal energy resource has potential as a strategic opportunity, but it is really the worldwide stage of the development in the renewable marine energy sector that combines with that resource to create a potential for economic opportunity; one that is no longer there with other renewables. An effective feed-in-tariff will create a pioneer market, the focus on community-scale projects, the strategic research initiatives, and the offshore interconnection infrastructure at FORCE, are all commitments toward being an early adopter. A development roadmap (Marine Renewable Energy Task Force), regulatory certainty (this legislation) and access to financing are the remaining puzzle pieces that can make Nova Scotia a/the world leader. That leadership can maximize economic gain as Nova Scotia develops its own resources and build a supply chain that can export as marine energy is implemented worldwide.

The fact that many of the research, fabrication or assembly, operational, management and developmental skills may have already been developed in Nova Scotia's maritime and offshore industry creates a clear opportunity to diversify and sustain those industries and the communities they support. The prospect of many decades of renewable marine energy development, and centuries of operations, maintenance and renewal, is an opportunity for business and infrastructure development in new areas of the coast close to these resources.

Another area of benefit is that a mature renewable marine energy sector (perhaps a decade or more away) may be able to support a resource rent in perpetuity (there is every reason to expect that marine energy plants will operate centuries from now). Much of our marine resource experience is fisheries with no such return (and significant management and other cost) or more recently the cycle of revenues associated with episodic non-renewable resource developments.

SECTION 3: The Challenges

What should the Government of Nova Scotia do to ensure all users of the marine environment are treated fairly?

It is likely that this question will generate responses suggesting that it is current users who are most at risk. In reality it is the new user who is at risk if held to a higher standard than the current users. A role of the legislation will be to ensure that all Nova Scotians see that renewable marine energy can be an essential part of Nova Scotia's energy and economic future, and, because of this, has a legitimate place in the waters of the Province.

The discussion and background papers rightly focus on the need to manage jurisdictional issues (intra- and inter-government) and to assure Nova Scotians that the sustainability of marine systems and other marine communities will not be risked in that approach.

Section 11.2 of the Background Paper explores the regulatory and jurisdictional challenge and perhaps carries through the adaptive management approach from a cooperative to collaborative, and ultimately integrative, approach if activity justifies it. The discussion clearly recognizes that a role of the legislation should be to allow a streamlined or facilitated approach, particularly for the pioneer phases.

This is likely the crux of this discussion. If the new legislation does not clarify, simplify, coordinate, and reduce conflict, it will become an incremental hurdle in an already crowded field of legislative and regulatory challenges. This is clearly not the intent of the Government of Nova Scotia. It would clearly deflect developer interest. The marine energy legislation must reduce challenges.

Marine energy legislation could establish a communication and outreach strategy for the Province as it explores these new resources. It could require to Province to publish a development strategy and roadmap and to refresh it regularly as resource, technical, operational and environmental knowledge advances. By embedding a risk-based discussion of potential environmental and user interactions, the interested communities might be reassured that development is unlikely to get ahead ability to address real risk.

SECTION 4: The Global Experience

What lessons can we learn from renewable offshore energy policies around the world?

The analysis in the Background Document reviews some model approaches in what is clearly an emerging effort to manage marine energy in a number of jurisdictions. At this point it seems that some of the approaches are more facilitative and others are more regulating, or focused on “crown rights and responsibilities”. It is fair to say that the UK has been attempting development oriented initiatives for much of the last decade; even ensuring a pilot farm leasing round before the Strategic Environmental Assessment needed for later stage development was initiated.

Given the lack of experience, Nova Scotia would be well advised to adopt a legislative framework and use regulations that can be reviewed and renewed to evolve management of the sector as it reaches scales that merit.

This may be nowhere better exemplified than the discussion of resource rents and royalties. Pioneer projects are unlikely to support these and indeed early projects supported by feed-in tariffs and other incentives will have to transfer any *rent* cost to ratepayers or taxpayers. If a longer-term regime is included, it should be made clear that it will only come into force when marine energy is a competitive renewable energy solution.

The Background Document appendix reflects experience in other jurisdictions and in other industries that should inform this discussion. Land-banking and a secondary market have emerged in other marine resource industries and already even in hydrokinetics in the US. The legislation should address the need for regulations that create a “use it or lose it” that reflects the real constraints to early project development but eliminates the speculator market for leases.

