

Comments on the Consultation Document “Marine Renewable Energy Legislation for Nova Scotia”

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Introduction

While the consultation paper identified a suite of questions that the Department of Energy was soliciting feedback on, MAP has focused its response in two major areas:

- (1) the process by which decisions affecting the use of marine resources can be made; and,
- (2) the substantive knowledge available to both inform the decision reached and influence the decision outcome, since a good decision process does not guarantee a good outcome.

MAP is convinced that by addressing these two areas, it is in fact providing feedback on most of the questions asked in the report as they can be categorized as either process-related or substance-related questions.

1. Process-Related Issues

We suggest that the major factors affecting marine renewable energy decision making in Nova Scotia centre around an identification of who the policy stakeholders are, the policy environment within which the policy is being debated and the current suite of existing public policies that are taken into account. In effect, these factors reflect the degree of politicization of the issues as it may be argued that *where* the problem arises, *who* is affected by it and *why* it is deemed important by some actors will all influence *how* the problem will be resolved. To that end, our over-arching recommendation under this section is to call on the Department of Energy to be a leading supporter and champion of the work currently being undertaken by the Government of Nova Scotia as it moves towards developing an integrated coastal development strategy for the province. As will be further discussed below, the specific process by which the Department develops and implement policies relating to marine renewable energy can serve as a ‘best-practice’ lesson for other sectoral-related policies currently being developed by Government of Nova Scotia.

Integrated Management

In the discussion paper, it is acknowledged that the Bay of Fundy is host to a wide range of coastal and ocean uses and that there are many stakeholder and user groups who could potentially be affected by marine renewable energy projects. The paper also recognizes the need for the development and operation of marine renewable energy projects to proceed within a legislated integrated management framework. While we agree that integrated coastal and ocean management (ICOM) is the most appropriate process by which to move forward with marine renewable energy, we are concerned about the apparent disconnect between the marine renewable energy process and the Government of Nova

Scotia's efforts to establish an integrated coastal management program for the province which is currently underway. Key elements of an integrated approach have been described by Underdal¹ as (i) comprehensiveness - in forecasting potential policy consequences (across time, space, actors and issues); (ii) aggregation – the extent to which policy consequences are evaluated from the perspective of reaching goals set for the marine sector broadly, rather than any single sector or actor; and (iii) consistency – the extent to which sectoral policies support broader policy goals. As summarized by Underdal (1980), “[A] policy is integrated to the extent that it recognizes its consequences as decision premises, aggregates them into an overall evaluation, and penetrates all policy levels and all government agencies involved in its execution.” (p. 160)

Efforts to develop a formal integrated coastal management program for the province have been underway for decades. However, these efforts have recently gained momentum largely in response to growing dissatisfaction by industry and the public regarding the government's lack of a long-term strategic plan for development in the province's coastal zone. In addition, the overly-complicated, inefficient, and ultimately ineffective regulatory regime governing activities in the coastal zone has generated considerable public concern and demand for action.

One recent event was particularly influential in the government's decision to move forward with a formal integrated coastal management program for the province, namely the recommendations of the Joint Review Panel in the Whites Point Quarry environmental assessment process. As the Chair of that Review Panel, you would recognize that the quarry project shared many similarities to marine renewable energy development as (1) the project would have affected a variety of coastal and ocean user groups in the vicinity, and (2) there was a high level of concern and uncertainty regarding the social, environmental and economic impacts that would result from the project. In 2007, the Joint Panel released its final report which recommended that the Province of Nova Scotia develop and implement a comprehensive coastal zone management policy or plan for the province.

It is clear that the Joint Panel's recommendation applies to all major industrial developments in the province's coastal zone, whether they are quarries, marine terminals or marine renewable energy projects. All forms of coastal development should be considered within the context of a broader provincial integrated management and planning framework which outlines long-term strategic goals and objectives for the coastal zone and establishes a formal process for decision making which includes all relevant government agencies, user groups, stakeholders, and the public.

Consistent with Underdal (1980), we hope that individual sectoral departments, such as the Department of Energy, will choose to consider any new policy or legislation related to marine renewable energy as nested within the context of the developing provincial integrated coastal management and planning framework.

