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November 28, 2018

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:

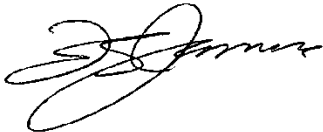
RE: Project No. 3698674
British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
John Hart Generating Station Replacement Project
PUBLIC Semi-Annual Progress Report No. 10 – April 2018 to September
2018 (Report)

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 Geoff Higgins at 604-623-4121 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,



Fred James
Chief Regulatory Officer

gh/rh

Enclosure

Copy to: BCUC Project No. 3698674 (John Hart Generating Station Replacement Project) Registered Intervener Distribution List.

John Hart Generating Station Replacement Project

Semi-Annual Progress Report No. 11

F2019 Six Month Period

October 2018 to March 2019

PUBLIC

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1 Introduction

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

12 The Project is being built under a Design-Build-Finance-Rehabilitate (**DBFR**)
13 procurement model where the successful proponent, InPower BC General
14 Partnership (**Project Co**), is responsible for design, construction and then asset
15 management, which involves planning and managing the maintenance of the new
16 assets, during the 15 years following construction. BC Hydro remains the operator of
17 the assets during the period and BC Hydro Operations' staff will perform the
18 maintenance work.

19 Under the DBFR procurement model, Project Co is financing 40 per cent of the
20 construction costs and all of their management costs during construction. These
21 Project Co costs get paid back to Project Co via monthly Availability Payments
22 (**Availability Payments**) over the 15 years following construction. There are two
23 components to the Availability Payments; the first component is debt repayment of
24 the costs financed by Project Co during construction and the second component is
25 for asset management services that Project Co will provide for the first 15 years.

26 The Availability Payments started in May 2018 when the first new Generating
27 Unit / Low Level Commercial Asset (**GU/LL Asset**) came in-service in May 2018 and

1 they will end in October 2033. This repayment period is called the Availability Term
2 **(the Availability Term)**. The Project Agreement includes a schedule of Maximum
3 Availability Payments for each month of the Availability Term.

4 There are two parts to the Availability Term. The Bridging Period **(the Bridging**
5 **Period)** is the first part and the Services Period **(the Services Period)** is the second
6 part.

7 The Bridging period started at the beginning of the Availability Term, with the first
8 GU/LL asset coming in service as noted above, and will end at Service
9 Commencement **(Service Commencement)**. Service Commencement is a
10 contractually defined term which marks the transition point for the site from
11 construction to Operations; after Service Commencement, BC Hydro Operations
12 staff will begin performing the Project Co prescribed maintenance of the Facility.

13 The second part of the Availability Term, after Service Commencement, is called the
14 Services Period. It ends at the end of the Availability Term in October 2033.

15 Total Completion **(Total Completion)** is another contractually defined term which
16 marks when Project Co gets paid the [REDACTED] fixed Decommissioning Payment.
17 The Project Agreement specifies Conditions Precedent for this milestone including:
18 Service Commencement; completion of asset Performance Verification Testing; and
19 completion of construction and decommissioning work with less than [REDACTED] in
20 deficiencies remaining, as assessed by the Independent Certifier.

21 **2 Project Status**

22 This Semi-Annual Progress Report No. 11 **(Report No. 11)** provides information
23 concerning the Project from October 1, 2018 to March 31, 2019 **(the Reporting**
24 **Period)**. Report No. 11 follows the Project report methodology laid out in British
25 Columbia Utilities Commission **(BCUC or Commission)** Order No. G-68-14 except

1 for the Key Performance Indicator Methodology changes which are outlined in
2 [Appendix G](#).

3 **2.1 General Project Status Since the Last Semi-Annual Progress** 4 **Report**

5 As reported in the last Progress Report, the second and third Generating Units and
6 automation of the Bypass System were completed on October 26, November 5 and
7 November 9, 2018 respectively. Completion of these water conveyance and
8 generating assets addressed the environmental, reliability and safety drivers for the
9 Project.

10 The Project has also now completed the required Balance of Plant work, key
11 documentation, and BC Hydro staff training which were noted as outstanding
12 requirements for Service Commencement in the last Progress Report. The effective
13 completion date of this work, as certified by the Independent Certifier for the Project,
14 was March 29, 2019. This was 25 weeks after the Target Service Commencement
15 Date of October 10, 2018. Delays to March 29, 2019 resulted in [REDACTED] in lost
16 Availability Payments to Project Co. The Availability Payment amounts are tabulated
17 in [Appendix E](#). Since the key generating and water conveyance assets were already
18 in-service there was no negative impact to BC Hydro from the delay.

19 As noted in [section 1](#), Service Commencement is when the Facility is handed over to
20 BC Hydro Operations and when Operations' staff will have access to perform
21 maintenance. In April 2019, Project Co and BC Hydro agreed that it would be
22 beneficial to both parties to delay Service Commencement until after Generating
23 Efficiency Testing is completed. Under the Project Agreement, this testing is a
24 condition of Total Completion and was not required for Service Commencement.
25 Therefore, a no-cost contract amendment to rename completion of all of the original
26 Service-Commencement-Conditions-Precedent 'Interim Service Commencement'
27 was executed, and handover to BC Hydro Operations (Service Commencement)
28 was pushed out to occur after the specified testing. This amendment has allowed

1 Project Co to do ongoing work under their construction protocols and has provided
2 BC Hydro with more time to familiarize staff with the Facility. (There was no change
3 to the Availability Payment terms from this contract change as discussed further in
4 [Appendix E.](#))

5 Project Co's official forecast for Service Commencement following this change was
6 June 5, 2019. There is no negative impact to BC Hydro from deferring this date.

7 Decommissioning work continues to progress favourably and Project Total
8 Completion remains on track for the August 2019 Target Date. Approximately
9 46 per cent of decommissioning activities have been completed as of
10 March 31, 2019.