It is by no means clear whether any of the reference initiatives really reflect the need for phased developments to be able to transition easily between development stages, perhaps requiring pilot leases to be converted into larger or longer-term leases, allowing demonstration installations to become the first phase in a larger scale trial, the small array to be built out to develop experience with operations and maintenance of a power plant. The transaction and infrastructure costs are just now being recognized as critical issues in moving marine energy ahead. If the right developer interest is to be attracted into Nova Scotia initiatives, they need to be able to plan a phased progression that builds out of the lessons-learned and infrastructure development in each phase, ideally without restarting permitting or infrastructure development in a new area each time.

SECTION 5: Framework for Development of Nova Scotia’s Marine Renewable Energy Industry

How do we integrate this approach into our current regulatory approach and legislation?

It is hard to discuss this question without integrating the Section 11 question.

It seems likely that the R&D phase will go much further into the development of commercial-scale marine energy than is envisaged in the Background and Discussion documents. Ultimately it may be the development of marine operations, installation repairs and maintenance technology, experience and approaches through “experimentation” with commercial-scale projects that leads to the ability to offer competitive projects in the future – refinement and testing of single, or even small arrays of, generators may not offer that same cost reduction opportunity.

The implication is that the R&D phase will endure longer, will include larger projects than envisaged, will be favoured by conditions that allow build out from one phase to another, and will require a facilitated or enabling approach at later stages than the discussion suggests.

Marine energy legislation should allow successful projects to renew/extend permits and leases and to expand into contiguous areas if this allows capitalization on existing research, infrastructure and servicing. An objective in the legislation should be to allow investments in testing and demonstration to transform into the basis of a longer-term operating industry. Commercialisation cannot be an add-on to research and testing, it is the process that has already started.

Current perception, if not intent, suggests that generator technologies must be tested in Nova Scotia at the unit level before any applications for larger deployments can be considered. This appears to be based on two premises. The first is that testing in other regions and environments may not prepare for the Fundy regime. While this may be valid to some extent, the sector cannot afford the cost and time needed to replicate demonstrations of essentially the same step in each new geographic area. If installation, operations and maintenance experience can be demonstrated by proponents, a phased development of larger scale projects should be allowed. The second premise is that the environmental impacts of a particular technology can be tested by deployment of a single generator for a one or two year period. While that might be valid in smaller and more constrained energy fields and waterways, a risk-based analysis is likely to suggest that even if there were extreme impacts, they would be undetectable from such a deployment.

The intent of the legislation must be to expeditiously advance experience with marine energy development to inform longer-term resource and environmental decisions, as much as to inform the longer-term renewable energy plan. The existing framework was crafted in a time when the focus was on tidal energy R&D while the current Renewable Electricity Plan is focused on making development of renewable marine electricity a critical part of the clean energy future for Nova Scotia, to the extent that this is responsible and sustainable. This argues that the existing framework has served well but may not be the best basis for the legislative approach.

SECTION 6: Getting Involved: Participation in Marine Renewable Energy Development

How should community interests be considered in project planning and development decisions made by government and regulators?

The Renewable Electricity Plan focus on community and First Nations engagement through facilitation of community-scale projects can be expected to create a significant level of understanding and engagement. The legislation should ensure that this engagement is not in any way restricted to limit later engagement by communities who will have been able to learn from the pioneers. It should also address the need to avoid or resolve any competition for space or interconnection between large-scale and community projects.

Marine energy legislation should explicitly identify the range of communities whose interests are being addressed. These may extend from the Maritimes and New England community using clean Nova Scotia power to meet climate action goals, the people of Nova Scotia meeting clean energy and security of energy and price, and achieving new economic sustainability opportunities, right up to the community of adjacent residents, users of the space or rights owners. A framework that avoids marine energy being held to ransom by a single interest group or landowner is needed if the objectives of the plan are to be attainable.

The legislation should include a commitment to communication by government and the emerging marine energy research and power development sectors. Communities must be able to understand that they are sharing in the knowledge development as progressively larger and more extensive trials move ahead. Provision for project and site specific information to be made public at some time will likely help, and is needed to ensure that knowledge is not lost even if projects fail to go ahead.

SECTION 7: Planning Issues

If other marine users/uses are displaced, how should this be addressed?

