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August 14, 2024

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

Dear Patrick Wruck:

**RE: Project No. 1599245
British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Bridge River 1 Units 1 to 4 Generator Replacement Project (Project)
PUBLIC Annual Progress Report No. 3
July 1, 2023 to June 30, 2024 (Annual Report)**

BC Hydro writes in compliance with Commission Order Nos. C-6-22 and G-27-24A, to provide public Annual Progress Report No. 3 for the Project.

Confidential Version of Report

Commercially sensitive and contractor-specific information has been redacted from the public version of the Report. A confidential version of the Report is being filed with the BCUC only, under separate cover. BC Hydro seeks this confidential treatment pursuant to section 42 of the *Administrative Tribunals Act* and Part 4 of the Commission's Rules of Practice and Procedure. BC Hydro requests that the information be held confidential on an ongoing basis, until otherwise determined by the BCUC.

For further information, please contact Joe Maloney at
bchydroregulatorygroup@bchydro.com.

Yours sincerely,



Chris Sandve
Chief Regulatory Officer

fk/rh

Enclosure

**BC Hydro Bridge River 1 Units 1 to 4
Generator Replacement Project**

Annual Progress Report No. 3

July 2023 to June 2024

PUBLIC

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1 Background and Updates

2 The objective of the BR1 Project (the **Project**) is to replace the Unit 1 to 4
3 generators, governors, exciters, and control systems at the Bridge River 1
4 Generating Station (**BR1**). The Project will improve the reliability of generating
5 Units 1 to 4, improve BC Hydro's ability to manage water flows to comply with the
6 Water Use Plan (**WUP**) Order target flow schedule, and meet commitments in the
7 2011 Agreements and the 2019 High Flow Settlement Agreement with the
8 St'át'imc Nation.

9 The Project scope remains the same as summarized in section 5.2 of the Bridge
10 River Projects Certificate of Public Convenience Necessity (**CPCN**) Application
11 (**Application**).¹

12 On October 11, 2022, the BCUC issued Decision and Order No. C-6-22 granting
13 BC Hydro a CPCN for the Project. In Appendix A to Order No. G-27-24A,² the BCUC
14 directed BC Hydro to file annual progress reports as follows:

- 15 • Actual costs incurred to date compared to the Project cost breakdown table
16 estimated provided in Table 5-3 of the Application, highlighting variances with
17 an explanation of variances greater than 30% for any row number or line item;
- 18 • Updated forecast of costs, highlighting the reasons for costs that are forecast to
19 have variances greater than 30% for any row number or line item; and
- 20 • The status of Project risks provided in Chapter 7 of the Application, highlighting
21 the status of identified risks, changes in and additions to risks, the options

¹ The Application was a joint application for the Project and for the Bridge River Transmission Project pursuant to BCUC Order G-246-20. BCUC Order C-6-22 discussed here is for the Project only. The review and decision for the Bridge River Transmission Project is subject to further process.

² Order G-27-24A was issued in BC Hydro's Request to Amend the Capital Filing Guidelines proceeding, and it amended the period and scope of annual reporting for several Major Projects, including the BR1 Project.

1 available to address the risks. The actions that BC Hydro is taking to deal with
2 the risks and the likely impact on the Project's schedule and cost.

3 BC Hydro files Progress Report No. 3 (**Report**), which provides an update on the
4 Project covering the period from July 1, 2023, to June 30, 2024 (**Reporting Period**).
5 During the Reporting Period, BC Hydro had no material changes³ to report as
6 defined in Appendix A to Order No. G-27-24A.

