

WWF-Canada Position



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WWF-Canada Position: In-Stream Tidal Energy

1. Policy Summary:

WWF sees an important role for tidal energy, specifically tidal current or in-stream tidal energy, in decarbonizing Canada's future electricity generation mix. This can be both at a large, commercial scale and at a small, community scale. We therefore advocate the testing of technologies and eventual deployment of arrays of in-stream tidal energy devices at both large and small scales in Canadian waters, on the understanding that any impacts on marine ecosystem integrity and biodiversity will be short-term, recoverable and effectively mitigated against. Our approach to minimizing biodiversity impacts is detailed below. If done well, we believe that in-stream tidal energy can play an important part in safeguarding our rich ecosystems over the long-term by slowing down climate change and its impacts, including ocean acidification.

WWF-Canada does not support tidal range technologies, such as tidal barrages and tidal lagoons, at this time, as impacts on the environment would be long-term and potentially large-scale compared to tidal current technologies. Other marine renewable energy technologies, such as offshore wind and wave energy, are not covered in this document.

2. WWF believes that:

- In-stream tidal energy has the potential to play a critical role in the future electricity generation mix and become a cost-effective source of electricity if given a stable regulatory regime, new long-term policies regarding renewable energy and adequate financial investment to get this fledgling industry off the ground. This could help cut carbon emissions and deliver jobs and wealth to the Canadian economy.
- While all energy technologies have some environmental impact, we contend that renewable technologies are less harmful in the long-term than fossil fuels. That being said, some renewable technologies, such as tidal range technologies, are known to have long-term, adverse environmental impacts, and should not be supported until such a time as other more habitat-friendly renewables have been fully developed, if at all.
- If done well, we believe marine renewables, such as in-stream tidal, can play an important part in safeguarding our rich marine ecosystem over the long-term by slowing down climate change and its impacts, including ocean acidification.
- It is critical that the in-stream tidal energy industry and regulators work to minimize any biodiversity impacts so that turbine deployment and operation does not compromise our commitment to achieve clean, healthy, productive and biologically diverse seas.

3. WWF recommends that:

Given the excellent tidal energy potential around Canada, WWF recommends that in-stream tidal energy technologies should continue testing and eventual deployment at both large and small scales, but we do so under the clear understanding that any impacts on marine ecosystem integrity and biodiversity will be short-term, reversible

WWF-Canada Position

and effectively mitigated through appropriate siting, design and construction of turbines with stringent environmental monitoring programs and adaptive management plans in place. New policies, such as dedicated marine renewable energy legislation and regulations, are needed to deliver in-stream tidal at both community and commercial scales.

Some sites may have to be ‘no go’ for development where biodiversity is known to be rare, threatened or highly sensitive to disturbance. These areas will need to be identified on a case-by-case basis, and take into consideration impacts at the species, ecosystem and landscape levels, in addition to ecosystem services, community needs and cultural values in accordance with the process for identifying areas of High Conservation Value.

In order to minimize impacts on biodiversity we recommend:

- Appropriate siting of turbines using the mitigation hierarchy. This refers to starting with avoiding sensitive sites and preventing adverse environmental effects before they occur before moving on to minimizing, restoring or repairing impacts. This hierarchy recognizes that restoring sites or repairing damages is particularly challenging in the marine environment.
- Site specific environmental assessments for all in-stream tidal energy projects – regardless of size. In some jurisdictions, such as Nova Scotia, environmental assessments are only required if projects reach a 2 megawatt projected output threshold, while federal environmental assessments are not triggered until a 50 megawatt threshold is reached. Provincial environmental assessments should be conducted for all tidal energy projects that fall below the federal 50 megawatt threshold. Both provincial and federal environmental assessment processes should include assessments of cumulative impacts of all projects in an area, in addition to the impacts of these projects in combination with other projects and processes. Strategic and ongoing research into cumulative impacts will be needed to ensure that development of the tidal industry occurs in an environmentally responsible manner.
- Adaptive, incremental and precautionary deployment and operation of turbines. The in-stream tidal energy industry is relatively new, and in order to determine what environmental impacts this form of tidal energy will have, turbines need to be deployed and routinely monitored. By using an adaptive process, or learning by doing, assumptions can be tested and models validated, and actions can be taken if unacceptable levels of impacts are seen. This iterative process can also ensure that research is incorporated into future planning processes. Incremental deployment means turbines can be installed in stages and removed if unacceptable levels of environmental impacts are seen. In addition, as in-stream tidal energy projects have a high level of uncertainty surrounding them, decision makers should use the precautionary principle and err on the side of caution with regards to setting acceptable levels of risk and levels at which adaptive measures – such as removing turbines from the water - will be taken to prevent environmental degradation.

4. WWF Will work with governments, international organizations, local communities, businesses to:

WWF will seek to influence the policy and planning process as appropriate to ensure that the climate case for renewable energy, including in-stream tidal energy, continues to be heard; influence policy makers and planners to incorporate appropriate environmental principles and tools, such as the precautionary principle, the ecosystem approach, and environmental and cumulative impact assessments into marine renewable energy legislation and regulations; ensure that in-stream tidal energy developments are rolled out at a scale that will drive cost reductions and play a prominent role in electricity generation while minimizing impacts on the environment; advocate for effective and ongoing community engagement with First Nations, local

WWF-Canada Position

communities and other stakeholders and rights holders; and to ensure that a strategic, plan-led approach to the marine environment is increasingly adopted to minimize spatial conflicts between marine users and uses while maximizing socioeconomic benefits and safeguarding the marine environment. WWF also seeks to provide thought leadership on how to implement in-stream tidal energy projects with minimal impacts on biodiversity and hopes to facilitate opportunities for information exchange about tidal energy research between government, industry, academia and the public.

5. Related Links/ supplementary reading

Brown, E., N. Dudley, A. Lindhe, D.R. Muhtaman, C. Stewart, and T. Synnott (eds.). (2013). Common guidance for the identification of High Conservation Values. HCV Resource Network. Retrieved from: https://www.hcvnetwork.org/resources/folder.2006-09-29.6584228415/2013_cgidentification_highres

Nova Scotia Department of Energy. (2012). Nova Scotia Marine Renewable Energy Strategy. 42 pp. Retrieved from: <http://energy.novascotia.ca/sites/default/files/Nova-Scotia-Marine-Renewable-Energy-Strategy-May-2012.pdf>

OEER Association. (2008). Fundy Tidal Energy Strategic Environmental Assessment: Final Report. Prepared for the NS Department of Energy. ISBN# 978-0-9810069-0-1, 92 pp. Retrieved from: <http://www.oera.ca/wp-content/uploads/2013/06/FINAL-SEA-REPORT.pdf>

Offshore Energy Research Association. (2015). Value Proposition for Tidal Energy Development in Nova Scotia, Atlantic Canada and Canada. Gardner Pinfold Consultants Inc. and Acadia Tidal Energy Institute. 80 pp. Retrieved from: http://www.oera.ca/wp-content/uploads/2015/04/Value-Proposition-FINAL-REPORT_April-21-2015.pdf



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.