At the federal level, Section 31 of Canada's *Oceans Act* identifies the Department of Fisheries and Oceans (DFO) as the primary agency responsible for leading and facilitating the development and

¹ Underdal, A. 1990. Integrated marine policy: What? Why? How? *Marine Policy* 1980 (July): 59-69.

implementation of integrated management plans for all activities or measures in or affecting estuaries, coastal waters and marine waters in Canada. Therefore, it is imperative that the Department of Energy and the Government of Nova Scotia work in collaboration with DFO and all other stakeholders to develop an integrated management plan for the Bay of Fundy. Such a plan would help minimize user conflicts and facilitate the responsible growth and development of all coastal and ocean uses within the Bay of Fundy, including marine renewable energy projects. One of the tools aimed at minimizing conflict and available for use in implementing integrated management is marine spatial planning.

Marine Spatial Planning

Traditionally, marine space has been designated or zoned on a sector-by-sector, case-by-case basis without much consideration of effects either on other human activities or the marine environment, resulting in conflicts among human uses and conflicts between human uses and the marine environment.² During recent years, marine spatial planning (MSP) has emerged as a promising tool for reducing and preventing conflicts between various ocean uses and activities and their impacts on the marine environment. MSP can be viewed as “a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process”.³ Therefore MSP is a tool to be used within the broader ICOM process. It provides a conflict-resolution mechanism, and in combination with zoning, these tools are key to achieving successful ICOM. In recognition of many potential benefits of marine spatial planning, the U.S. Ocean Policy Task Force has recently recommended coastal and marine spatial planning become a priority objective and key component of future U.S. ocean policy. MSP is a process that has taken off in recent years in the European Union, with the advent of the Integrated Maritime Policy and Marine Strategy Framework Directive. This overarching legislation is leading to European Member States coming up with both individual approaches to MSP as well as regional plans, within European seas.

Given the ecological significance of the Bay of Fundy, the growing number of conflicts over marine space, and the emergence of new ocean uses being proposed for the region (i.e. marine renewable energy, quarries, marine terminals, and finfish aquaculture operations), it would seem as though MSP would be an effective tool for managing ocean uses and activities within the Bay of Fundy and it is the perfect candidate for a MSP pilot project in Canada. We therefore recommend that the Governments of Nova Scotia and Canada consider developing a MSP process for the Bay of Fundy as a means of optimizing the use of marine space and resources.

Rights Allocation

Any process for awarding development rights for renewable energy projects must give adequate consideration to all potential alternative uses of that marine space. If a process for awarding

² C. Ehler and F. Douvère. *Marine Spatial Planning: a step-by-step approach toward ecosystem-based management*. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manuel and Guides No. 53, ICAM Dossier No. 6. Paris: UNESCO, 2009.

³ Ibid.

development rights for renewable energy projects is put in place before a broader marine spatial planning process is established, other user groups could be excluded from large areas of the Bay of Fundy as developers rush to reserve all sites favourable for use in marine renewable energy projects. Such a situation has already occurred in other areas, such as the Scotian Shelf, where the granting of oil and gas exploration leases have given the oil and gas industry substantial control over large areas of the seabed. The social, environmental and economic benefits to Nova Scotians that may have been generated from alternative uses of this marine space were not given adequate consideration before these leases were granted. If developers are given the opportunity to gain special use rights over marine areas most favourable to marine renewable energy, then all other users should be given a comparable opportunity to gain special use rights over marine areas most favourable to their own particular use or activity.

A Precautionary Approach to Development

Given the high level of uncertainty surrounding the environmental impacts of marine renewable energy development, we recommend that the Government of Nova Scotia develop a precautionary framework for the management of marine renewable energy projects as a key component of the legislation. This framework should place the onus on the developers of marine renewable energy technologies to demonstrate that the technology does not pose a serious threat to marine species, habitats, or ecosystems before it is used extensively in the marine environment. The rationale for the reversal of the burden of proof is discussed further below. The staged, adaptive approach to marine renewable resource development outlined in the discussion paper seems consistent with a precautionary approach to management of this resource and we support the continued use of this approach.

In addition, the precautionary framework for marine renewable energy should enable managers to continuously monitor for environmental changes once the technology is operational and to respond quickly with appropriate management measures should unacceptable levels of environmental damage be detected. Following other precautionary frameworks used to guide the management of other marine activities such as fisheries, the marine renewable energy precautionary framework should incorporate the following elements: (1) a suite of appropriate environmental indicators, (2) target reference points for each indicator, (3) limit reference points, and (4) control rules.

