Hydro Québec
TransÉnergie

Project Agent
Hydro Québec
Équipement et services partagés

Ontario Interconnection from **Outaouais** Substation

Power imports and exports for the benefit of all

Hydro-Québec recently completed work on the 1,250-MW Ontario interconnection. The project was conducted in three stages:

- Construction of a 315/230-kV converter substation at L'Ange-Gardien
- Extension of a 15-km, double-circuit 230-kV line linking the grids of Hydro-Québec and of Hydro-One Networks in Ontario
- Construction of a 115-km, double-circuit 315-kV line between Chénier substation, in Mirabel, and Outaouais substation. Work was also done on Chénier substation

The project is in line with Québec's energy strategy and is designed to promote power interchanges between Québec and Ontario and to secure supply for the Outaouais region.

The work took place from 2006 to 2010 and cost $590 million—nearly $25 million less than the cost announced at the start of the project.

This information bulletin describes the highlights of the project, all phases of which were conducted in compliance with the principles of sustainability, including social, technical, economic and environmental aspects.

PROJECT SUMMARY • November 2010

A transmission line across the Ottawa River will enable power interchanges between Québec and Ontario.

Public Participation Highlights

At each stage in the project, Hydro-Québec consulted the communities, organizations and government departments involved to listen to their concerns, enhance the project, and ensure that it was favorably received.

Community feedback

Hydro-Québec sent information bulletins to local residents in order to present the project justification, the study area, the environmental assessment process, the project costs and schedule, and progress reports. The company also held open house sessions with the aim of explaining the project and listening to the public's comments and concerns.

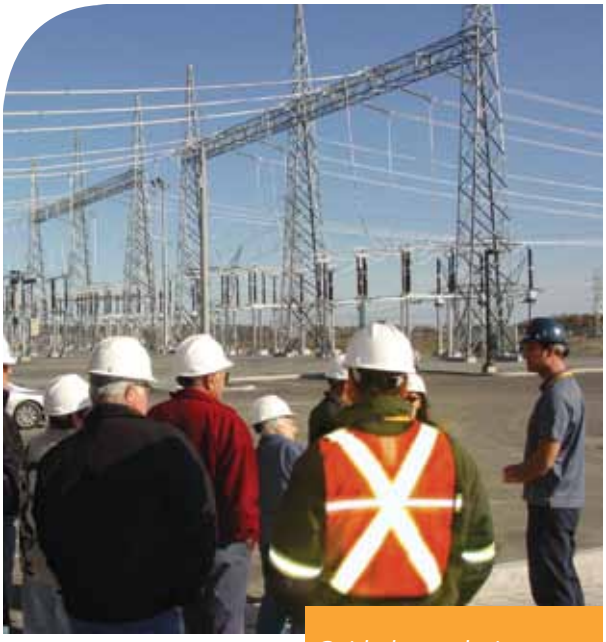
All information related to the project was sent to the affected RCMs and municipalities, to representatives of the government departments concerned, to regional media and to the main socio-economic, environmental, recreational, tourism and agroforest organizations. The Fédération de l'UPA Outaouais-Laurentides was also consulted.

An important inauguration

In fall 2009, as the Outaouais substation commissioning approached, two events underlined the unique nature of the Ontario interconnection.

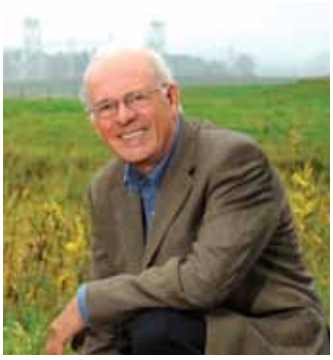
On September 25, 2009, the new interconnection was officially inaugurated by Jean Charest, Premier of Québec, and Nathalie Normandeau, Deputy Premier and Minister of Natural Resources and Wildlife and Minister responsible for the Northern Plan. Also present were Norman MacMillan, Minister for Transport and MNA for Papineau, Thierry Vandal, President and Chief Executive Officer of Hydro-Québec, and Isabelle Courville, President of Hydro-Québec TransÉnergie.

On Sunday, October 18, an open house was held at Outaouais substation. This was a highly popular event and was attended by 176 citizens, mostly from L'Ange-Gardien. Hydro-Québec had made a commitment to the citizens of that municipality to hold such an event.



Guided tour during open house

Main building housing the control system and converters



Armand Renaud, Mayor of L'Ange-Gardien during the project, summed up his experience as follows: "Communication with Hydro-Québec representatives was excellent. They kept us informed and it was easy to get answers to our questions."

