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November 15, 2021

Mr. Patrick Wruck  
Commission Secretary and Manager  
Regulatory Support  
British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

**RE: Project No. 3698674**  
**British Columbia Utilities Commission (BCUC or Commission)**  
**British Columbia Hydro and Power Authority (BC Hydro)**  
**John Hart Generating Station Replacement Project**  
**PUBLIC Semi-Annual Progress Report No. 16**  
**April 2021 to September 2021 (Report)**

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BC Hydro writes in compliance with Commission Order No. C-2-13, to provide its public Report. Commercially sensitive and contractor-specific information has been redacted pursuant to section 42 of the *Administrative Tribunals Act* and Part 4 of the Commission's Rules of Practice and Procedure.

A confidential version of the Report is being filed with the Commission only under separate cover.

For further information, please contact Joe Maloney at 604-623-4348 or by email at [bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com).

Yours sincerely,



Chris Sandve  
Chief Regulatory Officer

bh/rh

Enclosure

**John Hart Generating Station Replacement Project**

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**Semi-Annual Progress Report No. 16**

**F2022 Six Month Period**

**April 2021 to September 2021**

**PUBLIC**

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## 1 Introduction

2 The John Hart Generating Station Replacement Project (**the Project**) was initiated  
3 to address the risks of: 1) the deteriorating condition and reliability of the existing  
4 generating equipment and facilities; 2) the failure of the powerhouse superstructure  
5 and wood stave penstocks in the event of a major earthquake; and 3) environmental  
6 impact of flow interruptions on the Campbell River. The Commission issued a  
7 Certificate of Public Convenience and Necessity (**CPCN**) for the Project in  
8 February 2013. In December 2013, BC Hydro's Board of Directors (**the Board**)  
9 approved full Implementation phase funding. In February 2014, the Board approved  
10 the execution of the Project agreement for the original scope of work between  
11 BC Hydro and InPower BC General Partnership as explained below (**Project**  
12 **Agreement**) and associated commitments to construct the replacement John Hart  
13 facility (**the Facility**).

14 The Project was built under a Design-Build-Finance-Rehabilitate (**DBFR**)<sup>1</sup>  
15 procurement model where the successful proponent, InPower BC General  
16 Partnership (**Project Co**), was responsible for design and construction and is now  
17 responsible for asset management, which involves planning and managing the  
18 maintenance of the new assets during the 15 years of the Services Period.  
19 BC Hydro remains the operator of the assets during the Services Period and  
20 BC Hydro Operations' staff will perform maintenance prescribed by Project Co.

21 The Project Agreement for the original scope of work between BC Hydro and  
22 Project Co was a fixed price contract. Project Co billed BC Hydro monthly for work  
23 progressed. The payments for the scope of work covered by the fixed price contract  
24 were called Progress Payments (**Progress Payments**). See section [2.3.1](#) for further  
25 details on Progress Payments made. The Progress Payments were subject to  
26 deductions for impacts from events during construction and commissioning to the

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<sup>1</sup> Refer to [Appendix F](#) for definition of key terms.

1 Existing (original generating) Units' availability and for unavailability of new  
2 Generating Unit / Low Level Commercial Assets (**GU/LL Assets**). These deductions  
3 arising from events occurring during commissioning and construction were called  
4 Remittances (**Remittances**). Deductions that arose (or will arise) from events during  
5 the Services Period are called Non-Availability Event Deductions (**NAED**).  
6 Decommissioning was also for a fixed payment amount, also subject to  
7 Remittances. In this case, the Remittances were for variances from baselines  
8 related to contaminated soil volumes removed. See section [4.3](#) for all Remittance  
9 amounts on the Project.

10 Under the DBFR procurement model, Project Co financed 40% of their direct  
11 construction costs and all of their management costs during construction. These  
12 Project Co costs are being paid back to Project Co via monthly Availability Payments  
13 (**Availability Payments**) over the Services Period. There are two components to the  
14 Availability Payments; the first component is debt repayment of the costs financed  
15 by Project Co during construction and the second component is for asset  
16 management services that Project Co will provide during the Services Period.

17 The Availability Payments started in May 2018 when the first new **GU/LL Asset**  
18 came in-service and will end in October 2033. This repayment period is called the  
19 Availability Term (**the Availability Term**).

20 There are two parts to the Availability Term. The Bridging Period (**the Bridging**  
21 **Period**) was the first part and the Services Period is the second part.

22 The Bridging Period started at the beginning of the Availability Term, with the first  
23 GU/LL Asset coming in service as noted above and ended at Service  
24 Commencement (**Service Commencement**) in June 2019. Service Commencement  
25 is a contractually defined term which marked the transition point for the site from  
26 construction to the Services Period; after Service Commencement, BC Hydro  
27 Operations' staff began performing the Project Co prescribed maintenance of the

1 Facility. The Services Period ends at the end of the Availability Term in  
2 October 2033.

3 BC Hydro remains the owner and operator of the assets through all periods.

4 This extended procurement model; and the associated contractual requirements for  
5 four, eight, and twelve-year Condition Assessments and end-of-term hand back  
6 provisions were put in place to incent a focus on long term asset-quality in the  
7 design, installation and commissioning.

8 The Project Agreement includes a schedule of Maximum Availability Payments for  
9 each month of the Availability Term. During the Services Period portion of the  
10 Availability Term, these maximum payments are subject to deductions for asset  
11 unavailability, non-performance events, or for variances from labour or Project Co  
12 insurance baselines in the Project Agreement. The key difference between  
13 availability deductions from events that occurred during the Bridging Period (called  
14 Remittances) and deductions from events occurring during the Services Period  
15 (called Non-Availability Event Deductions) is that Remittances are deducted from  
16 Progress or Decommissioning Payments, but Non-Availability Event Deductions are  
17 deducted from Availability Payments. See [Appendix E](#) for further details on asset  
18 availability during the Services Period and Availability Payments made to date.

