

Calabogie Generating Station Redevelopment Project

WELCOME!

Thank you for taking time to visit this Open House.
Please fill out a Comment Sheet and leave it with us
or take it home and return it later to the address
provided.

A project representative will be glad to answer your
questions.

Your input and comments are an important
contribution to helping us develop an
environmentally responsible project.



Please **SIGN-IN** to receive future project updates

Purpose of this Open House

Calabogie Generating Station
Redevelopment Project

To introduce you to Ontario Power Generation Inc.'s plans to redevelop the Calabogie Generating Station (GS).



To seek your feedback at this early stage on local environmental considerations, issues or concerns that should be addressed through the environmental assessment process.

Who is Ontario Power Generation?

Calabogie Generating Station
Redevelopment Project

- Ontario Power Generation (OPG) is an Ontario-based electricity generation company.
- OPG focuses on the efficient production of electricity from its generation assets, while operating in a safe, open and environmentally responsible manner.
- OPG is a commercial company, owned by the Province of Ontario – its sole shareholder.
- OPG has been given a mandate from the Province of Ontario to develop and expand its hydroelectric capacity.
- This project will provide more clean, reliable and renewable electricity for Ontario.



Existing Calabogie powerhouse on South Branch of Madawaska River

Madawaska River and Water Management Operations

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Existing Operations

- Madawaska River flows 270 km from its headwaters in Algonquin Provincial Park to the Ottawa River at Arnprior. Its drainage area covers > 8,500 square km.
- Calabogie GS presently operates as a peaking plant in conjunction with the four other OPG owned generating stations on the Madawaska River.
- The generating units at the station have limited flow capacity ($66 \text{ m}^3/\text{s}$), but the operation of the units and sluice gates are integrated with the rest of the peaking system on the Madawaska River.
- Calabogie is a generation bottleneck on the Madawaska River, and the small turbine capacity results in frequent spill past the station.
- The operation of the existing plant is based on a daily/weekly cycle, with the inflow passed through the plant over a daily or weekly period. The operation of the plant takes into consideration energy demands and recreational opportunities as well as walleye spawning activities.

Proposed Project

- OPG does not propose to alter the existing water management compliance requirements associated with this facility.
- A redeveloped Calabogie GS will continue to be operated in full accordance with all of the flow and water level targets and compliance conditions identified in the Madawaska River Water Management Plan (MRWMP).
- Daily flows will remain unchanged, but an additional portion of river flow will pass through the plant to generate electricity, rather than just passing through the spillway gates.
- The increased flows through the units could have a slight effect on the hourly water levels for the reach as far as the downstream limit of the plant and until the upstream limit of the Stewartville forebay, but will remain consistent with the MRWMP.