Technical and Economic Highlights

A technical challenge

Building the interconnection involved considerable technical challenges for Hydro-Québec. Complex equipment and technologies have made it a veritable technology showcase for the company in the Outaouais region.

The interconnection has a capacity of 1,250 MW, meaning it can provide electricity for up to 400,000 homes in Ontario. The substation has two 625-MW converters, 14 transformers and 405 km of cabling—the equivalent of a round trip between Gatineau and Montréal.

The two transmission lines are designed to high reliability standards and will withstand heavy ice and wind loading.

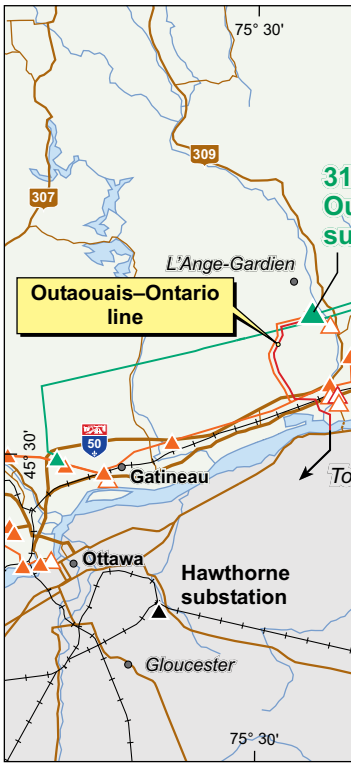
Maximizing economic spinoffs

Throughout the project, Hydro-Québec paid special attention to regional economic benefits by promoting the involvement of local construction companies.

Outaouais substation alone generated nearly $50 million in regional economic spinoffs, or nearly 14% of the total project cost. In addition, 17 permanent jobs were created for substation operation and maintenance.

The Chénier–Outaouais line generated more than $6 million in spinoffs for 85 local businesses and provided jobs for over 400 workers during the peak of construction.

In addition, Hydro-Québec contributed to the development of communities affected by the project through its Integrated Enhancement Program (IEP). These communities received funding equivalent to 1% of the initially authorized value of the facilities covered by the IEP (lines and substation).



Staying on schedule

The project was completed on schedule, even though several technical obstacles had to be overcome.

PHASE 1 – Outaouais substation

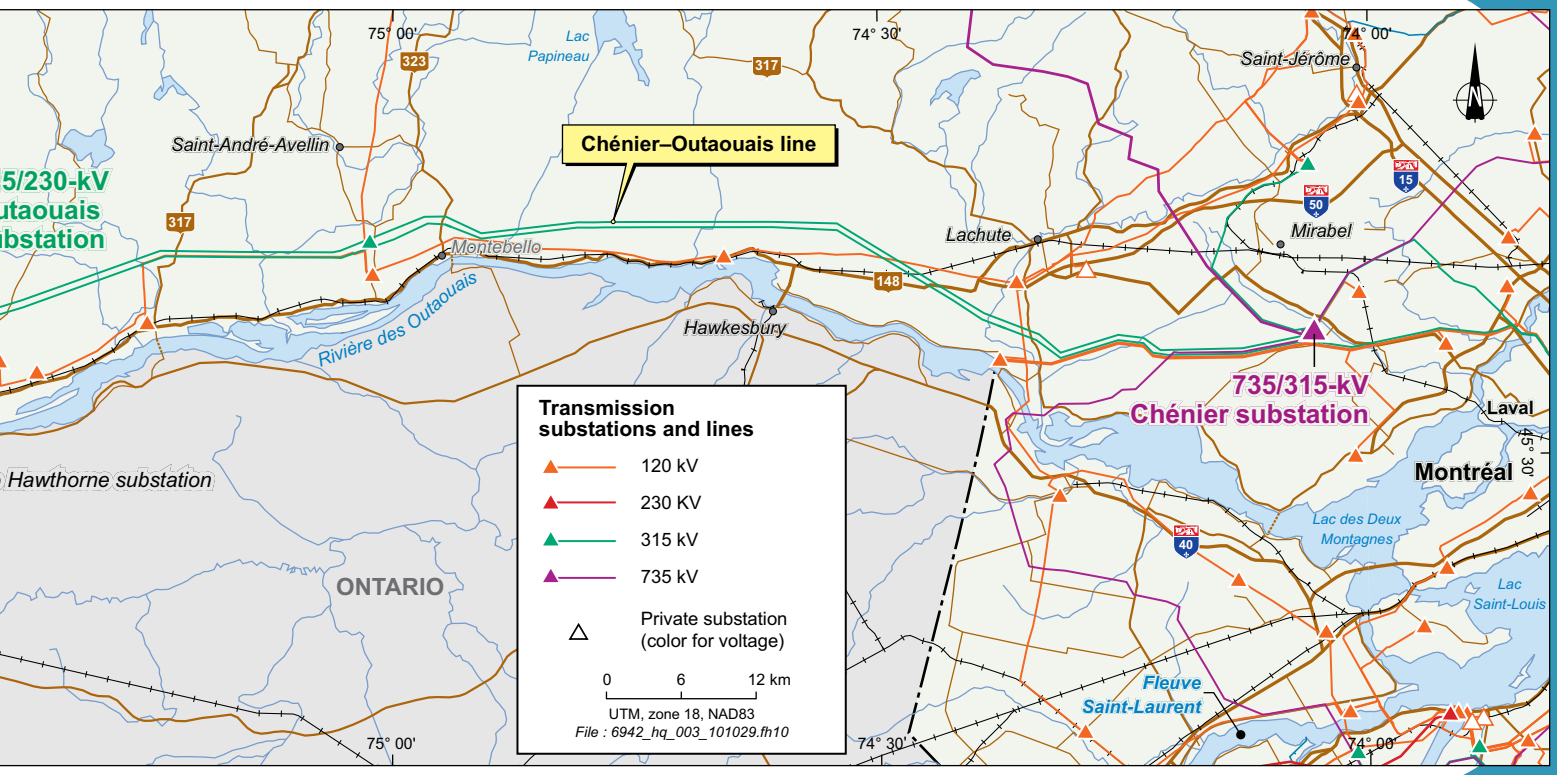
- **September 1999**: Filing of draft-design study report
- **November 2006**: Start of work
- **June 2007**: Completion of earthwork and start of construction on buildings and civil works
- **November 2008**: Completion of the 230-kV Outaouais–Ontario line
- **Spring 2009**: Commissioning of the switching section of the substation
- **July 2009**: Start of commercial operation (first converter)
- **Fall 2009**: Full commissioning (second converter)