The standard mantra of early interaction and discussion is embedded in this discussion and is evident in the application guidelines in the FIT regulations. Legislation and regulations can require consultation and project planning optimization to minimize conflicts, but how do they address the fact that sometimes trade-off decisions will ultimately be needed? If the objectives of the Renewable Electricity Plan are to be met, renewable marine energy will have to have a right to access resources even if competing with incumbent users. The legislation should ensure that such conflicts cannot postpone renewable energy projects unless their unmitigated impact is so significant as to cause losses that exceed the value of the project.

The central point is that Nova Scotia has a real interest in ensuring that priorities for marine energy in all planning and management processes are certainly no less than current or historical uses. Legislation should avoid setting any hierarchy that negates this. It should not require/define any compensation or if it does it should look at past approaches in which governments retired licenses, an approach they might choose to pursue if they create marine energy development zones.

SECTION 8: Economic Opportunities

What features should be included in the licensing system to ensure development takes place in a manner that balances private and public interests?

Employment, business and economic interests can be supported through requirements for community and regional benefit plans. Whether Nova Scotia is best served by making the meeting of a firm standard a compliance issue may be debatable given the reaction to Ontario's *Local Preference* rules. The discussed option of voluntary compliance may be the right mechanism to create a focus on local benefits. However it is a legislative framework that succeeds in establishing a continuous and progressive development of marine energy in the region that is likely the best strategy to growing employment opportunities, business strengths and anchoring longer-term economic opportunities. Uncertainty in progression between stages and other issues that could result in stop/start development tend to reinforce the pragmatics of using imported skills and capacities over those of growing domestic capacity.

Legislation will need to establish rights to land use and energy extraction and should allow front-end incentives like rent- and royalty-holidays in order to minimize feed-in-tariff costs and maximize development interest in early phases (10 years?).

Legislation will need to address the potential cap on project or regional energy extraction that optimizes resource development, minimizes negative interaction between projects and, if needed, limits environmental impact. This will be addressed again in the context of rights allocation. It raises the issue that at some level of development the legislative direction moves from mobilizing incentives for the pioneer power development projects to managing the remaining lands and energy resources to optimize benefits and minimize negative impacts.

Marine energy development should result in power projects that operate for decades and indeed centuries, admittedly using newer generations of equipment, but producing clean electricity in perpetuity. It is that long and sustained resource rent that should be the focus of legislative efforts to extract revenue for the provincial resources. Any effort to move too early will put the economic returns at risk and potentially delay the marine energy solution.

Legislation should address the issue of providing developers with *real property*, needed in the challenge of project financing, without creating incentives for *land-banking* or a parasitic secondary market. It is likely essential to allow for regulations to address due diligence in site evaluation and development, and to permit ownership transfers if they contribute to diligent development, but not if they simply create a secondary rights market.

The Background document raises issues around environmental research and monitoring, their costs, leadership and data ownership. The legislation must acknowledge that a cumulative open knowledge base is essential for progressive staged development of a marine energy sector in Nova Scotia, but it must recognize that the research and monitoring must be tailored to the scale and scope of the project (or accumulated group of projects) and designed to test whether assessed risks are real – small project interactions may be so small as to be less than the changes between tides and trying to measure their impact is *a priori* pointless. At later stages the issue may be how to deal with the responsibility for work on issues of risk appropriate to larger scale intervention, but that trigger may be the result of a number of projects by different owners. The legislation may have to leave room to create a mechanism for strategic collaborative research on critical risk issues in a novel approach to cumulative effects, or make it explicit that *last-in* takes on that responsibility.

SECTION 9: Environmental Issues

How should Nova Scotia and Canadian authorities/legislation/regulation work together to ensure environmental protection?

Nova Scotia has experience in use of the interagency standing committee and the CNOSPB, perhaps examples of the practical and the definitive approaches aimed at reduction of effort and focused experience development. The legislation must use Nova Scotia's authority to lead a coordinated process and to commit to ensuring that jurisdictional issues and excessive duplication are anticipated and resolved ahead of needs. As discussed in the previous section, one objective will be to ensure that a standing committee, or management board, learn from every project about the impact of the resource on installation, operations and maintenance, about any limits to resource extraction, project siting or regional development planning, and about scales of resource development that trigger environmental management concerns. This argues for the legislation to require formal accords or memoranda to establish a long-term responsibility.

SECTION 10: Occupational Health and Safety

How should Nova Scotia and Canadian authorities/legislation/regulation work together to ensure occupational health and safety?

This area is perhaps the one in which the Province has the most experience and can draw on approaches taken with terrestrial industry, offshore oil and gas and aquaculture. The legislation may simply extend an existing mandate, but it will have to designate a responsible agency that will be a part of the roundtable referred to above.

