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May 4, 2020

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**Attention: Patrick Wruck, Commission Secretary
and Manager, Regulatory Support**

Dear Sirs/Mesdames:

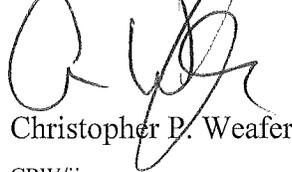
**Re: British Columbia Hydro and Power Authority ("BC Hydro") F2020 to F2021
Revenue Requirements Application ~ Project No. 1598990**

We are counsel to the Commercial Energy Consumers Association of British Columbia (the "CEC"). Attached please find the CEC's Final Submissions with respect to the above-noted matter.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION



Christopher P. Weafer

CPW/jj
cc: CEC
cc: BC Hydro
cc: Registered Interveners

**COMMERCIAL ENERGY CONSUMERS
ASSOCIATION OF BRITISH COLUMBIA**

FINAL SUBMISSIONS

**British Columbia Hydro and Power Authority F2020 to F2021 Revenue
Requirements Application
Project No. 1598990**

May 4, 2020

Commercial Energy Consumers Association of British Columbia

**British Columbia Hydro and Power Authority F2020 to F2021 Revenue
Requirements Application
Project No. 1598990**

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**COMMERCIAL ENERGY CONSUMERS ASSOCIATION
OF BRITISH COLUMBIA (the “CEC”)**

FINAL SUBMISSIONS

**British Columbia Hydro and Power Authority F2020 to F2021 Revenue
Requirements Application
Project No. 1598990 (the “Application”)**

1. CEC SUMMARY AND RECOMMENDATIONS

RATE INCREASES: *British Columbia Hydro and Power Authority (“BC Hydro” or the “Utility”) ultimately seeks a 1.76% increase in F2020 and a 1.01% decrease in F2021 leading to net cumulative increases of 1.76% and 0.72% for the test period years.*

The CEC submits that this increase and subsequent decrease are generally acceptable.

However, the CEC’s primary concern is with the bill impacts on commercial sector customers and hence requires an emphasis on conservation and efficiency and DSM investment.

LOAD FORECAST: *The comparisons of past forecasts to current forecasts show some remarkable changes with respect to forward additional load expectations and past forecasts, including a reduction of total domestic sales by 3,499 GWh by 2024.*

The CEC is doubtful about the increased load forecast for 2020 and recommends that the Commission consider the merits of more consistent flattening of the load forecasting. The CEC submits that at a minimum it would be prudent to assume the lower load forecast will be closer to the actual.

The CEC recommends that the Commission request BC Hydro to lower its load forecast for the 2020 period and/or request that BC Hydro revisit its load forecast in light of the current economic conditions and other factors highlighted in the evidence to make a suitable adjustment for this RRA.

COST OF ENERGY: *The CEC submits that to the extent Exempt contracts are being replaced, none should be approved without meeting a requirement of approaching market pricing because of the risks related to over-supply.*

The CEC recommends that the Commission request BC Hydro undertake analysis which optimizes the inputs of DSM as a supply side option, for delaying the timing of need to consider any new EPAs or EPA renewals and for full evaluation of DSM options before committing to any new EPAs or EPA renewals.

The CEC recommends the Commission direct BC Hydro to develop a robust plan for how it is currently and will in the future seek to manage the costs of energy related to planning for Site C in service.

OPERATING COSTS: On Budget Performance - The CEC considers that defining a positive outcome as an annual expenditure of 97% to 100% of plan virtually ensures that expenditures will reach the planned amount and does not identify improvement or improvement opportunities adequately.

The CEC contends that including additional metrics that address cost / benefit analysis throughout BC Hydro's operations could potentially result in operations with better value per dollar spent, and long- term lower costs.

OPERATING COSTS: Maintenance - The CEC submits that limiting operating costs without evaluating the cost effectiveness of activities or projects may prove to be less than prudent.

The CEC recommends that the Commission request BC Hydro to report annually on improvement in its processes for evaluating cost effectiveness.

OPERATING COSTS: Work Smart - The CEC supports BC Hydro's Work Smart commitment to continuous process improvement, and also supports eliminating non-value-added activities. The CEC agrees with the Commission that BC Hydro's Work Smart program should result in incremental cost/benefit savings which should be the natural result of continuous process improvement.

OPERATING COSTS: Management Salary Increase - The CEC notes that BC Hydro oft-times uses 'reputational risk' as justification for certain of its capital expenditures.

The CEC submits that the optics of providing substantial incentive payments at a time when businesses are failing, load may be reduced resulting in the need for increased rates, and residential customers are losing their jobs are not favourable, and can well result in 'reputational risk' to the Utility.

The CEC recommends that the BCUC not approve revenue requirements for a management and professional salary increases at this time.

OPERATING COSTS: Safety - The CEC submits that the safety and well-being of BC Hydro employees and the public are of the highest importance.

The CEC has reviewed the evidence in the Application with regard to the Safety Business Group and has no issues.

OPERATING COSTS: KBU Cost-Effectiveness - In general, the CEC is satisfied that the costs for the KBU are forecasted to stay within the recent historical range, but as with other KBUs the lack of cost and benefit analysis will continue to be a deficiency in reaching overall cost-effectiveness improvement goals.

OPERATING COSTS: Site C - The cost-effective completion of the Site C Project is a priority and ensuring annual use of the capacity and energy domestically in BC will be critical to achieving benefits for the project.

The CEC submits that the Commission should give priority to ensuring proper energy management in the time periods leading up to and after Site C in service, all of which need planning and action in the RRA Test Period before and after Site C is in service.

CAPITAL EXPENDITURES: *The CEC is pleased that BC Hydro is undertaking to improve its capital planning processes.*

The CEC recommends that the Commission develop its oversight process to assess the cost-effectiveness of BC Hydro capital expenditures over time.

In the CEC's view, the Asset Investment Planning Tool, which the CEC notes is industry accepted,¹ should be prioritized for continuing development and review instead of being deferred.

The CEC recommends that the Commission request BC Hydro provide a full report on the Asset Investment Planning Tool project within the next 6 months.

The CEC assesses the data provided in this application for the information on technology projects is generally insufficient to determine whether or not there will be value delivered to the company for the expenditures.

REGULATORY ACCOUNTS: *The CEC has reviewed the evidence related to BC Hydro's proposed treatment of its regulatory accounts and does not have any significant concerns.*

The CEC recommends that the Commission accept BC Hydro's proposed treatment as reasonable, conditioned on the expectation that BC Hydro will advance its Depreciation Study into the near future.

OTHER REVENUE ITEMS: *The CEC is concerned with respect to finance and interest charges on debt, particularly with regard to recent central bank decreases in rates, along with similar central bank policy around the world, in response to the economic impact of Covid-19. The Commission should be prepared to ask BC Hydro for adjustments with respect to these costs.*

TRANSMISSION REVENUE REQUIREMENT: *The CEC recommends that the Commission consider carefully whether or not the cost allocation methodology and calculation of OATT rates could be modified to reflect the full cost of service at this time and request BC Hydro to provide an estimate of the potential changes if the calculation were undertaken using the COSS methodology.*

In the interim, the CEC recommends that the Commission approve the Transmission Revenue Requirement.

DEMAND SIDE MANAGEMENT: *In the CEC's view, it would be preferable if BC Hydro did pursue more DSM up to all cost-effective DSM, particularly where there could be significant*

¹ Transcript Volume 11, page 1851

savings relative to other supply options, or where it could be pursued at a financial gain to ratepayers, if below market cost.

The CEC submits that the continuous reductions in DSM spending for the commercial class are clearly of concern to commercial customers, who are adjusting their plans to account for the loss of opportunities.

The CEC submits that the 'moderation' strategy can be more reasonably characterized as a 'severe reduction' strategy for the commercial rate classes, resulting in an effective transfer of DSM spending to the other rate classes.

Instead, spending should be increased in the commercial sector to advance the implementation of cost-effective compliance with new codes and standards for energy efficiency.

In light of the consistent underspending, the CEC recommends that the Commission focus attention on the lost customer benefit in terms of reduced bills, when there is additional cost-effective conservation and efficiency to be supported and advanced, the loss of opportunity is significant.

RATE FAIRNESS AND REBALANCING: *The CEC is appreciative that the last time rate rebalancing was possible the Commission narrowed the range of reasonableness and the CEC appreciates this improvement.*

While the CEC understands that rebalancing is not an option at this time, the CEC submits that the persistently unfair treatment of commercial ratepayers should be mitigated to the extent possible and as quickly as possible, including through the expansion of programs with reduced expenditure benefits to commercial rate payers, such as DSM, and those not currently available to MGS and LGS commercial customers, such as COVID-19 customer bill relief.

The CEC submits that eligibility discrimination is evident in this revenue requirements application and appears to be continuing.

The CEC recommends that the BCUC explicitly recognize the concern with existing and ongoing discrimination imbalance, for the commercial sector, in BC Hydro's decisions in this matter. The CEC recommends that the commission direct BC Hydro to consult with the CEC in regard to addressing an appropriate balance, including for DSM programming, development of a Freshet rate, increased COVID-19 related relief, evacuation relief and any other programs and services that could suitably be provided to the commercial rate class.

PERFORMANCE BASED REGULATION: *The CEC submits it would be inappropriate to consider PBR ratemaking at this time and the CEC submits for the type of PBR that FortisBC is advocating that this is totally inappropriate for BC Hydro.*

The CEC recommends that the Commission defer any consideration of PBR until at least the next Revenue Requirements application, when the effects of the pandemic are better understood.

More importantly, the CEC recommends that the Commission direct BC Hydro to consider what formulaic forecasting of its costs can be developed for consideration in its next RRA but preclude the need for BC Hydro to address the type of PBR FortisBC is putting before the Commission.

COMMISSION QUESTIONS: *Peace Region Electric Supply (PRES) Project.*

The CEC recommends that the Commission accept the Peace Region Electric Supply project as a prescribed undertaking under Section 18 of the Clean Energy Act.

MINETTE STATION TO LNG CANADA: *The CEC has reviewed the evidence and submits that the project components are required and the project meets the conditions of the Transmission Upgrade Exemption Regulation.*

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE: *As stated in the Electric Vehicles Inquiry Phase 1 Report, the CEC does not agree that regulated utilities should include EV infrastructure costs in their rate base when EV service can be provided by unregulated entities in a competitive marketplace.²*

The CEC submits that the costs should not be imposed on utility ratepayers,³ and particularly during this Test Period.

The CEC submits that the principle of cost-causation (being an issue of fairness) should apply to EV charging services such that those customers using the service will pay a cost-based price.

The CEC notes that the Commission expressed concern that by spreading the costs of EV charging infrastructure across its entire regulated customer base, a utility could potentially offer its EV charging service at a lower rate than a competitor that doesn't have the ability to cross subsidize.⁴

The CEC agrees with this concern.

The CEC submits that a free market with competitive EV charging service providers will provide the best and most cost-effective form of charging service to the public.

Additionally, the CEC submits that it is also not appropriate to facilitate subsidized service in a potentially competitive market at a time when commercial businesses are suffering significantly, and contributing more than their share of the revenues based on their costs. Doing so could potentially jeopardize the opportunities that should be available to commerce.

The CEC recommends that the Commission disallow the recovery of the costs at this time.

² Electric Vehicles Inquiry Phase 1 Report, page 44 (Exhibit C24-2, CEC evidence, p. 43; Exhibit C24-19, CEC final argument, p. 35.)

³ Electric Vehicles Inquiry Phase 1 Report, page 44 (Exhibit C24-2, CEC evidence, p. 43; Exhibit C24-19, CEC final argument, p. 35.)

⁴ Electric Vehicles Inquiry Phase 1 Report, page 41

2. INTRODUCTION

1. The CEC has participated in the BC Hydro Application and has reviewed the evidence on the record.
2. The CEC finds that BC Hydro has been quite transparent in its approach to the proceeding, and the CEC commends the Utility on its general responsiveness both in the written and oral hearing phases.
3. The CEC further finds that BC Hydro appears to be working to reduce costs and ensure value in its decision-making. For instance, BC Hydro is working to improve its capital planning processes, is taking steps to mitigate IPP energy costs, and is implementing various practices to increase its benefit-to-cost analyses.
4. The CEC submits that these are very positive steps.
5. Despite the positive progress towards an open and transparent approach to regulatory processes, the CEC notes that BC Hydro could go further in codifying and formalizing the improved approach apparent in the Application to ensure it continues and is embodied throughout the organization.
6. In the Commission's SAP Inquiry Report several recommendations were made to BC Hydro regarding its conduct in regulatory processes.⁵ During cross-examination at the Oral Hearing, it became evident that BC Hydro had done little to formalize and document the Commission-recommended approach to disclosure and conduct in regulatory proceedings.⁶
7. The CEC submits the Commission should direct BC Hydro to formalize and document its response to the Commission's recommendations. A failure to sufficiently incorporate Commission recommendations and provide documented instructions to staff is potentially problematic, even if the conduct of BC Hydro and the leadership of Mr. O'Riley in this proceeding show an improved overall approach to BC Hydro's culture in dealing with the regulator and intervenors.

⁵ British Columbia Hydro and Power Authority – Inquiry of Expenditures related to the adoption of the SAP Platform – British Columbia Utilities Commission Action on Complaint – Report at pages 116-117.

⁶ Tr. 5 p.368-388 (O'Riley).

8. BC Hydro also points out that the current Application reflects ‘a pervasive culture of restraint and cost containment in the face of external pressures and an increasingly complex operating environment’.⁷

9. The CEC is pleased that the Utility is working hard to contain costs, but encourages the Utility to include a focus on cost/benefit analysis as it continues to transition to a leaner culture. The CEC submits that cost containment is less useful than cost-effectiveness when seeking long-term benefits for ratepayers.

10. The CEC recognizes that the applied-for Application results in a relatively minor bill increase of 1.76% in F2020, followed by a 1.01% decrease in F2021.⁸

11. The CEC submits that this increase and subsequent decrease are generally acceptable.

12. However, the CEC also notes that these rate changes are largely a result of the offset arising from the 5% decrease in the Deferral Account Rate Rider (“**DARR**”).⁹ In fact, excluding the effect of the DARR decrease, BC Hydro is applying for 6.85% rate increase in F2021.

13. The CEC submits that a 6.85% rate increase is significant and should not be dismissed as irrelevant because of the DARR offset.

14. The CEC is of the view that it is important that BC Hydro continue to work to reduce costs in the short term, but that it is also necessary for it to improve its cost-benefit analyses in its decision-making for long-term gain.

3. REVENUE REQUIREMENT

15. In February 2019, BC Hydro filed its Fiscal 2020 to Fiscal 2021 Revenue Requirements Application (“**RRA**”)¹⁰, and filed an Evidentiary Update in October 2019.¹¹

⁷ BC Hydro Final Argument page 1

⁸ BC Hydro Final Argument page 1

⁹ BC Hydro Final Argument page 1

¹⁰ Exhibit B-1

¹¹ Exhibit B-11 to B-11-2

16. BC Hydro provided a Gross View of its Revenue Requirements in Table 1-3 of its Application showing a Total Rate Revenue Requirement of over \$5 billion for each of F2020 and F2021 and revenue shortfalls in the order of \$335 million and \$375 million respectively.

Table 1-3 Gross View of BC Hydro's Revenue Requirements⁴¹

	Schedule Reference	F2017 RRA	F2017 Actual	F2018 RRA	F2018 Actual	F2019 RRA	F2019 Forecast	F2020 Plan	F2021 Plan
(\$ million)		1	2	3	4	5	6	7	8
1	Cost of Energy	1,549.3	1,505.5	1,657.8	1,538.7	1,762.9	1,673.4	1,887.0	1,920.2
2	Operating Costs	1,185.0	1,165.1	1,220.0	1,228.7	1,221.0	1,257.5	1,224.2	1,229.3
3	Taxes	223.3	223.1	231.8	231.1	238.7	242.2	249.8	262.2
4	Amortization	783.2	777.9	821.1	807.6	850.9	871.5	915.7	936.5
5	Finance Charges	708.8	579.2	735.0	805.9	773.8	684.6	757.5	726.9
6	Return on Equity	684.0	683.5	698.0	684.0	712.0	(424.3)	712.0	712.0
7	Miscellaneous Revenue	(137.1)	(143.1)	(138.3)	(143.7)	(140.6)	(202.9)	(240.8)	(247.2)
8	Inter-Segment Revenue	(62.5)	(56.9)	(64.3)	(66.4)	(65.3)	(64.3)	(69.0)	(72.6)
9	Deferral Account Transfers	182.0	245.8	197.0	410.4	215.3	460.2	(152.5)	(158.1)
10	Other Regulatory Account Transfers	(285.9)	(138.0)	(358.1)	(461.2)	(346.8)	804.2	125.3	131.9
11	Subsidiary Net Income	(119.7)	(132.4)	(119.9)	(139.6)	(120.2)	(208.6)	(124.0)	(124.3)
12	Other Utilities Revenue	(12.6)	(13.0)	(12.0)	(11.9)	(12.1)	(28.6)	(28.6)	(28.7)
13	Liquefied Natural Gas Revenue	(4.4)	(0.4)	(10.7)	(1.3)	(10.9)	(0.3)	0.0	0.0
14	Deferral Rider Revenue	(223.5)	(223.7)	(231.3)	(233.2)	(241.8)	(241.2)	0.0	0.0
15	Total Rate Revenue Requirement	4,469.9	4,472.6	4,626.1	4,649.1	4,836.8	4,823.4	5,256.5	5,288.3
16	Less Revenue at F2019 Rates	(4,469.9)	(4,472.6)	(4,626.1)	(4,649.1)	(4,836.8)	(4,823.4)	(4,919.6)	(4,913.7)
17	Revenue Shortfall	0.0	0.0	(0.0)	0.0	0.0	0.0	336.9	374.5
18	Annualized Rate Increase	4.00%	4.00%	3.50%	3.50%	3.00%	3.00%	6.85%	0.72%
19	Deferral Account Rate Rider	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	0.00%	0.00%
20	Net Bill Increase	4.00%	4.00%	3.50%	3.50%	3.00%	3.00%	1.76%	0.72%

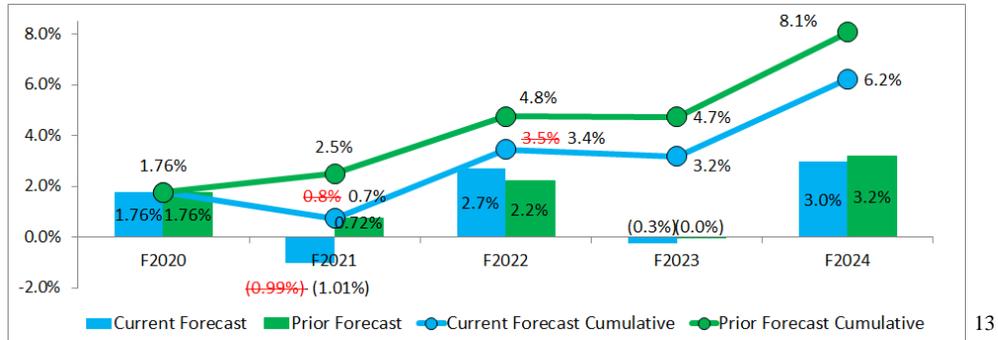
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17. The rate increases before the DARR were originally expected to be in the order of 6.85% and 0.72% for F2020 and F2021 respectively.

18. The removal of the DARR 5% in F2020 reduced the Net Bill Increases to 1.76% and 0.72% for the Test Period years.

¹² Exhibit B-1, page 1-35

19. Certain costs and figures were updated from time to time during the course of the proceeding and BC Hydro provided a view of its Five Year Net Bill Increases in Figure 1 of Exhibit B-11-2.



20. BC Hydro ultimately seeks a 1.76% increase in F2020 and a 1.01% decrease in F2021.

21. The CEC notes that, setting aside how the costs are reflected in rates, BC Hydro has increased its Total Revenue Requirement by about \$500 million, or over 10% from F2017 to F2020.

22. The CEC submits that this is significant and further notes that the current expectation is that rates will increase again significantly in F2022 and F2024.

23. The CEC is concerned about the ongoing increases in rates and is pleased that various reports have been written examining BC Hydro’s operations, including the Comprehensive Review and the Zapped Report.

24. The CEC looks forward to continued work reducing BC Hydro’s cost pressures and rate requirements in the future.

25. However, the CEC’s primary concern is with the bill impacts for Commercial sector customers and hence requires an emphasis on conservation, efficiency, and DSM investment.

¹³ Exhibit B-11-2 page 1

4. LOAD FORECAST

26. BC Hydro load forecasting history is an important aspect of understanding the merits of future forecasts in RRA processes. The CEC has, for some time, expressed concern with respect to BC Hydro load forecasts.

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Table 3-2 Fiscal 2017 to Fiscal 2019 Domestic Energy Sales Forecast (Mid, Low, High)

(GWh)	F2015 RRA	F2015 Actual	F2016 RRA	F2016 Actual	F2017 Plan	F2018 Plan	F2019 Plan
	1	2	3	4	5	6	7
1 Residential	18,805	17,047	18,743	17,331	18,654	18,979	19,327
2 Light Industrial and Commercial	18,277	18,564	18,346	18,421	19,212	19,360	19,655
3 Large Industrial	14,444	14,020	15,032	13,669	13,752	13,936	14,555
4 Other	1,604	1,567	1,638	1,602	1,611	1,618	1,634
5 Total Mid Domestic Sales	53,130	51,199	53,759	51,023	53,229	53,894	55,171
6 Total Low Domestic Sales	53,130	51,199	53,759	51,023	51,100	51,468	52,259
7 Total High Domestic Sales	53,130	51,199	53,759	51,023	55,371	56,415	58,255

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Table 3-4 Fiscal 2017 to Fiscal 2019 Domestic Energy Sales Forecast Less Demand-Side Management - Plan

(GWh)	F2015 RRA	F2015 Actual	F2016 RRA	F2016 Actual	F2017 Plan	F2018 Plan	F2019 Plan
	1	2	3	4	5	6	7
1 Residential	18,805	17,047	18,743	17,331	18,036	18,112	18,250
2 Light Industrial and Co	18,277	18,564	18,346	18,421	18,832	18,785	18,899
3 Large Industrial	14,444	14,020	15,032	13,669	13,380	13,323	13,882
4 Other	1,604	1,567	1,638	1,602	1,611	1,618	1,634
5 Total	53,130	51,199	53,759	51,023	51,860	51,838	52,664

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27. The comparisons of past forecasts to current forecasts show some remarkable changes with respect to forward-looking additional load expectations and past forecasts.

¹⁴ Exhibit B-1-1, BC Hydro 2017-2019, RRA, Page 3-13

¹⁵ Exhibit B-1-1, BC Hydro 2017-2019, RRA, Page 3-20

Difference by Sector ,Total Firm Sales and Total Domestic Sales between the October 2018 Load Forecast and May 2016 Load Forecast after savings Demand-Side Management and loss reduction F2019 to F2024.

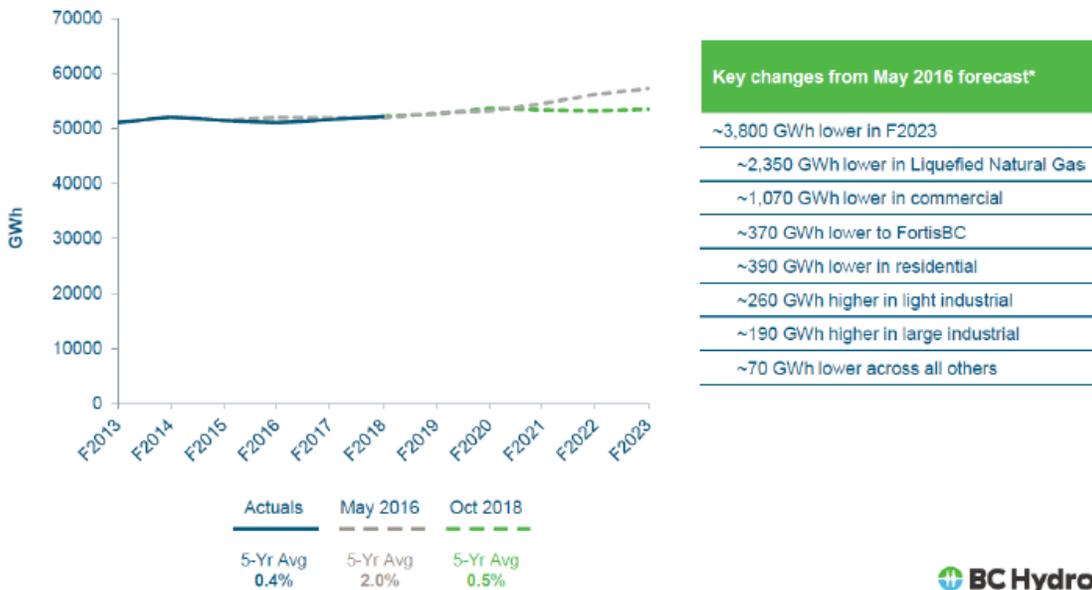
	Residential Sales (GW.h)	Commercial (GW.h)	Light Industrial (GW.h)	Light Commercial and Commerical Sales (GW.h)	Large Industrial Sales (GW.h)	Lights Irrigation BC Hydro Own Use (GW.h)	City of New Westminster & Fortis BC (GW.h)	Hyder and Seattle City Light (GW.h)	Total Firm Sales (GW.h)	Total Domestic Sales (GW.h)
F2019	(46)	(4)	70	66	(26)	(115)	(56)	0	(176)	(58)
F2020	(75)	(196)	120	(76)	684	(33)	3	(1)	501	537
F2021	(63)	(407)	293	(115)	(756)	12	(152)	1	(1,073)	(1,083)
F2022	(222)	(715)	216	(499)	(2,036)	10	(255)	3	(2,999)	(3,012)
F2023	(391)	(1,072)	260	(811)	(2,158)	(67)	(369)	1	(3,794)	(3,731)
F2024	(625)	(1,425)	214	(1,211)	(1,161)	(77)	(498)	(1)	(3,571)	(3,499)

Notes:
1. Total Domestic Sales do not include sale to BC Hydro Own Use

16

Total firm sales forecast

Slower growth across most sectors relative to previous forecast



15

* Total Firm sales includes all main sectors, BC Hydro Own Use, streetlights, irrigation & other utility sales



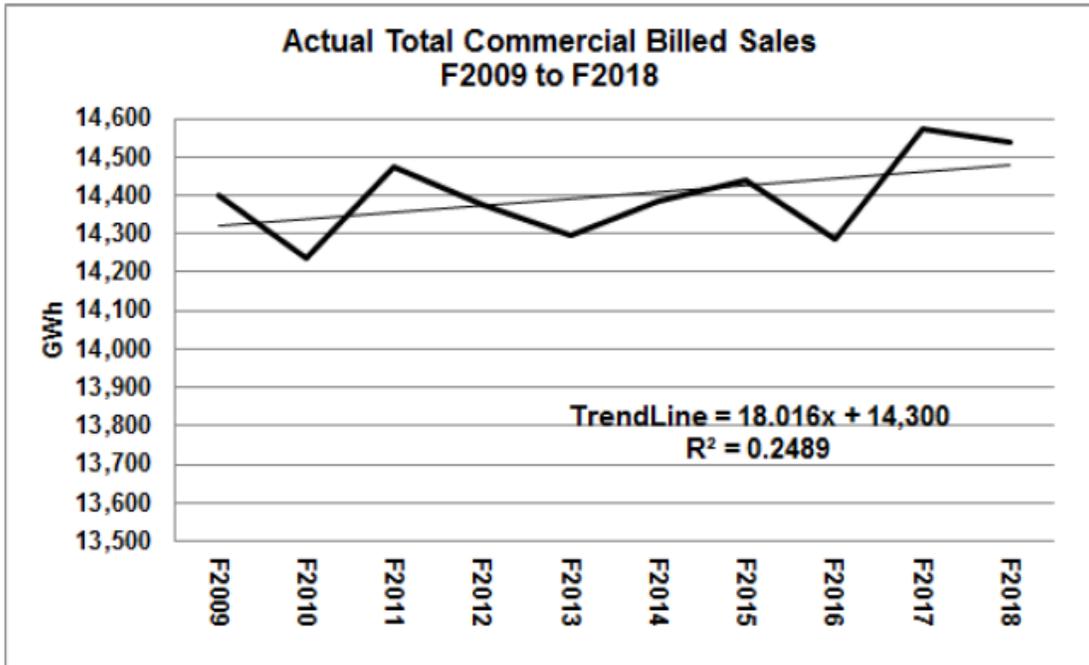
17

28. The CEC stresses the importance of understanding trends based on past records and recognizing appropriate issues stemming therefrom.

¹⁶ Exhibit B-5, BCUC IR1, 1.5.1

¹⁷ Exhibit B-5, BCUC IR1, 1.5.1

**Historical Commercial Sales F2009 to F2018
Calibration Data for October 2018 Load Forecast**



18

29. This is an example where trending based on the consequences of the Great Recession can lead to a failure to pick up the fundamental structural changes in load that have been emanating from those economic circumstances, and more importantly from the success of conservation and efficiency. The forecasting of load growth has changed from the past and is increasingly flat even despite growth in the economy.

30. The CEC is doubtful about the increased load forecast for 2020 and recommends that the Commission consider the merits of more consistent flattening of the load forecasting.

31. BC Hydro's load forecasting impacts both its anticipated revenue and its requirement for energy, and therefore costs.

32. Historically BC Hydro has prepared load forecasts on an annual basis and, going forward, anticipates returning to an annual load forecasting cycle.¹⁹

¹⁸ Exhibit B-5, BCUC IR 1, 1.5.1

¹⁹ Exhibit B-6, CEC 1.7.1

33. BC Hydro provides the following October 2018 Load Forecast in its Final Argument at page 14.

34. The Mid-Load Forecast is the sum of the sector forecasts, and the Low and High Bands represent a confidence interval generated from Monte Carlo analysis. BC Hydro states that its Mid-Load Forecast is a deterministic forecast, not a P50 forecast.²⁰

Electricity Sales Summary after Rates after DSM Savings

	F2019	F2020	F2021
	Forecast (GWh)	Forecast (GWh)	Forecast (GWh)
Residential	18,049	18,258	18,330
Commercial and Light Industrial	18,976	18,973	19,030
Large Industrial	14,003	14,702	14,243
Other	1,575	1,634	1,650
Total Domestic Sales	52,604	53,567	53,253
	F2019	F2020	F2021
Low Band	51,716	52,244	51,364
Mid Load Forecast	52,604	53,567	53,253
High Band	53,507	54,907	55,189

21

35. BC Hydro notes that the anticipated growth over the Test Period is not linear.

36. Demand is forecast to increase from fiscal 2019-fiscal 2020 by about 960 GWh primarily due to growth in the oil and gas sub-sector and residential sector.

37. Demand is then expected to decline from fiscal 2020 to fiscal 2021 by about 310 GWH due to expected declines in pulp and paper subsector sales.²²

38. In Exhibit B-15, BC Hydro provided a June 2019 Load Forecast covering fiscal 2020 to fiscal 2039, most of which is outside the Test Period.

²⁰ BC Hydro Final Argument page 15

²¹ BC Hydro Final Argument page 14

²² BC Hydro Exhibit B-1, page 3-36 to 3-37

39. The June 2019 Load Forecast is primarily an extension of the October 2018 Load Forecast, with the exception of the forecast for electric vehicles (“EVs”, and each an “EV”). The changes are identified in Table 1 Exhibit B-15.

40. BC Hydro states that it expects annual load growth of approximately 1% for fiscal 2020 to fiscal 2039 and that the June 2019 Load Forecast is, on average, within 0.1% of the October 2018 Load Forecast for the Test Period.²³

41. The CEC notes that the June 2019 Load Forecast before DSM is about 459 GWh (or 0.8%) lower than the 2018 Load Forecast for F2020, and about 399 GWh or 0.7% higher for F2021.

42. Given that the Evidentiary Update incorporated two months of actual results for Fiscal 2020, BC Hydro is not proposing any further adjustments to the revenue forecast provided in the Evidentiary Update. And, in any case, any variances between forecast and actual revenue would be deferred in the normal course for future recovery from, or refund to, ratepayers.

43. While the CEC is of the view that it may have been worthwhile to make the adjustments based on the updated forecasts, the CEC submits that based on the current world situation the load forecast should not be heavily relied upon, but may instead best serve as a general guidance from which significant downward adjustments may be likely.

44. BC Hydro provides the GDP forecast for F2018-F2023 in BCOAPO 4.178.1:

²³ Exhibit B-15, pages 2-3

The table below provides the requested GDP forecasts, which are publicly available from the following links:

- B.C. Ministry of Finance September 2018 Q1 report, page 44:
<https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/government-finances/quarterly-reports/2018-19-q1-report.pdf>;
and
- B.C. Ministry of Finance February 2019 Budget , page 84:
<https://www.bcbudget.gov.bc.ca/2019/default.htm>.

Calendar Year (Ministry of Finance)	Fiscal Year Equivalent (BC Hydro)	September 2018 Ministry of Finance Q1 2018 Total B.C. GDP Growth (%)	February 2019 Ministry of Finance 2019 Budget Total B.C. GDP Growth (%)
2017	F2018	3.6*	3.8*
2018	F2019	2.2	2.2
2019	F2020	1.8	2.4
2020	F2021	2.0	2.3
2021	F2022	2.0	2.1
2022	F2023	2.0	2.0

*estimated actual as per Ministry of Finance reports.

24

45. The CEC notes that the forecast GDP growth is in the order of 2 percent.

46. The evidence in the news is that the impact of COVID-19 on the economy as a whole will be substantial, and that a significant recession - both in the Test Period and beyond - should be considered as a possible outcome of the pandemic.

47. It is the CEC's understanding that BC Hydro typically does not plan for recessions in its load forecasting, but that recessions can be expected to result in significant sales reductions.²⁵

48. BC Hydro has increased its elasticity values from -0.05 to -0.1 across all customer sectors.²⁶ However, sensitivity analysis demonstrated minimal impact on the overall load forecast.²⁷

²⁴ Exhibit B-23, BCOAPO 4.178.1

²⁵ Exhibit B-12, BCUC 2.207.1 and 2.286.1

²⁶ BC Hydro Final Argument page 17

²⁷ BC Hydro Final Argument page 20

49. The CEC submits that it is possible that elasticity values will also increase during a period of recession, particularly for the Commercial and Industrial sector, and may well have more significance than is expected during the previous period of economic stability.

50. In the CEC's view, it would be appropriate for BC Hydro to review its forecast in light of the current COVID-19 pandemic and at least identify load reduction changes consistent with past evidence of the flattening of the load expectations over time.

51. The CEC submits that at a minimum it would be prudent to assume the lower load forecast will be closer to the actual.

4.1. METHODOLOGY

52. The CEC has reviewed the various rate sector forecasts, and submits that the general methodologies were reasonably suitable at the time of the forecast.

53. As noted above, the CEC understands that BC Hydro does not generally account for the likelihood of recessions in its forecasting.

54. The CEC submits that this deficiency is a flaw in the Utility's practices, and may have served to overestimate the load in the past.

55. The CEC submits that, notwithstanding the extremeness of the current economic situation, recessions typically occur with some level of predictable frequency and should be planned for in load forecasting. This is of increased concern when there are circumstances signalling the imminence of a recession, particularly in an RRA with such a short timeframe.

56. The CEC recommends that the Commission request BC Hydro to develop potential practices that would enable it to include a probability of recessions and provide these to the Commission for review prior to the next IRP.

57. With respect to the current situation, the CEC expects that in particular the commercial and industrial load will likely be lower than forecast, while the residential load may be higher. The CEC recommends that the Commission consider making such an adjustment to the BC Hydro forecasts.

4.1.1. RESIDENTIAL FORECAST

58. BC Hydro outlines the improvements it has made to the Residential sector methodology in its Final Argument at page 21.

59. The CEC supports the changes and recommends that the Commission accept the Residential forecast as being reasonable and acceptable to the extent the Commission wishes to rely on the current forecast.

60. The CEC expects that the residential load could potentially be somewhat higher than forecast as a result of the present stay-at-home orders and business closures.

4.1.2. COMMERCIAL AND LIGHT INDUSTRIAL FORECAST

61. The Commercial sector load forecast uses standard modelling techniques described in section 3.2.7 of the Application.²⁸

62. Improvements to the Commercial sector methodology were similar to the SAE model-related improvements from the Residential sector load forecast.

63. BC Hydro outlines the improvements it has made to the Commercial sector methodology in its Final Argument at page 21-22.

64. These include:

- (a) Updated customer response to temperature;
- (b) Recalibrated relationship of economic variables to electricity sales based on an updated 10-year model calibration period; and
- (c) Updating price elasticity from -0.05 to -0.10, consistent with the results of the independent elasticity study discussed above.

12 The models use statistical regression to establish relationships between commercial
13 sales, major commercial electricity end-uses, temperature variables and economic
14 variables over the most recent ten-year history (model calibration period). The

29

²⁸ Exhibit B-1, page 3-17

²⁹ Exhibit B-1, Page 3-19

65. The CEC submits that the use of a ten-year history (model calibration period) can be the sources of significant high forecasting bias when the early years of the history reflect recessionary dips and the later years may reflect rebound growth. The CEC further submits that differences in DSM, base conservation, and efficiency are likely not adequately accounted for.

66. The CEC submits that the improvements to the forecasting methodology are reasonable, but expects that the price elasticity may increase; during a forthcoming recession the Commission should anticipate lower loads for the Commercial sector. The CEC submits that the Commercial sector forecasts could be further improved with additional upgrading of technology.

67. The CEC believes there is and will be substantial opportunity for DSM, conservation, and efficiency improvements to change loads in this sector, and recommends that the Commission encourage BC Hydro to work with the Commercial sector to identify these opportunities and factor them into future load forecasting.

4.1.3. LARGE INDUSTRIAL FORECAST

68. Due to the large loads of individual industrial customers, there is a substantial risk associated with the industrial load forecast.³⁰

69. BC Hydro identifies the changes to its forecast in the Application at pages 3-27 to 3-30.

70. BC Hydro has aligned how it forecasts sales to LNG customers in a manner consistent with other large industrial customers using a probabilistic assessment approach. That is, a 10% probability would result in 10% of the load forecast being included, similar to that used for the long-term forecasts for other large industrial customers.

71. BC Hydro is also using a binary approach for the Large Industrial Sector Load Forecast in the first three years of the Large Industrial Sector Load Forecasts, which means that if there is a less than 50% probability of a customer taking service, then no load is included. This methodology requires good information in order to make the judgement.

³⁰ BC Hydro Final Argument page 18

72. The CEC agrees that the binary approach is appropriate since significant drops in output can result in the failure of the business as a whole.

4.2. CLIMATE

73. In CEC 1.14.1, BC Hydro details the ways in which it models uncertainties and/or accounts for ‘trends’ in climate, such as those related to climate change in its load forecasting.³¹

74. Variances between actual and forecast cost of energy arising from differences between forecast and actual domestic customer load are deferred to the Cost of Energy variance accounts, thus keeping customers whole.

75. The CEC recognizes and agrees with the recording of variances and forecast cost of energy arising from forecast error into the Cost of Energy Variance accounts, as this serves to keep customers whole³² in the short term.

4.3. ELECTRIFICATION AND VEHICLES

76. The CleanBC Plan is not reflected in the Load Forecast of the Application.³³

77. BC Hydro included only those elements of the CleanBC Plan that were already in place or were close to being enacted. BC Hydro considers that the next IRP will be the appropriate venue to discuss medium-to longer-term planning and load forecast implications of electrification.³⁴

78. The CEC agrees with this approach as it relies on actual information rather than expected information. The CEC expects that this may be a benefit under the current global crisis which is seeing many environmental regulations being rolled back in an effort to stabilize the economy.

79. The June 2019 Load Forecast for EVs used a new methodology to align the CleanBC Plan for light duty EVs, and included the *Zero-Emission Vehicles Act* (the “**ZEV Act**”) enacted

³¹ Exhibit B-6, CEC 1.14.1

³² BC Hydro Final Argument page 14

³³ Exhibit B-6, BCSEA 1.9.1

³⁴ BC Hydro Final Argument page 13

in May 2019.³⁵ The ZEV Act stipulates the percentage of new light duty car and truck sales in BC that must be zero emission by various dates.³⁶

80. BC Hydro believes that there is an asymmetrical risk (i.e. that there is more upside potential than downside) for future EV stock because the federal government has introduced new EV incentive programs, the Government of BC has committed additional funding toward the CEVforBC rebate program and lowered the maximum price eligibility, the Government of BC has passed Zero Emission Vehicle (“ZEV”) legislation as part of its CleanBC plan, and there are other supporting policies adopted by municipalities such as the City of Vancouver.³⁷

81. The CEC accepts BC Hydro’s reasoning that there is an asymmetrical risk regarding the EV load forecast, but submits that this again may be significantly disrupted by the economic fallout from COVID-19. Further, BC Hydro has not adequately considered the potential for conservation and efficiency in the EV forecast and the potential role DSM can and should play in reducing load and load impacts.

4.4. LOAD FORECAST CONCLUSION

82. The CEC accepts BC Hydro’s Load Forecast as provided but expects that the actual load will likely be significantly lower than currently forecast and that the Load Forecast could be appropriately adjusted to a lower level.

83. The CEC recommends that the Commission request BC Hydro to lower its Load Forecast for the 2020 period and/or request that BC Hydro revisit its Load Forecast in light of the current economic conditions and other factors highlighted in the evidence to make a suitable adjustment for this RRA.

5. COST OF ENERGY

84. BC Hydro plans its resources to meet domestic load first, and then, in the operating time frame (up to 3 years), makes decisions to dispatch resources to undertake Electricity Purchases

³⁵ Exhibit B-15, page 7

³⁶ Exhibit B-15, page 7

³⁷ Exhibit B-13, CEC 2.95.1

or Surplus to maximize the expected value of its energy supply portfolio within a range of outcomes.³⁸

85. BC categorizes its Cost of Energy into the following groups for presentation purposes:

- Heritage Energy;
- Non-Heritage Energy; and
- Market Energy.³⁹

Heritage Energy	Non-Heritage Energy	Market Energy
Water Rentals	IPPs and Long Term Commitments	Market Electricity Purchases
Natural Gas for Thermal Generation	Non-Integrated Area	Surplus Sales
Domestic Transmission – Other (including Skagit River Valley Treaty)	Gas and Other Transportation	
Columbia River Treaty Related Agreements	Water Rentals (Waneta Two Thirds)	
Remissions and Other (applied against Water Rentals; capped at \$50 m/year)		
Exchange Net (Canal Plant and Keenleyside Entitlement)		

40

86. BC Hydro’s updated cost of energy provided in its Evidentiary Update is based on the June 2019 energy study.⁴¹

³⁸ BC Hydro Final Argument page 41

³⁹ Exhibit B-1, page 4-3

⁴⁰ Exhibit B-1, page 4-3

⁴¹ Exhibit B-19, page 7

Table C-1 Cost of Energy Forecast (Integrated System and Non-Integrated Areas)

	Cost of Energy (\$millions)	Schedule Reference	F2020 Plan	F2020 EU	Diff	F2021 Plan	F2021 EU	Diff
			1	2	3=2-1	4	5	6=5-4
1	Heritage Energy	4.0L28	350.9	351.2	0.3	350.8	317.7	(33.1)
2	Non-Heritage Energy	4.0L33	1,576.3	1,332.4	(243.9)	1,641.1	1,447.2	(193.9)
3	Market Energy	4.0L38	(40.2)	245.3	285.5	(71.7)	(30.3)	41.4
4	Total	4.0L39	1,887.0	1,928.9	41.9	1,920.2	1,734.6	(185.6)

42

87. As illustrated above, Non-Heritage spending is expected to be substantially lower than originally planned for both F2020 and F2021.

Cost of Energy Forecast (Integrated System and Non-Integrated areas)									
Cost of Energy \$ Millions	Schedule Reference	F2017 RRA	F2017 Actual	F2018 RRA	F2018 Actual	F2019 RRA	F2019 Forecast	F2020 Evid Up	F2021 Evid Up
Heritage Energy	4.0L28	363.8	354.4	341.5	309.0	349.0	299.3	351.2	317.7
Non-Heritage Energy	4.0L33	1,296.6	1,249.7	1,407.2	1,351.1	1,476.5	1,365.1	1,332.4	1,447.2
Market Energy	4.0L38	(84.1)	(98.7)	(90.8)	(121.5)	(62.6)	9.0	245.3	(30.3)
TOTAL	4.0L39	1,549.3	1505.5	1657.8	1,538.7	1,762.9	1,673.4	1,928.9	1,734.6

43

88. The CEC notes that for the period F2017 to F2019, BC Hydro has also been underspending its Forecast Cost of Energy by about \$50 million in F2017, about \$120 million in F2018, and \$90 million in F2019.

89. Heritage Energy was underspent against Approved by about \$90 million in F2017, \$30 million in F2018, and \$50 million in F2019.

90. Non-Heritage Energy was underspent by about \$47 million in F2017, \$56 million in F2018, and about \$111 million in F2019.

⁴² Exhibit B-19, Appendix C page 1, Table C-1,

⁴³ Derived from Exhibit B-1, page 4-19, Table 4-2 and Exhibit B-19, Appendix C page 1, Table C-1

91. As demonstrated in the above table, BC Hydro's cost of energy is forecast to increase by over \$400 million between F2018 and F2020, rising from \$1,505.5 million in 2018 (actual) to \$1,928.9 in F2020 and declining again by approximately \$200 million in F2021 to \$1,734.6 million.

92. The CEC submits that these are significant increases that should be managed with caution.

93. BC Hydro states that its forecast increases in its cost of energy are primarily driven by increasing IPP energy costs under existing agreements.⁴⁴ The CEC addresses IPP energy costs below under IPP Contracts.

94. The CEC considers that it may be worthwhile for BC Hydro to annually report on its cost of energy in order to better understand the source of the consistent over-estimation.

5.1. ENERGY STUDIES

95. BC Hydro conducts monthly Energy Studies to optimize its operational management of all sources of energy supply on BC Hydro's Integrated system.⁴⁵

96. Energy Studies model operations over a five-year period (i.e. to the end of fiscal 2024 in current studies).

97. The results are used for operational decision-making (e.g. setting the threshold sale price) and near-term financial forecasts (e.g. cost of energy to be used in the Application), but are not used to determine the need for new resources.⁴⁶

98. The information from an Energy Study is used for operations until it is updated in the next Monthly Energy Study.⁴⁷

⁴⁴ Exhibit B-1, page 4-8

⁴⁵ Exhibit B-1, page 4-13

⁴⁶ Exhibit B-5, BCUC 1.15.3

⁴⁷ Exhibit B-31, Panel 2.5.2.1

99. BC Hydro states that for the month- to year- ahead time horizon, the Energy Study provides an appropriate level of guidance in terms of pricing, given that large storage reservoirs fill and draft on a seasonal time scale.⁴⁸

100. An internal audit of the Energy Studies Process concluded that:

- Key models are appropriate; and
- The methodologies applied are in line with leading industry practices.⁴⁹

101. The audit did include some recommendations on benchmarking and back-testing for management to investigate or consider.⁵⁰

102. BC Hydro points out that:

Formal back-testing and benchmarking, which is done prior to any model being brought into production, is a time-consuming process. While models can always be improved and there may be benefit in regular formal back-testing and benchmarking, management has to prioritize staff time and resources on the areas viewed as containing the most risk. Since the key input drivers have the largest impact on the outcomes, BC Hydro prioritizes understanding changes in these variables and analyzing for bias.⁵¹

103. Additionally, they state that:

In 2019, BC Hydro conducted a literature review on benchmarking techniques. BC Hydro is currently working on a longer term plan to address the recommendation in the audit on back-testing and benchmarking.⁵²

104. While the CEC recognizes the resource constraints and supports prioritization of highest risk areas, it is also of the view that it is important for the Utility to have an established plan with specified timelines for conducting the appropriate testing.

⁴⁸ Exhibit B-5, BCUC 1.28.1

⁴⁹ Exhibit B-31, Panel 2.7.2

⁵⁰ Exhibit B-31, Panel 2.7.2

⁵¹ Exhibit B-31, Panel 2.7.2

⁵² Exhibit B-31, Panel 2.7.2

105. The CEC recommends that the Commission request BC Hydro to complete and deliver a plan for back-testing and benchmarking which includes timeframes and anticipated costs.

106. The CEC recommends that the Commission require BC Hydro to report on the results of back-testing and benchmarking once the activities are completed.

107. Another key finding of the Energy Process Audit was that:

Energy Study reports are prepared on time and contain an appropriate level of detail; however they do not serve short-term operational planning needs.⁵³

108. That is, the Energy Study is not updated within the month as conditions change.⁵⁴

109. Additionally, the Energy Process Audit recommended that BC Hydro consider replacing their Ultralight (short-term model) with a more robust model that is formally coupled with the Energy Studies model.⁵⁵

110. BC Hydro states that:

BC Hydro's complete suite of operational tools do serve [its] needs for the short term operational planning. BC Hydro has other tools that are used for within month planning.⁵⁶

111. BC Hydro will explore the idea of replacing their Ultralight model with another, but considers it to be lower priority than other model improvements and tasks that the Generation System Operations team is currently working on.⁵⁷

112. The CEC recommends that the Commission request BC Hydro do a complete review of the model improvements required and provide a plan for full updating of the models.

⁵³ Exhibit B-1, Appendix DD, page 9

⁵⁴ Exhibit B-31, Panel 2.5.5

⁵⁵ Exhibit B-31, Panel 2.5.1

⁵⁶ Exhibit B-31, Panel 2.5.1

⁵⁷ Exhibit B-31, Panel 2.5.1

113. The CEC is of the view that improved modelling, while requiring increased time and costs, may provide long-term benefits in improved forecasting.

5.2. IPP CONTRACTS

114. IPPs account for approximately 25% of BC Hydro's electricity supply for the integrated system.⁵⁸

115. The following tables provide BC Hydro's IPP and Long Term Purchase Costs and Volumes for the Integrated Area.

Table 4-11 IPPs and Long-Term Commitments

Cost of Energy	Schedule Reference	F2017 RRA	F2017 Actual	F2018 RRA	F2018 Actual	F2019 RRA	F2019 Forecast	F2020 Plan	F2021 Plan
IPPs and Long-Term Commitments ⁵⁹	4.0 L29	1,234.4	1,213.1	1,369.7	1,311.6	1,439.3	1,326.6	1,538.5	1,601.1

59

⁵⁸ Exhibit B-1, page 4-27

⁵⁹ Exhibit B-1, page 4-27

Table 4-12 IPP and Long-Term Purchase Volumes for the Integrated System (October 2018 Forecast)

Call Process GWh	Number of EPAs ¹	F2017 RRA	F2017 Actual	F2018 RRA	F2018 Actual	F2019 RRA	F2019 Forecast	F2020 Plan	F2021 Plan
Pre 2003 EPAs ²	31	3,307	3,498	3,350	3,315	3,139	3,289	3,301	3,350
2003 Green Power Generation Call	6	562	591	562	557	562	565	566	566
2006 Open Call	17	2,129	2,235	2,135	2,132	2,135	2,136	2,178	2,178
2008 Bioenergy Call - Phase 1	2	188	199	188	191	188	161	204	216
2008/10 Standing Offer Program	26	295	293	431	338	517	407	486	522
2010 Bioenergy Call - Phase 2	4	282	151	725	209	725	568	680	680
2010 Clean Power Call	20	1,818	1,649	2,705	2,414	2,863	2,647	2,779	2,867
2010 Integrated Power Offer	7	1,022	1,040	1,064	1,012	1,074	1,052	1,175	1,145
Negotiated EPAs ³	14	3,700	3,989	3,712	4,185	3,703	3,801	4,010	4,369
Expected SOP Projects and other First Nations Commitments ⁴	7	71	-	130	-	291	6	70	149
Total	134	13,375	13,644	15,002	14,354	15,199	14,631	15,449	16,040

- 1 Number of EPAs with IPPs on the integrated system (as of October 1, 2018).
- 2 The volumes in this row also include miscellaneous energy purchases, such as energy purchases for border accommodations.
- 3 The volumes in this row also include two other energy supply contracts which are not considered to be IPP EPAs. These are the Surplus Power Rights Agreement between Teck and BC Hydro and the Residual Capacity Agreement between FortisBC and BC Hydro.
- 4 The volumes shown are expected volumes for future EPAs. Once an EPA is executed, the volumes are included in the appropriate call process. BC Hydro notes that the F2017-F2019 Plan values include forecast costs from the Standing Offer Program, and one co-generation project. This co-generation project is no longer going ahead and is not included as part of the forecast for the test period.

116. Using a simple calculation based on the above for the 2017-2019 actuals, and recognizing that there may be significant variation in the contracts, the CEC finds the average IPP cost to be in the order of about \$85/GWh - \$91/GWh.

BC Hydro IPP			
Cost	2017	2018	2019P
\$ Actual	1213000.1	1311000.6	1326000.6
GWh Actual	13644	14354	15449
\$/GWh	88.904	91.333	85.831

117. The CEC submits that this can be considered as relatively expensive energy compared to market energy or DSM.

118. BC Hydro states that it is proactively managing its IPP energy costs to the extent possible within the parameters of its contractual obligations.⁶⁰

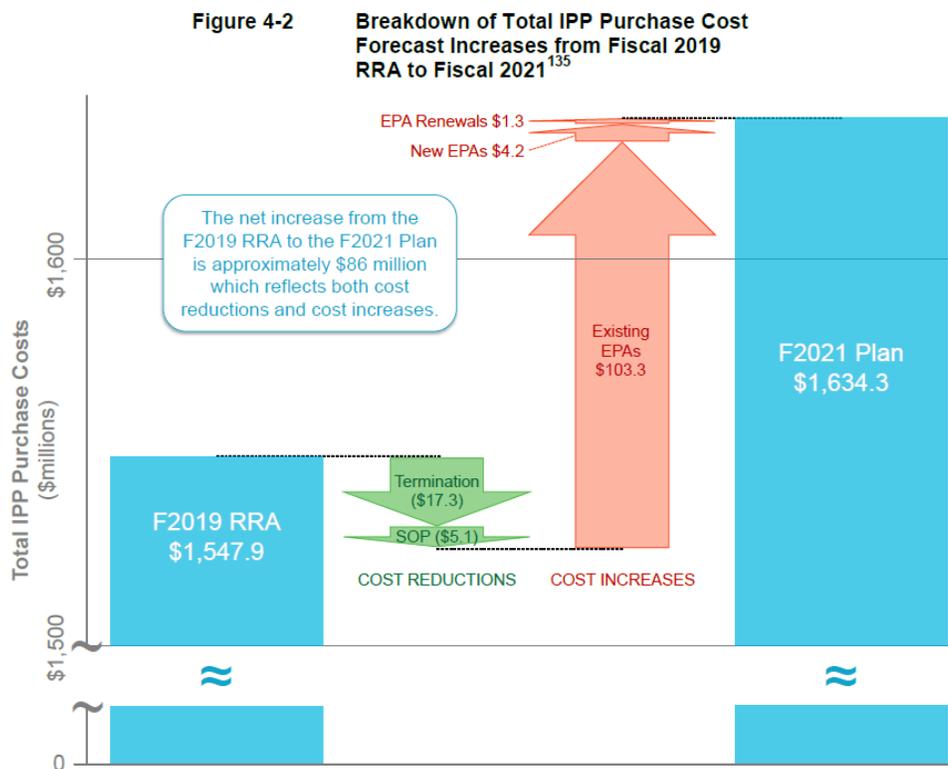
⁶⁰ BC Hydro Final Argument page 40

119. BC Hydro points out that it is exercising turn-down rights, monitors its EPA portfolio to ensure that IPPs are in compliance with their terms of agreements, considers exercising termination rights when such circumstances arise or opportunities to terminate cost-effectively present themselves, and is pursuing selective renewals at lower prices.⁶¹

120. It also does not have any active programs for the procurement of new energy resources from IPPs.⁶²

121. The CEC agrees with all these practices.

122. Despite BC Hydro’s management of IPPs, BC Hydro’s forecast spending increases from Fiscal 2019 to Fiscal 2021 (RRA) includes \$1.3 million in EPA Renewals (2,900 GWh)⁶³ and \$4.2 million in new EPAs.



⁶¹ BC Hydro Final Argument pages 40-41

⁶² Exhibit B-1 page 4-9

⁶³ Exhibit B-6, CEC 1.22.1

⁶⁴ Exhibit B-1, page 4-32

123. The CEC submits that the cost increases are significant and that it would appropriate for BC Hydro to conduct additional activities to bring these new costs down.

124. BC Hydro is uncertain about the number of new Energy Purchase Agreements (“EPAs” and each an “EPA”) that will replace existing or expiring EPAs because the outcome of negotiations for both new and renewed EPAs are unknown until the negotiations are completed.⁶⁵

125. The CEC has some concern regarding BC Hydro’s uncertainty with respect to EPAs.

126. It is the CEC’s understanding that BC Hydro does not examine all the EPAs as a group when considering renewals, but instead conducts negotiations as the EPAs expire.

127. Recognizing that the EPAs expire at different times, the CEC submits that it could be worthwhile for the Utility to examine all the EPA options and preferentially select only those for negotiation or renegotiation that appear to offer the most cost-effective option relative to the others.

128. The CEC is concerned with the extent to which the increase in EPA expenditures is required at all; additional lower-cost DSM, heritage energy, or market energy could replace the new or renewed contracts.

129. In CEC 1.20.1, BC Hydro provided a modified version of its IPP and Long-Term Purchase volumes for the Integrated System extended with Forecast for F2022 to F2031.

⁶⁵ Exhibit B-13, CEC 2.99.1

Modified Table 4-12 IPP and Long-Term Purchase Volumes for the Integrated System, Extended with Forecast for F2022 to F2031 (October 2018 Forecast)

Call Process (GWh)	EPAs	F17 RRA	F17 Actual	F18 RRA	F18 Actual	F19 RRA	F19 Forecast	F2020 Plan	F2021 Plan	F2022	F2023	F2024	F2025	F2026	F2027	F2028	F2029	F2030	F2031
Pre-2003 Electricity Purchase Agreements	31	3,307	3,498	3,350	3,315	3,139	3,289	3,301	3,350	3,344	3,345	3,430	3,368	3,335	3,314	3,280	3,255	3,136	3,137
2003 Green Power Generation Call	6	562	591	562	557	562	565	566	566	566	566	566	566	564	560	560	560	560	560
2006 Open Call	17	2,129	2,236	2,136	2,132	2,135	2,136	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178
2008 Bioenergy Call - Phase 1	2	188	199	188	191	188	161	204	216	198	198	198	198	198	198	198	198	149	109
2008/10 Standing Offer Program	26	295	253	431	338	517	407	466	522	522	522	522	522	522	522	522	522	522	522
2010 Bioenergy Call - Phase 2	4	282	151	725	209	725	568	600	600	600	600	600	606	705	705	705	705	705	705
2010 Clean Power Call	20	1,818	1,649	2,706	2,414	2,863	2,647	2,779	2,867	2,867	2,867	2,867	2,867	2,867	2,867	2,867	2,867	2,867	2,867
2010 Integrated Power Offer	7	1,022	1,040	1,064	1,012	1,074	1,052	1,175	1,145	1,120	1,134	1,134	1,134	1,134	1,134	1,134	1,122	1,132	1,058
Negotiated Electricity Purchase Agreements ¹	14	3,700	3,989	3,712	4,186	3,703	3,801	4,010	4,369	4,519	4,473	4,484	4,484	4,484	4,484	4,484	4,484	4,388	4,361
Expected Standing Offer Program Projects	7	71	-	130	-	291	6	70	149	230	230	230	230	230	230	230	230	230	230
Total	134	13,375	13,544	15,002	14,354	15,199	14,631	15,449	16,040	16,222	16,191	16,287	16,232	16,216	16,191	16,166	16,120	15,867	15,727

1. The Surplus Power Rights Agreement is not included in fiscal 2022 to fiscal 2031.

Modified Table 4-13 Breakdown of IPP and Long-Term Commitments for the Integrated System, Extended with Forecast for F2022 to F2031 (October 2018 Forecast)

Call Process (\$millions)	EPAs	F17 RRA	F17 Actual	F18 RRA	F18 Actual	F19 RRA	F19 Forecast	F2020 Plan	F2021 Plan	F2022	F2023	F2024	F2025	F2026	F2027	F2028	F2029	F2030	F2031
Pre-2003 Electricity Purchase Agreements	31	277.2	287.3	281.0	270.1	261.6	261.9	268.5	276.3	280.0	289.0	282.9	307.3	310.0	313.7	318.1	323.1	316.6	324.3
2003 Green Power Generation Call	6	33.3	34.9	33.7	32.9	34.1	34.0	34.6	35.0	35.4	35.9	36.3	36.7	36.9	37.1	37.8	43.2	44.6	45.7
2006 Open Call	17	186.4	187.5	190.8	187.2	192.7	184.5	196.9	199.0	201.2	203.3	205.9	208.4	210.7	213.0	215.4	217.1	216.5	213.8
2008 Bioenergy Call - Phase 1	2	22.7	22.0	23.0	25.0	23.3	21.7	24.4	20.1	17.6	17.9	18.2	18.6	19.0	19.4	19.7	20.1	16.4	11.4
2008/10 Standing Offer Program	26	28.9	28.2	43.8	33.2	52.6	41.8	50.5	54.4	55.0	55.6	56.2	56.8	57.4	58.1	58.8	59.4	60.0	60.7
2010 Bioenergy Call - Phase 2	4	39.2	20.2	99.7	29.6	100.9	83.0	98.3	99.6	100.9	102.2	103.6	105.9	110.1	111.5	113.0	114.6	116.0	117.6
2010 Clean Power Call	20	242.0	213.0	336.0	296.4	358.3	318.6	353.7	367.6	371.0	374.7	378.6	382.3	386.7	390.9	395.4	399.8	404.4	409.1
2010 Integrated Power Offer	7	126.5	128.4	131.2	127.1	135.1	138.0	156.9	149.8	140.2	146.9	143.7	146.8	149.5	152.5	155.6	148.7	149.6	141.8
Negotiated Electricity Purchase Agreements ¹	14	346.5	353.2	357.1	374.2	359.9	349.9	381.2	416.0	432.0	436.4	445.1	449.5	459.2	467.8	476.7	485.3	485.5	490.9
Expected Standing Offer Program Projects	7	7.8	-	13.6	-	29.2	0.7	8.1	16.4	25.4	25.7	25.9	26.2	26.4	26.7	27.0	27.2	27.6	27.8
Total IPP Purchase Costs	134	1,312.6	1,274.7	1,509.8	1,381.7	1,547.9	1,434.3	1,573.2	1,634.3	1,658.7	1,681.4	1,696.3	1,738.3	1,766.5	1,790.7	1,817.4	1,838.6	1,838.2	1,843.0
Accounting Adjustments	n/a	(78.1)	(61.6)	(140.2)	(70.1)	(108.6)	(107.8)	(34.7)	(33.2)	n/a									
IPPs and Long-Term Commitments	134	1,234.4	1,213.1	1,369.7	1,311.6	1,439.3	1,326.6	1,538.5	1,601.1	1,658.7	1,681.4	1,696.3	1,738.3	1,766.5	1,790.7	1,817.4	1,838.6	1,838.2	1,843.0

1. The Surplus Power Rights Agreement and the Residual Capacity Agreement are not included in fiscal 2022 to fiscal 2031.

130. As of October 1, 2018, the forecast costs for EPAs in the 2008/2010 Standing Offer Program (“SOP”) category (set out in Modified Table 4-13 as provided in BC Hydro’s response to CEC IR 1.20.1 above) are increasing in fiscal 2020 and beyond for the following reasons:

- Five SOP projects were forecast to reach commercial operation prior to or during the Test Period. This causes forecast energy volumes to increase (as shown in Modified Table 4-13) as these projects reach commercial operations and begin deliveries; and

⁶⁶ Exhibit B-6, CEC 1.6.1

- The prices for SOP EPAs are subject to annual price escalation. Section 4 of Direction No. 8 states that the BCUC must not disallow costs incurred by BC Hydro with respect to energy supply contracts entered into before fiscal 2017.⁶⁷

131. In response to Panel IR 2.3.1, BC Hydro provides the following table of Exempt and Non-Exempt supply contracts. BC Hydro provides rationale for the classifications in the IR response.

F2020	Exempt	Non-Exempt	Total
GWh	8,312	4,837	13,148
Cost (\$ million)	776	413	1,189
F2021	Exempt	Non-Exempt	Total
GWh	7,839	5,908	13,747
Cost (\$ million)	807	467	1,274
Total F2020 & F2021	Exempt	Non-Exempt	Total
GWh	16,150	10,745	26,895
Cost (\$ million)	1,583	880	2,463

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132. The CEC notes that the Exempt contracts account for the majority of the contracts, representing about 60% of the GWh and 64.27% of the costs.

133. Non-Exempt contracts appear to be somewhat more cost-effective, accounting for about 40% of the GWh and about 35.73% of the total costs.

134. The CEC submits that to the extent Exempt contracts are being placed, none should be approved without meeting a requirement for approaching market pricing because of the risks related to oversupply.

⁶⁷ Exhibit B-1, page 2-9

⁶⁸ Exhibit B-31, Panel 2.3.1

5.3. IPP VERSUS DSM ALTERNATIVE

135. In the CEC 2.99.2 IR series, the CEC requested BC Hydro to develop scenarios in which BC Hydro renewed lower portions of the anticipated IPP renewals and New EPAs, and utilized DSM to the extent necessary to address any supply gaps.

136. BC Hydro stated that they were unable to provide the requested scenarios and cost comparisons because it would ‘require a significant amount of new work and additional time’ including:

- Development of a DSM program that would address any supply gaps as a result of the changes in assumptions for new and renewed EPAs; and
- Running the associated Energy Studies to determine the operational impacts and costs of the proposed scenario, including extension of the Energy Study period to include fiscal 2031.

BC Hydro will be looking at scenarios related to meeting long term need, including planned reliance on EPA renewals and demand-side management, in BC Hydro’s 2021 Integrated Resource Plan.⁶⁹

137. The CEC is concerned that the Utility has not already analysed the cost-effectiveness of using DSM in place of IPP renewals or new EPAs, and further that they are unable to conduct such analyses during the RRA proceeding.

138. The CEC notes the testimony of Mr. O’Riley in the Oral Hearing regarding the placement of DSM within the organization:

MR. O’RILEY: A Yeah, and I know you've raised the issue of the connection between our planning group and the conservation group and how do we see the connections between those two.

MS. GJOSHE: Q Yes, and if I may pick up on it, for example, let's say you have an observer, an outsider, someone who is lesser informed and they look at the organization chart and here you have integrated planning business unit that's been

⁶⁹ Exhibit B-13, CEC 2.99.2

recently formed, and here is the DSM side of the organization standing on its own and someone may unwittingly or wittingly say, "It looks like a silo to me." What would you say to that?

MR. O'RILEY: A Well, I don't think it is. So you do have to divide the work, right? As among the executive and the company and I've got eight people, very able people, and part of my job is dividing the work amongst them. And we did explore the thought carefully about where the conservation group should go, right? And it has aspects of planning to it, it's got a big execution aspect to it and it's got a big connection to the customer. So we weighed putting it in the planning group back in 2017.

.....

You know, again, we're not relying on organization to get people to talk to one another, so I know the planning folks, and you can ask this of Mr. Clendinning later in the week, have a lot of engagement with the conservation group and there's a lot of discussion back and forth, and I think you'll see the results of that as we bring forward the IRP. And obviously, one of the big topics in the IRP is going to be, where do we go with conservation? You know, we've been on this track of, we call it the moderation strategy, for a number of years, we've got an outdated IRP, we need to recalibrate on that.⁷⁰

139. In the CEC's view, BC Hydro is apparently unwilling to treat DSM as a key supply-side option for meeting demand, instead regarding it as a 'conservation group' with its own separate objectives to be addressed in the IRP.

140. The CEC submits that this approach is problematic, and that this issue extends beyond the concern of organizational silos.

141. The CEC submits that BC Hydro should not wait until a new IRP application to identify the appropriate direction of 'conservation'.

⁷⁰ Transcript Volume 6 page 690-691

142. Rather, BC Hydro should undertake to analyse and integrate DSM into their supply-side options for near-term as well as long-term portfolio planning.

143. The CEC recommends that the Commission request BC Hydro undertake analysis which optimizes the inputs of DSM as a supply-side option for delaying the timing of need to consider any new EPAs or EPA renewals, and for full evaluation of DSM options before committing to any new EPAs or EPA renewals.

5.4. LONG-TERM STRATEGY - INTEGRATED RESOURCE PLAN

144. BC Hydro's next IRP will be undertaken in 2021 and will be assessed by the BCUC.⁷¹

145. BC Hydro provides examples of considerations which include 'cost and reliability, and factors associated with the Government of BC's energy policy such as the CleanBC Plan'.⁷²

146. The CEC is concerned that the IRP assessment remains quite distant and that ongoing planning is being deferred or delayed.

147. The CEC is concerned that the energy cost issues BC Hydro customers are exposed to, and as are seen in this Application, because of self-sufficiency planning approaches become a subject of Commission encouragement that BC Hydro pursue flexibility for energy planning, enabling more affordable costs for energy in the IRP process and ongoing prior to the end result of the IRP process.

6. OPERATING COSTS

148. BC Hydro's Total Operating Costs are expected to be in the order of about \$1.3 billion for both years in the Test Period.⁷³

149. In Exhibit B-11, BC Hydro states that Operating Costs have increased due to two factors that are outside of BC Hydro's control.

⁷¹ Exhibit B-13, CEC 2.92.2

⁷² Exhibit B-13, CEC 2.92.1

⁷³ Exhibit B-1, page 1-35

150. These include a change in discount rate from 3.83% to 3.33% as of April 2019 (determined by external actuary) and an increase in Storm Restoration costs.⁷⁴

151. The CEC agrees that these changes are largely outside of BC Hydro control on an annual basis.

152. Additionally, amortization and finance charges increased due to the full implementation of IFRS 16.⁷⁵

153. In its Decision regarding the 2017 – 2019 RRA, the BCUC stated that it did not have a high degree of comfort in BC Hydro’s overall operating costs, due to its limited involvement in the approval of BC Hydro’s previous revenue requirements.⁷⁶

154. BC Hydro states that, in response to the BCUC’s observation, it has provided significantly more information on operating costs, and addresses the composition, drivers, and outcomes of the overall budget of each Key Business Unit (“**KBU**”).⁷⁷

155. In its 2018 Decision, the BCUC expressed concern with the apparent lack of metrics used by BC Hydro for productivity or benchmarking purposes. BC Hydro states that it uses metrics and benchmarking on a regular basis across parts of the organization. BC Hydro further states that it has prepared benchmarking specifically for this proceeding.⁷⁸

156. BC Hydro provides Total Operations Costs per MWh of Sales and per customer in Figures 5-12 and 5-13 respectively,⁷⁹ which compares the results to other organizations.

157. In BCUC 1.57.3, BC Hydro extends the Operations cost per MWh of sales to 2021.

⁷⁴ Exhibit B-11, page 12

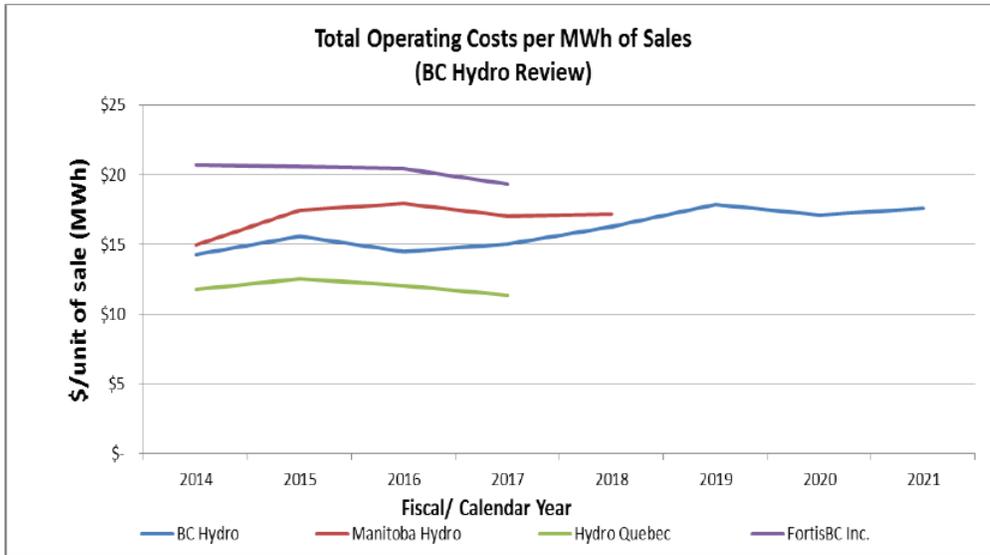
⁷⁵ Exhibit B-11, page 12

⁷⁶ BCUC Decision and Order No. G-47-18, BC Hydro Fiscal 2017 to Fiscal 2019 Revenue Requirements Application (March 1, 2018), page 33

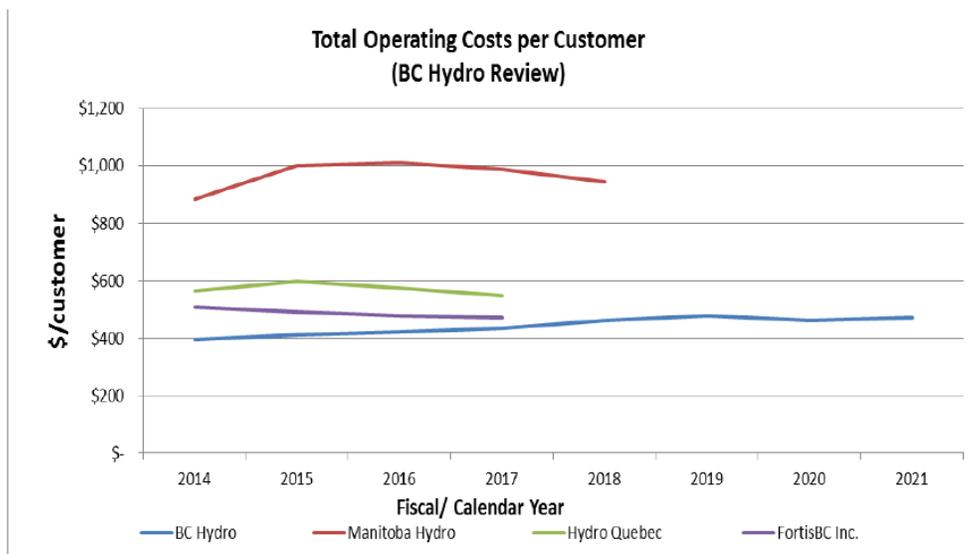
⁷⁷ Exhibit B-1 page 1-17

⁷⁸ Exhibit B-1, page 1-22, BCUC Decision and Order No. G-47-18, BC Hydro Fiscal 2017 to Fiscal 2019 Revenue Requirements Application (March 1, 2018), page 87.

⁷⁹ Exhibit B-1, pages 5-55 and 5-56



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158. BC Hydro expects the cost per MWh of sales and customers to level off beyond fiscal 2021 due to the full absorption of the IFRS ineligible capital overhead.⁸²

159. On page 5-55 of the Application, BC Hydro cautions against placing too much weight on the comparisons because there are different operating circumstances and

⁸⁰ Exhibit B-5, BCUC 1.57.3

⁸¹ Exhibit B-5, BCUC 1.57.3

⁸² Exhibit B-5, BCUC 1.57.3

As such, when evaluating these results, we look more to the fact that BC Hydro is within the same range as these utilities when it comes to operating costs, as opposed to any particular rank ordering.⁸³

160. The CEC agrees with need to exercise caution in comparing utilities due to the significant potential for variation in operating circumstances and customer bases.

161. In the CEC's opinion, however, it may be useful from an evaluation perspective to understand long-term expectations in examining current spending.

162. General expectations of 'levelling off' are important for the Commission in determining whether the revenue requirements for the Test Period represent a one-time increase or whether they are part of a broader pattern.

163. The CEC submits that this is a concern with the current methodology as it diminishes the understanding of context by reviewing Test Period costs that largely exclude information relating to longer-term outlooks.

6.1. PERFORMANCE METRICS

164. BC Hydro's key performance metrics are identified in its Service Plan, which are referenced several times in BC Hydro's responses to questions regarding accountability.⁸⁴

165. BC Hydro has 4 key goals that 'reflect successful delivery of [BC Hydro's] mission'.⁸⁵ These include:

“Safety Above All;

Set the Standard for Reliable and Responsive Service;

Help Keep Electricity Affordable for our Customers; and

Help Make Renewable, Clean Power British Columbia's Leading Energy Source.”⁸⁶

⁸³ Exhibit B-1, page 5-55

⁸⁴ Exhibit B-13, CEC 2.92.2

⁸⁵ BC Hydro's Service Plan 2019/20 -2021/22

166. BC Hydro also states that it is aligned with Government Priorities for:

“Making life more affordable;
 Delivering the services people can count on; and
 A strong, sustainable economy.”⁸⁷

167. In the CEC’s view, BC Hydro typically does a very good job meeting performance objectives related to Safety Above All; Setting the Standard for Reliable and Responsive Service; and Helping Make Renewable, Clean Power British Columbia’s Leading Energy Source.

168. In this Application, the CEC is particularly concerned with the Utility’s approach to keeping electricity affordable for its customers, and in assisting in its role in delivering ‘a strong, sustainable economy’.

169. BC Hydro provides the following results in the Service Plan.

Performance Measures (1)	2017/18	2018/19	2019/20 Target	2021/21 Target	2021/22 Target
Affordable Bills (2)	1 st Quartile	1 st Quartile	1 st Quartile	1 st Quartile	1 st Quartile
Project Budget to Actual Cost (3)	+0.40% on \$6.9 billion (4)	+0.46% on \$8.0 billion (5)	Within +5% to -5% of budget excluding project reserve amounts	Within +5% to -5% of budget excluding project reserve amounts	Within +5% to -5% of budget excluding project reserve amounts

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- Performance Measure descriptions, rationale, data source information and benchmarking is available online at:
www.bchydro.com/performance
- BC Hydro calculates a relative index for each usage level within the residential category and then calculates an average of the index to create an overall ranking based on Hydro

⁸⁶ BC Hydro’s Service Plan 2019/20 -2021/22

⁸⁷ BC Hydro’s Service Plan 2019/20 -2021/22

⁸⁸ BC Hydro Service Plan 2019/20 -2021/22 page 13

Quebec's annual report on North American electricity rates. The rankings of the 22 participating utilities are then allocated into quartiles. The 1st quartile ranking represents the six utilities that have the lowest monthly electricity bills on April 1 of a given year.

- This measure compares actual project costs at completion to the original approved full scope implementation budgets, not including project reserve amounts, for capital projects that were put into service during the five-year rolling period.
- This represents projects that went or were forecasted to go into service for the five-year period 2013/14 to 2017/18.
- This represents projects that went or are forecasted to go into service for the five-year period 2014/15 to 2018/19.⁸⁹

170. The CEC provides its commentary on the Affordable Bill and Project Budget to Actual metrics below:

6.1.1. AFFORDABLE BILLS

171. In the CEC's view, assessing Affordable Bills relative to other utilities and only considering 'Residential' rates does not provide an appropriate objective for BC Hydro.

172. The CEC submits that 'Affordable Bills' should reflect affordability based on the greatest cost effectiveness for BC Hydro specifically, since other utilities have significantly different cost bases. In the CEC's view, ongoing improvement would be an important measure in determining how BC Hydro is performing and would take into account the Utility's starting position, as well as its own unique cost structures.

173. More importantly, affordable bills should reflect the rates for all rate classes, not just the residential class. Indeed, if affordability is to be compared against other jurisdictions, it would make the most sense for this comparison to be conducted for commercial and industrial rate classes, where relative affordability is of particular concern because these ratepayers experience competition with other jurisdictions.

⁸⁹ BC Hydro Service Plan 2019/20 -2021/22 page 13

174. The CEC submits that the Commission should provide minimal weight to BC Hydro comparisons against other jurisdictions based on its residential rates, but instead identify metrics that hold BC Hydro accountable for ongoing improvement in the cost-effectiveness of its performance.

6.1.2. PROJECT BUDGET TO ACTUAL COSTS

175. BC Hydro's Project Budget to Actual Costs metric may be valuable in assessing whether or not BC Hydro capably delivers its costs according to budget.

176. It does not, however, address whether or not the budget is reasonable and cost-effective in the first place.

177. The CEC notes that the budgeting process has the most effect on the performance of the project or activity. Should the budget be higher than necessary, as long as actual expenses did not exceed that budget, underspending on an inflated budget would be seen as a positive outcome.

178. The CEC is of the view that there are few apparent metrics in use by BC Hydro to ensure that the budgeting process is producing cost effective budgets for activities and projects.

179. BC Hydro stated that:

“A positive outcome for Total Operating Costs for the Integrated Planning Business Group is defined as actual annual expenditures within 97 to 100 per cent of the annual operating plans while completing the related annual KBU work plans such as maintenance activities.”⁹⁰

180. The CEC considers that defining a positive outcome as an annual expenditure of 97% to 100% of plan virtually ensures that expenditures will reach the planned amount and does not adequately identify improvement or improvement opportunities.

181. The CEC contends that including additional metrics that address cost / benefit analysis throughout BC Hydro's operations could potentially result in operations with better value per dollar spent, and lower costs over a long-term horizon.

⁹⁰ Exhibit B-13 CEC 2.109.1

182. This would ultimately be a benefit to ratepayers.

183. BC Hydro stated:

“All Executive Team members have financial objective(s) on their individual performance plan. An example of this type of objective is:

“Come in “at or under” the Business Group’s budget with a primary objective of coming in “at or under” the BC Hydro budget as a team (ensuring best and highest use of organizational spend).”⁹¹

184. The CEC disagrees with the contention that coming in at or under budget ensures the best and highest use of organizational spend.

185. The CEC contends the highest and best use of organizational spend occurs as a result of rigorous analysis and evaluation of options to determine the best value for the money spent.

186. The CEC submits that it would be worthwhile for BC Hydro to develop metrics to evaluate the cost-effectiveness of its capital and O&M spending, and to report on these annually with a view to continuous improvement.

6.2. COST EFFECTIVENESS VS. COST REDUCTIONS

187. The CEC notes that there has been an emphasis on cost reductions in this proceeding.

188. BC Hydro states that it is limiting base operating cost increases below the forecast rate of inflation by offsetting non-controllable cost increases with reductions to controllable costs.⁹²

189. In its comprehensive review of BC Hydro, the BC Government states that:

Despite significant cost pressures, BC Hydro expects to limit base operating cost increases below the forecast rate of provincial inflation over the Fiscal 2020 to Fiscal 2024 period through savings from initiatives, prudent cost management and

⁹¹ Exhibit B-12, BCUC 2.220.3

⁹² Exhibit B-1, page 1-5

other measures such as leveraging Lean principles through BC Hydro's Work Smart process improvement program.⁹³

190. BC Hydro stated that the company's average base operating cost increase over the Fiscal 2015 to Fiscal 2021 period is 1.50%, which is 0.44% below the average rate of inflation of 1.94% for the same time period.⁹⁴

191. The CEC notes that operating costs below the inflation rate also mean that the customer growth in the system is being absorbed as it is held relatively fixed in terms of causing cost impacts.

192. The CEC is of the opinion that while it could be worthwhile to limit operating cost increases to below the rate of inflation in order to manage rates, 'sustainable improvement' also requires an understanding of cost/benefit or the rate reductions may ultimately be uneconomic, such as certain deferrals of required expenditures.

193. The CEC notes that the BC Hydro measures taken to reduce costs might not be accompanied by substantive cost/benefit analysis available for review by the Commission.

194. The CEC submits that limiting operating costs without evaluating the cost effectiveness of activities or projects may prove to be less than prudent.

195. The CEC has thoroughly reviewed the Application for examples of BC Hydro using cost/benefit analysis.⁹⁵ In over 3,000 pages, cost/benefit or related terms is used only 28 times. Over 80% of these references relate to DSM.

196. The CEC notes that cost/benefit analysis is used to determine the value of BC Hydro's DSM programs, as illustrated by the passage below.

197. BC Hydro stated:

⁹³ Exhibit B-1, Appendix C, Comprehensive Review of BC Hydro Phase 1 Final Report page 4

⁹⁴ Exhibit B-1, Appendix C, Comprehensive Review of BC Hydro Phase 1 Final Report page 32

⁹⁵ The CEC searched the 3006 pages of Exhibit B-1, (the application and appendices) using the search term cost/benefit. One result was found. Variations of the search term returned a further 27 results. [cost / benefit, cost-benefit, cost – benefit, benefit-cost, benefit – cost, benefit/cost, benefit / cost, cost benefit].

“The Utility Cost and Total Resource Cost tests are standard cost tests used in the DSM industry to assess cost effectiveness. The results of cost-effectiveness tests are typically expressed in a benefit-cost ratio. A ratio of greater than 1.0 means that benefits exceed costs and that the DSM program or portfolio is cost effective under that particular test.”⁹⁶

198. The CEC is of the opinion that if cost/benefit analysis can be, and is currently, used by BC Hydro to determine the value of DSM programs, cost/benefit analysis can and should be used in other areas of BC Hydro’s business to determine the value of projects or programs.

199. With regard to the Work Smart program, in its 2018 decision the Panel noted that BC Hydro states it has not completed a cost/benefit analysis for the initiatives but will instead monitor as it is rolled out to evaluate its effectiveness.⁹⁷

200. The CEC notes that BC Hydro stated that the Work Smart program has an imputed return on investment of five to one since its inception to fiscal 2018.⁹⁸ It also references the significant cost/benefit in its Final Argument.⁹⁹

201. It would appear BC Hydro has apparently conducted some measure of cost/benefit analysis for the Work Smart program, at least to the extent of calculating the imputed return on investment.

202. The CEC submits that BC Hydro has demonstrated that it finds cost/benefit analysis useful for some programs but generally is less transparent than the CEC expects the Commission should want.

203. The CEC submits that the evidence indicates BC Hydro does not make use of cost/benefit for the greater majority of its programs and projects.

⁹⁶ Exhibit B-1, page 10-28

⁹⁷ Exhibit B-1, page 5-7, BCUC Decision and Order N0 G-47-18, BC Hydro Fiscal 2017 to Fiscal 2019 Revenue Requirements Application (March 1, 2018) pages 34-35 and 87

⁹⁸ Exhibit B-12, BCUC 2.223.9

⁹⁹ BC Hydro Final Argument, page 85

204. The CEC submits that cost/benefit analysis is a valuable tool that can be used to estimate the cost-effectiveness of projects or programs at the planning stage, and can be further used to evaluate the results of these projects or programs.

205. The CEC notes that the cost reductions planned may not be sustainable for the long term - Mr. O'Riley stated in the oral hearing:

“But I think we have no business expecting real decreases in operating costs for a company like BC Hydro in the environment it operates. No business at all. And I want to be clear that that's not something I think is reasonable or even prudent given the service expectations on the company, and the compliance expectations”.¹⁰⁰

206. The CEC is of the view that it is appropriate for BC Hydro to evaluate operations and costs through a different lens – a cost / benefit lens - which may become especially important if real decreases in operating costs cannot be expected, as stated by Mr. O'Riley.

207. The CEC submits that the appropriate standard for management of BC Hydro should be ongoing improvement in cost-effectiveness while adhering to appropriate utility standards and developing improved standards.

208. Cost reductions for the sake of meeting particular targets may not be sound and cost-effective.

209. The CEC notes that according to Mr. O'Riley, this limit to operating cost increases will be a challenge in the future.

210. The CEC further notes that cost-effectiveness, as determined through cost / benefit analysis, is not discussed at length by BC Hydro with regard to managing operational costs.

211. The CEC suggests this is a missed opportunity.

¹⁰⁰ BC Hydro Final Argument, page 12 (Tr. 5, p. 372, l. 19 to p. 373, l. 9 (O'Riley)).

212. BC Hydro states that measures used to gauge the performance of the delivery of projects do not directly gauge the value of projects over time, but measure cost and schedule performance as well as track capital additions and project write-offs.¹⁰¹

213. The CEC submits that gauging the value of programs and projects over time should be considered a fundamental part of the process for assessing operations expenditures.

214. The CEC further submits that gauging the value of projects over time should include a cost / benefit analysis at the planning stage of any project, and throughout the life of the project.

215. The CEC is of the opinion that information gathered during the cost / benefit analysis can inform future projects within the KBUs and throughout the company.

216. The CEC submits that cost/benefit analysis should be an integral part of the budgeting process so that priority is given to projects or activities with the best return on investment.

217. The CEC recommends that the Commission request BC Hydro to report annually on improvement in its processes for evaluating cost effectiveness.

ARE NECESSARY PROJECTS BEING DEFERRED?

218. In its Final Argument BC Hydro notes that the 2020-2024 Capital Plan reflects a 13 percent reduction in BC Hydro's capital forecast relative to the previous capital plan. BC Hydro states that the material reduction is warranted as a means of balancing affordability, system performance and risk.¹⁰²

219. BC Hydro intends to moderate the planned investment in sustainment to mitigate impacts on customers without materially impacting system performance.¹⁰³ The reductions to the capital plan include:

- reductions due to decisions to defer investments; and

¹⁰¹ Exhibit B-13, CEC 2.113.1

¹⁰² BC Hydro Final Argument page 117

¹⁰³ BC Hydro Final Argument page 117-118

- updates to forecasts for active projects which resulted in a net reduction in capital expenditures or additions within the period, primarily due to project schedule changes reductions due to decisions to defer investments.¹⁰⁴

220. Over the Test Period the reduction is \$682 million, or 22.3%.¹⁰⁵ Approximately \$137 million of the reduction during the Test Period is attributable to decisions to defer investments.¹⁰⁶

221. The CEC submits that these are very significant reductions and is concerned that potentially either the original decision to make the investment may not have been optimized, or the present decision to defer the investment may not be optimized.

222. The CEC submits that, notwithstanding the current pandemic which could change the financial values of projects, it is unlikely that circumstances had changed in an unforeseen manner to the extent that the deferral was deemed appropriate at the time of this Application.

223. BC Hydro stated that the “top-down” aspect of the budgeting process ultimately dictated the budget amounts during the Test Period. BC Hydro did not fund the specific cost pressures identified by KBUs during the “bottom-up” assessment rather, BC Hydro determined to fund only the non-controllable organization-wide cost pressures, which were offset by identified cost savings.¹⁰⁷

224. The CEC is concerned that specific cost pressures identified by KBUs during the bottom-up process may represent operational activities that should not be deferred, such as necessary maintenance procedures to maximize the useful life of assets. Funding only “uncontrollable organization-wide cost pressures” may not be in the long-term interest of ratepayers.

225. The CEC is concerned that some cost-effective investments in asset maintenance may possibly be being deferred for short-term gain, and could result in pushing maintenance costs out to future periods at a greater cost overall.

¹⁰⁴ BC Hydro Final Argument page 118

¹⁰⁵ BC Hydro Final Argument page 118

¹⁰⁶ BC Hydro Final Argument page 118

¹⁰⁷ BC Hydro Final Argument page 63

226. In the oral hearing, as outlined in BC Hydro’s Final Argument, Mr. Kumar explained that “when we are dealing with maintaining or replacing a capital, it’s all about risk management.” He added that maintenance is an essential complement of sustainment capital investments:

“So initially when we replace capital, our risk goes down because we put a new asset in place and all our safety, environmental and financial risks are lower. As you go through the lifecycle of that asset, you actually keep that risk profile of that asset low by doing adequate maintenance. So capital replacement and maintenance are actually complimentary to each other as opposed to thinking in terms of should we maintain or should we invest capital. You actually have to invest capital and then maintain it to get the full economic life of that asset”.¹⁰⁸

227. The CEC fully agrees with ensuring there is proper and thorough maintenance of assets so as to get the full economic life of the asset.

228. The CEC submits that cost reductions for the sake of meeting particular targets may not be sound or cost-effective, and could have the potential to contribute to intergenerational inequity. The CEC notes that deferability does not equate to affordability.

229. In the Application, BC Hydro stated:

“In prior years, BC Hydro’s maintenance budgets were insufficient and unallocated funds had to be used to fund necessary maintenance activities.”¹⁰⁹

230. The CEC agrees with the elimination of the unallocated funds account, but is concerned to learn that maintenance budgets have been insufficient in prior years.

231. The CEC is of the view that maintenance budgets should be accurate, sufficient, and should fully reflect the costs required to maintain the assets of BC Hydro in a manner that will allow the full recovery of the asset value.

232. The CEC points out that cost / benefit analysis is an invaluable tool to gauge whether to maintain or replace an aging asset, particularly in light of advancing technologies.

¹⁰⁸ BC Hydro Final Argument page 95 (Tr. 11, p. 1891, l.9 to p. 1892, l. 4 (Kumar).

¹⁰⁹ Exhibit B-1, page 5-67

6.3. FULL TIME EQUIVALENTS (“FTEs”)

233. Labour costs are one of BC Hydro’s largest operating costs, and reflect the compensation paid to employees. BC Hydro’s total rewards offer includes salary, pension, benefits and time off.¹¹⁰

234. In Table 5-14 of the Application BC Hydro provides its Total FTEs by Function for the last several years.

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
Operating								
Integrated Planning	437	478	438	483	435	459	536	536
Capital Infrastructure Project Delivery	301	267	303	287	302	315	316	318
Operations	1,673	1,768	1,674	1,779	1,674	1,689	1,641	1,644
Safety	377	422	377	416	377	364	340	333
Finance, Technology, Supply Chain	737	767	744	823	750	867	874	874
People, Customer, Corporate Affairs	309	341	308	384	308	740	722	722
Other	37	39	38	36	38	41	40	40
Total (Schedule 16 line 69)	3,872	4,082	3,881	4,209	3,884	4,474	4,470	4,466
Percentage Change						15%	0%	0%
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%
Deferred								
Integrated Planning	0	0	0	0	0	0	0	0
Capital Infrastructure Project Delivery	3	7	3	5	3	4	4	4
Operations	0	1	0	0	0	0	0	0
Safety	0	0	0	0	0	0	0	0
Finance, Technology, Supply Chain	2	2	2	2	2	2	2	2
People, Customer, Corporate Affairs	150	150	147	153	147	158	158	158
Other	1	1	1	1	1	0	0	0
Total (Schedule 16 line 71)	155	161	152	162	152	165	164	164
Percentage Change						8%	0%	0%
Total								
Integrated Planning	802	804	802	830	802	870	952	952
Capital Infrastructure Project Delivery	579	581	607	652	607	737	739	739
Operations	2,889	2,845	2,893	2,880	2,893	3,033	2,984	2,984
Safety	563	576	565	568	565	501	464	447
Finance, Technology, Supply Chain	769	805	784	871	795	924	946	946
People, Customer, Corporate Affairs	467	497	463	545	463	906	887	887
Other	227	208	231	264	241	434	505	516
Total (Schedule 16 line 72)	6,296	6,315	6,344	6,611	6,365	7,405	7,477	7,471
Percentage Change						16%	1%	0%

¹¹⁰ Exhibit B-1, page 5-46

235. The CEC notes that there is a 16% increase in the FTEs in F2019 Forecast relative to the F2019 RRA.

236. The CEC submits that this is a significant increase and is concerned with the decisions supporting this increase.

237. The increase of 1,040 FTEs from fiscal 2019 RRA plan to fiscal 2019 forecast is largely driven by the conversion of external contractors to internal FTEs through the repatriation of Accenture activities to BC Hydro, and the Workforce Optimization program, as well as the growth associated with Site C.¹¹²

238. BC Hydro provides the following breakdown in CEC 1.27.1.

	FTEs
Workforce Optimization Program	475
Accenture Repatriation	423
Site C Project	190
Overtime FTE Changes	21
Reduction of Apprentice Intakes and Graduations	(75)
Miscellaneous changes to regular time FTEs	6
Total	1,040

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239. The CEC notes that the ‘Workforce Optimization Program’ and the ‘Accenture Repatriation’ together accounted for an increase of about 900 FTEs, which was partially offset by reduction of 75 Apprentice Intakes and Graduations.¹¹⁴

240. The reduction of 75 FTEs in Apprenticeship Intakes and Graduations was achieved by reducing the number of new hire cohorts.¹¹⁵ BC Hydro states:

¹¹¹ Exhibit B-1, page 5-46

¹¹² Exhibit B-6, CEC 1.27.1

¹¹³ Exhibit B-6, CEC 1.27.1

¹¹⁴ Exhibit B-6, CEC 1.27.1

¹¹⁵ Exhibit B-13, CEC 2.100.1

“The reduction is not expected to have any implications to BC Hydro operations because it is based on resource planning forecasts that account for attrition rates. In recent years, attrition in journey people positions has declined, which means that fewer Apprentices and Trainee new hires are required.”¹¹⁶

241. While the CEC accepts BC Hydro’s position that attrition may have declined, the CEC is concerned that BC Hydro could be reducing its future capability in reducing the pool of apprentices and graduates. The CEC questions whether the current increases due to Workforce Optimization and the Accenture Repatriation considered the future cost of offsetting the increases with reductions to Apprentices and Trainees.

242. The CEC notes the additional 3% increase in FTEs for F2020 relative to F2019 Forecast, with the total FTEs increasing from 7405 to 7477¹¹⁷ for a net increase of about 72 FTEs. This includes further increases in Workforce Optimization with another reduction of 32 Apprentices and Trainees.

Table 5-13 Summary of FTE Changes (Fiscal 2019 Forecast to Fiscal 2020 Plan)

Item	FTEs
Fiscal 2019 Forecast FTEs	7,405
Workforce Optimization Program	61
Reduction to Apprentices and Trainees (see Chapter 5D, section 5D.5.2)	(32)
Reduction in planned overtime	(29)
Site C Project	71
Fiscal 2020 Plan FTEs	7,477 ¹¹⁷

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243. The CEC is not confident that it is in the long-term interest of ratepayers to be offsetting the large increases in staff from the Accenture and Workforce Optimization programs with reductions in Apprentices and Trainees.

¹¹⁶ Exhibit B-13, CEC 2.100.1

¹¹⁷ Exhibit B-1, page 5-46

¹¹⁸ Exhibit B-1, page 5-45

6.4. KEY INITIATIVES RELATED TO FTES

6.4.1. WORKFORCE OPTIMIZATION PROGRAM AND ACCENTURE REPATRIATION

244. The Workforce Optimization Program is BC Hydro's approach to optimizing the mix of internal labour and external contractors that considers the ongoing nature of work, availability and skills of workers, and the total cost of employment.¹¹⁹

245. As demonstrated in the Tables above, the Workforce Optimization Program accounted for an increase of about 475 FTEs in F2019¹²⁰ and will account for another 61 in F2020.¹²¹

246. The Accenture Repatriation project accounted for an increase of 423 FTEs in F2019¹²² and the CEC understands is complete at this time.

247. BC Hydro states that 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, including \$8.2 million in annual savings due to the repatriation of services previously provided by Accenture.¹²³

248. BC Hydro states that while external suppliers are generally more expensive on a per-hour basis compared to employees, hiring internal employees represents an ongoing commitment, and additional costs such as pension, benefits, facilities and training are considered.¹²⁴

249. The CEC is of the opinion that the commitment to employees is also accompanied in practice by diminishing flexibility in staffing and deployment conditions.

250. In its 2018 decision, the BCUC noted that "although short-term savings are anticipated by BC Hydro, there does not appear to be an assessment of the long-term effects and costs of hiring contractors as employees."¹²⁵

¹¹⁹ Exhibit B-1, page 5-32

¹²⁰ Exhibit B-6, CEC 1.27.1

¹²¹ Exhibit B-1, page 5-45

¹²² Exhibit B-6, CEC 1.27.1

¹²³ Exhibit B-1, page 5-28

¹²⁴ Exhibit B-1, page 5-31

251. The CEC shares the concerns of the Commission.

252. In the Application, BC Hydro states that the Workforce Optimization Program accounts for both the short-term and long-term effects and costs of hiring contractors as employees.¹²⁶

This included consideration of:

- The costs of hiring internal employees against the costs of contracting out work to an external supplier. The costs of internal employees, measured by using Standard Labour Rates, includes base salary and wages, premiums, overtime, vacation/flex time, pension, employer-paid premiums, insurance, supplemental benefits and training;
- Other implications of employing internal resources such floor space requirements; and
- Non-financial benefits such as maintaining knowledge about assets or programs in-house and establishing strong succession plans for potential retirements.¹²⁷

253. The CEC is uncertain of the extent to which BC Hydro was able to consider costs such as increases in the HR requirements and all the softer implications of adding employees, including accounting for unproductive time, the additional time spent managing staff, the loss of flexibility in acquiring and shedding skill sets according to need, the full cost of personnel issues that may not reach HR and other difficult to quantify expenses. Additionally, external contract costs incorporate all the overheads of their business and the profit being made.

254. Absent such assessment of full costs and the changes to process outcomes, the hiring of contractors as employees may result in unexpected consequences for BC Hydro.

255. The CEC is concerned that by adding hundreds of FTEs to its payroll, BC Hydro may have given up a great deal of flexibility for savings that could be shorter term.

¹²⁵ Exhibit B-1, page 5-6, BCUC Decision and Order No. G-47-18, BC Hydro Fiscal 2017 to Fiscal 2019 Revenue Requirements Application (March 1, 2018), pages 34-35 and 87.

¹²⁶ Exhibit B-1, page 5-34

¹²⁷ Exhibit B-1, page 1-20

256. The CEC notes that an unexpected change in circumstances may result in less requirement for workers at BC Hydro, whether they be employees or contractors, such as might well occur during the COVID-19 pandemic.

257. In contrast, contractors may easily be replaced if their skills are no longer required, even if there is a cost to doing so. Employees, even if terminated for good reason, must be compensated at significant cost to the company both in compensation to the employee, but also in HR increases for managing the termination or replacement.

258. BC Hydro states that when positions became vacant, they were reviewed to determine the best use of the labour budget, taking into consideration factors such as the priority of work and shifting workloads across the company. In some cases, this resulted in positions being repurposed to fund a higher priority position or area where increasing workloads required additional resourcing.¹²⁸

259. The CEC notes that this process for vacant positions appears to have something of a cost-effectiveness test for budget reallocation. As such, this is a laudable process and should be encouraged. The Commission should be concentrating on ensuring transparency of such processes and wider application in order to exercise oversight in observing the appropriate cost-effectiveness trade-off applications.

260. BC Hydro states that FTE additions through the Workforce Optimization Program must be fully funded through an equivalent cost reduction.¹²⁹

261. The CEC submits that the “equivalent cost reduction” may not adequately cover the long-term costs of adding employees if not assessed correctly.

262. The CEC submits that the addition of the nearly one thousand FTEs from the Workforce Optimization Program and Accenture Repatriation¹³⁰ could have a deleterious effect on long-term operating costs and therefore energy costs for ratepayers.

¹²⁸ Exhibit B-12, BCUC 2.225.3

¹²⁹ Exhibit B-1, page 5-34

¹³⁰ Exhibit B-6, CEC 1.27.1

263. The CEC submits that a substantive cost-benefit analysis should have been completed at a very detailed level before the change was accepted.

264. The CEC notes that BC Hydro undertook to make substantial microanalyses of work effort when applying for and justifying the SAP projects - much of which was declared to be not 'quantifiable' - but the Utility does not appear to have done so here.

265. The CEC submits that it is important that BC Hydro work consistently to guard against the natural tendency for individuals to assess projects using varying forms of analysis in order to generate a preferred outcome and should be especially cautious when projects have the potential to result in long-term costs or increased additions to ratebase, such as occurs when FTEs are capitalized.

266. The Utility should also exercise extreme caution when including evidence from sources with a potential stake in the outcome.

267. The CEC submits that it would be appropriate for the Utility to have standardized and detailed cost/benefit analysis that ultimately reward managers or staff on the basis of the long-term outcome of decision-making, not on the delivery of a particular project.

6.4.2. WORK SMART PROGRAM

268. Work Smart is BC Hydro's program for continuous process improvement and is based upon Lean principles. Lean is a business philosophy focusing on streamlining work, as well as identifying and eliminating non-value-added activities.¹³¹

269. The CEC supports BC Hydro's commitment to continuous process improvement, and also supports eliminating non-value-added activities.

270. In its 2018 Decision, the BCUC expressed its belief that the efficiency savings generated by BC Hydro's Work Smart program should result in incremental cost savings.¹³²

¹³¹ Exhibit B-1, page 5-16

¹³² Exhibit B-1, page 5-17, BCUC Decision and Order No. G-47-18, BC Hydro Fiscal 2017 to Fiscal 2019 Revenue Requirements Application (March 1, 2018), page 34

271. The CEC agrees with the Commission that BC Hydro's Work Smart program should result in incremental cost/benefit savings, which should be the natural result of continuous process improvement.

272. BC Hydro considers the effectiveness of the Work Smart program to be demonstrated through annual capacity hours gained of 80,013 hours (annual benefit in fiscal 2018), which has an estimated imputed value of \$7.6 million annually. This capacity is used to manage increases in workload and work complexity as well as enabling employees to focus on the highest value work.¹³³

273. The CEC appreciates that capacity hours have been gained, and supports the Work Smart program.

274. However, the CEC submits that that continuous improvement should result in demonstrably greater cost effectiveness in BC Hydro's operations overall.

275. BC Hydro stated that if Work Smart solutions were required to deliver incremental cost and headcount savings (instead of avoiding higher costs), the program would not be successful. BC Hydro further stated that participation by employees and teams would be dis-incented as their position could be terminated as a result.¹³⁴

276. BC Hydro states that "We believe that our approach of using these gains to address workload issues and absorb new work, so that new costs can be avoided, is beneficial."¹³⁵

277. BC Hydro offers comparisons with a Washington State program that focuses on avoided costs rather than cost savings and an ICBC Lean program which indicates that cost savings are not an objective of this program.¹³⁶

¹³³ Exhibit B-12, BCUC 2.223.9

¹³⁴ Exhibit B-12, BCUC 2.223.9

¹³⁵ Exhibit B-1, page 5-17

¹³⁶ Exhibit B-1, page 5-18

278. The CEC is of the opinion that while avoided costs may indeed be beneficial, it is possible that the Work Smart program can focus on increased cost effectiveness and deliver incremental savings in terms of costs and benefits.

279. BC Hydro's focus on employee impacts as a reason to only focus on avoiding future costs is understandable, but should be replaced by a focus on cost-effectiveness.

280. BC Hydro's expectation to implement 31 Work Smart initiatives is higher than previous years and commensurate with the current number of employees in the Work Smart Program Office versus prior years.¹³⁷

281. BC Hydro will continue to measure the annual number of capacity hours gained and the imputed value of the capacity hours gained. This methodology is not expected to change.¹³⁸

282. The CEC submits that for greatest impact, continuous improvement and the elimination of non-value-added activities should be coupled with cost/benefit analysis to create optimum cost effectiveness.

283. BC Hydro stated that the Work Smart program has an imputed return on investment of five to one since its inception to fiscal 2018.¹³⁹

284. In its Final Argument, BC Hydro describes how the cost / benefit analysis for Work Smart tells a compelling story.¹⁴⁰ BC Hydro states that for the period from inception to the end of fiscal 2018, the life to date incremental cost of the program was approximately \$1.5 million. The estimated benefit (imputed value) was \$7.6 million. In other words, the life-to-date imputed value over that period was 5.0 times the incremental costs.¹⁴¹

285. The CEC supports the use of cost / benefit analysis to show the value of the Work Smart program and for other operating and capital investment decisions.

¹³⁷ Exhibit B-12, BCUC 2.223.11

¹³⁸ Exhibit B-12, BCUC 2.223.12

¹³⁹ Exhibit B-12, BCUC 2.223.9

¹⁴⁰ BC Hydro Final Argument, page 85

¹⁴¹ BC Hydro Final Argument, page 85

286. The CEC fully supports the use of metrics such as return on investment for the evaluation of the Work Smart program and all other programs and activities.

6.5. GENERAL WAGE INCREASES

287. BC Hydro's Application includes annual wage and salary increases of 2.0 percent for union employees and 2.5% for management and professional employees over the Test Period.¹⁴²

288. BC Hydro states that 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.¹⁴³

289. The CEC submits that annual increases of 2.5% for management and professional employees is likely to be significantly above inflation.

290. The CEC notes that BC Hydro's Total Rewards offer is consistent with median market rates¹⁴⁴ and the Utility has a low voluntary turnover rate of 1.3% compared to the average of 3.8%.¹⁴⁵ The CEC understands that BC Hydro has substantial non-salaried benefits which are included in the Total Rewards offer.

291. Given the current pandemic, the CEC submits that it would be prudent for BC Hydro to freeze management and professional wage increases at this time. In the CEC's view, it is inappropriate to offer wage increases during a period when large segments of the population are losing their income, especially when the benefit package likely offers significant long-term protections in the face of layoffs and health expenses.

¹⁴² Exhibit B-12, BCUC 2.219.2

¹⁴³ Exhibit B-5, BCUC 1.42.1

¹⁴⁴ Exhibit B-5, BCUC 1.42.4

¹⁴⁵ Exhibit B-1, page 5-47

292. The CEC submits that it is also likely not appropriate to offer significant incentive payments to Executive and Director level positions, which can account for 10% to 20% of their pay.¹⁴⁶

293. The CEC notes that BC Hydro oft-times uses ‘reputational risk’ as justification for certain of its capital expenditures.

294. The CEC submits that the optics of providing substantial incentive payments at a time when businesses are failing, load may be reduced resulting in the need for increased rates, and residential customers are losing their jobs are not favourable, and can well result in ‘reputational risk’ to the Utility.

295. The CEC recommends that the BCUC not approve revenue requirements for management and professional salary increases at this time.

6.6. BUSINESS GROUPS

296. BC Hydro has 7 Business Groups and a number of KBUs within each Business Group.

¹⁴⁶ Exhibit B-5, BCUC 1.42.10 and 1.42.10.1

Table 5-2 Business Groups and KBUs¹⁴⁷

	Business Group	Key Business Unit
Plan	Integrated Planning	Energy Planning and Analytics
		Dam Safety
		Stations Asset Planning
		Line Asset Planning
		Interconnections and Shared Assets
	Engineering	
Build	Capital Infrastructure Project Delivery	Project Delivery
		Indigenous Relations
		Environment
		Properties
Operate	Operations	Program and Contract Management
		Line Field Operations
		Stations Field Operations
		Distribution Design and Customer Connect
		Construction Services
		Generation System Operations
		Transmission and Distribution System Operations
Support	Safety	Safety System and Assurance
		Learning and Development
		Field Safety Services
		Security and Emergency Management
	Finance, Technology, Supply Chain	Finance
		Technology
		Supply Chain
	People, Customer, Corporate Affairs	Human Resources
		Customer Service
		Conservation and Energy Management
		Power Acquisitions and Contract Management
		Communications and Community Engagement
		Regulatory and Rates
	Other ¹⁴⁸	Ethics and Merit Office
Office of the General Counsel ¹⁴⁹		
	Office of the President and Chief Operating Officer	

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297. All Business Groups and KBUs develop annual business plans that identify key activities that each KBU will focus on during the year, as well as metrics to measure performance. The business plans are regularly reviewed by management, and specific measurements are included on performance measurement dashboards for each business group.¹⁴⁸

298. The CEC notes that the additional information provides more detail for each KBU but does not include discussion of the cost-effectiveness of each of the KBU’s activities.

299. Operating costs for the Business Groups are shown in the Table below.

¹⁴⁷ Exhibit B-1, page 5-11

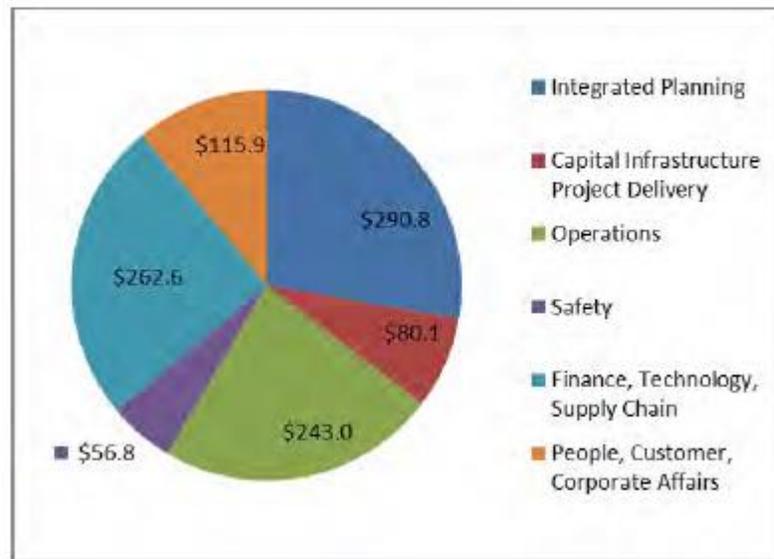
¹⁴⁸ Exhibit B-5, BCUC 1.62.1

Total Base Operating Costs (Fiscal 2019 - Fiscal 2021) (\$ million)			F2019			F2020			F2021		
Line	Column	Reference	RRA	Actual	Diff	Plan	Update	Diff	Plan	Update	Diff
			1	2	3=2-1	4	5	6=5-4	7	8	9=8-7
Operating Costs by Business Group											
1	Integrated Planning	5.1 L8	270.1	286.0	15.8	290.8	290.8	0.0	293.0	293.0	0.0
2	Capital Infrastructure Project Delivery	5.2 L8	81.9	86.9	4.0	80.1	80.1	0.0	81.1	81.1	0.0
3	Operations	5.3 L9	216.2	215.6	(0.6)	237.3	237.3	0.0	240.1	240.1	0.0
4	Safety	5.4 L8	54.9	53.6	(1.3)	56.8	56.8	0.0	57.5	57.5	0.0
5	Finance, Technology, Supply Chain	5.5 L5	295.0	261.2	(3.8)	262.6	262.6	0.0	264.8	264.8	0.0
6	People, Customer, Corporate Affairs	5.6 L9	122.5	106.5	(17.0)	110.6	110.6	0.0	111.9	111.9	0.0
7	Other	5.7 L8	(251.6)	(250.5)	1.0	(260.2)	(244.3)	15.9	(260.5)	(244.4)	16.1
8	F17-F19 RRA Compliance Filing Adjustment		10.4	0.0	(10.4)	0.0	0.0	0.0	0.0	0.0	0.0
9	Total Base Operating Costs		769.5	757.2	(12.2)	777.9	793.8	15.9	787.8	803.9	16.1

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300. The following pie chart provides a view for F2020.

Figure 5-20 Net Operating Costs by Business Group (Fiscal 2020)¹⁵⁰



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301. The Other category is not included in the pie chart figure because it includes a credit for capitalized costs which cannot be displayed correctly in a pie chart.

6.6.1. CAPITAL INFRASTRUCTURE PROJECT DELIVERY BUSINESS GROUP

302. The Integrated Planning Business Group was formed in 2017.¹⁵¹

¹⁴⁹ BC Hydro Final Argument page 60

¹⁵⁰ Exhibit B-1, page 5-74

¹⁵¹ Transcript Volume 11 page 1872

303. The Integrated Planning Business Group holds the budget for all maintenance work, while the Operations Business Group holds the FTEs associated with all maintenance work and is responsible for executing this work. The Integrated Planning Business Group is responsible for planning BC Hydro’s Power System. It serves as the Plan function of the Plan-Build-Operate-Support model.¹⁵²

304. The following provides the Integrated Planning Business Group’s net Operating Costs and FTEs by KBU.

Table 5A-1 Integrated Planning Net Operating Costs by KBU

	Schedule Reference	F2017	F2017	F2018	F2018	F2019	F2019	F2020	F2021
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
(\$ million)		1	2	3	4	5	6	7	8
1 Energy Planning and Analytics	5.1 L1	6.5	5.7	6.2	5.9	6.3	6.8	7.9	8.4
2 Dam Safety	5.1 L2	8.8	8.4	8.9	8.6	9.0	10.0	10.2	10.3
3 Station Asset Planning	5.1 L3	102.7	102.8	105.4	108.0	106.2	94.0	97.0	98.1
4 Line Asset Planning	5.1 L4	111.3	107.0	112.0	114.3	111.3	121.4	127.2	128.1
5 Interconnections and Shared Assets	5.1 L5	9.0	10.3	9.1	8.8	9.2	9.2	10.5	10.6
6 Engineering	5.1 L6	19.9	19.2	20.2	20.5	20.5	21.8	24.7	25.1
7 Business Unit Support	5.1 L7	13.1	31.3	7.6	17.6	7.6	16.0	13.2	12.5
8 Total	5.1 L14	271.3	284.8	269.4	283.8	270.1	279.3	290.8	293.0

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Table 5A-2 Integrated Planning FTEs by KBU

	Schedule Reference	F2017	F2017	F2018	F2018	F2019	F2019	F2020	F2021
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
(FTEs)		1	2	3	4	5	6	7	8
1 Energy Planning and Analytics	16.0 L1	27	29	27	31	27	38	44	44
2 Dam Safety	16.0 L2	35	34	35	34	35	37	37	37
3 Station Asset Planning	16.0 L3	51	51	51	49	51	46	59	59
4 Line Asset Planning	16.0 L4	109	109	109	112	109	113	116	116
5 Interconnections and Shared Assets	16.0 L5	40	36	40	43	40	47	47	47
6 Engineering	16.0 L6	536	540	536	558	536	586	646	646
7 Business Unit Support	16.0 L7	4	4	4	3	4	3	3	3
8 Total	16.0 L8	802	804	802	830	802	870	952	952

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305. In response to a CEC IR regarding assessment of performance level, BC Hydro states that a positive outcome for Total Operating Costs for the Integrated Planning Business Group is defined as actual annual expenditures within 97 to 100 per cent of the annual operating plans while completing the related annual KBU work plans such as maintenance activities.¹⁵⁵

¹⁵² Exhibit B-1, page 5A-1

¹⁵³ Exhibit B-1, page 5A-4

¹⁵⁴ Exhibit B-1, page 5A-5

¹⁵⁵ Exhibit B-13 CEC 2.109.1

306. The CEC is of the opinion that it could be prudent for the Integrated Planning Business Group to amend its definition of a positive outcome to encourage cost savings but also to develop activities with a high benefit/cost ratio.

307. BC Hydro states that over 67 per cent of the FTEs in this Business Group are represented by the Engineering KBU. Over 75 per cent of the labour costs for these FTEs are not included in the operating costs budget as these costs are charged primarily to capital projects.¹⁵⁶

308. The CEC notes that the number of FTEs in the Engineering KBU is forecast to increase substantially in F2019, F2020 and F2021.

309. The CEC submits that these added FTEs might have substantial impact on operating expenses for the Business Group once the capital projects are completed.

6.6.2. CAPITAL INFRASTRUCTURE PROJECT DELIVERY BUSINESS GROUP

310. The Capital Infrastructure Project Delivery Business Group is responsible for delivering BC Hydro's larger and more complex capital projects while also providing cross-company services relating to the management and support of Indigenous relations, environment, and properties.

**Table 5B-1 Capital Infrastructure Project Delivery
Net Operating Costs by KBU**

(\$ million)	Schedule Reference	F2017	F2017	F2018	F2018	F2019	F2019	F2020	F2021	
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan	
		1	2	3	4	5	6	7	8	
1	Project Delivery	5.2 L1	13.4	12.7	14.2	13.5	14.3	13.9	14.0	14.5
2	Indigenous Relations	5.2 L2	6.1	7.3	6.1	6.1	6.1	6.3	6.1	6.3
3	Environment	5.2 L3	27.2	26.2	27.5	27.0	27.8	29.2	29.8	30.0
4	Properties	5.2 L4	32.2	32.2	32.5	32.7	32.8	32.7	29.3	29.5
5	Business Unit Support	5.2 L5	0.8	0.7	0.8	0.7	0.8	0.8	0.8	0.9
6	Total	5.2 L12	79.7	79.2	81.1	79.9	81.9	82.9	80.1	81.1

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¹⁵⁶ Exhibit B-1, page 5A-3

¹⁵⁷ Exhibit B-1, page 5B-4

**Table 5B-2 Capital Infrastructure Project Delivery
FTEs by KBU**

(FTEs)	Schedule Reference	F2017	F2017	F2018	F2018	F2018	F2018	F2020	F2021
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
		1	2	3	4	5	6	7	8
1 Project Delivery	16.0 L9	340	324	368	387	368	453	450	450
2 Indigenous Relations	16.0 L10	47	57	47	59	47	68	68	68
3 Environment	16.0 L11	83	86	83	90	83	89	94	94
4 Properties	16.0 L12	106	110	106	114	106	124	123	123
5 Business Unit Support	16.0 L13	3	3	3	3	3	3	3	3
6 Total	16.0 L14	579	581	607	652	607	737	739	739

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311. BC Hydro states that the measures used to gauge the performance of the delivery of projects do not directly gauge the value of projects over time, but measure cost and schedule performance as well as track capital additions and project write-offs.¹⁵⁹

312. The CEC submits that to “gauge the value of projects over time” is essential to assessing the performance of the delivery of projects.

313. BC Hydro states the Project Delivery, Technology, and Properties KBUs deliver a majority of BC Hydro’s capital plan and have the following KBU-specific capital expenditure performance measures:

- Project Delivery - Number of projects placed in-service less than or equal to First Full Funding expected amount;
- Technology - Percentage of Technology projects completed within total approved First Full Funding Amount; and
- Properties - Percentage of completed projects with total spend less than or equal to the expected amount.¹⁶⁰

314. The CEC notes that the above KBU-specific capital expenditure performance measures seem to be limited to the project cost coming in on budget.

315. The CEC submits that this is only the most basic measure of performance. The CEC further submits that merely meeting the budget does nothing to judge the performance of the

¹⁵⁸ Exhibit B-1, page 5B-5

¹⁵⁹ Exhibit B-13 CEC 2.113.1

¹⁶⁰ Exhibit B-12, BCUC 2.228.3.1

budget-making process. Indeed, it supports the concept of initially establishing a high enough budget that it can be easily met.

Project Delivery KBU

Metric	F2016 Actual	F2017 Actual	F2016 / F2017 Plan	F2018 Actual	F2019 Actual	F2019 / F2020 Plan	F2020 Plan
Projects cost ≤ Expected Amount (Number and %)	74 of 95 (78%)	53 of 82 (64%)	N/A	32 of 51 (63%)	37 of 44 (84%)	≥ 50%	≥ 50%

BC Hydro started to track and report on the above capital performance measure in fiscal 2016. A plan amount was not established for fiscal 2016 and fiscal 2017.

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316. The CEC notes that, according to the information above, provided in response to a BCUC IR, a significant portion of capital projects do not achieve the basic performance measure of meeting the budget. Between 63% and 84% of projects achieved this performance metric between 2016 and 2019.

317. The CEC submits that this measure of project delivery performance may not be very conducive to benefit/cost analysis. The CEC further submits that a threshold of 50% does not encourage especially strong performance.

6.6.3. BUSINESS OPERATIONS GROUP

318. The Operations Business Group is responsible for operating BC Hydro’s facilities and assets. It serves as the Operate function of the Plan-Build-Operate-Support model.

319. BC Hydro states that the Operations Business Group is a new Business Group, which combines the operations functions of the former Transmission and Distribution and Generation Business Groups. BC Hydro further states that the planning functions of these former Business Groups are now included in the Integrated Planning Business Group.¹⁶²

320. The CEC has no objection to the separation of operations and planning, provided that this change is cost-effective and increases efficiency and productivity.

¹⁶¹ Exhibit B-12, BCUC 2.228.3.2

¹⁶² Exhibit B-1, page 5C-2

321. BC Hydro notes that the Operations Business Group makes up 40 per cent of BC Hydro’s total FTEs, while only accounting for approximately 30 per cent of the base operating costs. This difference is primarily because large portions of the Operations Business Group’s work are charged to the maintenance work programs that are budgeted in the Integrated Planning Business Group, as well as to capital projects.¹⁶³

322. Effectively, BC Hydro seems to be stating that it has separated planning and operations functions into the Integrated Planning and Operations Business Groups, then states that large portions of the Operations Business Group’s work are charged to maintenance programs in the Integrated Planning Group.

323. In the CEC’s view, holding a significant percentage of BC Hydro’s FTEs in the Operations Business Group, while charging large portions of the Business Group’s costs to maintenance programs and capital works, may not create transparency and ease of tracking costs vs work performed.

The Operations Business Group consists of the following KBUs:

Business Group	Key Business Unit
Operations	Program and Contract Management Line Field Operations Stations Field Operations Distribution Design Customer Connections Construction Services Generation System Operations Transmission and Distribution System Operations Business Unit Support

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Table 5C-1 Operations Net Operating Costs by KBU

	Schedule Reference	F2017	F2017	F2018	F2018	F2018	F2018	F2020	F2021
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
		1	2	3	4	5	6	7	8
1	S.3 L1	13.8	11.6	14.1	11.9	14.3	12.8	14.0	14.2
2	S.3 L2	67.7	69.8	68.2	71.6	68.7	68.2	82.3	83.1
3	S.3 L3	41.0	41.5	41.1	39.4	46.9	46.2	52.9	53.5
4	S.3 L4	12.8	10.2	13.1	10.6	13.5	14.3	14.8	15.1
5	S.3 L5	13.5	11.4	13.7	12.4	13.9	12.8	13.2	13.3
6	S.3 L6	14.5	16.0	14.7	14.2	14.8	14.6	15.0	15.2
7	S.3 L7	36.2	38.2	36.7	40.4	37.4	38.3	39.8	40.3
8	S.3 L8+L12	6.6	5.4	6.6	6.3	6.7	11.1	11.1	11.3
9	Total	206.1	204.2	208.2	206.7	216.2	218.4	243.0	246.0

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¹⁶³ Exhibit B-1, page 5C-4

¹⁶⁴ Exhibit B-1, page 5C-2

¹⁶⁵ Exhibit B-1, page 5C-5

Table 5C-2 Operations FTEs by KBU

(FTEs)	Schedule Reference	F2017	F2017	F2018	F2018	F2018	F2018	F2020	F2021
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
		1	2	3	4	5	6	7	8
1 Program and Contract Management	16.0 L15	213	205	217	206	217	221	228	228
2 Line Field Operations	16.0 L16	844	838	844	856	844	931	938	938
3 Stations Field Operations	16.0 L17	856	829	856	818	856	858	777	777
4 Distribution Design Customer Connect	16.0 L18	338	325	338	347	338	379	379	379
5 Construction Services	16.0 L19	404	411	404	409	404	398	397	397
6 Generation System Operations	16.0 L20	64	65	64	68	64	64	63	63
7 T&D System Operations	16.0 L21	165	170	165	174	165	178	197	197
8 Business Unit Support	16.0 L22	3	3	3	3	3	3	5	5
9 Total	16.0 L23	2,889	2,845	2,893	2,880	2,893	3,033	2,984	2,984

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324. BC Hydro states the increase in the Operations Business Group’s operating budget from fiscal 2019 forecast to fiscal 2020 plan is largely driven by increases to Storm Restoration costs and to Standard Labour Rates.¹⁶⁷

325. BC Hydro further states that operating costs are increasing by approximately \$14.1 million from fiscal 2019 forecast to fiscal 2020 plan due to an increase of \$11.1 million to the five-year average that drives the storm response budget.¹⁶⁸

326. BC Hydro continues to budget for storm restoration costs using a five-year average of normal weather years. BC Hydro states that in recent years, higher levels of storm related damage have been experienced, which has caused the five-year average of storm restoration costs to increase.¹⁶⁹

(\$ million)	3 Year Average F2017-F2019 Average	5 Year Average F2015-F2019 Average	10 Year Average F2010-F2019 Average	Most Recent Fiscal Year Actual Fiscal 2019 Actual
Storm Restoration Costs Forecast	24.6	22.0	13.4	25.6

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¹⁶⁶ Exhibit B-1, page 5C-7

¹⁶⁷ Exhibit B-1, page 5C-4

¹⁶⁸ Exhibit B-1, page 5C-23

¹⁶⁹ Exhibit B-1, Table 5-5, page 5-23

¹⁷⁰ Exhibit B-12, BCUC 2.232.4.1

327. The CEC acknowledges that the use of the five-year average was directed by the BCUC¹⁷¹, and that predicting storm restoration costs is inherently difficult, but notes that the costs for the Most Recent Fiscal year exceed even that of the 3 Year average. BC Hydro considers that using a three year average may give too much weight to recent years while using a 10-year average gives too much weight to historical years.¹⁷²

328. In the CEC’s view, the evidence and general climate change information suggests that while there will continue to be variability from year to year, storm restoration costs can be expected to continue to rise over time.

329. The CEC takes no issue with BC Hydro’s use of the five-year average methodology but submits that it may be worthwhile to continue to review this methodology with an eye to moving to a three-year average as the basis of costs for storm restoration change as storm restoration costs continue to rise.

6.6.4. SAFETY

330. The Safety Business Group includes the Learning and Development KBU, which includes the FTEs related to apprentices and trainees, distributed throughout the organization.

Business Group	Key Business Unit
Safety	Safety System and Assurance Learning and Development Field Safety Services Security and Emergency Management Business Unit Support

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Table 5D-1 Safety Net Operating Costs by KBU²³⁸

(\$ million)	Schedule Reference	F2017 RRA	F2017 Actual	F2018 RRA	F2018 Actual	F2019 RRA	F2019 Foreoact	F2020 Plan	F2021 Plan
		1	2	3	4	5	6	7	8
1 Safety Systems and Assurance	5.4 L1	14.3	14.5	14.8	14.7	14.7	12.9	13.1	13.3
2 Learning and Development	5.4 L2	25.0	25.7	25.0	23.2	25.4	25.5	25.8	26.2
3 Field Safety Services	5.4 L3	4.9	5.7	5.0	5.7	5.1	6.2	6.6	6.7
4 Security and Emergency Management	5.4 L4	9.3	9.4	9.3	9.2	9.3	9.6	10.7	10.8
5 Business Unit Support	5.4 L5	0.5	0.6	0.5	0.6	0.5	0.6	0.6	0.6
6 Total	5.4 L12	54.6	55.9	54.6	53.3	54.9	54.8	56.8	57.5

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¹⁷¹ Exhibit B-12, BCUC 2.232.4.1

¹⁷² Exhibit B-12, BCUC 2.232.4.1

¹⁷³ Exhibit B-1, page 5D-2

¹⁷⁴ Exhibit B-1, page 5D-9

Table 5D-2 Safety FTEs by KBU

(FTEs)	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
1 Safety Systems and Assurance	16.0 L24	52	48	52	49	52	52	52	52
2 Learning and Development	16.0 L25	438	456	438	437	438	358	317	300
3 Field Safety Services	16.0 L26	53	50	55	56	55	63	62	62
4 Security and Emergency Management	16.0 L27	18	20	18	25	18	26	31	31
5 Business Unit Support	16.0 L28	2	2	2	2	2	2	2	2
6 Total	16.0 L29	563	576	565	568	565	501	464	447

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331. Safety regulations change on an ongoing basis and can have widespread impacts across the organization. Changes in safety regulations, while introduced to improve safety outcomes for workers and the public, impact operating costs. The costs of achieving and maintaining regulatory compliance are incurred within overall actual operating costs. The cost impacts are not tracked because changes in work activity requirements, for example, are part of the normal workflow.¹⁷⁶

332. The CEC submits that the safety and well-being of BC Hydro employees and the public are of the highest importance.

333. The CEC has reviewed the evidence in the Application with regard to the Safety Business Group and has no issues.

6.6.5. FINANCE TECHNOLOGY SUPPLY CHAIN BUSINESS GROUP

334. The Finance, Technology, Supply Chain Business Group serves a Support function of the Plan-Build-Operate-Support model.

Business Group	Key Business Unit
Finance, Technology, Supply Chain	Finance Technology Supply Chain Business Unit Support

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¹⁷⁵ Exhibit B-1, page 5D-10

¹⁷⁶ Exhibit B-12, BCUC 2.214.1

¹⁷⁷ Exhibit B-1, page 5E-2

Table 5E-1 Finance, Technology, Supply Chain Net Operating Costs by KBU

	(\$ million)	Schedule Reference	F2017	F2017	F2018	F2018	F2018	F2018	F2020	F2021
			RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
			1	2	3	4	5	6	7	8
1	Finance	5.5 L1	29.7	28.7	30.2	28.7	30.7	30.8	31.5	32.1
2	Technology	5.5 L2	141.1	134.5	141.3	128.3	140.5	133.7	135.8	136.4
3	Supply Chain	5.5 L3	91.8	89.9	92.2	89.0	93.0	93.3	94.5	95.5
4	Business Unit Support	5.5 L4	0.8	0.7	0.8	0.7	0.8	0.8	0.8	0.8
5	Total	5.5 L11	263.3	253.8	264.4	246.7	265.0	258.5	262.6	264.8

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Table 5E-2 Finance, Technology, Supply Chain FTEs by KBU

	(FTEs)	Schedule Reference	F2017	F2017	F2018	F2018	F2018	F2018	F2020	F2021
			RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
			1	2	3	4	5	6	7	8
1	Finance	16.0 L30	188	194	188	195	188	204	205	205
2	Technology	16.0 L31	175	185	191	225	202	263	269	269
3	Supply Chain	16.0 L32	402	421	402	447	402	454	468	468
4	Business Unit Support	16.0 L33	3	3	3	3	3	3	3	3
5	Total	16.0 L34	769	805	784	871	795	924	946	946

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335. BC Hydro states that the Finance KBU’s FTE complement is comparable to the median for companies with revenues of \$5 billion and higher, and is below the bottom (best) quartile of companies.¹⁸⁰

336. The CEC is satisfied that FTEs and costs for the Finance KBU benchmark well with companies of comparable size. The CEC notes a forecasted increase in both FTEs and costs and recommends that close attention be given to maintaining the benchmark standard.

337. BC Hydro states that since fiscal 2016, the Technology KBU has converted 88 contractor positions to internal FTE positions.¹⁸¹

338. BC Hydro states it evaluates the performance for the metric ‘Capital (\$) – Technology’ using a threshold of +/- 7.5 per cent. The metric is considered green (on track) if the variance between the actual capital spend versus the planned capital spend for a given period is less than or equal to +/- 7.5 per cent. The metric is considered red (off-track) if the variance is more than +/- 7.5 per cent.¹⁸²

¹⁷⁸ Exhibit B-1, page 5E-5

¹⁷⁹ Exhibit B-1, page 5E-5

¹⁸⁰ Exhibit B-1, page 5E-15

¹⁸¹ Exhibit B-1, page 5E-21

¹⁸² Exhibit B-13 CEC 2.120.1

339. The CEC submits that increased scrutiny of technology capital expenditures is warranted and necessary, especially in light of the recent SAP project.

340. The CEC notes a substantial increase in the number of FTEs in the Supply Chain KBU.

341. In general, the CEC is satisfied that the costs for the Business Unit are forecasted to stay within the recent historical range but as with other KBUs, the lack of cost and benefit analysis will continue to be a deficiency in reaching overall cost-effectiveness improvement goals.

6.6.6. PEOPLE, CUSTOMER AND CORPORATE AFFAIRS BUSINESS GROUP

342. The People, Customer and Corporate Affairs Business Group is one of six business groups in the organization and serves a Support function in the Plan-Build-Operate-Support model.

Business Group	Key Business Unit
People, Customer and Corporate Affairs	Human Resources Customer Service Conservation and Energy Management Power Acquisitions and Contract Management Communications and Community Engagement Regulatory and Rates Ethics and Merit Office Business Unit Support

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Table 5F-1 People, Customer and Corporate Affairs
Net Operating Costs by KBU

(\$ million)	Schedule Reference	F2017	F2017	F2018	F2018	F2019	F2019	F2020	F2021
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
		1	2	3	4	5	6	7	8
1 Human Resources	5.6 L1	22.9	21.6	23.1	22.1	23.3	21.1	21.1	21.4
2 Customer Service	5.6 L2+L13	76.2	68.9	73.6	68.7	73.8	69.0	68.4	69.1
3 Conservation and Energy Management	5.6 L3	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6
4 Power Acquisitions and Contract Management	5.6 L4	4.6	4.6	4.7	4.9	4.8	4.8	4.7	4.7
5 Communications and Community Engagement	5.6 L5	12.8	12.4	12.6	13.7	12.7	13.6	12.9	13.0
6 Regulatory and Rates	5.6 L6	6.0	5.8	6.1	5.4	6.2	6.2	6.3	6.4
7 Ethics and Merit Office	5.6 L7	0.4	0.5	0.4	0.6	0.4	0.8	1.0	1.0
8 Business Unit Support	5.6 L8	0.7	0.8	0.8	0.7	0.8	0.8	0.8	0.8
9 Total	5.6 L15	124.3	115.2	121.8	116.8	122.5	116.9	115.9	117.2

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¹⁸³ Exhibit B-1, page 5F-3

¹⁸⁴ Exhibit B-1, page 5F-5

**Table 5F-2 People, Customer and Corporate Affairs
FTEs by KBU**

(FTEs)	Schedule Reference	F2017	F2017	F2018	F2018	F2019	F2019	F2020	F2021
		RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
		1	2	3	4	5	6	7	8
1 Human Resources	16.0 L35	88	84	88	88	88	125	124	124
2 Customer Service	16.0 L36	124	154	124	191	124	495	479	479
3 Conservation and Energy Management	16.0 L37	114	110	112	112	112	116	116	116
4 Power Acquisitions and Contract Management	16.0 L38	23	26	23	28	23	27	26	26
5 Communications and Community Engagement	16.0 L39	86	94	86	95	86	107	107	107
6 Regulatory and Rates	16.0 L40	28	23	27	26	27	28	28	28
7 Ethics and Merit Office	16.0 L41	1	2	1	3	1	4	5	5
8 Business Unit Support	16.0 L43	3	3	3	3	3	3	3	3
9 Total	16.0 L44	467	497	463	545	463	906	887	887

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343. BC Hydro states that the Customer Service KBU and the Human Resources KBU comprise over 75 per cent of the operating cost budget and over 65 per cent of the total FTEs for the People, Customer, and Corporate Affairs Business Group. This reflects the repatriation of services from Accenture, which has delivered annual savings in excess of the expected savings.¹⁸⁶

344. The CEC notes that the forecast number of FTEs in F2020 and F2021 is more than 60% higher than the 2018 actual number, due largely to the repatriation of service from Accenture.

345. The CEC notes that BC Hydro states that annual savings are greater than expected.

346. The CEC is of the opinion that BC Hydro’s analysis of savings may be questionable and BC Hydro has given up a great deal of flexibility in the performance of the work of this business unit.

347. The CEC submits that a change in economic conditions may make BC Hydro vulnerable to increased costs that may exceed anticipated savings from the Accenture repatriation.

6.6.7. OTHER

348. The Site C Project has been included in the Other category.

349. The project has FTEs but no operating costs as all project costs are charged to capital and to the Site C Regulatory Account.

¹⁸⁵ Exhibit B-1, page 5F-6

¹⁸⁶ Exhibit B-1, page 5F-3

Table 5G-1 Other Net Operating Costs

	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
1	Office of the General Counsel	5.7 L1	12.2	11.1	12.3	10.6	12.3	11.7	11.8
2	Office of the President and Chief Operating Officer	5.7 L2	0.9	1.0	1.0	0.8	1.0	0.9	0.9
3	Site C Project	5.7 L3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Independent Power Producers Capital Leases	5.7 L4	28.2	28.2	63.6	63.6	54.3	0.0	0.0
5	Corporate Costs	5.7 L4	17.2	13.1	18.4	28.4	19.7	38.9	13.0
6	Capitalized Costs	5.7 L5+L7	(180.2)	(179.0)	(158.6)	(159.6)	(136.9)	(137.6)	(93.8)
7	Total	5.7 L12	(121.7)	(125.6)	(63.4)	(55.2)	(49.6)	(90.2)	(68.1)

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Table 5G-2 Other FTEs

	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
1	Office of the General Counsel	16.0 L45	37	36	37	35	37	42	42
2	Office of the President and Chief Operating Officer	16.0 L46	4	4	4	3	4	3	3
3	Site C Project	16.0 L47	186	167	189	226	199	460	472
4	Independent Power Producer Capital Leases	16.0 L48	0	0	0	0	0	0	0
5	Corporate Costs	16.0 L49	0	0	0	0	0	0	0
6	Capitalized Costs	16.0 L50	0	0	0	0	0	0	0
7	Total	16.0 L51	227	208	231	264	241	505	516

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Table 5G-9 Site C Project Operating Costs and FTEs

	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
1	Operating Costs (\$ million)	5.7 L3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	FTEs	16.0 L47	186	167	189	226	199	460	472

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350. BC Hydro states that FTEs for the Site C Project are increasing during the Test Period as the project staffs up to a full complement of resources for the peak construction period. The project has no operating expenditures as all Site C costs are charged to capital or the Site C Regulatory Account. These costs will not impact rates until the project's assets are placed into service.¹⁹⁰

351. The CEC notes that the FTEs associated with the Site C Project are forecast to reach 472 in 2021.

352. The CEC further notes that approximately 100 FTEs associated with the Site C Project will be added to the Engineering KBU by 2021.

¹⁸⁷ Exhibit B-1, page 5G-2

¹⁸⁸ Exhibit B-1, page 5G-3

¹⁸⁹ Exhibit B-1, page 5G-10

¹⁹⁰ Exhibit B-1, page 5G-1

353. The cost-effective completion of the Site C Project is a priority, and ensuring annual use of the capacity and energy domestically in BC will be critical to achieving benefits for this project.

354. The CEC submits that the Commission should give priority to ensuring proper energy management.

7. CAPITAL EXPENDITURES

355. BC Hydro has annual capital expenditures in the order of \$2,830.5 million for F2020 and \$2,955.7 million for F2021.

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Table 6-1 BC Hydro Actual and Planned Growth and Sustaining Capital Expenditures Fiscal 2017 to Fiscal 2021²⁸⁹

(\$ millions)	F2017		F2018		F2019	F2019	F2020	F2021
	RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
Generation								
Growth (Schedule 13, Line 1)	20.0	21.2	2.4	10.2	0.7	4.0	3.2	-
Sustaining (Schedule 13, Line 3)	530.0	563.6	534.1	533.9	424.3	365.9	341.8	435.5
Total Generation	550.0	584.8	536.5	544.1	425.0	369.9	345.1	435.5
Site C Project (Schedule 13, Line 8)	742.5	662.7	716.5	704.8	829.2	1,186.8	1,530.0	1,535.5
Generation - Waneta 2/3 (Schedule 13, Line 2)						1,219.5		
Transmission								
Growth (Schedule 13, Line 4)	262.0	247.3	222.0	280.5	192.7	223.7	185.0	198.9
Sustaining (Schedule 13, Line 5)	255.5	268.1	326.3	218.3	373.9	209.1	222.6	286.5
Total Transmission	517.5	515.4	548.3	498.8	566.6	432.8	407.6	485.4
Distribution								
Growth (Schedule 13, Line 6)	224.7	226.0	233.4	287.6	209.5	305.7	300.0	284.6
Sustaining (Schedule 13, Line 7)	185.0	224.5	160.1	235.2	187.6	190.9	187.5	176.8
Total Distribution	409.8	450.5	393.4	522.8	397.0	496.6	487.5	461.4
Business Support								
Technology (Schedule 13, Line 9)	83.9	76.5	93.4	71.2	78.8	95.6	95.6	56.0
Properties (Schedule 13, Line 10)	95.7	86.6	75.0	63.5	88.3	43.5	58.9	55.3
Fleet / Other (Schedule 13, Line 11)	204.7	58.9	48.6	59.6	39.6	67.4	63.6	75.1
Total	2,604.0	2,435.4	2,411.9	2,464.8	2,424.6	3,912.2	2,988.3	3,104.1
Less: Contribution in Aid	(86.4)	(138.4)	(100.2)	(156.3)	(106.4)	(146.9)	(157.8)	(148.4)
TOTAL	2,517.6	2,297.0	2,311.7	2,308.5	2,318.2	3,765.3	2,830.5	2,955.7

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356. BC Hydro provides several details of its capital expenditures in its Application Appendices H-L.

¹⁹¹ Exhibit B-1, page 6-6

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Table 6-2 BC Hydro Actual and Planned Growth and Sustaining Capital Additions Fiscal 2017 to Fiscal 2021^{290, 291}

(\$ millions)	F2017		F2018		F2019	F2019	F2020	F2021
	RRA	Actual	RRA	Actual	RRA	Forecast	Plan	Plan
Generation								
Growth	26.6	24.2	0.9	9.6	0.2	(1.3)	2.7	-
Sustaining	486.4	318.5	386.2	397.6	1,332.1	1,304.7	312.0	297.0
Total Generation (Schedule 13, Line 13)	513.0	342.7	387.1	407.2	1,332.3	1,303.3	314.7	297.0
Site C Project (Schedule 13, Line 17)						-	27.9	189.4
Generation - Waneta 2/3 (Schedule 13, Line 14)						1,219.5	-	-
Transmission								
Growth	237.1	255.8	222.8	176.9	213.8	309.9	97.9	83.3
Sustaining	255.2	227.1	216.9	230.8	245.0	223.5	195.9	146.3
Total Transmission (Schedule 13, Line 15)	492.3	482.9	439.7	407.7	458.8	533.4	293.8	229.6
Distribution								
Growth	189.8	232.7	241.6	232.2	229.0	305.2	306.9	344.2
Sustaining	182.3	188.3	157.7	213.3	184.0	222.3	195.3	196.5
Total Distribution (Schedule 13, Line 16)	372.1	421.0	399.3	445.5	413.0	527.5	502.2	540.7
Business Support								
Technology (Schedule 13, Line 18)	81.6	81.6	91.1	97.2	112.6	67.1	147.6	75.5
Properties (Schedule 13, Line 19)	68.3	54.8	118.2	126.9	25.5	28.7	39.9	55.6
Fleet / Other (Schedule 13, Line 20)	210.3	85.6	54.5	59.4	45.7	69.8	64.9	71.3
Total	1,737.6	1,468.5	1,489.8	1,543.8	2,387.8	3,749.4	1,391.0	1,459.1
Less: Contribution in Aid	(90.1)	(103.6)	(88.0)	(129.5)	(84.6)	(148.5)	(146.1)	(165.8)
TOTAL	1,647.5	1,364.9	1,401.8	1,414.3	2,303.2	3,600.8	1,244.9	1,293.2

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357. Substantial reductions in growth and sustainment are a remarkable perspective on the state of the BC Hydro system and the capital planning cost-effectiveness. The Commission’s oversight is critical with such levels of change and the adequacy of information to assess the result is, in the CEC’s view, less than required to properly understand the outcomes.

7.1. PLANNING PROCESS

358. BC Hydro states that it is committed to continuous improvement in its capital planning processes¹⁹³ and appears to be moving from a risk-based framework to a value-based framework.

359. At the Oral Hearing, Mr. Kumar stated:

“So I think it’s important to actually mention the fact that currently the way we develop our capital plan -- so if you go back 10, 15 years ago, industry was struggling with the framework for the development of capital plans and trying to prioritize. So we ended up implementing what’s called a risk-based framework, which has actually done us really good in terms of developing a capital plan and our process.

¹⁹² Exhibit B-1, page 6-7

¹⁹³ Transcript Volume 11 page 1842

And if you remember, I mentioned I was involved in developing the first capital plan process for the transmission site. We actually did not even have a framework for developing that. So over the last 12 years Hydro has actually worked quite hard in terms of developing an industry leading framework that is based on a risk prioritization tool, and it's aligned with our objectives at a corporate level... And you've got great feedback from the Auditor General in terms of our planning process that we used.

What Ms. Pinksen was talking about is the next evolution of the capital planning process, which is going from a risk-based framework over to a value-based framework which helps us define the value of projects it's providing as opposed to the risk that the project is avoiding. They are both sides of the same coin, it's just a different way of defining how you move forward with the project.

So I would say our capital plan is well-defined in terms of cost effectiveness by using a risk-based framework...¹⁹⁴

360. The CEC is pleased that BC Hydro is undertaking to improve its capital planning processes.

361. In the CEC's view, the change from risk-based assessment to value-based assessment can potentially represent a significant improvement in the approach to capital if the cost/benefit analysis is undertaken on a systemic basis such that there is reviewable quantification of the overall value of the capital projects.

Facility Asset Studies

362. Most of the Asset plans do not explain why the particular solution is the most cost-effective choice because they are not discussed in the context of alternatives.

363. In the CEC's view there is a very significant level of "TBD" in the Projects and Programs greater than \$5 million in Appendix I.

¹⁹⁴ Transcript Volume 11, pages 1854-1855

7.2. CAPITAL PLANNING EVALUATION

364. BC Hydro states that:

“The success of our capital planning process as a whole over time is best assessed through the information provided in BC Hydro’s Service Plan. The Service Plan contains performance measures such as SAIDI, SAIFI, and Key Generating Facility Forced Outage Factor, which provides an indication of capital investment on system performance over time”.¹⁹⁵

365. The CEC accepts that certain system performance measures such as SAIDI, SAIFI, and forced outages can be appropriately evaluated against industry established norms and best practices.

366. The CEC does not agree that the cost-effectiveness of BC Hydro’s spending can be evaluated against other jurisdictions given the scant data available for assessment.

367. The CEC notes, and BC Hydro acknowledges, that all electric utilities, including those represented in Hydro Quebec’s Comparison of Electricity Prices in Major North American Cities, may have different cost structures and capabilities in terms of the opportunities they have to manage customer bills.¹⁹⁶

368. The CEC submits that comparisons to other electric utilities do not provide significant comfort that rates and customer bills are as low as they can be in this province.

369. In the CEC’s view it is necessary for BC Hydro to compare cost-effectiveness against its own historical performance in order to determine whether or not it is achieving good outcomes.

370. Consistent formal analysis and expectations of ongoing improvement would allow the BCUC to determine if BC Hydro is operating as cost-effectively as possible without importing measures from other jurisdictions that may or may not be relevant.

¹⁹⁵ Exhibit B-6, CEC 1.4.1

¹⁹⁶ Exhibit B-13, CEC 2.92.3

371. In CEC 2.92.2, BC Hydro outlines why they believe the Service Plan can be used to determine the cost-effectiveness of the ways by which the utility achieves its performance metrics.

“BC Hydro’s Service Plan outlines its performance measures and its financial plan including net income and costs. The financial plan includes the costs necessary to successfully achieve BC Hydro’s performance measures. As the BCUC has oversight into BC Hydro’s operating and capital expenditures (which are outlined in Chapter 5 and Chapter 6 of the Application), the BCUC can ask questions to determine whether the costs are reasonable.

This can also be reviewed in light of how BC Hydro measures against its Service Plan metrics to ensure costs reflect the goals of the company. If the BCUC determines that the costs are reasonable and BC Hydro achieves its Service Plan metrics, then the BCUC could conclude that BC Hydro has achieved its performance measures in a cost effective manner.”¹⁹⁷

372. In the CEC’s view, this essentially boils down to a theoretical leap with the Commission viewing expenses in one proceeding, and assuming that if they were approved, and metrics are achieved in another set of revenue requirements, then the decision-making has been cost-effective.

373. Such evaluation assumes that the original decision included:

- a complete understanding of the financial details and cost/benefit relationship prior to the approval;
 - The CEC submits this is difficult when approvals are requested relatively early in the project design process and when benefits are based on loose ‘judgement’;
- that the comparative metrics used in that decision only reflected maximum cost-effectiveness for BC Hydro and do not include comparisons against other jurisdictions that may or may not be cost-effective;

¹⁹⁷ Exhibit B-13, CEC 2.92.2

- The CEC notes that BC Hydro's evaluation may include comparisons to other jurisdictions;
- that there were no changes in the context, costs or benefits;
 - The CEC submits that changes in context, costs and benefits are fairly frequent in large capital projects
- that the review metrics are not excessive (i.e. a substantial budget that can be readily underspent without necessarily maximizing cost/benefit).

374. The CEC considers that it is very difficult if not impossible for the Commission to confidently determine whether the expenditures presented in the RRAs are cost-effective because there is very limited information submitted and limited follow-up as to whether or not the value of the expenditures is achieved.

375. RRAs are typically for two years, and the longer-term costs and benefits are not typically open for substantive review but are necessary to evaluate capital expenditures.

376. BC Hydro agreed that measuring normalized data over time would be a valid methodology in some, but not all cases. They note various improvements over time which were identified in the Application.¹⁹⁸

377. The CEC considers that establishing metrics which assess cost-effectiveness over longer time periods, and against BC Hydro's own performance over time, is important.

378. The CEC recommends that the Commission develop its oversight process to assess the cost-effectiveness of BC Hydro capital expenditures over time.

7.3. ASSET INVESTMENT PLANNING TOOL

379. BC Hydro includes an Asset Investment Planning Tool as part of its Enhancing Business Capability projects.¹⁹⁹ It is a new software platform for its capital planning processes²⁰⁰, and

¹⁹⁸ Exhibit B-13, CEC 2.92.4

¹⁹⁹ Exhibit B-1, Appendix I page 9 of 10

listed as a sustaining expense with capital expenditures of \$4.2 million in F2020 and \$1.0 million in F2021.²⁰¹

380. The total cost estimate was \$5.8 million at the time the Application was submitted.²⁰²

381. The Asset Investment Planning Tool:

“will develop and implement an enterprise value framework that builds upon BC Hydro’s existing enterprise-wide framework for prioritization. The enterprise value framework will enable a more consistent and objective approach to compare the risks, costs and benefits of different investments’.²⁰³

382. The project addresses BC Hydro Generation, Transmission and Distribution, Technology, Fleet Services, and Properties groups, which have historically worked independently to develop processes and find tools to “support ...²⁰⁴ information and making investment decisions regarding their investment portfolio”.²⁰⁵

383. Ms. Pinksen confirmed ‘absolutely’ that:

“A project like this is targeted at finding efficiencies and cost effectiveness in terms of that \$2 billion spend.”²⁰⁶

384. In BCOAPO 1.62.1 and 1.62.2, BC Hydro provides an overview of projects which are mandatory, committed, or to be prioritized.

385. The CEC notes that the Asset Investment Planning Tool is documented as being not prioritized, with a risk score of 10, which is considered as a fairly high risk in terms of the risk to BC Hydro if the investment is not undertaken.²⁰⁷

²⁰⁰ Transcript Volume 11, page 1843

²⁰¹ Exhibit B-1, Appendix I page 9 of 10

²⁰² Exhibit B-1, page 6-156

²⁰³ Exhibit B-6, CEC 1.4.2

²⁰⁴ NB: illegible

²⁰⁵ Exhibit B-48, page 4

²⁰⁶ Transcript Volume page 1850

²⁰⁷ Transcript Volume 11 page 1848

386. It is currently in the Definition Phase.²⁰⁸

387. BC Hydro provided further details of the project in Exhibit B-48 Undertaking No 30, requested by the CEC.

388. The Benefit Summary includes the following statements:

“The primary objective of this project is to address the capability gaps (people, process and technology) preventing the business from making optimized portfolio investment decisions which maximize business value in an efficient, objective, consistent and transparent manner.”²⁰⁹

“Financial benefits associated with implementing tools and processes (value framework) to objectively optimize the scope and timing of investments and eliminate investments that do not merit execution in order to maximize portfolio value across the enterprise.”²¹⁰

- “Based on experience and feedback from other utilities we expect to identify XXXXXXXXXXXXXXXXXXXX within 2 years of implementing this solution.”²¹¹

389. The risk summary states:

- “Moving the business from a ‘risk-based’ approach to investment planning to a ‘value based (considering risks and benefits) approach using a value framework will require engagement at all levels of the organization. There is a risk that this exercise could take a considerable amount of time. The project intends to begin early engagement in the Definition Phase so that detailed metrics can be established in the Implementation Phase.”²¹²

390. The CEC fully supports BC Hydro in the objectives of the project and submits that such projects are very important in developing long-term cost effectiveness in capital planning.

391. The CEC notes however that under cross-examination Ms. Pinksen stated:

²⁰⁸ Transcript Volume 11 page 1842

²⁰⁹ Exhibit B-48, page 1

²¹⁰ Exhibit B-48, page 2

²¹¹ Exhibit B-48, page 2

²¹² Exhibit B-48, pages 2-3

“We completed the first state of our definition phase and we did work with a software vendor and developed some conceptual level work. The project is actually currently on hold for a couple of reasons.

One is, as you can appreciate, a project where we’re looking across the enterprise requires a lot of subject matter expertise, and those subject matter expertise were also supporting this proceeding, so we found it prudent to place the project on hold and allow our subject matter experts to focus on supporting this proceeding. We want to make sure we have the best people participating in the project.

Second, as we’ve evolved through the definition phase, we’re getting a better idea of the cost of the project. The 5.8 million that was included was an estimate at the time this application was submitted, and that has changed. And we feel it’s prudent to pause and make sure that we can demonstrate benefits to ratepayer of continuing to invest in this type of project.”²¹³

392. The CEC is concerned with the deferral of this project.

393. While the CEC applauds the utility in ensuring value for its projects before proceeding, the CEC submits that if the Asset Investment Planning Tool Project has some true capability to improve cost effectiveness of the \$2 billion of investments, as confirmed by Ms. Pinksen, it could potentially result in significant benefit to the utility at relatively minor cost of \$6 million, and may result in a benefit even if the cost were to increase substantially.

394. The CEC notes that even a ½ of 1% saving on \$2 billion in spending results in a savings of \$20 million in one year.

395. In the CEC’s view, the Asset Investment Planning Tool, which the CEC notes is industry-accepted,²¹⁴ should be prioritized for continuing development and review instead of being deferred.

396. The CEC recommends that the Commission request BC Hydro provide a full report on the Asset Investment Planning Tool project within the next 6 months.

²¹³ Transcript Volume 11 page 1845

²¹⁴ Transcript Volume 11 page 1851

Capital Project Evaluation

397. When a project is completed BC Hydro prepares a project completion and evaluation report, but only for projects over \$20 million.²¹⁵

398. Mr. Kumar states:

“In that report we document whether the project met the objectives as set out when we were handed the project from our planning organization. So that would include various aspects of -- for example if a generating station was expected to deliver certain megawatts after the work was done, then we would document that in the completion report. Did the project get delivered for the first full funding expected amount and did we meet it on time? And so those different aspects are recorded in that report.”²¹⁶

399. As noted in the Oral Hearing, the post-project report comes in fairly soon after the project is completed, so there may not be enough time for the benefits that were anticipated in the business case to have been realized or reported on.²¹⁷

400. Mr. Darby argues that the vast majority of the projects are ‘risk avoidance’ so the projects deliver their benefits instantly, and only projects related to growth would have benefits that might be tracked over time.²¹⁸

401. However, the CEC submits that ‘risk avoidance’ projects may be difficult to evaluate because they often do not define the risk quantitatively. The CEC submits that the absence of quantification in risk analysis can contribute to lower quality capital planning.

402. Even without quantitative risk analysis, the CEC is of the view that such projects also deserve a longer-term review in order to determine if the risk mitigation was successful, if the best alternative was selected, and if the project was ultimately deemed to be cost effective and necessary. For instance, a technology project could be planned to result in reputational risk

²¹⁵ Transcript Volume 11 page 1858

²¹⁶ Transcript Volume 11 page 1858

²¹⁷ Transcript Volume 11 page 1861

²¹⁸ Transcript Volume 11 page 1861-18633

mitigation, however, down the road it could be determined that the project did not confer such a benefit, or even resulted in a different suite of risks such as poor performance, ongoing costs, etc.

403. The CEC submits that a full cost/benefit analysis for major projects, at one or two years post-completion, might provide for better ongoing evaluation of BC Hydro's capital planning.

404. The CEC notes that projects under \$20 million do not get as robust an analysis.

405. The CEC notes that there are a significant number of capital projects under the \$20 million threshold in BC Hydro's capital plan, and submits that all projects in excess of \$5 million should have significant review which evaluates the long-term outcome in order to identify areas of potential planning improvement.

7.6. TECHNOLOGY CAPITAL INVESTMENTS

406. BC Hydro provides a list of all technology capital projects over \$2 million in Appendix I of the Application, and technology capital projects over \$20 million in Appendix J of the Application.

407. The Total in Appendix I of the Application includes:

Fiscal 2020

\$141 million Capital additions forecast

\$93.5 million Capital expenditure forecast

Fiscal 2021

\$75 million Capital additions forecast

\$55.5 million Capital expenditure forecast²¹⁹

408. BC Hydro provides updates to its Technology capital projects in Exhibit B-29 using \$10 million as its threshold for review.²²⁰

409. BC Hydro states that its Technology capital plan is:

²¹⁹ Exhibit B-1, Appendix I

²²⁰ Exhibit B-29, page 2

“Dynamic and actual capital investments in the Test period may be different for a number of reasons, including changes in technology choice, changes in solution scope, scale, design and timing as well as emerging and changing business priorities”.²²¹

410. They also state that:

“Through active management, changes occur on an ongoing basis in order to respond to new circumstances”.²²²

411. The CEC is of the view that given the monetary significance of the Technology capital investments, the unquantifiable and non-monetized identified benefits means that they should be examined with the utmost scrutiny.

412. While the CEC accepts that technology plans may be ‘dynamic’ and require some level of flexibility to meet changing requirements, the CEC submits that this expected range of spending or deliverables scope means that particular attention should be paid to evaluating the cost-effectiveness of the proposed spending and conducting ongoing evaluation of the projects following their completion.

413. In Exhibit B-29, BC Hydro provided updated information on six technology capital projects (over \$10 million) that it expects to undertake, or has undertaken during the fiscal 2020 to fiscal 2021 Test Period.

414. The CEC assesses the data provided in this Application and the information on technology projects is generally insufficient to determine whether or not there will be value delivered to the Utility for the expenditures.

SUPPLY CHAINS APPLICATION - SAP

415. Appendix J provides summaries of projects exceeding \$20 million.

416. BC Hydro includes the Supply Chains Application which has a capital cost of \$68 million and an Authorized Cost of \$79.3 million including capital and operating costs.²²³

²²¹ Exhibit B-29, page 2

²²² Exhibit B-29, page 2

²²³ Exhibit B-1, Appendix J page 121-122

417. The forecast in-service date in Fiscal 2020²²⁴ and was approved in BCUC Order G-158-17.

418. The Supply Chains Application project involves the ‘design and implementation of new business processes and information technology to support the acquisition of materials and services from third parties’.²²⁵ BC Hydro describes the Key Drivers as being:

- Increased operational efficiency;
- Reduced material and service costs; and
- Risk reduction.²²⁶

419. The CEC has been concerned with the cost-effectiveness of this major technology project and has provided its views in the proceedings related to the Commission’s approvals.

420. In particular, the CEC is concerned with the judgement calls and quantification of benefits, the lack of clear cost-benefit analysis, and the apparent lack of post-investment analysis reviewing the value of the project.

421. BC Hydro states that the annual recurring quantifiable benefits are expected to be \$34.8 million with \$23 million of this amount being monetized.

422. The CEC submits that it would be appropriate for the Utility to include in its Application further details as to the cost-benefit analyses, current status, and planned cost-benefit reviews.

423. The CEC submits that such information would be valuable in assessing BC Hydro’s capital expenditures and planning processes and this one in particular because the benefit analysis appeared to be inadequately conducted.

²²⁴ Exhibit B-1, Appendix J page 121-122

²²⁵ Exhibit B-1, Appendix J page 121

²²⁶ Exhibit B-1, Appendix J page 121

7.6. OTHER CAPITAL / SITE C

424. BC Hydro provided updated information regarding the Site C Project in its Evidentiary Update. There are no changes to fiscal 2020 and fiscal 2021 for the Site C Project with respect to Site C FTEs and capital expenditures.²²⁷

425. There are an additional 192 FTEs in Other Capital from fiscal 2019 RRA to fiscal 2019 forecast which relate primarily to the Site C Project.

426. Since the previous application, the Project Total Authorized Budget for Site C has increased from \$8.8 billion to \$10.7 billion.²²⁸

427. If there are any updates to the approved budget for the Site C Project during the current proceeding they would have been identified.²²⁹

428. The CEC's view of the Site C Project is that it is a long-term legacy project, which needs special attention to matching its production of electricity to the domestic needs in the province, and particular care to manage in any surplus period. These issues are active concerns every year before and after the in-service date for the project.

8. REGULATORY ACCOUNTS

429. BC Hydro currently has 29 regulatory accounts, and their use is in accordance with International Financial Reporting Standards ("IFRS"). In February 2019 the Auditor General raised concerns as to the size and extent of BC Hydro's deferral accounts.

430. BC Hydro's total net regulatory account balance peaked at \$5.9 billion in fiscal 2016. The balance is forecast to be reduced to \$3.6 billion at the end of fiscal 2019, and to \$3.2 billion at the end of fiscal 2024.²³⁰

²²⁷ Exhibit B-13, CEC 1.101.2

²²⁸ Exhibit B-6, CEC 1.27.3

²²⁹ Exhibit B-13, CEC 2.101.1

²³⁰ Exhibit B-1, page 7-2

431. The reduction of the total net regulatory account balance in fiscal 2019 arises primarily from the write-off of the balance of the Rate Smoothing Regulatory Account, pursuant to the Comprehensive Review completed in 2019.²³¹

432. As noted in BC Hydro's Application, BC Hydro previously deferred a portion of its approved revenue requirement to the Rate Smoothing Regulatory Account for collection in rates in future fiscal years. This was part of the Government of B.C.'s 2013 10 Year Rates Plan, and kept rates lower than they otherwise would have been. As a result of the Comprehensive Review, BC Hydro ceased using the Rate Smoothing Regulatory Account and wrote off the balance in the account in fiscal 2019.²³²

433. The write-off of the Rate Smoothing Regulatory Account reduces BC Hydro's forecast overall regulatory account balance at the end of Fiscal 2019 by 24%, from \$4.7 billion to \$3.6 billion. Lowering the overall regulatory account balance means lowering the amount that would be otherwise recovered from ratepayers, thus reducing rate pressures over the next five years.²³³

434. The CEC notes that the write-off of \$1.1 billion impacts BC Hydro's financial debt-to-equity ratios and that the BC government transfer of such funds from BC Hydro is not directly connected to the write-off. The CEC, on behalf of the Commercial sector, appreciates the emphasis on affordability of electricity by BC Hydro.

435. Other factors affecting the regulatory account balance include the recovery of regulatory account balances in rates based on existing recovery mechanisms, reduction to the Trade Income Deferral Account, and a credit adjustment to the Heritage Deferral Account.

436. BC Hydro provides a review of its regulatory accounts in Chapter 7 of the Application and the rationale for the application of interest to regulatory accounts.

437. BC Hydro applies interest to all regulatory accounts with the exception of:

- Non-cash regulatory accounts (such as provisions);

²³¹ Exhibit B-1, page 7-2

²³² Exhibit B-1 page 1-27

²³³ Exhibit B-1, Appendix C, Comprehensive Review of BC Hydro Phase 1 Final Report page 3

- Rate smoothing regulatory accounts;
- The Total Finance Charges Regulatory Account; and
- Regulatory accounts that capture timing differences.²³⁴

438. The CEC accepts that it is generally appropriate for BC Hydro's regulatory account balances to attract interest at BC Hydro's weighted average cost of debt in recognition that BC Hydro incurs carrying costs.²³⁵

439. BC Hydro is not seeking changes to most regulatory accounts, but requests approval of seven changes to existing regulatory accounts and to close two existing accounts. These include:

- Reduce the DARR from 5% to 0% on April 1, 2019;
- Refund the forecast fiscal 2019 net closing balance and the forecast fiscal 2020 and fiscal 2021 net additions and net interest applied to the Cost of Energy Variance Accounts over the fiscal 2020 to fiscal 2021 test period resulting in a net benefit to ratepayers of \$329 million being amortized into rates during the test period;
- Defer any variances between forecast and actual amounts related to the Biomass Energy Programs which are not eligible for deferral treatment to the Non-Heritage Deferral Account;
- Continue to defer any variances between forecast and actual dismantling costs to the Dismantling Cost Regulatory Account with interest and continue to recover the forecast account balance at the end of the test period over the next test period;
- Defer low carbon electrification expenditures to the DSM Regulatory Account, consistent with the Direction to the BCUC Respecting Undertaking Costs;
- Remove the reference to Prescribed Standards from the scope of what may be deferred to the Site C Regulatory Account, as BC Hydro has fully adopted IFRS and BC

²³⁴ Exhibit B-1, page 7-57

²³⁵ Exhibit B-1 page 7-56

Hydro can continue to defer any costs related to the Site C Project that cannot be capitalized to the Site C Regulatory Account;

- Close the Capital Project Investigation Costs Regulatory Account at the end of fiscal 2021 as its balance will be fully amortized into rates at that time; and
- Close the Rate Smoothing Regulatory Account in fiscal 2020 as the account has a zero balance.²³⁶

440. The CEC notes that the reduction in the DARR from 5% to 0% results in a significant reduction in rate increases, as discussed earlier in these submissions.

441. The CEC notes that Direction No. 7 setting the DARR at 5% was repealed, and BC Hydro is forecasting a net credit balance in the accounts for fiscal 2019. BC Hydro is proposing to amortize this balance over the test period. BC Hydro's refund will permit ratepayers to realize the benefit more immediately than if the credit were refunded through the DARR.²³⁷

442. The CEC submits that this approach is appropriate and provides some welcome relief to ratepayers that would otherwise experience a more significant rate increase.

443. The CEC has reviewed the evidence related to BC Hydro's proposed treatment of its regulatory accounts and does not have any significant concerns.

444. The CEC recommends that the Commission accept BC Hydro's proposed treatment as reasonable, conditioned on the expectation that BC Hydro will advance its Depreciation Study into the near future.

9. OTHER REVENUE REQUIREMENTS ITEMS

445. In Chapter 8 of the Application, BC Hydro reviews Other Revenue Requirements Items including:

- Amortization Expense;

²³⁶ Exhibit B-1, page 7-5 to 7-7

²³⁷ Exhibit B-1, page 7-34 to 7-35

- Return on Equity;
- Capital Structure;
- Finance Charges;
- Taxes;
- Miscellaneous Revenues;
- Inter-Segment Revenues;
- Subsidiary Net Income;
- Allocation of Business Support Costs;
- Provisions and Other;
- Accounting Policy Matters; and
- International Financial Reporting Standards.²³⁸

446. BC Hydro discusses three main issues in its Final Argument at page 203. These relate to BC Hydro's depreciation rates, BC Hydro's forecast finance charges and BC Hydro's Return on Equity.²³⁹

447. The CEC generally agrees with BC Hydro's positions on these matters.

448. The CEC recognizes that Depreciation Expense has a considerable impact on BC Hydro's financial position and should be managed to the best of BC Hydro's ability and to the extent possible to reduce depreciation charges.

449. BC Hydro has not conducted a comprehensive Depreciation Study for some time and BC Hydro has agreed to advance the next study, though it will not be completed in time for the next RRA.²⁴⁰

450. The CEC submits that BC Hydro's explanations as to the validity of its depreciation are acceptable and the CEC accepts BC Hydro's planned approach.

²³⁸ Exhibit B-1, Chapter 8

²³⁹ BC Hydro Final Argument page 203

²⁴⁰ BC Hydro Final Argument page 204

451. The CEC is concerned with respect to finance and interest charges on debt, particularly with regard to recent central bank decreases in rates, along with similar central bank policy around the world, in response to the economic impact of COVID-19. The Commission should be prepared to ask BC Hydro for adjustments with respect to these costs.

452. With regard to the matters not addressed in response to BC Hydro's Final Argument, the CEC has reviewed the evidence and has no concerns to present at this time.

10. TRANSMISSION REVENUE REQUIREMENT

453. BC Hydro addresses the Transmission Revenue Requirement ("TRR") at Part 10 of its Final Argument.

454. The TRR includes the costs associated with the transmission lines and high-voltage station equipment that are used to provide transmission service under BC Hydro's Open Access Transmission Tariff ("OATT").²⁴¹

455. BC Hydro has a TRR to be recovered in bundled rates of \$1,035.3 million in F2020 and \$1,040 million in F2021.²⁴²

456. Various costs are reviewed extensively in BCUC IR 2.160-2.168.

457. BC Hydro also responded to a number of information requests relating to the cost allocation methodology and the OATT rate design.²⁴³

458. BC Hydro states that it forecasts growth-related transmission capital expenditures using the information available; however, whether or not new transmission voltage customers proceed with their proposed projects and interconnections, as well as the timing of these interconnections, is highly uncertain.²⁴⁴

²⁴¹ BC Hydro Final Argument page 211

²⁴² Exhibit B-13, BCOAPO 2.149.1

²⁴³ BC Hydro Final Argument page 212

²⁴⁴ Exhibit B-13, BCOAPO 2.137.2

459. However, in Panel IR 2.8.2, BC Hydro compares the methodologies used in the RRA against those used in its 2016 Cost of Service Study (“**COSS**”). It appears that Fiscal 2020 to Fiscal 2021 TRR is used only to allocate transmission capacity costs to the OATT Rates for recovery from OATT customers in the test period whereas the COSS considered a much broader set of costs.²⁴⁵

460. In the Application, BC Hydro states that:

“Consistent with past practice, current operating costs and provisions are directly assigned or allocated to the transmission function based on cost causation.”²⁴⁶

461. However, in Panel IR 2.8.2 BC Hydro compares the methodologies used in the RRA against those used in its 2016 COSS. It appears that Fiscal 2020 to Fiscal 2021 Transmission revenue requirements is used only to allocate transmission capacity costs to the OATT Rates for recovery from OATT customers in the test period whereas the COSS considered a much broader set of costs.²⁴⁷

462. The CEC is concerned that the OATT rate may not be recovering its full cost of service.

463. The CEC recommends that the Commission consider carefully whether or not the cost allocation methodology and calculation of OATT rates could be modified to reflect the full cost of service at this time, and request BC Hydro to provide an estimate of the potential changes if the calculation were undertaken using the COSS methodology.

464. In the interim, the CEC recommends that the Commission approve the TRR.

11. DEMAND SIDE MANAGEMENT

465. BC Hydro is seeking acceptance pursuant to section 44.2 of the *Utilities Commission Act* of its traditional DSM expenditure schedule as set out in Table 10-1 of the Application and as amended in the Evidentiary Update.

²⁴⁵ Exhibit B-13, BCOAPO 2.137.2

²⁴⁶ Exhibit B-1, page 9-10

²⁴⁷ Exhibit B-31, Panel 2.8.2

466. BC Hydro’s traditional DSM expenditure schedule consists of traditional DSM expenditures of \$90.8 million in fiscal 2020 and \$89.1 million in fiscal 2021. The expenditures are described in detail in the Fiscal 2020 to Fiscal 2022 Demand Side Management Business Plan in Appendix X of the Application (the “**DSM Plan**”).^{248 249}

467. BC Hydro stated in the Oral Hearing that it does not know the timing of when a DSM expenditure schedule will be brought forward for Fiscal 2022 and subsequent years.²⁵⁰

468. However, Appendix X of the Application provides some detail in Table 6 as provided below.

469. BC Hydro is also unable to say what the impact of a lower LRMC will have on DSM planning.²⁵¹

Table 6 Demand Side Management Expenditure Summary (\$ million)

	F2020 Plan	F2021 Plan	F2022 Plan	Total
Codes and Standards	5.2	5.3	5.4	16.0
Rate Structures	0.5	0.5	0.5	1.4
Programs				
Residential	18.4	19.7	21.0	59.1
Commercial	18.9	17.5	17.2	53.7
Industrial	26.5	26.9	26.3	79.7
Total Programs (excluding TMP)	63.7	64.1	64.6	192.4
Capacity-focused	6.9	4.3	0	11.1
Supporting Initiatives	14.6	14.9	15.0	44.4
Total	90.8	89.1	85.5	265.4
Thermo-Mechanical Pulp	0	27.2	0	27.2
Total with Thermo-Mechanical Pulp	90.8	116.2	85.5	292.6

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²⁴⁸ BC Hydro Final Argument page 216

²⁴⁹ Exhibit B-11. The Evidentiary Update reduces BC Hydro’s DSM expenditure schedule by \$27.2 million in fiscal 2021 from \$116.3 million to \$89.1 million because two projects that BC Hydro expected to proceed under the Thermo-Mechanical Pulp Program did not submit applications by the required deadline. This update was first provided in Exhibit B-5, BCUC IR 1.182.1.

²⁵⁰ Transcript Volume 14 page 2643

²⁵¹ Transcript Volume 14, page 2649

²⁵² Exhibit B-1, Appendix X, page 16, Table 6

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Table 7 New Incremental Energy Savings and Associated Capacity Savings

	F2020 Plan	F2021 Plan	F2022 Plan
New Incremental Energy Savings (GWh/yr)			
Codes and Standards	356	411	282
Rate Structures	117	118	114
Programs			
Residential	36	36	36
Commercial	59	52	44
Industrial	132	136	92
Thermo-Mechanical Pulp	0	100	0
Total Programs	227	324	172
Total New Incremental Energy Savings	700	853	568
New Incremental Associated Capacity Savings (MW)			
Codes and Standards	79	88	54
Rate Structures	14	14	13
Programs			
Residential	10	10	10
Commercial	9	8	7
Industrial	16	16	11
Thermo-Mechanical Pulp	0	12	0
Total Programs	35	46	28
Total New Incremental Capacity Savings	128	147	95

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470. BC Hydro is not professing that they are pursuing all cost-effective DSM.²⁵⁴

471. The CEC submits that the evidence has been that DSM represents a very cost-effective source of supply relative to the LRMC, and there should be no reduction in DSM spending as a result.

472. The Total Resource Cost Test (“**TRC**”) is a benefit to cost ratio that measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants and the utilities costs. If TRC is above 1 then there is a net benefit in the DSM program.

²⁵³ Exhibit B-1, Appendix A, Page 17, Table 7

²⁵⁴ Transcript Volume 14, page 2653

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Table 8 Benefit Cost Ratios and Net Levelized Costs (\$/MWh)

	Benefit-Cost Ratios		Net Levelized Costs (\$/MWh)	
	Utility Cost Test (Market Price at \$30 per MWh)	Modified Total Resource Cost Test (LRMC at \$105 per MWh)	Utility Cost Test (\$)	Total Resource Cost Test (\$)
Codes and Standards	n/a	n/a	n/a	n/a
Rate Structures	11.1	1.4	(4)	73
Programs (including TMP) ¹²	1.7	3.6	12	(11)
Total Portfolio (including TMP)	1.1	2.5	27	14

11

12 Appendix A contains more detailed cost test results and the levelized resource costs of
13 individual initiatives.

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473. BC Hydro’s DSM plan has a TRC of 2.5 on a portfolio basis and low net levelized costs in \$MWh.

474. In the CEC’s view, it would be preferable if BC Hydro did pursue more DSM up to all cost-effective DSM, particularly where there could be significant savings relative to other supply options, or where it could be pursued at a financial gain to ratepayers if below market cost.

475. The CEC submits that the proposed DSM Plan does not provide appropriate program spending for commercial customers as detailed in the section ‘Commercial Sector DSM’ below.

476. The CEC submits that DSM spending could be increased overall, and in particular should be increased for the Commercial sector.

Moderation Strategy

477. BC Hydro has been following a ‘moderation’ strategy related to DSM as a response to the energy surplus and need to limit forecast rate increases.²⁵⁶ BC Hydro states that it has

²⁵⁵ Exhibit B-1, Appendix X, Page 20, Table 8

²⁵⁶ BC Hydro Final Argument page 216

maintained a similar overall level of spending on traditional DSM as in the previous test period.²⁵⁷

478. The CEC notes that BC Hydro rates are now moderated and that there is inadequate emphasis on management of customer total bills. BC Hydro commercial customers are more concerned with the costs of electricity in bills relative to their business throughput, or the cost effectiveness of the electricity they use. Rate increases is only one component, the other is conservation and efficiency of use.

479. The CEC notes that BC Hydro is not 'required' to follow a moderation strategy, and that government policy does not dictate the moderation of DSM:

MR. P. WEAVER: Q And to confirm, it is government policy that has resulted in the current moderation of DSM investment, correct?

MR. HOBSON: A I'm not sure you would say it's just government policy. I mean, I think we went through the moderation of DSM in the last application and I think there's a range of different factors that BC Hydro looked at and traded off during that process.²⁵⁸

480. The CEC recognizes the issue of reducing load on rates, and supports BC Hydro's efforts to contain rates, but submits that the evidence is that DSM is one of the most cost-effective supply options, and indeed where the cost is below market price could be potentially be resold for profit. More importantly, BC Hydro customers can continue to reduce their bills and improve the cost-effectiveness of their energy use.

481. In the CEC's view, purchasing energy such as from IPPs at a cost near or above market, while moderating DSM spending, is not a cost-effective means of securing supply or managing rates.

482. In the last application BC Hydro examined whether or not to pursue a moderation strategy or a more aggressive level of DSM spending.²⁵⁹

²⁵⁷ BC Hydro Final Argument page 218

²⁵⁸ Transcript Volume 14, page 2645

²⁵⁹ Transcript Volume 14, page 2660

483. The utility did not undertake the same formality of process for this test period, as they were satisfied that the results would hold for the current test period as well.²⁶⁰

484. The CEC submits that this was not an especially useful decision.

485. The CEC is of the view that BC Hydro should continue to evaluate its DSM strategies in each RRA period and explicitly examine DSM availability as part of its supply options whenever these options are open for review.

486. The CEC understands that the DSM Plan will be reviewed in the next IRP which is scheduled to be developed in 2021.²⁶¹

487. The CEC points out, however, that the IRP will take some considerable time for development, and the strategies can be expected to remain in place for some time. The last IRP was completed in 2013.

488. The CEC submits that it would have been prudent to consider the potential for changes to the ‘moderation strategy’, particularly as to how it has been implemented in the Commercial sector.

Commercial Sector DSM Reductions Over Time

489. BC Hydro points out in its Final Argument that the overall level of spending for DSM is similar to that in the previous test period ‘overall’, but does not acknowledge the significant diminishment that has been occurring and is continuing to occur in the commercial sector.

490. The Commercial DSM Plan for F2020 and F2021 is \$18.9 million and \$17.5 million respectively, as provided in Table 6 of Appendix X of the Application. The F2022 Plan is for \$17.2 million.

²⁶⁰ Transcript Volume 14, page 2660

²⁶¹ Exhibit B-13, CEC 2.99.2

Table 6 Demand Side Management Expenditure Summary (\$ million)

	F2020 Plan	F2021 Plan	F2022 Plan	Total
Codes and Standards	5.2	5.3	5.4	16.0
Rate Structures	0.5	0.5	0.5	1.4
Programs				
Residential	18.4	19.7	21.0	59.1
Commercial	18.9	17.5	17.2	53.7
Industrial	26.5	26.9	26.3	79.7
Total Programs (excluding TMP)	63.7	64.1	64.6	192.4
Capacity-focused	6.9	4.3	0	11.1
Supporting Initiatives	14.6	14.9	15.0	44.4
Total	90.8	89.1	85.5	265.4
Thermo-Mechanical Pulp	0	27.2	0	27.2
Total with Thermo-Mechanical Pulp	90.8	116.2	85.5	292.6

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491. The CEC provides the following table illustrating the significant reductions in DSM spending accruing to Commercial customers since F2014.

	BC Hydro DSM Program Spending by Rate Class (\$M) (excl. TMP)										
	F2014(A)	F2015(A)	F2016(A)	F2017(A)	F2018(A)	F2019(F)	F2020(P)	F2021(P)	%Change F2014-F2021	F2022(P)	%Change F2014-F2022
Residential	17.6	14.2	16	12.5	11.8	14.3	18.4	19.7	10.7%	21	16%
Commercial	42.6	36.6	33.6	34.5	24.7	21.2	18.9	17.5	-143.4%	17.2	-148%
Industrial	36.1	45.7	64.8	23.2	20.5	26.8	26.5	26.9	-34.2%	26.3	-37%
Total	96.3	96.5	114.4	70.2	57	62.3	63.8	64.1	-50.2%	64.5	-49%

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F20xx = Fiscal 20xx

(A)= Actual

(F)= Forecast

(P) = Planned

492. As illustrated above, BC Hydro anticipates an overall reduction in DSM spending of about \$32 million, or 50% between F2014 and F2021. The spending reduction is expected to roughly stabilize in F2022.²⁶⁴

²⁶² Exhibit B-1, Appendix X, page 16, Table 6

²⁶³ Derived from Exhibit B-1, Appendix X, Table 6 and Exhibit B-6, CEC 1.80.2 Attachment 1 and Gjoshe 1.14.2

493. In contrast, commercial spending is planned to be 143% lower in F2021 than it was in F2014, and the spending is planned to decline further by an additional 4% in F2022.

494. In CEC 1.80.1, the CEC inquired as to why Commercial program spending declined from \$33 million in F2016 to \$24 million in F2018.

495. BC Hydro stated:

“BC Hydro’s continuation of the moderation strategy for fiscal 2017 to fiscal 2019 as outlined in the Previous Application included a planned decline in commercial program spending. As explained in BC Hydro’s response to CEC IR 1.111.3 in the Previous Application, reductions to commercial spending were planned to take effect in fiscal 2018 and fiscal 2019. The decline did not occur immediately in fiscal 2017 due to a spike in activity in response to the announced changes to the commercial program offers.”²⁶⁵

496. The CEC submits that the continuous reductions in DSM spending for the commercial class are clearly of concern to commercial customers, who are adjusting their plans to account for the loss of opportunities.

497. BC Hydro’s current proposal represents a decrease in program spending of an additional 30% from F2018 to F2021.

498. The CEC submits that changes in DSM program spending in the test period should recognize the significant reductions already experienced by commercial ratepayers over the last 5 years and should be adjusted to halt the continuous decline in commercial spending.

499. The CEC notes that the historical and planned reductions to DSM spending as part of the ‘moderation strategy’ have not been equivalently allocated amongst rate classes.

500. BC Hydro proposes an increase of 10.7% for residential DSM program spending in F2021 relative to F2014 Actuals, with an additional 5% planned in F2022. This increase includes an \$8 million boost, or about 55%, in spending from F2018 to F2021.

²⁶⁴ BC Hydro does not know the timing of when a DSM expenditure schedule will be brought forward for Fiscal 2022 and subsequent years (Transcript Volume 14 page 2643)

²⁶⁵ Exhibit B-6, CEC 1.180.1

501. Industrial spending is planned to decline by 34% from F2014 to F2021, and to further decline by an additional 3% in F2022. Anticipated F2021 spending represents a \$7 million increase, or about a 31% increase relative to F2018.

502. BC Hydro removed funding for Thermo Mechanical Pulp (“**TMP**”) because the program has been completed and there are no additional plans beyond the test period.²⁶⁶

503. The CEC does not find a good rationale for the significant encroachment on Commercial rate sector DSM spending.

504. Mr. Hobson confirms that there is a greater impact on revenues from having commercial conservation but does not acknowledge that this is one of the reasons for the greater moderation of commercial DSM. He points to taking a look at the offering in the last application and identifying what funding was required to move the projects ahead.²⁶⁷

“The mix of projects that customers submitted under the leaders in energy management program had lower costs, and therefore lower incentive levels associated with the implementation of the energy efficiency measures that was originally planned.”²⁶⁸

505. Mr Hobson considers this to be a ‘good news story’ in that they are able to achieve the project at a different incentive level.²⁶⁹

506. The CEC submits that it is reasonable to interpret this as demonstrating that commercial customers are highly incented by the opportunities for savings, which is logical given the high rates paid relative to their cost of service.

507. The CEC submits that when faced with higher than expected responses at lower than expected cost, it would be appropriate for BC Hydro to expand its DSM objectives for the spending rather than curtailing spending.

²⁶⁶ Transcript Volume 14 page 2636

²⁶⁷ Transcript Volume 14, page 2647

²⁶⁸ Exhibit B-13, CEC 2.131.2

²⁶⁹ Transcript Volume 14, page 2668

508. Mr. Weafer inquired as to the reason BC Hydro deferred or cancelled various supporting activities in sector enabling activities.²⁷⁰

509. Mr. Hobson noted the moderation strategy and the extended impact with various trade allies as a result of those changes. He suggested that education etc. would be continued but:

“...it’s not like we would take the time that we would use for education and double it in the next period or anything like that. So I don’t think it would have that kind of an effect going forward.”²⁷¹

510. BC Hydro’s support of the commercial new construction market through codes and standards activities will likely take a considerable amount of time for the effects to be realized.

511. In the CEC’s submission, commercial customers have been unreasonably singled out to receive increased reductions in DSM spending relative to the other rate classes and have borne the brunt of the DSM ‘moderation’ strategy over a long period of time.

512. The CEC submits that the ‘moderation’ strategy can be more reasonably characterized as a ‘severe reduction’ strategy for the commercial rate classes, resulting in an effective transfer of DSM spending to the other rate classes.

513. Instead, spending should be increased in the commercial sector to advance the implementation of cost-effective compliance with new codes and standards for energy efficiency.

514. Integrated systems programs have a TRC of 3.6. Mr. Weafer inquired if this means that there is likely more cost effective DSM available, however Mr. Hobson stated that:

MR. HOBSON: A In itself it doesn’t necessarily indicate that there would be more, just because the ratio is high. But I think we would agree that there are further cost effective opportunities available based on a TRC at \$105.²⁷²

²⁷⁰ Transcript Volume 14, page 2669

²⁷¹ Transcript Volume 14, page 2669

²⁷² Transcript Volume 14, page 2652

515. BC Hydro is not professing to be pursuing all cost effective DSM from a TRC perspective, and certainly not at \$105.²⁷³

516. The actuals are coming in under plan.²⁷⁴

Underspending

517. In addition to significantly reducing its planned spending over time, BC Hydro has had significant underspending in its DSM allocations since F2014.

518. BC Hydro provides the following historical planned and actual spending in CEC 1.80.2:

²⁷³ Transcript Volume 14, page 2652

²⁷⁴ Transcript Volume 14, page 2655

Expenditures since Fiscal 2014 (\$ 000)

	F2014 Plan	F2014 Actual	F2015 Plan	F2015 Actual	F2016 Plan	F2016 Actual	F2017 Plan	F2017 Actual	F2018 Plan	F2018 Actual
Codes and Standards										
Residential	-	-	-	-	-	-	-	-	-	-
Commercial	-	-	-	-	-	-	-	-	-	-
Industrial	-	-	-	-	-	-	-	-	-	-
Total Codes and Standards	2,661	1,628	3,998	3,071	6,095	4,688	4,740	5,057	4,833	4,707
Rate Structures										
Residential Inclining Block Rate	720	302	841	314	517	506	500	527	300	271
General Service Rate	696	400	892	521	421	487	-	-	-	-
Transmission Service Rate	831	300	844	400	740	300	747	285	720	283
Total Rate Structures	2,047	1,011	1,977	1,238	1,678	1,302	1,247	702	1,020	553
DSM Programs										
<i>Residential Sector</i>										
Behaviour	5,772	4,112	3,613	2,770	4,616	3,236	3,933	2,176	3,180	1,830
Refrigerator Buy-back	2,483	2,230	1,239	934	1,308	1,188	-	0	-	(0)
Low Income	2,852	2,185	2,478	1,925	2,517	2,425	2,535	2,800	2,807	3,542
New Home	2,040	2,706	2,200	2,718	2,114	1,255	-	(128)	-	1
Retail	4,602	4,063	4,023	4,011	3,887	4,712	3,408	4,658	2,331	2,026
Home Energy Retrofit Offer	1,293	1,284	2,940	972	3,214	2,241	2,425	2,248	2,807	2,801
Sector Enabling Activities	1,303	1,013	1,240	874	1,241	973	834	677	851	812
Residential Sector Total	20,224	17,582	17,734	14,202	18,676	16,030	13,135	12,519	11,775	11,810
<i>Commercial Sector</i>										
Leaders in Energy Management - Commercial	40,191	33,784	29,578	26,394	31,400	25,159	31,348	25,060	20,950	15,221
New Construction	8,369	7,672	8,784	9,011	7,416	7,360	11,549	8,781	8,507	8,901
Sector Enabling Activities	1,238	1,176	1,127	1,345	1,174	1,069	1,000	682	1,020	591
Commercial Sector Total	49,822	42,631	39,487	36,650	39,990	33,609	43,898	34,513	29,877	24,714
<i>Industrial Sector</i>										
Leaders in Energy Management - Transmission	36,354	20,437	20,577	28,298	23,462	18,771	16,061	14,385	18,206	14,050
Thermo-Mechanical Pulp	n/a	n/a	-	134	10,588	19,657	-	133	14,700	(1,900)
Leaders in Energy Management - Distribution	12,307	10,126	12,152	13,505	11,850	10,807	9,779	8,152	9,821	7,758
Load Displacement	7,080	4,537	21,321	2,919	8,344	14,481	-	-	-	-
Sector Enabling Activities	1,228	1,003	1,233	853	1,236	968	814	523	816	582
Industrial Sector Total	57,068	36,103	64,283	45,708	62,459	64,774	26,674	23,173	43,543	20,486
Total Programs	127,114	96,317	121,483	98,560	121,325	114,412	83,707	79,204	85,195	57,012
Supporting Initiatives										
Public Awareness ¹	11,738	11,158	10,008	9,688	9,985	8,838	8,872	8,709	8,936	8,900
Advanced DSM Strategies ²	2,712	1,940	1,871	984	n/a	n/a	n/a	n/a	n/a	n/a
Information Technology	-	-	225	-	-	-	n/a	n/a	n/a	n/a
Indirect and Portfolio Enabling	8,233	8,200	8,731	8,470	8,443	7,278	7,186	6,178	7,284	6,075
Supporting Initiatives Total	22,684	21,298	20,834	19,142	18,429	16,116	14,037	12,977	14,220	13,074
ENERGY EFFICIENCY PORTFOLIO TOTAL	154,506	120,282	148,293	120,009	147,526	136,517	103,732	89,031	105,269	75,436
Capacity Focused DSM	-	28	2,430	4,742	3,102	8,644	9,988	8,377	14,236	6,868
PORTFOLIO TOTAL, EE & CF DSM	154,506	120,280	150,723	124,751	150,629	145,162	113,720	97,408	119,505	82,304

Notes:
¹Public Awareness and Education also includes community engagement supporting initiative costs.
²From F2016 Advanced DSM Strategies is included in Codes and Standards.

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519. The CEC provides the following summary of the above for Total DSM spending:

	BC Hydro Underspending (\$)				
	F2014	F2015	F2016	F2017	F2018
Planned Spending	154506	150723	150629	113720	119505
Actual Spending	120280	124751	145162	97408	82304
Difference	34226	25972	5467	16312	37201
Percent Under	22%	17%	4%	14%	31%

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²⁷⁵ Exhibit B-6, CEC 1.80.2 Attachment 1

²⁷⁶ Derived from Exhibit B-6, CEC 1.80.2

520. In Fiscal 2014 the plan was for \$49.822 million, of which only \$42.6 million was spent. By Fiscal 2018 the plan for spending was for \$29.877 million with actual spending at \$24.714 million, more than \$5 million, or about 18%, lower than intended.²⁷⁷

521. Mr. Hobson states that for F2020 BC Hydro is tracking quite well in spending the allocations.²⁷⁸

522. In the CEC's opinion, consistent underspending year after year is not appropriate. At a minimum, BC Hydro should be at least spending what is planned under its 'moderation' strategy, particularly when it is well aware of additional opportunities for cost-effective expenditure.

523. In light of the consistent underspending, the CEC recommends that the Commission focus attention on the lost customer benefit in terms of reduced bills; when there is additional cost-effective conservation and efficiency to be supported and advanced, the loss of opportunity is significant.

524. The CEC reiterates that the R:C ratio for commercial ratepayers is significantly above unity.

525. In light of the substantial discrimination being experienced by the commercial sector in multiple areas of BC Hydro planning, the ongoing reductions experienced by the commercial rate class since F2014 and the proposed reduction in the current DSM proposal the CEC recommends that the Commission deny the proposed DSM plan and recommend that BC Hydro reallocate its spending to provide increased opportunities for cost-effective advancement of conservation and efficiency for BC Hydro's customers, including but not limited to the commercial rate classes.

Low Carbon Electrification ("LCE")

526. BC Hydro's LCE expenditures are described in the Low Carbon Electrification Program in Appendix Y of the Application, and updated in Attachment 1 to BCUC Panel IR 2.18.2.²⁷⁹

²⁷⁷ Transcript Volume 14, page 2655

²⁷⁸ Transcript Volume 14, page 2656

²⁷⁹ BC Hydro Final Argument page 216

527. BC Hydro’s objectives for the LCE expenditures and activities in the test period include:

- Supporting the Government of B.C.’s climate change objectives by helping our customers to reduce their greenhouse gas emissions;
- Assisting our customers in pursuing low carbon electrification opportunities that:
 - Increase revenue from additional electricity consumption to reduce pressure on rates over the energy surplus period; and
 - Reduce their greenhouse gas emissions;
- Assessing customer response to our program offers and gaining experience with new technologies to help us understand potential barriers that customers and BC Hydro may face when developing and advancing low carbon electrification alternatives; and
- Acting early to capture time-sensitive opportunities.²⁸⁰

528. Table 10-10 of Chapter 10 of the Application represent forecast and committed expenditures from the Initial LCE Projects as well as forecast expenditure from the BC Hydro LCE program.

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

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²⁸⁰ Exhibit B-6, BCUC 1.54.1

529. The BC Hydro LCE program expenditure was planned to cover activities beginning in fiscal 2019 and carrying through fiscal 2020, which could include commitments to customers in fiscal 2020 where the project would not be completed until fiscal 2021 or fiscal 2022. There are no further expenditures planned beyond activities and commitments in 2020.²⁸²

530. Total program expenditures anticipated in the original table was \$2.36 million and actual expenditures in 2019 were less than \$500,000.²⁸³

531. The expenditures are considered to be prescribed undertakings pursuant to section 18 of the *Clean Energy Act* and section 4 of the *Greenhouse Gas Reduction Regulation*.

532. The CEC has reviewed the evidence and BC Hydro's position and accepts that the projects are prescribed undertakings and therefore recoverable in rates.

533. BC Hydro is also requesting approval to defer its LCE expenditures over the Test Period to the DSM Regulatory Account, as per the Direction to the BCUC Respecting Undertaking Costs.

Capacity-Focused DSM

534. BC Hydro is doing work on capacity-focused DSM which addresses all customer classes.²⁸⁴ This includes a range of different activities including substation pilots and designed to try to understand if capacity constraints can be alleviated within particular geographic areas.²⁸⁵

Long Range Marginal Cost ("LRMC")

²⁸¹ Exhibit B-1, page 10-26

²⁸² Exhibit B-6, BCUC 1.40.2

²⁸³ Transcript Volume 14, page 2611

²⁸⁴ Transcript Volume 14, page 2629-2630

²⁸⁵ Transcript Volume 14, page 2629

535. BC Hydro expects to update its LRMC as part of the next IRP. BC Hydro has provided some preliminary assessment of inputs to a potential future look at LRMC determination:

**LRMC Value that results in Total Resource Cost Benefit
Cost Ratio (excluding Non-Energy Benefits) = 1.0¹**

	LRMC (Levelized \$ per MWh)
Rate Structures	
Residential Inclining Block Rate	n/a
General Service Rate	n/a
Transmission Service Rate	<u>72</u>
Total Rate Structures	72
DSM Programs	
<i>Residential Sector</i>	
Low Income ²	(27)
Non Integrated Areas ³	164
Retail	(4)
Home Renovation Rebate	<u>51</u>
<i>Residential Sector Total⁴</i>	16
<i>Commercial Sector</i>	
LEM-C	33
New Construction	<u>35</u>
<i>Commercial Sector Total</i>	33
<i>Industrial Sector</i>	
LEM-I	27
Thermo-Mechanical Pulp	<u>33</u>
<i>Industrial Sector Total</i>	29
Total Programs⁴	28
Energy Management Activities	n/a
Supporting Initiatives	n/a
Codes & Standards	n/a
PORTFOLIO TOTAL^{4,5}	46

Notes:

1. Benefit-cost ratios are based on expenditures and energy savings from fiscal 2020 to fiscal 2022 activities.
2. Low Income value includes 40 per cent Non-Energy Benefits.

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536. Cost of wind is expected to be between \$54/MWh and \$80/MWh; which is less than the LRMC used in the Application.²⁸⁷

²⁸⁶ Exhibit B-5, BCUC 1.175.2

²⁸⁷ Transcript Volume 14, page 2649

Both of the above cost estimates fall within our preliminary assessment of the range for wind costs. Given this, the value that equates the program and portfolio total TRC to 1.0, as calculated in our response to BCUC IR 1.175.2 (i.e. \$51/MWh), is likely below an amount that represents the cost of acquiring electricity generated from clean or renewable resources in British Columbia.

BC Hydro plans to update the LRMC in our next Integrated Resource Plan.

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12. RATE FAIRNESS AND REBALANCING

537. Commercial energy consumers pay a disproportionate amount for their electricity relative to their costs.

538. As demonstrated in the table below, GS<35kW were paying 123.6% of their costs in F2017. Similarly, MGS customers were paying 115.1% of their costs and LGS customers were paying 103.9% of their costs.

Rate Class	Revenue to Cost Ratios				
	F2014 Actual (%)	F2016 Forecast (%)	F2016 Actual (%)	F2017 Actual (%)	Percentage Point Change (F2016 Actual to F2017 Actual) (%)
Residential	92.9	93.3	90.8	93.2	2.4
GS < 35 kW	123.5	111.9	122.6	123.6	1.0
MGS	119.5	117.2	123.5	115.1	-8.4
LGS	101.5	101.3	103.9	103.9	0.0
Irrigation	90.3	87.6	95.1	89.5	-5.6
Street Lighting – BC Hydro Owned	129.4	173.6	183.6	198.4	14.8
Street Lighting – Customer Owned		104.8	101.8	95.1	-6.7
Transmission	97.3	102.6	98.8	95.4	-3.4
Total	100.0	100.0	100.0	100.0	100.0

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²⁸⁸ Exhibit B-5, BCUC 1.175.3

²⁸⁹ BC Hydro F2017 FACOS February 14, 2019. Appendix B BC Hydro Cost of Service Study

539. In contrast, BC Hydro's residential customers are recovering about 93.2% of the cost of serving them, irrigation customers recover about 89.5% of their cost, and Transmission customers recover about 95.4%. Customer-Owned street lighting only recovers 95.1% of their costs.

540. BC Hydro-owned street lighting is the only other rate class that recovers more than its cost of service.

541. The CEC submits that inequitable contribution to revenues based on costs between rate classes is fundamentally unfair, particularly to the extent it is ongoing to the point of becoming a seemingly permanent subsidization from one rate class to another.

542. The CEC does not accept a 'range of reasonableness' of 5%²⁹⁰ as being 'fair', even though this has been accepted by the Commission in other applications relating to revenue to cost ratios.²⁹¹

543. Nevertheless the CEC submits that R:C ratios exceeding 5% difference from unity become particularly unfair, and egregiously so when it is compounded over time. In the CEC's view, the current R:C ratios -particularly for the SGS and MGS rate classes - are especially unfair.

544. The CEC is appreciative that the last time rate rebalancing was possible the Commission narrowed the range of reasonableness and the CEC appreciates this improvement.

545. The CEC submits it has been a significant period of time since rate rebalancing was considered seriously and the CEC expects Commercial sector over-collection is currently tracking to remain unbalanced for some time to come.

546. The CEC recognizes that the current Application does not contemplate any review of R:C ratios.

²⁹⁰ Revenue to Cost ratios are developed using the best available information which consistently forms the basis for decision-making in utility analysis. In the CEC's view it is unreasonable to dismiss the credibility of information in this one instance while relying on it for many other purposes.

²⁹¹ BCUC Order G-4-18 Appendix D to FEI 2016 Rate Design Decision page 2 of 2

547. The BC Hydro Comprehensive Review states:

“.. to minimize rate increases for BC Hydro’s approximately 1.8 million residential accounts, the government will continue to prohibit the BCUC from rebalancing BC Hydro’s rates for Fiscal 2020 and Fiscal 2021 through regulation, since a near- term rebalancing of BC Hydro’s rates could conflict with government’s commitment to keep life affordable for British Columbians. The decision to prohibit rate rebalancing is a matter of public policy.”[emphasis added]²⁹²

548. This was effected in Direction No. 8 to the BCUC, issued by the government on February 14, 2019, which prohibited rate rebalancing for Fiscal 2020 and Fiscal 2021.

In setting rates for the authority for F2020 and F2021, the commission must not set rates for the purpose of changing the revenue-cost ratio for a class of customers.²⁹³

549. Similarly, section 58.1(7) of the *Utilities Commission Act* states:

“(7) The commission may 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.”²⁹⁴

550. Despite the current prohibitions, the CEC submits it would be inappropriate to ignore continued unfairness between rate classes.

551. For instance, the CEC notes that other programs and services are also not evenly distributed between rate classes.

552. As discussed elsewhere in these submissions, DSM program spending for commercial customers has been reduced in this Application, while residential DSM program spending has been increased to the detriment of the commercial rate class. Such programming could be revised to be more equitable without being considered rate ‘rebalancing’.

553. BC Hydro’s Evacuation Relief Tariff Amendment application excludes Medium and Large General Service customers from the proposed relief.²⁹⁵ Such tariffs could be modified to

²⁹² Exhibit B-1, Appendix C, Comprehensive Review of BC Hydro Phase 1 Final Report page 19

²⁹³ Direction No. 8 to the BCUC, B.C. Reg. 24/2019, s.5.

²⁹⁴ *Utilities Commission Act*, RSBC 1996 c 473, s 58.1(7)

include Medium and Large General Service customers without being considered rate rebalancing.

554. BC Hydro's COVID-19 relief has preferentially been focused on residential and small businesses, leaving large commercial operations with only deferral options. Such relief can and should be extended to Large General Service customers and would not be considered rate rebalancing.

555. BC Hydro has made little to no effort to provide for a Freshet rate for commercial customers and does not currently have any plans to implement a Freshet energy rate for commercial customers.²⁹⁶ A freshet rate could be developed without being considered rate rebalancing.

556. The CEC submits that the evidence is that there are continuous and encompassing discriminatory practices against the general service rate class by BC Hydro.

557. Commercial customers contribute significant load and revenues to BC Hydro. In the CEC's view, commercial customers seem to be treated as a funding source for a variety of programs benefitting other rate classes while the commercial sector is unduly denied the benefits of these programs.

558. The CEC submits that this is an illogical and inappropriate approach amounting to killing the goose that lays the golden egg, and is counter to the provincial government's strategic goals of 'helping businesses thrive' and building 'a strong, sustainable economy.'²⁹⁷

559. Ongoing and systemic discrimination against the commercial sector is harmful to this rate class particularly during the current pandemic. Even in normal operating conditions, these conditions can potentially undermine the business sustainability of the commercial sectors, and ultimately the affordability of rates for all customers.

²⁹⁵ BC Hydro, FortisBC Energy Inc. and FortisBC Inc. Evacuation Relief Tariff Amendment Application Exhibits B-1 and B1-4

²⁹⁶ Exhibit B-6, CEC 1.90.1

²⁹⁷ Making Life Better Budget 2019

560. If the BCUC were to rebalance rates to address this discrimination, annual rate increases for residential customers for Fiscal 2020 could be up to 2.2% higher than currently forecast rate increases. At the same time, rates for commercial customers would decrease and industrial rates would remain approximately the same.²⁹⁸

561. While the CEC understands that rebalancing is not an option at this time, the CEC submits that the persistently unfair treatment of commercial ratepayers should be mitigated to the extent possible and as quickly as possible, including through the expansion of programs with reduced expenditure benefits to commercial ratepayers, such as DSM, and those not currently available to MGS and LGS commercial customers, such as COVID-19 customer bill relief.

562. The CEC submits that eligibility discrimination is evident in this Application and appears to be continuing.

563. The CEC recommends that the BCUC:

- explicitly recognize the concern with existing and ongoing discrimination imbalance in its Decision in this matter;
- direct BC Hydro to consult with the CEC in regard to addressing an appropriate balance, including for DSM programming, development of a Freshet rate, increased COVID-19 related relief, evacuation relief and any other programs and services that could suitably be provided to the commercial rate class.

13. PERFORMANCE BASED REGULATION

564. BC Hydro provides an examination of Performance Based Regulation (“**PBR**”) in Chapter 11 of its Application.

565. As noted in its overview, PBR is a ‘different approach to regulation’ which is premised on a profit incentive.²⁹⁹

²⁹⁸ Comprehensive Review page 19

²⁹⁹ Exhibit B-1, page 11-8

566. The CEC agrees with BC Hydro that cost of service regulation should be given time to work, and that PBR may be less palatable given that the return to enhanced regulation is so recent.

567. In the CEC's view, formulaic ratemaking generally relies on the premise that business will continue to operate as usual. Exogenous factors and off-ramps are generally established to address situations in which unexpected activities occur. The CEC notes that such formulaic revenue requirement rate setting can be done appropriately in cost of service regulation.

568. Further to the recent COVID-19 pandemic, the CEC submits that spending and revenues are currently in a very uncertain position.

569. The CEC submits it would be inappropriate to consider PBR ratemaking at this time and the further that the type of PBR for which FortisBC is advocating is inappropriate for BC Hydro.

570. The CEC recommends that the Commission defer any consideration of PBR until at least the next Revenue Requirements Application, when the effects of the pandemic are better understood.

571. More importantly, the CEC recommends that the Commission direct BC Hydro to consider what formulaic forecasting of its costs can be developed for consideration in its next revenue requirements application but preclude the need for BC Hydro to address the type of PBR FortisBC is putting before the Commission.

14. COMMISSION QUESTIONS

572. The Panel requests that parties' final arguments include its position and rationale for the following:³⁰⁰

- A) Whether the Peace Region Electric Supply project meets the requirements to be considered a prescribed undertaking under section 18 of the *Clean Energy Act*, pursuant to section 4(2) of the *Greenhouse Gas Reduction (Clean Energy) Regulation*;

³⁰⁰ Exhibit A-31, page 1

- B) Whether the Minette Station to LNG Canada Interconnection project meets the requirements of the *Transmission Upgrade Exemption Regulation*, as amended by B.C. Reg. 160/2018, to exempt the project from Part 3 of the *Utilities Commission Act*; and
- C) Whether British Columbia Hydro and Power Authority's investments in electric vehicle charging infrastructure should be included in rate base during the current test period and recovered from ratepayers or be separately tracked and excluded from rate base until the British Columbia Utilities Commission directs otherwise, given the developing landscape of the electric vehicle charging stations market in BC.

Question 1 - Peace Region Electric Supply (PRES) Project

Whether the Peace Region Electric Supply project meets the requirements to be considered a prescribed undertaking under section 18 of the Clean Energy Act, pursuant to section 4(2) of the Greenhouse Gas Reduction (Clean Energy) Regulation.

573. The PRES Project will construct two 58 km long 230 kV transmission lines between South Bank substation and Shell Groundbirch substation in the Peace Region, with a new 230 kV switchyard at South Bank substation including transformation and expanding Shell Groundbirch substation to terminate the new transmission lines in the station.³⁰¹

574. While the key drivers of the PRES Project are 'reliability and reputational'³⁰² in that it is needed to serve load growth,³⁰³ the PRES Project will also enable the electrification of natural gas production, processing and compression in that area.³⁰⁴

575. BC Hydro confirms that the project is not specifically identified in Order In Council ("OIC") 101, BC Hydro states that the PRES project satisfies the two criteria in OIC 101 for a project to be considered a Prescribed Undertaking - as established in s.4(2) of the *Greenhouse*

³⁰¹ Exhibit B-1, Appendix J, page 71

³⁰² Exhibit B-5, BCUC 1.119.1

³⁰³ Exhibit B-5, BCUC 1.119.1

³⁰⁴ BC Hydro Final Argument page 141

Gas Reduction (Clean Energy) Regulation - and provides evidence supporting its position in BCUC 1.119.2.³⁰⁵

576. The CEC has reviewed BC Hydro's position and agrees with BC Hydro.

577. The relevant statutory definition and associated test for a "prescribed undertaking" is as follows under the *Clean Energy Act* and *Greenhouse Gas Reduction (Clean Energy) Regulation*:

Clean Energy Act

Greenhouse gas reduction

18 (1) In this section, "**prescribed undertaking**" means a project, program, contract or expenditure that is in a class of projects, programs, contracts or expenditures prescribed for the purpose of reducing greenhouse gas emissions in British Columbia.

(2) In setting rates under the *Utilities Commission Act* for a public utility carrying out a prescribed undertaking, the commission must set rates that allow the public utility to collect sufficient revenue in each fiscal year to enable it to recover its costs incurred with respect to the prescribed undertaking.

(3) The commission must not exercise a power under the *Utilities Commission Act* in a way that would directly or indirectly prevent a public utility referred to in subsection (2) from carrying out a prescribed undertaking.

(4) A public utility referred to in subsection (2) must submit to the minister, on the minister's request, a report respecting the prescribed undertaking.

(5) A report to be submitted under subsection (4) must include the information the minister specifies and be submitted in the form and by the time the minister specifies.³⁰⁶

Clean Energy Act

Greenhouse Gas Reduction (Clean Energy) Regulation, section 4(2)

³⁰⁵ Exhibit B-5, BCUC 1.119.2

³⁰⁶ *Clean Energy Act*, SBC 2010, c 22, s 18.

(2) A public utility's undertaking that is in a class defined as follows is a prescribed undertaking for the purposes of section 18 of the Act:

(a) for the purpose of reducing greenhouse gas emissions in British Columbia, the public utility constructs or operates an electricity transmission or distribution facility, or provides for temporary generation until the completion of the construction of the facility, in northeast British Columbia primarily to provide electricity from the authority to

(i) a producer, as defined in section 1 (1) of the Petroleum and Natural Gas Royalty and Freehold Production Tax Regulation, B.C. Reg. 495/92, or

(ii) an owner or operator of a natural gas processing plant;

(b) the public utility reasonably expects, on the date the public utility decides to carry out the undertaking, that the facility will have an in-service date no later than December 31, 2022.³⁰⁷

578. The CEC submits that a reasonable statutory interpretation of section 18 of the *Clean Energy Act*, pursuant to section 4(2) of the *Greenhouse Gas Reduction (Clean Energy) Regulation* supports the inclusion of the PRES Project as a prescribed undertaking for the reasons outlined in BC Hydro's Final Argument at pages 140-143.

579. In particular the CEC finds that:

1. The PRES Project meets the intention to reduce greenhouse gases

580. The PRES Project will reduce greenhouse gas emissions by constructing an electricity transmission facility which will provide reliable electricity supply to new gas processing customers in northeast BC. Instead of using fossil fuels for their power supply or compression needs, these customers will now be supplied by BC Hydro when the project is in service.³⁰⁸

³⁰⁷ *Greenhouse Gas Reduction (Clean Energy) Regulation*, BC Reg 102/2012, s 4(2).

³⁰⁸ Exhibit B-5, BCUC 1.119.5

581. In the absence of the PRES Project, the new gas processing load would have no choice but to combust fossil fuels for power supply, resulting in a significant increase in greenhouse gas emissions in the province.³⁰⁹ BC Hydro estimates that the GHG reductions will be in the order of 560 tonnes of CO₂e per GWh.

582. The CEC has reviewed the evidence and agrees that absent the PRES Project there could be a significant increase in greenhouse gas emissions, and that the project can serve to reduce these emissions.

2. The project meets the geographic stipulations

583. The project is designed to enable electrification of natural gas productions, processing and compression in the South Peace Region,³¹⁰ which is located in northeastern BC.

3. The project addresses the target customer base

584. The majority of the existing and forecast load in this region is from natural gas producers,³¹¹ and will target these loads.³¹² There are a small number of customers including residential, commercial and industrial which will also be affected. Some of these customers are also gas producers.³¹³

4. The project meets the specified in-service date

585. The project has a planned in-service date of October 21, 2021, which is well before the deadline of December 31, 2022.

586. The CEC submits that in addition to the qualification as a prescribed undertaking, it appears that there are no significant elements of the project which might otherwise compromise its value.

³⁰⁹ BC Hydro Final Argument page 141

³¹⁰ BC Hydro Final Argument page 141

³¹¹ BC Hydro Final Argument page 141

³¹² BC Hydro Final Argument page 141

³¹³ Exhibit B-5, BCUC 1.119.3

587. Rather, there appears to be additional benefits in that there is increased demand for energy beyond reducing greenhouse gases; it is the most cost-effective solution identified; BC Hydro has undertaken appropriate First Nations consultation; and it will increase reliability for existing customers in the region.³¹⁴

588. BC Hydro states that the load growth in the Peace Region (particularly in the Dawson Creek and Groundbirch areas) is expected to increase by 500 MW by 2028 such that the ability of the transmission system to maintain supply to all customers and to supply the growing load under normal conditions is expected to be exceeded by fall 2021.³¹⁵

589. BC Hydro stated that the proposed project was selected as the preferred alternative because it is the most cost-effective solution that addresses the project needs.³¹⁶

590. BC Hydro has engaged with Treaty 8 First Nations on the PRES Project. First Nations input informed the route selection, the transmission line alignment and mitigations.³¹⁷

591. The CEC is satisfied that the PRES Project meets the requirements to be considered a prescribed undertaking under section 18 of the *Clean Energy Act*, pursuant to section 4(2) of the *Greenhouse Gas Reduction (Clean Energy) Regulation*.

592. The CEC recommends that the Commission accept the PRES Project as a prescribed undertaking.

Question 2 – Minette Station to LNG Canada

Whether the Minette Station to LNG Canada Interconnection project meets the requirements of the Transmission Upgrade Exemption Regulation, as amended by B.C. Reg. 160/2018, to exempt the project from Part 3 of the Utilities Commission Act.

593. BC Hydro has requested that the BCUC reconsider and vary Directive 3 of the BCUC Decision in its previous Application to remove the direction to BC Hydro to file a CPCN application for the Northwest Substation Upgrade project, which was designed to serve LNG

³¹⁴ BC Hydro Final Argument page 140-143

³¹⁵ Exhibit B-1, Appendix J, page 71

³¹⁶ Exhibit B-1, Appendix J, page 72

³¹⁷ Exhibit B-5, BCUC 1.119.7

Canada's Load Interconnection request. The original Northwest Substation Upgrade project has been cancelled due to LNG Canada splitting its load interconnection request into two phases. The new MIN to LNG Canada interconnection project facilitates the first phase of the LNG load interconnection request and includes scope items that were formerly part of the exempt Northwest Substation Upgrade Project.³¹⁸

594. The capital expenditures for the test period for the MIN to LNG Canada

595. The capital expenditures for the Test Period for the MIN to LNG Interconnection project are \$28.2 million in fiscal 2020 and \$26.6 million in fiscal 2021.³¹⁹ There are no capital additions for the MIN to LNG Canada Interconnection project in the test period.³²⁰

596. The CEC submits that reasonable statutory interpretation of the *Transmission Upgrade Exemption Regulation*, as amended by B.C. Reg. 160/2018, supports the exemption of the Minette Station to LNG Canada Interconnection project from Part 3 of the *Utilities Commission Act* for the following reasons:

1. The Project fulfills the key conditions relating to projects for LNG facilities in the District of Kitimat.

597. Section 2(2) of the *Transmission Upgrade Exemption Regulation* states that, subject to section 2(3),

the authority is exempt from Part 3 of the Act in respect of the construction or operation of a plant or system, or an upgrade or extension of either, to provide service for the following:

- (a) an LNG facility in the vicinity of the District of Kitimat;
- (b) a facility necessary for the construction of an LNG facility in the vicinity of the District of Kitimat.³²¹

³¹⁸ BC Hydro Final Argument page 138

³¹⁹ Exhibit B-5, BCUC 1.1.9

³²⁰ Exhibit B-5, BCUC 1.1.9

³²¹ *Transmission Upgrade Exemption Regulation*, BC Reg 160/2018, s 2(2).

598. BC Hydro stated the Minette to LNG Canada Interconnection project is being constructed to serve LNG Canada's phase 1 load at Kitimat. The new MIN to LNG Canada Interconnection project also includes shunt capacitors at the Minette Substation, including associated protection and control equipment.³²²

599. BC Hydro provides a discussion of the components in BCUC 1.1.2.1, 1.9.1, and 1.11.1.³²³

600. The CEC has reviewed the evidence and finds that the project components are required and the project meets the conditions in s.2(2) of the *Transmission Upgrade Exemption Regulation*.

2. The Project fulfills the conditions related to timing.

601. Section 2(3) states that:

“The exemptions under subsection (2) do not apply in respect of a plant, system, upgrade or extension that, on the date the authority decides to construct the plant, system, upgrade or extension, cannot reasonably be expected to come into service before October 1, 2025”.³²⁴

602. BC Hydro reasonably expects that the MIN to LNG Canada Interconnection project will be in service prior to October 1, 2025.³²⁵

603. The CEC has reviewed the evidence and is satisfied that the Minette Station to LNG Canada Interconnection project meets the requirements of the *Transmission Upgrade Exemption Regulation*, as amended by B.C. Reg. 160/2018, to exempt the project from Part 3 of the *Utilities Commission Act*.

604. The CEC further notes relevant First Nation interests are specific to the Haisla Nation, as the project is located in their sole traditional territory.³²⁶

³²² Exhibit B-5, BCUC 1.1.2

³²³ Exhibit B-5, BCUC 1.1.2.1, 1.9.1, and 1.11.1.

³²⁴ *Transmission Upgrade Exemption Regulation*, BC Reg 160/2018, s 2(3).

³²⁵ BC Hydro Final Argument, page 139.

605. BC Hydro has been engaged with the Haisla Nation on this project since early 2018. The Haisla Nation has reviewed the various permit applications and indicated they had no objections to the project moving forward.³²⁷

606. The Minette substation expansion area is located in a wetland; however, selection of this location avoided impacts to fish-bearing streams and seasonal wetlands that support Beaver Creek, an important salmonid habitat. BC Hydro applied for and received Water Sustainability Act approval to complete work in the wetland, and is implementing mitigation measures that include environmental monitoring, buffering of riparian habitat, and permitting for amphibian and fish salvages.³²⁸

607. The CEC submits that these are positive aspects of the project.

608. The CEC recommends that the Commission find the Minette station to LNG project to be exempt pursuant to the *Transmission Upgrade Exemption Regulation*.

Question 3 – Electric Vehicle Charging Infrastructure

Whether British Columbia Hydro and Power Authority's investments in electric vehicle charging infrastructure should be included in rate base during the current test period and recovered from ratepayers or be separately tracked and excluded from rate base until the British Columbia Utilities Commission directs otherwise, given the developing landscape of the electric vehicle charging stations market in BC.

609. In response to BCUC IRs, BC Hydro stated that net capital expenditures on EV charging infrastructure totalled \$3.5 million to 2018, with a further \$2.8 million forecast for 2019 through 2021 (below):

³²⁶ Exhibit B-5, BCUC 1.1.11

³²⁷ Exhibit B-5, BCUC 1.1.11

³²⁸ Exhibit B-5, BCUC 1.1.11

The table below details the gross and net actual capital expenditures for electric vehicle charging stations from fiscal 2013 to fiscal 2018 and the forecast for fiscal 2019:

(\$ Millions)	Actual					Forecast		Total
	F2013	F2014	F2015	F2016	F2017	F2018	F2019	
Gross Capital Expenditures	0.8	1.7	0.7	1.1	1.3	3.4	2.5	11.5
Less: Contributions in Aid	0.8	1.7	0.7	1.0	0.9	0.4	2.1	7.6
Net Capital Expenditures	0.0	0.0	0.0	0.1	0.4	3.0	0.4	3.9

The charging stations all fall into the “Batteries” asset class.

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Capital expenditures for the construction of EV fast charging stations during the fiscal 2020 and fiscal 2021 test period are identified in the table below.

	F2020 (\$ million)	F2021 (\$ million)
EV Fast Charging Station Construction	0.2	2.2

These capital expenditures are net of contributions from NRCan, the Province of B.C. and site hosts. BC Hydro continues to deploy EV fast charging stations across BC Hydro’s service territory to support CleanBC.

330

610. The CEC submits that the \$6.3 million (actual and forecast)³³¹ investment by BC Hydro in electric vehicle charging infrastructure should not be added to the rate base.

611. The CEC is of the view that all BC Hydro’s investments in electric vehicle charging infrastructure should be tracked separately and excluded from rate base.

612. As stated in the EVs Inquiry Phase 1 Report, the CEC does not agree that regulated utilities should include EV infrastructure costs in their rate base when EV service can be provided by unregulated entities in a competitive marketplace.³³²

613. The CEC submits that the costs should not be imposed on utility ratepayers,³³³ and particularly during this Test Period.

Potential to Stifle the Competitive Market

³²⁹ Exhibit B-5, BCUC 1.122.2

³³⁰ Exhibit B-5, BCUC 1.122.4

³³¹ Exhibit B-5, BCUC 1.122.4

³³² Electric Vehicles Inquiry Phase 1 Report, page 44 (Exhibit C24-2, CEC evidence, p. 43; Exhibit C24-19, CEC final argument, p. 35.)

³³³ Electric Vehicles Inquiry Phase 1 Report, page 44 (Exhibit C24-2, CEC evidence, p. 43; Exhibit C24-19, CEC final argument, p. 35.)

614. The CEC is of the opinion that the EV charging market is not a natural monopoly and has competitive foundations that can provide consumer protection and deliver appropriate service levels if left to function appropriately.

615. The CEC notes that the Commission expressed concern that by spreading the costs of EV charging infrastructure across its entire regulated customer base, a utility could potentially offer its EV charging service at a lower rate than a competitor that doesn't have the ability to cross subsidize.³³⁴

616. The CEC agrees with this concern.

617. The CEC submits that a free market with competitive EV charging service providers will provide the best and most cost-effective form of charging service to the public.

618. BC Hydro argued that public utilities should be able to recover costs on the basis that installing fast charging stations will remove a key barrier to EV adoption and deliver benefits to all ratepayers, including lowering GHG and increasing utility revenue through additional electricity sales.³³⁵

619. BC Hydro states that until there is private sector uptake of DCFC services, utilities operating in the market are best-suited to provide this service, and need to have the ability to recover the costs of doing so.³³⁶

620. In the CEC's view, allowing EV charging stations with costs recovered through rate base can stifle entrepreneurial activity rather than encourage it. It is also unnecessary because the costs are not of such significance that they cannot be managed by the competitive market.

621. One of the issues preventing competition in the charging market relates to the definition of a public utility.

622. The CEC points that in the Phase 1 Report, the Commission found that the regulation of all EV charging services, to the extent that the provider is not already considered to be a public

³³⁴ Electric Vehicles Inquiry Phase 1 Report, page 41

³³⁵ Electric Vehicles Inquiry Phase 1 Report, page 44

³³⁶ Electric Vehicles Inquiry Phase 1 Report, page 44

utility under the *Utilities Commission Act*, is either not required or not within its jurisdiction, and recommended that the Minister issue an exemption, with respect to EV charging services, from Part 3 of the *Utilities Commission Act* with the exception of sections 25 and 38, with respect to safety only, for those EV charging service providers that are not already a public utility under the Act.³³⁷

623. The CEC is of the view that recovering the costs of electric vehicle charging stations before there is evidence that the market would not participate given a clear opportunity to do so is not appropriate in that it could give some negative signals to the market.

624. The CEC submits that it is prudent to allow some time for any potential change in regulation to have its effect in stimulating competitive investment.

Fairness

625. The CEC is also of the view that the Commission should not enable public utilities to absorb capital costs for EV Charging infrastructure into rate base, to the ultimate expense of all ratepayers when only a few customers receive financial benefit.

626. The CEC submits that the principle of cost-causation (being an issue of fairness) should apply to EV charging services such that those customers using the service will pay a cost-based price.

627. The CEC notes that there are many additional ways for the government to transfer costs, if so desired, to taxpayers that do not include using the electric utility to do so, such as subsidizing the cost of new EVs.

Timing

628. Finally the CEC submits that it is inappropriate timing for the costs for EV charging regardless of the outcome of the market.

³³⁷ Electric Vehicles Inquiry Phase 1 Report, page 41

629. The CEC notes the expected impact of the current COVID-19 pandemic can potentially serve to create significant economic issues for ratepayers, so further costs should not be added to rate recovery at this time, particularly for those who cannot afford the more expensive EVs.

630. Additionally, the CEC submits that it is also not appropriate to facilitate subsidized service in a potentially competitive market at a time when commercial businesses are suffering significantly, and contributing more than their share of the revenues based on their costs. Doing so could potentially jeopardize the opportunities that should be available to commerce.

631. The CEC recommends that the Commission disallow the recovery of the costs at this time.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

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