SEA, Marine Spatial Planning and Offshore Wind

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Introduction The purpose of this paper is to explore whether Strategic Environmental Assessment (SEA) and/ or Marine Spatial Planning (MSP), used as a planning tool can be influential in achieving greater sustainable development and growth in Ontario's offshore wind energy sector.

Background/Context Within the last 15 years, five major legislative and policy initiatives related to marine planning and protection have been created and enacted by the Canadian Government including: the *Oceans Act* (1996), *Ocean Strategy* (2002), *Ocean Action Plan* (2005), *Health of Our Oceans Initiatives* (2007), and *Our Oceans our Future: Federal Programs and Activities* (2009). Initially with the Oceans Act, 1996, Canada has shown interest in adapting better planning and management of its oceans and coasts (with some policy guidance to the Great Lakes), that have been charged to employ a more integrated, proactive and sustainable approach (Rutherford, Dickinson & Gunton, 2010).

A number of alternative energy sources have been developed and implemented internationally, which utilize renewable sources such as wind, solar and bio-fuels. Of these sources, wind energy has been displaying the most promising advances in worldwide production and implementation (Industry Canada, 2011). Wind energy production has the ability to substantially augment non-renewable energy producers locally, nationally and globally. This is currently exemplified in Ontario as 1636 megawatts of wind energy capacity from onshore installations have the potential to power the annual energy needs of over 800,000 homes (Canadian Wind Energy Association, 2008). By 2030, Ontario hopes to achieve 15,000 mega watts (MW) of renewed, replaced, or added energy production, which is approximately half of its current provincial transmission capacity (Ministry of Environment (MOE), 2010). Moreover by 2014, through Ontario's Long Term Energy Plan, the current energy campaign aim is to become coal-free by replacing or shutting down coal-fired power plants.

In addition, on May 14, 2009, the Ontario Government passed in to law Ontario Bill 150, Green Energy and Green Economy Act, 2009. "The purpose of this Act is to facilitate the development of a sustainable energy economy that protects the environment while streamlining the approvals process, mitigates climate change, engages communities and builds a world-class green industrial sector" (http://www.greenenergyact.ca/). Furthermore, as a component to the new Green Energy and Green Economy Act, 2009, Ontario will be introducing a Feed in Tariff Program (FIT), which will allow renewable energy projects and producers (including individuals, communities and large-scale industries) the opportunity to secure the sale of their energy at a long-term fixed rate. For offshore wind in Ontario, the FIT contract price is awarded at 19.0 ¢/kWh. To compare, onshore wind projects in Ontario are awarded FIT contracts at 13.5¢/kWh. Certainly, these two pricing structures allow for wind energy to provide a viable (lucrative) business model for operators. Likewise however, all upfront costs and operational expenses are the sole responsibility of wind energy operators.

Planning for renewable energy in concurrence with the Green Energy Act and FIT

Program requires awareness of policies and regulatory exemptions provided in the Green Energy Act. These exemptions are subsumed with the regulations set out in the Green Energy Act. For example, the Green Energy Act includes an assortment of planning approval exemptions in Section 33, 34, 41 and 70.2 of the *Ontario Planning Act* (R.S.O. 1990, c. P.13), including policy and regulations exemptions in the Environmental Protection Act, Environmental Assessment Act and Environmental Bill of Rights, 1993 (Renewable Energy Facilitation Office (REFO), 2010). At present under the Green Energy Act there is a one-window approach to managing wind energy approvals; however, multiple Ministries coordinate and review REA project proposal and approval requirements (REFO).

Nevertheless, the REA process does not address Federal requirements (REFO, 2010). Federal policy, legislation and regulation are essential in addressing offshore wind development in the Great Lakes; lakebeds are considered Federal or "Crown Lands", and found under Federal jurisdiction when an offshore development is proposed. The full list of triggers for an environmental assessment consist of the following:

- the federal government proposes the project;
- the federal government provides financial assistance to a project proponent;
- and the Law list regulations for environmental assessments is met (Canadian Environmental Assessment Agency (CEAA), 2011-1);
- the federal government sells, leases or transfer control of the land for a project;
- the federal government provides a license, permit or approval for the project (MOE, 2010).

In the case of offshore wind, the latter two triggers for environmental assessment are highly likely to be initiated with federal authorities and will become part of the planning process. However, this raises a central question: how can SEA and MSP better facilitate policy and planning for offshore wind and the development of offshore space?