19 Total Completion (**Total Completion**) is another contractually defined milestone  
20 related to construction. Total Completion marked completion of Asset Performance  
21 Verification Testing and of construction and decommissioning work (with acceptable  
22 deficiencies and a deficiency plan, as agreed to between BC Hydro and Project Co).  
23 Total Completion was achieved in May 2020.

24 Following close-out reporting, ongoing reporting to the BCUC will continue on asset  
25 availability, Availability Payments, and Condition Assessment outcomes.

1 The first four-year Asset Condition Assessment is expected to be conducted in  
2 summer 2022.

## 3 **2 Project Status**

4 This Semi-Annual Progress Report No. 16 (**Report No. 16**) provides information  
5 concerning the Project from April 1, 2021 to September 30, 2021 (**the Reporting**  
6 **Period**). Report No. 16 follows the Project report methodology laid out in British  
7 Columbia Utilities Commission (**BCUC** or **Commission**) Order No. G-68-14, except  
8 for the Key Performance Indicator Methodology changes which are outlined in  
9 [Appendix G](#) and have been followed since Report No. 10 (April to September 2018).

### 10 **2.1 General Project Status Since the Last Semi-Annual Progress** 11 **Report**

12 Implementation, decommissioning and restoration work are complete, with the  
13 exception of some minor deficiencies as allowed for under the Project Agreement.  
14 These deficiencies are expected to be corrected by the end of December 2021.

15 The assets continue to perform well to date. See [Appendix E](#), Progression of  
16 Availability Payments, for details on asset availability during the Services Period and  
17 Availability Payments made to date.

18 [Table 1](#) provides a Project Status dashboard for the Reporting Period.

1 **Table 1 Project Status Dashboard<sup>2</sup>**

2 ● Green: No Concerns; ● Amber: Some Concerns but in Control; ● Red: Serious Concerns

Status as of:		Sept 30, 2021
Overall Assessment	●G	BC Hydro is now receiving beneficial use of the assets, all the Project risk-drivers were addressed ahead of schedule, and the assets are all performing well to-date.
Schedule	●G	Deficiency correction work was progressed in the Reporting Period while complying with Provincial Government COVID public health Orders. Outstanding Construction Period Project Agreement deficiency correction work is expected to be completed by the end of December 2021. See sections <a href="#">2.2.2.4</a> and <a href="#">2.2.2.5</a> for further details. BC Hydro's close out reporting to the Board, and then to the BCUC, will follow the final reports from Project Co. These reports are expected to be submitted to BC Hydro in late 2021. Schedule remains green because the remaining deficiency correction work does not impact the benefits being derived from the key assets being In-Service.
Cost	●G	The total Project Cost forecast is \$1,001 million, the same as the forecast in Progress Report No. 15, and \$49 million less than the Board approved P50 Expected Amount of \$1,050 million. See section <a href="#">4</a> for more details on Project Costs.
Environment	●G	There were no significant environmental incidents during the Reporting Period, as discussed in section <a href="#">2.3.2.5</a> .
Risks	●G	All material contract risks have now been closed, as noted in section <a href="#">5</a> . The Sudden Short Circuit test (SST) on one of the Generating Units was completed in July 2021, thus closing this risk. Independent certification of the SST test from Project Co was received in October 2021.
Safety	●G	There were no Major or Moderate injuries, and no WorkSafe BC inspections, during the Reporting Period. Refer to section <a href="#">2.3.2.6</a> .

3 The post-financial close, Board-approved Project (P50-Expected Amount to P90-Authorized Amount) cost range is \$1,050 million to  
4 \$1,118 million. The Board-approved Expected Amount was \$110 million more than the Design-Build-Finance-Rehabilitate P50 amount of  
5 \$940 million but within the CPCN Design-Bid-Build range of \$1,014 million to \$1,159 million.

## 6 **2.2 Major Accomplishments, Work Completed and Key Decisions**

### 7 **2.2.1 Government Agency Approvals**

8 BC Hydro and BC Parks need to exchange very small pieces of lands in and around  
9 the Project area to rationalize and consolidate them. BC Parks requires legislative  
10 approval prior to completing the land exchange with BC Hydro and with BC Parks  
11 The land exchange between BC Hydro and BC Parks is subject to legislative  
12 approval and Royal assent.

<sup>2</sup> The key performance indicator guidance is outlined in [Appendix G](#).

1 Legislative approval was received in the fall of 2021, subsequent to the Reporting  
2 Period. The land exchange is expected to complete by mid-December 2021,  
3 following the Royal assent.

## 4 **2.2.2 Construction**

### 5 **2.2.2.1 BC Hydro Contract Management**

#### 6 *Submittals*

7 BC Hydro continues to process submittals in accordance with the timeline  
8 requirements as laid out in the Project Agreement.

#### 9 *Quality*

10 The Project team is closely monitoring Project Co's progress towards closing  
11 deficiencies.

#### 12 *Issues and Risks*

13 There are no outstanding notices of potential claims from Project Co.

### 14 **2.2.2.2 Project Co Management, Engineering, and Design**

15 Work on final documentation items (such as as-built drawings and commissioning  
16 reports) is ongoing with completion expected in late 2021 / early 2022.

### 17 **2.2.2.3 Procurement and Manufacturing**

18 There were no ongoing procurement and manufacturing activities in the Reporting  
19 Period.

### 20 **2.2.2.4 Construction and Commissioning**

21 The Sudden Short Circuit Test on one Generating Unit and deficiency work deferred  
22 from summer 2020 were completed in July 2021. Application of the  
23 Turbine-Inlet-Valve anti-sweat-coating was completed in October 2021.

