

DISCUSSION PAPER
OFF-SHORE WIND FACILITIES
RENEWABLE ENERGY APPROVAL REQUIREMENTS

Introduction

This document serves two purposes. First, it discusses and solicits input on a proposed shoreline exclusion zone for off-shore wind projects. Secondly, it discusses various considerations relevant to off-shore wind projects and the protection of human health and the environment, including the province's natural and cultural heritage.

The document will introduce greater clarity to Ontarians and renewable energy developers about off-shore wind policy currently being considered and, specifically, about the places that would be appropriate and not appropriate for off-shore wind development. The proposed approach is in keeping with the government's priority to protect human health and the environment.

Feedback received will inform our work to more fully develop the approach and off-shore wind specific-requirements that would be articulated as amendments to the Renewable Energy Approval (REA) regulation (O.Reg. 359/09). In addition, off-shore wind policy will be supplemented with research currently underway in government ministries including the Ministry of the Environment (MOE), Ministry of Natural Resources (MNR) and Ministry of Tourism and Culture (MTC).

Once fully developed, the proposed policy and associated regulatory amendments will be the subject of a future Environmental Registry posting that will outline requirements for off-shore wind developments as proposed amendments to O. Reg. 359/09 and the REA process.

1. Discussion of Proposed Off-shore Exclusion Zone

The Government of Ontario is committed to protecting inland water bodies, including the Great Lakes, and to ensuring that Ontarians enjoy safe beaches, drinking water, food and fish, and the province's natural and cultural heritage.

To accomplish this, the government is proposing a five kilometre shoreline exclusion zone for all off-shore wind facilities.

In addition to this approach to off-shore wind projects, the MNR is undertaking a phased review of Ontario's current process for making Crown land available for renewable energy projects. The second phase of this review will include consideration of where, when and how the Government makes Crown land available for off-shore wind projects, and may result in additional areas being removed from future development.

The proposed shoreline exclusion zone would be delineated as the area five kilometres from the water's edge of the Great Lakes, other inland lakes (e.g. Lake St. Clair), and the major islands.

Areas under five kilometres from the shoreline would not be considered for off-shore wind turbines. All off-shore wind would require a REA and all other applicable approvals.

Based on the studies that an off-shore wind developer will be required to conduct prior to making an application for the REA (e.g. noise assessment, studies relating to the protection of natural and cultural heritage, etc.), a project may be required to be located beyond the proposed shoreline exclusion zone of five kilometres.

Development within the five kilometre shoreline exclusion zone would be limited to transmission cables and related infrastructure necessary to connect an off-shore facility to the on-shore transmission grid. Such development within the five kilometre exclusion zone must meet all applicable requirements, including but not limited to those related to cultural and natural heritage.

In proposing a shoreline exclusion zone, Government of Ontario ministries are soliciting input on the following considerations. The proposed approach will be the subject of subsequent Environmental Registry postings that will outline requirements for off-shore wind development as proposed amendments to O. Reg. 359/09 and the REA process. The development of these requirements will be ongoing and will take into consideration comments received in response to this posting.

1.1 Ontario Lakes as a Source of Drinking Water

Seventy per cent of Ontarians get their drinking water from the Great Lakes. Recognizing this, the government has introduced several pieces of legislation to ensure the protection of this important resource.

Through the Technical Rules: Assessment Report made under the *Clean Water Act, 2006*, for example, the government established intake water protection zones and described rules for their delineation. For instance, for a drinking water intake or a planned intake which is or would be located in one of the Great Lakes, an Intake Protection Zone is defined based on combined circular zones each having a radius of one kilometre from the centre point of each intake.

A five kilometre shoreline exclusion zone would establish a distance between drinking water intakes, both current and planned, and off-shore wind facilities. Establishing a shoreline exclusion zone would also ensure that sediment dredging and other construction-related activities do not impact any drinking water intakes, given that the intakes are generally located less than four kilometres from the shoreline.

