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By email

The Hon. Harjit Sajjan
National Defence Minister

101 Colonel By Drive
Ottawa, Ontario
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Holly King
Section Head, Directorate Real Property Services
Department of National Defence

Dear Minister Sajjan and Ms. King,

TC Energy Proposed Pump Storage Plant

TC Energy, formerly TransCanada Pipeline, (TCE) proposes to build a 1,000 MW hydroelectric pumped storage plant (the Project) on the shore of Georgian Bay on Department of National Defence (DND) land in Meaford.

Although this project is at some distance to the area where our associations are located, we have been looking at the potential impacts on the environment and Georgian Bay waters should it proceed, and have concluded that the Project is large enough to have a Georgian Bay wide impact in some material respects. Furthermore, we are always concerned about potential large-scale damage to aquatic habitat, fish populations and species at risk anywhere on the Bay.

Accordingly, we are writing to you to register our concerns and recommendations concerning the Project for your consideration.

The Georgian Bay Association (GBA) is an umbrella organization for 19 community associations along the east and north shores of Georgian Bay, representing around 3,000 families. We have been advocating on behalf of our land-owning members for over 100 years and estimate that we reach around 18,000 residents of the Georgian Bay. Our mandate is to work with our water-based communities and other stakeholders to ensure the careful stewardship of the greater Georgian Bay environment.

At this stage of the process, GBA's objective is to ensure that potential environmental issues and impacts are thoroughly analyzed and assessed, and that the Project is held to the highest standards of environmental mitigation measures in order to strictly minimize its environmental impacts. We have not decided to oppose the Project at this stage because there are many unknowns about the potential environmental impacts and how effective mitigating actions may be. Consequently, if the proposal is to proceed to the next steps, it is vital to ensure a robust environmental assessment process and strong, effective mitigating actions are mandated.

Accordingly, GBA has participated in submissions to, and discussions with, the Town of Meaford, liaised with Save Georgian Bay, who have assembled an experienced group of concerned local citizens to comment on this proposal, and held many meetings and discussions with TCE and their advisors in order to gather information about the Project.

Impact on CO2 emissions

One of our major concerns with this project is the projected carbon emissions savings. TCE commissioned Navigant to do an economic analysis of the project, which includes calculating potential CO2 reductions. Navigant based their calculation on certain assumptions regarding future Ontario energy sector demand and supply, and show average CO2 emissions savings of around 490,000 tonnes per annum (tpa). GBA is uncertain whether these assumptions are reasonable and whether the projected savings will be realized.

In particular we note that the future energy markets in Ontario, and also New York and Michigan (who would lose substantial imports of surplus Ontario electricity should this project proceed), are subject to uncertainty with potential changes that are difficult to predict. Technological advances (in battery technology and other sectors) between now and 2027, when this project would commence operations, could lead to there being no need for this project with regard to their current benefits for Ontario should it be in place today, particularly given the inherent inefficiency of this type of pumped storage at 70-75%. Furthermore, consumer and commercial behaviour and demand react quickly to the economics of such technological advances. Therefore, the current surplus off-peak electricity supply may not exist in 2027, or shortly thereafter, and/or may no longer be categorizable as “wasted”.

However, our greatest concern regarding TCE’s CO2 reduction projections concerns their failure so far to provide any analysis or support for the projected impact of the substantive lost exports to New York and Michigan (or other jurisdictions that may import Ontario’s surplus electricity in the future). They have simply provided a figure for the reduction in their average projected CO2 savings from 490,000 tpa to 300,000 tpa (resulting from these lost exports increasing CO2 emissions in recipient jurisdictions) without any supporting analysis to demonstrate how they arrive at this number of an increase in CO2 emissions of only 190,000 tpa. We regard this as inadequate given the import, particularly to the federal government, of the projected CO2 savings for this project.

For all the reasons set out above we are highly skeptical that any CO2 savings will result and in fact it is possible that the project will cause an increase in CO2 emissions.

Accordingly, we strongly recommend that, before any decision is made by DND to allow this project to proceed, one or more independent experts review TCE’s Navigant CO2 savings projections in order to satisfy both DND and the relevant federal and provincial government agencies that this project will have a positive climate change impact, not a negative one.

In addition, we have some specific thoughts on the potential environmental impacts, which we have determined through our initial research. We would ask that DND consider imposing requirements on TCE, either before granting approval, or by insisting that the environmental assessment process includes the recommendations below. We further recommend that all these should be included as DND conditions for leasing the requisite land to TCE. The topics and associated recommendations are as follows:

CONCEPTUAL DESIGN

Since GBA and others have been expressing our concerns about the potential entrainment of fish and other aquatic biota, turbidity, sediment disturbance, and impacts on fish habitat and currents, TCE has decided to make significant changes to the project's design. The new design will apparently:

- move the water intake/outflow pipe away from the shoreline;
- incorporate tunnels installed beneath the lakebed that will lead to deep water to avoid sensitive near-shore fish habitat;
- raise the intake/outflow structures off the lakebed to avoid bottom dwelling aquatic organisms and the potential to create turbidity; and
- incorporate fixed screens to limit the speed of water intake and release, which should lower water currents and further protect fish and other aquatic biota.