7 **1.1 CPCN Conditions**

8 The CPCN was granted subject to the following conditions:

- 9 a. Consistent with BC Hydro commitments to the St'át'imc
10 Nation, with respect to in-season flow management
11 decisions to facilitate the construction of the BR1 Project,
12 BC Hydro shall work with the Joint Planning Forum
13 consistent with the mutually agreed to Terms of Reference
14 established between BC Hydro and the St'át'imc Authority
15 and give due consideration to water level and flow impacts
16 and water needs related to: Fish and fish habitat; Wildlife
17 and wildlife habitat; Soil erosion; St'át'imc use of the land
18 and resources in the area; and St'át'imc cultural activities in
19 the area; and
- 20 b. Consistent with BC Hydro's commitments to the St'át'imc
21 Nation, BC Hydro, in collaboration with the Tsal'alh and
22 SCC, will make best efforts to ensure compliance, monitoring
23 and enforcement of the Bridge River Contract Worker
24 Conduct Requirements and the Bridge River Internal Review
25 Procedure for Code of Conduct Violations.

26 BC Hydro continues to engage with the St'át'imc Nation and Tsal'alh:

- 27 • Continued engagement with the St'át'imc Nation on the Bridge River Access
28 and Accommodation study that will lead to recommendations for worker
29 accommodation, as well as transportation of workers, equipment, and materials

³ A material change (**Material Change**) is a change in BC Hydro's plan for the Project that would reasonably be expected to have a significant impact on the schedule, cost or scope.

1 to and from the site during construction. The study is expected to conclude in
2 late summer 2024.

- 3 • [Redacted]
- 4 [Redacted]
- 5 [Redacted]
- 6 [Redacted]
- 7 [Redacted]

8 **1.2** [Redacted]

9 [Redacted]

10 [Redacted]

11 [Redacted]

12 [Redacted]

13 [Redacted]

14 [Redacted]

15 [Redacted]

16 [Redacted]

17 [Redacted]

18 [Redacted]

19 [Redacted]

20 [Redacted]

21 [Redacted]

22 [Redacted]

23 [Redacted]

24 **2 Project Cost**

25 At the time of the Application, the Project had an Authorized Cost of \$326.3 million
26 with an expected In-Service Date (**ISD**) of July 2030. On June 8, 2023, BC Hydro's
27 Board of Directors approved Implementation Funding for the Project. There was no

1 variance between the Authorized Cost filed in the Application and the amount
2 approved by the Board.

3 [Table 1](#) provides the actual costs incurred to the end of the Reporting Period. The
4 table also provides the Project's forecast Expected Cost and Authorized Cost as of
5 June 30, 2024, and a comparison to the Project Cost Range Breakdown provided in
6 Table 5-3 of the Application.

7 As of the end of the Reporting Period, the actual costs incurred total \$17.9 million.
8 The forecast Expected Cost for the Project as of the end of the Reporting Period is
9 \$275.9 million and the forecast Authorized Cost is \$326.3 million.

10 Variances greater than 30% between the Project Cost Range Breakdown are
11 provided in Table 5-3 of the Application ([Table 1](#), column A) and i) and the Project's
12 forecast as of June 30, 2024 ([Table 1](#), column B) are explained in section [2.1](#); and
13 ii) the Project's actual costs as of June 30, 2024 ([Table 1](#), column E) are explained
14 in section [2.2](#).