Case Example: Toronto Hydro Offshore Wind Proposal Toronto Hydro's interest in alternative power production has resulted in their exploration of offshore wind generation in Lake Ontario. Currently at the proposal stages, an offshore wind project would be comprised of approximately 60 offshore turbines. Together, the array of wind turbines would span across 25km of Lake Ontario's coastline (Toronto Hydro Energy Services, 2008). Further, the turbines would be sited between 2km and 4km from shore. When implemented, the proposed wind farm will have the generation potential of 200 MW at full operational capacity (Toronto Hydro Energy Services, 2008).

The idea of the project and proposed turbine locations stirred immense public controversy among area residents and environmental groups alike. A local news article about the project, Spears (2008) notes that much of the public's concern (e.g., area residents and outside environmental groups), was based on possible, unknown, social and environmental impacts from a possible offshore wind research project. Significantly, there was added anger regarding the lack of intended public input into the planning process of the newly proposed facility (Spears, 2008).

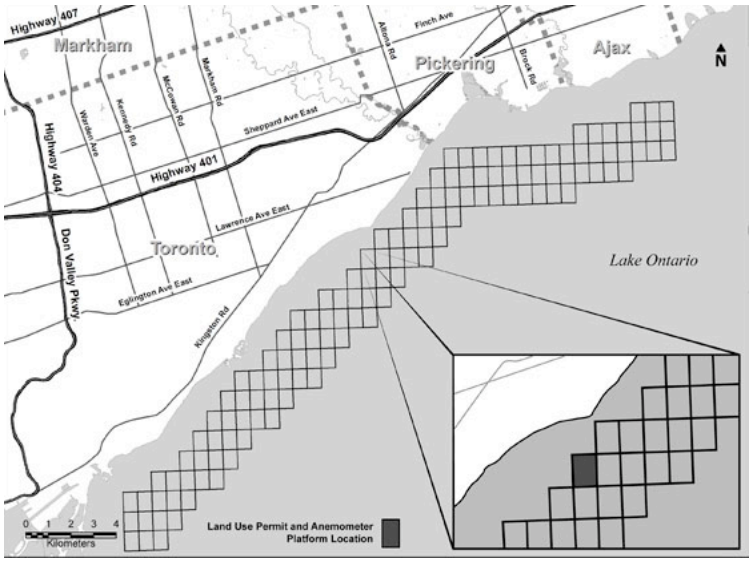

Figure 1: Toronto Hydro project and anemometer site (Data Source: Toronto Hydro Energy Services, 2008).

To combat these issues, the provincial government placed a "recommended" 5-kilometre buffer for any offshore wind turbine from shore in November, 2010. Likewise, in January 2011, the Ontario government established an undefined-timeline-moratorium on offshore wind development across the province. Both policy shifts were largely unexpected with regard to their logic and timing, and sense of confusion and uncertainty now prevails with respect to the future of offshore wind in Ontario.

Marine Spatial Planning (MSP) Overview

MSP has emerged over the past 10 years as an adaptive planning strategy to integrate cross-sectoral and agency perspectives together with maritime management and planning (Douvere, 2008; Plasman, 2008; Maes, 2008; Jay, 2010; Dickinson, Rutherford & Gunton, 2010). Much of the primary policy development and physical implementation associated with MSP has been within several national jurisdictions throughout the European Union and United States. Predominantly, MSP has been applied in tandem, collaboratively partnered with an ecosystems-based approach to create and support greater sustainable development and preservation of marine space and habitats (Douvere, 2008).

To this end, the origins of MSP are rooted in land use (spatial) planning, and used as a beneficial planning framework to rationally and conservationally develop urban and rural areas, while sustaining essential environmental and cultural values (Douvere & Ehler, 2009). However, whereas land use (spatial) planning has been an integrated part of national law within its respective jurisdictions, MSP is still in the early stages of acceptance as an approach that may be beneficial for marine development (Helsinki Commission, 2008).

