

**Chris Sandve**  
Chief Regulatory Officer  
[bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com)

April 27, 2023

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. 1599147**  
**British Columbia Utilities Commission (BCUC or Commission)**  
**British Columbia Hydro and Power Authority (BC Hydro)**  
**2020 Street Light Rates Application (the Project)**  
**Compliance with BCUC Order No. G-312-21 Directive 4**  
**Annual Replacement Program Report No. 2 – April 2022 to March 2023**

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BC Hydro writes in compliance with Commission Order No. G-312-21, to provide Annual Progress Report No. 2 for the Project.

For further information, please contact Shiau-Ching Chou at  
[bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com).

Yours sincerely,



Chris Sandve  
Chief Regulatory Officer

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Enclosure

**BC Hydro 2020 Street Light Rates Application**

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**Annual Replacement Program Report No. 2**

**Fiscal 2023**

**April 2022 to March 2023**

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## 1 Background

BC Hydro has prepared this Annual Replacement Program Report No. 2 in accordance with BCUC Order No. G-312-21 which directed BC Hydro to file, within 30 days of each annual reporting period, a report on the Streetlight Replacement Program (Replacement Program or Program), providing the following information:

1. Replacement Program Scope:
  - a. Program Scope Change Summary (including explanations of any changes to the Replacement Program scope)
2. Replacement Program Costs:
  - a. Cost Summary (including explanation of variances relative to the expected cost estimates in the Application):
    - i. Direct Deployment Costs (Materials and Installation);
    - ii. Indirect Program Costs (Replacement Program Management, Deployment Management, Supporting Technology, Customer Engagement, Dismantling); and
    - iii. Other Costs (Change Management, Material Management, Procurement, Regulatory);
  - b. Contingency Summary (including explanation of variances for inflation, contingency, and capital overhead).

## 2 Replacement Program Scope

As of March 31, 2023, 86,611 or ~98.6% of the BC Hydro-owned and maintained streetlights under Rate Schedule (**RS**) 1701 have been converted to Light-Emitting Diodes (**LEDs**). BC Hydro is on track to remove the remaining 1,233 High Pressure Sodium (**HPS**) streetlights, as planned, before the end of Quarter 1 of Fiscal 2024. The proactive removal of the lights under RS 1755 Private Outdoor Lights (Group 1

and 3) commenced in October 2022. As of March 31, 2023, 34.7% of the RS 1755 lights have been removed, converted to LEDs (and migrated to RS 1701), or confirmed to not exist in the field. BC Hydro remains on track to complete the RS 1755 related work, as planned, by the end Fiscal 2024. BC Hydro is continuing to engage and support customers impacted by the termination of the RS 1755 Private Outdoor Lighting service.

## **2.1 Program Scope Change Summary**

Since BC Hydro filed its Street Light Rates Application in 2020, there have been no Program Level Changes to the Program's scope, schedule, or budget.

## **3 Replacement Program Costs**

### **3.1 Cost Summary**

As of March 31, 2023, \$58.4 million has been spent, life to date, on the Program and the Program's Estimate-At-Completion (**EAC**) is within its approved Expected Cost. [Table 1](#) below contains a summary of the Program's budget, Costs-to-Date, and expected costs to complete the Program. Comments on the Direct and Indirect costs are contained in the sections below.

**Table 1 Streetlight Replacement Program Cost Summary Table**

	A	B	C	D	E	F = D + E	G = F - C
	Table G-4 Budget <sup>1</sup> (Real \$M, inflation below)	Budget w/ RS1755 Termination <sup>1</sup> (Real \$M, inflation below)	Budget w/ RS1755 Termination <sup>2</sup> (Nominal \$M, inflation allocated to each line)	Actual Cost- to-Date <sup>3</sup> (Nominal \$M)	Estimate-to- Complete (Nominal \$M)	Estimate At Completion (Nominal \$M)	Variance (Nominal \$M)
<b>Program Costs</b>							
<b>Direct Deployment Costs (Materials + Installation):</b>							
Labour	20.1	15.6	16.4	18.6	0.9	19.5	3.1
Materials	24.6	22.5	23.6	24.8	0.7	25.5	1.9
<b>Indirect Program Costs:</b>							
Program Management	1.3	1.3	1.3	1.9	0.1	1.9	0.6
Deployment Management	3.2	3.2	3.4	1.9	0.6	2.6	-0.8
Supporting Technology	2.2	2.1	2.2	1.9	0.1	2.0	-0.2
Customer Engagement	0.8	0.8	0.9	1.3	0.6	2.0	1.1
Other (Change Management, Material Management, Procurement, Regulatory)	0.6	0.6	0.7	0.3	0.0	0.3	-0.4
Dismantling	2.4	6.2	6.7	2.9	1.5	4.3	-2.4
<b>Total Program Costs before Loadings and Contingency</b>	<b>55.4</b>	<b>52.6</b>	<b>55.1</b>	<b>53.5</b>	<b>4.5</b>	<b>58.0</b>	<b>2.9</b>
Contingency	7.5	7.1	7.5	0.0	5.2	5.2	-2.3
Inflation	2.9	2.9	0.0	0.0	0.0	0.0	0.0
Capital Overhead	7.5	6.5	6.5	4.8	1.1	5.9	-0.6
<b>Program Expected Cost</b>	<b>73.4</b>	<b>69.2</b>	<b>69.2</b>	<b>58.4</b>	<b>10.8</b>	<b>69.2</b>	<b>0.0</b>
Program Reserve (Loaded)	9.9	9.4	9.4				
<b>Requested Total Authorized</b>	<b>83.3</b>	<b>78.6</b>	<b>78.6</b>				

Minor addition errors may occur due to rounding.