1
2

Table 1 Project Cost Summary Table as of June 30, 2024⁴

| Row No. | | A | B | C | D | E | F | G |
|---------|---|--------------------------------|----------------------------------|--|--|-------------------------|---------------------------------|---------------------------------|
| | | Application filed Jul 23, 2021 | Current Forecast at Jun 30, 2024 | Current Forecast Variance to Application | Current Forecast Variance to Application | Actuals to Jun 30, 2024 | Actuals Variance to Application | Actuals Variance to Application |
| | | (\$M) | (\$M) | (\$M) | (%) | (\$M) | (\$M) | (%) |
| | Description | | | B-A | C/A | | E-A | F/A |
| | Pre-Implementation Phase Costs | | | | | | | |
| | (Excludes Interesting During Construction and Capital Overhead) | | | | | | | |
| 1 | Total Pre-Implementation Phase Costs | | | | | | | |
| | Implementation Phase Costs | | | | | | | |
| | Direct Construction Costs | | | | | | | |
| 2 | Generator 1 st Unit | | | | | | | |
| 3 | Generator 2 nd Unit | | | | | | | |
| 4 | Generator 3 rd Unit | | | | | | | |
| 5 | Generator 4 th Unit | | | | | | | |
| 6 | Governor (all units) | | | | | | | |
| 7 | Exciter (all units) | | | | | | | |
| 8 | Controls (all units) | | | | | | | |
| 9 | Balance of Plant (all) | | | | | | | |
| 10 | Total Direct Construction Costs | | | | | | | |
| | Indirect Construction Costs | | | | | | | |
| 11 | Project Management | | | | | | | |
| 12 | Engineering & Design | | | | | | | |
| 13 | Indigenous Relations | | | | | | | |
| 14 | Environment, Stakeholders & Properties | | | | | | | |
| 15 | Procurement & Quality Assurance | | | | | | | |
| 16 | Legal Costs | | | | | | | |
| 17 | Total Indirect Construction Costs | | | | | | | |
| 18 | Total Implementation Phase Costs | | | | | | | |
| | (Before Contingency & Loadings) | | | | | | | |
| 19 | Contingency | | | | | | | |
| 20 | Interest During Construction (IDC) | | | | | | | |
| 21 | Capital Overhead | | | | | | | |
| 22 | BC Hydro Expected Cost | 243.4 | 275.9 | 32.9 | 13.5% | 17.9 | -225.5 | -92.6% |
| 23 | Project Reserve | 82.9 | 50.4 | -32.9 | -39.7% | 0 | -82.9 | -100% |
| 24 | BC Hydro Authorized Cost | 326.3 | 326.3 | 0.0 | 0.0% | 17.9 | -308.4 | -94.5% |

⁴ Due to the use of rounded numbers, certain columns and rows may not calculate precisely to the numbers provided.

2.1 Project Cost Forecast Variance Explanation

[Table 2](#) below provides the reasons for the variances of 30% or greater between the costs submitted in the Application and the forecast costs as of the end of the Reporting Period as shown in [Table 1](#), column C.

Table 2 Project Cost Forecast Variance Explanation as of June 30, 2024

| Row in Table 1, Column D | Explanation | Total Variance (\$ million) |
|--------------------------|---|-----------------------------|
| 14 | <ul style="list-style-type: none"> <u>Prior Report</u>: Decrease of \$3.0 million in Environment, Stakeholders and Properties due to Environment Mitigation and Monitoring budget being redistributed to other Bridge River system projects. <u>Current Report</u>: No change. | |
| 20 | <ul style="list-style-type: none"> <u>Prior Report</u>: Increase of \$5.5 million due to increase in the interest rates used to estimate the interest that will be incurred over the life of a project and an updated Preliminary Cost Estimate on April 3, 2023 for the Implementation phase, First Full Funding request. | |
| 23 | <ul style="list-style-type: none"> <u>Prior Report</u>: Decrease of \$32.5 million due to actual cost information received from the generator replacement RFP. Project reserve was used to offset the increased costs. <u>Current Report</u>: No change in this Reporting Period. | |

2.2 Actual Cost Variance Explanation

[Table 3](#) below provides the reasons for the variances of 30% or greater between the costs submitted in the Application and the actual costs incurred as of the end of the Reporting Period as shown in [Table 1](#), column F.

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2

**Table 3 Actual Costs Incurred Variance
Explanation as of June 30, 2024**

| Row in Table 1, Column F | Explanation | Total Variance (\$ million) |
|-----------------------------|--|-----------------------------------|
| 2 to 24 | Negative variances in the identified rows are due to the Project being early in the Implementation phase and project activities still being underway. They are not indicative of the financial performance of the Project. | N/A |

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3 Project Risks

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This section describes the material Project risks that have potential to impact the Project included in Chapter 7 of the Application.⁵ Over the life of the Project, risks and associated risk treatments are and will be identified, analyzed, monitored, and reviewed, in accordance with BC Hydro's project management practices and procedures. The material Project risks are summarized in [Table 4](#) below.