The original design was based on the Ludington pumped storage project in Michigan that demonstrated consistently high rates of fish entrainment and other impacts, even after a successful lawsuit forced the installation of a net system to mitigate the damage. GBA is still concerned about the degree to which mitigation will effectively address the environmental concerns that arise. We intend to follow events closely to ensure that the design unfolds as advertised. We also wonder why TCE proposed a different design at the outset, which would clearly have caused extensive environmental damage and would have struggled to gain acceptability under the environmental assessment process.

> ***Recommendation****: TC Energy is required to commission an independent study to assess this new design to ensure that it achieves the stated objectives.*

ENVIRONMENT

Water Quality

1. **Baseline water quality** – The current water quality of Georgian Bay inshore and offshore from the Project is deemed to be pristine, providing high quality aquatic habitat and drinking water. It also provides a safe environment for recreation. However, the data required to demonstrate the precise current water quality conditions in the area is not readily available.

***Recommendation**: That TC Energy is required to implement and maintain a comprehensive surface water quality assessment and monitoring program starting as soon as possible which will:*

- *Provide baseline data on the current water quality conditions;*
- *Monitor changes to water quality resulting from the construction and operation of the Project; and*

The monitoring program should also include all parameters and requirements of the appropriate federal and provincial agencies in accordance with the environmental impact assessment requirements for the Project.

2. **Turbidity** – Turbidity has been identified as a water quality parameter of particular concern since the waters of Georgian Bay in this area typically have no turbidity. The concerns are that the Project will cause turbidity by:

- construction disturbing the soils on land and the nearshore clay substrate; and
- although it appears that the revised intake/outflow pipe design will minimize the disturbance of clay and other sediment during operations, this needs to be carefully assessed.

***Recommendation:** That TC Energy is required to submit a comprehensive turbidity assessment detailing:*

- *local site conditions, including borehole logs and appropriate geophysical investigations;*
- *loading rates of materials causing turbidity from all possible sources affected by the Project during site preparation, construction, operation and decommissioning; and*
- *design details, including a mitigation strategy, monitoring plan, and response plan.*

3. **Water quality criteria** – The Canadian Council of Ministers of the Environment and the Ontario Ministry of Environment, Conservation and Parks specify surface water quality objectives for the protection of aquatic life. Among other parameters, these objectives specify allowable limits for turbidity.

   ***Recommendation:** That TC Energy is required to comply with the applicable federal and provincial water quality objectives for all water quality parameters. For clarity, the background level and natural state for turbidity shall be taken as the clear flow condition of calm winds, no waves and dry weather. In the event the federal or provincial authorities grant a mixing zone, this mixing zone shall be limited to 100 metres from the edge of the Project footprint, and must not result in toxic conditions, or irreparable environmental damage, including risk to ecosystem integrity and human health.*

Fish Habitat

4. **Avoidance of sensitive habitat** – TC Energy states it will avoid spawning and other sensitive aquatic habitat. Although it appears that the revised intake/outflow pipe design will minimize the impact on known spawning habitat for Lake Whitefish, Lake Trout and Carp and other fish habitat, this needs to be carefully assessed.

   Recommendation: *That TC Energy is required to include in the parameters for the independent study, as per the Recommendation with regard to the Conceptual Design above, an assessment of the impact of the revised intake/outflow pipe design on the above spawning and other fish habitat.*

5. **Mitigation of fish mortality** – TC Energy states it will employ mitigation measures to further reduce the potential adverse environmental effects associated with the Project.

   Recommendation: *That, once details of these measures become available, TC Energy is required to commission the appropriate studies on these measures and the potential fish mortality to ensure maximum mitigation of potential adverse environmental effects, which must then be carefully peer reviewed.*

6. **Fish habitat offsets** – TC Energy suggest the use of fish habitat offsets to compensate for impacts associated with the death of fish and destruction of fish habitat.

   Recommendation: *That TC Energy is required to apply fish habitat offsets within areas adjacent to the municipal boundaries of Meaford and in a form considered by DND as beneficial to the community of Meaford.*

Species at Risk

7. **Species at risk** – Preliminary investigations identify that as many as 11 species listed as being at risk are located on the Project site and at least 23 species at risk may utilize the nearshore environment of Georgian Bay within the vicinity of the Project. Several of these species are listed as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). But available data is limited.

Recommendation: *That TC Energy is required to retain a third-party subject matter expert approved by DND to undertake both:*

- *A comprehensive monitoring program to characterize habitat and flora and fauna within the project area, identify the species at risk that are currently present, and map their habitat; and*
- *A comprehensive aquatic habitat and aquatic community monitoring program to characterize habitat and organisms prone to impingement and entrainment, and to support the optimization of siting of the intake/outfall, diffuser structures and other offshore structures.*

This monitoring program should focus on fish, ichthyoplankton, macro-zooplankton and benthic invertebrates; extend from the shoreline out to 30 m depth; extend approximately 2 km along the Project site shoreline; and occur throughout the Spring, Summer and Fall seasons to initially provide a baseline for existing habitat and communities and then monitor the impact of the Project.