The environmental indicators would be used to measure changes in the marine environment which are associated with marine renewable energy technology. Examples of some relevant environmental indicators that might be used for technology designed to harness tidal energy include downstream current velocity, total fish biomass, total species diversity, suspended sediment concentration, sediment composition, and grain size. Once the appropriate environmental indicators were selected, the next step would be to identify target reference points and limit reference points. Target reference points are the acceptable range of measurements for a particular indicator which represents a “good” environmental status. The target reference points would be determined by baseline data and social, economic and environmental objectives. Limit reference points are the measurements which represent a transition to a “poor” or deteriorating environmental status. Measurements below the limit reference point indicate that a threshold has been exceeded whereby an unacceptable level of harm is being done to the marine

environment. The limit reference points would be determined by baseline data on pre-development environmental conditions. Finally, a series of pre-established control rules would need to be developed for each indicator. Control rules are mandatory management actions that must be executed once a limit reference point has been exceeded. The control rules may involve implementing measures to mitigate damage to the environment caused by the technology or they may even require shutting down the project either temporarily or permanently depending on the severity of the environmental impact. Control rules should be established collaboratively through consultations with governments, developers and stakeholders.

Regulatory Issues

In the discussion paper, the possibility of creating joint federal-provincial legislation and instituting an integrated regulatory model for marine renewable energy similar to that created for offshore petroleum operations is raised. The creation of joint legislation could indeed help to make the regulatory process more efficient by minimizing the need for multiple approvals and assessments and minimizing overlapping administration. However, if joint legislation is created and an integrated federal-provincial regulatory body is established, it will be important to ensure that the new legislation and regulatory regime does not weaken any existing provincial or federal regulations, approvals, assessments, or legislative requirements related to development projects in the marine environment. Regulations under federal legislation such as the *Environmental Assessment Act*, *Fisheries Act*, *Oceans Act*, and *Species at Risk Act* are particularly important and their original intent must not be diluted by joint legislation regarding marine renewable energy.

The United Kingdom's new *Marine And Coastal Act* provides an example that may be worth consideration. This new legislation formalizes MSP, working with existing legislation to provide a regional approach to nature conservation, fisheries management and other marine uses. The Act created a new Marine Management Organisation to oversee this process for the UK⁴. Currently, within English waters there are several sub-regional initiatives planning marine conservation zones, the Irish Sea, the North Sea, and southwest and southeast seas.⁵ The *Marine and Coastal Act* has a strong economic vision. With regard to marine renewable energy, it streamlines the consenting process for wind, wave or tidal energy (100MW or less in output) by ensuring that only one administrative process is used to consider all marine aspects of an application.

It is therefore our recommendation that if new joint federal-provincial legislation for marine renewable energy is drafted, it should focus on harmonizing all uses of the marine environment within an MSP framework, which has the added benefit of simplifying the regulatory process and maintaining a strong economic vision while also ensuring long-term conservation benefits.

⁴ Due to devolution, Scotland, Wales and Northern Ireland have produced (or are in the process of drafting) their own MSP legislation and management organizations, following the Marine Act's model.

⁵ Further information on these initiatives can be found on the Natural England website: <http://www.naturalengland.org.uk/ourwork/marine/protectandmanage/mpa/mcz/default.aspx>

Benefits of Marine Renewable Energy

It is stated in the discussion paper that the future marine renewable generated electricity could reduce Nova Scotia's dependence on imported fossil fuels and make Nova Scotia less susceptible to fluctuating market prices. While this is so in theory, it has not been the case in practice, in Nova Scotia. For example, an estimated 90% of all natural gas that was found offshore of the province was exported to the United States. Recognizing that the principle reason behind the export of natural gas from the Sable project was likely financial in nature, both in terms of price of gas as well as the remaining economic life of coal-fired power plants, this financially-driven approach must be reconsidered with marine renewable energy development.