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

1 **Table 1 Project Status Dashboard**

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

Status as of:		March 31, 2019
Overall Assessment	●G	The last GU/LL Assets were in service under budget and 2.5 months early in November 2018. In the last Progress Report, we reported the schedule as amber due to the second and third Generating Units being later than the Target Date of October 10, 2018. BC Hydro is now receiving beneficial use of the assets, all of the Project risk-drivers were met early, and the assets are all performing well to-date. Decommissioning work has also advanced with no significant issues at this time.
Schedule	●G	The second and third Generating Units and the automation of the Bypass System came into Commercial Operation on October 26, November 5 and November 9, 2018 respectively. Outstanding Powerhouse Balance of Plant works, training and documentation were completed on March 29, 2019. The Total Completion Date of August 13, 2019 remains on track.
Cost	●G	The total Project cost is forecast is \$1,002 million, \$48 million less than the Board approved P50 Expected Amount of \$1,050 million.
Environment	●A	There were five reportable environmental incidents in the Reporting Period. No environmental impacts occurred as the result of these environmental incidences. Refer to section 2.3.2.5 .
Risks	●G	BC Hydro is managing some contract risks as outlined in section 2.2.2.1 . Some contingency for these risks has been retained within the current forecast Project cost.
Safety	●G	There were no Major or Moderate injuries during the reporting period. There were two WorkSafeBC inspections with no issues were noted. Project Co's safety record remains top-quartile in the industry. Refer to section 2.3.2.6 .

- 3
- 4 • The Board approved contractual Target Total Completion Date in August 2019 is nine months later than the pre-financial close CPCN baseline schedule date of November 2018.
 - 5 • The post-financial close, Board approved (P50 Expected Amount and the Authorized Amount) cost range for
 - 6 the Project is \$1,050 million to \$1,118 million. The Expected Amount is \$110 million more than the
 - 7 Design-Bid-Finance-Rehabilitate P50 amount of \$940 million but within the CPCN Design-Bid-Build range of
 - 8 \$1,014 million to \$1,159 million.
- 9

10 **2.2 Major Accomplishments, Work Completed and Key Decisions**

11 **2.2.1 Government Agency Approvals**

12 **2.2.1.1 Construction Approvals**

13 The final requirement related to construction, the Leave to Commence Operation
14 (LCO),¹ was submitted to the Comptroller of Water Rights (the **Comptroller**) in

¹ LCO marks acceptance of the work done, and was not required for commencement of commercial operation.

1 May 2019; it is expected to be granted in June 2019. The table below shows the
 2 timing of Approvals.

3 **Table 2 Status of Required Leave to Commence**
 4 **Construction (LCC)**

LCC No.	Authorization to Proceed	Status In Progress Report No. 10	Current Status
LCC1	Civil Works	Received Jul 2014	Received Jul 2014
LCC2	Intake Works	Received Oct 2014	Received Oct 2014
LCC3	Tailrace Rock Plug	Received Jul 2015	Received Jul 2015
LCC4	Tailrace Rock Plug Removal	Received Dec 2016	Received Dec 2016
LCC5	Intake Cofferdam Removal	Received Apr 2017	Received Apr 2017
LTCD1 (Previously LCC6)	Commence Diversion and Use of Water	Received Feb 2018	Received Feb 2018
N/A	<i>Water Sustainability Act</i> section 93 Order (Alteration of a Dam)	Received Oct 2018	Received Oct 2018
N/A	Navigation Protection Act Authorization	Received Oct 2018	Received Oct 2018
LCO	Leave to Commence Commercial Operations	Anticipated winter 2018/2019	Anticipated in Jun 2019

5 **2.2.1.2 Decommissioning Approvals**

6 The following table lists the authorizations and permits that have been obtained to
 7 support decommissioning work.

8 **Table 3 Status of Decommissioning**
 9 **Authorizations and Permits**

Authorization / Permit	Status In Progress Report No. 10	Current Status	Comments
Authorization for Alteration of a Dam	NA	Received Oct 2018	Required to plug the intakes
Notification For Works In And Around Water	NA	Received Oct 2018	
Temporary Water Use	NA	Received Oct 2018	

Authorization / Permit	Status In Progress Report No. 10	Current Status	Comments
Leave to Commence Decommissioning	Anticipated winter 2018/2019	Received Dec 2018	Originally part of the LCO. This was separated, as noted in BCUC Progress Report No 10, to allow decommissioning to start without waiting for the LCO.
Disposal of Treated Water	NA	Received Jan 2018	

1 Project Co also confirmed the following permitted disposal sites for the wood stove
 2 penstock material: Rockyview Resources (Elk Falls Landfill); Comox Strathcona
 3 Waste Management; and Uplands. Project Co has provided up-to-date copies of the
 4 permits for these facilities.