As well, within a five kilometre shoreline exclusion zone, where transmission cables can be located to connect an off-shore facility to the on-shore transmission grid, the government is proposing a one kilometre intake protection zone.

In areas outside the shoreline exclusion zone, where off-shore wind facilities can be considered, applicants would be required to conduct site-specific studies to assess potential impacts and implement measures to mitigate any potential impact to water quality.

1.2 Noise Considerations

The proposed shoreline exclusion zone is also intended to ensure that potential noise levels from a typical off-shore wind facility are within acceptable levels (40 decibels (dBA) at an on-shore noise receptor), also taking into consideration the combined contributions from all wind facilities located in the area, off-shore and on-shore.

Site-specific noise assessments may require an off-shore project be located beyond the shoreline exclusion zone of five kilometres.

The noise studies for off-shore wind projects would be completed using the noise guideline for off-shore wind projects, which is currently being developed by the MOE. The purpose of these studies would be to demonstrate conformity with the requirements and acceptable levels.

1.3 Near Shore Activities

Near-shore areas are widely used for a variety of purposes including tourism. By establishing a shoreline exclusion zone, the objective is to establish a distance between near shore activities and off-shore wind facilities.

Should an off-shore wind facility be built and become operational, the shoreline exclusion zone would set a distance between these near shore activities, specifically the beaches and near shore boat traffic to help ensure public safety and the safety of near-shore users, including but not limited to recreational boaters, sailing and cruises.

1.4 Ecological Considerations

The near-shore area is important to the ecological health of inland waters including the Great Lakes. These areas are biologically diverse, complex and highly productive, serving important roles in the production of many sport fish species. They often contain important habitat for fish, animals and birds, as well as being an area subject to active coastal and littoral processes.

While off-shore areas offer a more uniform, less complex fisheries habitat than the near shore environment, off-shore areas are nevertheless also important to the overall health of lakes, particularly in providing spawning habitats for cold water fish species.

In off-shore environments, the engineering infrastructure required for the base of the wind turbines (such as rock piles installed to reduce sand erosion or ice impacts) may in fact provide or improve fish habitat.

In the areas outside the shoreline exclusion zone, where off-shore wind facilities can be considered, applicants will be required to conduct site-specific studies to assess potential impacts and implement measures to mitigate any potential impact to the ecological features.

1.5 Shipping Lanes

Shipping within the Great Lakes plays an important role in local and international commerce. Establishing shipping-related exclusion areas will ensure that off-shore wind development does not impede the safe movement of commodities and products within the Great Lakes. With this in mind, it is proposed that appropriate exclusion areas constrained from off-shore wind development will be established such that shipping on the Great Lakes is not affected.

2. Description of Off-shore Wind-Specific Considerations

The second part of this document describes various considerations relevant to off-shore wind projects and discusses work currently being conducted by various ministries to inform an off-shore wind policy and associated regulatory amendments.

Green energy is a key part of the province's plan to combat climate change and phase out coal. Increasing renewable energy generation and conservation will reduce greenhouse gas emissions and create thousands of green jobs in Ontario.

To facilitate green energy development, the REA regulation (O.Reg 359/09) and related statutory and regulatory amendments to support the *Green Energy and Green Economy Act, 2009* came into force on September 24, 2009.

Off-shore wind projects are classified as Class 5 facilities in O.Reg 359/09 and are subject to requirements under that regulation.

Applicants for off-shore projects proposed for Crown land would apply to the MNR for the use of Crown land, prior to submitting a REA application to the MOE. The beds of most inland lakes in Ontario, including the Canadian portion of the Great Lakes, are provincial Crown land administered by MNR through the *Public Lands Act*. Use or occupation of the Crown lakebed, including the development of off-shore wind facilities,

requires the approval of MNR through the issuance of appropriate land tenure documents.

The provincial approval requirements for off-shore wind projects themselves are established in the REA requirements of MOE and the Approval and Permitting Requirements Document for Renewable Energy Projects of MNR.

