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November 30, 2020

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

Dear Mr. Wruck:

RE: Project No. 1599045
British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Review of BC Hydro's Performance Based Regulation Report

BC Hydro writes in accordance with BCUC Order No. G-251-20 to provide its Supplementary Evidence in this proceeding.

BC Hydro expects that the current deadline for responding to information requests on this Supplementary Evidence may be challenging to meet, given the holiday break and the fact that this filing includes two submissions provided by two independent experts who may be called upon to respond to questions. The current timeline allows for only five-and-a-half business days between receipt of information requests from interveners on December 21 and responses on January 4. We respectfully request that our deadline for filing responses to information requests be extended from January 4, 2021 to January 18, 2021.

For further information, please contact Chris Sandve at 604-974-4641 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,

Fred James
Chief Regulatory Officer

cs/rh

Enclosure

BC Hydro
Power smart

BCUC Review of BC Hydro's Performance Based Regulation Report

Supplementary Evidence of British Columbia Hydro and Power Authority

November 30, 2020

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Appendices

1 Introduction

Q1. What is the purpose of this Supplementary Evidence?

A1. BC Hydro has prepared this Supplementary Evidence to respond to the evidence of Pacific Economics Group (**PEG**) and Dr. Mark Lowry[1] and to respond to the suggested questions put forward by the BCUC to guide the scope of further review in this proceeding.[2,3]

Q2. Please provide a summary of this Supplementary Evidence.

A2. In this Supplementary Evidence, we identify improvements to BC Hydro's existing cost of service framework that could help to achieve the goals of BCUC regulation of BC Hydro and could be implemented starting with BC Hydro's Fiscal 2023 Revenue Requirements Application:

- A three-year test period;
- Regularly scheduled statistical benchmarking; and
- Information-only performance metrics.

We also explain why other concepts identified in this proceeding would interfere with the goals of BCUC regulation of BC Hydro and should not be adopted.

1 Refer to Exhibits A2-5 and A2-7.
2 Refer to Exhibit A-9.
3 Our silence on a particular aspect of evidence should not be interpreted as agreement or verification.

Q3. What is the nature of the appended independent expert evidence?

A3. Appendix A is a supplementary independent expert report provided by Dr. Dennis Weisman, which addresses Dr. Lowry's evidence. Among other conclusions, Dr. Weisman's supplementary report concludes:

> "First, financial rewards and penalties are not the only form of incentives that can motivate desired behavior. Second, there are trade-offs in the design of regulatory regimes than can result in a shorter-duration cost-of-service regulation regime dominating a longer-duration PBR regime with earnings sharing in terms of incentive power. Third, earnings sharing can have a pronounced effect in decreasing the power of the regulatory regime. Fourth, lengthening the regulatory lag (e.g. increasing the test period from 2 to 3 years) can have a significant effect in increasing the power of the regulatory regime."[4]
>
> …
>
> "Moreover, with a three-year (or longer) test period this type of regulatory regime may well give rise to greater incentive power than an indexed form of PBR with a term of 5 years that incorporates a significant earnings-sharing component. This suggests that at least in terms of incentive power, the Commission may well be taking a step backward if it opted for this type of PBR regime."[5]

Appendix B is a submission provided by Mr. Mark Kolesar. Mr. Kolesar was a member of the Alberta Utilities Commission for 12 years, including six years as Vice Chair and two years as Chair (ending earlier this year). During that time, Mr. Kolesar was among the commissioners who presided over the introduction and development of PBR in Alberta. Mr. Kolesar addressed the applicability of PBR in the context of BC Hydro, as a Crown corporation. Among other things, Mr. Kolesar concludes:

[4] Appendix A, para 50.
[5] Appendix A, para. 52.

> "….under PBR, it is most likely BC Hydro will seek productivity improvements sufficient to earn the return expected by its shareholder, but no more. Given this finding, the Commission should consider whether BC Hydro's culture, processes and procedures, compensation scheme and the expectations of its shareholder are adequately attuned to the incentives of PBR, and whether, upon weighing all of the Commission's objectives, a form of COSR might better suit the circumstances of BC Hydro.[6]

2 The Goals of BCUC Regulation of BC Hydro

Q4. What should be the goals of BCUC regulation with respect to BC Hydro?