1 Apart from Remedial work on guide bearings to address minor oil leakage, the  
2 deficiencies remaining after October 2021 mainly relate to documentation, such as  
3 the receipt of drawings and the Commissioning Test Report, and completion of the  
4 land exchange described in section [2.2.1](#).

#### 5 **2.2.2.5 Decommissioning and Restoration**

6 Final decommissioning and restoration were completed in summer 2020.

7 The City of Campbell River has removed the original City-water infrastructure. The  
8 City has completed restoration work in the area where their pipeline was removed.  
9 Updated drawings were received and documents were registered with the Land Title  
10 Office.

### 11 **2.3 Key Project Agreement Developments, Challenges and Issues**

#### 12 **2.3.1 Progress Payments under the Project Agreement**

13 Under the terms of the Project Agreement, there is a maximum amount that  
14 Project Co can invoice for Eligible Costs (**Eligible Costs**) each month. Eligible Costs  
15 are all direct construction costs properly and reasonably invoiced by the  
16 Design-Builder to Project Co for design and construction for the original scope of  
17 work. The total commitment to Project Co for Eligible Costs under the Project  
18 Agreement was for a fixed amount as noted in section [1](#).

19 The table in [Appendix B](#) shows the Maximum Eligible Costs amount that could be  
20 billed each month under the Project Agreement, the actual amounts approved to  
21 date, and the monthly and cumulative variances.

22 [Appendix C](#) summarizes the work breakdown completed by Project Co, the total  
23 Eligible billing allowed for each category, and the approved value (and  
24 corresponding percentage) of the work completed to date for each category.

25 As discussed in section [1](#), BC Hydro paid Project Co 60% of the progressed (billed)  
26 Eligible Amounts as Progress Payments. The remaining 40% of the Eligible

1 Amounts (along with the fixed amount for Project Co's Interest During Construction  
2 **(IDC)**,<sup>3</sup> and the fixed amount for Project Co Ineligible Costs (**Ineligible Costs**)<sup>4</sup> are  
3 booked as a liability (debt) on BC Hydro's balance sheet which is being repaid to  
4 Project Co over the Availability Term.

## 5 **2.3.2 Contract Management**

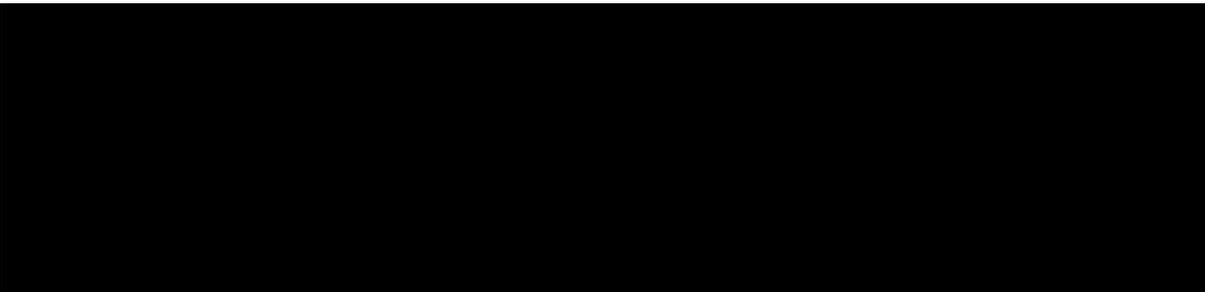
### 6 **2.3.2.1 BC Hydro Initiated Changes and Impact to Cost and Schedule**

7 There were no material BC Hydro initiated changes impacting overall cost or  
8 schedule.

### 9 **2.3.2.2 Material Changes to the Project Agreement and Exercise of Project** 10 **Agreement Rights**

11 There have been no material changes to the Project Agreement and no Project  
12 Agreement rights were exercised during the Reporting Period.

13  
14  
15  
16  
17



### 18 **2.3.2.3 Changes to Project Financing Arrangements**

19 There have been no changes to Project financing arrangements since Financial  
20 Close.

### 21 **2.3.2.4 Project Reserve Draws**

22 There have been no Project reserve draws to date.

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<sup>3</sup> As estimated at financial close of the Project Agreement for the portion of the costs being financed by Project Co.

<sup>4</sup> Project Co indirect or 'ineligible' costs include bidding fees, insurance during construction, and Project Co overhead costs during construction.

1 **2.3.2.5 Material Environmental Incidents**

2 There were no material environmental incidents during the Reporting Period.

3 **2.3.2.6 Material Safety Incidents**

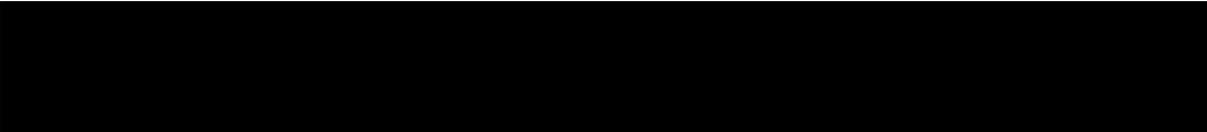
4 There were no safety incidents during the Reporting Period.

5 BC Hydro has been the Prime Contractor at the John Hart Facility, with primary  
6 safety coordination responsibility, since April 2020.

7 **2.4 Plans During the Next Six Months**

8 The plans for the next six months include:

- 9 • Completing remaining deficiency work;
- 10 • Receiving outstanding documentation such as the Commissioning Test Report  
11 and the remaining as-built drawings;

- 12 
- 13
- 14 • Closing-out the Project; and
- 15 • Planning, coordinating and conducting Facility maintenance activities as  
16 prescribed by Project Co, in the Services Period.