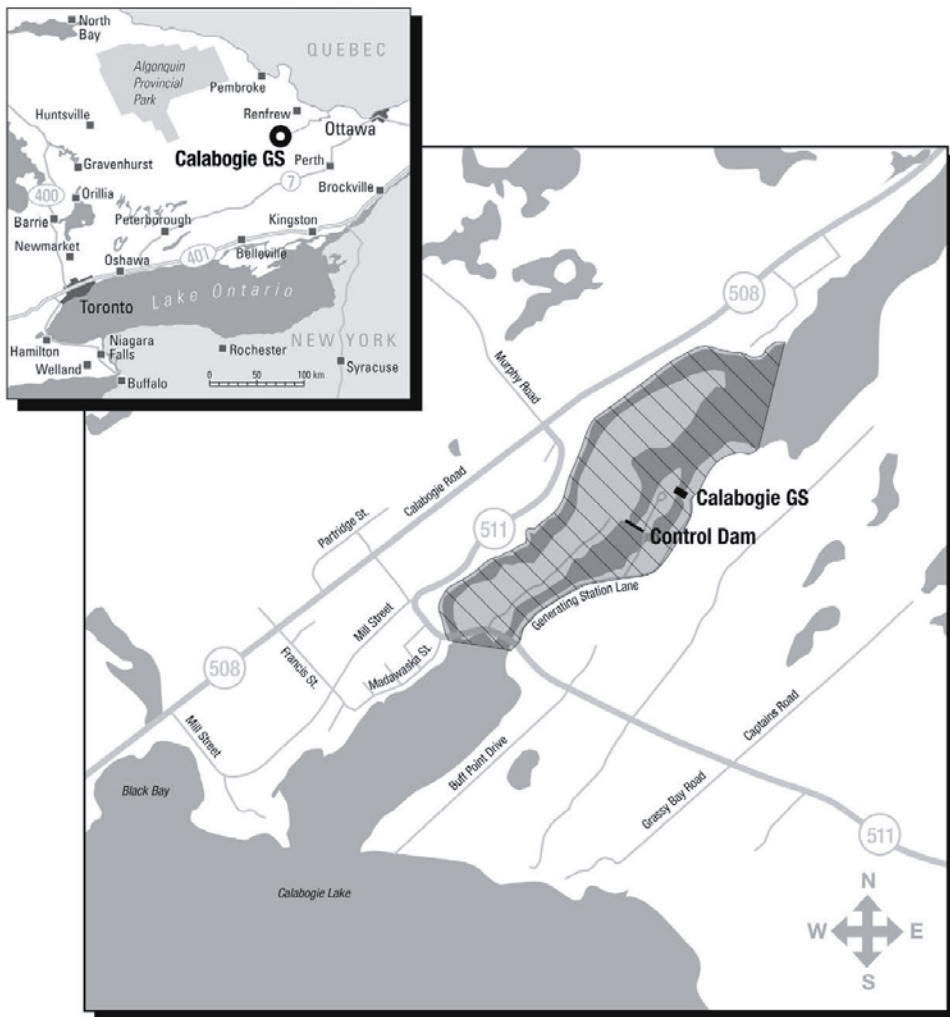


Existing Calabogie powerhouse on South Branch of Madawaska River

General Location and Zone of Impact

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- The proposed zone of impact for the project is expected to be the immediate area around the GS (shown in the hatched area in the Figure below).



Project location and proposed zone of impact

Existing Calabogie Generating Station

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- Calabogie GS was constructed in 1917 and is located within the Village of Calabogie. The current facility is considered to be near an 'end of life stage'.
- The GS has an installed capacity of 5 MW utilizing two quadruple-Francis horizontal turbines operating at a gross head of just under 9 m and a maximum total turbine outflow of 66 cms.
- Calabogie GS is significantly undersized in comparison to either typical mean flows or to both the upstream and downstream hydroelectric stations on the river, which have daily peaking flows up to 458 cms.



Madawaska River in the vicinity of the Calabogie GS

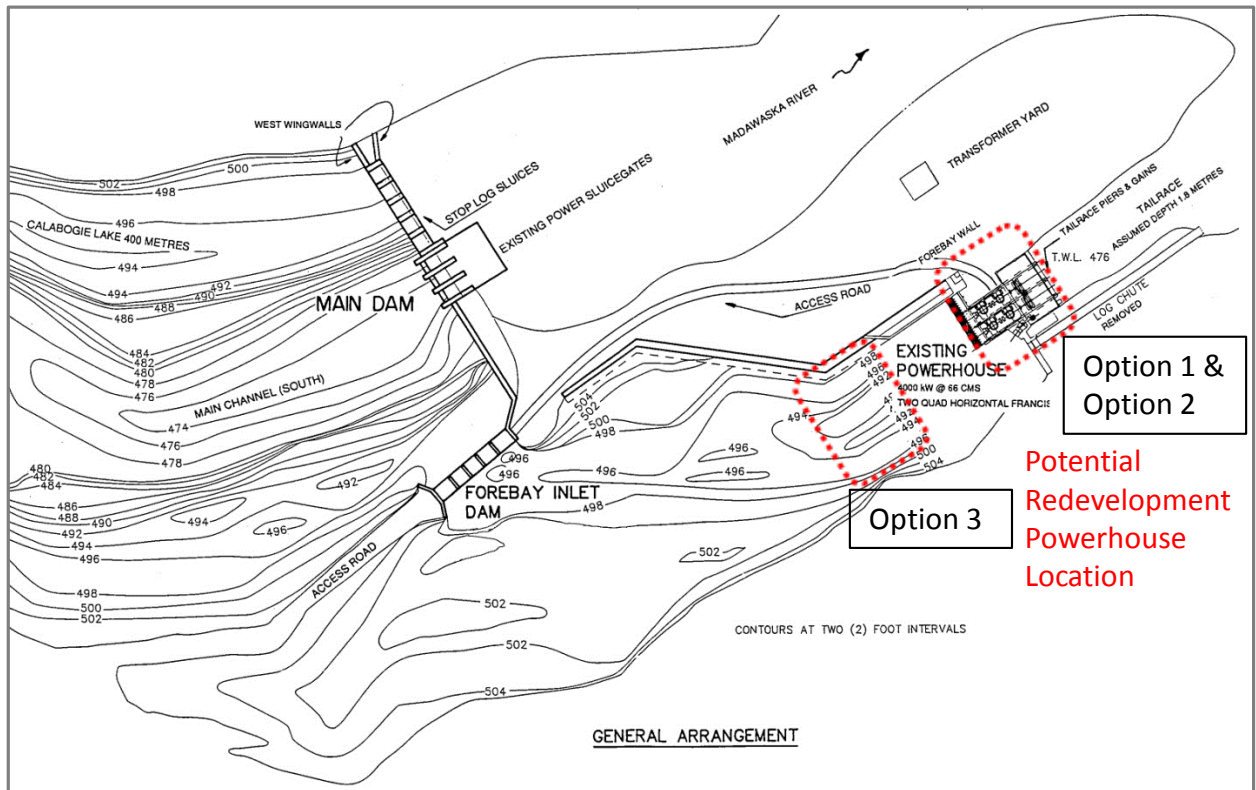
Water from Calabogie Lake travels downstream via the North Channel, South Channel Sluiceway, and the GS