Off-shore wind applicants may also be subject to Canadian federal government requirements for off-shore wind projects and may need to obtain approvals under the federal Fisheries Act and/or Navigable Waters Protection Act that may trigger a federal environmental assessment under the Canadian Environmental Assessment Act.

2.1 Natural Heritage Assessment

Applicants for renewable energy projects are required by O.Reg 359/09 to conduct a natural heritage assessment. A natural heritage assessment is required for both on-shore and off-shore components of an off-shore wind facility and may include consideration of such natural features as provincially significant coastal wetlands, significant wildlife habitat and protected areas.

The natural heritage assessment requirements for off-shore projects are outlined in sections 24 to 28 of O.Reg. 359/09. As part of a natural heritage assessment, off-shore wind applicants must conduct a site investigation, as described in section 26 of O.Reg. 359/09, with specific emphasis on fish populations and fisheries and fish habitats, as well as species and habitats protected under the *Endangered Species Act, 2007* and hazard lands.

2.2 Water Assessment

Applicants for renewable energy projects are also required by O.Reg 359/09 to conduct a water assessment. A water assessment is required for both on-shore and off-shore components of an off-shore wind facility. The water assessment requirements for renewable energy projects are outlined in sections 29, 30 and 31 of O.Reg. 359/09.

In accordance with O.Reg. 359/09, for the purpose of a water assessment, applicants are required to complete a records review and a site investigation. Based on the findings of the records review and site investigation, applicants may be required to conduct further studies.

2.3 Cultural Heritage Resources Assessment

As part of a REA application for an off-shore wind facility, applicants will be required to complete assessments of impacts on cultural heritage resources (off-shore and on-shore) of their proposed off-shore wind facilities and submit them to MTC.

Protections for cultural heritage resources are integral to Ontario's framework for renewable energy development. Consistent with this principle, applicants would integrate consideration of cultural heritage as early as possible into the development of offshore wind projects. This includes input from Aboriginal and local communities. The proposed approach would require applicants to consider the impact of any offshore wind project on all areas likely to be affected, including the shoreline, fore-shore, lakebed, riverbed, waterways and on land.

As outlined in sections 20 and 22 of O. Reg. 359/09, cultural heritage requirements for offshore renewable energy projects include:

- An archaeological assessment conducted by a consultant archaeologist;
- An archaeological assessment report prepared by the consultant archaeologist and submitted to MTC; and
- MTC provides comments on any archaeological assessments and/or heritage assessments submitted to MTC as part of a REA application to MOE.

Given the specific challenges of offshore renewable energy projects, the government is considering how impacts on marine cultural heritage resources could be monitored throughout the life of the project, from construction through operation and decommissioning. This approach could also establish standard distances (e.g., setbacks) from archaeological sites of potential or known significance. The degree of significance would be considered in determining an appropriate distance.

2.4 Off-shore Wind Facility Report

In accordance with O.Reg. 359/09, off-shore wind developers are required to prepare and submit the following core reports in support of a REA application:

- Project Description Report;
- Design and Operations Report;
- Construction Plan Report;
- Decommissioning Plan Report;
- Consultation Report; and
- Wind Turbine Specifications Report.

In addition to these core reports requirements, O. Reg. 359/09 also requires that for off-shore wind projects an "Off-shore Wind Facility Report" be completed and submitted as part of the REA. The "Off-shore Wind Facility Report" requirements are outlined in item 12 of Table 1 of the REA Regulation. The "Off-shore Wind Facility Report" is required to evaluate the potential for negative environmental effects, including human health arising from the project and propose mitigation measures.

In the “Off-shore Wind Facility Report” an applicant will set out a description of the following:

- The nature of the existing environment in which the renewable energy project would be undertaken;
- Any negative environmental effects that may result from engaging in the renewable energy project; and
- Mitigation measures in respect of any negative environmental effects identified, and the negative environmental effects that are expected to result if the measures are implemented.

This report could be organized as an executive summary of the findings of the required studies, including but not limited to natural heritage assessment, coastal engineering study, noise assessment and heritage assessments, and will include, in light of the findings of the studies, a discussion about the considerations that informed the proposed design layout.

