



# Proposed Georgian Bay Hydroelectric Pumped Storage Facility

## Backgrounder

### Proposal

TC Energy, formerly Trans Canada Pipelines, has received permission to do a feasibility study for an open system Hydroelectric Pumped Storage facility on the federally owned shoreline of the Department of National Defence's Training Centre in Meaford. TC Energy is currently doing public and indigenous consultations as required under the feasibility study terms.

### Overview

The purpose of the Georgian Bay Hydroelectric Pumped Storage Facility is a for-profit project to generate electricity for Ontario's power grid. During hours of off-peak demand for electricity, the facility's turbines would pump water directly out of Georgian Bay 150 metres uphill to a concrete man-made reservoir holding about 22 million cubic metres (22 billion litres) of water. During peak demand hours, water is released from the uphill reservoir creating electricity. This water would empty back into Georgian Bay. This open system using water directly from a natural body of water uses 1300 MW of off-peak power to create 1000 MW of electricity during high demand periods. This technology was developed in the 1960's when there were no viable options to store electricity - it needed to be consumed as soon as it was generated.

TC Energy has touted this facility as a green energy project. They have described the facility as a clean, renewable energy source that will reduce CO2 emissions. However, examples of similar projects using the same technology makes it clear that the overall net environmental impact of this facility will be devastating, killing millions of fish each year. It has been proven that open systems such as this have a destructive effect on the entire aquatic ecosystem. Further environmental impacts to the escarpment forest, shoreline bird and fish spawning habitats as well as the effects on the sport and commercial fishing industries, drinking water and the tourism industry are all serious consequences to consider.

Hydroelectric pumped storage facilities using current technology and best practices are becoming popular around the world. However, almost all these facilities are closed systems that are separate and sequestered from the surrounding natural environment. Unlike open systems which use bodies of water with aquatic ecosystems, closed systems have both an upper **and** lower self-contained reservoir for electricity generation and water return.

## **Environmental and Other Impacts**

### **1. Impact of Ludington Michigan's Open System Hydroelectric Pumped Storage Facility**

A hydroelectric pumped storage facility using identical open system technology as TC Energy's proposal was built in 1973 in Ludington, Michigan. The catastrophic environmental impact of this facility is chilling:

- Since its construction in 1973, the Ludington facility has killed 150 million fish a year in Lake Michigan. This continued until 1996 when a legal settlement was reached by the Ludington owners and the State of Michigan, the National Wildlife Federation and others who initiated the legal action.
- Forced in the settlement to mitigate its decimation of the fish population, the Ludington owners installed a two kilometre net.
- Even with the net, it is currently estimated that 10 million larger fish continue to be killed each year.
- However, the mitigation net is not effective for fish under 18 cm and the negative impact on other important organisms in the Great Lakes aquatic ecosystem has helped downgrade the rating of many of Lake Michigan's nearshore and coastal wetlands habitats to poor. (North and east Georgian Bay's rating is currently very good to excellent, south Georgian Bay's rating is currently fair to good)
- In addition to the fish barrier requirement, the successful litigation against the Ludington facility owners also resulted in \$50 million and 10,000 acres being awarded to the Great Lake Fishery Trust which was created to compensate residents of Michigan for the lost use and enjoyment of the fishery resources caused by the Ludington Pumped Storage facility.

### **2. Fish Populations and Aquatic Ecosystems**

- As proven by the Ludington MI hydro Pump Storage Facility, the impact on fish population and aquatic ecosystems can be devastating
- Nets will only keep out most, but not all, larger fish from being sucked up by turbines
- Smaller fish including baitfish will not be prevented being drawn into turbines as well as other important organisms in the Great Lakes food chain such as phytoplankton and small fresh water crustaceans (Diporeia).
- Studies have shown that white fish spawning grounds and shoreline bird habitats and nesting grounds are very sensitive to environmental changes

### **3. Turbidity**

- The daily massive flow of water back into Georgian Bay will cause water turbidity, stirring up the clay lake bottom and clouding the pristine clear waters

of Meaford and surrounding area. Strong currents and wave motion can distribute this cloudiness even further to neighbouring communities' shorelines. The effect this will have on shoreline bird habitats and the aquatic ecosystem needs to be extensively studied.

- The expected four year construction of the project will cause a major disruption to the lake bottom potentially distributing murky, churned up water all along the Georgian Bay shoreline from Wiarton to Collingwood
- Many local shoreline residents draw water from the Bay for daily use. Sediment and churned up marine life may make this water unusable.
- Boating, swimming and other water activities will be less attractive for local residents and visitors to the area and may affect the tourism industry

#### **4. Construction Impact**

- As well as creating massive, excess turbidity during the four year construction period, the development of the site will necessitate the clearing of some of the escarpment forest
- Temporary construction jobs will siphon off labour especially in the trades and will exacerbate critical labour shortages in the area. Local construction costs are already above the national average and this project will cause them to rise further
- The influx of temporary construction workers will cause traffic congestion on routes in and around Meaford
- Need for temporary rental accommodation will cause a shortage of the already limited supply of rental units

#### **5. High Voltage Power Transmission Corridor - Meaford to Barrie**

- While a high voltage power transmission line connecting the Pumped storage facility electricity to Ontario's power grid is not part of the feasibility study??, if this proposed project moves ahead, a transmission corridor will have to be built
- The existing high voltage transmission corridor connecting Bruce Nuclear to the power grid is at full capacity so a trunk line connecting the Meaford Pumped storage facility to it is not feasible. A separate 100 km transmission corridor from Meaford to Barrie will have to be created.
- Expropriations, right of ways, proximity to residential areas are unanswered questions that need to be addressed immediately and should be included in the feasibility study

### **Conclusion**

TC Energy's proposed facility uses 50-year-old environmentally harmful technology. The Ludington Hydroelectric Pumped Storage Facility on Lake Michigan has demonstrated how devastating this technology can be to the aquatic and shoreline

ecosystems. To ignore this valuable lesson is sheer folly. The bottom line is that Open System Hydroelectric Pumped Storage Facilities are environmentally destructive. This harm cannot be offset by a modest, so called 'green', 1000 MW electricity generation. Today, much better solutions and technologies exist. From advances in battery storage, hydrogen cells and closed system hydroelectric pumped storage facilities, many superior alternatives are available to produce and store clean, renewable energy. This is something we whole heartedly support.

## **Save Georgian Bay**

The Save Georgian Bay Group is made up of environmental consultants, electrical engineers, industry experts and other volunteers concerned about TC Energy Corporation's proposed hydroelectric pumped storage facility in Meaford, Ontario. The groups' goal is to examine the proposal with a main focus on environmental as well as economic and social impacts. The group is actively seeking volunteers to help educate the community and study the project.

## **How Can You Help?**

- Go to [savegeorgianbay.ca](http://savegeorgianbay.ca) to hear our depositions, get information, updates, volunteer information or to download a letter you can send to the Department of National Defence (DND)
- Sign our petition at [change.org](http://change.org)
- Contact your south Georgian Bay municipal representatives:
  - Meaford, Owen Sound, the Town of the Blue Mountains, Collingwood
- Contact your MPP and MP:
  - Bill Walker MPP, Jim Wilson MPP, Alex Ruff MP, Terry Dowdall MP
- Mail or email your own letter directly to DND before July 31, 2020  
ThirdPartyAccess@forces.gc.ca  
Holly King  
Section Head  
Directorate Real Property Services, DND  
60 Moodie Drive  
Ottawa, ON K1A 0K2

Jayne Sutherland – December 1, 2019