⁵ BC Hydro defines "material" in this case to be any risk with a pre-treatment risk level in the Executive Risk zone, as identified in the Project Delivery Risk Matrix.

1

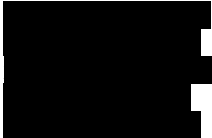

Table 4 Summary of Material Project Risks and Treatments

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|---|------------------|---|--|---|--|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| 7.3.1 | Active | <p>Regulatory proceeding impacting the Project schedule. A BCUC Order being issued later than expected or a BCUC Order declining to issue a CPCN for the BR1 Project. BC Hydro is requesting a decision from the BCUC on whether to grant a CPCN for the Project by no later than July 2022.</p> | Financial Loss | <p>10 Probability: Possible (L6) Severity: \$10 M to \$100 M (S4)</p> | <p>9 Probability: Remote (L5) Severity: \$10 M to \$100 M (S4)</p> | Closed | Completed – Comprehensive Application | Not Applicable |
| | | | | | | | Completed – Overall system view and the economic value of the Bridge River System | |
| | | | | | | | Completed – Regulatory schedule that allows for a decision by July 2022 | |
| | | | | | | | Completed – Including a three-month schedule contingency to mitigate impact from the regulatory proceeding | |
| 7.3.2 | Active | <p>Bid Price Uncertainty from a Changing Generator Supply Market The public procurement process for generators will seek bids from multiple generator suppliers. Due to the changing generator supply market, including fluctuations in commodity pricing for steel and copper, as well as the remoteness of the Bridge River area, there is a risk that bidding</p> | Financial Loss | <p>11 Probability: Likely (L7) Severity: \$10 M to \$100 M (S4)</p> | <p>9 Probability: Possible (L6) Severity: \$1 M to \$10 M (S3)</p> | Closed | Completed – Estimating analysis of the anticipated range for the replacement generator contract pricing and assigning a special reserve for market risks | Not Applicable |
| | | | | | | | Completed – Notify the market of the opportunity so that bids are received from a range of proponents, leading to competitive prices | |
| | | | | | | | Completed – Market sounding activities (RFI) in advance of the request for proposal process | |
| | | | | | | | Completed – Site visits for bidders to ensure the location remoteness will be accounted in bid pricing | |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|---|------------------|--|---|---|--|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | suppliers may not accurately estimate the scope and risks associated with the generator replacement work. | | | | | <p>Completed – Familiarizing proponents with BC Hydro’s practices and performance expectations through a Request for Information</p> <p>Completed – Comprehensive criteria for bid pricing evaluation</p> <p>Completed - Bid period for the public procurement process in the Definition so that competitive market pricing for the replacement generators can be available at the same time as the preliminary cost estimate</p> | |
| 7.3.3 | Active | <p>Project Resources Contracting or Transmitting COVID 19</p> <p>There is a diminishing risk that a resource or resources working on the Project contracts and/or transmits COVID-19.</p> <p>This could have negative impact on the health of workers or contractors assigned to the BR1 Project. Sick or isolating workers may result in a delay in completing critical BR1 Project activities.</p> | Worker Safety | <p>10</p> <p>Probability: Likely (L7)</p> <p>Severity: Temporary Disability (S3)</p> | <p>8</p> <p>Probability: Remote (L5)</p> <p>Severity: Temporary Disability (S3)</p> | Closed | <p>Completed – Following BC Hydro’s Pandemic Response Plan which complies with the Government of B.C and Government of Canada guidelines and requirements</p> <p>Completed – Sharing BC Hydro’s Pandemic Response Plan with the St’at’imc Nation, local governments, stakeholders, and the public</p> <p>Completed – Proactively keeping Project resources, the St’at’imc Nation, local governments, stakeholders, and the public informed about BC Hydro’s response to the pandemic and plans for critical and supporting functions</p> | Not Applicable |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|--|------------------|--|---|---|--|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| 7.4.1 | Identified | Extension of Duration of Planned Outages There is a risk that contractor performance, construction delays or unanticipated events extend the required duration of planned outages, which may lead to higher flows down Lower Bridge River that exceed the WUP Order flow targets and impact fish and fish habitat. | Reputational | 11.5 Probability: Fairly Likely (L6.5) Severity: Loss of trust - regulator and/or shareholder (S5) | 11 Probability: Possible (L6) Severity: Loss of trust - regulator and/or shareholder (S5) | Identified | Completed – Schedule planned outages after the break in period for the newly replaced generators at BR2 | 11 Probability: Possible (L6) Severity: Loss of trust - regulator and/or shareholder (S5) |