17 **2.5 Site Photographs**

18 [Appendix A](#) provides photographs of the Project site.

19 **3 Project Schedule**

20 **3.1 Project Agreement Target and Commercial Operation Dates**

21 The target and achieved commercial operation dates are tabulated in [Table 2](#) below.

1

**Table 2 Target and Achieved Commercial Operation Dates**

	Original Target Commercial Operation Dates	Revised Target Commercial Operation Dates following Innovation Proposal 001	Actual Commercial Operation Dates
1	May 2, 2018 1st GU	May 2, 2018 Tunnel and LLO OR Tunnel and 1st GU	May 2, 2018 Tunnel and LLO
2	July 21, 2018 2nd GU	July 21, 2018 1st unit (if LLO 1st) OR 2nd unit (if a GU was 1st)	July 21, 2018 1st GU
3	October 10, 2018 3rd GU & Service Commencement	Oct 10, 2018 Remaining unit(s) & Service Commencement	October 26, 2018 2nd GU
			November 5, 2018 3rd GU
			March 29, 2019 Completion of the Original Conditions Precedent for Service Commencement (Renamed 'Interim Service Commencement')
4	Feb 1, 2019 Bypass System	Feb 1, 2019 Bypass System <sup>5</sup>	February 1, 2019 – Bypass System Commercial Operation [REDACTED] November 9, 2018 – Bypass System Actual Operational In-Service-Date [REDACTED]
5	August 13, 2019 Total Completion	No Change	May 22, 2020

2 [Appendix E](#) has further details on how the late dates impacted Availability Payments.

3 **4 Project Costs**

4 **4.1 Project Cost Summary**

5 [Table 3](#) below provides a summary of:

- 6 • The Board approved Project Cost, the current forecast Project Cost and the
- 7 variance between the two; and

5



- The plan to date amounts based on the Board approved cost schedule, the actual costs to date and the variance between the two.

**Table 3 Total Project Expenditure Summary (\$M)  
(Public Version)**

Description	Board Approved (Plan)	Forecast	Forecast vs Plan	Plan to Date	Actuals to Date	Actuals vs Plan to Date
Total Project Co Costs <sup>6</sup>	781	772	(9)	781	772	(9)
BC Hydro Costs Including Contingency	187	170	(17)	187	169	(18)
BC Hydro loadings	82	59	(23)	82	59	(23)
Total Owner's Costs	269	229	(40)	269	228	(41)
<b>P50 Project Cost<sup>7</sup></b>	<b>1,050</b>	<b>1,001</b>	<b>(49)</b>	<b>1,050</b>	<b>1,000</b>	<b>(50)</b>
Project Reserve	68	-	(68)	-	-	-
<b>Authorized Project Cost</b>	<b>1,118</b>	<b>1,001</b>	<b>(117)</b>	<b>1,050</b>	<b>1,000</b>	<b>(50)</b>

Note: Minor addition errors occur due to rounding.

Further variance explanations are provided in the confidential filing of the more detailed cost breakdown in [Appendix D](#).

## 4.2 BC Hydro Construction Payments to Project Co

In addition to the fixed amount for Progress Payments for the planned Project scope, BC Hydro must also pay Project Co for Design Development Changes and for Change Notices and Innovation Proposals that were accepted by BC Hydro.

The net cost of Project Changes and Design Development Changes was approximately [REDACTED]<sup>8</sup> These were paid within the current Project forecast amount.

There were two accepted Innovation Proposals, Innovation Proposal 001 and Innovation Proposal 003. Innovation Proposal 001 was the only material one, with a

<sup>6</sup> The total Project Co Costs include the cost to decommission existing John Hart facilities.

<sup>7</sup> The Project Cost excludes Net Book Value write-downs and costs related to Impact Benefit Agreements.

<sup>8</sup> [REDACTED]

1 value of [REDACTED] and paid in 2016 (refer to Semi-Annual Progress Report No. 6  
2 for more details). Innovation Proposal 003 was agreed and paid in April 2018 with a  
3 value of [REDACTED]

#### 4 **4.3 Project Co Payments to BC Hydro during Construction**

5 As outlined in section [1](#), payments from Project Co to BC Hydro for asset  
6 non-availability or for variances from Project Agreement baselines during  
7 construction and commissioning (i.e., prior to and during the Bridging Period) are  
8 called Remittances. Remittances related to construction were netted off the  
9 implementation Progress Payments and Remittances related to decommissioning  
10 were netted off the Decommissioning payments to Project Co. All Remittances were  
11 included as reductions in Project implementation costs.

12 As of September 30, 2021 [REDACTED] was netted off the Progress Payment  
13 amounts for minor outages related to construction and commissioning. The final  
14 Progress Payment invoice was received in March 2021 and paid in April 2021. There  
15 was a further Remittance amount of [REDACTED] netted off the Decommissioning  
16 Payment in previous reporting periods. The Remittance accounted for contaminated  
17 soil volumes (that had to be removed from the old Penstock and Powerhouse areas)  
18 being less than baselines in the Project Agreement.

### 19 **5 Material Project Risks**

20 All material Project risks that have potential to impact the Project by [REDACTED]  
21 [REDACTED] have now been closed.