The challenge for any government is reconciling the fact that in exploiting common pool resources, those who bear the greatest risks generally do not reap the rewards.⁶ The offshore energy sector in Nova Scotia has repeatedly experienced opposition as a result of this single fact. We suggest that legislation surrounding marine renewable energy must address this issue if indeed the goal of the legislation is to support development that is in the best interest of the public and the environment. In order to address it, we suggest two principles must be incorporated in the decision-making process.

First, the burden of proof when assessing risk must shift from efforts to reduce Type I errors, (i.e. reducing false positives or rejecting the null hypothesis when it is true) to reducing Type II errors (i.e. reducing false negatives or accepting the null hypothesis when it is false). The current scientific practice of placing a greater burden of proof on those who postulate 'some', rather than 'no' effect reflects the epistemologically conservative characteristic of science and has been compared to the practice in criminal law in which one is 'innocent until proven guilty'.⁷ However, while the former use has served theoretical science well and the latter is a morally-acceptable approach when assessing the consequences of a decision taken with respect to an individual, there is a growing demand among civil society for scientists and law makers to be ethically conservative when assessing environmental risk. In other words, the call is to focus more on reducing the incidence of accepting that there is no significant impact when in fact there is or, in scientific terminology, reduce accepting the null hypothesis when it is false. Put more simply, the call is to place the burden of proof on those who claim the null hypothesis or say there is no significant negative effect. This requirement would build confidence in the decision-making process as it would demonstrate taking into account the social consequences affecting the needs, rights and welfare of the public and other users of marine resources and space, thereby minimizing potential conflicting scenarios.⁸

Second, assuming that the decision supports the development of marine renewable energy projects and that impacts can be mitigated, Nova Scotians must be seen as being first in line to receive the benefits of the energy that is produced. Numerous regulatory examples exist from other sectors globally to

⁶ Lemons, J. (1995). *Scientific uncertainty and environmental problem solving*. Blackwell Science, Cambridge, MA.

⁷ Shrader-Frechette, K. (1995). Methodological Rules for Four Classes of Scientific Uncertainty. In J. Lemons (Ed.), *Scientific uncertainty and environmental problem solving*. Blackwell Science, Cambridge, MA., pp. 12-39.

⁸ Ibid.

implement this guarantee, based on the setting of a minimal percentage of the resource to remain in the area from which it is exploited.⁹ Where appropriate, local control, ownership, and use of marine renewable energy should be recognized as a priority in the legislation. We note the efforts towards a community-based feed-in tariffs (COMFIT) program to ensure that renewable energy projects bring benefits to the communities they are located in. We also support widespread net metering programs for consumers who invest in renewable energy technology. However, it seems unlikely that these programs would be applicable to marine renewable energy in the near-to-medium term.

2. Substance-Related Issues

There is considerable recognition in the discussion document of the uncertainty of technical and scientific knowledge surrounding marine renewable energy. It is not the intent of MAP to focus on these knowledge gaps but rather to highlight the role the level of participant knowledge can play in the decision-making process and in influencing the achievement of expected outcomes. We suggest that while the who, where and why in a decision-making process affects how the problem is resolved, a critical factor underlying and influencing the outcome of the process is the knowledge base of the policy actors or the 'what' factor. Given that collaboration and consultation have been identified as two stated principles guiding the development of marine renewable energy in the consultation document, there is a need to recognize differing levels of knowledge among the policy actors and to work towards building the knowledge capacity of those who are being consulted with, particularly coastal communities. We suggest that such knowledge not only increases the quality and quantity of those participating in the discourse, but contributes to building trust and minimizes opportunities for disseminating 'misinformation' by some with vested interests in the decision-making process.

Coastal communities are confronted with a variety of economic and environmental issues related to industrial development, aquaculture, and agriculture. Although there are existing problems arising from ongoing economic activities, new development may be particularly controversial in coastal towns and villages for several reasons. First, large development projects are often accompanied by a corresponding infusion of infrastructure including factories, buildings, roads, etc. Abrupt changes to small communities may be disconcerting. Second, government departments responsible for regulating aspects of coastal development are also interested in promoting economic activity, and residents may be concerned about this dual role. Third, both environmental and economic impacts require technical information and expertise that is perhaps filtered by both government and developers, giving even less confidence in the process. A general rule of thumb that seems to be applicable to any development project, regardless of size or location, is that the benefits are never as great as the proponents boast while the threats are never as large as the opponents fear. This provides a wide degree of distrust among members of communities who would like to have the data and information necessary to inform decision-making.