| | | | | | | | Completed – Schedule one planned outage per year to avoid outage overlap | |
| | | | | | | | Completed – Assign a special reserve to account for supplementary environmental mitigation and monitoring costs | |
| | | | | | | | Planned – Completing an outage impacts analysis and share with the St'at'imc Nation, Comptroller of Water Rights and public stakeholders | |
| | | | | | | | Planned - Start planned outages in late spring / early summer, after the spring freshet | |
| | | | | | | | Planned - Perform constructability, staging reviews, and pre-assembly prior to starting the planned outages | |
| | | | | | | | Planned - Include commercial terms in supply and installation contracts | |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|--|------------------|--|--|---|--|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| 7.4.2 | Identified | <p>Fire Occurring in Work Area</p> <p>There is a risk that a fire may occur in the work area as a result of construction activities involving exposed flames as the space does not have automatic fire suppression. During commissioning period, which would result in schedule delays and cost implications, to address equipment deficiencies.</p> | Worker Safety | <p>11</p> <p>Probability: Possible (L6)</p> <p>Severity: Fatality (S5)</p> | <p>7</p> <p>Probability: Remote (L5)</p> <p>Severity: Treatment by Medical Professional (S2)</p> | Identified | <p>Planned – Installing an automatic fire suppression system to protect the area of the generating station where construction activities will be carried out. Installation will be completed prior to starting construction activities</p> <p>Planned – Require all hot work procedures (e.g., welding, brazing, etc.) to be completed in compliance with approved hot work permits. A hot work permit will require workers to have a fire watch monitoring safety hazard during these higher risk activities</p> | <p>7</p> <p>Probability: Remote (L5)</p> <p>Severity: Treatment by Medical Professional (S2)</p> |
| 7.4.3 | Identified | <p>Increased Safety Incidents due to Constrained Layout</p> <p>The Bridge River 1 Generating Station has a constrained layout and a small assembly space. The station building also includes offices for the workers that operate and maintain the generating station which will be in use throughout the Implementation phase as at least three of the generating units will be operating regularly. There is a risk of increased safety</p> | Worker Safety | <p>11</p> <p>Probability: Possible (L6)</p> <p>Severity: Fatality (S5)</p> | <p>11</p> <p>Probability: Possible (L6)</p> <p>Severity: Fatality (S5)</p> | Identified | <p>Planned – BC Hydro assuming the role of Prime Contractor and assigning a BC Hydro Site Safety Coordinator to set the tone and culture for site safety and to maintain overall co-ordination and control of the site</p> <p>Planned – Contractually requiring each contractor to develop Safety Management Plans, Safe Work Procedures and Emergency Response Plans before starting site work activities</p> <p>Planned - Conducting daily safety meetings, safe work observations and ongoing safety audits of each contractor to ensure compliance with WorkSafeBC regulations, the contractor's safety management system and other agreed standards and controls for occupational health and safety systems</p> | <p>11</p> <p>Probability: Possible (L6)</p> <p>Severity: Fatality (S5)</p> |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|---|------------------|--|--|---|--|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | incidents that may result in worker injury, disability or a fatality from having workers and contractors performing operating, maintenance, and construction activities in adjoining or overlapping work areas. | | | | | Planned - Developing an Owner's Safety Plan and Occupational Health Identification Risk Assessment that will manage expectations related to known safety hazards. Planned – Relocation of the offices for the workers that operate and maintain the generating station to an area outside and adjacent to the BR1 Powerhouse. | |