5 **2.2.2 Construction**

6 **2.2.2.1 BC Hydro Contract Management**

7 *Submittals*

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

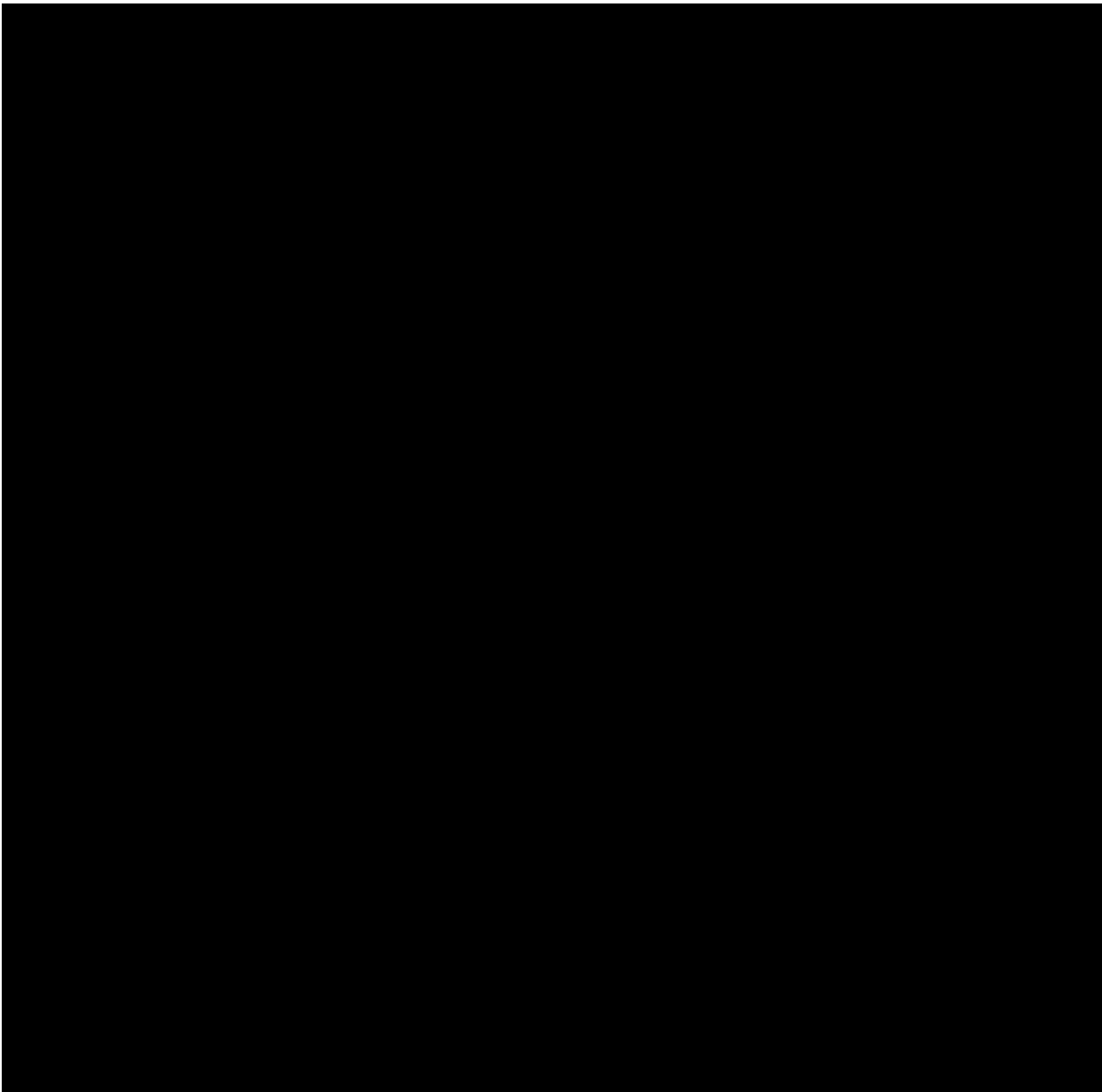
10 *Quality*

11 The Project team is closely monitoring Project Co's progress towards closing
 12 deficiencies. Project Co is incented to progress deficiencies in order to obtain their
 13 Decommissioning Payment as noted in [section 1](#).

14 *Issues and Risks*

15 There are currently seven notices of potential claims from Project Co under review
 16 with BC Hydro. None of these are expected to impact the schedule or to cause an
 17 exceedance of the Project Expected Amount.

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21 **2.2.2.2 Project Co Management, Engineering, and Design**

22 Over 99 per cent of the design budget has been progressed as of the end of March
23 2019. During the Reporting Period the focus was on monitoring design for balance of
24 plant/auxiliary equipment; final documentation items such as as-built drawings and
25 operations and maintenance manuals; and designs for the Existing Intake
26 decommissioning.

1 **2.2.2.3 Procurement and Manufacturing**

2 All major equipment and components are on site.

3 **2.2.2.4 Construction & Commissioning**

4 Balance of Plant work was completed in March 2019 with deficiencies within the
5 specified allowances in the Project Agreement. Completed work includes heating,
6 ventilation, and air conditioning systems; fire protection; fan houses; and lighting.

7 The Minimum Performance Test was also attained in the Reporting Period. This is a
8 key Facility test requiring 124 cubic meters per second of water flow through the
9 Facility and 10 cubic meters per second through the Environmental Operating Valve
10 (EFRS).

11 The Performance Verification Testing, which is required to confirm the Energy and
12 Capacity Guarantees under the Project Agreement, is ongoing.

13 **2.2.2.5 Decommissioning**

14 *Planning*

15 A contaminated soil baseline procedure was developed by Project Co and BC Hydro
16 in the Reporting Period. It sets out the commercial verification procedure for the
17 volumes of excavated contaminated soils. There is a cost sharing mechanism in the
18 Project Agreement for volumes above specified volumes. BC Hydro has retained
19 some contingency in the current forecast amount for this risk but we do not expect
20 the specified volumes to be exceeded at this time.

21 *Intake Plugging*

22 At the end of March 31, 2019 61 per cent of the activities related to plugging the
23 intakes were completed. This included concrete placement as required. Injection of
24 grouting is now underway.

1 Key remaining activities include monitoring concrete curing and preparation for plug
2 leakage tests.

3 *Penstocks Removal*

4 Approximately 83 per cent of the wood penstocks and 78 per cent of the steel
5 penstocks (measured by length) were removed as of March 31, 2019.

6 The black mastic in the steel penstocks is being removed on-site prior to the steel
7 being hauled off-site for disposal. BC Hydro is closely monitoring the removal to
8 reduce the risk of soil cross-contamination during removal and disposal.

9 *Surge Towers*

10 Two of the three Existing Surge Towers will be removed during Decommissioning
11 and one will be left for telecommunications. Planning for removal is underway,
12 including detailed work plans to ensure worker safety and protection of nearby
13 equipment including a major Fortis gas line.

14 *Powerhouse*

15 As of March 31, 2019, approximately 53 per cent of the Existing Powerhouse related
16 decommissioning activities have been completed. All Existing Generator
17 components have been removed. Turbine Inlet Valve, Runner and oil removals are
18 nearing completion. BC Hydro is monitoring removal of the equipment and ensuring
19 Project Co removes oil in accordance with Environmental Management Plans.

20 **2.3 Key Project Agreement Developments, Challenges and Issues**

21 **2.3.1 Progress Payments under the Project Agreement**

22 Under the terms of the Project Agreement, there is a maximum amount that
23 Project Co can invoice for Eligible Costs (**Eligible Costs**) each month. Eligible Costs
24 are all direct construction costs properly and reasonably invoiced by the
25 Design-Builder to Project Co for design and construction for the original scope of

1 work. The total commitment to Project Co for Eligible Costs under the Project
2 Agreement remains unchanged.

3 BC Hydro has provided a table in [Appendix B](#) which shows the Maximum Eligible
4 Costs amount that can be billed each month under the Project Agreement, the actual
5 amounts approved to date, and the monthly and cumulative variances.

