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Utilities Commission

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July 26, 2019

Sent via eFile

**BC HYDRO F2020–F2021**
**REVENUE REQUIREMENTS EXHIBIT A-9**

Mr. Fred James
Chief Regulatory Officer
Regulatory & Rates Group
British Columbia Hydro and Power Authority
16th Floor - 333 Dunsmuir Street
Vancouver, BC V6B 5R3
bchydroregulatorygroup@bchydro.com

**Re: British Columbia Hydro and Power Authority – F2020–F2021 Revenue Requirements Application – Project No. 1598990 – Information Request No. 2**

Dear Mr. James:

Further to British Columbia Utilities Commission Order G-146-19, enclosed please find BCUC Information Request No. 2 to British Columbia Hydro and Power Authority. In accordance with the Regulatory Timetable, please file your responses no later than Tuesday, September 3, 2019.

Sincerely,

*Original Signed By:*

Patrick Wruck
Commission Secretary

/nd
Enclosure

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British Columbia Hydro and Power Authority
F2020-F2021 Revenue Requirements Application

**INFORMATION REQUEST NO. 2 TO BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**

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## A. CHAPTER 2 – LEGAL AND REGULATORY FRAMEWORK

**201.0 Reference:** **LEGAL AND REGULATORY FRAMEWORK**
**Exhibit B-1, Application, Section 2.2.2; *Utilities Commission Act* (UCA) as amended by Bill 19, *Energy Statutes Amendment Act, 2019*, 4th session, 41st Parl, British Columbia, 2019 (first reading); Exhibit B-6, AMPC IR 17.3.2, BCSEA IR 3.1, BCOAPO IR 5.1; Office of the Auditor General of British Columbia, Rate-Regulated Accounting at BC Hydro[1], February 2019, pp. 22–23**
**BCUC jurisdiction**

As a result of amendments enacted by the *Energy Statutes Amendment, Act 2019*, the UCA states:

**Definitions**

1 (1) In this Act:
(2) This Act does not apply to Powerex Corp.

**Rate rebalancing**

58.1 (1) In this section, "revenue-cost ratio" means the amount determined by dividing a public utility's revenues from a class of customers during a period of time by the public utility's costs to serve that class of customers during the same period of time.

[...]

(7) The commission may not set rates for a public utility for the purpose of

[1] https://www.bcauditor.com/sites/default/files/publications/reports/OAGBC_RRA_RPT.pdf.

changing the revenue-cost ratio for a class of customers except on application by the public utility.

In response to AMPC IR 17.3.2, the British Columbia Hydro and Power Authority (BC Hydro) stated:

> Details of Powerex Corp's past, current and forecast business activities, unless otherwise publicly reported by BC Hydro (as in Section 8.9 of Chapter 8 and Appendix A of the Application) are commercially sensitive and thus confidential. Powerex net income is included in BC Hydro Trade Income to the benefit of BC Hydro ratepayers.
>
> The *Energy Statutes Amendment Act 2019* amended the *Utilities Commission Act* so that the Act does not apply to Powerex Corp.

In Section 2.2.2 of the Application, BC Hydro states: "As an outcome of the Comprehensive Review, the Government of B.C. also announced that it intends to table legislation to further update BC Hydro's regulatory framework."

In response to BCSEA IR 3.1, BC Hydro stated:

> Bill 19, the *Energy Statutes Amendment Act, 2019*, received Royal Assent on May 16, 2019. This means that the changes described in section 2.2.2 of Chapter 2 of the Application have been completed. As a result of amendments contained in the *Energy Statutes Amendment Act, 2019*:
>
> - The definitions of 'expenditure for export,' 'feed-in tariff program' and 'integrated resource plan' and sections 2(p), 3 to 5, 7 (1)(i), 8(1)(b)(ii), 16 and 35(g), (h) and (m), of the *Clean Energy Act* have been repealed. With regards to expenditures for export, these changes have the same effect as section 6 of Direction No. 8 to the BCUC. For further information on the effect of these changes, please refer to BC Hydro's response to BCUC IR 1.3.1;
> - Section 44.1 of the *Utilities Commission Act* now applies to BC Hydro. This means that the BCUC will review BC Hydro's IRP [integrated resource plan] going forward and that traditional DSM [demand-side management] programs must meet the adequacy requirements set out in the Demand-Side Measures Regulation. A sub-section has been added to the *Utilities Commission Act* stating that BC Hydro need not file an IRP before February 28, 2021. Our DSM plans have always been consistent with the adequacy requirements set out in the Demand-Side Measures Regulation. Table 10-7 in section 10.3.1.4 of Chapter 10 of the Application shows how BC Hydro's proposed DSM Plan aligns with the adequacy requirements;
> - A sub-section has been added to the *Utilities Commission Act* stating that the Act does not apply to Powerex Corp. This sub-section has the same effect as section 8 of Direction No. 8 to the BCUC, except that the latter had only exempted Powerex from Part 3 of the Act; and
> - A sub-section has been added to the *Utilities Commission Act* stating that the BCUC must not set rates for a public utility for the purpose of changing the revenue-cost ratio for a class of customers except on application by the public utility. This sub-section has the same effect as section 5 of Direction No. 8 to the BCUC.

201.1 Considering the recent amendment to section 58.1 of the UCA, does the British Columbia Utilities Commission (BCUC) have the jurisdiction to order a public utility, including BC Hydro, to file a rate rebalancing application with the BCUC?

201.2 As a result of the amendments to the UCA, *Hydro and Power Authority Act* and *Clean Energy Act* as a result of the *Energy Statutes Amendment Act, 2019* receiving royal assent, are there any changes to the BCUC's jurisdiction over BC Hydro that are not outlined in BC Hydro's response to BCSEA IR 3.1?

In response to BCOAPO IR 5.1, BC Hydro provided a table that shows the specific regulatory accounts, programs and capital projects that are not subject to the BCUC's review or are subject to limited BCUC review because of existing regulations. In the response, BC Hydro also noted that "other regulations, particularly Direction No. 8, also impact our revenue requirements for the test period and are discussed in Table 2-1 and section 2.5 of Chapter 2 of the Application."

In the Office of the Auditor General of British Columbia (OAG) report, Rate-Regulated Accounting at BC Hydro, it states:

> First, rates have largely been determined by government, rather than an independent third-party regulator (BCUC) or BC Hydro's own governing board (which is not empowered to establish rates for BC Hydro)…
>
> Second, rates have not been set within a framework that is designed to recover BC Hydro's costs of service…Government has directed BC Hydro's revenues, expenses and, in effect, its own bottom line. For example:
>
> - Government has set BC Hydro's net income… BC Hydro's profitability is no longer connected to risk or performance.
> - BC Hydro has also been directed by government to defer its annual revenue shortfall into the Rate Smoothing Regulatory Account, resulting in the premature recognition of revenue and higher annual net income than would otherwise result.
>
> Rates have not been designed to ensure that each customer class pays its appropriate share of the costs (that is, residential customers are underpaying and commercial customers are overpaying), and BCUC has not had the authority to rebalance the rate design of customer classes because of government direction.

201.3 Given the items identified in response to BCOAPO IR 5.1, the contents of Direction No. 8 to the BCUC and the *Energy Statutes Amendment Act, 2019*, in BC Hydro's view, please discuss whether it has satisfied the OAG's comments regarding BC Hydro's eligibility to apply rate regulated accounting in the Test Period.

**202.0 Reference: LEGAL AND REGULATORY FRAMEWORK**
**Exhibit B-1, Appendix C, pp. 18–19; Exhibit B-6, Ince IR 13.5;**
**Direction No. 8 to the BCUC, OIC 051/2019, section 7**
**Retail access**

The Comprehensive Review of BC Hydro: Phase 1 Final Report in Appendix C of the Application states:

> Retail access is the ability for customers to secure electricity from the market via a third-party provider rather than the local utility such as BC Hydro… In a surplus situation, allowing retail access increases the amount of surplus energy that BC Hydro must export, possibly at a loss, increasing costs borne by ratepayers who do not or cannot opt

for retail access.

> To minimize potential costs to ratepayers, retail access for BC Hydro customers is currently prohibited, and, as a result of the Review, this prohibition will continue. The government has extended the prohibition of retail access through regulation. The prohibition will continue until or unless a public utility, in this case BC Hydro, requests otherwise.

Section 7 of Direction No. 8 to the BCUC states the following regarding "Retail access:"

> Except on application by the authority, the commission must not set rates for the authority that would result in the direct or indirect provision of unbundled transmission services to retail customers in British Columbia, or to those who supply such customers.

BC Hydro stated in response to Ince IR 13.5 that it has "no intention of requesting a repeal of section 7 of Direction No. 8."

202.1 Please discuss whether the inclusion of "…or to those who supply such customers" includes wholesale customers of BC Hydro. For example, those bulk electricity customers who then supply to its own end-use customers through its own distribution system.

202.2 Please confirm, or explain otherwise, that section 7 of Direction No. 8 only prohibits "retail access" for BC Hydro's retail (end-use) customers.

202.3 Please provide BC Hydro's definition of the term "retail customers" as used in section 7 of Direction No. 8. Is this representative of BC Hydro's end-use customers?

202.4 Please discuss if section 7 of Direction No. 8 prohibits electricity producers outside of BC from using BC Hydro's transmission system to supply electricity to BC Hydro's retail customers.

202.5 Please discuss if section 7 of Direction No. 8 prohibits electricity producers outside of BC from using BC Hydro's transmission system to supply electricity to retail customers of other distribution utilities within BC.

202.6 Please discuss if retail access as described by section 7 of Direction No. 8 includes electricity producers in BC who supply electricity to non-BC Hydro retail customers.

202.7 Please discuss whether section 7 of Direction No. 8, or any other legislation, prohibits electricity producers in BC, other than BC Hydro, from obtaining unbundled transmission services through BC Hydro to move electricity to the BC border for sale to retail customers outside of BC.

202.8 Please discuss if allowing electricity producers in BC, other than BC Hydro, to obtain unbundled transmission services through BC Hydro to move electricity to the BC border would have any impact on the following:

i. the ability of retail customers in BC to secure electricity from the market via a third-party provider;

ii. the amount of surplus energy that BC Hydro must export;

iii. the capacity on BC Hydro's transmission system; and

iv. the costs borne by BC Hydro ratepayers.

## B. CHAPTER 3 – LOAD AND REVENUE FORECAST

**203.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-1, p. 3-5; Exhibit B-5, BCUC IR 5.1, 12.2.1**
**Internal audit**

In response to BCUC IR 12.2.1, BC Hydro provided a copy of the GDS Associates Inc. report as Attachment 1 to the response. GDS Associates Inc. provides recommendations regarding governance (section 2.2), methodology (section 3.2) and a summary of findings regarding the outputs in section 4.2 of the report.

BC Hydro states in its Application that "BC Hydro has addressed the audit recommendations and the issues raised by the BCUC."

BC Hydro explained the difference between the October 2018 load forecast and May 2016 load forecast in response to BCUC IR 5.1.

203.1 Please explain whether all of the recommendations and findings included in the GDS Associates Inc. report are included in BC Hydro's internal audit report.

203.1.1 If not, please identify which recommendations and/or findings are not included and explain why those have been omitted.

203.2 Please confirm BC Hydro has also addressed all of the recommendations included in GDS Associates Inc.'s report.

203.2.1 If not confirmed, please explain why those recommendations have not been addressed and, to the extent possible, address them in response to this question.

**204.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-1, p. 3-48; BNN Bloomberg, Chevron seeks to turn Kitimat LNG plan into all-electric design, dated July 15, 2019[2]**
**Liquified natural gas (LNG) load forecast**

BC Hydro states in the Application that:

> Publically available information on LNG projects which informed our load forecast included:
>
> - LNG Canada Inc. recently made a positive final investment decision. Only construction-related load from this LNG facility is expected within the window of our load forecast;
> - Woodfibre LNG announced that it intends to make a final investment decision this winter. We included a probability weighted sales forecast from this facility in its load forecast; and
> - FortisBC Tilbury is in operation and we included forecast sales to this LNG facility.

[2] https://www.bnnbloomberg.ca/chevron-seeks-to-turn-canada-lng-plan-into-all-electric-design-1.1287377.

In an online article from BNN Bloomsberg, it states:

> Chevron and its partner Woodside Petroleum Ltd. earlier this year had announced they'd applied to expand the capacity of their LNG project in Kitimat, British Columbia, by as much as 80% to 18 million metric tons a year… the project is proposing to become an 'all-electric plant' powered by hydroelectricity, allowing expanded capacity without the corresponding increase in emissions of a traditional LNG facility…
>
> Chevron and Woodside expect to make a final investment decision in 2022 to 2023 with production starting by 2029…

204.1 Please discuss in detail, and quantify where possible, what impact the above announcement regarding Kitimat LNG would have on BC Hydro's load forecast: i) within the test period; ii) within the fiscal 2019 to fiscal 2024 (F2019-F2024) period as presented in Appendix O of the Application; and iii) the 20-year load forecast to be filed on October 3, 2019, respectively.

**205.0 Reference: LOAD AND REVENUE FORECAST**
**BC Gov News, B.C. tops up electric vehicle rebate program, June 26, 2019 News Release[3]**
**Electric vehicle**

In a news release on BC Gov News, it states:

> Budget 2019 committed $41.5 million toward the CEVforBC rebate program for this fiscal year, with $15 million having been released. The changes made include lowering the maximum price eligibility threshold to $55,000 – ensuring the program supports the most affordable vehicles… The provincial rebate will be reduced to $3,000 for battery, fuel-cell, and longer-range plug-in hybrid electric vehicles and to $1,500 for shorter-range plug-in hybrid electric vehicles, effective June 22, 2019.

205.1 Please discuss whether, and if so by how much, the recent changes to the CEVforBC rebate program may impact BC Hydro's electric vehicle load forecast within the Test Period.

**206.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-5, BCUC IR 13.1**
**Luxury electric vehicle load forecast**

BC Hydro stated in response to BCUC IR 13.1 that:

> The [electric vehicle] EV forecast is based on the most recent historical data from [Insurance Corporation of British Columbia] ICBC on electric vehicles, which spans from December 31, 2015 to June 30, 2016. During that time, the Tesla Model S was the dominant luxury EV, and our model uses that as a proxy when forecasting future high-end EV growth. Over that six month period, Tesla Model S EV sales grew by 15.7 per cent… in our view, this growth rate is too aggressive and is not representative of the potential for future luxury EV growth. Accordingly, we applied a 2 per cent annual growth rate for the remainder of the forecast period (i.e., January 1, 2019 to March 31, 2024).

206.1 Please explain why BC Hydro believes a 2 percent annual growth rate on luxury EV for the remainder of the forecast period is appropriate. Please include the relevant references and any analysis or studies commissioned to support this growth rate.

[3] https://news.gov.bc.ca/releases/2019EMPR0025-001302.

**207.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-5, BCUC IR 5.1**
**Load forecast beyond the Test Period**

In response to BCUC IR 5.1, BC Hydro stated that "The change in the commercial forecast primarily reflects the change in the calibration period… the May 2016 Load Forecast trajectory reflected more periods of historical growth towards the early part of the calibration period compared to the calibration period of the October 2018 Load Forecast."

207.1 Please explain the higher historical growth in the early part of the May 2016 load forecast calibration period.

207.1.1 Please explain why this higher historical growth is not likely to continue in the Test Period.

207.2 Please quantify how much of the difference between the May 2016 and October 2018 load forecasts are attributable to the change in the calibration period.

**208.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-5, BCUC IR 4.2.1, 15.3**
**Load forecast beyond the test period**

BC Hydro stated in response to BCUC IR 4.2.1 that:

> The October 2018 Load Forecast is one of the inputs to the Energy Studies models that forecast the Cost of Energy across a five-fiscal- year time horizon, which includes the two-year test period… The modeling horizon and load forecast inputs extend beyond the test period because system conditions beyond the test period can have impacts on optimal operations during the test period, which impacts the Cost of Energy.

BC Hydro stated in response to BCUC IR 15.3:

> The Energy Studies model operations for the next five years (i.e., to the end of fiscal 2024 in the current studies). These results are used for operational decision making (e.g., setting the threshold sale price) and for near-term financial forecasts (e.g., the Cost of Energy forecast in the Application).

208.1 In consideration that BC Hydro's Energy Studies are performed monthly, please explain how often BC Hydro updates the load forecast for the purpose of the monthly energy studies.

208.1.1 Please discuss to what extent, and for which time periods, does the October 2018 load forecast inform operational decision making.

**209.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-5, BCUC IR 5.3.1**
**Growth Domestic Product (GDP) growth projection**

BC Hydro stated in response to BCUC IR 5.3.1 that:

> Since BC Hydro's filing of the Application we have not received an updated regional economic forecast from the Conference Board of Canada. However, the following table shows that recent employment growth forecasts over the short term from the B.C. Ministry of Finance are very similar to those used by the Conference Board of Canada to develop the test period economic forecast.

In response to BCUC IR 5.3.1, BC Hydro further provided a comparison between the Conference Board of

Canada (CBoC) Economic Forecast June 2018 with the BC Ministry of Finance BC Budget February 2019 values for total provincial BC GDP growth, total provincial employment growth forecast and total provincial housing starts.

209.1 Please explain how frequently BC Hydro updates its load forecast for internal purposes.

209.1.1 Please explain how frequently BC Hydro incorporates updated economic forecasts when it updates its load forecast.

209.1.2 Please explain whether BC Hydro's load forecast produced for internal purposes relies on CBoC economic forecast.

209.1.2.1 If not, please provide the source of the economic forecast and explain why CBoC's economic forecast is not used.

209.2 Please explain how often CBoC updates its regional economic forecasts, and how often the BC Ministry of Finance updates its economic forecasts.

209.3 Please explain whether the frequency for CBoC to update its regional economic forecasts meets BC Hydro's load forecast needs (such as internal operational needs, financial reporting needs such as in this Application and for resource planning).

**210.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-1, pp. 3-41, 3-42; Appendix O, Section 20, Table F-2;**
**Exhibit B-5, BCUC IR 5.3.1, 7.2**
**GDP growth projection**

BC Hydro states on page 3-41 of its Application that the employment, retail sales and commercial GDP values are as provided by the CBoC Economic Forecast June 2018. All of these values are at the BC Hydro-wide service area while regional forecasts of these variables are used in developing sales forecasts which comes from the commercial statistical adjusted end-use (SAE) models.

BC Hydro states on page 3-42 of the Application that "Demand growth from other light industrial customers is driven by projected provincial GDP which shows lower growth over the test period relative to past load forecasts." BC Hydro also presents Table 3-7 in its Application, and is replicated below:

**Table 3-7 Real GDP Growth – British Columbia**

| Calendar Year | 2015 (Actual) | 2016 (Actual) | 2017 (Actual) | 2018 (Forecast) | 2019 (Forecast) | 2020 (Forecast) |
|---|---|---|---|---|---|---|
| Real GDP Growth (%) | 3.5 | 3.5 | 3.6 | 2.2 | 1.8 | 2.0 |

Source: B.C. Ministry of Finance First Quarter Report Issued September 7, 2018.

In response to BCUC IR 5.3.1, BC Hydro provided the following table comparing the total provincial BC GDP growth between the CBoC Economic Forecast June 2018 and the BC Ministry of Finance BC Budget February 2019.

**Total Provincial BC GDP Growth (%)**

| Calendar Year | Conference Board of Canada Economic Forecast June 2018 (%) | BC Ministry of Finance BC Budget February 2019[1] (%) |
|---|---|---|
| **2019** | **1.8** | **2.4** |
| **2020** | **2.0** | **2.3** |

210.1 Please explain whether the provincial GDP growth of 1.8 percent for 2019 and 2.0 percent for 2020 is from the CBoC Economic Forecast June 2018 or from the BC Ministry of Finance First Quarter Report issued September 7, 2018.

210.2 Please clarify whether the GDP growth forecast used to estimate the light industrial load forecast is from CBoC or the BC Ministry of Finance.

210.2.1 If the GDP growth forecast is from the BC Ministry of Finance, please explain why CBoC forecasts are not consistently applied for all customer segments' load forecast.

BC Hydro stated in response to BCUC IR 7.2 that:

> The perturbation process used the Conference Board of Canada's GDP growth forecast (refer to Appendix O, section 20, Table F-2 of the Application) as the base. That base was then perturbed randomly using a normal distribution with a mean of zero and standard deviation of 1.7 that was itself derived from the actual, annual values for GDP growth for British Columbia over the past twenty years (refer to Appendix O, section 20, Table F-2, Note 3) in order to incorporate variability.

Table F-2 in Section 20 of Appendix O of the Application shows the commercial economic drivers (employment annual growth, real retail sales annual growth and real commercial GDP annual growth) and the BC provincial GDP annual growth as the light industrial economic driver. Note 2 to the table regarding commercial economic drivers states: "history and forecast for all data in the table above comes from the Conference Board of Canada June, 2018 Economic Forecast." Note 3 regarding light industrial economic drivers states: "history comes from BC Stats while forecast of real BC GDP growth from 2018 to 2022 comes [from] BC Ministry of Finance, First Quarter Report, issued September 7, 2018."

210.3 Please clarify whether the perturbation process was performed on each of the commercial economic drivers and the light industrial economic driver.

210.3.1 If the perturbation process is also performed on the light industrial economic driver, please explain whether the "base" references CBoC's GDP growth forecast or references the BC Ministry of Finance growth forecast.

210.3.2 If the perturbation process is only performed on the commercial economic drivers, please explain whether the variability to GDP on the commercial GDP annual growth is applied to the light industrial forecast.

210.3.2.1 If yes, please elaborate on why that is appropriate.

210.3.2.2 If no, please explain how variability to the GDP growth is applied to the light industrial load forecast.

210.4 Please confirm, or explain otherwise, that the perturbation distribution (normal distribution with a mean of zero and standard deviation of 1.7) is the same for all economic drivers presented in Table F-2.

210.4.1 If confirmed, please explain why BC Hydro considers it appropriate to use the same distribution. Please include any analysis or studies to support this assumption.

210.4.2 If not confirmed, please present the distribution assumption for each applicable economic driver.

**211.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-5, BCUC IR 5.3.1**
**Rate and price elasticity**

BC Hydro stated in response to BCUC IR 5.3.1 that "There are challenges and uncertainties in forecasting actual future rates. BC Hydro developed the rate impacts for the October 2018 Load Forecast using the past five years of the 2013 10-Year Rates Plan. However, the rates within that rate plan are not the same as the rates we are now seeking within this Application."

211.1 Please explain why the rates BC Hydro is seeking within this Application is not used as an input to estimate rate and price elasticity in the Test Period load forecast.

211.2 Please compare the assumed rates used in the October 2018 load forecast and the rates BC Hydro is seeking within this Application.

211.2.1 Please quantify the impact to the Test Period load forecast if the rates BC Hydro is seeking within this Application is used to estimate rate and price elasticity.

**212.0 Reference: LOAD AND REVENUE FORECAST**
**Exhibit B-5, BCUC IR 9.4**
**Top-down and bottom-up forecast**

In response to BCUC IR 9.4, BC Hydro stated:

> The bottom-up and top-down forecasts are iterated until they converge by adjusting the following parameters… For instance, if the bottom-up forecast for one of the six sub-regions is much higher than what is in the top-down forecast, we would check the bottom-up assumptions for defensibility. If it is felt that the probability weightings in the bottom-up were too high, then the iteration would be to lower them until the bottom-up and top-down forecasts align.

212.1 Please elaborate on whether the top-down forecasts are also tested for defensibility and adjusted accordingly.

212.2 Please elaborate on how BC Hydro determines whether the top-down or the bottom-up forecasts requires adjustment, and by how much respectively, in order for the two forecasts to converge.

## C. CHAPTER 5 – OPERATING COSTS

**213.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 33.1**
**Change in organization structure**

In response to BCUC IR 33.1, BC Hydro stated:

> Our current Plan-Build-Operate-Support model completes the functional centralization we've pursued over the past decade with the Environment, Finance, Information Technology, Human Resources, Project Delivery, Safety, and Supply Chain functions. The positive results from these previous organizational changes gave us the confidence to continue with the functional centralization of larger functions, such as planning and operations.

213.1 Please comment on whether there are further organizational changes planned. If so, please discuss: i) the timeline; ii) the types of changes and the expected benefits; and iii) associated costs.

213.2 Please discuss if there are any programs planned for the Test Period, where similar to the Accenture repatriation or Workforce Optimization program, there will be impacts to the number of Full Time Equivalents (FTEs), or operating expenditures. If so, please provide the details of the program(s).

**214.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 64.1**
**Change in the type, complexity and volume of work**

In response to BCUC IR 64.1, BC Hydro stated that although the "core work has remained the same, the type, complexity, and volume of work BC Hydro performs has changed and increased since the Previous Application. In particular, the compliance burden on BC Hydro has increased, creating additional coordination requirement and costs."

In the response, BC Hydro also provided examples of changes and increases to the volume and complexity of the work since the previous revenue requirement application (RRA).

214.1 For each example provided in response to BCUC IR 64.1 and summarized below, please quantify the impact on operating costs for F2020 plan and F2021 plan where possible.

- North American Electric Reliability Corporation Critical Infrastructure Protection
- Safety Regulations
- Indigenous Relations
- Greater Involvement of Subject Matter Experts in Field Work
- *Provincial Water Sustainability Act*
- Species at Risk
- Invasive species

Further in response to BCUC IR 64.1, BC Hydro stated it has:

> …established a new company-wide initiative for fiscal 2020: make it easier to get work done. This objective means that everyone considers the impact of trickledown effect of the work they're doing in front-line Operations employees. It includes removing barriers and engaging our front-line Operations teams early in process development, so that they have more time to complete core work.

214.2 Please elaborate on the "make it easier to get work done" initiative. As part of the response, please identify any quantitative and qualitative benefits resulting from the initiative.

214.3 Please discuss if the "make it easier to get work done" initiative contributes to capacity hours gained, similar to the Work Smart program. If not, why not?

214.4 Please comment on the expected annual reductions in operating costs as a result of this initiative.

**215.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 65.1, 104.1; Exhibit B-6, BCOAPO IR 36.1**
**Allocation of costs**

In response to BCUC IR 65.1, BC Hydro stated:

> BC Hydro's internal labour must be directly attributable to the capital project and program to be eligible for capitalization under IFRS. As a result, many KBUs [Key Business Units] do not charge internal labour to capital projects and programs.
>
> As part of the annual and future year budgeting processes, operating, capital, and deferred work plans (projects and programs) are developed. The work plans include estimates of internal labour, external contractors, materials, and services required to deliver the work. Based on the skillsets required and resource availability, BC Hydro decides whether to complete the work with internal or external resources. For internal resources, based on the nature of the work, BC Hydro plans labour as either operating, capital and deferred.

215.1 Please discuss the factors for determining whether a cost is operating, capital or deferred.

215.2 Please explain if there has been any change in the methodology for planning labour (operating, capital and deferred costs) since the last RRA. If so, please comment on each of the changes and the reason the change was implemented.

In response to BCUC IR 104.1, BC Hydro stated that "[e]ligible capital overhead is shown as a reduction to operating expenses in Appendix A."

In response to BCOAPO IR 36.1, BC Hydro provided the following break down of capitalized costs by fiscal year:

| ($ million) | Schedule Reference | F2017 RRA | F2017 Actual | F2018 RRA | F2018 Actual | F2019 RRA | F2019 Forecast | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Eligible Capital Overhead | | | | | | | | | |
| Integrated Planning | | (3.1) | (3.6) | (3.1) | (2.9) | (3.1) | (2.7) | (2.7) | (2.7) |
| Capital Infrastructure Project Delivery | | (0.5) | (0.4) | (0.5) | (0.3) | (0.5) | (0.4) | (0.4) | (0.4) |
| Operations | | (19.7) | (18.2) | (19.7) | (19.1) | (19.7) | (20.7) | (20.7) | (20.7) |
| Finance, Technology, Supply Chain | | (44.5) | (44.4) | (45.3) | (46.4) | (46.0) | (46.1) | (46.7) | (47.1) |
| People, Customer, Corporate Affairs | | (0.4) | (0.4) | (0.4) | (0.3) | (0.4) | (0.5) | (0.5) | (0.5) |
| Total | Appendix A 5S line 7 | (68.2) | (67.0) | (69.0) | (69.0) | (69.7) | (70.4) | (71.0) | (71.4) |
| IFRS Ineligible Capital Overhead | Appendix A 5.0 line 58 | (112.0) | (112.0) | (89.6) | (89.6) | (67.2) | (67.2) | (44.8) | (22.4) |
| Total Capitalized Overhead | 5.7 L18 | (180.2) | (179.0) | (158.6) | (158.6) | (136.9) | (137.6) | (115.8) | (93.8) |

215.3 Please discuss the methodology for allocating capital overhead.

215.3.1 Please explain if there has been any change in the process or controls for allocating overhead costs since the last RRA. If so, please comment on each of the changes and the reason the change was implemented.