SECTION 11: Rights Allocation

Considering the proposed staged development approach what should Nova Scotia use to award development rights?

If it is accepted that the *R&D* phase extends all the way to gaining experience with commercial-scale power plants, then this phase of development must be managed in a way that facilitates and progresses these early projects. As such, rights awards should be tailored to the progression and

developers should be assured of the needed site and resource access as they progress. This can indeed begin with some assurance that an interest can be held while exploring a potential site or region, that this can progress to what may become a staged expansion of a commercial-scale development if technical, operational and environmental milestones are met. In this phase, legislative and regulatory initiatives must be aimed at ensuring that project developers have incentive to undertake pilot projects and are not risking their project development and infrastructure optimization to new entrants or encroaching neighbours.

Before the point (after the first four 15-20 MW arrays?) where there is a transition to a focus on expansion of commercial-scale projects, the legislation should provide for development planning that recognizes the need to optimize resource use and manage potential environmental issues. This is the transition point from incubating an industry to management of its further growth. Effectively this would be a transition from a *First Rights* to some more competitive approach. The nomination approach with EOI or RFP might seem the easiest approach by government, but it is questionable whether this will result in the best development approach, or the easiest transition in continuous development. A leasing round approach (with some geographic and capacity targets) may offer a better approach to pacing and spacing development, matching it to a resource development plan that may emerge over time and coordinating with transmission development and market access and demand. The legislation might require that each round require a review of its potential resource availability, its potential impact on existing and future resource extraction, its potential conflict with other industries and the scope for cumulative environmental impacts – is it possible that the Strategic Environmental Assessments being undertaken in the UK provide a model?

As noted earlier, the legislation should clearly aim at avoiding creation of a secondary market for sites. At the same time it must allow for the inevitable slippage and performance target shortfalls that may come with early stages and early projects and for the changes in ownership that are not uncommon in underfinanced pioneer industries during diligent project development. This latter point raises the issue that diligent project execution effort should earn a real property right even when multi-stage pilot power projects are being developed in that R&D phase; these rights may prove important in developing financial capacity for the sector.

SECTION 12: Regulatory Issues

Which regulatory model would be most effective for Nova Scotia: cooperation, collaboration, integration, or other approach?

The legislation must recognize that the immediate phase of marine energy exploration is one that requires a broad framework of facilitation and incubation, and that the longer term resource, space and environmental management requirements may only be defined by experiences in that early phase. This may mean that the regulatory model will have to be adaptive, always ensuring that it addresses the management of complex and overlapping jurisdictions that has been found around marine projects in the past. The lesson learned in the interagency standing committee around the FORCE approvals is probably fundamental, but will likely have to be strengthened through accords or MOUs to make it robust enough to handle the next stages.

It may well be that understanding of the resource potential and the longer-term scale of renewable marine energy development will justify an integrated authority. The legislation should allow for such a development, but should not require it in any way that could delay work on proposal development and initiation of reviews of the expansion of existing demonstrations into pioneer arrays.

In the discussion paper the objectives for the regulatory approach are identified as:

- *Separate policy formulation and advice from regulatory administration*
- *Minimize the need for multiple approvals or duplicate assessments*
- *Minimize overlapping administration by multiple authorities*
- *Minimize inconsistencies in legislative requirements and decision-making*
- *Provide the ability to regulate activities in the presence of different viewpoints regarding ownership (provincial or federal)*
- *Ensure regulators have independence, accountability, and clear objectives*

The developmental objectives in this list are bracketed by two procedural objectives, which can either make or break the success of this legislation. If regulatory approaches are too divorced from the future energy, climate action and economic development objectives of the government they are not likely to be adaptive or to see the early marine energy activities as the experience on which to build a longer term approach. The central ones are those that are critical to launching a measured development approach. Regulatory approaches that are simple, transparent and effective are critical, experience suggesting that the risk of overlap, confusion and duplication can be addressed, but it does need specific action and leadership. The objective of working through potential disputes in ownership

may be narrower than the need to be able to work through disputes in assessment of risk and in access to energy or space.

Conclusion

To repeat a comment from our opening paragraphs – (The regulatory regime) should encourage responsible pioneer activity, provide certainty for early stages of expansion and set the framework for directing or constraining later sustainable developments, and extracting resource rents in the following decades.