6 [Appendix C](#) shows the summary of the work breakdown for the work to be
7 completed by Project Co, the total Eligible billing allowed for each category, and the
8 approved value (and corresponding percentage) of the work completed to date for
9 each category.

10 As discussed in [section 1](#), BC Hydro pays Project Co 60 per cent of the progressed
11 (billed) Eligible Amounts as Progress Payments. The remaining 40 per cent of the
12 Eligible Amounts (along with the fixed amount for Project Co's Interest During
13 Construction (**IDC**)),² and the fixed amount for Project Co Ineligible Costs (**Ineligible**
14 **Costs**)³ are booked as a liability (debt) on BC Hydro's balance sheet which will be
15 repaid to Project Co through the Availability Term.

16 **2.3.2 Contract Management**

17 **2.3.2.1 BC Hydro Initiated Changes and Impact to Cost and Schedule**

18 There have been no BC Hydro initiated changes that have impacted overall cost or
19 schedule to date.

² As estimated at financial close of the Project Agreement for the portion of the costs being financed by Project Co

³ Project Co indirect or 'ineligible' costs include bidding fees, insurance during construction, and Project Co overhead costs during construction.

1 **2.3.2.2** *Material Changes to the Project Agreement and Exercise of Project*
2 *Agreement Rights*

3 During the Reporting Period, BC Hydro and Project Co agreed to a Development
4 Change Record Confirmation to add the 'Interim Service Commencement' milestone
5 as discussion in [section 2.1](#).

6 **2.3.2.3** *Changes to Project Financing Arrangements*

7 There have been no changes to Project financing arrangements since Financial
8 Close.

9 **2.3.2.4** *Project Reserve Draws*

10 There have been no Project reserve draws to date.

11 **2.3.2.5** *Material Environmental Incidents*

12 There were five reportable environmental incidents in the reporting period. These
13 are listed below:

- 14 • In December 2018, a minor water-flow ramp rate violation occurred when the
15 Turbine Inlet Valve on Generating Unit 1 began closing when Generating Unit
16 3 was briefly turned off. This occurred due to an overly sensitive Generating
17 Unit 1 governor response. The bypasses were promptly opened to restore
18 flow. The issue has been rectified and testing has been completed.
- 19 • In January 2019, there were two water quality exceedances related to metal
20 concentrations in treated water. Project Co believes that this exceedance was
21 due to the background conditions and is working with the British Columbia
22 Ministry of Environment and Climate Change Strategy to review concentration
23 thresholds for metals in discharge.
- 24 • In February 2019, a unit shut down resulted in a reduction in river flow which
25 in turn resulted in a ramp rate violation.

- 1 • Also in February 2019, a minor oil sheen was observed on the Campbell
2 River near the northeast corner of the Existing Powerhouse. Booms were
3 deployed to contain the sheen and will remain in place until the Existing
4 Powerhouse is fully decommissioned and oil leaks are no longer a concern.

5 There were no environmental impacts resulting from these incidents.

6 **2.3.2.6 Material Safety Incidents**

7 There have been no lost time injuries to date on the Project. There were no Minor or
8 Moderate injuries in the reporting period.

9 There were two WorkSafeBC inspections during the reporting period with no orders.

10 The Project's safety statistics continue to be industry-top-quartile. Project Co's
11 life-to-date All-Injury-Frequency statistic at the end of March 2019 was 0.60 with
12 approximately 3.64 million Project Co hours worked to date. The
13 calendar-year-to-date All-Injury-Frequency statistic is 0.33.

14 **2.4 Plans During the Next Six Months**

15 The plans for the next six months include:

- 16 • Obtaining Service Commencement;
- 17 • Completion of decommissioning; and
- 18 • Planning for and advancing Project close-out activities.

19 **2.5 Site Photographs**

20 Refer to [Appendix A](#) for photographs.

21 **3 Project Schedule**

22 **3.1 Project Agreement Target and Commercial Operation Dates**

23 The updated work schedule is shown in [Table 4](#) on the next page.

Table 4 Project Co Work Schedule¹

John Hart Generating Station Replacement Project						2018 2019 2020																					
Activity Name	Start	Finish	Previous Report's Finish	Variance - Previous Report	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
John Hart Generating Station Replacement Project	03-Feb-14 A	13-Aug-19	13-Aug-19	0																							
Original Contractual Milestones	02-May-18 A	13-Aug-19	13-Aug-19	0																							
Contractual-Asset-ISD#1 - Power Tunnel with either Low Level Outlet or 1st Unit		02-May-18 A	02-May-18	0																							
Contractual-Asset-ISD#2 - 1st or 2nd Unit			21-Jul-18 A	21-Jul-18	0																						
Contractual-Asset-ISD#3 - Remaining Assets (2nd Unit, 3rd Unit & Bypass) & Service Commencement			10-Oct-18 A	10-Oct-18	0																						
Total Completion Date			13-Aug-19*	13-Aug-19	0																						
Project Milestones	02-May-18 A	09-Nov-18 A	09-Nov-18	0																							
1st ISD - Asset - Power Tunnel & Low Level Outlet			02-May-18 A	02-May-18	0																						
2nd ISD - Asset - 1st Unit			21-Jul-18 A	21-Jul-18	0																						
3rd ISD - Asset-Set - 2nd Unit			26-Oct-18 A	26-Oct-18	0																						
3rd ISD - Asset-Set - 3rd Unit			05-Nov-18 A	05-Nov-18	0																						
3rd ISD - Asset-Set - Bypass System			09-Nov-18 A	09-Nov-18	0																						
Engineering	03-Feb-14 A	14-May-19	26-Oct-18	-128																							
Intake Design		15-Apr-14 A	21-Nov-17 A	21-Nov-17	0																						
Power Tunnel Design		25-Feb-14 A	06-Apr-18 A	06-Apr-18	0																						
Powerhouse Design		28-Feb-14 A	14-Jun-18 A	14-Jun-18	0																						
Bypass System Design		24-Mar-14 A	07-Apr-17 A	07-Apr-17	0																						
Tailrace System Design		03-Feb-14 A	30-May-18 A	30-May-18	0																						
Switchyard System Design		08-Mar-14 A	04-Jul-17 A	04-Jul-17	0																						
Existing Facilities Design		03-Jan-17 A	14-May-19	26-Oct-18	-128																						
Procurement	08-Sep-14 A	23-Nov-17 A	23-Nov-17	0																							
Unit 1, 2 & 3 Supply		09-Mar-15 A	23-Nov-17 A	23-Nov-17	0																						
Unit 1, 2 & 3 Design		08-Sep-14 A	24-Aug-17 A	24-Aug-17	0																						
Construction and Commissioning	25-Aug-14 A	13-Aug-19	13-Aug-19	0																							
Intake Construction & Commissioning		25-Aug-14 A	28-Apr-18 A	28-Apr-18	0																						
Power Tunnel Construction & Commissioning		29-Jul-15 A	29-Apr-18 A	29-Apr-18	0																						
Powerhouse Construction & Commissioning		08-Jan-15 A	01-Feb-19 A	30-Nov-18	-36																						
Bypass System Construction & Commissioning		11-Sep-17 A	09-Nov-18 A	30-Oct-18	-7																						
Tailrace Construction & Commissioning		23-Feb-15 A	12-Apr-18 A	12-Apr-18	0																						
Switchyard Construction & Commissioning		30-Jun-17 A	13-Aug-19	13-Aug-19	0																						
Decommissioning Construction & Commissioning		12-Dec-18	09-Aug-19	13-Aug-19	2																						