- Over the last 50 years several studies have investigated redeveloping the site or increasing generation at the existing plant.

Proposed Plans

Calabogie Generating Station Redevelopment Project

- The proposed plan is to Re-Develop the station with capacity increased to approximately 10 to 15 megawatts.



Project Site Plan Options

- The existing powerhouse may be re-used or a new powerhouse might be constructed slightly upstream within the existing forebay.

Proposed Plans (continued)

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- The proposed Calabogie GS redevelopment may consist of the following components/structures:
 - main dam and spillway
 - forebay wing wall
 - forebay inlet structure and bridge
 - powerhouse structures
 - access road
 - electrical substation



- The project will also require some ancillary facilities such as construction laydown areas and construction trailers.

Environmental Assessment Process

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- In Ontario, proposed waterpower facilities are subject to the *Environmental Assessment Act* (EA Act).
- The Ontario Waterpower Association (OWA) developed the Class EA process which was approved by the Ontario Minister of the Environment and the Lieutenant Governor in Council in 2008. The EA Act formally recognizes the OWA Class Environmental Assessment for Waterpower Projects (OWA Class EA) and outlines the requirements for EA approval.
- Under the OWA Class EA the Calabogie GS Project will be classified as a “Project Associated with Existing Infrastructure”. Provided the requirements of the OWA Class EA planning process are met, and a Part II Order request is not made (or denied), a project is considered approved under the EA Act.
- Copies of the Class EA are available from www.owa.ca



Environmental Assessment Process (continued)

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- EA approval is required prior to issuance of other project approvals and permits. An Administrative Amendment is likely required to the existing Madawaska River Water Management Plan (MRWMP).



View from eastern shoreline of the forebay looking towards the inlet sluices (bridge)

- Preliminary field work associated with assessing the environmental effects was initiated in 2016.
- More comprehensive field work was carried out in 2017.
- The effects of the project during construction and operation are now being assessed.
- Measures to avoid, prevent, eliminate, reduce, mitigate and compensate for negative effects will be identified.
- Measures to enhance positive effects will also be identified.



Site overview

Aquatic Assessment

- Aquatic field studies were completed in 2016 and 2017.
- The existing GS has in place existing seasonal regime constraints from April 1 to the May long weekend to facilitate Walleye and Northern Pike spawning. A minimum year-round flow, along with an enhanced minimum flow during Walleye spawning, is maintained in the North Channel.



North Channel of Madawaska River

- The Madawaska River between Calabogie GS and Stewartville GS is managed as a coolwater fishery with Northern Pike, Smallmouth Bass, Largemouth



Bass, Walleye, Rock Bass, Pumpkinseed, Yellow Perch, White Sucker, and Redhorses present.

Aquatic Assessment (continued)

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- Fall-spawning fish, Lake Sturgeon or American Eels are not known to be present in the stretch of the River between Calabogie GS and Stewartville GS.