2.5 Technical Study Requirements

In the Project Description Report and Construction Plan Report, applicants for off-shore wind facilities are expected to discuss specifically the turbine support structures and foundations; staging areas for assembly of turbine components and equipment, port and storage capabilities for installation of turbines, and infrastructure for in-water construction and maintenance.

The Project Description Report and the Design and Operations Report would include consideration about the interconnection of an off-shore wind facility to on-shore grid/off-shore substation, including potential impacts from submerged cables that would connect an off-shore wind farm to the on-shore transmission grid; erosion abatement capabilities specific to the proposed turbine models; and cold weather protection systems. Specifically, consideration would need to be given to ice cover conditions on the lake, hazards posed by ice to off-shore structures and transmission systems, and potential approaches to mitigate the impact of these hazards.

In the Design and Operations Report, as part of emergency preparedness and response requirements, safety measures and environmental management and monitoring plans would be included.

Depending on site-specific characteristics and as part of the Off-shore Facility Report, a Sediment Management Plan (SMP) would be required to ensure that dredged sediment associated with installation of transmission cable and wind turbine foundations and support structures is properly managed. The SMP would include information regarding final disposal, the status of all required permits for handling the sediment from the off-shore facility, the sediment quality monitoring and testing as well as sediment quality review that will be conducted as necessary. The applicant would need to document water

quality and sediment quality conditions in the proposed locations for the off-shore wind facilities in a manner acceptable to the MOE.

As described in the MNR Approval and Permitting Requirements Document for Renewable Energy Projects, the applicant is also required to undertake a coastal engineering study which addresses the potential effect of the proposed project on natural erosion and accretion and submit it to the MNR for review.

Applicants may also be required to provide financial assurance for the decommissioning of an off-shore wind facility.

2.6 Consultation Requirements

Consultation is an important part of the REA process. The consultation requirements outlined in sections 14 to 18 of O. Reg. 359/09 apply to the off-shore wind projects. Applicants for renewable energy projects, including off-shore wind projects, must consult with the public, Aboriginal communities and municipalities while in the planning stages of the project. Applicants must as part of the REA, detail to the ministry the consultation work undertaken. The ministry will review this work to ensure that the applicant has met the mandatory consultation requirements prescribed in O.Reg. 359/09.

As required by O.Reg. 359/09, applicants are required to provide notification to inform the public, Aboriginal communities and municipalities about off-shore wind facilities which they are proposing to develop. They are also required to provide notification of the location and time of at least two public meetings regarding their projects which must occur in advance of submitting the REA to the MOE.

Aboriginal communities often have or assert rights, such as the right to fish, that are exercised in lakes and other water bodies. Depending on the circumstances, these activities could be impacted by an offshore wind facility. Aboriginal communities may also have aboriginal title claims that extend to the beds of lakes and other water bodies. As with other renewable energy projects, proponents must carry out consultation with aboriginal communities in accordance with sections 14, 15 and 17 of O. Reg 359/09 and the Aboriginal Consultation Guide for preparing a Renewable Energy Approval Application (which is currently being developed).

Unique conditions associated with off-shore wind facilities, additional requirements which recognize these unique conditions, such as the potential for multiple municipalities and tourism operators, and a distance between an off-shore wind project location and receptors, would be considered in notification and consultation requirements for off-shore wind facilities.

3. Future Guidance Documents

Several guidance documents will be developed and made available for public review and comment before they are finalized. The guidance documents may include site-specific set-back requirements, such as noise setbacks and setbacks from marine archaeological sites of potential or known significance, and natural heritage resources. The guidance documents which will become available include but are not limited to the following:

- Cultural Heritage Guidance for Offshore Renewable Energy Projects, Ministry of Tourism and Culture;
- Off-shore Wind Noise Guidelines, Ministry of the Environment;
- Coastal Engineering Study Guidance, Ministry of Natural Resources; and
- Crown Land Renewable Energy Policy review, Phase 2, Ministry of Natural Resources.