



Revelstoke Generating Station Unit 6 Project

Factsheet–November 2020

We've completed planning work to obtain regulatory approvals for the Revelstoke Unit 6 project. While we do not have a timeline for construction, Revelstoke 6 is an important contingency project and we wanted to shorten its lead time in case electricity demand grew faster than anticipated.

REVELSTOKE DAM AND GENERATING STATION

Revelstoke Dam and Generating Station are located on the Columbia River, 5 kilometers upstream from the City of Revelstoke. The facilities are part of our Columbia system with Revelstoke Reservoir and Mica Dam located upstream and the Hugh L. Keenleyside Dam and Arrow Lakes Reservoir downstream. The Revelstoke Generating Station, completed in 1984, was designed to hold six generating units but only four units were installed when the facility was constructed.

The fifth generating unit was recently added and began service in 2010.

Revelstoke Generating Station produces, on average, about 7,817 gigawatt hours or roughly 15 per cent of the electricity BC Hydro generates each year. With the five generating units, Revelstoke Generating Station has a combined capacity of 2,480 megawatts, accounting for approximately 23 per cent of the installed capacity of our Heritage Resources. Electricity generated by the plant is delivered to the grid by two parallel 500 kilovolt transmission lines that run from Revelstoke Generating Station to the Ashton Creek substation near Kamloops.



Revelstoke Generating Station

PROJECT BENEFITS AND OPPORTUNITIES

- **Jobs.** Revelstoke Unit 6 would create about 436 person years of temporary employment.
- **Meeting the needs of BC Hydro customers.** Revelstoke Unit 6 would provide significant additional dependable capacity to BC Hydro's system.
- **Cost effective.** The Revelstoke Dam and Generating Station were designed and built to accommodate the installation of Revelstoke Unit 6 so most of the investment has already been made.
- **Low impact.** The Revelstoke Unit 6 project would not involve any significant change to the facility and construction activities would be within the existing facility's footprint.
- **Maximizing the value of BC Hydro assets.** Because Revelstoke is situated between two major storage reservoirs – Kinbasket Reservoir and Arrow Lakes Reservoir – the addition of a sixth unit provides flexibility and optimal operation of this storage.

ABOUT THE PROJECT

The work to install the sixth generating unit at Revelstoke Generating Station would be very similar to the Revelstoke Unit 5 project and follow the same general steps, including the installation of:

- A sixth steel penstock, 7.9 metres in diameter, similar to the existing penstocks on the face of the dam;
- A Francis-style turbine, about 7.0 metres in diameter with a maximum discharge capability of 400 cubic metres per second;
- An umbrella type generating unit with a rated capacity of approximately 500 megawatts;
- A generator transformer, switchgear and associated equipment located in the existing powerhouse; and
- Additional ancillary mechanical and electrical equipment for the generator and transmission switchgear located in the existing powerhouse.

Project quick facts

- Construction would take just over three years
- Number of jobs: about 436 person years of employment
- Adds approximately 500 megawatts of capacity

CONSTRUCTION WORK

Project work to install the sixth unit in the powerhouse would take place within the fenced property boundary of the existing Revelstoke Dam and Generating Station and use the same construction areas and laydown areas used for the Revelstoke Unit 5 project.

INCREMENTAL CHANGES TO OPERATIONS

We would continue to operate Revelstoke Generating Station and Revelstoke Reservoir as part of our Columbia system operations. The operation of the sixth generating unit would be expected to cause the following incremental changes to Revelstoke Reservoir and the downstream Columbia River:

Higher downstream Columbia River flows during peak generation

Revelstoke Generating Station is mostly operated as a daily peaking plant, where the available water is used to maximize generation when load demand is high. Generation is reduced during light load hours to a minimum flow of 5,000 cubic feet per second (cfs). The extra capacity provided by the sixth generating unit would allow the existing water supply to be used differently by releasing up to 20 per cent more water with all six units operating for short periods of time during high demand periods. The maximum facility discharge with all six units will be 93,000 cfs.

Minimal change for Revelstoke Reservoir levels

Revelstoke Reservoir levels fluctuate throughout the day in response to generation discharge from Revelstoke and Mica Generating Stations. We generally operate the reservoir level within 1.5 metres from full pool to maintain head and maximize power generation from Revelstoke Generating Station. Operation of the sixth generating unit would be expected to only cause small changes to the timing and amount of water level fluctuation within the current 1.5 metre operating range under normal conditions. We would continue to occasionally operate Revelstoke reservoir at a lower minimum level during cold weather or unusual system conditions.

Only minor changes to operation of other Columbia facilities

The operation of a sixth generating unit at Revelstoke Generating Station would result in only minor changes to the operation of other Columbia facilities and associated reservoirs (Mica Dam/Kinbasket Reservoir and Hugh L. Keenleyside Dam/Arrow Lakes Reservoir). All reservoir elevations and facility discharges elsewhere in the Columbia River system would be expected to stay within their current normal operating ranges.



Installing penstock for Revelstoke Unit 5 Project



Workforce

Construction work for the Revelstoke Unit 6 project would be completed by independent contractors through several large contracts that would be awarded according to BC Hydro's procurement policies. Under an agreement with Allied Hydro Council, workers for the project would be hired through the Columbia Hydro Constructors (CHC) Agreement that includes provisions to support local and equity hire. The Revelstoke Unit 5 Project hired over 380 person years of trades work under the CHC Agreement. Of these, 33% (125 person-years) were local hires and about 6% (22.8 person years) were First Nation hires. Work at the Revelstoke Generating Station is expected to create 436 person years of direct employment over the construction period. We are not planning a work camp for the project due to proximity of the community of Revelstoke to the worksite.



TRANSMISSION

The project would not require any new transmission lines or upgrades to the existing lines between Revelstoke Generating Station and the Ashton Creek substation. Some upgrades to other parts of our transmission grid would be needed to reliably deliver the additional generation from the sixth generating unit. We would need to upgrade the Nicola substation and construct a new capacitor station. The capacitor station needs to be roughly halfway along the transmission line that runs between Vaseux Lake Terminal Station and Nicola Substation.

The new series capacitor station would be built on BC Hydro-owned property along the Isintok-McNulty Forest Service Road approximately 19 kilometres west of Summerland. The 6.4 hectare property is on the south side of the Isintok-McNulty Forest Service Road adjacent to and on the east side of the existing 500 kilovolt transmission lines. The capacitor station could require approximately 3 to 4 hectares of land for construction and would be located below or beside the existing transmission line. Construction would take about two years and create roughly 20 person years of temporary employment.

CONSULTATION AND PUBLIC ENGAGEMENT

We worked closely with Indigenous groups on the environmental assessment application for the project and we engaged with Indigenous groups, government and community members. We also convened a Core committee that met from November 2013 until December 2016 to ensure a diverse range of perspectives were considered.

REGULATORY APPROVALS

The Province granted an Environmental Assessment Certificate for the Revelstoke 6 project in November 2018 following a decision by the Minister of Environment and Climate Change Strategy and the Minister of Forests, Lands, Natural Resources Operations and Rural Development. The project was reviewed by the provincial Environmental Assessment Office (EAO) under the BC Environmental Assessment Act.

The provincial Comptroller of Water Rights has also granted a second water licence for Revelstoke Dam to allow us to use another 3,000 cubic feet per second of water (cfs) for power generation. Although Revelstoke Dam was originally licenced for 90,000 cfs to allow generation with six units, modern units have slightly higher capacity and can divert more water. The second water licence will allow us to operate the facility at maximum capacity with six generating units.



Questions? Please contact:

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