Implemented in 2003, Belgium has generated an objective-led *Master Plan* for their territorial segment of the North Sea and exclusive economic zone (Douvere, 2008). Previously, all marine development and uses were planned and implemented on an ad hoc

basis with various governing bodies to oversee the projects. Largely, these projects were solely for the exploitation of natural resources (Douvere, Maes, Vanhulle, and Schrijvers, 2007). The Belgian MSP policy framework included the foundational issues of: developing offshore wind, delimitation of marine protected areas, policy plan for sustainable gravel and sand extraction, prevention of oil pollution, mapping marine habitats, biodiversity protection, and management of land-based activities that affect the marine environment (Douvere et al.). Enacting the *Master Plan* led to a more comprehensive zoning system for Belgium's marine space (See *Figure 2*). Moreover, sea use zoning helped to create clarity and transparency in future planning applications. Henceforth, conflicts among uses and users within each MSP zone were reduced through zoning legislation. In the same way, a sustainable ecosystem plan that applied to all spatial zones would help to level the playing field among various existing and future competing users and uses.

Figure 2: Belgian Marine Master Plan Zoning Map
(Data Source: Douvere et al., 2007, p. 186).

In reviewing the Toronto Hydro case study example, two main themes have emerged. First of all, offshore wind planning, legislative regulations, and permitting processes remain in their infancy in Ontario. As such, the planning and permitting processes are new and have not been tested. Frameworks for development, operation, monitoring, and evaluation for offshore energy have not been extensively established. Secondly, initiating offshore wind development in Ontario has essentially commenced with little experience and expertise – a somewhat trial- and-error approach.

Therefore, it can be hypothesized that MSP can bring a new (positive) organization to planning offshore wind energy projects in Ontario. Decisions for site location, feasibility, and environmental and social protection could be outlined in a rational and organized manner. As such, a MSP approach to offshore wind development will help to engage public participation, possibly alleviate negative public perceptions, anticipate questions,

and educate to address concerns regarding offshore wind prior to proposal stage and during planning phases.

Prospect The MSP process for the governance of the Great Lakes could be advantageous for future offshore wind development if a zoning scheme that considers public values and visual impact is established. MSP sets itself apart from the traditional sea use management approach by demonstrating forethought into the spatial issues that might be associated with individual permit decisions, on a project-by-project, case-by-case, single sector basis. By virtue of the scope in this dynamic, planning process design, spatial conflicts amongst marine users and the onshore public population can be prevented or reduced simply through spatial recognition and collaborative public inclusion/ discussion for the planning process. Notably, numerous European jurisdictions have implemented MSP to govern their national waters to their advantage; significantly, these jurisdictions have created and forwarded an integrated, sustainable, and adaptive vision for the present and future development and health of their respective marine environments. Moreover, MSP requires utilization of an ecosystem-based and participatory approach to ensure full transparency, inclusion, and sustainable development (Douvere, 2008; Ehler, 2008).

Strategic environmental assessment is a constructive tool to guide decision-makers and the public's best interests towards offshore wind energy development (including policies, plans, and programs) that will be implemented and operated at the level of highest efficiency and sustainable capacity. Once a MSP has been established to incorporate offshore wind, SEA if employed, is a means to assess the applicability and or effects (environmental, economic, social) of offshore wind policy, programs and plans. Thereby, environmental assessments can follow a SEA using information gained through the process and more effectively mitigate individual project impacts.

SEA offers the capability to effectively determine the environmental feasibility of an offshore wind development program/ project by assessing impacts of development on a regional basis. Conceivably, SEA can be assessed on a lake-by-lake basis, or for offshore development in an entire province. On the other hand, project focused EA is a tool used to assess more of the project specific impacts in-situ. In addition, using the SEA framework can support greater emphasis for direction on the social and sustainable development strategy in planning (Josimovic & Pucar, 2010). As noted by Partidario and Clark (2000),

> "SEA is a systematic, ongoing process for evaluating, at the earliest appropriate stage of publicly accountable decision-making, the environmental quality, and consequences, of alternative visions and development intentions in policy, planning, or program initiatives, ensuring full integration of relevant biophysical, economic, social and political considerations" (p. 4).

Therefore, SEA is a tool that provides adequate context and rationale for decision makers to evaluate a synergistic, integrated assessment for long-term policy or program effects (Partidario & Clark, 2000).

In one instance, experience in the United Kingdom discovered greater applicability of SEA for offshore wind energy development, than for onshore wind energy development

(Toke, 2011). This was principally due to the fact that the offshore wind energy project contained a government owned land-area that was sufficiently large to effectively set renewable (wind) energy targets (Toke). Therefore, SEA has a proven record to evaluate the suitability and the likelihood for offshore wind to meet national and/ or regional planning and renewable energy targets within the context of environmental, social and sustainable development strategies. Moreover, the United Kingdom also employs SEA within their MSP framework. This is done by consideration of significant environmental effects that a MSP can impose on bordering marine jurisdictions (Ehler & Douvere, 2010).