⁹ For example, although lobster is an extremely export lucrative fishery in the Central American country of Belize, a legislative requirement imposes a rule that specifies a percentage of the harvest must be available for local consumption. (Government of Belize).

It is clear that there are a variety of scientific, social, political, and planning decisions to be made as coastal development proceeds. There are formalized approaches to interacting with the public as well as enabling their participation in information-processing and decision-making. This is an integral part of ecosystem-based management. For example, Feurt (2008) espoused collaborative learning as a tool in fostering public input into management of a Maine watershed.¹⁰ Similarly, Fanning (2003) demonstrated the potential for policy-oriented learning among stakeholders involved in decision-making in the 1999 Georges Bank moratorium decision and the 1993 decision to build of the fixed link between Prince Edward Island and New Brunswick.¹¹

Presently, coastal residents are confined to a very limited and often adversarial role in the decision process. Kiker et al. (2005) expressed this as follows: “The current environmental decision-making context limits stakeholder participation within the decide-and-defend paradigm that positions stakeholders as constraints to be tested rather than the source of core values that should drive the decision-making process.”¹² Currently, the way stakeholder participation models are conceptualized and operationalized has been seen as raising several problems: (1) proponents of marine conservation often focus on aggregate costs/benefits, without regard to distributive inequalities; (2) the assumption that all relevant stakeholders can be jointly incorporated is misleading given differences in their legal rights and other political capacities; and (3) political institutions have a significant role in creating the different status of stakeholder groups, and thus shaping their perspectives and strategies (Singleton, 2009).¹³ That is to say, institutions govern the ‘rules of the game’ in stakeholder participation scenarios, including who can participate and what kind of power they have.

Marine spatial planning, discussed above as a tool to implement integrated management, has significant implications for nearshore development. Beyond coastal land-use designation, it brings elements of GIS, decision support systems, and ecosystem modelling together to enable user input to development. Prospective analysis via scenario building is critical in obtaining community involvement in local and regional management.

It is clear that further information and capability in decision making is required, enabling coastal communities to more fully interact in development scenarios. Stewardship groups or ENGO’s provide some of this component, but a more formal set of tools and processes would help communities in several ways:

¹⁰ Feurt, C. 2008. Collaborative learning guide for ecosystem management, available from http://ciceet.unh.edu/living_coasts/projects/pdf/CLGuide_11-04-08.pdf

¹¹ Fanning, L.M. (2003). *Towards an Understanding of the Role of Core Values and Policy Networks to Influence Decision-Making in an Evolving Ocean Governance Regime: A Maritimes Canada Study*. Unpublished PhD thesis, Faculty of Graduate Studies, Dalhousie University, Halifax, NS

¹² Kiker, G.A., A. T. S. Bridges, A. A. Varghese, T.P. Seager, I. Linkov. 2005. Application of multicriteria decision analysis in environmental decision making. *Integrated Environmental Assessment and Management* 1: 95–108.

¹³ Singleton, S. 2009. Native people and planning for marine protected areas: How ‘stakeholder’ processes fail to address conflicts in complex, real-world environments. *Coastal Management* 37: 421-440.

- Relevant geo-referenced environmental information collated in GIS format: this could be delivered to individual citizens in condensed or simplified form, e.g. geo-pdf or web map server.
- GIS can be the basis for more formal decision-making using interactive tools such as CommunityViz, a GIS system meant for scenario building with public input (see below).
- A more formal process of consultation with community groups with a structured plan that outlines their role, participation, and rights in planning and management of development activities. Collaborative and policy-oriented learning are two examples of this approach.
- Science tools based on imaging techniques (e.g. benthic health) whose collection and interpretation are available to the public.
- Scenario testing models that allows communities to see the effects of decision-making guided by differing sets of values, objectives and targets.

Conclusion

The Marine Affairs Program welcomes the Government of Nova Scotia's commitment to reducing the province's reliance on carbon-based electricity generation and moving towards greener, local sources. We are also supportive of the Government's commitment to the responsible development of marine renewable energy in the province by using the staged approach and their decision to create introduce new legislation before marine renewable energy reaches the commercial stage of development.