# **John Hart Generating Station Replacement Project**

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## **Semi-Annual Progress Report No. 16**

### **Appendix A**

### **Site Photographs**

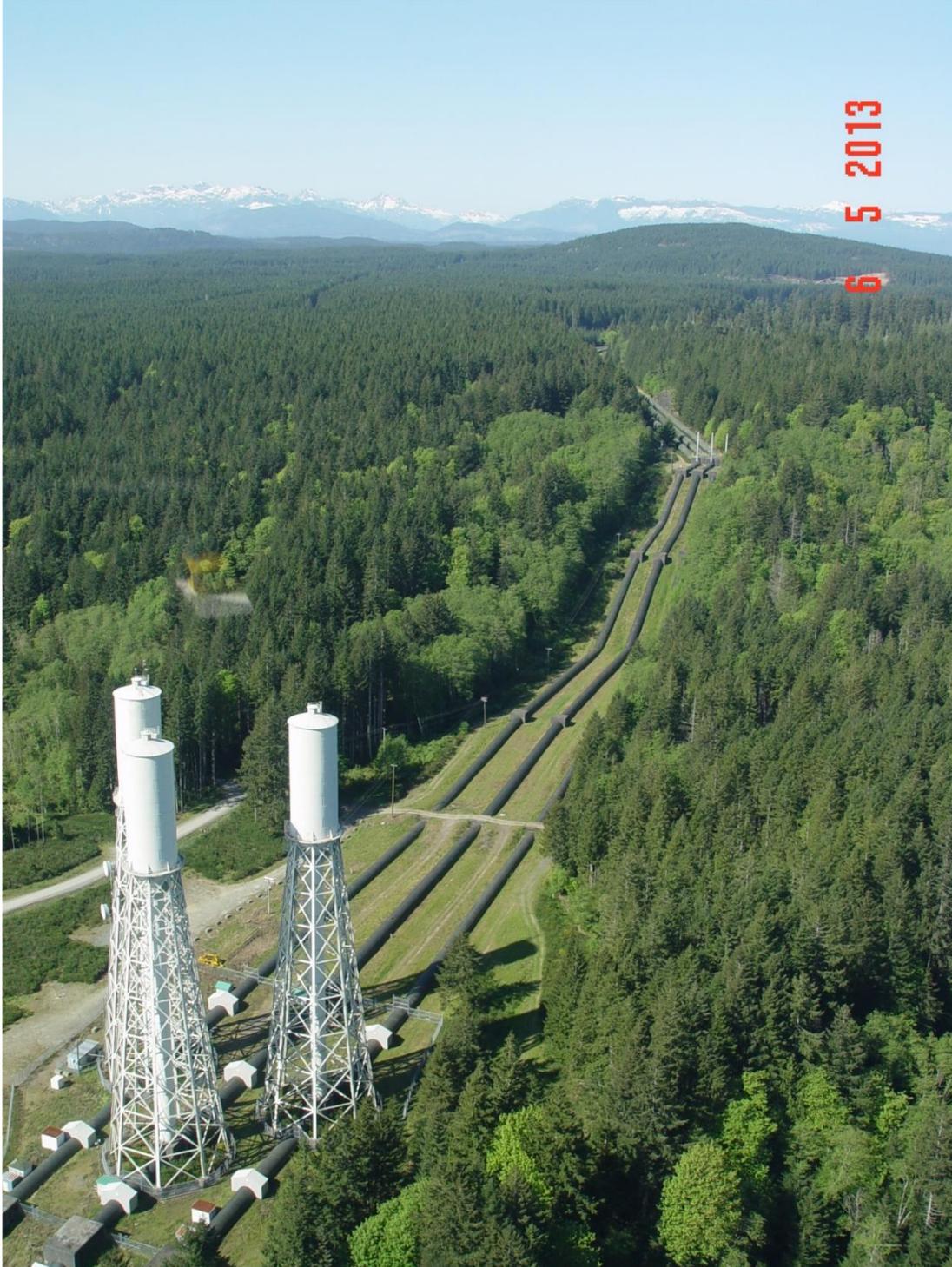
Figure A-1 Original Powerhouse – May 2013



Figure A-2 Powerhouse removed – September 2021



Figure A-3 Original Surge Towers and Penstocks - May 2013



**Figure A-4** Surge Tower retained as a heritage feature (not connected to new facility), Penstock Corridor (steel penstocks removed) and Access portals to new JHN underground Powerhouse - September 2021



**Figure A-5** Original Penstock Corridor looking East - May 2015



**Figure A-6 Penstock Corridor (penstocks removed) - September 2021**



Figure A-7 Main Concrete Dam and Spillway – March 2008



**Figure A-8 Main Concrete Dam, Spillway, new Intake and Low Level Outlets – April 2019**



**John Hart Generating Station Replacement Project**

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**Semi-Annual Progress Report No. 16**

**Appendix B**

**Project Co Direct (Progression) Payments to Date**

**PUBLIC**

**REDACTED**

**John Hart Generating Station Replacement Project**

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**Semi-Annual Progress Report No. 16**

**Appendix C**

**Project Progression of Eligible Costs**

**PUBLIC**

**REDACTED**

# **John Hart Generating Station Replacement Project**

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## **Semi-Annual Progress Report No. 16**

### **Appendix D**

### **Detailed Project Expenditures**

**PUBLIC**

**REDACTED**

**John Hart Generating Station Replacement Project**

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**Semi-Annual Progress Report No. 16**

**Appendix E**

**Progression of Availability Payments**

**PUBLIC**

Section 1 explained that there are two distinct periods in the Availability Term called: 1) the Bridging Period; and 2) the Services Period.

During the Bridging Period, the maximum possible Availability Payments were multiplied by a Ramp Rate percentage which depended on the number of Commercial Assets in Commercial Operation.

Table E-1 below outlines the original Target Dates for the GU/LL Assets and the Bypass System; the Revised Target Dates for the GU/LL Assets under Innovation Proposal 001; the added interim date of October 10, 2018 for the completion of the automation of the Bypass System; the actual Commercial Operation Dates for the GU/LL assets; the actual completion date of the automation of the Bypass System; and the Ramp Rate attained with each Commercial Asset coming in service.