The monitoring programs should also include such other requirements as stipulated by appropriate federal and provincial agencies.

Coastal Processes

8. **Physical limnology** – The Project as proposed draws and releases a large volume of water from and to the shores of Georgian Bay. This cycle of flows may alter the natural circulation patterns within Nottawasaga Bay and possibly throughout Georgian Bay. It could affect stratification, heat balances, water evaporation and ice formation over large areas.

   Recommendation: *That TC Energy is required to retain a third-party subject matter expert to undertake a comprehensive assessment of the physical limnology of Georgian Bay and provide mathematical model predictions of the potential effects of construction, operations and decommissioning on circulation, stratification, heat balance, water evaporation and ice formation. Further, that TC Energy is required to take preventive measures to minimize potential disruption of the physical limnology of Georgian Bay.*

OTHER CONSIDERATIONS

9. **Alternative site locations** – TCE proposed the current site based on the following criteria:
   - the site provides approximately 150 m of vertical elevation between the upper reservoir (man-made lake on the Niagara Escarpment) and the lower reservoir (Georgian Bay);
   - a source of water (Georgian Bay) available at no cost to TCE;
   - location within 100 km of a sufficient connection to the power grid.

   In choosing the Meaford site, TCE did not consider the relative merits of:
   - an open loop system (a system where either the upper or lower reservoir or both are part of a larger body of water); vs
   - a closed loop system (a system where neither the upper nor lower reservoir are part of a larger body of water).

   From an environmental impact perspective, the potential for environmental harm from an open loop system greatly exceeds that of a closed loop system, particularly if the closed loop system utilizes existing bodies of water (such as disused mines or quarries), where the vast majority of any environmental impact has already occurred in the original creation of those water bodies.

The Australian Renewable Energy Mapping Infrastructure (AREMI) has identified prospective sites for closed loop pump storage plants within Southern Ontario, including abandoned mines and quarries, with the required parameters for use as pump storage plants that should satisfy the above criteria. For instance Northland Power is proposing a 400 MW closed loop pumped storage plant at Marmora in SE Ontario, see: https://marmoraandlake.ca/pumped-storage

Recommendation: *That TC Energy is required to retain a third-party expert to undertake a comprehensive assessment of alternative potential sites for the Project, including, but not limited to, prospective sites identified by AREMI. The merits of such sites should be compared to the merits of the DND site. This report should assess the best alternative sites with the least environmental impacts relative to the DND site.*

10. Hydro Line

GBA has reviewed the attached letter from Grey County to TCE of January 23, 2020 and we are in agreement with the recommendations and observations in that letter. We would add that, if it is determined that a submersible line across Nottawasaga Bay will be utilized, there is a risk that sediments containing mercury, other heavy metals and other pollutants will be disturbed in the process of laying the cable and that these will then be dispersed into the water adversely affecting water quality. This potential contamination therefore needs to be comprehensively studied by TCE in advance and then the studies peer reviewed.

11. Niagara Escarpment

GBA has reviewed the attached Meaford staff recommendations to Meaford Council dated June 1, 2020 on Niagara Escarpment issues related to the Project and we are in agreement with the recommendations and observations in that staff report.

12. Site decommissioning

TCE has advised a 50-year life span for the Project.

Recommendation: *That TC Energy is required to submit a comprehensive decommissioning plan for the site, including costing, to restore the site to its current condition. This plan to include TCE furnishing a decommissioning bond, or other payment mechanism, to fully fund future decommissioning of the site.*

13. CO2 Emissions Analysis

In addition to the peer review of the Navigant report outlined above.

Recommendation: *That TC Energy is required to provide a carbon balance projection report for the entire project life cycle, including construction, operations and decommissioning.*

We ask that DND consider the potential impacts of this project and our recommendations. In particular, GBA's objective is to ensure that potential environmental issues and impacts are thoroughly analyzed and assessed, and that the Project is held to the highest standards of environmental mitigation measures in order to minimize its environmental impacts.

We look forward to hearing from you and would be pleased to discuss these matters further (perhaps by webinar?).

Yours sincerely,

Rupert Kindersley
Executive Director

Copied to:

Federal Minister of Environment & Climate Change Canada, Jonathan Wilkinson

Federal Minister of Natural Resources, Seamus O'Regan

Federal Minister of Fisheries and Oceans, Bernadette Jordan

Ontario Minister of Environment, Conservation & Parks, Jeff Yurek

Ontario Minister of Natural Resources & Forestry, John Yakabuski

Ontario Minister of Energy, Greg Rickford

Bill Walker, Ontario MPP, Alex Ruff, Federal MP, and Terry Dowdall, Federal MP

Municipality of Meaford: Mayor, Councillors and CAO Rob Armstrong

Mayors and Reeve of the Townships of: Georgian Bay, Archipelago, Carling, Killarney & NEMI

TC Energy, John Mikkelsen and ERM Consultants, Graeme Burt

Save Georgian Bay, Tom Buck & Bruce Rodgers