Thus, there is opportunity for SEA to play this specific role in the evaluation of projects in Ontario. For example, the Green Energy Act and FIT program might be subject to SEA. The SEA process could examine the potential of these two renewable energy measures to advance renewable energy implementation in Ontario while meeting sustainability criteria. For instance, the SEA could evaluate what effects the GEA and FIT program have had on avian mortality since its inception in 2009.

A strategic environmental assessment process could be employed to appraise the spatial planning activities for offshore wind energy undertaken in an MSP. Thereby, "strategic environmental assessment also serves to strengthen accountability and provide greater public confidence that federal government decisions are being made in full awareness of the potential environmental impact" (CEAA, 2011-2). The SEA process not only identifies alternatives, but also evaluates them in order to appropriately forward a recommendation (Therivel, Wilson, Thompson, Heaney, & Pritchard, 1992). This is an appropriate assessment process given the high probability that siting locations for wind turbines will require planned strategic spatial locations with explanations (for decision-makers and the public) in order to achieve a high level of acceptability (Cowell, 2010). These recommendations can be garnered from an evaluation of siting location alternatives.

In summary, SEA is a valuable strategic planning arrangement that aids implementation of a project by mitigating the conflict between the technical and social issues of wind energy development (Cowell, 2010). This process expands the scope of evaluation for siting wind farms to incorporate factors such as appropriate energy feasibility versus siting wind farms based on public apprehension and visual impacts. Applying SEA confers decision-makers with the guidance and prudence needed to perceive consequences in certain mitigation and planning solutions between conflicts (Josimovic & Pucar, 2010). Taken together, the process of decision-making is advanced from a traditional rationalist approach to a collaborative approach in order to guarantee higher levels of opportunity for public participation (Therivel & Partidario, 2000).

Applying SEA within the framework of broad public involvement enhances the collaboration needed for the successful development of such energy projects. Collaborative, public participation could include, but not be limited to: framing of goals, evaluation of and choice in alternatives, and ownership of development (Therivel & Partidario, 2000). Certainly, SEA encourages the same or similar collaborative planning impetus as MSP. However, SEA is deployed for alternative reasons when compared with MSP. Strategic environmental assessment is a means of performance evaluation for how well offshore wind development and implementation strategies are functioning within

MSP. In examining visual impacts data, it can be queried, are there greater enhancements that can be made to the current mitigation techniques, which increase social, sustainability or ecosystem objectives (Therivel & Partidario, 2000). In concert, MSP incorporates multi-sector planning into the spatial plan or marine zoning framework.

Therefore, SEA is an assessment tool that can center on offshore wind policy, programs or plans created within a MSP framework. Once SEA has been established, individual environmental assessments can be undertaken on a project-by-project basis. Decisively, SEA can oversee the best practice implementation and monitoring of offshore wind policies, plans and programs in the MSP process. The hierarchy of offshore wind project planning, which a SEA fits in could be tiered as follows: MSP ➔ SEA (wind policy, offshore wind policy, offshore wind programs, and offshore wind plans) ➔ Project/ Class Environmental Assessment for offshore wind projects. Therefore, in this instance SEA becomes an evaluation tool between the conception of offshore wind in a MSP, and the finalized implementation of offshore wind on a project-by-project basis. Equally however, SEA might be placed at the top of the hierarchy. In Ontario, it could be hypothesized that to address current public apprehensions against offshore wind, SEA could be employed to elucidate the need for and scientific basis behind offshore wind development.

To this end, SEA can evaluate individual sectors, uses or users within the MSP to maintain a certain level of checks-and-balance for the MSP zone planning. It is significant to highlight that politicians and/ or decision-makers might be reluctant to accept SEA if the outcome will not be favourable towards the reliability of their original decisions and threaten their credibility (Therivel & Partidario, 2000). Nevertheless, if there are public concerns about how a policy, plan, or program is functioning, SEA can be employed in order to provide verification that best practices are being followed.

For the foreseeable future, it appears that the prospect of offshore wind in Ontario will remain at an impasse, unless a more effective planning and assessment process is developed and applied. We argue that SEA and MSP should be central elements of any attempts to improve the process.

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