**Table E-1 Project Agreement ISDs**

Contractual Ramp Rate Item No. and Associated Incremental Ramp Rate (%) <sup>19</sup>	Original Target Commercial Operation Dates and GU/LL Assets	Revised Target Commercial Operation Dates and GU/LL Assets following Innovation Proposal 001	Actual / Forecast Commercial Operation Dates	Status and Comments <sup>20</sup>
1 (█%)	May 2, 2018 1st GU	May 2, 2018 Tunnel and LLO OR Tunnel and 1st GU	May 2, 2018 (Actual) Tunnel and LLO	Met
2 (█%)	July 21, 2018 2nd GU	July 21, 2018 1st unit (if LLO 1st) OR 2nd unit (if a GU was 1st)	July 21, 2018 (Actual) 1st GU	Met

<sup>19</sup> The Ramp Rate percentage is multiplied by the value, in the relevant month, in the schedule of Availability Payments which is included in the Project Agreement.

<sup>20</sup> Met” means attained on or before the Target Date, ‘Late’ means completed but not attained on or before the Target Date, ‘On Track’ means it is forecasting to occur on or before the Target Date, ‘Missed’ means not completed and the Target Date has passed.

Contractual Ramp Rate Item No. and Associated Incremental Ramp Rate (%) <sup>19</sup>	Original Target Commercial Operation Dates and GU/LL Assets	Revised Target Commercial Operation Dates and GU/LL Assets following Innovation Proposal 001	Actual / Forecast Commercial Operation Dates	Status and Comments <sup>20</sup>
3 (█%)	October 10, 2018 3rd GU & Service Commencement	October 10, 2018 Remaining unit(s) & Service Commencement	October 26, 2018 (Actual) 2nd GU	Late
			November 5, 2018 (Actual) 3rd unit	Late
			March 29, 2019 (Actual) Completion of the Original Conditions Precedent for Service Commencement (Renamed 'Interim Service Commencement')	Late
4a (█%)	February 1, 2019 Bypass System	February 1, 2019 Target Bypass System Completion Date for the last Ramp Rate Increment Remained Unchanged	February 1, 2019 (Actual) = the later of Bypass System completion (November 9, 2018) and February 1, 2019	Met
4b (No Ramp Rate increment)	N/A	Partial Repayment of the increment to Innovation Proposal 001 for automated Bypass System completion delays beyond October 10, 2018	November 9, 2018 (Actual)	Late
5 (No Ramp Rate increment)	August 13, 2019 Project Total Completion	August 13, 2019	May 22, 2020	Late
6 (No Ramp Rate increment)	October 9, 2033 Service Period End	October 9, 2033	October 9, 2033	Fixed end-date

The table below shows the Availability Payments paid to Project Co to September 30, 2021.

**Table E-2 Availability Payments to Project Co<sup>21, 22</sup> (\$M)**

A Date	B Non-Indexing (Debt Repayment) Portion				C Indexing (Asset Management Fee) Portion				D Total Availability Payments Net of Deductions
	B1	B2	B3	B4	C1	C2	C3	C4	
	Maximum	Cost of Delays to In-Service Dates	Availability Deductions	Actual Net Non-Indexing Portion	Maximum	Cost of Delays to In-Service Dates	Immediate Callout Billable Hours & Insurance	Actual Net Indexing Portion	
May 2018 – Mar 2021	100.3	(3.5)	(0.2)	96.6	20.5	(0.8)	(0.0)	19.7	116.3
Apr 2021	3.1	N/A	(0.0)	3.1	0.6	N/A	-	0.6	3.6
May 2021	3.1	N/A	(0.0)	3.1	0.6	N/A	-	0.6	3.7
Jun 2021	3.1	N/A	(0.0)	3.1	0.6	N/A	-	0.6	3.7
Jul 2021	3.1	N/A	(0.0)	3.1	0.6	N/A	(0.0)	0.6	3.7
Aug 2021	3.1	N/A	-	3.1	0.6	N/A	(0.0)	0.6	3.7
Sep 2021	3.1	N/A	(0.1)	3.0	0.6	N/A	(0.0)	0.6	3.6
<b>Total</b>	<b>118.8</b>	<b>(3.5)</b>	<b>(0.3)</b>	<b>115.0</b>	<b>24.1</b>	<b>(0.8)</b>	<b>(0.0)</b>	<b>23.2</b>	<b>138.2</b>

None of the adjustments show up in the Project actuals. They show up elsewhere in BC Hydro statements of accounts as explained in the next two bullets.

<sup>21</sup> Minor addition errors occur due to rounding.

<sup>22</sup> '-' means zero deductions that billing period. Where '0.0' appears instead of '-', it means there were minor deductions under \$0.05 M.

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- Section B of the table above shows the deductions to the Non-Indexing (debt repayment) portion of the Availability Payments. These deductions write-off part of the debt provision on the BC Hydro balance sheet for the money owing to Project Co financed portion of the construction costs. There are two types of Non-Indexing deductions; the first was for delays in the Asset In-Service Dates (which have now passed), and the second is for Assets not being available during the Services Period; and
  - Section C of the table above shows the adjustments to the Indexing (asset management fee) portion of the Availability Payments. The budget for the Indexing portion of the Availability Payments is held by BC Hydro Operations. Therefore, adjustments to these payments show up in their cost centre. To date, Indexing Payment adjustments have occurred for the following items:
    1. Delays in the Asset In-Service Dates (See the summary in [Table E-1](#). No further deductions for this item can occur.);
    2. Increases in insurance premiums in accordance with the Project Agreement; and
    3. Minor deductions for BC Hydro crews being called out for forced outages and priority alarms in excess of the contractual allowance (BC Hydro recovers these costs at fixed labour rates under the Project Agreement).