215.4 Please describe the types of eligible capital overhead incurred by the Operations and the Finance, Technology, Supply Chain KBUs.

**216.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 40.2.1**
**Operating cost increases – impact on net operating cost increases**

In response to BCUC IR 40.2.1, BC Hydro stated the following:

> $(54.3) million – lower IPP capital lease costs due to impact of the new accounting standard on leases, IFRS 16 which is further explained in Chapter 5, section 5G.6 of the Application.

216.1 Please comment on the impact the adoption of International Financial Reporting Standards (IFRS) 16 has had on loan covenants, credit ratings and borrowing costs.

**217.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 41.1, 42.3.1; Exhibit B-6, AMPC IR 3.1.3**
**Operating cost increases – labour costs**

In response to BCUC IR 41.1, BC Hydro provided a summary of changes to its base operating costs from F2017 plan to F2021 plan. Included in this table is the line item "Labour" with cost increases in F2017 plan to F2021 plan, as shown below:

| | ($ million) | | F2017 Plan | F2018 Plan | F2019 Plan | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|
| 1 | F2016 Revenue Requirement Application Plan | | 826.9 | | | | |
| 2 | | | | | | | |
| 3 | Less: | | | | | | |
| 4 | IFRS Ineligible Capital Overhead (Schedule 5.0, line 10) | | (80.5) | | | | |
| 5 | Independent Power Producer Capital Leases (Schedule 5.0, line 11) | | (33.8) | | | | |
| 6 | Base Operating Costs (Carry Forward) (Schedule 5.0, line 9) | A | 712.7 | 756.6 | 757.4 | 769.5 | 777.9 |
| 7 | | | | | | | |
| 8 | Compliance Filing Adjustment (Schedule 5.0, line 8) | B | 10.1 | 0.1 | 0.2 | | |
| 9 | | | | | | | |
| 10 | Cost Savings | C | (33.2) | (0.3) | (0.2) | (13.6) | (0.4) |
| 11 | | | | | | | |
| 12 | Cost Increases | | | | | | |
| 13 | Labour | | 4.9 | 8.4 | 9.1 | 11.0 | 10.3 |
| 14 | Storm restoration | | 2.8 | | | 11.1 | |
| 15 | Unavoidable costs (mandatory fees, crane remediation) | | 5.2 | (0.8) | 0.2 | | |
| 16 | Capital Driven (maintenance, capital project dispute resolution costs, capital project investigation costs) | | 19.0 | (3.1) | 2.6 | | |
| 17 | Initiatives (safety, customer strategy) | | 6.5 | (1.5) | - | | |
| 18 | Other | | 6.5 | (0.6) | 0.2 | | |
| 19 | Smart Metering and Infrastructure | D | 22.1 | (1.4) | (0.1) | | |
| 20 | | | | | | | |
| 21 | Total Cost Increases | E | 67.0 | 1.0 | 12.0 | 22.1 | 10.3 |

217.1 Please explain why the labour cost increases are rising over time, and have more than doubled in F2020 compared to F2017. Please breakout the components contributing to the labour cost increase for each year (e.g. Work Force Optimization program, Accenture Repatriation, Standard Labour Rate Increases, etc.) and include the associated cost for each component.

In response to BCUC IR 42.3.1, BC Hydro provided a breakdown of the incremental operating labour costs over the Test Period as shown below:

| Item | Fiscal 2020 Incremental ($ million) | Percentage Increase/ Decrease of total labour cost change % | Fiscal 2021 Incremental ($ million) | Percentage Increase/ Decrease of total labour cost change % |
|---|---|---|---|---|
| Salary Increases | 10.1 | 56.1 | 8.9 | 86.4 |
| Employer Health Tax | 7.9 | 43.9 | (1.9) | (18.4) |
| Employee Benefit Plan | 2.1 | 11.7 | 2.0 | 19.4 |
| Current Service Costs | (2.1) | (11.7) | 1.3 | 12.6 |
| Total Labour Cost Change | 18.0 | 100.0 | 10.3 | 100.0 |
| Unallocated Funds Reduction | (7.0) | | 0.0 | |
| Labour Cost Total | 11.0 | | 10.3 | |

217.2 Please expand the table above by adding columns that provide: i) the actual labour costs for F2012 through F2019; and ii) the percentage increase over the prior year for all fiscal years.

In response to AMPC IR 3.1.3, BC Hydro provided the following table with a break down of the operating labour cost increases from F2019 forecast to F2020 plan by Business Group.

| | Integrated Planning | Capital Infrastructure Project Delivery | Operations | Safety | Finance, Technology, Supply Chain | People, Customer, Corporate Affairs | Other | Total |
|---|---|---|---|---|---|---|---|---|
| Accenture Repatriation | - | 0.4 | - | - | 3.2 | 31.7 | - | 35.3 |
| Workforce Optimization Program | 2.9 | 2.1 | 5.7 | 1.4 | 14.6 | 4.6 | 0.6 | 32.0 |
| Labour Cost Increases | 5.2 | 1.2 | 5.1 | 1.9 | 3.4 | 1.1 | 0.1 | 18.0 |
| Unallocated Funds Reduction | (2.0) | (0.5) | (2.0) | (0.7) | (1.3) | (0.4) | (0.1) | (7.0) |
| Vacancy Factor Savings | (1.2) | (1.6) | (0.5) | (0.2) | (1.4) | (0.5) | (0.3) | (5.6) |
| Other Labour Adjustments | (3.6) | 0.5 | 3.1 | (0.6) | (2.1) | (2.4) | (0.6) | (5.7) |
| Total | 1.3 | 2.1 | 11.4 | 1.8 | 16.3 | 34.1 | (0.2) | 66.8 |

217.3 Please explain why the incremental cost increase for the Workforce Optimization program from F2019 forecast to F2020 plan is $32.0 million. Please reconcile to the number of expected contractors to internal FTE conversions for that period.

217.4 Please elaborate on what is included in "Other Labour Adjustments." Please specify the items and the associated costs.

**218.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 5.6.5.2, p. 5-47; Exhibit B-5, BCUC IR 40.2.1, 42.4**
**Operating cost increases – standard labour rates**

In response to BCUC IR 40.2.1, BC Hydro stated that "[w]hile there is discretion in determining management and professional salary increase budgets, it would be difficult to continue to attract and retain employees if salaries do not increase over time and remain competitive with the market."

BC Hydro stated in response to BCUC IR 42.4: "benchmarking indicates that the value of BC Hydro's existing Total Rewards offer is consistent with median market rates."

In its Application, BC Hydro states its "voluntary turnover rate is 1.3 per cent, which is below the 3.8 per cent average of the Power and Utilities industry as reported by the Conference Board of Canada."

218.1 Considering BC Hydro's existing Total Rewards offer is consistent with median market rates and BC Hydro's voluntary turnover rate is 2.5 percent lower than industry average, please explain whether these comparisons factor into management's decision on management and professional salary increases. If so, please explain how.

**219.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 42.1, 42.6**
**Operating cost increases – general wage increase**

In response to BCUC IR 42.6, BC Hydro stated:

> The primary considerations for determining management and professional salary increases are Public Sector Employers' Council policy and labour budgets.
>
> Public Sector Employers' Council sets policies for exempt compensation in the B.C. Public Sector. For example, from 2012 to 2018 their manager salary freeze policy limited salary increases between 0 per cent to 2 per cent per year. As such, management and professional salaries did not increase at the same rate as union wages during that period…
>
> BC Hydro participates in and collects information from a number of local and Canadian market salary increase forecast surveys. Those sources indicate that the median salary increase forecast for 2019 if 2.5 per cent.

219.1 Please explain whether BC Hydro's management and professional employee salary increases from 2012 to 2018 were the maximum annual allowed during that time. If not, please explain why not?

In response to BCUC IR 42.1, BC Hydro stated:

> Planned salary increases for union employees over the test period are 2 per cent per year which is consistent with the bargaining mandate set by the Public Sector Employers Council. It's improbable that collective agreements could be renewed without providing an increase that is consistent with this mandate.
>
> Planned salary increases for management and professional employees over the test period are 2.5 per cent per year which is similar to forecast inflation and market salary increases. While there is discretion in determining management and professional salary increase budgets, it would be difficult to continue to attract and retain employees if salaries do not increase over time and remain competitive with the market.

219.2 Please confirm, or explain otherwise, that the general wage increase BC Hydro included in the Application is 2.0 percent for union employees and 2.5 percent for management and professional employees, and that this is the only increase to employee compensation in the Test Period.

**220.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 42.10, 42.10.1**
**Incentive pay**

In response to BCUC IR 42.10, BC Hydro stated that "[o]nly Executive and Director level positions receive incentive pay. These positions represent approximately 1 per cent of all management and professional employees."

In response to BCUC IR 42.10.1, BC Hydro provided details of the structure of the incentive pay (salary holdback) that only Executives and Director level positions receive and stated:

> The maximum annual award an employee can receive is 10 per cent or 20 per cent of their salary, depending on their position. Awards are based on corporate and individual performance.
>
> Corporate performance is based on results achieved on BC Hydro's Service Plan performance measures…
>
> Individual performance is based on the employee's individual performance objectives established at the start of the year and assessed by the employee's manager at year end…
>
> The only change to the program since the Previous Application is an increase in the weighting of the corporate component from 40 per cent to 60 per cent for Executives.

220.1 Please explain whether the current incentive (holdback) program replaced a prior incentive program.

220.2 Please discuss whether there are any other employee groups that receive some form of incentive or performance pay. If so, comment on how the pay criteria are designed and measured.

220.3 Please explain whether financial objectives (i.e. operational efficiencies for Business Groups and KBUs and reductions in operating costs) are included as part of the corporate or individual performance objectives. If not, why not? If yes, please describe the financial objectives and provide examples.

220.4 Please discuss whether executives and director level employees are involved in setting/changing the Service Plan performance measures, targets and the weighting.

220.4.1 Please clarify the role of the Board of Directors with respect to setting/changing Service Plan performance measures.

220.4.1.1 Please discuss if the Board of Directors receive incentive pay. If so, please discuss if this incentive pay is based on the annual Service Plan performance measures.

**221.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 51.6**
**Overtime**

In response to BCUC IR 51.6, BC Hydro stated that it actively manages overtime using certain strategies.

221.1 Please confirm, or explain otherwise, that an overtime target is the equivalent to planned or budgeted overtime.

221.2 Please provide the annual overtime targets and actual overtime by KBU and by affiliation for F2017 to F2019 actual, and the annual overtime targets for the Test Period. Please explain significant variances for the target to actual comparisons.

221.3 Please explain what is meant by "capacity of internal workers." Include a discussion on how the capacity of an internal worker is measured and how it impacts the number of overtime hours, and overtime costs.

221.4 Please explain how the difference in standard labour rates of ~9 percent across International Brotherhood of Electrical Workers (IBEW) trades were calculated and discuss how this difference correlates to regular and overtime costs for IBEW trades (i.e. each overtime hour worked costs ~9 percent more than a regular hour worked). Please provide the same for the Movement of United Professionals (MoveUP) management and professional employees.

221.5 Please explain how BC Hydro verifies that the strategies used to actively manage overtime are consistently applied across the organization and are effective.

**222.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 5.6.4, Table 5-14, p. 5-46; Section 6.2.1, Table 6-1, p. 6-6; Exhibit B-5, BCUC IR 47.5, 51.4, 51.7.1; Exhibit B-6, BCOAPO IR 30.1; AMPC IR 3.2**
**Summary of FTE changes**

In response to BCUC IR 51.7.1, BC Hydro provided a table that includes a high-level explanation for significant differences in FTEs between the RRA and F2017 and F2018 actuals and F2019 forecast. The table is broken down by KBUs according to Business Group.

In response to BCUC IR 47.5, BC Hydro provided a table illustrating the breakdown of FTEs added through the Workforce Optimization program by Business Group and by funding source.

222.1 Please explain why the F2019 increases described in BCUC IR 51.7.1 and listed below (that are attributed primarily to the Workforce Optimization Program for the Business Groups) are significantly greater than the number of FTE conversions in F2019 as listed in response to BCUC IR 47.5 for the same business group.

- Integrated Planning
- Capital Infrastructure Project Delivery
- Operations

222.2 Please provide the number of temporary hires for the Line Field Operations KBU in F2019 and explain why these temporary hires were required.

222.3 With respect to the Distribution, Design & Customer Connect KBU, please break down the increase of 41 FTEs from F2018 to F2019, between the Workforce Optimization program and higher overtime.

222.4 Please explain what is meant by "unplanned new hires" in the Field Services KBU in F2019 as indicated in BCUC IR 51.7.1. Please quantify the number of unplanned new hires and explain why they were needed.

In response to BCUC IR 51.4, BC Hydro stated: "As shown in Figure 5-6 on page 5-31 of Chapter 5 of the Application, there was considerable growth of capital expenditures from fiscal 2011 to fiscal 2018. The largest growth is in the Business Groups that primarily deliver Capital projects (Capital infrastructure Delivery and Operations) as well as in the Site C Project."

Table 5-14 in the Application provides a summary of the total FTEs by function. The capital portion of the table is reproduced below:

**Table 5-14 Total FTEs by Function**

| FTEs (including Overtime) | F2017 RRA | F2017 Actual | F2018 RRA | F2018 Actual | F2019 RRA | F2019 Forecast | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|---|
| **Capital** | | | | | | | | |
| Integrated Planning | 365 | 325 | 365 | 346 | 367 | 411 | 416 | 416 |
| Capital Infrastructure Project Delivery | 276 | 307 | 301 | 360 | 302 | 418 | 418 | 417 |
| Operations | 1,215 | 1,077 | 1,219 | 1,100 | 1,219 | 1,344 | 1,343 | 1,340 |
| Safety | 186 | 154 | 188 | 152 | 188 | 138 | 124 | 114 |
| Finance, Technology, Supply Chain | 31 | 36 | 39 | 46 | 44 | 54 | 70 | 70 |
| People, Customer, Corporate Affairs | 8 | 6 | 8 | 8 | 8 | 8 | 8 | 8 |
| Other | 189 | 168 | 192 | 227 | 202 | 394 | 465 | 477 |
| Total (Schedule 16 line 70) | 2,269 | 2,072 | 2,311 | 2,239 | 2,329 | 2,766 | 2,843 | 2,841 |
| Percentage Change | | | | | | 19% | 3% | 0% |

Table 6-1 in the Application provides the actual and planned growth and sustaining capital expenditures from F2017 to F2021.

222.5 Please reproduce Table 6-1 to include only: generation (removing the Site C Project and Generation – Waneta 2/3 line items); transmission; and distribution capital expenditures.

222.5.1 Please comment on the trend of capital expenditures in the re-produced table from F2017 actual to F2021 plan.

222.6 Please discuss the level of FTEs in the Integrated Planning, Capital Infrastructure Project Delivery and Operations KBUs considering the trend in capital expenditures over the same period.

In response to AMPC IR 3.2, BC Hydro provided the following table:

| FTEs (includes regular and overtime) | Fiscal 2012 Actual | Fiscal 2013 Actual | Fiscal 2014 Actual | Fiscal 2015 Actual | Fiscal 2016 Actual | Fiscal 2017 Actual | Fiscal 2018 Actual | Fiscal 2019 Forecast | Fiscal 2020 Plan | Fiscal 2021 Plan |
|---|---|---|---|---|---|---|---|---|---|---|
| Operating | 4,415 | 4,096 | 4,089 | 4,036 | 4,042 | 4,082 | 4,209 | 4,051 | 4,047 | 4,043 |
| Capital | 1,527 | 1,662 | 1,752 | 1,872 | 1,828 | 1,905 | 2,013 | 2,378 | 2,383 | 2,370 |
| Deferred | 309 | 250 | 258 | 223 | 188 | 161 | 162 | 165 | 164 | 164 |
| Total FTEs (Chapter 1, Figure 1-3, page 1-19) | 6,251 | 6,007 | 6,099 | 6,131 | 6,058 | 6,148 | 6,385 | 6,593 | 6,594 | 6,577 |
| Smart Metering and Infrastructure FTEs | 81 | 119 | 112 | 85 | 69 | - | - | - | - | - |
| Site C FTEs | 56 | 82 | 92 | 97 | 108 | 167 | 226 | 389 | 460 | 472 |
| Accenture Repatriation FTEs | - | - | - | - | - | - | - | 423 | 423 | 423 |
| Total FTEs (Appendix A, Schedule 16.0, line 60) | 6,388 | 6,208 | 6,303 | 6,312 | 6,234 | 6,315 | 6,611 | 7,405 | 7,477 | 7,471 |
| **Labour Costs $ Million** | | | | | | | | | | |
| Total Labour Costs | 717.3 | 718.9 | 749.9 | 751.7 | 780.8 | 792.3 | 832.7 | 921.4 | 966.6 | 983.0 |
| Capital Labour Costs | 205.8 | 192.8 | 208.9 | 218.8 | 243.6 | 267.4 | 295.5 | 342.0 | 366.5 | 372.9 |

222.7 Please present as separate line items: i) the Site C capital labour costs; and ii) the capital labour costs excluding Site C.

222.8 Please comment on the change/trend in capital labour costs (excluding Site C) from F2017 actual to F2021 plan. Please discuss this change/trend to the change in capital FTEs over the same period.

222.8.1 Please comment on the change/trend in Site C capital labour costs from F2017 actual to F2021 plan. Please discuss this change/trend to the change in Site C FTEs over the same period.

In response to BCOAPO IR 30.1, BC Hydro provided the regular time FTEs for F2011 through F2018 breaking out those attributable to Smart Meter Infrastructure (SMI) and Site C.

| FTE | F2011 | F2012 | F2013 | F2014 | F2015 | F2016 | F2017 | F2018 |
|---|---|---|---|---|---|---|---|---|
| BC Hydro Excluding SMI and Site C | 5,743 | 5,738 | 5,511 | 5,571 | 5,512 | 5,462 | 5,578 | 5,791 |
| SMI | 33 | 80 | 115 | 108 | 83 | 67 | 0 | - |
| Site C | 29 | 55 | 81 | 91 | 96 | 106 | 157 | 212 |
| Total | 5,805 | 5,873 | 5,707 | 5,770 | 5,690 | 5,635 | 5,736 | 6,004 |

222.9 Please explain why the "BC Hydro FTEs Excluding SMI and Site C" results in the above table do not agree to the provided "Total FTEs (Chapter 1, Figure 1-3, page 1-19)" in response to AMPC IR 3.2.

222.9.1 Please explain why the FTEs for "SMI" and "Site C" in the above table do not agree to the "Smart Metering and Infrastructure FTEs" and "Site C FTEs" provided in response to AMPC IR 3.2.

**223.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 38.3, 38.6, 38.8, 38.9, 38.10, 38.11.1, 38.13, 38.13.1; Exhibit B-6, BCOAPO IR 26.2; Government of British Columbia June 2011 Review of BC Hydro[4], Section 2.2.3, p. 40**
**Work Smart Program**

In response to BCUC IR 38.6, BC Hydro stated that "[i]n subsequent years, project recommendations are revisited on a sample basis with the process owner to ensure the approved future state that was implemented is still in effect and that the capacity hours gained remain."

223.1 Please explain if there is a set schedule which establishes the timeline for evaluation of all approved future states that were implemented.

223.2 Please comment on whether the approved future states for all implemented project recommendations have the same number of capacity hours gained as measured when first implemented. If not, please discuss why and quantify the impact on costs and the total number of capacity hours gains.

In response to BCUC IR 38.8, BC Hydro provided a table outlining the approximate total incremental costs incurred related to the Work Smart program from inception through F2019:

| | | F2015 ($) | F2016 ($) | F2017 ($) | F2018 ($) | F2019 ($) | Cumulative Total ($) |
|---|---|---|---|---|---|---|---|
| | Initial Program Development | 25,200 | | | | | 25,200 |
| | Training | 48,000 | 34,850 | | | | 82,850 |
| A | Subtotal – Development Costs | 73,200 | 34,850 | | | | 108,050 |
| B | Initiative Facilitation (by third parties) (Note 1) | 424,879 | 113,165 | | | | 538,044 |
| C | Work Smart Program Office (Incremental FTE) | | 175,879 | 257,151 | 460,831 | 869,428 | 1,763,289 |
| D=A+B+C | Total Program Costs | 498,079 | 323,894 | 257,151 | 460,831 | 869,428 | 2,409,383 |

[4] https://news.gov.bc.ca/files/Newsroom/downloads/bchydroreview.pdf.

Further, in response to BCUC IR 38.13.1, BC Hydro stated:

> Planned costs for the Work Smart program in fiscal 2020 are expected to be approximately $953,000… The increase from fiscal 2018 ($460,831) to fiscal 2020 ($953,000) is due to the addition of two and a half full time equivalents to support a greater volume of projects, training offerings, and new tools including Design Thinking and Lean Daily Management.
>
> Planned costs in fiscal 2021 are expected to be consistent with fiscal 2020 plus any adjustments to the standard labour rate.

223.3 Please provide a breakdown of the expenditures included in the Work Smart Program Office costs. Please also explain what these expenditures are for.

223.4 Please explain why the Work Smart Program Office costs increased from $257,151 in F2017 to $460,831 in F2018.

In response to BCUC IR 38.9, BC Hydro provided the following cost benefit analysis:

| | A | B | C | D = C/A |
|---|---|---|---|---|
| Fiscal Year | Incremental Cost ($) | Capacity Hours Gained | Imputed Value ($) | Value/ Cost |
| | | | | |
| 2015 + 2016 (Note 1) | 821,971 | 17,417 | 1,594,966 | 1.9 |
| 2017 | 257,151 | 22,631 | 2,171,186 | 8.4 |
| 2018 | 460,831 | 39,965 | 3,871,659 | 8.4 |
| Total through 2018 | 1,539,955 | 80,013 | 7,637,811 | 5.0 |

Further in Attachment 1 of this same response, BC Hydro provided details on how the estimated imputed program benefit of $7.6 million was calculated.

223.5 Please explain what is meant by "Imputed Value" (column C) and how it impacts the Test Period revenue requirement.

223.5.1 Please clarify whether the "Imputed Value" can be considered the avoided costs. If not, why not?

223.6 Please confirm, or explain otherwise, that the cumulative value (or avoided operating cost) of each capacity hour gained from 2015 to 2018 is $95.46 (= $7,637,811 / 80,013).

223.6.1 If confirmed, please discuss whether $95.46 is comparable to the average hourly compensation of those employees who participate in the Work Smart program.

223.7 Please quantify the capacity hours gained as a percentage of total labour hours and discuss whether there is a capacity hours gained target, and whether this target has been achieved in each of the years since initiation.

In response to BCUC IR 38.10, BC Hydro stated that it "expect[s] that the natural result of increasing the capacity of the existing workforce to absorb new work would be avoiding or delaying the need to add resources to perform that work. However, fewer expected contract hours and fewer expected new hires are not measures we use to assess performance."

In response to BCUC IR 38.11.1, BC Hydro stated: "[w]ithout the capacity hours gained delivered through the Work Smart program, BC Hydro's operating costs (and thus its revenue requirements) would be higher."

223.8 Please explain whether BC Hydro considers there is value to adding a performance measure to the Work Smart program, which measures the cost savings, avoided costs and/or the impact on contract hours and number of new hires. Please explain why or why not.

On page 40 of the Government of BC June 2011 Review of BC Hydro, it states:

> BC Hydro, recognizing that it has not been operating to optimum efficiency, has initiatives to streamline processes, eliminating low value work and leveraging technology, but there is some question as to the effectiveness of these initiatives as they have not demonstrated significant reductions to operating costs.

223.9 Please explain whether BC Hydro can demonstrate the effectiveness of the Work Smart program through reductions to operating costs. If so, please elaborate.

223.10 Please discuss how the Work Smart program generates efficiencies in operating costs.

BC Hydro provided 31 Work Smart initiatives planned for F2020 in response in BCUC IR 38.13. And in response to BCUC IR 38.3, BC Hydro stated:

> Of the 31 projects, the first 19 projects are process focused and expected to yield annual capacity gains consistent with prior years. In other words, we expect to achieve approximately 22,800 annual capacity hours gained from these projects (1,200 hours/project X 19 projects).
>
> The remaining 12 projects are not conventional projects, have different objectives and therefore may not yield annual capacity hours gained that can be reliably measured.

223.11 Please discuss whether BC Hydro's expectation to implement 31 Work Smart initiatives in F2020 is consistent with the number of initiatives implemented in past years.

223.12 Please explain if BC Hydro will continue to measure the annual number of capacity hours gained and the imputed value of the capacity hours gained. If not, why not? If so, please comment on whether the methodology for measuring these values is expected to change.

**224.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 46.2, 48.2, 48.3; Exhibit B-6, BCOAPO IR 29.1**
**Workforce Optimization Program – annual net savings**

In response to BCUC IR 46.2, BC Hydro provided Attachment 1 which breaks down the estimated costs and savings by business group for the Workforce Optimization Program workforce adjustment requests.

In response to BCUC IR 48.3, BC Hydro provided a breakdown of Workforce Optimization program FTEs from inception to F2019 by function (operating, capital or deferred).

**Number of Workforce Optimization FTEs by Fiscal Year (F17-19) and Function**

| | F2017 | | | F2018 | | | F2019 | | |
|---|---|---|---|---|---|---|---|---|---|
| Business Group | OMA | Capital | Deferred | OMA | Capital | Deferred | OMA | Capital | Deferred |
| Integrated Planning | 2.6 | 13.4 | 0.0 | 16.1 | 23.9 | 0.0 | 7.4 | 24.6 | 0.0 |
| Capital Infrastructure Project Delivery | 7.0 | 47.0 | 0.0 | 12.8 | 58.8 | 1.0 | 10.0 | 67.7 | 1.0 |
| Operations | 4.3 | 17.7 | 0.0 | 17.2 | 31.9 | 0.9 | 46.8 | 28.2 | 0.0 |
| Finance Technology and Supply Chain | 1.5 | 3.0 | 0.0 | 61.0 | 17.0 | 0.0 | 40.7 | 0.4 | 0.0 |
| Safety | 8.8 | 1.2 | 0.0 | 3.1 | 2.9 | 0.0 | 6.8 | 2.2 | 0.0 |
| People, Customer, Corporate Affairs | 2.0 | 0.0 | 0.0 | 9.5 | 0.0 | 9.5 | 23.3 | 0.9 | 2.9 |
| Other | 1.3 | 0.7 | 0.0 | 2.8 | 1.2 | 0.0 | 1.0 | 0.0 | 0.0 |
| **Total** | **27.5** | **83.0** | **0.0** | **122.4** | **135.8** | **11.4** | **136.1** | **123.9** | **3.9** |

In response to BCUC IR 48.2, BC Hydro provided a breakdown of the planned Workforce Optimization program FTEs to be added through contract conversion in F2020 and F2021 by function (operating, capital or deferred).

**Number of Workforce Optimization FTEs by Fiscal Year (F20 & F21) and Function**

| | F2020 | | | F2021 | | |
|---|---|---|---|---|---|---|
| Business Group | OMA | Capital | Deferred | OMA | Capital | Deferred |
| Integrated Planning | 1.6 | 0.4 | 0.0 | | | |
| Capital Infrastructure Project Delivery | 0.7 | 9.3 | 0.0 | | | |
| Operations | 17.2 | 7.8 | 0.0 | | | |
| Finance Technology and Supply Chain | 13.7 | 4.3 | 0.0 | | | |
| Safety | 0.0 | 0.0 | 0.0 | | | |
| People, Customer, Corporate Affairs | 1.3 | 0.0 | 0.0 | | | |
| Other | 0.0 | 0.0 | 0.0 | | | |
| Total | 34.6 | 21.7 | 0.0 | 0.0 | 0.0 | 0.0 |

224.1 Please confirm, or explain otherwise, that the annual costs, savings and net savings are cumulative (i.e. each year provides the total costs, savings and net savings from all contractor conversions to internal FTEs up to the end of that fiscal year).

224.2 Please confirm, or explain otherwise, that the F2020 and F2021 estimated costs and savings are equivalent because there are no expected contractor conversions to internal FTEs planned for F2021.

224.3 Please clarify why the total estimated annual net savings has been declining from F2017 ($16.5 million) to F2019 ($15.2 million) when contractors were converted to internal capital and operating FTEs during this period.

224.4 Please explain why the operating net savings are positive for the following business groups: i) Capital Infrastructure Project Delivery (F2017 to F2021); ii) Operations (F2018 and F2019); and iii) People, Customer, Corporate Affairs (F2019 to F2021). Please include discussion on the number of contractors converted to internal capital and operating FTEs for each Business Group during this period.

224.5 Please explain why the total net savings is reduced over time for the following business groups: i) Capital Infrastructure Project Delivery; ii) Safety; iii) Finance, Technology, Supply Chain; and iv) People, Customer, Corporate Affairs. Please include discussion on the number of contractors converted to internal capital and operating FTEs for each Business Group during this period.

224.6 Please comment on why some contractor conversions to internal FTEs were done at a net cost to BC Hydro (i.e. Capital Infrastructure Project Delivery, Operations and People Customer Corporate Affairs Business Groups).

224.7 Please explain why no contractor conversions are planned for F2021.

224.8 Please reconcile the Workforce Optimization program results from F2019 ($0.6 million reduction in net savings from prior year and 263.9 [136.1 + 123.9 + 3.9] FTEs converted) with the expected results in F2020 ($3.3 million increase [from $15.2 million to $18.5 million] in net savings from prior year and 56.3 [34.6 + 21.47] FTEs converted).

Further in response to BCOAPO IR 29.1, BC Hydro provided the number of incremental FTEs approved through the Workforce Optimization program since F2016, broken down by fiscal year and Business Group.

| Business Group | F2017 | F2018 | F2019 | F2020 | F2021 | Total |
|---|---|---|---|---|---|---|
| Integrated Planning | 16 | 40 | 32 | 2 | - | 90 |
| Capital Infrastructure Project Delivery | 54 | 73 | 79 | 13 | - | 218 |
| Operations | 22 | 50 | 75 | 25 | - | 172 |
| Finance Technology and Supply Chain | 5 | 78 | 41 | 21 | - | 145 |
| Safety, Security, Emergency Management | 10 | 6 | 9 | 1 | - | 26 |
| People, Customer, Corporate Affairs | 2 | 19 | 27 | 0 | - | 48 |
| Other (Office of the General Counsel KBU) | 2 | 4 | 1 | - | - | 7 |
| Total | 111 | 270 | 264 | 62 | - | 706 |

224.9 Please explain why the F2020 total in the above table does not agree with the total planned contract conversions to internal FTEs in F2020 as shown in response to BCUC IR 48.2. Please provide an updated table, if applicable.

**225.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 5.6, p. 5-28; Section 5.6.1.3, Footnote 161, p. 5-34; Exhibit B-5, BCUC IR 35.1, 46.3, 46.5, 47.1, 47.3, 47.4, 47.4.1, 47.5, 48.1; Exhibit B-6, AMPC IR 3.7; BC Hydro F2017-F2019 RRA proceeding, Exhibit B-1-1, Section 5.3.1.3, p. 5-16**
**Workforce Optimization Program – contractor conversions to internal FTEs**

In response to BCUC IR 46.5, BC Hydro provided an estimate for the total contractor workforce as of the end of F2018, where it stated:

> BC Hydro does not track contractor FTE equivalency. However, BC Hydro estimates that its total contractor workforce as of the end of fiscal 2018 was approximately 4300 to 5800 FTEs, excluding contractors on the Site C Project. This number is an estimate based on contractor spend less non-labour costs (e.g., materials) and estimates of hourly rates and hours worked per year.

225.1 If possible, using the same methodology, please provide the estimated total annual contractor workforce at the end of F2015 to F2021 plan. Please comment on any trends.

In response to BCUC IR 47.1, BC Hydro stated:

> Equivalent cost reduction is the reduction to external contractor costs as well as other cost reductions, if required, to fully offset the cost of the additional FTE.
>
> […]
>
> Billings from external contractors include other costs such as their profit and professional development/training costs.

In Footnote 161 on page 5-34 of the Application, BC Hydro states:

> FTE additions through the Workforce Optimization Program Plan must be fully funded through an equivalent cost reduction. In most cases, this means a reduction in funding for external contractors; however, in some cases, FTE additions may be funded through reductions to other expenditures (e.g., materials, building and equipment, etc.), or by re-purposing other vacant positions.

Further in response to BCUC IR 47.3, BC Hydro stated that "less than 1 per cent of the total Workforce Optimization FTEs were funded through a reduction to other expenditures." As part of this response, BC Hydro also provides examples of this type of funding as part of the Workforce Optimization program.

225.2 Please clarify what is meant by "funded through reductions to other expenditures (i.e., materials, building and equipment, etc.)"

225.2.1 Please explain whether FTE additions funded through reductions to other expenditures may include costs such as contractor profit and professional development/training costs.

In response to BCUC IR 47.4, BC Hydro stated:

> Re-purposing other vacant positions to fund FTE additions through the Workforce Optimization Program refers to either:
>
> - the conversion of vacant FTE positions no longer required;
> - the conversion of funding from vacancy factor positions to fund additional FTEs.

Further in response to BCUC IR 46.3, BC Hydro stated: "[t]here were no instances where FTEs were hired in lieu of contractors when it was less cost-effective to hire FTEs on a long-term basis."

225.3 Please explain why re-purposing other vacant positions to fund FTE additions is not considered to be a new hire. Please discuss how this is considered to be part of the Workforce Optimization program.

225.4 Please explain why a vacant FTE position is available for conversion if it is no longer required. Please also comment on how this conversion is considered cost-effective given that the vacant position was no longer needed and had no associated FTE costs (i.e. no salary being paid).

225.5 Please explain what is meant by the "conversion of funding from vacancy factor positions." Please discuss how this is different from filling the vacant position (i.e. new hire), or the conversion of vacant FTE positions that are no longer required.

225.6 Please explain, how the cost-effectiveness/savings of "re-purposing other vacant positions" is measured, and how this contributes to the cost savings of the Workforce Optimization program. Please provide details of the calculation.

225.7 Please explain how the re-purposing of vacant positions impacts the vacancy factor savings. Please quantify the impact on the vacancy factor savings for those positions that were re-purposed in this manner.

In the BC Hydro F2017-F2019 RRA, BC Hydro stated:

> At the end of October 2015, approximately 170 FTEs had been approved for hire through fiscal 2019 with offsetting reductions in the use of external resources.
>
> […]
>
> The Workforce Optimization Program will result in net savings, since increased labour costs will be more than offset by a reduction in contractor costs.

225.8 Please explain when the Workforce Optimization program changed focus from being funded through a reduction in contractor costs to being fully funded through an equivalent cost reduction (which includes funding through reductions to other expenditures [i.e., materials, building and equipment, etc.], or by re-purposing other vacant positions).

On page 5-28 of the current Application, BC Hydro states:

> By replacing contractors with internal FTEs, the Workforce Optimization Program has increased the number of FTEs while decreasing BC Hydro's total costs by an estimated $18.5 million annually.

225.9 Please explain where the annual net savings of $18.5 million for the Test Period can be found in Appendix A. If the net savings amounts cannot be traced to Appendix A, please explain how the net savings impacts the revenue requirement.

225.10 Of the $18.5 million in total annual cost savings, please provide the net annual savings attributable to those positions: i) funded through reductions to other expenditures (i.e., materials, building and equipment, etc.); and ii) funding through re-purposing other vacant positions.

In response to BCUC IR 47.4.1, BC Hydro provided a list of KBUs where FTE additions through the Workforce Optimization program were funded through the re-purposing of other vacant positions.

| Business Group | Key Business Unit |
|---|---|
| Integrated Planning | Engineering |
| Capital Infrastructure Project Delivery | Environment |
| Capital Infrastructure Project Delivery | Project Delivery |
| Capital Infrastructure Project Delivery | Properties |
| Operations | Distribution Design and Customer Connections |
| Operations | Stations Field Operations |
| Safety | Learning and Development |
| Finance Technology, Supply Chain | Finance |
| Finance Technology, Supply Chain | Supply Chain |
| People, Customer, Corporate Affairs | Communications and Community Engagement |
| People, Customer, Corporate Affairs | Ethics and Merit Office |
| People, Customer, Corporate Affairs | Human Resources |

Further in response to BCUC IR 35.1, BC Hydro provided a list of all vacancies approved for recruitment as of March 31, 2019.

225.11 Please explain if there is a correlation between the number of vacancies (including the KBUs the vacancies exist in) and re-purposing other vacant positions to fund FTE additions through the Workforce Optimization program.

In response to BCUC IR 48.1, BC Hydro stated: "[t]he majority of the workforce adjustment conversions replaced work or functions performed by external contractors… 95 per cent are external contractor conversions."

225.12 Please confirm, or explain otherwise, that the remaining 5 percent of workforce adjustment conversions were funded through reduction to other expenditures or re-purposing other vacant positions.

225.12.1 If not confirmed, please elaborate on how these workforce adjustment conversions were funded.

In response to BCUC IR 47.5, BC Hydro provided a table illustrating the breakdown of the FTEs added through the Workforce Optimization program by Business Group and by funding source. Presented in F2018 (Finance Technology and Supply Chain and People, Customer, Corporate Affairs Business Groups) and F2020 (People, Customer, Corporate Affairs Business Group) are positive figures where funding FTE additions was completed by re-purposing vacant positions, and all other FTE additions are negative.

225.13 Please explain why positive values are listed in the re-purposing vacant positions column for the Finance Technology and Supply Chain Business Group in F2018 and the People, Customer, Corporate Affairs Business Group in F2018 and F2020.

225.13.1 Please clarify whether this indicates vacant positions were re-purposed to add contractor positions. Please also comment on the impact on the annual net savings in these instances.

In response to AMPC IR 3.7, BC Hydro stated:

> Generally, the contractor to FTE conversions from the Workforce Optimization Program have resulted in lower average operating costs per FTE than existing FTEs. As discussed further in section 5.6 of Chapter 5 of the Application, this is because many of the conversions are driven by capital investment and the majority of the labour costs associated with these FTEs are charged to capital projects.
>
> The average labour operating costs for FTEs approved through the Workforce Optimization Program are higher than the average labour operating costs for existing FTEs in the Indigenous Relations, T&D System Operations and Customer Service KBUs, for the following reasons:
>
> - Indigenous Relations KBU – The contractor to FTE conversions charge less of their time to capital projects than existing FTEs.
>
> […]
>
> - Customer Service KBU – The contractor to FTE conversions have comparatively higher operating labour costs than the FTEs in the Contact Centre, which make up a significant portion of the overall existing FTEs in the Customer Service KBU.

225.14 Please confirm, or otherwise explain, that the role completed by a contractor is fully replaced by an internal FTE in the Workforce Optimization program.

225.15 Please explain whether the contractor to FTE conversions for the Indigenous Relations KBU have reductions to their capital costs (per FTE) offsetting the increase in operating costs (per FTE). If not, why not?

225.16 Please clarify why contractor to FTE conversion in the Customer Service KBU have comparatively higher operating labour costs than the FTEs in the contract centre.

225.16.1 Please explain if the increased labour costs as a result of the FTE conversion was more than offset by a reduction in contractor costs. If not, please explain why and discuss whether there were additional cost savings derived elsewhere, and whether these savings are to be incurred annually.

**226.0 Reference: OPERATING COSTS**
**Exhibit B-1 Section 5.6.2.2, Table 5-11, pp. 5-40–5-41;**
**Exhibit B-5, BCUC IR 49.3, 49.6, 49.10, 49.11, 49.11.2**
**Accenture repatriation**

In Table 5-11 in the Application, BC Hydro presents the forecast annual net savings from the Accenture Repatriations:

**Table 5-11 Summary of Accenture Repatriation Savings and FTE Impact**

| KBU/Function | Services - ABS F2019 RRA ($ million) (1) | Services - ABS Reduction ($ million) | Incremental Operating Costs ($ million) (2) | Annual Operating (Costs) Savings ($ million) (3 = 1 - 2) | FTEs |
|---|---|---|---|---|---|
| Customer Service | 27.8 | (27.8) | 21.9 | 5.9 | 281 |
| Human Resources | 5.1 | (5.1) | 3.5 | 1.6 | 32 |
| Properties | 1.8 | (1.8) | 0.4 | 1.4 | 7 |
| Supply Chain | 2.5 | (2.5) | 2.4 | 0.1 | 23 |
| Technology | 0.0 | 0.0 | 0.5 | (0.5) | 5 |
| Communications and Community Engagement | 0.0 | 0.0 | 0.7 | (0.7) | 7 |
| Finance | 0.0 | 0.0 | 0.3 | (0.3) | 2 |
| **Sub-Total** | **37.2** | **(37.2)** | **29.8** | **7.4** | **357** |
| Tempworks[164] | 4.2 | (4.2) | 4.2 | 0.0 | 0 |
| Field Service Representatives[165] | 7.9[166] | (7.9) | 7.1 | 0.8 | 66 |
| **Total** | **49.3** | **(49.3)** | **41.1** | **8.2** | **423** |

In response to BCUC IR 49.3, BC Hydro provided a table illustrating the total Services - ABS operating costs for F2016 to F2018 by KBU/function:

| KBU/Function | Services - ABS F2016 Actuals ($ million) | Services - ABS F2017 Actuals ($ million) | Services - ABS F2018 Actuals ($ million) |
|---|---|---|---|
| Customer Service | 31.4 | 27.4 | 28.0 |
| Human Resources | 4.7 | 4.9 | 5.1 |
| Properties | 1.7 | 1.7 | 1.8 |
| Supply Chain | 2.6 | 2.3 | 2.4 |
| Technology | 0.0 | 0.0 | 0.0 |
| Communications and Community Engagement | 0.0 | 0.0 | 0.0 |
| Finance | 0.0 | 0.0 | 0.0 |
| Sub-Total | 40.4 | 36.4 | 37.2 |
| Tempworks | 7.9 | 6.9 | 4.7 |
| Field Service Representatives | 18.8 | 4.7 | 0.0 |
| Total | 67.1 | 48.0 | 41.9 |

226.1 Please provide the F2019 actuals for Services – ABS.

226.2 Please explain why Table 5-11 calculates the annual operating (costs) savings based on the 2019 RRA figure instead of the actual F2018 costs given that the F2018 actual provides the last full year of Accenture costs prior to the repatriation.

226.2.1 Please update Table 5-11 using the actual F2018 figures.

BC Hydro states in Footnote 164 on page 5-41 of the Application:

> Accenture previously provided Tempworks (i.e., temporary administrative and clerical support) services to BC Hydro. Rather than repatriating this function, BC Hydro decided to manage this function as part of its overall Contingent Labour Resource Augmentation Solution which will provide BC Hydro with a centralized, automated and standardized process for securing all contingent labour resource augmentation services and will

provide greater visibility into the use of contingent labour across the whole organization.

Further in response to BCUC IR 49.6, BC Hydro stated:

> Contingent labour resource augmentation is defined as an individual who does work under BC Hydro supervision on a non-permanent basis. The main drivers of BC Hydro's use of contingent labour are to help deliver on projects, to provide short-term specialized skills and to meet variable work volumes.

226.3 Please explain why Tempworks has an incremental operating cost in Table 5-11 when no FTEs were repatriated.

226.4 Please discuss if the contingent labour resource augmentation solution reduces overtime (i.e. unplanned, planned, budgeted, or targeted).

On page 5-40 of the Application, BC Hydro states: "[r]epatriation also eliminated the requirement to share with Accenture future operational savings achieved through efficiency initiatives and eliminated the need for day to day management of Accenture."

226.5 Please quantify the savings achieved through the elimination of the day-to-day management of Accenture. Please clarify if these savings are included in the annual cost savings of the Accenture repatriation in Table 5-11.

226.6 Please discuss the efficiency initiatives that have been undertaken, and quantify any operational savings achieved or planned to be achieved. Please clarify if these savings are included in the annual cost savings of the Accenture repatriation in Table 5-11.

In response to BCUC IR 49.10, BC Hydro stated that "BC Hydro also identified a number of areas where additional resources were required because Accenture performed tasks with employees not included in the staffing snapshot or because Accenture's staffing approach didn't align with how BC Hydro wanted to operate the function."

226.7 Please provide the number and type of additional resources required. Please breakdown the information by KBU and also by affiliation.

226.8 Please explain how the added resources impact the overall savings to the Accenture repatriation.

226.8.1 If there is no impact, please explain why the additional resources were not included in the calculation of the annual cost savings.

In response to BCUC IR 49.11, BC Hydro provided the following table breaking down the FTE additions associated with the repatriation of services from Accenture:

| KBU/Function | Management and Professional | MoveUP | Total |
|---|---|---|---|
| Customer Service | 20 | 261 | 281 |
| Human Resources | 18 | 14 | 32 |
| Properties | 0 | 7 | 7 |
| Supply Chain | 2 | 21 | 23 |
| Technology | 1 | 4 | 5 |
| Communications and Community Engagement | 1 | 6 | 7 |
| Finance | 1 | 1 | 2 |
| Sub-Total | 43 | 314 | 357 |
| Field Service Representatives | 4 | 62 | 66 |
| Total | 47 | 376 | 423 |

226.9 Please confirm, or explain otherwise, that the management and professional employees repatriated primarily provide managerial oversight to the MoveUP employees in the above table.

226.9.1 If confirmed, please explain why the Human Resource and Finance KBU/Function have the same or more management and professional employees repatriated as compared to MoveUP employees repatriated.

226.9.2 If not confirmed, please discuss the role of the repatriated management and professional employees in the Human Resource and Finance KBU/Function.

In response to BCUC IR 49.11.2, BC Hydro stated:

> …there was a memorandum of understanding (MOU85) that was negotiated with MoveUP that provides some different terms and conditions that apply only to the repatriated MoveUP positions. These were primarily terms and conditions that were contained within the Accenture and MoveUP collective agreement and carried over to BC Hydro. For example, MOU85 contains separate wage scales, and an 'hours of work' and 'scheduling' section for the Contact Center.

226.10 Please provide the date of when MOU85 expires and comment on whether the terms and conditions within MOU85 can be re-negotiated following its expiration.

226.10.1 If MOU85 expires in the Test Period and the terms and conditions within MOU85 can be re-negotiated, please discuss if this has been accounted for in the current RRA. If not, why not? If so, please indicate where it has been accounted for.

**227.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 52.1; Exhibit B-6-1, BCOAPO IR 6.1, Attachment 1, p. 9; Attachment 2**
**Benchmarking – Morneau Shepell**

In response to BCUC IR 52.1, BC Hydro provided Attachment 2 listing the participants of the Willis Towers Watson salary survey used for salary information for MoveUP and management and professionals.

227.1 Please confirm, or explain otherwise, that only salary information from the Canadian participants, or the Canadian offices of the participants, was used to determine median salary for MoveUP and management and professional employees.

227.1.1 If not confirmed, please explain how salary information from foreign participants considered inherent differences, including, but not limited to: socio-economic; currency; and cost of living factors.

227.1.2 If not confirmed, please discuss the weight the Willis Towers Watson salary survey had in determining the median salary in the Morneau Shepell benchmarking study, and the general wage increases over the Test Period.

In the confidential response to BCOAPO IR 6.1, BC Hydro provided the 2017 Morneau Shepell assessment in Attachment 1 and a summary of the total rewards comparison by job in Attachment 2.

227.2 Please confirm, or explain otherwise, that all job titles (positions) were included in the summary of the total rewards comparison by job in Attachment 2.

227.2.1 If confirmed, please explain why the number of employees that participated in the 2017 Morneau Shepell assessment in Attachment 1 does not agree with the number of BC Hydro job titles (positions) in the summary of the total rewards comparison by job in Attachment 2. Please provide an updated summary, as necessary.

**228.0 Reference: OPERATING COSTS**
**Exhibit B-5, BCUC IR 62.1, 62.4, 62.10**
**Benchmarking – operating and maintenance costs**

In response to BCUC IR 62.1, BC Hydro provided a list of performance measurements currently included on the dashboard for each Business Group.

228.1 Please confirm, or explain otherwise, that each KBU has a performance measure on operating expenditures.

228.1.1 If confirmed, please elaborate on the performance measure and how it measures efficiency of operating costs.

228.1.2 If confirmed, please provide the actual results of the performance measure for F2012 to F2019 actuals and F2020 to F2021 planned. Please also compare the actual results with the performance measure targets, if applicable.

228.1.3 If not confirmed, please explain why.

228.2 The Capital Infrastructure Project Delivery Business Group has a performance measure of "Operating Costs Before Capital Overhead." Please explain if there is a performance measure for capital overhead expenditures and whether all Business Groups (KBUs) have a similar performance measure. If not, why not?

228.2.1 If yes, please provide the actual results of the performance measure for F2012 to F2019 actuals and F2020 to F2021 planned. Please also compare the actual results with the performance measure targets, if applicable.

228.3 Please confirm, or explain otherwise, that each KBU has a performance measure on capital expenditures.

228.3.1 If confirmed, please elaborate on the performance measure and how it measures efficiency of capital (direct and indirect) costs.

228.3.2 If confirmed, please provide the actual results of the performance measure for F2012 to F2019 actuals and F2020 to F2021 planned. Please also compare the actual results with the performance measure targets, if applicable.

228.3.3 If not confirmed, please explain why.

In response to BCUC IR 62.4, BC Hydro provided the labour costs as a percentage of overall revenues as provided below:

| Labour operating costs as % of Revenue $ millions | F17 Actual | F18 Actual | F19 Forecast |
|---|---|---|---|
| **Labour operating costs** | **487.8** | **522.2** | **557.5** |
| **Total revenues** | **5,874.0** | **6,237.0** | **6,095.0** |
| **Labour operating costs as % of revenue** | **8%** | **8%** | **9%** |

228.4 Please confirm, or explain otherwise, that the increase in labour operating costs from F2018 to F2019 forecast is primarily a result of the Workforce Optimization program and the Accenture Repatriation.

In response to BCUC IR 62.10, BC Hydro provided a table presenting the total human resources (HR) operating costs divided by total FTEs:

| Total HR operating costs divided by total FTEs | Actual F2012 | Actual F2013 | Actual F2014 | Actual F2015 | Actual F2016 | Actual F2017 | Actual F2018 |
|---|---|---|---|---|---|---|---|
| Total HR operating costs ($ million) | 22.6 | 23.4 | 23.8 | 22.9 | 21.4 | 21.6 | 22.1 |
| Total BC Hydro FTEs | 5,738 | 5,511 | 5,571 | 5,690 | 5,635 | 5,735 | 6,004 |
| **Operating costs per FTE** | **$3,935** | **$4,247** | **$4,266** | **$4,019** | **$3,799** | **$3,768** | **$3,688** |

| | Forecast F2019 | Plan F2020 | Plan F2021 |
|---|---|---|---|
| Total HR operating costs ($ million) | 21.1 | 21.1 | 21.4 |
| Total BC Hydro FTEs | 6,789 | 6,884 | 6,880 |
| **Operating costs per FTE** | **$3,111** | **$3,067** | **$3,108** |

In addition, BC Hydro provided a table illustrating the total HR operating costs divided by total operating expenses:

| Total HR operating costs divided by total BC Hydro operating costs $ million | Actual F2012 | Actual F2013 | Actual F2014 | Actual F2015 | Actual F2016 | Actual F2017 | Actual F2018 |
|---|---|---|---|---|---|---|---|
| Total HR operating costs | 22.6 | 23.4 | 23.8 | 22.9 | 21.4 | 21.6 | 22.1 |
| BC Hydro net operating costs | 779.2 | 754.7 | 755.1 | 797.6 | 829.3 | 867.6 | 931.9 |
| **HR costs / BC Hydro operating costs** | **2.9%** | **3.1%** | **3.2%** | **2.9%** | **2.6%** | **2.5%** | **2.4%** |

| | Forecast F2019 | Plan F2020 | Plan F2021 |
|---|---|---|---|
| Total HR operating costs | 21.1 | 21.1 | 21.4 |
| BC Hydro net operating costs | 979.3 | 959.0 | 991.4 |
| **HR costs / BC Hydro operating costs** | **2.2%** | **2.2%** | **2.2%** |

228.5 Considering the Workforce Optimization program and the Accenture repatriation, including the repatriated human resources employees, please discuss the reduction in operating costs per FTE as well as the reduction in HR costs as a percentage of operating costs between F2018 actual and F2019 forecast.

**229.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 5.6.1.4, Table 5-10, pp. 5-36–5-38; Exhibit B-5, BCUC IR 35.1**
**Vacancy management governance process**

In response to BCUC IR 35.1, BC Hydro provided a list of all vacancies approved for recruitment as of March 31, 2019. The list includes 433 vacancies from various KBUs, including: Customer Service (86 vacancies, of which 68 are Customer Service Accounts Rep 7 and 7 are Customer Service Billing Agents);

Engineering (20 vacancies); Learning & Development (29 vacancies); Line Field Operations (21 vacancies); Project Delivery (45 vacancies); Stations Field Operations (21 vacancies); and Supply Chain (38 vacancies).

229.1 Please discuss whether BC Hydro is currently actively recruiting for all 433 vacant positions. If not, why not?

229.2 Please confirm, or explain otherwise, that the list of all vacancies approved for recruitment are included in the number of the FTEs in the Test Period (Appendix A, Schedule 16, line 52). If not, please explain why not.

229.3 Please clarify whether all 433 vacant positions approved for recruitment have been included in the current Test Period revenue requirement.

229.3.1 Please discuss whether the labour costs included in the Test Period revenue requirement only includes the period that the vacant position is expected to be filled. For example, if the vacancy is expected to be filled in October of 2019, then the revenue requirement only includes labour costs from October 2019 onwards.

In Table 5-10 of the Application, BC Hydro provides details on the additional Workforce Optimization FTEs confirmed since the previous RRA, by KBU.

229.4 Please comment on the number of vacant positions in the KBUs provided below. If any of the vacancies are attributed to expected contractor conversions to internal FTEs as part of the Workforce Optimization program, please confirm the conversions are included in Table 5-10 of the Application.

- Customer Service (86)
- Engineering (20)
- Learning and Development (29)
- Line Field Operations (21)
- Project Delivery (45)
- Stations Field Operations (21)
- Supply Chain (38)

229.5 Please explain why there are approximately 68 vacancies for "Customer Service Accounts Rep 7" and approximately 7 vacancies for "Customer Service Billing Agent" within the Customer Service KBU, considering the recent repatriation of Accenture. Please discuss how filling these vacancies impacts the annual savings from the Accenture repatriation.

**230.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 5.5.2.3, Table 5-6, p. 5-25; Appendix A, Schedule 5, 16; Exhibit B-5, BCUC IR 35.1.2, 43.1, 43.3.2, 68.1**
**Vacancy factor savings**

In response to BCUC IR 43.1, BC Hydro stated:

> Vacancy factor savings are budget adjustments which take into account the fact that positions will not remain filled 100 per cent of the time.
>
> […]
>
> Filling vacancies is part of the vacancy management governance process discussed in section 5.4.3 of Chapter 5 of the Application.
>
> […]

Vacancy factor savings also includes an increased proportion of time and costs charged out to capital work than previous budgets.

The savings of $5.6 million for each of fiscal 2020 and fiscal 2021 is our estimated operating savings as a result of applying a consistent approach to labour analysis for all key business units. The approach entailed a review of historical operating labour expenditures, estimated future vacancies, and charge out expectations for each key business unit. Adjustments, as appropriate, were made to each key business unit's budget based on the resulting data.

230.1 Please explain whether vacancy factor savings are treated as a reduction to labour costs in the RRA for the positions that BC Hydro does not expect to have filled 100 percent of the time.

230.1.1 Please discuss whether a full complement of staff for the full F2020 plan year (i.e. all positions are filled 100 percent of the time) would have the same labour costs as presented in the current RRA for F2020 (Appendix A, Schedule 5, line 16).

230.1.1.1 If so, please explain where the vacancy factor savings is located in the Application; specifically, Appendix A.

230.1.1.2 If no, and the F2020 plan labour costs include the $5.6 million savings, please clarify where additional savings will be applied if the expected vacancy factor savings are exceeded.

230.2 Please provide the vacancy factor savings applied during the Test Period for capital and deferred FTEs. Please discuss the cost pressures these savings address.

230.2.1 Please confirm, or explain otherwise, that the approach for estimating the vacancy factor savings for capital and deferred FTEs was the same for operating FTEs. If not confirmed, please discuss the approach.

230.3 Please explain why the vacancy factor savings would impact the proportion of time/costs charged to capital work.

230.4 Please confirm, or explain otherwise, whether vacancy factor savings were included in previous revenue requirement applications.

230.4.1 If confirmed, please provide reference to where these savings were included in the previous applications, and calculate the actual annual savings achieved.

230.5 Please discuss the relationship between the vacancy factor savings and the vacancies approved for recruitment.

230.6 Please explain how $5.6 million in vacancy factor savings will be sustained into F2021.

In response to BCUC IR 43.3.2, BC Hydro stated: "our approach to vacancy factor savings is cost based rather than position by position vacancy duration estimates and that while there may be a number of positions that are not filled 100 percent of the time… the vacancy factor is an estimated aggregation of all partial year vacancies."

230.7 Please elaborate on the methodology applied to derive the estimated annual vacancy factor savings. Specifically address how this was accomplished without considering the number and type of vacant positions.

230.8 Please explain how the estimated aggregation of all partial year vacancies was determined. Please provide an illustrative example and calculation of the vacancy factor savings.

In Table 5-6 of the Application, BC Hydro provides a vacancy factor savings of $5.6 million and states that "[i]n the test period, BC Hydro has taken a consistent approach to assessing each KBU and identifying any budget reductions associated with unfilled positions."

In response to BCUC IR 68.1, BC Hydro stated that the Engineering and Project Delivery KBUs have vacancy factor adjustments.

230.9 Please confirm, or explain otherwise, that the $5.6 million vacancy factor savings includes the vacancy factor adjustments.

230.9.1 If confirmed, please explain how the vacancy factor adjustments are incorporated into the vacancy factor savings calculation.

230.9.2 If not confirmed, please explain if there are cost savings achieved through the vacancy factor adjustments, and if so, where these savings can be located in the Application, specifically, Appendix A.

230.10 Please explain why the Engineering and Project Delivery KBUs are the only KBUs that appear to have vacancy factor adjustments.

Schedule 16 in Appendix A of the Application shows the FTEs.

230.11 Please explain whether the FTEs presented in Schedule 16 are net of vacancies (i.e. total FTEs less vacancies approved for recruitment).

In response to BCUC IR 35.1.2, BC Hydro stated that the list of vacant positions actively being recruited for are vacant due to one of four reasons: replacement, leave, new position and seasonal position.

230.12 Please confirm, or explain otherwise, the portion of the year that a seasonal position is not required to be filled is included in the estimated annual vacancy factor savings.

230.12.1 If confirmed, please explain why seasonal positions should be included in the estimated annual vacancy factor savings given that by the nature of the position, these positions not expected to be filled the entire year.

230.12.2 If confirmed, please provide the amount that seasonal positions contribute to the estimated $5.6 million in vacancy factor savings.

**231.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 5.5.2.2, Table 5-5, pp. 5-23–5-24; Section 5G.7.2, p. 5G-12;**
**Exhibit B-5, BCUC IR 36.2.1, 36.3, 63.2, 63.6, 63.7**
**Unallocated funds**

In Table 5-5 of the Application, BC Hydro provides a detailed breakdown of Test Period cost increases and includes a $7.0 million incremental savings in F2020 from the reduction of unallocated funds.

In response to BCUC IR 63.2, BC Hydro stated:

> The unallocated funds budget was held centrally in Corporate Costs in order to effectively manage the funding of unplanned work demands and unanticipated cost pressures that arise throughout the fiscal year.
>
> In the Previous Application, an unallocated funds budget of $6.5 million was included for fiscal 2019 in Corporate Costs. …Over the course of the fiscal 2017 to fiscal 2019 test period, additional net savings of $8.5 million were identified and added to the unallocated funds budget, increasing it to $15.0 million...
>
> …forecasts are prepared for and reviewed by the Executive Team on a monthly basis to identify emerging cost pressures and potential areas of savings. In the event that adequate savings could not be identified by the Business Groups to absorb

unanticipated cost pressures, the unallocated funds budget would have been considered as a possible funding source.

During the fiscal 2020 and fiscal 2021 test period, there is no unallocated funds budget.

231.1 Please explain how BC Hydro will manage the funding of unplanned work demands and unanticipated cost pressures that arise during the Test Period.

231.2 Given that there are no unallocated funds planned for the Test Period, please explain if there is another fund planned for the Test Period with a similar purpose.

In response to BCUC IR 36.2.1, BC Hydro stated: "As part of the review process, the Executive Team may approve funding reallocations between Business Groups or KBUs. These approved funding reallocations then form the target for the fiscal year."

Further, in response to BCUC IR 36.3, BC Hydro stated: "Cost pressures that cannot be absorbed within a KBU are raised to the Executive Team as part of the monthly review process for discussion of corrective action options such as advancing or delaying work and may result in target adjustments for a KBU, while keeping BC Hydro's overall budget the same."

231.3 In reference to BC Hydro's methodology of making "adjustments for a KBU, while keeping BC Hydro's overall budget the same," please discuss whether this is comparable to operating within an approved spending envelope for operating expenses under a performance based regulation regime. Please discuss the similarities and differences.

231.4 Please discuss whether emerging cost pressures and potential areas of savings will be evaluated over the Test Period, and where adequate savings are not identified in the Business Group experiencing cost pressures, cost savings from another Business Group may be applied, similar to the unallocated funds.

231.5 Please explain how the reallocation/repurposing of funds between Business Groups drives process improvements and conveys an expectation for the efficient use of existing budgets.

In response to BCUC IR 63.6, BC Hydro confirmed it collected $16.9 million in F2019 rates related to unallocated funds and trailing costs for the Accenture repatriation, and is now proposing to reallocate these funds in the Test Period.

Further in response to BCUC IR 63.7, BC Hydro stated:

> Provided below is a table of the unallocated funds budget, the expenditures incurred and the balance available in each fiscal year for unplanned work demands and unanticipated cost pressures incurred in the KBUs. Unspent amounts do not carry forward; the unallocated funds budget is determined each year….

| | Fiscal 2015 | Fiscal 2016 | Fiscal 2017 | Fiscal 2018 |
|---|---|---|---|---|
| RRA Plan | 4.9 | 10.1 | 4.0 | 5.2 |
| Annual Planning Adjustments | - | (3.6) | - | 4.8 |
| Unallocated Funds Usage | | | | |
| Acquisition of 2/3 Waneta | - | - | (1.5) | (1.6) |
| Accenture Repatriation | - | - | - | (1.7) |
| PST Self-Assessment | - | - | (1.4) | - |
| Various Other | (1.1) | (0.1) | - | - |
| Unallocated Funds Available for Other Cost Pressures during the Year | 3.8 | 6.4 | 1.2 | 6.7 |

231.6 Please provide a similar breakdown for F2019.

231.7 Given that unallocated funds were historically meant to manage the funding of unplanned work and unanticipated cost pressures, please explain how the unallocated funds budget included in the RRA plan for F2015 to F2019 was determined or forecasted.

231.8 Please explain how the $16.9 million incremental savings from repurposing unallocated funds in F2019 to F2020 impacts F2021 planned costs, if any.

231.9 Please clarify how $16.9 million of unallocated funds and trailing costs for the Accenture repatriation from F2019 can be reallocated in the Test Period if unspent amounts do not carry forward.

231.10 Please explain what happened to the $16.9 million collected in rates in F2019. If unspent, please clarify if the $16.9 million becomes part of retained earnings at fiscal year end. If spent, please specify the expenditures/cost pressures.

231.11 Please explain what is meant by "unallocated funds available for other cost pressures during the year." Please discuss if this refers to unallocated funds that were not used (i.e. unused amounts).

231.12 Please explain what happened to the F2015 to F2018 "unallocated funds available for other cost pressures during the year." Were any of the funds to the account of the shareholder or spent on other cost pressures during the year? If spent on other cost pressures, please identify the cost pressures and the amount spent on each.

231.13 Assuming the "unallocated funds available for other cost pressures during the year" did not address other cost pressures in the year, please explain why these amounts are not alleviating cost pressures in the subsequent year, similar to how the $16.9 million of unallocated funds from F2019 is reallocate to the Test Period.

231.14 Please explain what is meant by "Annual Planning Adjustments."

231.15 Please elaborate on what the $1.7 million cost pressure in F2018 relates to, and whether this amount is included in the Accenture repatriation savings.

231.16 Please explain what is meant by "PST Self-Assessment" and provide details of this cost pressure.

On page 5G-12 of the Application, BC Hydro states:

> The 2013 10 Year Rates Plan prescribed certain operating cost and rate increase targets, to manage unanticipated cost pressures within these targets, BC Hydro maintained a budget of unallocated funds.

231.17 Please explain why there are no unallocated funds for F2013 and F2014 in the above table.

**232.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 6.4.15, Table 6-43, p. 6-123; Section 6.4.15.2, p. 6-134;**
**Exhibit B-5, BCUC IR 63.11, 63.12, 63.13.3.3**
**Power system assets/vegetation management and storm restoration**

In response to BCUC IR 63.11, BC Hydro stated: "The December 2018 storm remediation expenditures were approximately $22.9 million. Of these expenditures, approximately $5.1 million were capitalized for asset replacements, and $17.8 million were related to repairs and charged to the Storm Restoration budget."

In this same response, BC Hydro provided the actual costs of the three most costly storms that it has record of, which included the December 2018 windstorm at a cost of $22.9 million and the August 2018 wildfire at a cost of $8.9 million.

Further in response to BCUC IR 63.12, BC Hydro stated: "Audited financial results for fiscal 2019 are not yet available. The recalculation of the five-year average, using the fiscal 2019 forecast, which excludes the December 2018 storm impact… would be as follows:"

| Based on F19 Forecast included in F20-21 RRA | F2015 ($ million) | F2016 ($ million) | F2017 ($ million) | F2018 ($ million) | F2019 ($ million) | F2015-F2019 Average ($ million) |
|---|---|---|---|---|---|---|
| Storm Restoration Costs | 12.9 | 23.5 | 25.3 | 22.9 | 6.7 | 18.3 |

232.1 Please confirm, or explain otherwise, that the $6.7 million storm restoration costs in F2019 include all operating costs associated with the August 2018 wildfire. If not confirmed, please provide a breakdown of the storm restoration costs included in the $6.7 million.

232.2 Please confirm, or explain otherwise, that capital costs associated with the August 2018 wildfire were $2.2 million ($8.9 million less $6.7 million).

232.3 Please update the above table provided in response to BCUC IR 63.12 to include the December 2018 storm if the F2019 audited financial results are available.

232.4 Considering two of the three most costly storms for BC Hydro occurred in F2019, please discuss whether using a five-year average approach to forecasting the Test Year storm restoration costs would potentially result in under forecasting storm restoration costs.

232.4.1 If yes, please discuss alternative methods to forecasting storm restoration costs. As part of the response, please discuss forecasting methods used by other electrical utilities in North America.

232.4.2 If applicable, please provide the storm restoration forecast using the alternative methods identified in the preceding IR.

In response to BCUC IR 63.13.3.3, BC Hydro stated that "[t]he capital replacement expenditures due to wildfires are part of the $18 million Trouble capital expenditures budgeted in the test period, as shown in Table 6-43 of Chapter 6 of the Application."

In Table 6-43, BC Hydro provides the following actual and planned Trouble capital expenditures for F2017 to F2021:

- F2017: RRA $10.5 million; Actual $17.0 million
- F2018: RRA $10.8 million; Actual $21.5 million
- F2019: RRA $11.0 million; Forecast $17.3 million
- F2020: Plan $17.7 million
- F2021: Plan $18.0 million

Further on page 6-134 of the Application, BC Hydro states that Trouble capital expenditures are for equipment replacements that meet capitalization rules and resulting from: (1) routine trouble calls; (2) storms; or (3) damage to the plant.

232.5 Please discuss whether Trouble capital expenditures are correlated with storm restoration costs (i.e. if storm restoration costs increase, trouble capital expenditures would increase).

232.6 Please discuss how BC Hydro forecasts Trouble capital expenditures.

232.7 Given the variance between forecast and actual Trouble capital expenditures in the above table, please discuss whether BC Hydro has considered alternative methods to forecasting the planned trouble capital expenditures. Please explain why or why not.

232.7.1 If yes, please discuss the alternative methods considered and the methods used by other electrical utilities in North America.

232.7.2 If applicable, please provide the Trouble capital expenditures forecast using the methods identified in the preceding IR.

**233.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 5A.6.2, Table 5A-8, p. 5A-21; Exhibit B-5, BCUC IR 69.4, 71.3, 72.3**
**Power system assets/maintenance costs pressures**

In response to BCUC IR 71.3, BC Hydro presented the following table, which provides the actual/forecast costs for F2015 to F2019 and the planned costs for Stations Asset Maintenance:

| Stations Asset Maintenance ($ million) | F2015 Actual | F2016 Actual | F2017 Actual | F2018 Actual | F2019 Forecast | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|
| Labour | 40.3 | 40.8 | 40.0 | 42.0 | 42.6 | 44.5 | 45.0 |
| Services - Other | 27.4 | 24.3 | 26.3 | 27.6 | 24.4 | 34.1 | 34.5 |
| Material | 9.6 | 8.8 | 8.5 | 8.8 | 8.1 | 6.9 | 6.9 |
| Total | 77.2 | 73.9 | 74.7 | 78.4 | 75.1 | 85.5 | 86.4 |

233.1 Please provide a breakdown of the planned station asset maintenance projects that accounts for the increase in maintenance costs from F2019 forecast to F2020 plan.

233.2 Please explain the reduction in station asset maintenance costs from F2018 actual to F2019 forecast.

233.3 Please explain the $10.4 million increase ($75.1 million to $85.5 million) in Stations Asset Maintenance costs presented from F2019 forecast to F2020 plan.

BC Hydro provides the F2019 forecast operating costs and FTEs for the Stations Asset Planning KBU in Table 5A-8 of the Application.

**Table 5A-8 Stations Asset Planning KBU Fiscal 2019 Forecast Operating Costs and FTEs by Department**

| | ($ million) | Labour | Services - ABSU | Services - Other | Materials | Building & Equipment | Capitalized Overhead | External Recoveries | Total Operating | Total FTEs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Stations Asset Maintenance | 50.9 | 0.0 | 25.9 | 8.0 | 0.8 | 0.0 | 0.0 | 85.7 | - |
| 2 | Stations Asset Planning, Director | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1 |
| 3 | Substations Growth and Sustainment | 2.2 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 20 |
| 4 | Generation Asset Management | 1.5 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 8 |
| 5 | Generating Stations Maintenance Planning | 1.7 | 0.0 | 1.8 | 0.0 | 0.0 | 0.0 | 0.0 | 3.5 | 10 |
| 6 | NIA Planning | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 7 |
| 7 | Total (Sch 5.1 L3, Sch 16.0 L3) | 56.9 | 0.0 | 28.3 | 8.0 | 0.8 | 0.0 | 0.0 | 94.0 | 46 |

233.1 Please explain why the table presented in response to BCUC IR 71.3 shows $75.1 million for the F2019 forecast Stations Asset Maintenance costs while Table 5A-8 of the Application shows $85.7 million. Please provide updated tables, if applicable.

In response to BCUC IR 72.3, BC Hydro presented the following table which provides the actual/forecast costs for F2015 to F2019 and the planned costs for Lines Asset Maintenance:

| Lines Asset Maintenance ($ million) | F2015 Actual | F2016 Actual | F2017 Actual | F2018 Actual | F2019 Forecast | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|
| Labour | 23.3 | 24.3 | 26.3 | 27.7 | 23.6 | 26.5 | 27.7 |
| Services - Other | 75.4 | 71.2 | 71.1 | 78.4 | 82.4 | 84.3 | 78.4 |
| Materials | 4.1 | 3.9 | 3.5 | 4.0 | 3.1 | 2.8 | 4.0 |
| Recoveries | (7.2) | (8.3) | (8.5) | (8.7) | (8.5) | (8.5) | (8.7) |
| Total | 95.6 | 91.0 | 92.4 | 101.4 | 100.5 | 105.1 | 105.6 |

233.2 Please explain why the sum of the F2021 plan components does not equal the total. Please provide an updated table, as necessary.

233.3 Please explain why there is a reduction in Services - Other by $5.9 million from F2020 plan to F2021 plan.

Further in response to BCUC IR 69.4, BC Hydro stated that contributing to the increase from F2019 forecast to F2020 plan for Services – Other of the Integrated Planning Business Group is made up in part of:

> Approximately $10 million non-labour funding increase to Lines and Stations maintenance reflecting an aging and growing asset base, increased severe weather events, higher delivery costs, outstanding condition-based and corrective maintenance needs and additional regulatory and compliance requirements).

233.4 Please confirm, or otherwise explain, that the $10 million non-labour funding increase to lines and stations maintenance is fully accounted for in the tables provided in response to BCUC IR 71.3 (stations asset maintenance) and BCUC IR 72.3 (lines asset maintenance).

233.4.1 If not confirmed, please provide a breakdown of the work included in the $10 million non-labour funding.

**234.0 Reference: OPERATING COSTS**
**Exhibit B-1, Appendix A, Schedule 1**
**Revenue requirement summary**

Schedule 1 in Appendix A to the Application presents the revenue requirement summary from F2017 to F2021 plan.

234.1 If the Test Period revenue collected ends up being greater than the planned revenue requirement, please discuss how these differences would be accounted for. Please comment on whether the difference would accrue to an unallocated funds budget. Is the treatment different compared to the previous Test Period when there was a Rate Smoothing Deferral Account?

**235.0 Reference: OPERATING COSTS**
**Exhibit B-1, Section 4.7.4, pp. 4-43–4-44; Appendix A, Schedule 15;**
**Exhibit B-6, BCOAPO IR 55.1**
**Waneta maintenance costs**

In response to BCOAPO IR 55.1, BC Hydro stated:

> The increase in operating costs for the Business Unit Support KBU of the Operations

Business Group from fiscal 2018 actual to fiscal 2019 forecast is primarily due to the maintenance costs associated with BC Hydro's purchase of the remaining two-thirds interest in the Waneta generating facility.

In the Application, BC Hydro states that "Teck [Resources Ltd.] is responsible for all operating costs, including paying for its share of water rentals. These costs are shown as an offset in Miscellaneous Revenues (Appendix A, Schedule 15, line 22)."

Schedule 15 in Appendix A to the Application presents the revenues received from Teck Resources Ltd. from F2017 to F2021 plan:

**Miscellaneous Revenue**
**($ million)**

| Line | Column | F2017 RRA | F2017 Actual | F2017 Diff | F2018 RRA | F2018 Actual | F2018 Diff | F2019 RRA | F2019 Forecast | F2019 Diff | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Reference | 1 | 2 | 3 = 2 - 1 | 4 | 5 | 6 = 5 - 4 | 7 | 8 | 9 = 8 - 7 | 10 | 11 |
| | Waneta 2/3 | | | | | | | | | | | |
| 20 | Lease revenue from Teck | | | 0.0 | | | 0.0 | | | 0.0 | 75.2 | 76.7 |
| 21 | Teck portion of operating costs | | | 0.0 | | | 0.0 | 0.0 | 3.8 | 3.8 | 5.7 | 5.9 |
| 22 | Teck portion of water rentals | | | 0.0 | | | 0.0 | 0.0 | 2.4 | 2.4 | 3.5 | 3.7 |
| 23 | Teck portion of property taxes | | | 0.0 | | | 0.0 | 0.0 | 0.1 | 0.1 | 0.6 | 0.6 |
| 24 | Subtotal | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.4 | 6.4 | 84.9 | 86.9 |

235.1 Please confirm, or explain otherwise, that these maintenance costs are offset by revenues received from Teck Resources Ltd.

235.1.1 If confirmed, please also confirm, or explain otherwise, that the offsets for these costs are included in Appendix A, Schedule 15, line 22.

**236.0 Reference: OPERATING COSTS**
**Exhibit B-6-1, BCOAPO Confidential IR 6.1, Attachment 2; *Financial Information Act* Return for the Year Ended March 31, 2010 to March 31, 2018**
**Employee renumeration & expenses**

On BC Hydro's website under Openness & Accountability[5], BC Hydro provides the *Financial Information Act* Returns for March 31, 2002 to March 31, 2018. Included in the *Financial Information Act* Returns is the Schedule of Remuneration and Expenses for Employees.

236.1 Please describe the types of employee expenses that are included in the Schedule of Remuneration and Expenses for Employees. As part of the response, please discuss whether these costs include reimbursements of employees' work-related out-of-pocket costs.

236.2 Please discuss whether these expenses form part of an employees' salary.

236.3 Please discuss whether these expenses are included in the 2017 Morneau Shepell benchmarking study and the "BCH total rewards" column of the table provided as Attachment 2 to the confidential response to BCOAPO IR 6.1. If not included, please explain why.

236.3.1 If yes, please identify any other columns in the table provided as Attachment 2 to the confidential response to BCOAPO IR 6.1 where these expenses would be included.

[5] https://www.bchydro.com/toolbar/about/accountability_reports/openness_accountability.html.

## D. CHAPTER 5C – OPERATING COSTS – OPERATIONS BUSINESS GROUP

**237.0 Reference: OPERATING COSTS – OPERATIONS BUSINESS GROUP**
**Exhibit B-1, Table 5C-4, p. 5C-12; pp. 5C-10, 5C-13;**
**Exhibit B-5, BCUC IR 60.1, 63.15, 66.1, 79.2, 126.1;**
**NERC FAC-003-4 Transmission Vegetation Management, Table 2, pp. 17-18**
**Vegetation management**

BC Hydro provided the actual/forecast and planned vegetation maintenance program costs for F2015 to F2021 in response to BCUC IR 63.15, as presented below:

| Vegetation Program | F2015 Actual | F2016 Actual | F2017 Actual | F2018 Actual | F2019 Forecast | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|
| Transmission | 19.5 | 16.8 | 17.5 | 18.0 | 17.7 | 17.7 | 17.8 |
| Distribution | 23.9 | 24.1 | 23.8 | 23.4 | 24.2 | 24.4 | 24.4 |

237.1 Please provide the budgeted costs related to Transmission and Distribution Vegetation Maintenance for each fiscal year from F2015 to F2019 and explain any variances greater than 10 percent between actual and budgeted amounts.

Page 5C-10 of the Application describes the work performed by the Vegetation Management Department, some of which includes: transmission; substation and distribution vegetation management maintenance programs; right of way access maintenance programs and clearing; and storm response in aid to the removal of vegetation to reduce overall system restoration time.

Page 5C-13 of the Application states:

> The majority of this department's budget is related to labour. This represents 66 FTEs including one Department Manager, 11 Regional & Program Managers, seven Vegetation Specialists and Foresters, 33 Vegetation Coordinators and five Administrators. Nine FTEs that represent overtime which is driven by peak demand.

BC Hydro's response to BCUC IR 79.2 stated the following:

- Wind storm outages are often caused by trees and branches falling onto powerlines. BC Hydro's Vegetation Management department inspects the transmission and distribution line corridors in the preventative maintenance planning process and identifies hazardous trees for removal. These inspections also identify trees with overhanging branches that could contact the powerlines during snow/ice events.
- To meet the *BC Wildfire Act* and BC Wildfire Regulation, BC Hydro's vegetation management contractors mow the transmission corridors mechanically, with a variety of wheeled and tracked equipment, during preventative maintenance to keep wood debris levels lwo and reduce the potential for forest fires.
- On the overhead transmission system, BC Hydro inspects the entire length of every circuit for vegetation growth once per calendar year. In some cases, circuits in higher vegetation growth areas may receive two or more vegetation inspections per year.
- On the overhead distribution system, the vegetation maintenance inspection cycle varies across the province from three to five years depending on growth rates and vegetation species.

BC Hydro's response to BCUC IR 66.1 provided a breakdown of operating costs for each KBU's departments for the periods F2017, F2018, F2020 and F2021. A summary of the details of the Vegetation Management Department, as provided in this response, as well as the F2019 forecast data as provided in Table 5C-4 on page 5C-12 of the Application, was compiled by BCUC staff and reflected below:

| Vegetation Management ($ million) | RRA F2017 | RRA F2018 | Forecast F2019 | RRA F2020 | RRA F2021 |
|---|---|---|---|---|---|
| Labour | 3.1 | 3.2 | 3.0 | 3.1 | 3.1 |
| Services - ABSU | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Services - Other | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 |
| Materials | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Building and Equipment | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Capitalized Overhead | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| External Recoveries | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **3.7** | **3.8** | **3.5** | **3.5** | **3.6** |
| FTEs | 71 | 71 | 66 | 65 | 65 |

237.2 Please discuss the relationship between the Vegetation Management Department within the Program and Contract Management KBU of the Operations Business Group and the Line Asset Planning KBU of the Integrated Planning Business Group, given that the Vegetation Management Department also inspects the transmission and distribution line corridors.

237.3 Please identify how much overtime, both in dollars and FTE equivalence, was charged by the Line Asset Planning team to transmission and distribution vegetation management in each of F2017 to F2019.

In response to BCUC IR 60.1, BC Hydro stated:

> BC Hydro has a variety of transmission voltage classes ranging from 69 kV to 500 kV, with different corridor maintenance widths depending on the voltage class (e.g.,10m width for a single 69kV circuit compared to 62.5m width for a typical 500 kV single circuit). Therefore, the corridor area maintained may be different compared to some utilities of similar transmission length with a transmission system dominated by one or two voltage classes.
>
> […]
>
> Corridor with and vegetation clearance distances maintained on distribution systems are more comparable across utilities… BC Hydro's distribution system is exposed to winter storms, especially along the South Coast, the risk from these storms is not similar to the risk that some utilities in the peer group experience due to vegetation damage from repeated exposure to hurricanes and tornados.

Table 2 of the NERC Reliablity Standard FAC-003-4 on Transmission Vegetation Management states the minimum vegetation clearance distance (MCVD) along a transmission path for a given voltage, based on elevation.

237.4 Please provide the standard corridor maintenance width for distribution lines or the MCVD that BC Hydro applies to distribution lines when managing vegetation growth. As part of the response, please discuss how the standard corridor maintenance width or MCVD for distribution lines are determined and include the relevant standard upon which the standard corridor maintenance width or MCVD for distribution lines is based, if applicable.

237.5 Please explain the process used to confirm that all transmission and distribution circuits are

inspected for vegetation growth within the allotted inspection cycle.

237.6 Please provide the number of occurrences, if any, in each year from F2015 to F2019 where BC Hydro did not meet the standard corridor maintenance width or MVCD for transmission and distribution lines. As part of the response, please segregate the occurrences between transmission lines and distribution lines.

237.7 Please provide the number of occurrences, if any, in each year from F2015 to F2019 where BC Hydro did not meet the *BC Wildfire Act* and BC Wildfire Regulation with respect to vegetation management in the transmission corridors and distribution corridors. In the response, please segregate the occurrences between transmission and distribution corridors.

237.8 Please discuss whether there have been any power or safety issue with vegetation and transmission/distribution lines since F2015. If so, please provide the number of events and briefly describe the event.

237.9 Please provide the number of outages caused by vegetation, for example trees and branches falling onto powerlines during wind storms from F2015 to F2019.

BC Hydro's response to BCUC IR 126.1 included the below table which identified the number of individual district storm events that BC Hydro has responded to in each of the past five years:

| Fiscal Year | F2014 | F2015 | F2016 | F2017 | F2018 |
|---|---|---|---|---|---|
| Number of district storm events | 52 | 62 | 88 | 125 | 148 |

237.10 Given the increase in the number of individual storm events, please discuss the last time the standard corridor maintenance width or MCVD for transmission and distribution lines had been reviewed and whether the standard corridor maintenance width or MCVD has increased as a proactive measure to prevent trees from falling onto power lines.

237.11 Given the increase in the number of individual storm events, please discuss whether BC Hydro plans to extend the standard corridor maintenance width or MCVD for transmission and distribution lines in the Test Period to prevent trees from falling onto power lines. If not, please explain.

237.12 Given the increase in the number of individual storm events, please discuss whether BC Hydro plans to extend the requirements of the *BC Wildfire Act* and the BC Wildfire Regulation for vegetation management in transmission and distribution corridors in the Test Period. If not, please explain.

237.13 Please discuss whether there is a correlation between the number of individual storm events and the amount spent on vegetation management. Please explain why or why not.

237.13.1 If there is a correlation, please explain why actual vegetation management costs have remained relatively flat from F2017 to F2021.

**238.0 Reference: OPERATING COSTS – OPERATIONS BUSINESS GROUP**
**Exhibit B-1, Table 5C-4, pp. 5C-12 – 5C-13; Exhibit B-5, BCUC IR 66.1**
**Program and Contract Management Department**

Table 5C-4 on page 5C-12 of the Application shows the following for the F2019 forecast operating costs and FTEs for the Program and Contract Management Department in the Program and Contract Management KBU:

- Labour: $0.6 million
- Services – Other: $0.2 million
- Total FTEs: 4

Pages 5C-12 and 5C-13 state that the Director, Program and Contract Management Department contains four FTEs, as well as a budget of $0.2M in non-labour costs that represents funding for travel and annual dues.

BC Hydro's response to BCUC IR 66.1 provided the following forecast operating costs for each of F2020 plan and F2021 plan for the Program and Contract Management Department in the Program and Contract Management KBU:

- Labour: $0.6 million
- Services – Other: $1.0 million
- Total FTEs: 4

238.1 Please explain why the F2020 and F2021 plan amounts for "Services – Other" has increased by $0.8M compared to the F2019 forecast for the Director, Program and Contract Management Department.

**239.0 Reference: OPERATING COSTS – OPERATIONS BUSINESS GROUP**
**Exhibit B-1, Table 5C-6, p. 5C-19;**
**Exhibit B-5, BCUC IR 66.1**
**Trouble Line Field Ops and Ops Support Department**

Table 5C-6 of the Application shows F2019 forecast labour operating costs of $24.5 million and FTEs of 123 for the Trouble Line Field Ops and Ops Support Department in the Line Field Operations KBU.

BC Hydro's response to BCUC IR 66.1 showed the following forecast labour operating costs and FTEs for F2020 plan and F2021 plan for the Trouble Line Field Ops and Ops Support Department in the Line Field Operations KBU:

- F2020:
  - Labour: $28.3 million
  - FTEs: 130
- F2021:
  - Labour: $28.6 million
  - FTEs: 130

239.1 Please explain how an increase in seven FTEs in the Trouble Line Field Ops and Ops Support Department results in a $3.8 million increase in labour costs from F2019 to F2020.

**240.0 Reference: OPERATING COSTS – OPERATIONS BUSINESS GROUP**
**Exhibit B-1, Tables 5C-8, pp. 5C-25; Exhibit B-5, BCUC IR 66.1**
**Stations Operations Department**

Table 5C-8 in the Application shows $26.6 million for the forecast operating labour costs and 807 FTEs for F2019 for the Stations Operations Department in the Stations Field Operations KBU.

BC Hydro's response to BCUC IR 66.1 showed $33.0 million for the forecast operating labour costs and 774 FTEs for each of F2020 plan and F2021 plan for the Stations Operations Department in the Stations Field Operations KBU.

240.1 Please explain why labour costs are increasing by $6.4M from the F2019 forecast to the F2020 RRA plan and F2021 plan for the Stations Field Operations Department given that FTEs are decreasing from 807 to 774.

**241.0 Reference: OPERATING COSTS – OPERATIONS BUSINESS GROUP**
**Exhibit B-5, BCUC IR 85.1; BC Hydro Application for Reliability Coordinator Registration with the Mandatory Reliability Standards Program proceeding, Exhibit B-1, p. 1-2; Exhibit B-6, BCUC IR 8.3**
**Inter-Utility Operations Department**

BC Hydro's response to BCUC IR 85.1 provided the below table that identifies operating costs for the Inter-Utility Department:

| Inter-Utility Operating Costs – RRA Plan ($/million) | Fiscal 2015 | Fiscal 2016 | Fiscal 2017 | Fiscal 2018 | Fiscal 2019 | Fiscal 2020 | Fiscal 2021 |
|---|---|---|---|---|---|---|---|
| WECC Membership Fees | 4.4 | 4.4 | 3.3 | 3.4 | 3.6 | 4.1 | 4.1 |
| PEAK Membership Fees | - | - | 3.7 | 3.7 | 3.7 | 2.0 | 2.0 |
| Northwest Power Pool | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| WECC Congestion Management/Flow Mitigation | - | - | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 |
| Distribution Management System | 0.6 | 0.6 | - | - | - | - | - |
| BC Hydro Internal Staff Cost | 1.0 | 1.0 | - | - | - | - | - |
| Contractor Costs | 0.5 | 0.5 | - | - | - | - | - |
| Total RRA Plan | 6.6 | 6.6 | 7.6 | 7.7 | 7.9 | 6.5 | 6.5 |

On page 1-2 of BC Hydro's Application for Reliability Coordinator Registration with the Mandatory Reliability Standards (MRS) Program states: "Recently PEAK has announced it will be winding down operations and will no longer provide RC [Reliability Coordinator] services effective December 31, 2019.

241.1 Please explain why estimated annual PEAK membership fees of $2M are included in the F2020 and F2021 RRA plan given that PEAK will no longer provide RC services effective December 31, 2019.

In response to BCUC IR 8.3 in the BC Hydro Application for Reliability Coordinator Registration with the Mandatory Reliability Standards Program proceeding, BC Hydro stated:

> …BC Hydro is not seeking cost recovery from B.C. registered entities as part of this process. In the future it may be appropriate to review cost sharing for a part of or the whole MRS Program amongst B.C. registered entities.
>
> BC Hydro submits that there may be various cost recovery mechanisms that could be employed. One possible mechanism for cost recovery could be on a net energy for load basis, similar to how WECC fees are currently recovered from member organizations.

241.2 Please confirm, or explain otherwise, that cost recovery from BC registered entities with respect to BC Hydro providing RC services has not been included as an offset to the Test Period revenue requirement.

## E. CHAPTER 5D – OPERATING COSTS – SAFETY

**242.0 Reference: OPERATING COSTS – SAFETY**
**Exhibit B-1, p. 5D-3; Appendix A, Schedule 5.4; Figures 5D-1, 5D-2**
**Exhibit B-5, BCUC IR 87.1, 87.3.1, 88.1; Exhibit B-6, CEC IR 47.1, BCOAPO IR 3.2.1**
**Injuries and injury frequency**

BC Hydro's response to BCUC IR 87.1 stated the following:

- At the time of the Application, finalized Lost Time Injury Frequency (LTIF) and All Injury Frequency (AIF) rates for fiscal 2019 were not available. BC Hydro can now confirm that AIF for fiscal 2019 was 2.04 (target of 1.71) and LTIF for fiscal 2019 was 0.87 (target of 0.80).
- BC Hydro's Service Plan includes a LTIF target of 0.80 for fiscal 2020, 0.80 for fiscal 2021 and 0.75 for fiscal 2022. BC Hydro has not yet set LTIF targets for subsequent years.
- BC Hydro's internal target for AIF for fiscal 2020 is set to 1.70. BC Hydro has not yet set AIF targets for subsequent years.
- The majority of BC Hydro's workplace injuries are related to body mechanics.
- Initiatives to improve both the LTIF and AIF rates include developing a program by which employees can have improved access to injury recovery services as well as better accommodation for modified duties, as well as an expansion of BC Hydro's Ergonomics program.

242.1 Please identify the costs associated with the initiatives mentioned above. As part of the response, please identify when these initiatives started.

242.1.1 Please identify any initiatives related to improving LTIF and AIF rates that have been discontinued since the last revenue requirement. Please also provide the associated cost of these initiatives. As part of the response, please explain why these initiatives were discontinued.

242.1.2 Please identify the department where the costs of the initiatives noted in the preamble are budgeted in the F2020 and F2021 revenue requirement.

In response to BCOAPO IR 3.2.1, BC Hydro stated two performance measures were revised in the 2019/2020 to 2021/2022 Service Plan, one of which includes:

1. Lost Time Injury Frequency

   2018/2019 to 2020/2021 Service Plan 2020/2021 target: 0.75

   2019/2020 to 2021/2022 Service Plan 2020/2021 target: 0.80

   Based on the number of lost time injuries we had seen year-to-date in February 2019, BC Hydro did not expect to meet our lost time frequency target in fiscal 2019. Therefore, the 2020/2021 Lost Time Injury Frequency target was adjusted from 0.75 to 0.80, based on our 2018/2019 forecasted result.

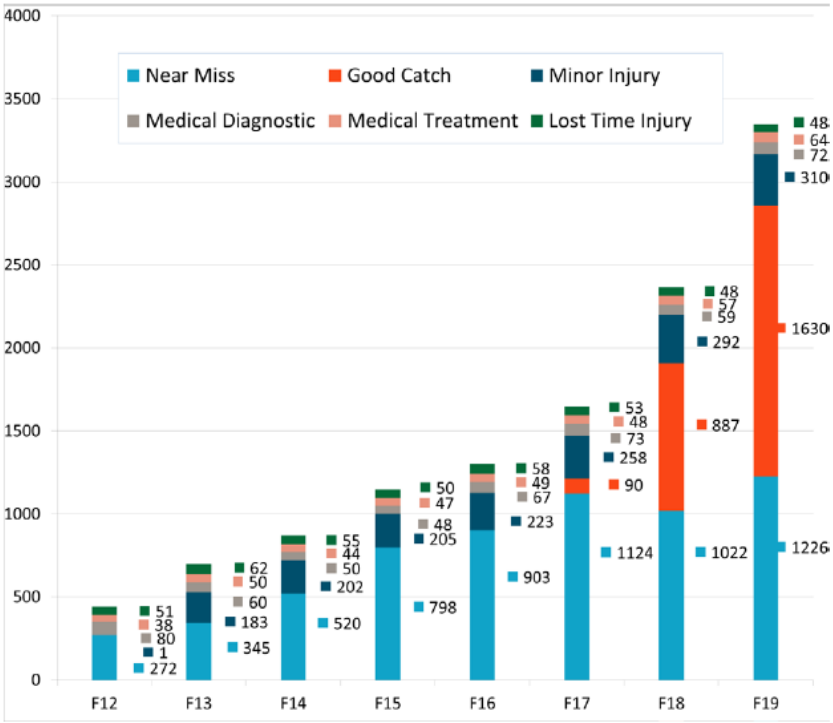
242.2 Please discuss why BC Hydro has lowered the LTIF target when it has a number of initiatives in place to improve the LTIF.

242.3 Please discuss whether lowering the LTIF will have an impact on BC Hydro's safety culture. Please explain why or why not.

242.4 Please provide a high-level discussion of the impact of a 0.05 reduction in the LTIF on the most recent completed annual incentive (holdback) payout. Please quantify the impact, if possible.

BC Hydro's response to CEC IR 47.1 stated that body mechanic injuries accounted for 72 percent of the Lost Time incidents in F2019.

BC Hydro's response to BCUC IR 87.3.1 included the chart below, which expanded Figure 5D-4 of the Application to both incorporate final numbers for 2019 and include the number of injuries per year.




Schedule 5.4 of Appendix A to the Application categorizes operating costs in the Safety Business Group, as shown below:

| Operating Costs - Safety ($ million) | | | F2018 | | F2019 | | | F2020 | F2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | Reference | Actual | Diff | RRA | Forecast | Diff | Plan | Plan |
| Line | Column | | 5 | 6 = 5 - 4 | 7 | 8 | 9 = 8 - 7 | 10 | 11 |
| | **Operating Costs by Resource** | | | | | | | | |
| 13 | Labour | | 35.0 | (0.7) | 36.1 | 36.0 | (0.0) | 37.9 | 38.6 |
| 14 | Services - ABSU | | 0.4 | 0.2 | 0.2 | 0.0 | (0.2) | 0.0 | 0.0 |
| 15 | Services - Other | | 15.9 | (1.9) | 17.8 | 17.6 | (0.2) | 17.8 | 17.8 |
| 16 | Materials | | 1.2 | 0.6 | 0.7 | 0.8 | 0.1 | 0.8 | 0.8 |
| 17 | Buildings & Equipment | | 0.7 | 0.5 | 0.2 | 0.4 | 0.1 | 0.3 | 0.3 |
| 18 | Capitalized Overhead | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 19 | External Recoveries | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | Total | | 53.3 | (1.3) | 54.9 | 54.8 | (0.2) | 56.8 | 57.5 |

242.5 Over the period from F2018 to F2021, please explain why operating costs for the Safety Business Group have remained somewhat flat relative to the growth in the number of injuries (Medical Treatment, Medical Diagnostic, Minor Injury, Lost Time Injury) in F2018 and F2019.

242.6 Please explain whether an increase in Near Miss and Good Catch reporting is expected to reduce the number of injuries related to body mechanics. If so, please explain how.

242.7 Please complete the table below to identify the percentage of body mechanic injuries under each classification as defined in the chart provided in response to BCUC IR 87.3.1 and reproduced in the preamble.

| Injury due to: | Minor Injury | Medical Treatment | Medical Diagnostic | Lost Time Injury | Total |
|---|---|---|---|---|---|
| Body Mechanics | | | | 72% | **100%** |
| Other | | | | 28% | **100%** |
| **Total** | **100%** | **100%** | **100%** | **100%** | |

242.7.1 Other than body mechanic injuries, please discuss the types of injuries associated with each of the four incident classifications above (i.e. the types of injuries categorized as "other" in the preceding IR).

242.8 Please re-graph the chart provided in response to BCUC IR 87.3.1 to reflect only those incidents that occurred in the field.

242.9 For each metric stated in the chart provided in response to BCUC IR 87.3.1 and reproduced in the preamble, please identify how many of these occurrences happened when an employee was working overtime, if possible.

242.9.1 Based on the response to the preceding IR, please discuss whether there is an increased risk of injuries when an employee is working overtime.

242.10 Please define the following categories of injuries: Minor Injury, Medical Treatment and Medical Diagnostic.

242.10.1 Please re-graph the chart provided in response to BCUC IR 87.3.1 to reflect only: Medical Treatment Minor Injury, Medical Diagnostic.

242.10.2 Please discuss any trends related to the frequency and volume of Minor Injury and Medical Diagnostic metrics.

242.11 Please identify the total number of labour hours lost each year from F2012 to F2019 associated with each of the following metrics: Lost Time Injury, Medical Treatment, Minor Injury and Medical Diagnostic.

242.12 Please explain why Minor Injuries and Medical Diagnostic are not included in the calculation of the All Injury Frequency rate.

242.12.1 Please discuss whether BC Hydro has specific programs in place to reduce Minor Injury and Medical Diagnostic events. If so, please identify.

242.13 Please discuss the process used in setting the LTIF and AIF targets in BC Hydro's Service Plan for years F2020, F2021 and F2022 and why these targets are set at levels above the AIF and LTIF of Canadian Electricity Association (CEA) (Like Utilities).

242.14 Please discuss why the Target LTIF is kept constant over the Test Period and then changes for F2022.

242.15 Please explain why an AIF target has not been defined for the F2021 test year.

Figures 5D-1 and 5D-2 on page 5D-3 of the Application reflect BC Hydro's Lost Time Injury Frequency and All Injury Frequency relative to CEA (Like Utilities).

**Figure 5D-1 Lost Time Injury Frequency – Employees**[234]

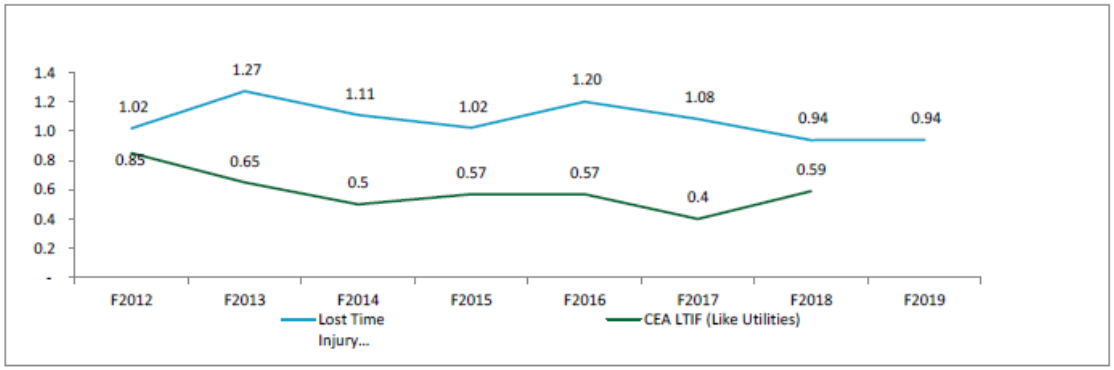
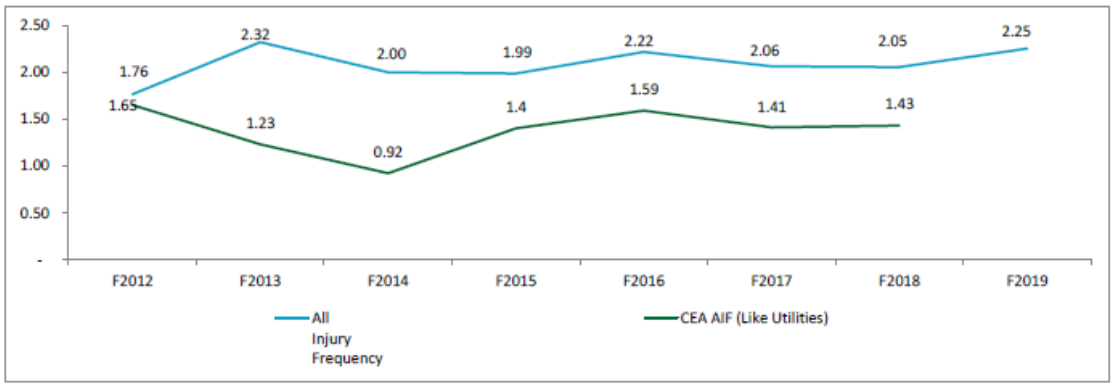



**Figure 5D-2 All Injury Frequency – Employees**[235]




242.16 Please identify the "Like Utilities" that represent the CEA LTIF and AIF.

242.17 Please explain why BC Hydro has not been able to meet its target AIF and LTIF for F2019.

242.18 Please identify the years from F2012 to F2019 that BC Hydro has been able to meet its target AIF and LTIF that was set in its Service Plan. As part of the response, please provide the actual and target AIF and LTIF for each year.

242.19 Please explain why BC Hydro's AIF and LTIF from F2012 to F2018 are higher than the CEA for "like utilities."

BC Hydro's response to BCUC IR 88.1 stated: "Other lagging indicators used by BC Hydro include: lost time injuries, medical attentions, and minor injuries."

242.20 Please provide a table of the following annual metrics of "CEA Like Utilities" over the period F2012 to F2019 – Lost Time Injuries, Medical Treatment, Medical Diagnostics, Minor Injuries, if available.

**243.0 Reference: OPERATING COSTS – SAFETY**
**Exhibit B-5, BCUC IR 87.2.1, 88.3**
**Serious incidents and contractor safety**

BC Hydro's response to BCUC IR 88.3 stated:

> …For example, contractor safety has been a topic of discussion among Canadian Electricity Association members and the different members have adopted their versions of contractor safety programs to address this.

> Another initiative that has come out as a result of benchmarking with Canadian Electricity Association is the renewed focus on serious incidents, not only focusing on avoiding fatalities and permanently disabling injuries, but looking at a more proactive approach, learning from those incidents that could have resulted in a serious injury, what is called potential serious incidents. [emphasis added]

243.1 Please define what BC Hydro would classify as a serious incident. As part of the response, please identify any differences between BC Hydro's definition and the CEA's definition.

243.1.1 Please discuss how serious incidents are measured in the BC Hydro Service Plan, and if not, why not.

BC Hydro's response to BCUC IR 87.2.1 stated:

> All BC Hydro employee good catches, near misses and injuries that are recorded in the Incident Management System (IMS) are triaged by BC Hydro Safety Incident Investigators.
>
> BC Hydro Safety Incident Investigators do not triage or investigate public or contractor incidents. However, a process is in place to review these incidents. BC Hydro's Public Safety Team reviews all public safety incidents and takes appropriate actions. Contractor incidents are investigated by the contractors themselves, with support from BC Hydro and WorksafeBC as required.
>
> At fiscal 2019 year end, IMS logged 10,002 incidents. Out of these incidents, 3350 were employee incidents which were triaged by BC Hydro Safety Incident Investigators. The other 6652 incidents were managed through other processes per above.

243.2 Please discuss whether BC Hydro considers a contractor's safety history when hiring contractors. Please explain why or why not.

243.3 Please discuss what safety metrics BC Hydro uses to measure contractor performance with respect to safety once hired.

243.4 Please complete the below table to identify the total annual number of incidents logged in IMS since F2017, along with a breakdown of those incidents related to BC Hydro employees, contractors, public and other. Please identify what makes up "other," if applicable.

| | # of Employee Incidents | # of Contractor Incidents | # of Public Incidents | # of Other | # of Total Incidents |
|---|---|---|---|---|---|
| F2017 | | | | | |
| F2018 | | | | | |
| F2019 | 3,350 | 6,652 | | | 10,002 |

243.5 Please provide a high-level discussion of the extent the frequency of reported incidents affects the time required to complete a project or task. Please estimate the impact in terms of additional hours required, if possible.

243.6 Please discuss the initiatives that BC Hydro has in place to reduce contractor and public safety incidents.

243.7 Please discuss whether BC Hydro has any new initiatives planned for the Test Period to reduce contractor and public safety incidents.

243.8 Please discuss whether BC Hydro's Service Plan has targets for reducing the number of

contractor and/or public safety incidents. If yes, please identify them. If no, please explain why not.

## F. CHAPTER 6 – CAPITAL EXPENDITURES

**244.0 Reference: CAPITAL EXPENDITURES – INVESTMENT IN SUSTAINMENT**
**Exhibit B-5, BCUC 125.2.1; Exhibit B-1, p. 6-24**
**System performance**

In response to BCUC IR 125.2.1, BC Hydro stated:

> The Lower Mainland region had better reliability performance (or lower reliability indices) than the BC Hydro average in both SAIFI [System Average Interruption Frequency Index] and SAIDI [System Average Interruption Duration Index] in four of the past five fiscal years…
>
> Over the five-year period from fiscal 2014 to fiscal 2018, the remaining regions generally experienced worse reliability performance than the BC Hydro system average, with higher all-events SAIFI on outage frequency and all-events SAIDI on outage duration.

On page 6-24 of the Application, BC Hydro states: "…the reliability scores in BC Hydro's Customer Satisfaction Index indicate that customers continue to be satisfied with the level of reliability they are receiving."

244.1 If possible, please provide the reliability scores in BC Hydro's Customer Satisfaction Index by geographic region (Lower Mainland, Vancouver Island, Southern Interior, North).

244.1.1 How does each region compare with the BC Hydro average?

244.1.2 Please provide BC Hydro's assessment of the current level of customer satisfaction in each region. Are there any regions where the level of customer satisfaction needs improvement?

244.1.3 Please provide reasons that customers in certain regions may experience a lower level of satisfaction compared to customers in other parts of the province.

244.2 Please provide BC Hydro's historical and planned levels of investment in sustainment capital by geographic area. Are there any regions where BC Hydro plans to increase the level of investment in sustainment capital in order to address a lower level of customer satisfaction? Are there any regions where BC Hydro plans to moderate the level of investment in sustainment capital given a higher level of customer satisfaction? Please discuss.

**245.0 Reference: CAPITAL EXPENDITURES – INVESTMENT IN SUSTAINMENT**
**Exhibit B-5, BCUC IR 126.1**
**Standards for system performance**

In response to BCUC IR 126.1, BC Hydro stated:

> For the purposes of normalizing reliability performance measures, BC Hydro excludes major event impacts on our system. BC Hydro's definition of a major event is an uncontrollable event (e.g., windstorm, earthquake, forest fire, flood, lightning, etc.) that causes an outage resulting in more than 70,000 customer-hours lost or if customer-hours lost is greater than or equal to one per cent of annual customer-hours lost for the distribution system, whichever is less. This definition excludes controllable causes such

as equipment failure or human error at the distribution, substation, or transmission level.

245.1 Please discuss the rationale for the selection of the threshold major event of 70,000 customer-hours lost or one percent of annual customer-hours lost for the system.

245.1.1 Please discuss whether the threshold changes depending on the number of major events related to all events?

245.2 Please provide the number of major events on BC Hydro's system in each of the past five years. How many of these are considered weather events?

245.3 Please provide BC Hydro's forecast for the number of major events in each of the next five years. How many of these are considered weather events?

**246.0 Reference: CAPITAL EXPENDITURES – CAPITAL INVESTMENT PLANNING PROCESS**
**Exhibit B-5, BCUC IR 131.1**
**Extreme weather risk mitigation**

In response to BCUC IR 131.1, BC Hydro stated that it:

> … is undertaking climate studies to assess the impacts of extreme weather events on future load, hydroelectric generation and system resiliency…
>
> In addition, BC Hydro is performing a detailed risk assessment of the vulnerability of its power system to storm events and severe weather as part of our climate change adaption efforts. This analysis will quantify the risks to power system infrastructure due to impacts from a changing climate and incorporates climate projections created by the Pacific Climate Impacts Consortium (PCIC) with the Transmission and Distribution systems geospatial records. PCIC climate projections include a variety of future emissions scenarios and their associated projected temperature and precipitation changes.

246.1 Please provide the PCIC climate projections used to assess the impacts of weather events on future load, hydroelectric generation and system resiliency.

246.2 Please discuss how the PCIC climate projections are incorporated into BC Hydro's risk assessment method. Are multiple PCIC climate projections used to quantify the risk?

246.3 Please discuss the reliability of the PCIC climate models used to assess the impacts of future weather events on BC Hydro's power system.

**247.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-1, Section 2.5.8, pp. 2-22, 2-23; BC Hydro F2017-F2019 RRA, Decision and Order G-47-18 dated March 1, 2018 (F2017-F2019 RRA Decision), Directive 3; Transmission Upgrade Exemption Regulation, BC Reg. 160/2018, Sections 2(1)(b), 2(1)(e); Exhibit B-5, BCUC IR 1.1, 1.1.6, 1.1.3**
**Northwest Substation upgrade**

In its response to BCUC IR 1.1, BC Hydro stated:

> In July 2016, LNG Canada paused their interconnection project and did not restart the interconnection process again until late 2017. When the project was restarted, LNG Canada split their interconnection load and request into two phases, with separate and distinct approvals for each phase, and requested that BC Hydro only advance phase 1…. LNG Canada has not made a decision on whether to proceed with its phase 2 project but

has requested that BC Hydro undertake interconnection studies to inform their final investment decision on this project. The additional scope that was in the original Northwest Substation Upgrade Project and was not required for phase 1, may be required for phase 2.

In its response to BCUC IR 1.1.6, BC Hydro stated: "The driver for the Northwest Substation Upgrade Project at the time of the Previous Application was the interconnection request by LNG Canada."

247.1 Please explain why an amendment to Directive 3 of the F2017-F2019 RRA Decision to file a Certificate of Public Convenience and Necessity (CPCN) for the Northwest Substation Upgrade Project is necessary when the project has been cancelled.

247.2 Please explain the scope of work for Phase 2 of the Minette Station (MIN) to LNG Canada Interconnection Project. Please highlight any overlapping scope with the cancelled Northwest Substation Upgrade Project.

247.3 Please provide BC Hydro's expected cost for Phase 2 of the project, including BC Hydro's costs to-date to perform the interconnection studies.

247.3.1 Please discuss the preliminary results of the interconnection studies and explain whether and how (and how much of) BC Hydro's expected cost for Phase 2 will be recovered from LNG Canada and from BC Hydro ratepayers.

247.4 Please discuss when a decision to proceed with Phase 2 of the MIN to LNG Canada Interconnection Project is expected from LNG Canada.

247.5 Please explain whether the scope of work in the Northwest Substation Upgrade Project that is <u>not</u> part of the Phase 1 of the MIN to LNG Canada Interconnection Project is still planned to be completed by a separate project at a later date.

i) If yes, please indicate when that project is expected and the anticipated cost of the project.

ii) If no, please explain why this work is no longer required.

The Transmission Upgrade Extension Regulation is detailed in Section 2.5.8 of the Application, where BC Hydro states:

> This direction, as amended by B.C. reg. 160/2018, exempts BC Hydro from Part 3 of the *Utilities Commission Act* with regards to:
>
> i. A series capacitor station and related facilities and equipment in the vicinity of the District of Vanderhoof, the Village of Burns Lake and the Village of Telkwa;

In its response to BCUC IR 1.1.3, BC Hydro stated:

> The addition of a series capacitor station and related facilities and equipment is the vicinity of the District of Vanderhoof, the Village of Burns Lake or the Village of Telkwa was not included in the Northwest Substation Project's scope of work and is also not included in the MIN to LNG Canada Interconnection project's scope of work.

247.6 Please confirm, or otherwise explain, whether BC Hydro has a project currently in any stage of development that includes the scope of a series capacitor station in the District of Vanderhoof, the Village of Burns Lake, or the Village of Telkwa.

247.6.1 If confirmed, please provide project details similar to information submitted in Appendix J of the Application.

**248.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-5, BCUC IR 122.1.1, 122.2.1, 122.4.1; BCUC An Inquiry into the Regulation of Electric Vehicle Charging Service, Exhibit C-1-2, pp. 6–7**
**Electric vehicle charging stations**

In its response to BCUC IR 122.1.1, BC Hydro stated: "Prior to fiscal 2018, capital costs incurred by BC Hydro for the deployment of the 30 EV [electric vehicle] fast charging station pilot were classified under Technology capital."

In its response to BCUC IR 122.2.1 pertaining to the forecast capital additions related to EV charging infrastructure, BC Hydro stated:

> In fiscal 2019, there were $0.5 million in capital additions for electric vehicle charging stations, all of which were leased to other parties.
>
> The remaining stations are operated by BC Hydro and will be put into service during the test period. Capital additions are forecast to be $3.4 million for fiscal 2020 and $2.4 million for fiscal 2021.

248.1 Please provide a list of all charging stations built by BC Hydro in BC to date. Please indicate:

i. whether the station is a Direct Current Fast Charging (DCFC) station;
ii. the location (include whether it is in multi-unit buildings private lots or highway corridors);
iii. the number of nozzles;
iv. the in-service date;
v. the total construction cost;
vi. the land purchase or right-of-way costs;
vii. the operator of each station; and
viii. the current charging rate or fee, if any.

248.1.1 Please breakdown the construction costs by the portion contributed by third parties, if any, and the portion invested by BC Hydro.

248.1.2 Please explain how the locations of EV charging stations are determined and who determines the locations.

In the BCUC An Inquiry into the Regulation of Electric Vehicle Charging Service, BC Hydro states:

> The first phase of the DCFC infrastructure build out in B.C. (Phase 1 deployment) began in 2012. With funding from both the Federal and Provincial Governments, BC Hydro initiated the 'Electric Vehicle Smart Infrastruture Project,' which included the deployment of 30 DCFC stations on a pilot basis. BC Hydro owns each of these 30 stations and leases them for a nominal amount to the respective station host/operator.
>
> During 2016, BC Hydro received funding approvals from both Natural Resources Canada and the Provincial Government to support the installation of an additional 21 DCFC stations (Phase II deployment) … The second phase of DCFC deployment is scheduled to be complete by May 31, 2018.

248.2 Please confirm, or explain otherwise, that BC Hydro has completed its Phase 2 Deployment of EV charging stations.

248.3 Please generally discuss BC Hydro's long-term rollout plan for the construction/deployment of EV charging stations and explain what phase BC Hydro is currently conducting.

248.4 Please provide a plan or overview of BC Hydro planned investment in EV charging stations in the Test Period. Please indicate the locations of planned investments, whether the station is DCFC, the construction cost and the expected in-service date of each station. Please breakdown the construction costs by the portion contributed by third parties, if any, and the portion of capital costs invested by BC Hydro.

248.4.1 Please indicate who determines the locations of the EV charging stations planned for the Test Period and how those locations are determined.

248.4.2 Please discuss if the funding from the Federal and Provincial Governments are contingent on certain criteria being met. If so, please elaborate.

248.4.3 Please confirm, or explain otherwise, that BC Hydro will own and operate the EV charging stations planned to be constructed during the Test Period.

248.4.3.1 If confirmed, please discuss what impact does this business model have on BC Hydro's revenue requirement compared to leasing the stations to a host/operator.

In its response to BCUC IR 122.4.1, BC Hydro stated:

> These planned capital expenditures include all EV fast charging station equipment…, civil and electrical work, charger installation, and paving if required. No historical land purchase or lease costs are included to date as BC Hydro has secured 10 year land leases/licenses at no cost, except for two sites where land licenses were secured at a nominal cost.

248.5 Please explain whether these capital expenditures include signage, right of ways and/or other facilities.

248.6 Please explain whether BC Hydro intends to provide other ancillary services at remote charging sites, such as convenience stores or washroom facilities.

248.6.1 If so, please explain who will own and operate these ancillary services and whether the construction of these facilities will be paid for by BC Hydro.

**249.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-1, Section 6.4.14.2; Exhibit B-5, BCUC IR 117.2**
**DVES: Downtown Vancouver West End Substation**

In response to BCUC IR 117.2, BC Hydro stated that it plans to file a CPCN for the West End Substation Construction Project in F2023.

In Table 6-25 of the Application, BC Hydro lists the DVES: West End Strategic Property Purchase as a Capital Addition in F2020.

249.1 Please discuss how the property purchase in F2020, which is three years prior to an anticipated CPCN filing in F2023, would impact any future decisions for BC Hydro's business case or alternatives for this project.

249.2 Please explain why this property purchase is listed as a Capital Addition in F2020, when the anticipated CPCN is not expected until F2023.

249.2.1 Please explain whether this asset is considered "used and useful" to ratepayers in the period F2020–F2023.

249.2.2 Please explain how the cost of this asset will be accrued.

249.2.3 Please explain if, and how, the financing costs related to this asset will be accrued.

249.2.4 Please confirm, or explain otherwise, that the cost of this asset will be included as part of the future CPCN application. If yes, please discuss what asset value will be included in that CPCN. For example, the net land purchase costs in F2020? Or net land purchase costs in F2020 plus increase in land value from F2020 to the filing date of the CPCN? Other?

249.3 Please explain where land purchases are accounted for and whether land purchases are included in BC Hydro's rate base. As part of the discussion, please also discuss how land and property purchased for future construction are accounted for.

249.3.1 Please explain whether any change in land value between F2020 and the date of completion of the Downtown Vancouver West End Substation will be accounted for.

249.4 Please explain how future land sales following de-commissioning of the old downtown Vancouver Dal Grauer substation site will be accounted for after the new Downtown Vancouver West End Substation is operational.

249.4.1 Please explain whether gains or losses on future land sales following de-commissioning of the old downtown Vancouver Dal Grauer substation site will be accounted for and how this would impact future revenue requirements.

**250.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-6, Ince IR 6.15, Attachment 1, pp. 11–12;**
**BC Hydro Application for a CPCN for the Dawson Creek/Chetwynd Area Transmission Project, Order G-144-12 with Reasons for Decision dated October 12, 2012, pp. 12–13**
**Peace Region Electric Supply (PRES) Project**

On October 10, 2012, the BCUC approved a CPCN for the Dawson Creek/Chetwynd Area Transmission Project (DCAT) by Order G-144-12.

250.1 Please explain how the need for the DCAT project differs from the need for the PRES project.

250.1.1 Please identify and discuss any significant similarities and differences in these projects which may support the PRES project to be a prescribed undertaking, as proposed by BC Hydro.

250.2 Please explain how lessons learned from the DCAT project have been applied to the planning and/or will be applied to the execution of the PRES project.

250.3 Please explain any future anticipated or expected transmission upgrade or extension projects in the Peace Region.

250.3.1 Please explain whether BC Hydro anticipates filing a CPCN or capital expenditure schedule with the BCUC for any of these future projects.

In its reasons for decision accompanying Order G-144-12, the BCUC discusses the need for BC Hydro to provide N-1 reliability in the Peace Region:

> Pursuant to section 125.2 of the UCA, BCUC has adopted the Western Electric Coordinating Council (WECC) standards for reliability, which includes the N-1 operating criterion for service on the bulk transmission system. N-1 means that the transmission system will remain operative even with the loss of one key element…. [where] the 'bulk power system' which is defined to mean …operated at 100kV or greater…excludes radial transmission facilities, regardless of voltage.

250.4 Please explain whether the PRES project is driven by the need to meet the N-1 reliability criteria.

250.5 Please explain how the PRES project "primarily serves natural gas producers and processors."

250.6 Please explain who determines if a given project meets the definition of a prescribed undertaking.

250.7 Please explain which portion(s) of the project's scope, if any, pertain to the need to increase reliability to existing customers, and which portion(s) of the project's scope pertain to the need to add new loads related to the criteria of a prescribed undertaking.

A business case for the PRES project, published in October 2014, was provided as Attachment 1 in response to Ince IR 6.15. It stated that costs of $178,800 for "Legal and Regulatory" costs were incurred in the Identification Phase. On page 11 of Attachment 1, the scope of work for "Regulatory and Legal" is listed as:

- Reviewing Planning Report and participation in Structured Decision Making process
- Planning of regulatory application
- Legal support of First Nations consultation.

250.8 Please explain the scope of work described by "Planning of regulatory application."

250.8.1 If this scope of work included the preparation of a CPCN application, please explain why that expectation changed.

**251.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-1, Appendix I, p. 7; Exhibit B-5, BCUC IR 113;**
**BC Hydro Review of the Regulatory Oversight of Capital Expenditures and Projects proceeding, Exhibit B-7, p. 46**
**Distribution sustaining capital expenditures and additions**

In BC Hydro's Review of the Regulatory Oversight of Capital Expenditures and Projects proceeding, BC Hydro defines a "Program of Projects" as the following:

> A Program of Projects is a group of related projects with common business drivers and or technical characteristics which are managed in a coordinated way to deliver a common business requirement or achieve delivery efficiencies by sharing teams, resources, and information technology environments. The projects are managed together to reduce risk and achieve efficiencies and other delivery benefits not available if managed individually. Programs of Projects usually have long durations (multiple years), a finite end date, and are often flexible in scope with new projects added over time.

In its response to BCUC IR 113 regarding Distribution Automation projects, BC Hydro stated:

> Automation of distribution devices is a work program that facilitates a high volume of asset additions, replacements, or improvements consisting of repeatable work units located throughout the system. Each individual unit is relatively low cost and below the $5 million threshold…
>
> The execution of the work will, in most instances, be in groups of units for delivery efficiency. This work program is managed and executed as a recurring capital program and is ongoing…
>
> As the Distribution Automation work program is not executed as a program of projects, there is no reference to this program in Appendix J of the Application.

In Appendix I of the Application, BC Hydro lists the capital expenditures and additions for the Distribution Automation Work Program:

| Planning ID | Name of Project or Program of Projects | Capital Additions Plan F2020 ($ million) | Capital Additions Plan F2021 ($ million) | Capital Expenditures Plan F2020 ($ million) | Capital Expenditures Plan F2021 ($ million) |
|---|---|---|---|---|---|
| | Distribution Automation Work Program | 21 | 20 | 20 | 18 |

251.1 Given the level of capital investment and the recurring nature of this work program, please explain why the Distribution Automation Work Program is not managed as a Program of Projects.

251.2 Please explain the advantages and disadvantages of managing the Distribution Automation Work Program as a Program of Projects.

251.3 Please confirm that the Distribution Automation Work Program would require a filing of a CPCN or capital expenditure schedule if it was managed as a Program of Projects.

**252.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-5, BCUC IR 120.1; BC Hydro Review of the Regulatory Oversight of Capital Expenditures and Projects proceeding, Exhibit B-7, p. 46**
**Mica Replace Units 1-4 Generator Transformers and Mica Modernize Controls Project**

In response to BCUC IR 120.1, it stated:

> BC Hydro does not believe that efficiencies could be found by combining these projects into a single project… That said, BC Hydro recognize the opportunity to take advantage of the same outage period and that efficiencies could be achieved by combining the procurement and contract management of the installation work. While these activities were coordinated, the independent delivery of the projects allows each project to continue with minimal potential impacts from any delivery risks faced by the other project.

In the BC Hydro Review of the Regulatory Oversight of Capital Expenditures and Projects proceeding, BC Hydro defines a "Program of Projects."

252.1 Please explain whether there are any interdependencies between any current or upcoming projects at the Mica generating station.

252.2 Please explain whether all projects currently underway at the Mica generating station have a common business driver and/or a common business requirement.

252.3 Please explain whether all projects at a single site, such as Mica, would have to be managed in a coordinated way to reduce risk and achieve efficiencies.

252.4 Please explain why BC Hydro does not view all projects at a single site to be a Program of Projects or as a single overarching project.

252.5 Please discuss whether there are any public interest or public perception concerns at the Mica generating station which may warrant a higher level of BCUC oversight. If not, why not?

**253.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-5, BCUC IR 116.8**
**G.M. Shrum G1 to 10 Control System Upgrade Project**

In response to BCUC IR 116.8, BC Hydro provided a list of projects that have or will take place at GMS concurrently with the $75 million GMS G1 to 10 Control System Upgrade Project:

- GMS Unit 1-5 Turbine Rehabilitation Project (PID G000611),
- GMS G1-G5 Rotor Rehabilitation Project (PID G000651),
- GMS Spillway Chute Interim Upgrade Project (PID G000595),
- GMS W.A.C. Bennett Dam Riprap Project (PID G000623),
- GMS Spillway Gate Upgrade Project (PID G000656),
- GMS W.A.C. Bennett Dam - Core Upgrades Project (PID G000110),
- GMS Draft Tube Maintenance Gates Refurbishment Project (PID G000129),
- GMS Control System Upgrade Project (PID 93687),
- GMS 500kV Disconnect Switch Replacement/Refurbishment Project (PID G000135),
- GMS Upgrade HVAC System Project (PID G000114),
- GMS Replace Unit 1-5 Exciter Transformers Project (PID G000121),
- GMS Unwatering System Refurbishment Project (PID G000128),
- GMS Seal Low Level Outlets Project (PID G003555),
- GMS Auxiliary Building Service Upgrade (PID G0030088), and
- GMS Visitor Centre Water Supply Project (PID G003001).

Future projects forecast to be greater than $5 million at the GMS facility which may run concurrently with the GMS G1-10 Control Systems Upgrade Project include:

- GMS Intake Operating Gate and Intake Maintenance Gate Refurbishment (PIDG000131)
- GMS Intake Operating Gate Hydraulic Upgrade (Planning ID G003336)
- GMS Pauwels Transformer Life Extension (PID G003826)
- GMS Transformers Phase 4 Replacement (PID G000133)
- GMS U1 - U10 Water Passage Refurbishment (PID G000130)
- GMS U9 - U10 Circuit Breaker Replacement (PID G000120)
- GMS U5 Stator Replacement (PID G003837)
- GMS U6 Stator Replacement (PID G000124)
- GMS U5 - U8 Generator Air Cooler Replacement (PID G000126)
- W.A.C. Bennett Dam - Spillway Seismic Upgrade (PID G000109)

253.1 Please explain whether there are any interdependencies in the projects listed above.

253.2 Please estimate the sum total cost of all the projects listed above.

253.3 Please explain whether these projects could be considered to have: a common business driver or business requirement; a long duration; a finite end date; and could be managed together to reduce business risk.

253.4 Please explain whether these projects constitute a program of projects. If not, please explain why.

**254.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-5, BCUC IR 110.1**
**Ex-plan projects**

In its response to BCUC IR 110.1, BC Hydro stated:

> BC Hydro considers an ex-plan project as a project that was not included in the approved Capital Plan (fiscal 2020 to fiscal 2024) or a project that was in the approved Capital Plan outside of the current test period, but that is required to address an immediate need such that the project must be advanced into the current year.
>
> When submitting a project as ex-plan, the responsible KBU must validate that the project meets the ex-plan criteria described above. In addition, the responsible KBU will determine if the ex-plan project's capital expenditures in the current fiscal year can be accommodated within its own current fiscal year capital plan. If the KBU cannot manage the additional investment within their current fiscal year capital plan, redirection from another KBU will be considered based on the latest portfolio forecasts…
>
> Three ex-plan projects related to transmission system upgrades for the Liquefied Natural Gas and Oil and Gas sectors in the North Coast and Peace regions have been initiated since the fiscal 2020 to fiscal 2024 Capital Plan was finalized. These additional investments and the related increase in unplanned future amortization will be offset by the expected increase in future revenue related to these projects. These projects and any other ex-plan projects will be incorporated into the capital plan during the annual capital planning cycle in 2019 as explained above.

254.1 In the above preamble, BC Hydro stated: "If the KBU cannot manage the additional investment within their current fiscal year capital plan, redirection from another KBU will be considered based on the latest portfolio forecasts." Please confirm, or explain otherwise, that "redirection" in this context means that BC Hydro will move excess funds from other KBU to meet additional capital funding needs in any particular KBU.

254.2 Please list the three ex-plan projects mentioned in the quote in the preamble. Include scope details and project budget amounts. Please explain why each of these projects was deemed necessary to be advanced outside of the normal capital planning process.

254.2.1 Please indicate from which department and line of business the funds for these projects were reallocated.

254.3 Please explain who approves ex-plan project decisions and how these decisions are communicated to the BCUC.

254.4 Please confirm, or explain otherwise, that if any ex-plan project met the appropriate criteria, a CPCN application or capital expenditure filing would be made to the BCUC.

**255.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-1, Section 2, pp. 2-16–2-17; Section 6; Appendix J; Appendix K**
**General capital expenditures**

In Section 2 of the Application, BC Hydro discusses the filing of CPCN applications:

> BC Hydro files applications for a CPCN or acceptance of a capital expenditure schedule for projects with an authorized cost estimate that exceeds the financial thresholds in BC Hydro's 2010 Capital Project Filing Guidelines. BC Hydro has proposed an update to these guidelines in the Review of the Regulatory Oversight of Capital Expenditures and Projects proceeding currently before the BCUC. The BCUC also has discretion to direct

BC Hydro to file a CPCN for projects that are below the financial thresholds, if they are extensions to BC Hydro's system.

255.1 Please confirm, or explain otherwise, that BC Hydro proposes to keep the CPCN filing thresholds at the current levels during the Test Period.

255.2 Please confirm, or explain otherwise, that if after refinement but before construction, BC Hydro foresees that any of its capital projects' budgets will be revised to potentially exceed the CPCN threshold, BC Hydro will file CPCN applications for these refined projects with the BCUC for approval.

255.3 If the BCUC were to find that BC Hydro's capital expenditure program (as filed) required reductions, which projects or programs or budgets would BC Hydro propose to cut back. Please explain why.

**256.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-1, Appendix J, p. 82; Exhibit B-5, BCUC IR 121.4**
**Capacitor Bank Project alternatives**

BC Hydro states it is planning projects to add capacitor banks to its transmission grid, including the Peace to Kelly Lake Capacitors project:

> The Peace Region is a major generation source for BC Hydro, generating enough power to meet about 36 per cent of the total energy demand in the province… The existing transfer demand on the Peace to Kelly Lake transmission section is near 95 per cent of the transfer capacity of the lines. The addition of Site C and other generation in the Peace Region will cause the required power transfer to exceed the available transmission capacity… and will require significant reinforcements starting in 2024 to deliver the power from the Peace Region to the south of the province without constraints.

In response to BCUC IR 121.4, BC Hydro wrote of Project Alternatives that were dismissed:

> Alternative (iii): Build a new transmission line from Peace Canyon to Williston Substation and provide additional 15 per cent series compensation to 5L11, 5L12, and 5L13: This third alternative of building a new transmission line was eliminated due to the extensive project footprint and environmental impacts, which were expected to represent a significant schedule risk to the project.

256.1 Please confirm, or explain otherwise, that the purpose of installing capacitor banks is to increase the capacity to transfer power on a transmission line.

256.2 Please explain what benefits would result from building additional transmission lines as opposed to adding series capacitor stations to existing lines, as proposed in the Peace to Kelly Lake Capacitor Project.

256.3 Please explain how the ability to transfer power differs between building a parallel transmission line and adding series capacitor stations as proposed in the Peace to Kelly Lake Capacitor Project.

256.3.1 Please explain under what conditions BC Hydro would consider building additional transmission lines instead of other options to increase transfer capacity.

256.3.2 Please generally explain the benefits and costs of each option.

256.3.2.1 Please explain how these decisions relate to the current and future capacity available on BC Hydro's transmission grid.

256.4 Please explain how the decision to install capacitor banks or stations versus additional transmission lines impacts BC Hydro's ability to deliver power to new loads.

256.5 Please explain how BC Hydro's transmission losses will be impacted after the completion of the additional series capacitor station projects, both in the Northwest and on the North to South 500kV lines.

**257.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-1, Table 6-56, p. 6-152;**
**Exhibit B-5, BCUC IR 123.1, 123.2.1, 123.3, 123.5, 123.9, 123.13**
**Cybersecurity**

In its response to BCUC IR 123.1 and 123.2.1, BC Hydro stated:

> BC Hydro uses a risk-based approach to cybersecurity and information protection and is currently conducting a risk assessment of the environments identified by the Auditor General's report. Following the results of this assessment, BC Hydro will be able to better prioritize investments and efforts that will address the audit recommendations.
>
> The assessment is expected to conclude in fall 2019. An action plan and timelines will be determined based on the results of the risk assessment.
>
> […]
>
> The cost to perform the risk assessment is estimated at $0.3 million and is not included in the Application.

257.1 Please explain where the $0.3 million budget to perform the risk assessment is allocated and why it is not included in the Application.

257.2 Please explain whether there are any other assessments or studies being performed by BC Hydro in the Test Period which are not included in the budgets submitted in the Application.

257.2.1 If yes, please explain where the budgets are allocated for these assessments or studies.

257.2.2 Please explain whether BC Hydro considers that it performs a sufficient number of risk assessment or studies related to Cybersecurity, and whether it has sufficient resources to perform risk assessments or studies.

257.3 Please discuss whether BC Hydro plans to file the cybersecurity risk assessment on industrial control systems as an evidentiary update following its completion in fall 2019.

257.3.1 If not, please discuss whether BC Hydro plans to file the report with the BCUC outside of this proceeding. If not, please explain why.

257.4 Please discuss whether BC Hydro plans to file an action plan and timelines based on the results of the risk assessment mentioned above as an evidentiary update or as a filing outside of this proceeding, following its completion. If not, please explain why.

257.5 Please explain whether BC Hydro has chosen to take any immediate actions following the public release of the recommendations highlighted in the Auditor General's report, ahead of the formal risk assessments and plans, in order to address any of the areas of concern.

In its response to BCUC IR 123.3, BC Hydro wrote of its investments in its North American Electric Reliability Corporation (NERC) critical infrastructure protection (CIP) version 5 (v5) compliance initiative:

> The purpose of the initiative is to upgrade electronic and physical security for computer/electronic equipment used to control and to monitor industrial control

systems connected to the Bulk Electric System to meet compliance standards defined by the North American Electric Reliability Corporation (NERC) associated with critical infrastructure. As of March 31, 2019, $30.2 million has been spent on these initiatives, including both capital and associated operating expenditures. The NERC CIP v5 Compliance initiative consists of the following five initiatives:

1. Transmission Stations - $18.6 million;
2. Generation Stations - $2.7 million;
3. Grid Operations - $3.1 million;
4. Technology - $5.8 million;
5. Physical Key Management Work Package – addresses physical spaces containing Cyber Assets and is funded by the above initiatives;

These initiatives started in 2016 and BC Hydro achieved compliance with NERC CIP Version 5 by October 1, 2018. Further work on the Transmission Stations initiatives will continue through to 2023 to extend the use of the Station Gateway System to automate a number of manual compliance processes.

257.6 Please provide the project scope of each of the five projects identified in the preamble above.

257.7 Please explain where these budgets were accounted for. For example, are these projects under the Technology budget?

257.8 Please confirm, or explain otherwise, that these projects are required for MRS compliance.

257.8.1 If not confirmed, please explain why BC Hydro has chosen to perform these projects. For example, for efficiency, or security enhancement, or another reason.

257.9 Please provide the total actual and/or forecast costs for capital and associated operating costs spent for NERC CIP v5 compliance compared to the original amount estimated at assessment of the NERC CIP v5 standard. Please explain any variances.

257.10 Please explain whether BC Hydro extends its MRS cybersecurity program implementation to assets outside the scope of mandatory MRS standards, such as to distribution assets.

257.10.1 Please explain whether BC Hydro's cybersecurity program is consistently applied to all of BC Hydro assets, not just to assets governed under mandatory MRS regulations.

257.11 Please confirm whether learnings from the MRS program are applied to assets outside the MRS program, to enhance security or other reasons.

In its response to BCUC IR 123.13, BC Hydro stated that it estimates an additional $12 million will be required for implementation work on NERC CIP V5 through to 2023: "This work will extend the used of the Station Gateway System, which automates a number of manual compliance processes, and will help facilitate ongoing sustainment."

257.12 Please explain the scope, timelines and budget for the work yet to be completed for the Transmission Stations initiatives. Please explain which KBU the budget for this project is accounted for in the Application.

257.13 Please provide details for the Station Gateway System, including the: scope; functions; benefits; and costs.

257.14 Please explain whether the Station Gateway System is required by NERC CIP v5 standards.

257.14.1 If not required by NERC CIP v5 standards, please explain why BC Hydro is pursuing this project.

In its response to BCUC IR 123.9, BC Hydro explained its corporate governance, including a summary of its MRS Steering Committee and its Cybersecurity Oversight Committee. It appears that many positions listed are included on both committees.

257.15 Please explain any interactions or overlap between Cybersecurity and MRS governance.

257.16 Please explain any interactions or overlap between Cybersecurity and MRS work.

257.17 Please explain whether there is consistency in how Cybersecurity and MRS are governed.

257.18 Please confirm, or explain otherwise, that the Reliability Compliance Manager is designated as the main person responsible in the event of a situation of urgency due to a cybersecurity breach.

257.18.1 Please describe what actions are taken by the main person responsible in the event of a situation of urgency due to a cybersecurity breach.

257.18.2 Please discuss the effectiveness of this current structure.

257.18.3 Please explain whether the team responsible for these actions is sufficiently resourced.

In Table 6-56 of its Application, BC Hydro provides a summary of Technology projects over $2 million, including the "NERC CIP v7" project, with capital expenditures of $2.3 million in F2020 and capital additions of $2.3 million in F2020.

257.19 Please explain the scope of work BC Hydro has done to investigate or become compliant with NERC CIP v7.

257.20 Please explain the scope and budget for the "NERC CIP v7" project.

In response to BCUC IR 123.5, BC Hydro stated: "BC Hydro conducted Cybersecurity Program Audits in 2016 and 2019. …BC Hydro expects to be able to provide the 2019 internal audit report after it has been approved by BC Hydro's Board of Directors in June 2019."

257.21 Please discuss whether BC Hydro plans to file the 2019 Internal Cybersecurity Program Audit as an evidentiary update in this proceeding or outside of this proceeding.

257.21.1 Please provide BC Hydro's entity-wide risk assessment analysis for cybersecurity and how the scope of the 2019 Internal Cybersecurity Program Audit was designed to address these key risks.

257.21.2 Please include a description of how this audit scope was developed and include consideration of the most current risks in cybersecurity.

257.21.3 Please contrast this scope with the scope of the audit performed in 2016.

257.22 Some BC utilities are members of the Emergency Cyber Threat Organization with Natural Resources Canada (NRCan). Please confirm, or explain otherwise, that BC Hydro is a member.

257.23 Please confirm, or explain otherwise, that BC Hydro is a member of the "Energy Sector Network."

257.24 Please confirm, or explain otherwise, that BC Hydro receives threat notifications from the Energy Sector Network or the Emergency Cyber Threat Organization or NRCan.

257.24.1 If confirmed, please explain what actions BC Hydro takes when it receives a threat notification.

257.25 Please explain whether BC Hydro is a member of any other organization that provides real time information or notifications related to cybersecurity or threats.

257.26 Please confirm whether BC Hydro participates in the annual E-ISAC (NERC) GridEx mock cyber-

attack.

257.27 Please explain the process BC Hydro follows if it receives a credible cyber threat or attack, including: timelines; key internal and external contacts; manager of the situation; and authority of all people involved to carry out assigned duties.

257.27.1 Please explain who BC Hydro notifies if it receives a threat or an attack.

257.28 Please explain whether BC Hydro performs any internal mock cyber-attacks.

257.28.1 Please provide the results of any internal mock cyber-attacks.

**258.0 Reference: CAPITAL EXPENDITURES**
**Exhibit B-5, BCUC IR 133.1, Attachment 1, pp. 12, 17**
**Capital expenditures and additions**

On page 12 of Attachment 1 to BCUC IR 133.1, it showed a capital expenditure variance of $13.1 million above plan for F2018 for the "New Feeder to Bowen Island (LM-NSC-125)" project. BC Hydro provided the following explanation for the variance:

> The Previous Application Plan was based on early cable routing reviews; the cost increase is due to the final route selection and the associated increase in design, engineering, materials, construction and project management costs.

258.1 Please explain how the early cable routing reviews were determined and why those routes were not suitable as the final route selection.

Further on page 12 of Attachment 1 to BCUC IR 133.1, it showed the following capital expenditure variances for F2018:

- H-Frame Elimination – Chinatown (IPID 900557) - $7.8 million above plan
- Variance Sites – LED Street Light Conversion (IPID 900556) - $5.7 million below plan

258.2 Please explain the above variances.

On page 17 of Attachment 1 to BCUC IR 133.1, it showed the following for "Risk Adjustment" in Technology Capital Additions:

- 2017: RRA = ($17.6 million), Actual = $0
- 2018: RRA = ($9.9 million), Actual = $0
- 2019: RRA = ($12.2 million), Forecast = $0

258.3 Please explain what the "Risk Adjustment" is and how the RRA amounts are determined.

## G. CHAPTER 8 – OTHER REVENUE REQUIREMENTS ITEMS

**259.0 Reference: OTHER REVENUE REQUIREMENTS ITEMS**
**Exhibit B-5, BCUC IR 157.6; 157.6.1**
**Full adoption of IFRS**

In response to BCUC IR 157.6, BC Hydro stated that it had applied or intends to apply "the full retrospective adoption approach" for certain IFRS standards.

259.1 Please provide a high-level discussion of the differences, if any, to the Test Period and future periods' revenue requirements of applying a full retrospective approach versus a modified retrospective approach.

In response to BCUC IR 157.6.1, BC Hydro provides the following IFRS 1 elections adopted by BC Hydro and a description of the related adjustments:

| | | | | |
|---|---|---|---|---|
| Deemed Cost | IFRS D5-D8B | PP&E | Prior GAAP carrying value of PP&E can be used as a deemed cost for assets used in operations subject to rate regulation on transition date. Election available on an asset-by-asset basis. In the absence of taking this election, full retroactive restatement of PP&E and Intangible assets would be required. | Reclassification from PP&E accumulated depreciation to PP&E cost |

[…]

| | | | | |
|---|---|---|---|---|
| Cumulative translation differences | IFRS 1 D12-D13 | Consolidation | The cumulative translation differences for all foreign operations are deemed to be zero at the date of transition to IFRSs. In the absence of this election, the cumulative translation differences would be subject to full retrospective restatement. | Reclassification between cumulative translation adjustment and retained earnings. |
| Decommissioning liabilities included in the cost of property, plant and equipment | IFRS 1 D21 | PP&E | Instead of retrospectively accounting for changes, entities can include in the depreciated cost of the asset an amount calculated by discounting the liability estimated at the date of transition to IFRSs back to, and depreciating it from, when the liability was first incurred. | Reduction in book value of PP&E and retained earnings that is expected to be insignificant. |

259.2 Please discuss whether any of the above elections could impact the Test Period and future periods' revenue requirements. As part of the discussion, please also discuss whether a change in the accounting "cost" of an asset or future gains/losses on a disposition of a related entity would have any implications on the Test Period and future periods' revenue requirements.

259.2.1 If yes, please discuss how the changes arising from IFRS 1 are being considered and tracked.

**260.0 Reference: OTHER REVENUE REQUIREMENTS ITEMS**
**Exhibit B-5, BCUC IR 158.1.1, 158.7.1**
**Infrastructure rights**

BC Hydro stated in response to BCUC IR 158.1.1 that:

> BC Hydro has incurred costs related to customer-owned equipment upgrades (infrastructure rights) prior to fiscal 2019 but that these upgrades did not commonly occur and were not material. Any amounts incurred were recorded with the other voltage conversion capital costs.

260.1 Please provide the following actuals for each of F2014 to F2019:

i) The number of voltage conversion projects;

ii) The number of voltage conversion projects that had customer-owned equipment upgrades (infrastructure rights); and

iii) The capital additions related to infrastructure rights that were recorded with the other voltage conversion capital costs.

BC Hydro stated in response to BCUC IR 158.7.1 that its accounting treatment for infrastructure rights is consistent with other utilities and cites Toronto Hydro and AltaGas as examples.

260.2 Please discuss whether there are other Canadian utilities that use a different accounting treatment for infrastructure rights. If so, please identify the utility and describe the accounting treatment.

260.3 Please discuss if the proposed accounting treatment of infrastructure rights has been reviewed by BC Hydro's external auditor. If so, please provide the external auditor's assessment of BC Hydro's eligibility to recognize the infrastructure rights as intangible assets with depreciation over a 35-year useful life.

260.4 Under a scenario where BC Hydro's external auditor assesses that the infrastructure rights either cannot be capitalized or the useful life differs from 35 years, please discuss the implications to BC Hydro's ratepayers and shareholders in the Test Period and beyond.

**261.0 Reference: OTHER REVENUE REQUIREMENTS ITEMS**
**Exhibit B-1, Appendix A, Schedule 5; Exhibit B-5, BCUC IR 161.3, 161.7**
**Provision and other**

In response to BCUC IR 161.3, BC Hydro provided the incremental rate impact for the Test Period based on the three-year historical actuals of 0.9 percent of the Power System and Technology capital expenditures for each year.

261.1 Please provide a high level discussion of the rate impact beyond the Test Period of over or under forecasting project write-offs in the Test Period (i.e. would it have an upward or downward impact on rates, if any). As part of the discussion, please discuss if over or under forecasting project write-offs would impact BC Hydro's regulatory accounts, such as the Amortization of Capital Additions Regulatory Account.

In response to BCUC IR 161.7, BC Hydro provided the following:

| $ million | F2017 RRA | F2017 Actual | F2018 RRA | F2018 Actual | F2019 RRA | F2019 Forecast | F2020 Plan | F2021 Plan |
|---|---|---|---|---|---|---|---|---|
| Dismantling costs | 30.9 | 33.7 | 35.7 | 67.5 | 30.6 | 44.5 | 67.0 | 43.0 |
| Gains/losses on mass asset retirements | 31.0 | 33.5 | 33.1 | 34.0 | 33.6 | 33.6 | 35.9 | 38.7 |
| Capital asset write-offs | 7.9 | 13.5 | 7.0 | 9.7 | 6.1 | 6.1 | 8.0 | 8.1 |
| Project write-offs | - | 14.8 | - | 27.3 | - | - | 9.9 | 9.7 |
| Non-cash provision expenses [1] | (5.3) | (31.3) | - | (3.1) | - | (2.0) | - | - |
| Other costs [2] | 1.5 | (0.7) | (14.8) | 16.9 | (18.6) | 0.1 | (12.6) | (12.5) |
| Total (Schedule 5.0 Line 110) | 66.0 | 63.6 | 61.0 | 152.3 | 51.7 | 82.3 | 108.2 | 87.0 |

Note:
1. Non-cash provision expenses pertain to the three non-cash provision regulatory accounts: the First Nations Provisions, the Environmental Provisions, and the Arrow Water Systems Provision regulatory accounts described in Chapter 7, Section 7.5.3 Non-Cash Provisions.

2. Other costs includes real property sales gains, liquidated damages received from vendor, banking fees, electricity purchase agreements termination and other provision expenses.

261.2 Please provide a breakdown of "Other costs" by the items listed in Note 2 of the preamble for F2017 to F2021. Please provide explanations for variances greater than 10 percent and ensure that the totals agree with the table in the preamble.

BC Hydro presents the net provisions and other costs in lines 65 to 77 in Schedule 5 of Appendix A to the Application. A BCUC prepared summary of specific data from this section of the Application is presented below:

| Line | Net Provision & Other | F2019 Forecast ($ millions) | F2020 Plan ($ millions) | F2021 Plan ($ millions) |
|---|---|---|---|---|
| 65 | Integrated Planning | 36.5 | 40.5 | 42.9 |
| 71 | Other | 5.8 | 12.2 | 11.9 |
| 72 | Dismantling Expense-Integrated Planning | 24.0 | 33.0 | 34.8 |
| 74 | Dismantling Expense-Operations | 6.0 | 32.4 | 7.8 |

261.3 Please explain the variance from the F2019 forecast to F2020 and F2021 plan for each of the line items listed above.

**262.0 Reference: OTHER REVENUE REQUIREMENTS ITEMS**
**Exhibit B-6, BCOAPO IR 72.1**
**Forecast interest rates and forecast foreign exchange rate**

In response to BCOAPO IR 72.1, BC Hydro provided the forecast interest and foreign exchange rates from the January 2019 forecast received from the Treasury Board of the Government of BC.

262.1 Please discuss if BC Hydro plans to update the Application with the forecast interest and foreign exchange rates from the January 2019 forecast received from the Treasury Board of the Government of BC in the September 3, 2019 Evidentiary Update as contemplated in the Regulatory Timetable. If not, please explain why not.

262.2 Please provide the rate impact of updating the Application with the forecast interest and foreign exchange rates from the January 2019 forecast received from the Treasury Board of the Government of BC.

**263.0 Reference: OTHER REVENUE REQUIREMENTS ITEMS**
**Exhibit B-6, CEC IRs 74.2, 74.3**
**Water rights**

BC Hydro stated in response to CEC IR 74.2 that:

> The term of water licence renewals for BC Hydro is determined at the discretion of the Comptroller of Water Rights. BC Hydro anticipates that a 40-year term set out in the *Water Sustainability Act* will be the minimum term for BC Hydro's water licence renewals.

BC Hydro stated in response to CEC IR 74.3 that:

> BC Hydro is in the process of applying for renewals of water licenses for Bridge, Shuswap and Alouette; however, BC Hydro has not renewed a power water licence for approximately 40 years.

263.1 Please discuss when BC Hydro expects to finalize the terms of the water licences identified in the preamble.

263.2 Please discuss why BC Hydro anticipates that a 40-year term will be the minimum term for BC Hydro's water licence renewals.

263.2.1 Please confirm, or explain otherwise, that all of BC Hydro's water licences that have finite terms would be renewed at the same term (i.e. 40 years).

263.3 In the event that the term of the water licence renewals differs from 40 years, please discuss if BC Hydro plans to adjust the amortization period in the next RRA to reflect the actual term of each licence. If not, please explain why not.

263.4 Please discuss the impact to the Test Period revenue requirements and rates of a one, five and ten-year difference from the anticipated 40-year term of the licences.

263.5 Please discuss if variances between forecast and actual costs to renew finite term water licences can be deferred and recovered from/repaid to ratepayers in future test period(s) via existing regulatory accounts. If so, please identify the regulatory account(s).

## H. CHAPTER 9 – TRANSMISSION REVENUE REQUIREMENT

**264.0 Reference: TRANSMISSION REVENUE REQUIREMENT**
**Exhibit B-5, BCUC IR 163.1, Attachment 3, Table 1, p. 2;**
**Attachment 7, p. 1; BCUC IR 163.1.1, 163.1.2**
**Exports from BC**

BC Hydro's response to BCUC IR 163.1 stated:

> …BC Hydro also notes that in any scenario where Point B is at the U.S. border, this indicates that the Transmission Customer intends to export electrical energy from Canada for sale in the U.S. In order to do so, the Transmission customer also requires an export sales permit or licence from the National Energy Board (NEB), which has jurisdiction to regulate electricity energy exports from Canada.

Excerpts from Table 1 of Attachment 3 to BCUC IR 163.1 is provided below, and identifies the potential Path Name and Point of Receipt (POR) and Point of Delivery (POD) Combinations for exports from the BC Hydro System to the US and Alberta:

Table 1: Valid Path Name and POR/POD Combinations on the BC Hydro System

| Path Name | POR | POD |
|---|---|---|
| BC – US | | |
| W/BCHA/BCHA – BPAT/KI – BC.US.BORDER/ | KI | BC.US.BORDER |
| W/BCHA/BCHA – BPAT/GMS.MCA.REV – BC.US.BORDER | GMS.MCA.REV | BC.US.BORDER |
| W/BCHA/BCHA – BPAT/BCHA.INT.SYS – BC.US.BORDER/ | BCHA.INT.SYS | BC.US.BORDER |
| W/BCHA/BCHA – BPAT/BCHA.LM.SYS – BC.US.BORDER/ | BCHA.LM.SYS | BC.US.BORDER |
| W/BCHA/BCHA–BPAT/POWELL.RIVER – BC.US.BORDER | POWELL.RIVER | BC.US.BORDER |
| BC – AB | | |
| W/BCHA/BCHA – AESO/KI – AB.BC/ | KI | AB.BC |
| W/BCHA/BCHA – AESO/GMS.MCA.REV – AB.BC/ | GMS.MCA.REV | AB.BC |
| W/BCHA/BCHA – AESO/BCHA.INT.SYS – AB.BC/ | BCHA.INT.SYS | AB.BC |
| W/BCHA/BCHA – AESO/BCHA.LM.SYS – AB.BC/ | BCHA.LM.SYS | AB.BC |
| W/BCHA/BCHA – AESO/POWELL.RIVER – AB.BC/ | POWELL.RIVER | AB.BC |

Attachment 7 in response to BCUC IR 163.1 stated the following:

- BC Hydro requires the use of eTags to schedule energy in both Pre-schedule and Real-time for all interchange energy transactions, including internal paths.
- An important element of the eTag is its specification of which transmission reservation the energy is to be scheduled on.

BC Hydro's response to BCUC IR 163.1.2 stated: "In the above example, KI is the Kootenay Interconnection point of interconnection with FortisBC…"

264.1 Please clarify what each of the PORs listed in Table 1 above represents: GMS.MCA.REV, BCHA.INT.SYS, BCHA.LM.SYS and POWELL.RIVER.

BC Hydro's response to BCUC IR 163.1.1 stated:

> In this scenario, Point A could be the Point of Receipt for a generator located in BC Hydro's Service area while Point B could be the Point of Delivery at a border for the Point to Point reservation.
>
> For example, the path, Point of Receipt, and Point of Delivery could be as follows:
>
> Path = W/BCHA/BCHA-BPAT/GMS.MCA.REV-BC.US.BORDER
>
> In the above example, the path is from BC Hydro's service area to the U.S. Border.
>
> This scenario represents all transmission exports from BC Hydro's service area because Network Integration Transmission Service cannot be used for third party sales.

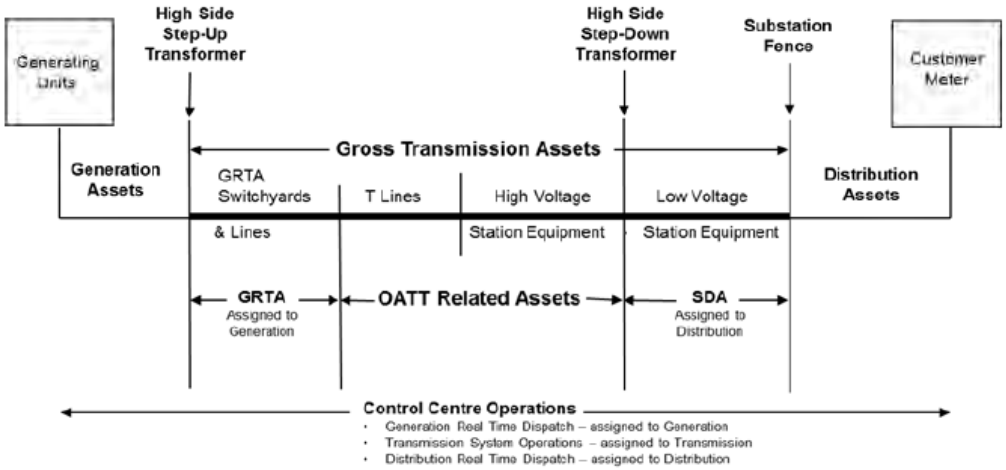
264.2 Please clarify where the PORs (BCHA.INT.SYS, BCHA.LM.SYS and POWELL.RIVER) listed in Table 1 above are located, if not from BC Hydro's service area.

264.3 Please confirm, or explain otherwise, that Network Integration Transmission Service is associated with each of the following PORs: BCHA.INT.SYS, BCHA.LM.SYS and POWELL.RIVER.

**265.0 Reference: TRANSMISSION REVENUE REQUIREMENT**
**Exhibit B-1, Figure 9-1, p. 9-3; Exhibit B-5, BCUC IR 163.2**
**NITS current costs – transmission line and station equipment allocation**

Figure 9-1 in the Application illustrates that the Open Access Transmission Tariff (OATT) Related Assets are a combination of High Voltage Station Equipment and Transmission Lines:

**Figure 9-1 Asset Boundary for Transmission Revenue Requirement and OATT Rates**




BC Hydro's response to BCUC IR 163.2 stated: "The total current costs…of $931.9M in fiscal 2020 and $930.3 million in fiscal 2021 all relate to BC Hydro's transmission system (transmission lines and high voltage station equipment)."

265.1 Please complete the table below to breakdown the Total Current Costs between transmission line and high-voltage station equipment

| | F2020 | F2021 |
|---|---|---|
| Costs Allocated to Transmission Lines | | |
| Costs Allocated to High-Voltage Station Equipment | | |
| Internal Ancillary Services | | |
| Internal Scheduling and Dispatch | | |
| **Total Current Costs** | **$931.9M** | **$930.3M** |

**266.0 Reference: TRANSMISSION REVENUE REQUIREMENT**
**Exhibit B-1, p. 9-27; Appendix A, Schedule 3.4; Exhibit B-5, BCUC IR 163.1**
**External OATT revenue**

Page 9-27 of the Application states:

> The long-term PTP revenue is derived from the forecast long-term PTP volumes and the proposed long-term PTP rates. The forecasts of long-term PTP volumes are based on committed long-term transmission contracts.
>
> The short-term PTP (including non-firm PTP) revenue forecast reflects the discounting of short-term PTP rates on export and wheel-through transactions.

The table below prepared by BCUC staff summarizes the F2017 and F2018 actual, F2019 forecast and F2020 and F2021 plan short-term and long-term PTP transmission sales volumes and revenues using data provided in Schedule 3.4 of Appendix A to the Application:

| ($ million) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| **[A]** External Revenue (Line 68) | 9.7 | 8.5 | 9.0 | 12.4 | 12.4 |
| **[B]** Total PTP Revenue (Line 69) | 90.4 | 99.4 | 96.3 | 113.3 | 114.2 |
| **% ([A]/[B])** | **10.7** | **8.6** | **9.3** | **10.9** | **10.9** |
| **GWh** | **2017** | **2018** | **2019** | **2020** | **2021** |
| **[C]** External LT PTP (Line 50) | 1,130 | 908 | 1,039 | 1,314 | 1,314 |
| **[D]** External ST PTP (Line 59) | 288 | 446 | 266 | 240 | 240 |
| **[E]** Total External PTP Volume **[C + D]** | 1,418 | 1,354 | 1,305 | 1,554 | 1,554 |
| **[F]** Total PTP Volume (Line 51 + Line 60) | 16,252 | 18,140 | 19,572 | 19,821 | 20,206 |
| **% ([E] + [F])** | **8.7** | **7.5** | **6.7** | **7.8** | **7.7** |

266.1 Please explain why the volume of PTP transmission used by external customers as a percentage of the total volume of PTP transmission used by all transmission customers has declined since 2017.

266.2 Excluding BC Hydro and Powerex, please identify the number of OATT customers who use BC Hydro's PTP transmission service.

266.2.1 Please confirm, or explain otherwise, that the customers identified in the preceding IR are the "external" customers in Schedule 3.4.

266.2.2 Excluding BC Hydro and Powerex, please identify the number of OATT customers who use BC Hydro's PTP transmission service who are located:

i) within BC Hydro's service area;
ii) outside of BC Hydro's service area, but within BC; and
iii) outside of BC Hydro's service area and outside of BC.

266.3 For each of the locations listed in the preceding IR, please identify how those customers use BC Hydro's PTP transmission service (i.e. to import to BC, export from BC, wheel through BC, wheel within BC, other). If applicable, please explain what "other" is.

266.4 Excluding BC Hydro and Powerex, please complete the table below to provide the volume of PTP transmission used by OATT customers for each activity listed.

| GWh | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| Import to BC | | | | | |
| Export from BC | | | | | |
| Wheel through BC | | | | | |
| Wheel within BC | | | | | |
| Other | | | | | |
| **Total** | **1,418** | **1,354** | **1,305** | **1,554** | **1,554** |

In response to BCUC IR 163.1, BC Hydro stated:

> In each scenario, an Eligible Customer under section 1.12 of the Open Access Transmission Tariff (OATT) and BC Hydro's Becoming a BC Hydro Transmission Customer Business Practice, included as Attachment 1, would execute a Service Agreement per OATT Attachment B (Long-Term PTP) and/or an Umbrella Agreement per OATT Attachment A (Short-Term PTP) to become a BC Hydro Transmission Customer and to purchase transmission rights on BC Hydro's system in accordance with Part I (Common Service Provisions) and Part II (Point-To-Point Transmission Service) of the OATT.

266.5 Please provide the annual number of Service Agreements and Umbrella Agreements that BC Hydro has received from F2017 to F2019 from entities who want to become a BC Hydro transmission customer.

266.6 Please provide the annual number of new transmission customers from F2017 to F2019.

266.7 Please discuss whether there are any constraints, such as transmission system capacity, which may impact the number of new transmission customers that BC Hydro can accommodate assuming they meet the eligibility requirements under the OATT.

**267.0 Reference: TRANSMISSION REVENUE REQUIREMENT**
**Exhibit B-1, p. 9-16**
**Cost allocations to generation, transmission and distribution**

Footnote 340 on page 9-16 of the Application states:

> In Order No. G-47-16, issued on March 31, 2016, the BCUC approved a Cost of Service Study and Rate Class Segmentation Negotiated Settlement Agreement, as part of BC Hydro's 2015 Rate Design Application. In section 8 on page 11 of the Negotiated Settlement Agreement appended to Order No. G-47-16, the negotiating parties agreed it was appropriate to functionalize five per cent of DSM costs to transmission, subject to BC Hydro revisiting the functionalization between generation, transmission and distribution in its fiscal 2019 Cost of Service Study.

267.1 Please confirm, or explain otherwise, that BC Hydro used the methodologies from its 2016 Cost of Service Study (contained in Appendix A of Order G-47-16) to allocate costs to its Transmission Revenue Requirement in this Test Period.

267.1.1 If not confirmed, please identify any discrepancies and explain why.

**268.0 Reference: TRANSMISSION REVENUE REQUIREMENT**
**Exhibit B-1, Appendix A, Schedule 3.4; Exhibit B-5, BCUC IR 168.1**
**Scheduling and dispatch services**

In response to BCUC IR 168.1, BC Hydro stated the following reasons why scheduling and dispatch costs are not included in the allocation of PTP transmission costs to Powerex:

- Powerex provides scheduling and electronic tagging services to BC Hydro and does not charge BC Hydro for these services;
- BC Hydro, as a transmission customer, covers the cost of OATT scheduling and dispatch services for its own transmission system, and Powerex covers the cost of scheduling and e-tagging functions between balancing authorities; and

- These additional costs may result in some transactions not occurring, even though they are economic on a consolidated basis, which could result in a reduction to Powerex's net income, and all else equal, higher rates for BC Hydro's customers.

Line 37 of Schedule 3.4 in Appendix A to the Application shows that internal scheduling and dispatch charges reduce the Transmission Revenue Requirement by $3.7 million and $3.8 million in each of F2020 and F2021, respectively.

268.1 Please compare the F2017, F2018 and F2019 actual costs for the scheduling and electronic tagging services provided by Powerex to BC Hydro with the ancillary and dispatch charges not allocated to Powerex for the same period. Please discuss any differences.

268.2 Please explain why "these additional costs may result in some transactions not occurring, even though they are economic on a consolidated basis."

## I. CHAPTER 10 – DEMAND-SIDE MANAGEMENT

**269.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-5, BCUC IR 174.1.1**
**Reallocation of funds during the Test Period**

BC Hydro stated in BCUC IR 174.1.1:

> BC Hydro's interpretation of the *Utilities Commission Act* is that BC Hydro is permitted to reallocate costs or resources between program areas and years without seeking prior BCUC approval.
>
> Under section 44.2 of the *Utilities Commission Act*, BC Hydro may file a statement of the expenditures on DSM that it has made or anticipates making during the test period. Section 44.2 provides the BCUC with the authority to accept or reject all or part of BC Hydro's DSM expenditures and approve rates under section 61 that recover those expenditures…

269.1 Please provide BC Hydro's view on the purpose and interpretation of a section 44.2 expenditure schedule acceptance, addressing the following elements:

i) Over or under expenditure on a portfolio basis;

ii) Over or under expenditure on a program basis;

iii) The impact of reallocations on portfolio cost-effectiveness, and the possible impacts on cost recovery under section 61 in the event of over or under expenditure;

iv) The ability of the BCUC to disallow over-expenditures that result in the adequacy or cost-effectiveness not being met; and

v) What consequences, if any, are appropriate to incent the utility to ensure that deviations from accepted expenditure schedules are in the public interest.

**270.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-1, p. 7-57; Appendix AA, pp. 6–7;**
**Exhibit B-5, BCUC IR 179.1; UCA, RSBC 1996, c. 473, section 60(1)(b)(ii)**
**Measurement, verification and evaluation**

BC Hydro stated in response to BCUC IR 179.1:

> BC Hydro budgets for the expenditures it believes are necessary to deliver its plan, and expects to spend the planned expenditures. However, we also try to achieve the anticipated energy and associated capacity savings targets within each sector at the least cost. This has the potential to result in underspending during the test period, improving the cost-effectiveness of the DSM portfolio.

BC Hydro stated in Appendix AA to the Application:

> BC Hydro is a Crown corporation without an incentive mechanism that would make it profit from DSM impacts, and thus is not in a conflict of interest with respect to the evaluation or measurement and verification of DSM impacts. Without a DSM incentive mechanism, BC Hydro does not profit from the over-estimation of DSM impacts. This is in contrast to a number of other jurisdictions in North America, including California, where electricity is delivered by investor-owned utilities with incentive mechanisms for DSM. In these jurisdictions, utilities are in a conflict of interest with respect to the evaluation or measurement and verification of DSM impacts, since evaluation results influence incentive payments to utilities for DSM. In many of these jurisdictions, the majority of measurement and verification, and evaluation work is outsourced to contractors;

270.1 Given BC Hydro's statement regarding the absence of an incentive to over-estimate DSM impacts, please explain whether BC Hydro currently have incentives to maximize/optimize the amount of cost-effective DSM. If so, please elaborate on these incentives.

In its Application, BC Hydro states that "interest is not charged to the DSM Regulatory Account…"

270.1 Please discuss whether the accrual of interest to the DSM Regulatory Account would have an impact on BC Hydro's decision-making regarding energy, system and load management. If yes, please elaborate. If no, please explain why there would be no impact.

Section 60(1)(b)(ii) of the UCA states: "In setting a rate under this Act, the commission must have due regard to the setting of a rate that provides to the public utility for which the rate is set a <u>fair and reasonable return</u> on any expenditure made by it to reduce energy demands."[6]

270.2 Please reconcile BC Hydro's statement that it is "without an incentive mechanism that would make it profit from DSM impacts" with section 60(1)(b)(ii) of the UCA that requires the BCUC to set a rate that provides the public utility with "a fair and reasonable return on any expenditure made by it to reduce energy demands."

[6] Emphasis added.

**271.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-1, Appendix AA, p. 2; Attachment 1, Section 1.1, p. 5;**
**Exhibit B-5, BCUC IR 188.2**
**Independence of DSM evaluation function**

Appendix AA to the Application states: "The purpose of the evaluation function is to refine estimates of DSM impacts and identify program improvements in a rigorous and neutral manner in support of DSM and Integrated Resource Plan (IRP) decisions, risk management, and stakeholder confidence."

In response to BCUC IR 188.2, BC Hydro stated:

> The roles and responsibilities of the external evaluation advisors are to:
>
> a) Review draft evaluation reports to ensure that BC Hydro evaluations utilize appropriate methodologies and align with industry practice and provide written comments to the evaluation team on all aspects of the evaluation project. Comments are to focus on the research design, input data, analytical methods, and alignment with industry practice and standards, and other topics as directed by BC Hydro.
>
> b) Participate in Evaluation Oversight Committee (EOC) meetings to present their review to EOC members. Final evaluation reports are reviewed and subject to approval by an EOC made up of BC Hydro staff representing business units with an interest in DSM and chaired by a staff person from outside the Conservation and Energy Management business unit. The external evaluation advisors participate in EOC meetings and act as a resource to Committee members. The EOC ensures that BC Hydro's DSM evaluations are objective, unbiased, and of sufficient quality.
>
> c) Review the final evaluation report and BC Hydro's response to comments on the draft report.
>
> d) Prepare a final Advisor's Memo on the Evaluation Report, which is appended to the final report. In this memo, advisors are asked to comment on the quality of the research design, the input data, and the analytical method, as well as how the methodology compares to industry practice.

Attachment 1 of Appendix AA to the Application summarizes the four milestone evaluations of DSM initiatives completed by BC Hydro in F2017.

271.1 Please provide a table showing all the milestone DSM evaluations completed since F2009. Please ensure the table includes the following information for each fiscal year:

i) Name of the DSM initiative(s) evaluated;

ii) Number of DSM initiatives evaluated vs. the total number of DSM initiatives in the portfolio;

iii) Indicate if an external DSM evaluation advisor was appointed to assist on the named initiative; and

iv) Name of the external advisor company used, if any.

271.1.1 If the external advisor company used is not the same every year since 2009, please explain why the external advisor company has changed and discuss BC Hydro's criteria for selecting an external advisor company.

271.1.2 Please explain how BC Hydro determines which DSM initiatives should be evaluated each year and how often.

271.2 Please provide a copy of the last three completed evaluation reports including the attached final advisor's memo on the evaluation report.

**272.0 Reference: DEMAND-SIDE MANAGEMENT**
**BC Hydro F2017-F2019 RRA Decision, p. 85; Exhibit B-1-4, Attachment 2, DSM Audit Q1 F2017 Report, p. 4; Exhibit B-5, BCUC IR 12.4, 187.3, 187.4, 187.7**
**Independent audit of DSM program**

In the BC Hydro F2017-F2019 RRA Decision, the BCUC stated that "an independent assessment of the entire program could provide appropriate assurance that BC Hydro's EM&V [Evaluation, Measurement and Verification] methods are effective and unbiased."

In the DSM Audit Q1 F2017 report, BC Hydro states that the "[Audit] Criteria included BC Hydro policies, standards and procedures, and industry practices and protocols such as International Performance Measurement & Verification Protocol and the U.S. Department of Energy Uniform Methods Project Protocols" and that the "audit was conducted in conformance with the International Standards for the Professional Practice of Internal Auditing."

In response to BCUC IR 12.4, BC Hydro stated:

> Standard 1300 of the Internal Standards for the Professional Practice of Internal Auditing explains the process and oversight involved for an entity to conform with the standards. Specifically, Standard 1300 states that: ... External assessments must be conducted at least once every five years by a qualified, independent assessor or assessment team from outside the organization.

In response to BCUC IR 187.3, BC Hydro stated:

> BC Hydro periodically engages external subject matter experts to assist Audit Services by providing expertise in a specialized area. Audit Services ensures audit standards are followed by managing the audit and overseeing the work of subject matter experts.

In response to BCUC IR 187.4, BC Hydro stated:

> Internal audits and external audits are not interchangeable. External audits are performed to provide an opinion on the external financial statements of the organization that the financial statements are prepared under a recognized financial reporting framework. Internal audits seek to evaluate and improve an organization's operations by contributing to improvement of governance, risk management and control processes.

In response to BCUC IR 187.7 BC Hydro stated:

> BC Hydro does not believe that an external DSM audit would be appropriate. As discussed in BC Hydro's response to BCUC IR 1.187.6, we believe our internal audits bring appropriate independence...
>
> BC Hydro is confident in the Conservation and Energy Management business function and that our cycle of DSM internal audits appropriately reflects the associated risks. The increased cost of performing additional audits, with unknown benefits, outweighs the value from an audit of each expenditure application. Accordingly, BC Hydro does not support filing a DSM audit with each DSM expenditure application.

272.1 If internal and external assessment have different scopes, please discuss BC Hydro's interpretation of how to comply with Standard 1300 with respect to "External assessments must be conducted at least once every five years by a qualified, independent assessor or assessment team from outside the organization."

272.2 Please discuss whether the DSM audit performed was focused on process and controls over the DSM program rather than on financial reporting.

272.3 Please explain, including the timeline and milestone, what BC Hydro's current cycle of DSM internal audits entails.

272.4 Please reconcile Standard 1300, which requires that external assessments be conducted at least once every five years by an independent assessor or team from outside the organization, with BC Hydro's view that an external DSM audit would not be appropriate.

272.5 Please provide BC Hydro's views on the merits of completing an audit of the overall DSM program, similar to that provided in Exhibit B-1-4, once every five years.

**273.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-1, pp. 10-1, 10-24; Table 10-4; Exhibit B-6, AMPC IR 5.6**
**DSM Program spend by sector**

On page 10-1 of the Application, BC Hydro notes that "[o]ur proposed demand-side measures expenditure schedule responds to the BCUC's Decision on our Previous Application by increasing expenditures for the residential sector by approximately 50 per cent…"

On page 10-24 of the Application, BC Hydro states that one of the modifications from the F2017 to F2019 DSM plan includes reducing the commercial and industrial program budgets, while remaining within the overall traditional DSM funding envelope.

In Table 10-4 of the Application, BC Hydro shows the following:

**Table 10-4 DSM Program Spend by Sector**

| | Residential (including low income) (%) | Commercial and light industrial[352] (%) | Large Industrial (%) |
|---|---|---|---|
| **BC Hydro percentage of DSM program spend by sector (excluding Thermo-Mechanical Pulp program)** | | | |
| F2014 to F2016 Actual | 17 | 51 | 32 |
| F2017 to F2018 Actual and F2019 Forecast | 19 | 57 | 24 |
| F2020 to F2021 Forecast | 30 | 38 | 32 |
| **BC Hydro Allocation of DSM costs for cost recovery purposes** | | | |
| Allocation of DSM costs | 40 | 35 | 25 |

In response to AMPC IR 5.6, BC Hydro stated:

> Accordingly, BC Hydro looked for opportunities to redirect funding to residential sector programs from elsewhere in the DSM portfolio. Commercial and industrial program expenditure forecasts were reviewed and reductions were identified to better align forecasts with expected spending.
>
> In addition, this reallocation of funding better aligns with the FACOS allocation that the

BCUC referenced in its Decision on the Previous Application. BC Hydro's updated view of DSM program spend by sector can be found in Table 10-4 of Chapter 10 of the Application.

273.1 Please confirm, or explain otherwise, that in terms of the proportional share of DSM program spending, the allocation to Commercial and light industrial sector in the Test Period has declined by 19 percent, and the Large industrial sector (excluding the thermal-mechanical pulp [TMP] program) has increased by 8 percent since the F2017 to F2019 period.

273.2 Aside from the increased expenditure in the Residential sector in response to the BCUC's decision regarding the F2017 to F2019 RRA, please discuss whether there were other factors that led to BC Hydro's current requested expenditure allocation between the sectors. If so, please identify these factors.

**274.0 Reference: DEMAND-SIDE MANAGMENT**
**Exhibit B-5, BCUC IR 175.2**
**Cost-effectiveness and LRMC**

In response to BCUC IR 175.2, BC Hydro provided the long-run marginal cost (LRMC) value that would result in a Total Resource Cost (TRC) ratio of 1. Footnote 1 notes that the benefit-cost ratios are based on expenditures and energy savings from F2020 to F2022 activities.

274.1 Please provide an updated version of the response provided in BCUC IR 175.2 based on expenditures and energy savings for the Test Period only (F2020-2021).

**275.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-1, Appendix X, pp. 79–80; Exhibit B-5, BCUC IR 178.1, Attachment 1, pp. 1, 6**
**Cost-effectiveness & key program assumptions**

BC Hydro states on page 79 of Appendix X to the Application that "[r]anges indicate that there are sub-components within the initiatives that have different adjustment factors."

BC Hydro's response to BCUC IR 178.1 provided measure lives for each measure/technology/offer. Page 1 of Attachment 1 to BCUC IR 178.1 indicated that Window Film and Dryer Racks have measure lives of one year.

BC Hydro stated on page 6 of Attachment 1 to BCUC IR 178.1 that "behavioural measure" has a measure life of 1, 6 or 24 years.

275.1 Please provide additional details for the Dryer Rack measures, including BC Hydro's plans for ensuring savings persist for longer than one year.

275.2 Please explain if more than one intervention type is included under the "Behavioural measure" and indicate the measure life for each of the underlying interventions, if applicable.

**276.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-1, Appendix X, p. 30; Exhibit B-6, Ince IR 12.5; Zone II RPG IR 25.5**
**Energy Savings Kits**

BC Hydro states in Appendix X to the Application that Energy Savings Kits will be provided at pre-qualified events and will not require a BC Hydro account number to receive a kit.

BC Hydro stated in response to Ince IR 12.5:

> The pre-qualified events are intended to make it easy for households who meet the income qualifications to receive an Energy Saving Kit. At these events individuals receiving a kit do not need to declare their household income or provide their BC Hydro account number. At the event, our Community Outreach Team assists with the registration process and distributes the kits. […]
>
> BC Hydro considers the following when selecting events:
>
> […]
>
> Frequency – whether the organization has had an event in the past two years, where kits were distributed.

BC Hydro stated in response to Zone II RPG IR 25.5:

> BC Hydro does not conduct post-audits on customers who have received an Energy Saving Kit. We receive feedback on install rates through participant surveys and energy savings are verified through billing analysis.

276.1 Please discuss whether there are mechanisms in place to ensure that Energy Saving Kits (ESKs) are installed and to reduce the incidence of unused kits, particularly in the case of pre-qualified events where individuals do not need to provide their account number. If so, please describe the mechanisms.

276.1.1 Please explain how BC Hydro confirms that savings are realized, or that ESKs are installed effectively.

**277.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-1, pp. 2-30, 7-32; Table 10-10, 10-11, 10-12, pp. 10-26–10-27; Exhibit B-6, BCSEA IR 40.2; Direction to the BCUC Respecting Undertaking Costs, BC Reg. 77/2017**
**Approval of LCE expenditures**

On page 7-32 of the Application, BC Hydro requests for BCUC approval to defer low-carbon electrification expenditures to the DSM Regulatory Account, consistent with the Direction to the BCUC Respecting Undertaking Costs.

On page 2-30 of the Application, BC Hydro states that "[t]he BCUC must allow BC Hydro to defer [low-carbon electrification] expenditures to the DSM Regulatory Account."

Table 10-10 in the Application shows the planned expenditures for low-carbon electrification (LCE) for the Test Period:

**Table 10-10 Fiscal 2020 to Fiscal 2021 Expenditure Summary ($ million)**

| | F2020 Plan | F2021 Plan | Total |
|---|---|---|---|
| Rate Structures | 0.5 | 0.5 | 1.0 |
| Programs | | | |
| Residential | 18.4 | 19.7 | 38.1 |
| Commercial | 18.9 | 17.5 | 36.4 |
| Industrial | 26.5 | 26.9 | 53.4 |
| Total Programs (excluding TMP) | 63.7 | 64.1 | 127.8 |
| Capacity-focused | 6.9 | 4.3 | 11.1 |
| Supporting Initiatives | 19.8 | 20.2 | 40.0 |
| Thermo-Mechanical Pulp | 0 | 27.2 | 27.2 |
| Low-Carbon Electrification | 18.3 | 9.7 | 28.0 |
| Total Expenditures | 109.2 | 126.0 | 235.1 |

Tables 10-11 and 10-12 of the Application show that the traditional DSM expenditure is targeted at the pursuit of energy and capacity savings, while low-carbon electrification is shown separately in the tables as providing new load and capacity growth.

In response to BCSEA IR 40.2, BC Hydro stated:

> There are no further expenditures planned beyond activities and commitments in fiscal 2020. Phase Two of the Comprehensive Review will consider further roles for BC Hydro in supporting the CleanBC plan.

277.1 Please confirm, or explain otherwise, that BC Hydro is not seeking acceptance under section 44.2 of the UCA of the LCE expenditures shown in the 2nd to last row of Table 10-10. Please discuss.

277.2 In BC Hydro's opinion, what role does the BCUC have in determining whether the individual LCE projects within the LCE program meet the definition under the Greenhouse Gas Reduction Regulation (BC Reg. 102/2012) (GGRR) to be considered a prescribed undertaking.

277.3 Given the different focus of the DSM program compared to the LCE program, please comment on BC Hydro's ability to report on these expenditures separately within the DSM Regulatory Account, and the advantages or disadvantages of doing so.

277.4 Please reconcile the expenditure for LCE projects shown in Table 10-10 and BC Hydro's response to BCSEA IR 40.2 concerning the lack of further expenditures for LCE in F2021.

**278.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-1, Appendix Y, p. 6**
**Initial LCE projects**

The paragraph on page 6 of Appendix Y which refers to both project 1 and project 2 appears to only contain details for project 2.

278.1 Please provide a description of the activities related to customer project 1, redacted as necessary.

**279.0 Reference: DEMAND-SIDE MANAGEMENT**
**DSM Regulation; Exhibit B-1, Section 10.5.7, Table 10-15; Appendix Y, Table 3-2**
**BC Hydro LCE Program: energy management activities**

Under the DSM Regulation, "energy management program" means a program to assist customers to optimize energy use.

Table 10-15 of the Application outlines the forecast energy management activity expenditures in each DSM sector: Approximately $5 million annually for the Residential sector; $6 million for the Commercial sector; and $8 million for the Industrial sector.

Table 3-2 of Appendix Y to the Application provides the total expenditure on BC Hydro funded LCE Program components:

**Table 3-2 – BC Hydro Funded Low Carbon Electrification Program Expenditures**

| BC Hydro LCE Program | | Expenditures ($ million) | | | | | |
|---|---|---|---|---|---|---|---|
| GGRR Regulation Subsection | Program Component | 2018 | 2019 | 2020 | 2021 | 2022 | Total |
| 4(3)(a), 4(3)(b) | Energy Management Studies and Incentives | - | 1.51 | 3.10 | 7.00 | 2.49 | 14.11 |
| 4(3)(a) | Public Awareness | - | 0.60 | 0.91 | - | 0.00 | 1.51 |
| 4(3)(b) | Education & Training | - | 0.01 | 0.04 | - | - | 0.05 |
| 4(3)(c) | Research and Pilots | - | 0.01 | 0.10 | - | - | 0.11 |
| 4(3)(d) | Standards Enabler | - | 0.23 | 0.65 | - | - | 0.88 |
| **Program Total** | | - | **2.35** | **4.80** | **7.00** | **2.49** | **16.65** |

279.1 Please provide additional details on the types of activities included under BC Hydro's DSM energy management activities, and how they differ from the activities under the BC Hydro LCE Energy Management Studies and Incentives program component.

279.2 In the case of existing BC Hydro customers, please describe how the LCE energy management activities differ from the energy management activities currently offered to the three different sectors.

279.2.1 Discuss the steps BC Hydro is taking to reduce duplication, or take advantage of synergies, between the DSM and LCE programs involving activities such as: public awareness; codes and standards; education; or training.

279.3 Please provide a breakdown of the expenditures under the BC Hydro LCE Energy Management Studies and Incentives program component detailed in Table 3-2.

**280.0 Reference: DEMAND-SIDE MANAGEMENT**
**Exhibit B-5, BCUC IR 184.4**
**Codes and standards**

BC Hydro stated in response to BCUC IR 184.4:

> To clarify the language on page 10-17 of Chapter 10 of the Application, BC Hydro understands the adequacy requirement for DSM expenditures on activities in support of codes and standards development under the DSM regulation to be a minimum level, not a set level of effort. As such, BC Hydro's level of effort is determined by the activities required to meet long term market transformation goals. BC Hydro's long-term strategy

is to move the market for both new and existing buildings in all residential and commercial customer segments to near-net zero performance over the long-term. As part of the DSM planning cycle, BC Hydro identifies the short-term initiatives and activities necessary to develop model building codes and product standards, to support the adoption of policies and regulations, and to build industry capacity to understand and comply with new and existing codes and standards. This planning process drives the allocation of resources to the codes and standards effort.

280.1 Is BC Hydro aware of any benchmarking data regarding utility expenditure in support of codes and standards in other jurisdictions? If so, please provide a summary.

## J. CHAPTER 11 – PERFORMANCE BASED REGULATION

**281.0 Reference: PERFORMANCE BASED REGULATION**
**Exhibit B-5, BCUC IR 197.4; Exhibit B-1, Section 11.7.2, p. 11-60**
**Proposed consultation approach**

In response to BCUC IR 197.4, BC Hydro stated that:

> It is important for BC Hydro to inform and educate customers and the public about all regulatory approaches and frameworks through which BC Hydro is seeking approval from the BCUC.
>
> If PBR was adopted for BC Hydro, this would include PBR. Accordingly, BC Hydro would endeavor to educate customers and the public about PBR, by preparing an application that was as accessible as possible and by conducting workshops as required.
>
> While BC Hydro has had success engaging with customers on topics such as safety, capital investments and energy conservation, we expect that broad customer engagement on a complex topic such as PBR would be more challenging to undertake.

In the Application, BC Hydro describes the consultation process it would propose for implementing a Performance Based Regulation (PBR) plan. BC Hydro states that it "could conduct topic-specific workshops, including information presentations and a question and answer session" and identified several topics that may be appropriate for dedicated workshops.

281.1 Please describe in detail, what, if any, consultation has been done to date with customer groups regarding the designing of a PBR plan.

**282.0 Reference: PERFORMANCE BASED REGULATION**
**Exhibit B-5, BCUC IR 196.1, 197.1, 197.2, Exhibit B-1, Section 11.5.3, p. 11-49**
**Potential implementation timetable**

In Section 11.5.3 of the Application, BC Hydro states that "some base operating costs are beyond our control and would likely need to be included in a 'Y' factor." BC Hydro then provides a list of examples of Y factors, followed by some examples where operating costs would also need to be adjusted for one-time events or increases through a "Z" factor.

In response to BCUC IR 196.1, BC Hydro stated that: "If PBR were adopted for BC Hydro using fiscal 2021 as the base year, BC Hydro's current expectation is that we would propose a PBR term of fiscal 2022 to fiscal 2026."

In response to BCUC IR 197.1, BC Hydro stated that:

> BC Hydro believes that, given the prolonged period of time during which the BCUC's jurisdiction over BC Hydro was limited, there is significant value in the greater level of review and accessibility associated with cost of service regulation, at this time…
>
> …delaying consideration of the adoption of PBR until there is a higher degree of certainty with respect to the base costs used to generate going-in rates may also be beneficial to all parties.

282.1 Please confirm, or explain otherwise, that the reference to using "fiscal 2021 as the base year" would apply to establishing both the base O&M and base capital?

282.2 Please explain why F2021 would be the appropriate base year, as opposed to any other historical year? Would it be appropriate to use some historical average to calculate a base O&M and base capital for the F2022 to F2026 period? Please discuss why or why not.

282.3 Please confirm, or explain otherwise, that the proposal of a "fiscal 2021 as the base year" and the proposed implementation delay is meant to address the "consideration of the adoption of PBR until there is a higher degree of certainty with respect to the base costs used to generate going-in rates"?

282.3.1 Will using F2021 as the base year result in higher certainty in establishing the base going in rates? Please discuss.

282.4 Please provide a sample calculation of the F2021 base operating costs, outlining the proposed Y-factor and Z-factor items, to determine BC Hydro's base O&M.

282.5 Please identify any topics which would be suited for a negotiated settlement process, should one be directed.

In BCUC IR 197.2, BC Hydro stated: "If PBR is adopted for BC Hydro, we expect that we would retain experts for all three topics during a PBR proceeding and that interveners would likely retain similar expertise."

282.6 Given BC Hydro's stated expectation of proposing a PBR term of F2022 to F2026, the considerations regarding stakeholder engagement discussed in Section 11.7.2 of the Application and the intent on engaging certain experts, what would be the most reasonable timing (by month and year) to conduct the engagement process, and the subsequent filing of a PBR plan for review by the BCUC. Please discuss and provide a proposed timetable.

In Section 11.5.3 of the Application, BC Hydro provides a list of operating costs that it would exclude from base operating costs.

282.7 Please confirm, or explain otherwise, that BC Hydro would propose excluding these same operating costs from base O&M if the BCUC were to direct BC Hydro to file a PBR plan starting in 2022.

282.7.1 Please list any other adjustments to base O&M that BC Hydro may propose and explain why.

**283.0 Reference: PERFORMANCE BASED REGULATION**
**Exhibit B-5, BCUC IR 191.2, Exhibit B-1, Section 11.5.1, Table 11-3**
**Capital expenditures**

In response to BCUC IR 191.2, BC Hydro listed several options it states are more likely to be appropriate for the management of capital expenditures under a PBR plan. BC Hydro also stated that:

> While the options below provide an initial indication of potential approaches to managing capital expenditures under a PBR plan, it is important to note Dr. Weisman's caution on page 46 of Appendix FF of the Application where he explains that there is no consensus on an optimal PBR design for the treatment of capital expenditures. Accordingly, we would want to give this issue further consideration in the context of an overall PBR plan design before providing a definitive preference.

In Section 11.5.1 of the Application, BC Hydro discusses the consideration for capital expenditures under a PBR. BC Hydro also provides a discussion and evaluation on each of the potential approach to managing capital expenditures in Table 11-3.

283.1 Please discuss how BC Hydro would approach establishing base capital. Please include a discussion of which year(s) would be most appropriate, what adjustments would need to be made and why.

283.2 Please also discuss the existing regulatory approach under the BCUC's mandate (i.e. CPCN, capital expenditure filings) and how these current processes would or would not apply in a PBR framework for BC Hydro.

**284.0 Reference: PERFORMANCE BASED REGULATION**
**Exhibit B-5, BCUC IR 193.1**
**Regulatory accounts**

In response to BCUC IR 193.1, BC Hydro stated that:

> …the regulated firm under PBR should bear limited financial responsibility for events outside of its control… whereas a fundamental property of PBR is that the regulated firm bears greater risk in exchange for the prospect of greater reward, this does not imply that the regulated firm should bear all of the risk under PBR. Reflexively eliminating or reducing variance accounts and recovery mechanisms may cause the regulated firm to bear excessive risk.

284.1 Is it BC Hydro's view that the entirety of its deferral and regulatory accounts serve the purpose of reducing risk for "events outside of its control"? Please discuss.

284.2 Please explain in detail how "eliminating or reducing variance accounts and recovery mechanisms may cause the regulated firm to bear excessive risk." How does BC Hydro measure excessive risk? Please discuss the trigger mechanisms that would identify when a utility is bearing excessive risk.

284.3 In BC Hydro's view, at what point would the proliferation of regulatory and deferral accounts become a disincentive for the utility to find efficiencies and reduce costs? Please discuss the economic triggers that would identify when this might become a concern for a utility on PBR?

**285.0 Reference: PERFORMANCE BASED REGULATION**
**Exhibit B-5, BCUC IR 195.3**
**Potential key performance indicators**

In response to BCUC IR 195.3, BC Hydro stated that:

> If the BCUC decides to adopt PBR for BC Hydro following this proceeding, BC Hydro has suggested that fiscal 2021 be used as the base year. This means that the first year under a PBR plan would be fiscal 2022, which is also the first year where the BCUC would have jurisdiction to determine BC Hydro's allowed net income.

285.1 Please discuss whether the BCUC's process to determine BC Hydro's allowed net income in F2022 should be conducted prior to, in tandem with, or subsequent to the BCUC's review of a potential PBR plan from BC Hydro.

**286.0 Reference: PERFORMANCE BASED REGULATION**
**Exhibit B-5, BCUC IR 198.1**
**Cost of Service (COS) compared to PBR**

In response to BCUC IR 198.1, BC Hydro stated that "PBR for Hydro Quebec Distribution is currently experiencing some public acceptance challenges" and that:

> The Government of Quebec and Hydro Quebec have been under significant public pressure to return all efficiency gains achieved, both under PBR and under the prior cost of service regime, to ratepayers. The public and political pressure to return efficiency gains to ratepayers is well-documented in Quebec media - with some media in Quebec describing efficiency gains as customers being 'overcharged.'

BC Hydro also provided a news article from the Montreal Gazette as support of this position.

BC Hydro then also referenced Dr. Weisman's explanation "that the success of PBR may be less certain in the case of Crown Corporations because it requires a greater degree of coordination between government and regulatory governance structures."

286.1 Please discuss and provide relevant references, in addition to the above news article, to any regulatory filings as a result of attempting to address these concerns. Please outline any resulting changes and amendments to Hydro Quebec's existing PBR plan, as a result of these (or any other) regulatory changes.

286.2 Please provide a discussion on what the Government of Quebec, Hydro Quebec and the regulator has done to address these concerns. Please include relevant references to support this discussion.

**287.0 Reference: PERFORMANCE BASED REGULATION**
**Exhibit B-5, BCUC IR 189.3**
**Revenue cap**

In response to BCUC IR 189.3, BC Hydro stated that "…because BC Hydro is not motivated by the prospect of higher earnings, the adoption of PBR may not provide the same 'carrot' incentives for efficient performance as would be the case for an investor-owned utility."

287.1 Please confirm, or explain otherwise, if the absence of motivation for the prospect of higher earnings is the same under COS as it is under PBR. If confirmed, please explain why the adoption of PBR would be different from the use of COS, with regards to the motivation for efficient performance.