¹. Variances from the previous quarter are workday variances.

The table on Availability Payment Ramp Rates related to the Project Agreement ISDs, and the related content that was previously included in this section, has moved to Appendix E to reduce repetition.

4 Project Costs

4.1 Project Cost Summary

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

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

**Table 5 Total Project Expenditure Summary
 (\$ million) (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 ¹	781	775	(6)	756	748	(8)
BC Hydro Costs Including Contingency	187	168	(19)	187	152	(35)
BC Hydro loadings	82	59	(23)	82	58	(24)
Total Owner's Costs	269	227	(42)	269	210	(59)
P50 Project Cost ²	1,050	1,002	(48)	1,025	958	(67)
Project Reserve	68	-	(68)	-	-	-
Authorized Project Cost	1,118	1,002	(116)	1,025	958	(67)

¹ The total Project Co Costs include the cost to decommission existing John Hart facilities.

² The Project Cost excludes Net Book Value write-downs and costs related to Impact Benefit Agreements.

Further variance explanations are provided in the (confidential) cost breakdown 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 are accepted by BC Hydro.

The net cost of Project Changes and Design Development Changes to date is approximately [REDACTED]. These are being paid within the current Project forecast amount.

There have also been two accepted Innovation Proposals, Innovation Proposal 001 and Innovation Proposal 003. Innovation Proposal 001 was paid in 2016 (refer to Semi-Annual Progress Report No.6 for more detail). Innovation Proposal 003 was agreed and paid in April 2018. (BC Hydro did not report on this in the last Progress Report as it has a fairly small dollar value.) It provided the opportunity to equip the new Generating Units with additional instrumentation to allow for enhanced data acquisition and analysis of the unit operating conditions. The cost of Innovation Proposal 003 was [REDACTED] which was paid from existing Work Package Agreement budgets.

4.3 Project Co Payments to BC Hydro during Construction

Project Co must pay BC Hydro for disruptions caused by Project Co to availability of either the Existing Units and/or the completed new Commercial Assets. During the Bridging Period, these payments are called 'Remittances' and they are netted off of the implementation Progress Payments and are included in Project implementation costs (**Remittances**). During the 15-year Services Period starting at Service Commencement, these payments will be netted off of the Availability Payments.

As of March 31, 2019, [REDACTED] had been netted off the Progress Payment Amounts for minor outages related to construction and commissioning. Another [REDACTED] in outstanding payments from Project Co to BC Hydro for outages during construction and commissioning is included in BC Hydro's cost Forecast.

5 Material Project Risks

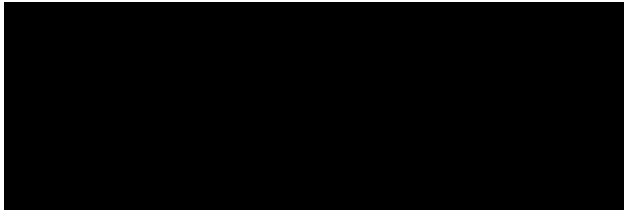
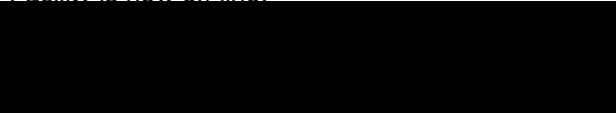
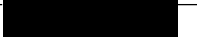
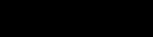
This section describes the material Project risks that have potential to impact the Project by [REDACTED] based on the allocation of Project reserve or contingency as filed with the Commission in Report No. 1.

Note that the residual consequence and residual probability levels are qualitative assessments. The risk and response summary is what is provided in internal executive reporting. Also note that the contingency and reserve amounts indicated are the amounts that were allocated in the original Project budget. They do not indicate forecast draw amounts.

Table 6 Material Project Risks

Risk Event/Description	Risk and Response Summary	Residual Consequence ⁴	Residual Probability
Change in Requirements and/or Performance Specifications <i>(no change)</i>	<p>There is a risk that policies and procedural changes could change the requirements / performance specifications of the Project, which may result in a compensation event, increased Project Cost and/or schedule delays.</p> <p>To manage this risk all changes to the Project Agreement must be accepted by the BC Hydro Representative. President approval is required for scope changes greater than [REDACTED]. All communications are managed through document control processes and BC Hydro Representative review.</p> <p>This risk is largely passed therefore the residual consequence has been reduced. The remaining risk relates to ongoing decommissioning works.</p> <p>[REDACTED]</p>	<p>[REDACTED] (Medium)</p>	<p>[REDACTED] (Possible)</p>
Event triggers operational requirement during construction	Due to the fact that BC Hydro had to operate the original plant through the majority of the Project and had to (and is continuing to) manage reservoir levels though-out the Project life, there is a risk that BC Hydro operational requirements did or will	<p>[REDACTED] (Medium)</p>	<p>[REDACTED] (Remote)</p>

