The Chaudière or Akikodjiwan Falls are home to Canada’s oldest hydroelectric power plant remaining operational today\(^2\). From the construction of the first run-of-river generating station in 1891, to powering the first lightbulbs, streetlights and streetcars in Ottawa\(^3\), the Chaudière Falls are entering yet another chapter in their long and storied history with an expansion to the existing hydropower generating facility.

Expanding the capacity of Chaudière Island hydropower installation from 65 to 85 MW

Chaudière Island in the Ottawa River

"In as much as the City of Ottawa's past has been tied to this river. Today's Chaudière expansion project confirms that Ottawa's future is also tied to it."

- Ontario Energy Minister Bob Chiarelli

Generating enough clean, renewable power for 20,000 homes

Reducing greenhouse gas emissions by 115,000 tonnes of CO\(_2\) every year

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At the start of this expansion project, the Chaudière Falls already hosted hydropower plants on both the Ontario and Québec sides of the Ottawa River, with a total generating capacity of 65 megawatts (MW). On the Gatineau side, Hydro Ottawa owned a 12 MW plant (purchased from Domtar Corporation in 2012) as well as a 27 MW plant (purchased from Hydro Québec in 2016). On the Ottawa side, Hydro Ottawa owned a 3 MW and a 6 MW plant (also purchased from Domtar Corporation in 2012), two 8 MW legacy plants dating back to the late 1800’s and early 1900’s respectively, as well as a 1 MW plant that was completed in 2007.

On March 4th 2014, Hydro Ottawa was awarded a 40-year contract to expand their existing hydropower facilities at Chaudière Falls, with an estimated price-tag of more than $150 million financed from the bond market. Construction on the hydropower expansion started in 2015. The 3 MW and 6 MW plants on the Ottawa side of the river were first decommissioned, with the water rights from these plants redirected to the expansion project along with additional unused water rights owned by Hydro Ottawa.

The decision to install the new turbines below grade was driven by a desire to minimize impacts on the local visual and natural environment.

While expanding clean, renewable electricity generating capacity was obviously the driving force behind the project, Hydro Ottawa additionally wanted the expansion project to serve as a public space to be enjoyed by the community, as well as a tangible reminder of the site’s significance to First Nations and the local industrial past. These additional goals were be achieved through the inclusion of a First Nations Plaza. Three safe public viewing platforms, increased public access and a new pedestrian and cyclist bridge in the design.

Despite Hydro Ottawa’s extensive stakeholder consultation with local First Nations groups, the project has experienced ongoing media coverage focusing on a call from select advocacy groups for the falls and islands to be returned to the Algonquin Anishinabeg Nation as an act of reconciliation.

The expansion began producing power on the 18th of August 2017, and was officially opened on the 16th of October, 2017. During its development, the project created 150 new jobs in the construction industry. The project resulted in the net addition of 20 MW of generating capacity at Chaudière Falls, bringing the site total up to 85 MW. At present, 39 MW of this is destined for use in Québec, while 46 MW is for Ontario. While it is too soon for formal results to be available, the expansion is expected to generate enough clean energy to power 20,000 homes, which in turn will reduce greenhouse gas emissions by an estimated 115,000 tonnes of CO₂ every year, as this new clean energy displaces electricity previously generated from other dirtier sources. In addition, the expanded hydroelectric facility will help contribute to the province of Ontario’s long-term target of generating 9300 MW of hydropower by 2025.

Finally, a power purchase agreement with the Independent Electricity System Operator in Ontario will generate $15 million of revenue annually for Hydro Ottawa, of which a dividend would ultimately go to the City of Ottawa as Hydro Ottawa’s only shareholder.
According to Hydro Ottawa CEO and President Bryce Conrad, the biggest challenges faced through the course of the expansion project were its size and location: "It's in the backyard in the city of Ottawa. Everyone can see it. Everyone can hear it when the dynamite goes off. So, just the logistics around a project of this magnitude are challenging"[6].

That said, the hydropower generating facilities have been operational for a few months now and aside from some routine adjustments such as calibrating sensors, this ramping-up period has gone very smoothly. Looking to the future, over the coming two years, Hydro Ottawa will upgrade the remaining two Québec-side hydropower plants (12 MW and 27 MW), subsequently transferring the power generated by these facilities to Ontario markets.

Figure 1: Hydropower generating facilities at Chaudière Falls[11].

REFERENCES

[9] https://twitter.com/BarrhavenJan/status/92002360830816256