A4. The BCUC should have three broad goals with respect to its regulation of BC Hydro's revenue requirement: to set rates at efficient levels, to maintain adequate, safe and reliable service and to ensure financial integrity through the recovery of reasonable and prudently incurred costs and by providing an opportunity to earn a fair return on investment.[7] These goals are consistent with the statutory framework set out by the *Hydro and Power Authority Act* and the *Utilities Commission Act.*[8] They have been echoed in previous submissions in this proceeding.[9]

All forms of regulation can provide incentives to achieve these goals.[10] The question to consider in this proceeding is what form of regulation will provide the most effective incentives for BC Hydro to operate efficiently and provide safe and reliable service, given its unique aspects. The answer to this question does not have to be a binary choice between Cost of Service

6 Appendix B, page 12.

7 Setting rates that are non-discriminatory is also an important goal but is more relevant to rate design.

8 For example, refer to sections 38 and 59 of the *Utilities Commission Act*.

9 For example, refer to Exhibit C1-6 (page 1), Exhibit C4-6 (page 1), Exhibit C9-5 (page 2) and Exhibit A2-1 (Appendix FF, page 21).

10 A quote often attributed to former New York Public Service Commission Chair Alfred Kahn is "All regulation is incentive regulation."

Regulation or PBR.[11] As our subsequent answers will explain, there are improvements that can be made to BC Hydro's existing cost of service framework that will strengthen BC Hydro's incentives to achieve these goals.

3 Unique Aspects of BC Hydro that Affect the Application of PBR

Q5. Are there unique aspects that could affect the application of PBR to BC Hydro?

A5. Yes. BC Hydro has previously outlined the following unique considerations for BC Hydro: one with regard to BC Hydro's mandate[12] and two with regard to the fact that the BCUC's ability to regulate BC Hydro only recently became less constrained.[13]

PBR Incentives Assume a Profit-Maximizing Mandate that BC Hydro Does Not Have

The first issue is the extent to which PBR can provide effective incentives for BC Hydro, given that its incentives rely on a utility's motivation for higher profits[14] and BC Hydro does not have a profit maximization mandate.[15]

While there has been some discussion of BC Hydro's mandate in this proceeding[16], the following points are worth re-emphasizing:

[11] Refer to Exhibit A2-1 (Appendix FF, page 1); Exhibit A2-5 (page 16); and Appendix B, page 4 for further discussion on the differences between Cost of Service Regulation and PBR.
[12] Refer to section 11.8.4 of Exhibit A2-1.
[13] Refer to sections 11.8.1 and 11.8.2 of Exhibit A2-1.
[14] For further discussion refer to page 11-10 of Appendix A2-1.
[15] For further discussion, refer to section 11.8.4 of Appendix A2-1.
[16] For example, Exhibit C8-5 provides a helpful summary.

- First, BC Hydro's mandate is set out through a Mandate Letter[17] and Service Plan[18]. Exceeding allowed net income is not identified as an expectation or desirable outcome anywhere in either of these two documents. Efficiency and cost control are emphasized throughout but the focus of these efforts is to keep rates affordable for customers[19], not to increase shareholder returns;

- Second, BC Hydro's actual net income is consolidated into the Government of B.C.'s financial statements. The Government of B.C. plans its budget based on BC Hydro achieving its allowed net income – no more and no less. In other words, BC Hydro is expected to achieve an actual net income that is as close to its allowed net income as possible. At the same time, the Mandate Letter and Service Plan set out expectations for BC Hydro to provide safe, reliable, affordable and clean electricity. The Government of B.C. expects BC Hydro to meet these expectations and achieve its allowed net income while keeping rates as affordable as possible;

- Third, these implications are borne out by BC Hydro's actual financial results: in five of the last six fiscal years, BC Hydro's actual net income has been either at or below the allowed amount.[20] Excluding fiscal 2019, in which the Rate Smoothing Regulatory Account was written off, BC Hydro's actual net income varied from its plan by between 0 per cent and 2 per cent;

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17 For the most recent version of BC Hydro's Mandate Letter, refer to: https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/accountability-reports/openness-accountability/bch-mandate-letter-2019-2020.pdf

18 For the most recent version of BC Hydro's Service Plan, refer to: https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/regulatory-planning-documents/service-plans/bchydro-service-plan-2019-201902.pdf

19 Refer to page 5 of BC Hydro's 2019/20 – 2021/22 Service Plan.

20 Refer to BC Hydro's response to CEC IR 2.128.3 (Exhibit B-13 of BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application proceeding) and to BC Hydro's Annual Service Plan Reports.