# **John Hart Generating Station Replacement Project**

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## **Semi-Annual Progress Report No. 16**

### **Appendix F**

#### **Key Contractual Terminology**

Below are explanations of key contractual terminology and acronyms used in this report.

- **Actual Commercial Operation Date** is the later of the Target Commercial Operation Date and the date on which all the conditions precedent to Commercial Operation of the applicable Commercial Asset(s) have been satisfied as certified by the Independent Certifier;
- **Availability Payments** are the payments from BC Hydro to Project Co during the Availability Term to repay the costs financed by Project Co during the Implementation (construction) Phase and for asset management fees. These payments started when the first commercial asset attained Commercial Operation in May 2018 and they will end in October 2033;
- The **Availability Term** is the period when Availability Payments are made, and it encompasses both the Bridging and the Services Periods. It started in May 2018 and ends in October 2033;
- **Bridging Period** is the duration between; 1) the time that the first GU/LL (GU/LL) Asset attains Commercial Operation; and 2) the time that the last GU/LL Asset is in Commercial Operation and all Conditions Precedent to Service Commencement have been met. During the majority of the Bridging Period, both the Existing and the new Facility are in operation;
- **Bypass System** – is the automatic system that controls three pressure-reducing ‘bypass valves’ to restore flow to the river in event of a Unit outage. The term bypasses is used to refer to the individual bypass valves which were initially manually operable;
- **Commercial Assets** are the GU/LL Assets, the conditions precedent to Service Commencement, and automatic operability of the Bypass System;

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- A **Commercial Asset's Operation Date** is the later of when the relevant Commercial Asset is completed and the Target Date for that asset. This is the date that the Ramp Rate percentage increment of the Availability Payments related to that asset can start being paid to Project Co;
  - **Comptroller** – Comptroller of Water Rights;
  - **Conditions Precedent** to Service Commencement are the things that must be complete under the Project Agreement before the Services Period can start. This includes all assets being in service, Balance of Plant work, BC Hydro staff training, and submittal of key documentation;
  - **CPCN** – Certificate of Public Convenience and Necessity;
  - **DBFR** (Design-Build-Finance-Rehabilitate) is the Procurement Model for the Project. Under this model, BC Hydro holds one contract with the consortium InPower BC (Project Co) which then has subcontracts with the suppliers and vendors. Under this model, Project Co is financing part of the construction costs and will only get paid for these costs in the 15 years after construction. The 'Rehabilitate' component of this model is that Project Co retains a significant amount of the asset quality risk during the first 15 years and must meet specific asset condition assessment criteria every four years. Project Co will also provide asset management services during this 15-year period;
  - **Effective Date** means the date of the Project Agreement between BC Hydro Power Authority and InPower BC General Partnership. The Effective Date was February 25, 2014;
  - **Eligible Costs** are all costs properly and reasonably invoiced by the Design-Builder to Project Co for design and construction for the original scope of work;

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- **EFRS** – The Environmental Flow Release System, providing flows of 4 cm to 10 cm into the Elk Falls Canyon to meet operational Water Use Plan obligations;
  - **Existing Facility** means the original John Hart Generating Station, including the Existing Powerhouse, Existing Penstocks, Existing Intake, Existing Surge Towers, Existing Tailrace, Existing Intake Control Building (Concrete), Existing Intake Control Building (Steel), Existing Intake Gates, Existing Site Office Building, Existing Units, Substation, Dams, Spillway and all associated buildings, structures, facilities, systems, monitoring instruments and other infrastructure, as it existed on the Effective Date;
  - **Existing Units** are the old generating units in the Existing Facility;
  - **Facility** means the new hydro-electricity generating facilities, including the Power Intake, Water Conveyances, Generating Units, Powerhouse, any modifications to the Dams, any modifications or improvements to other portions of the Existing Facility (to the extent incorporated into the design of the Facility), and all associated buildings, structures, tunnels, shafts, roads and infrastructure and all other civil, structural, mechanical, electrical, instrumentation and other equipment and systems to be designed, constructed, procured or otherwise provided by Project Co pursuant to the Project Agreement;
  - **Generating Units** are the new units in the new powerhouse. This term refers to all machinery and equipment making up a new complete and independent hydro-electric generator including the water passages, Turbine, Generator, Unit Transformer, protection and control system and replacements thereof;
  - **GU/LL Asset** means any one of the three Generating Units (**GUs**) or the Low Level Outlet (**LLO**) (including the Environmental Flow Release System and manual operability of the bypasses);

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- **Ineligible Costs** means the indirect or ‘ineligible’ costs include bidding fees, insurance during construction, and Project Co overhead costs during construction;
  - **KPI** – Key Performance Indicator;
  - **LLO** – the Low Level Outlet valve, which includes the Environmental Flow Release Valve and the bypasses (with manual operability). The Low Level Outlet Valve is capable of providing up to 40 cm into the upper Elk Falls canyon;
  - The **LLO System** includes the Low Level Outlet, the Environmental Flow Release System and the automated Bypass System;
  - **PPM** – Project and Portfolio Management;
  - **Progress Payments** are the payments for progression of Implementation works;
  - **The Project** is the John Hart Generating Station Redevelopment Project;
  - **Project Co** means InPower BC General Partnership;
  - The **Ramp Rate** is the percentage increment of the Availability Payments that Project Co becomes entitled to as the Commercial Operation Dates for the Commercial Assets are attained. The Ramp Rate is multiplied by the relevant month’s value in the schedule of Availability Payments which is included in the Project Agreement. This determines the Availability Payment amount that Project Co will receive;
  - **Remittances** means a payment from Project Co to BC Hydro for specific events such as non-availability of the GU/LL assets during the Bridging Period;
  - **Service Commencement** is when the Bridging Period ends, and the Services Period begins. This occurs either on October 10, 2018 or when all of the GU/LL

assets are in Commercial Operation and all of the Conditions Precedent to Service Commencement have been met, whichever is later. The key difference at Service Commencement is that the Facility is handed over to BC Hydro operations and BC Hydro's crews will be used in maintenance and operation of the Facility;

- **Services Period** starts at Service Commencement and ends on October 9, 2033. During this period, Project Co provides asset management services and retains asset quality risk. The other key difference at Service Commencement is that BC Hydro's crews will be used in maintenance and operation of the Facility;
- **Target Commercial Operation Dates** (for the Commercial Assets) and the **Target Service Commencement Date** are the earliest possible dates that the percentage of the Availability Payments related to each Commercial Asset can start;
- **Total Completion** marks completion of construction and decommissioning on the Project, with deficiencies or trailing costs as allowed under the Project Agreement; and
- The **Total Completion Longstop Date** is a milestone date of August 23, 2020 under the Project Agreement.

# **John Hart Generating Station Replacement Project**

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## **Semi-Annual Progress Report No. 16**

### **Appendix G**

#### **Key Performance Indicator Methodology**

The table below outlines the Key Performance Indicator Methodology. Note that the guidance has been periodically updated to align with BC Hydro Project Delivery’s internal guidance. The current methodology is shown in the table immediately below. Since the Project is In Service, the Schedule methodology has been deleted; schedule will be green in this and any subsequent Progress Reports. The original methodology from 2014 is shown in a separate table at the end of this appendix.

Indicator	Red	Amber	Green
Overall Project Health (Amended)	<b>Amended Guidance:</b> Cost, schedule, safety, or environment is red; or, subject to Project Manager discretion if Indigenous Relations or Regulatory are red.	<b>Amended Guidance:</b> Cost, schedule, safety, or environment is amber; or, subject to Project Manager discretion if Indigenous Relations or Regulatory are amber.	<b>Amended Guidance:</b> All other cases.
Environment (Amended)	<b>Amended Guidance:</b> Any Major incident; Moderate preventable externally reportable PCB Spill; Moderate preventable Archaeology incident; Minor or Moderate preventable SF <sub>6</sub> incident; Minor, Moderate or Major preventable fish incidents; or Moderate or Major regulatory action. ‘Major’, ‘Moderate’ and ‘Minor’ are defined in BC Hydro’s Incident Management System and our internal Project and Portfolio Management Environment practice.	<b>Amended Guidance:</b> Any Moderate incident not categorized as ‘Red’, or multiple Minor Incidents or Near Misses if a pattern of risk is emerging.	All other cases.
Cost (No change)	Project actual or forecast costs exceed the expected (P50) budget of \$1,050 million by greater than 5% or > \$100k.	Project actual or forecast costs exceed the expected P50 budget of \$1,050 million by < 5% or < \$100k or a new issue or event has arisen, or risk associated with an existing issue or event has increased, and as a result BC Hydro wishes to signal that there is significant risk of the cost indicator going red in the future.	All other cases.

Indicator	Red	Amber	Green
Safety (No change)	Serious contractor safety performance issues reported that have resulted in a lost time injury.	Re-occurring safety performance issues or poor audit results requiring mitigation. Treatment plan(s) developed and implemented.	All other cases.
Risks (No change)	Material risks previously identified have materialized with treatment plan(s) in place; New material risk(s) materialized, treatment plans in place. The Project is forecasting to exceed the Upper Bound of \$1,118 million.	Project risks have materialized and been treated. The Project is forecasting to be within the Upper Bound of \$1,118 million.	Material risks identified, up-to-date treatment plan developed. Lower ranked risks are monitored and addressed.

## Negotiated Key Performance Indicator methodology filed with the BCUC in 2014

	Red	●	Amber	●	Green	●
Overall	Serious Concerns – if any of the sub-components are red		Some Concerns but in Control		No Concerns – all sub-components are green	
Schedule – In Service Dates	Project is forecasting to miss ISD for one or multiple assets specified in the Project Agreement (per <a href="#">Table 2</a> )		Project is forecasting to miss a Project Agreement work progress item (per <a href="#">Table 3</a> ), the contractor has taken action to rectify, ISDs for key assets are not at risk		All other cases - ISD expected to be met	
Cost	Project is forecast to exceed the Upper Bound of the Project (\$1,118 million)		Forecast to complete exceeds P50 budget (\$1,050 million) and a draw on Board Project Reserve is required		Forecast to complete is expected to be within P50 cost amount (\$1,050 million <sup>1</sup> )	
Environmental	A violation of environmental regulation or law, multiple environmental incidents have occurred with adverse impact to BC Hydro's reputation is forecast		A new reportable environmental related issue or re-occurring environmental issues identified in audits.		All other cases	
Risks	Material risks previously identified have materialized, with treatment plan(s) in place; New material risk(s) materialized, treatment plan(s) in place. The Project is forecasting to exceed the Upper Bound of \$1,118 million		Project risks have materialized and treated. The Project is forecasting to be within the Upper Bound of \$1,118 million		Material risks identified, up-to-date treatment plan developed. Lower ranked risks are monitored and addressed	
Safety	Serious contractor safety performance issues reported that has resulted in a lost time injury		Re-occurring safety performance issues or poor audit results requiring mitigation. Treatment plan(s) developed and implemented		All other cases	