PHASE 2 – Chénier–Outaouais line

- **October 2007**: Filing of environmental impact statement
- **May 2009**: Start of construction
- **May 2010**: Commissioning

The thyristor valves, part of the converter, are the key component in the conversion operation that separates the Québec and Ontario power grids.

For the Chénier–Outaouais line, engineers designed a new type of 315-kV tower that has a reduced footprint and thus takes up less farmland.



Outaouais substation measures 350 m by 480 m, making it one of the largest substations in the Hydro-Québec system.

Environmental Highlights

Three impact studies were conducted: the first, in 1999, dealt with the construction of Outaouais substation. The second, which took place in 2000, dealt with the work to be done on the Outaouais–Ontario line. Lastly, the study on the Chénier–Outaouais line was filed in 2007.

All of these studies gave Hydro-Québec a thorough knowledge of the host environment, making it possible to assess the project impacts and develop effective mitigation measures in line with community expectations.

Mitigation measures

Hydro-Québec implemented numerous measures to preserve the quality of life, especially with regard to landscape and drinking water, as well as to limit noise and lighting levels generated by the new facilities.

As part of the Chénier–Outaouais line construction, a new reduced-footprint tower for 315-kV lines was designed, thus lessening the impact of tower siting on farmland. Of the 292 towers erected for this line, 59 have a reduced footprint. Building the line in an existing right-of-way also greatly contributed to reducing environmental impacts.

Nearly 158,000 m^3 of rock was excavated, crushed and reused directly on the Outaouais substation site. This made it possible to avoid 12,500 truck trips on surrounding roads, thus helping to preserve the quality of life of local residents.

This fall, Hydro-Québec is carrying out landscaping around Outaouais substation to reduce visual impact.

Environmental compliance assurance and follow-up studies

Hydro-Québec prepared environmental compliance assurance guides to ensure that its commitments were fulfilled and the mitigation measures properly implemented. The company has also planned for follow-up studies, especially at Outaouais substation, with regard to drinking water quality and noise levels.

Chénier–Outaouais line

Outaouais–Ontario line

For more information

For more information or to obtain more copies of this bulletin, you may contact:

Éric Moisan
Advisor – Communications and Communities
Direction régionale – Laurentides
333, boulevard Jean-Paul-Hogue, 1er étage
Saint-Jérôme (Québec)
J7Z 6Y3

Info-project line
1 800 465-1521, extension 6022

www.hydroquebec.com/projects

2010E1343-A

Hydro Québec

Ce document est également publié en français.