- Fourth, just as each of the above points demonstrates that the prospect of earning net income above that associated with the allowed rate of return would not provide an incremental incentive to BC Hydro, the same is true with regard to the prospect of penalties against allowed net income. This is because the BCUC has previously recognized a need to limit financial consequences to offsets against earnings in excess of allowed net income, so that the Fair Return Standard is maintained;[21] and

- Fifth, BC Hydro's approach to Trade Income and the sale of surplus properties demonstrates that BC Hydro does not have a profit maximization mandate and is instead focused on affordability and keeping rates low for customers, consistent with the Government of B.C.'s expectations. The Government of B.C. and BC Hydro have consistently taken the position that all Trade Income and net gains from the sale of surplus properties should benefit ratepayers even though there are alternative approaches that could increase revenues to the Government of B.C., as BC Hydro's shareholder.

  With regard to Trade Income, during the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application proceeding, BC Hydro stated:

  > "…BC Hydro continues to include forecast Trade Income in its revenue requirements on the same basis as the Previous Application. The inclusion of Trade Income in BC Hydro's revenue requirements benefits ratepayers as it reduces the overall revenue requirements."[22]

[21] Refer to page 134 of Order No. G-139-14.

[22] Refer to BC Hydro's response to BCUC IR 1.143.3 (Exhibit B-5) of the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application proceeding.

In response to a follow-up information request, BC Hydro confirmed that government was aware of BC Hydro's approach.[23]

With regard to net gains from the sale of surplus properties, during the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application proceeding, BC Hydro stated:

> "The Real Property Sales Regulatory Account allows ratepayers to receive significant benefits from planned sales of surplus property and property rights (e.g., statutory rights of way) that would otherwise flow to the shareholder."[24]

BC Hydro asked Mr. Kolesar, to consider the implications of BC Hydro not being a profit maximizing utility. Mr. Kolesar concluded:

> "under PBR, it is most likely BC Hydro will seek productivity improvements sufficient to earn the return expected by its shareholder, but no more. Given this finding, the Commission should consider whether BC Hydro's culture, processes and procedures, compensation scheme and the expectations of its shareholder are adequately attuned to the incentives of PBR, and whether, upon weighing all of the Commission's objectives, a form of COSR might better suit the circumstances of BC Hydro."[25]

Dr. Weisman has previously explained that the lack of a profit maximization mandate can pose a problem for the application of PBR to Crown Corporations but that this problem can be overcome through the implementation of a compensation structure that encourages management to behave as if profit-maximization is mandated.[26]

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[23] Refer to BC Hydro's response to BCUC IR 3.295.2 (Exhibit B-16) of the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application proceeding.

[24] Refer to para. 412 of BC Hydro's Final Argument in the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application proceeding.

[25] Refer to Appendix B, page 12.

[26] Refer to section 5.2 of Appendix FF of Exhibit A2-5.

However, in the case of BC Hydro, Public Sector Employers' Council policy restricts incentive-pay to a limited number of senior management employees, in the form of a salary holdback.[27] Specifically, the Public Sector Employers' Council's Guide to B.C. Public Sector Compensation and Expense Policies states:

> Bonus programs are no longer permitted and must be phased out for executive and excluded employees where they exist. Instead, a hold back of up to 20 per cent of maximum base salary may be implemented for senior executives in place of a bonus program.[28]

While a salary holdback is a form of incentive pay, the maximum amount awarded to an individual employee is capped. Within this cap, the amount awarded to each individual employee reflects individual employee performance as well as BC Hydro's results against its Service Plan performance measures, which represent the mandate provided to BC Hydro by the Government of B.C. As explained above, this mandate does not include profit maximization and accordingly, none of BC Hydro's Service Plan performance measures reflect this objective.