| 7.4.4 | Identified | <p>Project In-Service Date Delayed Due to scheduling constraints, multiple interdependent activities will take place concurrently. This creates a potential risk that the target Project In-Service Date milestone could be missed.</p> <p>This may result in a delay in completing equipment replacements and continued exposure to the reliability issues with the existing generator equipment.</p>  | Financial Loss | <p>10.5 Probability: Fairly Likely (L6.5) Severity: \$10 M to \$100 M (S4)</p> | <p>9 Probability: Possible (L6) Severity: \$1 M to \$10 M (S3)</p> | Active | <p>Planned - Developing detailed management plans for procurement, construction, quality, environment and safety activities that clearly explain how the equipment will be manufactured, supplied, assembled, installed, commissioned and tested</p>  <p>Completed – Dividing the project scope into work packages and detailed activity lists to decrease exposure to unplanned work</p> <p>Planned – Structuring and sequencing work activities in a manner that ensures the critical schedule path is understood and optimized</p> <p>Planned – Assigning a dedicated BR1 Project scheduler to manage progress by frequently reviewing planned versus actual progress, resolving critical schedule path issues and employing a BC Hydro resource at the manufacturing facilities to oversee supplier's work and recovery plans, as required.</p> | <p>9.5 Probability: Fairly Likely (L6.5) Severity: \$1 M to \$10 M (S3)</p> |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
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| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | [REDACTED] | | | | | <p>Planned – Incorporating appropriate schedule contingencies to provide insurance for schedule risks.</p> <p>Planned - Employing site trade resources from unions within the collective agreement between Columbia Hydro Constructors and the Allied Hydro Council, which contains a no-strike clause and provisions to address working conditions.</p> | |
| 7.4.5 | Identified | <p>Cost Increase The complexity of the BR1 Project and the Bridge River System, the brownfield nature of the site, the required</p> | Financial Loss | 10.5 Probability: Fairly Likely (L6.5) | 9 Probability Possible (L6) | Identified | Planned - Incorporating recent experience gained from the replacement of Units 5, 6, 7 and 8 at the Bridge River 2 Generating Station as well as comparable projects implemented at other BC Hydro facilities | 9 Probability Possible (L6) Severity: \$1 M to |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|--|------------------|--|--|---|--|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | environmental monitoring, and the public procurement process creates the potential for additional cost risk impacts beyond those included in the BR1 Project Expected Cost Estimate. Actions will be implemented to reduce the likelihood of these cost risks materializing and reserves will be included in the BR1 Project Authorized Cost Estimate to mitigate these cost risks, if realized. | | Severity: \$10 M to \$100 M (S4) | Severity: \$1 M to \$10 M (S3) | | Completed - Conducting a detailed cost analysis using range estimating techniques (i.e., a Monte Carlo simulation) that consider differing levels of uncertainty for each scope item to inform the contingency in the Expected and Authorized Cost Estimates Completed - Incorporating appropriate special reserves relating to known cost risks in the BR1 Project. Special reserves will only be accessible if those specific risks materialize | \$10 M (S3) |
| 7.4.6 | Identified | Shortage of Accommodation There is a potential for the workforce required at site during construction to exceed the available local accommodations in the Seton Portage – Shalalth area due to multiple concurrent Bridge River Generation System projects. This may result in reduced productivity associated with longer commute times to/from | Financial Loss | 10 Probability: Possible (L7) Severity: \$1 M to \$10 M (S3) | 8.5 Probability Fairly Likely (L6.5) Severity: \$100 K to \$1 M (S2) | Identified | Planned - Prioritizing local accommodations for primary workers most likely to impact the schedule Planned - Securing accommodations at hotels in Lillooet for supplementary workers and visitors Planned - Assisting contractors with accommodation management and local vacancy listings Planned - As required, entering into a pre-arranged commercial agreement for reserved use of the local Lil'item Hotel operated by the Tсах'alh Development Corporation | 8.5 Probability Fairly Likely (L6.5) Severity: \$100 K to \$1 M (S2) |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|---|------------------|--|---|---|---|---|
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| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | Lillooet, which will result in a reduction in overall productivity and cause delays in meeting schedule milestones. | | | | | Planned - The Bridge River Access and Accommodation study for LaJoie Dam Improvement Project and other Bridge River capital projects is underway. This project has provided information on our estimated worker demand. This study was initiated after the application filing. | |
| 7.4.7 | Identified | <p>Space Constraints Resulting in Delays</p> <p>There is insufficient space in the Bridge River 1 Generating Station service bay to accommodate dismantling of the existing generators and the pre-assembly and / or installation of the replacement generators, in addition to required regular operating and maintenance activities. The space constraints may result in delays to site construction activities. These delays could cause the sequencing of activities within specific areas to be modified, leading to unproductive downtime.</p> | Financial Loss | 10 Probability: Likely (L7) Severity: \$1 M to \$10 M (S3) | 9 Probability: Possible (L6) Severity: \$1 M to \$10 M (S3) | Identified | <p>Planned - Conducting an equipment pre-assembly, dismantling and installation sequence analysis to determine the best equipment staging arrangement with respect to the available floor space and the floor loading capacities</p> <p>Planned - Utilizing the service bay in the adjacent Bridge River 2 Generating Station for generator component pre-assembly activities</p> | 9 Probability: Possible (L6) Severity: \$1 M to \$10 M (S3) |
| 7.4.8 | Identified | Health and Safety | Worker Safety | 10 | 8 Probability: Very | Identified | Planned - Proactively working with the community of Tsal'alh and the Joint Steering Committee as well as Contractors and Union Halls to increase awareness of evolving | 8 |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|--|------------------|--|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | The influx of temporary workers and contractors in the Seton Portage – Shalalth area could lead to impacts on the health and safety of local communities. | | Probability: Possible (L6) Severity: Temporary Disability (S4) | Unlikely (L4) Severity: Temporary Disability (S4) | | temporary worker changes and to help advance planning, preparation, coordination, and communication Planned - Requiring all temporary workers to comply with a Bridge River Code of Conduct so that a basic set of rules to maintain civil behavior are followed and so that conflict with local residents is reduced. Divergence from Code of Conduct behaviors will be grounds for discipline and BC Hydro may exercise its rights under the Code of Conduct to direct workers off the work site | Probability: Very Unlikely (L4) Severity: Temporary Disability (S4) |
| 7.4.9 | Identified | Credit Failure of Contractor During the public procurement process, BC Hydro will seek bids from a wide range of generator suppliers. There is a potential for some of the suppliers to be under financial strain. There is a risk that a supplier might experience credit failure after being awarded a contract and subsequently be unable to eventually deliver on | Financial Loss | 10 Probability: Possible (L6) Severity: \$10 M to \$100 M (S4) | 7 Probability: Possible (L6) Severity: \$10 K to \$100 K (S1) | Active | Planned - Assessing the credit history and financial situation of suppliers prior to appointing a preferred proponent Planned - Performing assessments of a supplier's financial capacity and credit rating, where appropriate, prior to awarding any contract Planned - Requiring performance security in the form of performance and labour and materials bonds or a letter of credit and a third-party guarantee. | 9 Probability: Possible (L6) Severity: \$1 M to \$10 M (S3) |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|--|------------------|---|---|---|--|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | contractual obligations, which may lead to schedule delays and cost overruns. [REDACTED] | | | | | [REDACTED] | |
| 7.4.10 | Identified | Damage to Generating Station during Construction The nature of the existing powerhouse building foundation and the seismic performance of the Bridge River 1 Generating Station means that a seismic event could cause | Safety | 9 Probability: Very Unlikely (L4) Severity: Fatality (S5) | 9 Probability: Very Unlikely (L4) Severity: Fatality (S5) | Identified | Planned - Developing an Interim Dam Safety Risk Management Plan describing any surveillance and/or safety risk measures required during construction | 9 Probability: Very Unlikely (L4) Severity: Fatality (S5) |

| From Application dated July 23, 2021 & Newly Identified Risks | | | | | | Updated for Reporting Period ending June 30, 2024 | | |
|---|-------------|--|------------------|---|--|---|--|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Section in Application | Risk Status | Description of Risk Event and Consequence | Consequence Type | Risk Level | Residual Risk Level | Risk Status | Risk Treatments (Identified in the Application or New) | Residual Risk Level |
| | | <p>significant damage to the generating station.</p> <p>Significant damage to the generating station during construction stage may result in minor injuries, disability, or a fatality to workers, contractors, and/or the public in or near the generating station.</p> | | | | | Planned - Following the Bridge River Emergency Action Plan in the event of an earthquake. By following the Bridge River Emergency Action Plan, the consequences of an earthquake event during the BR1 Project are similar to current operational earthquake risks and are considered tolerable | |
| Added in Progress Report No. 3 | Identified | <p>Escalation Higher Than Estimated</p> <p>Due to the supply chain escalation (fluctuations of commodity prices for steel, copper and chemicals, marine and land transportation costs and currency exchange rates) and/or geopolitical issues, there is a risk that the cost of materials and services required for this Project will increase at a rate higher than forecasted.</p> <p>This may result in cost increases requiring an EAR revision or scope reduction.</p> | Financial Loss | <p>10</p> <p>Probability: Likely (L7)</p> <p>Severity: \$1 M to \$10 M (S3)</p> | <p>8.5</p> <p>Probability: Fairly Likely (L6.5)</p> <p>Severity: \$100 K to \$1 M (S2)</p> | Identified | <p>Planned - Inclusion of commodity cost adjustment clauses and exchange rate adjustment clauses in contracts.</p> <p>Completed - Special reserve of \$20.2 million for escalation risks exceeding the BC Hydro recommended escalation rates.</p> | <p>8.5</p> <p>Probability: Fairly Likely (L6.5)</p> <p>Severity: \$100 K to \$1 M (S2)</p> |

**BC Hydro Bridge River 1 Units 1 to 4
Generator Replacement Project**

Annual Progress Report No. 3

Appendix A

Record of Material Changes

1 Record of Material Changes

2 This Appendix provides a summary record of the material changes that have been
3 reported to the BCUC.

4 Record of Material Changes Due to Schedule Delay

5 **Table A-1** Reported Material Changes Due to
6 Schedule Delay

| Description of Major Milestone | No. and Date of Material Change Report | Reported Forecast Date | Variance to Application |
|--------------------------------|--|------------------------|-------------------------|
| N/A | N/A | N/A | None |

7 Record of Material Changes Due to Project Cost Increase

8 **Table A-2** Reported Material Changes Due to
9 Project Cost Increases

| Description | No. and Date of Material Change Report | Reported Authorized Cost (\$M) |
|-------------|--|--------------------------------|
| N/A | N/A | None |

10 Record of Material Changes Due to Change to the Project 11 Scope

12 **Table A-3** Reported Material Changes Due to
13 Project Scope Changes

| Application Section No. and Heading | No. and Date of Material Change Report | Reported Explanation of Scope Change |
|-------------------------------------|--|--------------------------------------|
| N/A | N/A | None |