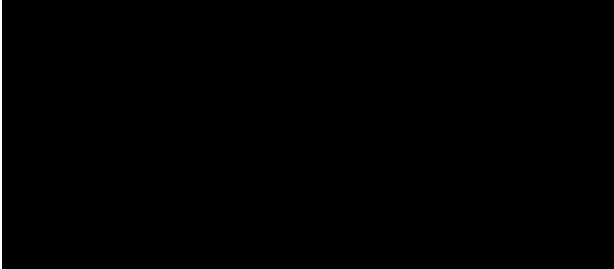
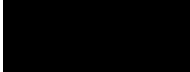
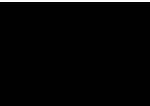
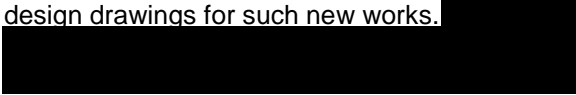
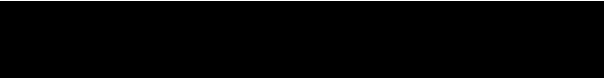
⁴ The residual consequence is the anticipated total consequence regardless of which budget it is paid from. All or part of any consequences would be covered first from existing budgets and then from contingency before using Project Reserve.

Risk Event/ Description	Risk and Response Summary	Residual Consequence ⁴	Residual Probability
<i>(no change)</i>	<p>impact Project Cost and schedule. BC Hydro implementation plans addressed internal communications to manage this risk. Regular discussions between site Project staff and Vancouver Island Generating Station staff. BC Hydro Generation System Operations (GSO) and Fraser Valley Operations (FVO) occur on a regular basis through Project construction and commissioning. Further, the Project Agreement provides specific requirements for Project Co to be able to handle potential significant operating conditions.</p> 		
Integration Risk with Existing Facility Asset <i>(amended)</i>	<p>Due to interfaces and integration of new assets, including protection and control interconnections with the existing assets, there was a risk of delays to the Project schedule, safety or environmental incidents, a compensation event, lost opportunity costs, and/or Project Cost increases.</p> <p>To treat this risk BC Hydro specifications required Project Co to develop a commissioning and cutover plan that was reviewed through the consent procedure.</p> <p>Generation System Operations was (and continues to be) briefed on an ongoing basis as construction progressed. Damage to BC Hydro's existing plant that is not the responsibility of Project Co is covered under BC Hydro's insurance program. The Project Agreement also provides financial mitigation for outages that may occur. Vancouver Island Generation staff also provided ongoing mitigation to deal with issues that may have arisen. The implementation project plan for transmission and distribution work ensured delivery of BC Hydro obligations on time and according to assigned scope.</p> <p>This risk is now closed because the Existing Facility is now off line.</p> 	<i>NA-Closed</i>	<i>NA-Closed</i>
Retained	BC Hydro has a retained scope of work that		

Risk Event/ Description	Risk and Response Summary	Residual Consequence ⁴	Residual Probability
Scope of Work <i>(no change)</i>	<p>includes the Transmission & Distribution Telecom and Protection & Control Interconnection Package, and activities including submittal reviews. There is a risk of BC Hydro failing to meet its Project Agreement obligations resulting in Project Cost increases, schedule delays, and potentially a compensation event.</p> <p>To treat this risk work package budgets have been reviewed both top down and bottom up, and each work package manager has developed a work package specific Implementation Plan. A Transmission & Distribution Project Manager is in place to manage Transmission & Distribution Telecom and Protection & Control Interconnection Package activities and a detailed plan specific to this integration work is being implemented. The Project has also developed a document management system to manage submittals. The Owner's Engineer Implementation Plan details review methodologies through a team approach. This risk is almost closed given most of the construction work is nearing completion. However, there is some residual risk until the new Facility and final commissioning of the full integrated systems are complete.</p>	<p>[REDACTED]</p> <p>(Low)</p>	<p>[REDACTED]</p> <p>(Possible)</p>
Environmental event during Implementation or Decommissioning <i>(amended)</i>	<p>The risk of an environmental event due to construction has largely passed as there is little to no environmental risk related to the outstanding works. However, there remains a risk related to flow events during remaining performance testing. There is also environmental risk related to Decommissioning due to weather events, a Project Co non-compliance with environmental regulations, undisclosed contamination, contamination baseline exceedance along the penstock corridor, unknown ground water contamination, or the discovery of a provincially / federally listed species. The consequences include environmental contamination, delays, fines, penalties, increased costs, reputational impacts, and possible contamination of public drinking water.</p> <p>These risks are largely transferred to Project Co through Schedule 8 of the Project Agreement. Under the Project Agreement, Project Co is</p>	<p>[REDACTED]</p> <p>(Medium)</p>	<p>[REDACTED]</p> <p>(Possible)</p>

Risk Event/ Description	Risk and Response Summary	Residual Consequence ⁴	Residual Probability
	<p>required to develop, maintain and continually improve on environmental management processes which include management plans, work plans, monitoring, and auditing.</p> <p>[REDACTED]</p> <p>Further treatment includes the use of environmental monitors:</p> <ul style="list-style-type: none"> • An independent environmental monitor reports to the Comptroller; • An independent environmental monitor reports to the owner, BC Hydro; and • BC Hydro audits site work to ensure it is consistent with Project Co plans and to perform its role as Owner <p>[REDACTED]</p>		
<p>Geotechnical Issue (no change)</p>	<p>There was a risk that geotechnical conditions encountered at site could be determined to be outside planned expectations.</p> <p>To treat this risk for horizontal sections of water conveyance tunnels, the Project Agreement outlines a baseline of rock conditions.</p> <p>Determination that there is exceedance of these conditions in the horizontal water conveyance tunnels would result in a differing site condition compensation event.</p> <p>For all other areas (intake, powerhouse, tailrace, adits, and access tunnels), Project Co carries the risk of as found conditions if geotechnical conditions encountered at site are outside planned expectations. In such an event, the Project schedule may be delayed and there is a risk of Project Co default or a formal dispute as defined in the Project Agreement.</p> <p>Status:</p> <p>The excavation portion of the Tunnel Work was completed in June 2017.</p> <p>[REDACTED]</p>	<p>[REDACTED] (Medium)</p>	<p>[REDACTED] (Possible)</p>