In addition, it is important to recognize that the public may not accept profit maximization as a legitimate objective of a Crown Corporation. This is demonstrated by the experience of Hydro-Quebec where public backlash saw efficiency gains under PBR as customers being "overcharged"[29] and the Government of B.C. subsequently introduced legislation to set electricity distribution rates and remove the requirement for a PBR mechanism to be

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27 Details on the incentive aspects of BC Hydro's compensation structure are provided in BC Hydro's response to BCUC IRs 1.42.10, 1.42.10.1 and 1.42.10.2 (Exhibit B-5) of the Fiscal 2020 to Fiscal 2021 Revenue Requirements Application proceeding.

28 Refer to page 22 of B.C. Public Sector Compensation and Expense Policies. (https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/services-policies-for-government/public-sector-management/psec/public-sector-compensation-expense-policies-guidelines.pdf)

29 Refer to BC Hydro's response to BCUC IR 1.198.1 (Exhibit A2-2).

established.[30] As Mr. Kolesar explains, this concern can exist even in the case of investor-owned utilities:

> One of the constant criticisms of PBR in Alberta was that the earnings of the companies in excess of the allowed return meant that rates were higher than they otherwise should be. It was difficult for certain critics of PBR to comprehend the longer-term objectives and the mechanics of PBR, so these criticisms were often difficult to allay.[31]

BCUC Ability to Regulate BC Hydro Only Recently Became Less Constrained

The fact that the BCUC's ability to regulate BC Hydro only recently became less constrained has two important implications: First, it is likely to be more challenging to secure stakeholder support for an approach that would grant BC Hydro the type of increased autonomy from regulatory scrutiny, upon which PBR is predicated.[32] Second, BC Hydro's existing regulatory framework may be able to resolve the concerns that prompted the BCUC to consider PBR, if it is given the opportunity to do so. There have been notable developments with regard to both of these implications since the start of this proceeding. Specifically:

- Intervener opposition to PBR throughout this proceeding has been noticeable and explicit.[33] On this point, Mr. Kolesar's evidence is instructive. Mr. Kolesar states:

  > "The experience in Alberta was that PBR was difficult to explain and therefore often criticized. It was difficult for certain critics of PBR to step outside of the COSR mindset

30 Refer to BC Hydro's response to BCUC IR 2.286.1 (Exhibit A2-4).
31 Appendix B, page 9, footnote 13.
32 Refer to Dr. Weisman's definition of PBR on pages 4 to 5 of Appendix FF of Exhibit A2-1.
33 For example, refer to page 4 of Exhibit C1-6 or to page 3 of Exhibit C9-5 or to Exhibit C11-2.

and comprehend the longer-term objectives and the mechanics of PBR.";[34] and

- While the BCUC's Decision on BC Hydro's Fiscal 2017 to Fiscal 2019 Revenue Requirements Application, which prompted this proceeding, emphasized cost control[35], the BCUC's more recent Decision on BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application, expressed concern that cost cutting may be too aggressive.[36] In other words, to the extent that the BCUC's interest in pursuing PBR was rooted in a desire to bolster BC Hydro's cost control efforts, that impetus may no longer apply. In fact, it is possible that the BCUC's more recent concerns are better addressed through a cost of service approach that allows for line-by-line scrutiny of BC Hydro's revenue requirement.

4 Aspects of PBR that May Help or Interfere with the Goals of BCUC Regulation of BC Hydro

All forms of regulation provide incentives. As our subsequent answers will explain, there are improvements that can be made to BC Hydro's existing cost of service framework that will strengthen BC Hydro's existing incentives to achieve the goals of BCUC regulation of BC Hydro. However, certain concepts put forward in this proceeding would interfere with the goals of BCUC regulation of BC Hydro and should not be adopted.

[34] Appendix B, page 11.
[35] Refer to page 110 of Order No. G-47-18.
[36] Refer to page (v) of Order No. G-246-20.

Q6. Does BC Hydro support Dr. Lowry's suggestion of moving to a three-year test period?[37]

A6. Yes. Multiyear Rate Plans are intended to incent efficient performance by creating a multi-year disconnect between allowed revenue and actual costs so that a utility must perform within a pre-determined revenue envelope to achieve its allowed return.[38] BC Hydro's current regulatory system already takes this approach by setting rates based on forecast costs for multiple years.[39] A three-year test period would create a greater disconnect between BC Hydro's allowed revenue and actual costs.

In his evidence, Dr. Weisman noted that the "textbook" