# MICA UNITS 5 AND 6 PROJECTS

PROJECT UPDATE AUGUST 2011

- TO ENSURE THE PROVINCE OF BC CONTINUES TO HAVE THE ELECTRICITY IT NEEDS BC HYDRO IS RE-INVESTING CLOSE TO $1 BILLION TO UPGRADE AND EXPAND MICA GENERATING STATION.
- ON-SITE CONSTRUCTION WORK TO INSTALL TWO ADDITIONAL GENERATING UNITS (UNIT 5 AND UNIT 6) BEGAN IN MAY 2011.
- BC HYDRO IS DELIVERING ON ALL PROJECT COMMITMENTS DEVELOPED WITH GOVERNMENT, FIRST NATIONS AND STAKEHOLDERS TO MAXIMIZE PROJECT BENEFITS AND MINIMIZE IMPACTS.
- BC HYDRO CONTINUES WORK TO REPLACE AGING GAS-INSULATED SWITCHGEAR EQUIPMENT AT THE FACILITY NEEDED TO MAINTAIN RELIABILITY.

## PROJECTS TO HELP MEET BC'S ELECTRICITY NEED

To ensure the province of BC continues to have the electricity it needs, BC Hydro is re-investing close to $1 billion to expand and upgrade Mica Generating Station.

## NEW GENERATING UNITS WILL PROVIDE MORE CAPACITY

BC Hydro started on-site work in May 2011 to install two additional approximately 500 megawatt (MW) generating units into existing turbine bays at the Mica powerhouse. Originally designed to hold six generating units, only four were installed at the time of construction. The two new units will increase the facility's capacity to 2805 megawatts. This is a significant increase in capacity that will help meet our customer's needs during peak demand periods when furnaces, stoves, computers, and appliances are all in use.

The project work is being completed by two main contractors. Andritz Hydro will supply and install the turbine and generating units. Peter Kiewit Infrastructure Group will complete concrete work needed to house the new turbine and generating unit. BC Hydro is working towards an in-service date of 2014 for Mica 5 and 2015 for Mica 6.

## NEW SWITCHGEAR EQUIPMENT TO MAINTAIN RELIABLE GENERATION

On average, the Mica powerhouse generates 7,202 gigawatt hours (GWh) of electricity each year. This represents about 15 per cent of the electricity generated in the province.
BC Hydro is replacing the facility's original switchgear equipment to ensure continued reliability. BC Hydro is also continuing work to install additional high voltage (500 kilovolt) switchgear equipment needed to support the new fifth and sixth generating units.

Switchgear equipment safely conducts the electrical energy produced from the underground generating units to the above-ground transmission lines. Mitsubishi Electric Power Products Incorporated (MEPPI) is completing the project work.

Crew assembles ventilation ducts.

BC hydro

FOR GENERATIONS

# MICA PROJECTS CONSTRUCTION HIGHLIGHTS

Work starts to prepare empty powerhouse bay for fifth Mica generating unit.

## CREWS MOBILIZED AND PREPARING TO START CONCRETE WORK

Project contractors Andritz Hydro and Peter Kiewit Infrastructure Group mobilized at Mica dam in May 2011. Peter Kiewit is now placing all concrete necessary to install the turbine draft tubes. The space for the draft tubes was excavated when the powerhouse was originally constructed in 1973. Concrete needed for the work will be produced by a concrete batch plant installed in June just below the dam.

## STEPS TO INSTALL NEW FIFTH AND SIXTH UNITS

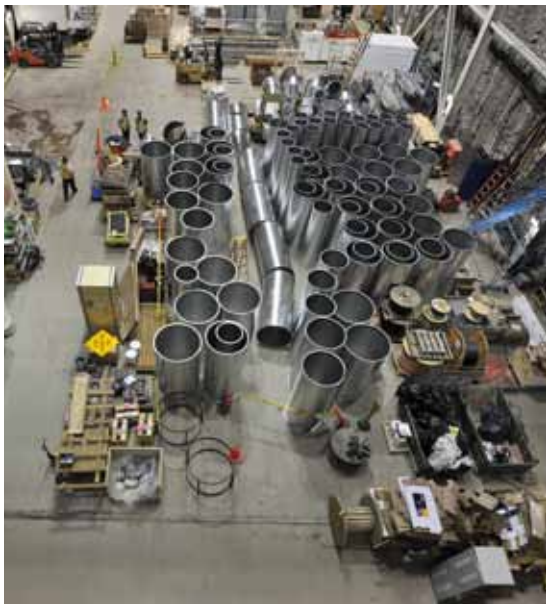
Construction work for each unit involves the following main steps:

1. Install draft tube and embed in concrete.
2. Install spiral case that houses the turbine, and embed it in concrete.
3. Deliver and install the new turbine.
4. Install the generator.
5. Install the switchgear and other electrical equipment.
6. Commission and test the generating unit.

## TIGHT WORKSPACE

Mica dam is surrounded by the rugged Monashee mountains in an area that receives an annual average snowfall of 10 metres. To protect from avalanche and rockfalls the powerhouse was carved out of the rock on the west bank of the river just below the dam. The underground powerhouse with roughly the same interior space as BC Hydro's 18-storey head office building in Vancouver (24,000 cubic metres) is a tight space for projects of this size. As a result, every detail of the project has been carefully choreographed to ensure there is enough room for equipment and supplies.

Mica batch plant that will produce concrete needed for installation of new generating units.



Tight space – storing equipment in Mica powerhouse.

## TURBINE TRANSPORT

Each new generating unit will be powered by a Francis turbine (runner) that measures 6.5 metres in diameter and weighs 150 tonnes. Andritz Hydro will manufacture the turbines in Germany and is currently scheduled to deliver the turbines to Mica in 2013. In 2009, a new turbine was transported from Brazil over 12,000 kilometres by sea, land, and river to Revelstoke dam.

## SWITCHGEAR EQUIPMENT NEEDED FOR NEW UNITS INSTALLED

The above-ground switchgear building has been expanded to accommodate the installation of new gas-insulated switchgear equipment. Work crews used a lift skip to install conductors in the narrow 274 metre long leadshaft excavated when the powerhouse was constructed.

## MORE BEDS AT MICA CREEK CAMP

BC Hydro's Mica Creek camp located 10 km downstream from the dam is getting more beds for Mica project workers. Although the camp originally housed 2700 workers and their families when the dam was constructed from 1965 to 1973, the camp was planned to be downsized. Most of the original townsite was flooded when the Revelstoke dam began operating in 1985, leaving a 100-person camp remaining to house the facility's operational staff and temporary workers.

Under one of the largest contracts ever awarded by BC Hydro to a First Nations joint venture, Secwepemc Camp and Catering will install temporary camp facilities to house approximately 250 contractor employees. These facilities include single-room dormitories and a service complex with recreation, administration, first aid, security, kitchen and dining, luggage storage and laundry facilities.

## EMPLOYMENT

All labour for the Mica projects is hired through the Collective Agreement between the Columbia Hydro Constructors Ltd (CHC) and the Allied Hydro Council of British Columbia (AHC) which represents the affiliated unions. CHC has staff on site to manage hiring for both BC Hydro and project contractors..

### FOR MORE INFORMATION ABOUT JOBS, PLEASE CONTACT

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New single-room dormitory building for BC Hydro's expanded Mica Creek camp.

Draft tube for new fifth Mica generating unit.

Gas-insulated conductors installed in Mica leadshaft.

## PROJECTS DESIGNED WITH STAKEHOLDERS

BC Hydro will deliver on all project commitments made during the Environmental Assessment Office review to maximize project benefits and minimize impacts.

The commitments were designed by the Mica Units 5 and 6 Core Committee who worked from January 2008 until June 2009 to identify and address potential project effects. The Committee included representatives from federal, provincial and local government, first nations, interested groups and individual stakeholders.

Highlights of progress on some of the project commitments are included below.

## TO BENEFIT THE REGION

### EMPLOYMENT

As of July 26, 2011, approximately 100 workers were on site hired through the Columbia Hydro Constructors under a collective agreement with the Allied Hydro Council. The collective agreement gives hiring preference to residents of the Columbia River basin and equity groups (including First Nations, women in non-traditional job classifications, visible minorities and disabled workers). Of the workers hired, 44% were residents of the Columbia River basin and 13% were equity hire.

### HELPING BUILD TRADES SKILLS

BC Hydro is providing a total of $120,000 through the Mica projects to support trades training programs offered in the local communities of Revelstoke, Golden, Valemount and Nakusp. Local trades training programs supported by BC Hydro to date have involved 46 students. Programs include Okanagan College's 2010 Residential Construction Program in Revelstoke, Selkirk College's 2010 Carpentry Program in Nakusp, and the College of the Rockies' Introduction to Trades program 2011 program in Golden.

## AND MINIMIZE IMPACTS

### HIGHWAY SAFETY

BC Hydro is covering the cost of additional RCMP patrols to protect public safety along the 136 km stretch of Highway 23 North from Revelstoke to Mica Creek Camp throughout project construction.

BC Hydro has installed highway signage to warn drivers of high wildlife use areas, provides a safety package to all Mica project workers with information on traffic safety, accident risks, and wildlife awareness and protection. BC Hydro also coordinates a Mica Road Safety Committee with other user groups to share road information and implement measures as needed to improve safety.

## ADDITIONAL INFORMATION

For details on the EAO review and Mica Units 5 and 6 Projects mitigation and compensation commitments and the Mica Units 5 and 6 Core Committee report, please visit **eao.gov.bc.ca**. For more information about the project, please visit our website at **bchydro.com**.

### QUESTIONS? PLEASE CONTACT:

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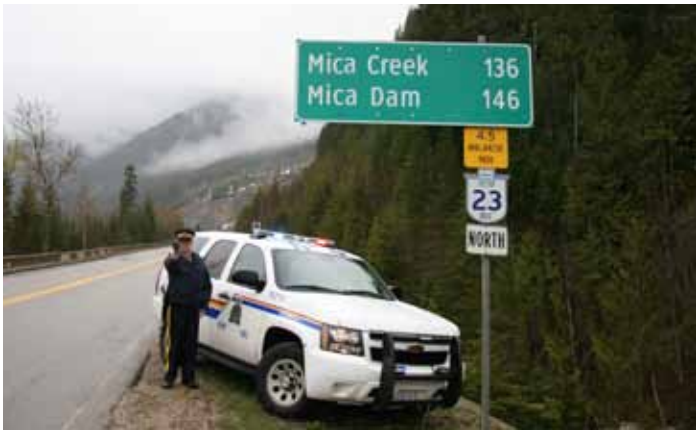
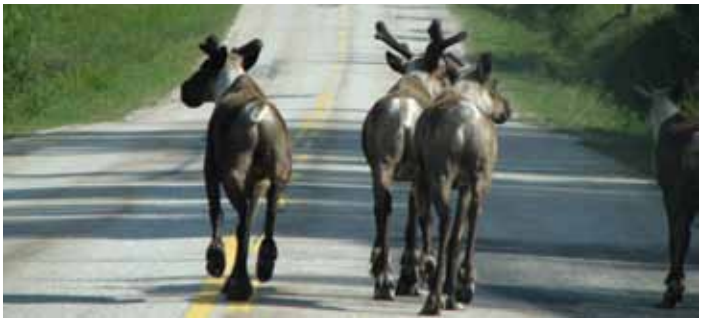
Okanagan College residential construction students receives hands on training at job site in Revlestoke.




Increased RCMP enforcement on Mica highway to protect public and wildlife safety.



Endangered mountain caribou on Highway 23 North to Mica Generating Station.