Risk Event/ Description	Risk and Response Summary	Residual Consequence ⁴	Residual Probability
<p>Owner's Costs (Management of contract dispute / resolution, and/or step-in) <i>(no change)</i></p>	<p>Due to the cost of managing a contract dispute and/or managing BC Hydro's step-in rights under the Project Agreement, owner's costs may be increased and/or the Project schedule may be delayed.</p> <p>This risk has been managed through the procurement process which selected an experienced Design-Builder with the competence to deliver large hydropower project [REDACTED]</p> <p>[REDACTED] There is also an Independent Certifier who reviews and signs off on monthly progress payments and the Commissioning Notices to Operate (CNOs). BC Hydro is a knowledgeable owner proactively managing the contract and submittals to mitigate claims.</p> <p><i>Status:</i></p> <p>[REDACTED]</p>	<p>[REDACTED] (Medium)</p>	<p>[REDACTED] (Possible)</p>

Risk Event/ Description	Risk and Response Summary	Residual Consequence ⁴	Residual Probability
Supervening Event Occurs (e.g., Change in Law) <i>(amended)</i>	<p>A supervening event may occur (or may be found to have occurred) due to a compensation, relief, excusing, force majeure, or change in law event. This could result in higher Project Cost or schedule delays.</p> <p><i>Status:</i></p> 	 (Medium)	 (Fairly Likely)
Permits and/or Approvals Denied <i>(amended)</i>	<p>BC Hydro retained risk for delays or denial of LCC approval beyond three months, DFO Fisheries Act Authorization beyond six months, and tailrace Parks Use Permit (PUP) beyond six months. The PUP covering any parts of the New Works (i.e., tailrace structure and any in-stream works located in the Elk Falls Provincial Park permit area) required BC Parks review and acceptance of final design drawings for such new works.</p>  <p>The Project Agreement transferred the risk of obtaining authorizations to Project Co for the first three months for LCCs and six months for Tailrace PUP and Fisheries Act Authorization. The Impact Benefits Agreements ensured that First Nation consultation is complete with respect to authorizations.</p> <p>All required permits have now been received except for the LCO. Note that the LCO is administrative in nature and is not required to operate the new plant or for any outstanding works. Therefore this risk is now closed.</p> 	NA – Closed	NA – Closed

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Appendix A

Site Photographs

Figure A-1 John Hart water release valve passing water down Elk Falls Canyon



Figure A-2 View of powerhouse



Figure A-3 Gate Gallery



Figure A-4 Crews advancing removal of woodstave penstocks



Figure A-4 Partial removal of steel penstocks



Figure A-5 View of steel penstocks removal



Figure A-6 Decommissioning of Old Powerhouse



Figure A-8 JHN ACEC 2019 Award for Engineering Excellence in Energy and Industry



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Appendix B

Project Agreement Payments to Date

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REDACTED

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Appendix C

Project Progression of Eligible Costs

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Appendix D

Detailed Project Expenditures

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⁹ Includes the cost to decommission existing John Hart facilities and excludes Net Book Value write-downs and costs related to Impact Benefits Agreements.

REDACTED

REDACTED

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Appendix E

Progression of Availability Payments

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

During the Bridging Period, the maximum possible Availability Payments get multiplied by a Ramp Rate percentage which depends on the number of Commercial Assets in Commercial Operation. At the end of the last reporting period, Project Co was receiving [REDACTED] per cent of their Availability Payments based on the Low Level Outlet, and first Generating Unit being in Commercial Operation.

Payment of the next incremental [REDACTED] per cent Ramp Rate was eligible to be added on the later of the completion of automation of the Bypass System or February 1, 2019. Automation of the Bypass system was attained on November 9, 2018 so this increment started on February 1, 2019.

The final [REDACTED] per cent increment was attained on March 29, 2019 with completion of the original Conditions Precedent for Service Commencement. As discussed in [section 2](#), completion of these original requirements was renamed 'Interim Service Commencement'. Project Co is now receiving 100 per cent of the Maximum Availability Payments, subject to deductions for asset unavailability or other terms as specified in the Project Agreement.

[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 Bypass System following Innovation Proposal 001; the actual Commercial Operation Dates for the GU/LL assets; the actual completion date of the Bypass System; the Commercial Operation Date 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 (%) ¹	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 ²
1 (█%)	May 2, 2018 1 st GU	May 2, 2018 Tunnel and LLO OR Tunnel and 1 st GU	May 2, 2018 (Actual) Tunnel and LLO	Met
2 (█%)	Jul 21, 2018 2 nd GU	Jul 21, 2018 1 st unit (if LLO 1 st) OR 2 nd unit (if a GU was 1 st)	Jul 21, 2018 (Actual) 1 st GU	Met
3 (█%)	Oct 10, 2018 3 rd GU & Service Commencement	Oct 10, 2018 Remaining unit(s) & Service Commencement	Oct 26, 2018 (Actual) 2 nd GU	Late
			Nov 5, 2018 (Actual) 3 rd unit	Late
			Mar 29, 2019 (Actual) Completion of the Original Conditions Precedent for Service Commencement (Renamed 'Interim Service Commencement')	Late
4 (█%)	Feb 1, 2019 Bypass System	Feb 1, 2019 Target Bypass System Completion Date for the last Ramp Rate Increment Remained Unchanged	Feb 1, 2019 (Actual) = the later of Bypass System completion (Nov 9, 2018) and February 1, 2019	Met
(No Ramp Rate increment)	N/A	Partial Repayment of the increment to Innovation Proposal 001 for automated Bypass System completion delays beyond Oct 10, 2018	Nov 9, 2018 (Actual)	Late
N/A	Aug 13, 2019 Project Total Completion	Aug 13, 2019	Aug 13, 2019	On Track
N/A	Oct 9, 2033 Service Period End	Oct 9, 2033	Oct 9, 2033	Fixed end-date

¹ 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.

² "Met" means attained on or before the Target Date, 'Late' means not attained on or before the Target Date, 'On Track' means it is forecasting to occur on or before the Target Date.

[Table E-2](#) below shows the Availability Payments paid to Project Co from October 1, 2018 to March 31, 2019).

Table E-2 Availability Payments to Project Co¹
(\$ million)

Date	Maximum Possible Ramp Rate if ISD were met	Maximum Monthly Availability Payments After Ramp Rate Adjustments			# of Assets In-Service	Actual Availability Payments net of Deductions ¹⁰						
		Non-indexing Payment	Indexing Payment	Maximum Total Payment		Actual Ramp Rate % At End of Each Month	Non-Indexing Payment	Indexing Payment (\$M)	Availability Deductions	Other Payments	Net Paid to Project Cost	Total Loss Availability Payments
May – Sep -18	70%	9.1	-	9.1	2	70%	9.1	-	-	-	9.1	-
Oct-18	90%	2.6	1.4	4.0	2	70%	2.2	1.2	-	-	3.3	(0.7)
Nov-18	90%	2.8	0.5	3.3	2	70%	2.2	0.4	-	-	2.6	(0.7)
Dec-18	90%	2.8	0.5	3.3	2	70%	2.2	0.4	-	-	2.6	(0.7)
Jan-19	90%	2.8	0.5	3.3	2	70%	2.2	0.4	-	-	2.6	(0.7)
Feb-19	100%	3.1	0.6	3.7	3	80%	2.5	0.5	-	-	3.0	(0.7)
Mar-19	100%	3.1	0.6	3.7	4	100%	2.5	0.5	-	-	3.0	(0.7)
Total		26.2	4.2	30.5			22.8	3.4	-	-	26.2	(4.3)

¹ Minor addition errors may occur due to rounding.

10. The past Lost Availability Payments are not recoverable by Project Co. From a BC Hydro accounting perspective, these debt repayment amounts foregone by Project Co are recognized as reductions in finance charges and reductions of the liability for the money owing to Project Co for the costs they financed during construction. These savings (or finance charge reductions) are recorded as reductions in BC Hydro's expenses; they are not included (ie., do not show up as a reduction) in the Project's capitalized costs. show up as a write-off of part of the debt provision on the BC Hydro balance sheet for the money owing to Project Co for the portion of the construction costs they financed.

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Appendix F

Key Contractual Terminology

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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 of 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 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 Generating Unit/ Low Level (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 the end of construction and decommissioning on the Project, with deficiencies or trailing costs as allowed under the Project

[REDACTED]

[REDACTED] fixed Decommissioning Payment until this milestone is attained. The Project Agreement specifies Conditions Precedent for this milestone including: Service Commencement; completion of asset Performance Verification Testing; and completion of construction and decommissioning work with less than [REDACTED] in deficiencies remaining, as assessed by the Independent Certifier.

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Appendix G

Key Performance Indicator Methodology

The table below outlines the Key Performance Indicator Methodology. Performance Indicators for Safety, Environment, and Risk are in process of being reviewed internally against practice standards and newer criteria may be released in future reports. The original methodology from 2014 is also included at the end of this appendix.

Indicator	Red	Amber	Green
Overall Project Health (amended)	Serious Concerns – if cost or schedule are red or some of the sub-components are red Original BCUC methodology: <i>Serious Concerns – if any of the sub-components are red</i>	Some concerns– if cost or schedule are amber or some of the sub-components are amber or red with low risk Original BCUC methodology: <i>Some Concerns but in control</i>	No Concerns – if cost or schedule are green or some of the sub-components are green or amber with low risk Original BCUC methodology: <i>No Concerns – all sub-components are green</i>
Schedule – In-Service-Dates (amended, less stringent than the original BCUC filed methodology but more reflective to the current Project Status)	Project is forecasting to miss the Works Completion Date which is the Target Commercial Operation (In-Service) Date of <i>February 1, 2019</i> as included in the original plan. Original BCUC methodology: <i>red if any of the ISDs were forecast to be missed and the Project team had interpreted this to be against the revised dates after innovation Proposal 001 which moved the last ISD up from February 1, 2019 to October 10, 2018.</i>	Revised Text: Project is forecasting to miss or has missed one of the <i>interim</i> Target Commercial Operation (In-Service) Dates <i>or risk is seen to the final</i> Target Commercial Operation Date of February 1, 2019. For missed interim dates, schedule will only be marked amber in the report this is first reported and then the indicator will be marked green again for the same event if it is passed. Original BCUC methodology: <i>amber if the Project is forecasting to miss a work progress item, ISDs for key assets are not at risk</i>	All other cases.

Indicator	Red	Amber	Green
Cost (amended, more stringent than the original BCUC filed methodology)	Project actual or forecast costs exceed the expected (P50) budget of \$1,050 million by greater than 5 per cent or > \$100k. Original BCUC methodology: <i>Project is forecast to exceed the Upper Bound of the Project (\$1,118 million).</i>	Project actual or forecast costs exceed the expected P50 budget of \$1,050 million by < 5 per cent 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. Original BCUC methodology: <i>Forecast to complete exceeds the P50 budget (1,050 million) and a draw on Board Project Reserve is required.</i>	All other cases.
Environmental	As a result of an Environmental related issue or event: <ul style="list-style-type: none"> • The project is forecasting to miss a Commercial Asset ISD or Service Commencement; • The project is forecasting to exceed its Expected Cost; • An external reportable environmental incident has occurred; • A violation of environmental regulation or law, or of a condition of an Environmental Assessment Certificate, or of an environmental condition of a CPCN has occurred; • An Environmental incident(s) has occurred which would be rated at a consequence level of S3 or greater under the project delivery risk matrix; • the shareholder or regulator is directing BC Hydro with respect to the project in a manner that causes 1 or 2 above; or 	A new Environmental related issue or event has arisen, or The risk associated with an existing Environmental related issue or event has increased, which results in a 50 per cent or more probability that this indicator will be red in the future. Original BCUC methodology: <i>A new reportable environmental related issue or re-occurring environmental issue identified in audits.</i>	All other cases.

Indicator	Red	Amber	Green
	<ul style="list-style-type: none"> An adverse reputational impact is forecast. A reportable incident is an incident which BC Hydro is required by law or regulation to report to the regulator or agency. <i>Original BCUC methodology: A violation of environmental regulation or law, multiple environmental incidents have occurred with adverse impact to BC Hydro's reputation forecast.</i>		
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.
Safety (No change)	Serious contractor safety performance issues reported that have resulted in a lost time injury. (no change)	Re-occurring safety performance issues or poor audit results requiring mitigation. Treatment plan(s) developed and implemented.	All other cases.

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 Table 2)	Project is forecasting to miss a Project Agreement work progress item (per Table 3), 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 ¹)
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