**Notes**

1. Table G-4 in the Street Light Rates Application assumed that all the RS 1755 lights were going to be converted to LEDs (Column A in Table 1). As explained in BC Hydro’s responses to BCOAPO IR 1.11.3 and BCUC IR 2.23.1 after the business case was approved, the decision was made to terminate the RS 1755 service. Column B in the Table 1 above shows the revised Program budget.
2. In Column C, the revised budget was restated where inflation was allocated to each cost line item.
3. Actual Cost-to-Date are as of March 31, 2023.

In its Reasons for Decision to BCUC Order No. G-312-21, the BCUC stated that a regular review of Program capital and installation costs was important to evaluate whether any change to the approved LED rates is warranted upon completion of the Program.<sup>1</sup> Considering the forecasted variance for the Program at completion before loadings and contingency is \$2.9 million or ~5.3% when compared to the Budget with RS 1755 termination (Column C in [Table 1](#)), BC Hydro does not believe that any changes to the approved rates for RS 1701 is warranted at this time.

<sup>1</sup> British Columbia Hydro and Power Authority 2020 Street Lighting Rates Application Decision and Order No. G-312-21 dated November 1, 2021

### 3.1.1 Direct Deployment Costs (Materials and Installation)

The Program is incurring higher than expected unit costs for installation labour, which is primarily the result of higher costs for ACA<sup>2</sup> remediation. Material unit costs are higher than expected due to costs for other materials required to complete the streetlight replacements (e.g., for ACA remediation and bonding<sup>3</sup>). However, the increased unit costs are partially offset by lower than expected volume of lights that will need to be converted to LEDs under RS 1701 and those street lights being converted to LEDs under RS 1755 (original count of 89,182<sup>4</sup> versus current count of 88,707<sup>5</sup>). Despite a greater number of RS 1755, Private Outdoor Lights, will be converted to LEDs (migrated to RS1701) based on in-field data validation checks, the total number of LED conversion is expected to be lower than originally planned. The reduction in volume is the result of data clean-up activities and customers requesting the removal of some lights instead of replacement. The overall forecasted increase in direct deployment costs relative to the budget (column C in [Table 1](#)) is \$5.0 million.

### 3.1.2 Indirect Program Costs (Program Management, Deployment Management, Supporting Technology, Customer Engagement, Dismantling)

Overall, the Indirect Program Costs EAC noted in [Table 1](#) are \$1.7 million lower than the budgeted amount. The items with forecasted over-spend variance are Customer Engagement and Program Management, where the variance is forecasted to be \$1.1 million higher and \$0.6 million higher than budget, respectively. The increased costs are the result of the identified need for BC Hydro to provide more support to its

<sup>2</sup> ACA, or ammoniacal copper arsenate is a preservative used on wooden poles. Remediation of ACA poles may be required in order to complete work on an ACA treated pole.

<sup>3</sup> Bonding is a method of keeping all metal components on a pole at the same voltage potential to prevent a worker from receiving a shock and/or being injured.

<sup>4</sup> The rates pricing model included 90,850 streetlights (as noted in the Application's Table G-6 and BCUC IR 1.9.2.ATT.01). BCUC IR 2.23.3 discussed the difference between the 89,182 streetlight count and the 90,850 count.

<sup>5</sup> 87,844 and 863 streetlights to be converted to LEDs under RS 1701 and RS 1755 respectively.

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Streetlighting customers (with lights under RS 1701 and RS 1755) and additional Program Management support resulting from the higher-than-expected complexity in managing the Program's Implementation Phase. The higher forecasted costs are offset by the lower EAC costs for Dismantling (-\$2.4 million), Deployment Management (-\$0.8 million) and Supporting Technology (-\$0.2 million). The decreased costs are the result of lower than expected RS 1755 removals, and lower than expected costs for installation quality assurance activities.

### **3.1.3 Other Costs (Change Management, Material Management, Procurement, Regulatory)**

The EAC for the Other Costs is forecasted to be \$0.4 million below budget, due to lower-than-expected Change Management, Procurement and Regulatory costs.

## **3.2 Contingency Summary**

Contingency has been reduced to cover the net variances in the other cost items. In the future, remaining Contingency will be allocated, where needed, to offset overall cost over-runs associated with unanticipated costs and/or adjustments in work plans (e.g., additional resourcing). At the end of the Program, any unallocated Contingency will result in the Program's actual cost being less than the Expected Cost.

As noted above, inflation has been allocated to the respective line items in Column C in [Table 1](#).

Capital Overhead (**COH**) is a loading percent added to capital costs and is adjusted over time. The cost-to-date for COH is lower than the budgeted COH loading amount. This is primarily due to a change in the accounting treatment of some ancillary materials.