River Redhorse (*Moxostoma carinatum*)

- River Redhorse (listed as a species of Special Concern) are likely spawning downstream of the Calabogie GS near the area known as Cherry Point.

- No major constraints are expected on the project but likely some kind of fisheries compensation (such as spawning habitat creation) will be required as part of a *Fisheries Act* Authorization to be obtained from Fisheries and Oceans Canada (DFO).



View from eastern shoreline of the forebay looking towards the inlet sluices (bridge)

Terrestrial Assessment

- Terrestrial field studies were completed in 2016 and 2017.
- Most of the forest cover on the site of the Calabogie GS is secondary forest having been cleared at the time of the original construction and later.
- Field studies/surveys on site have included:
 - Bat Survey
 - Whip-poor-will Surveys
 - Dawn Breeding Bird Surveys
 - Vegetation assessment (ecological land classification)



Remote acoustic bird monitor



- Barn swallows are present at the site and some mitigation measures will be required if they are potentially affected by the project.
- No major constraints are expected on the project.

Cultural Heritage Assessment

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Archaeology

- A Stage 1 archaeological assessment was completed on the Calabogie GS in 2016.
- No areas of archaeological potential were identified and therefore no further archaeological resource assessment work is required.

Built Heritage

- A Cultural Heritage Evaluation was conducted on the Calabogie GS.
- No decision has been made at this point on the future of the Calabogie powerhouse.
- A Cultural Heritage Impact Assessment will be required based on the future design decisions for the proposed project development or site alteration.



Socio-Economic Assessment

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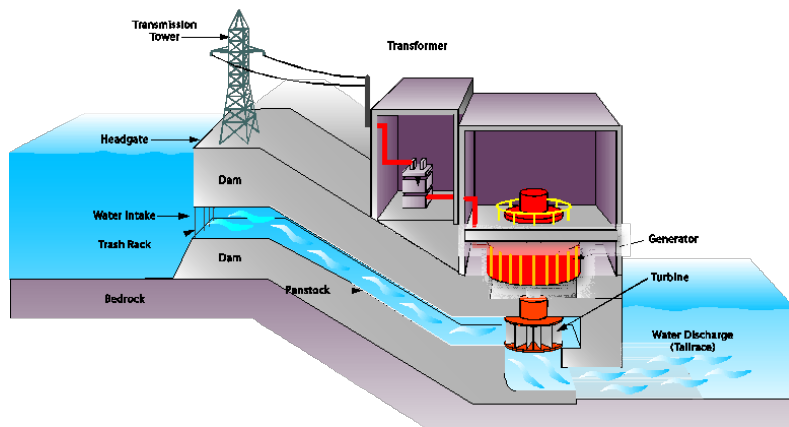
- No change in land use is proposed with the project.
- The project will generally have a minor positive effect during the construction phase through construction employment and contracting.
- Discussions will occur with the Township and County to determine any areas of concern and to mitigate any potential nuisance effects.
- There are no proposed alterations to water management plan levels on Calabogie Lake.



How Hydroelectric Development Works

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- Hydroelectric power stations convert the kinetic energy of falling water into electrical energy.
- Hydroelectric stations use either the natural drop of a river, such as a waterfall, or a dam built across a river to raise the water level and provide the drop (head) needed to create a driving force.
- Water is collected at the top of the dam in what is called the forebay. From there, the water flows into a



pipe called a penstock which carries it down to a turbine water wheel.

- The water pressure increases as it flows down the penstock. The pressure and flow of the falling water drives a turbine which in turn spins a generator.
- This creates electricity that can be sent to the transmission grid.



We Value Your Opinion

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THANK YOU for attending!

- Consultation is a key component of the EA process as it provides you with an opportunity to contribute and inform decisions relating to the project.
- OPG will be hosting a second Open House most likely in the first half of 2019 with key findings from the EA.
- Meetings and consultation activities have also been held with Algonquins of Ontario.
- We would like to know if there are any important environmental or social values, interests or concerns you might have about the project.
- There will be additional opportunities for you to participate in the EA process.

Please take the time to ask questions and complete the *Comment Sheets* before you leave.

If you have further comments or questions please email us at: info@calabogiegs.com or visit our project webpage at: www.calabogiegs.com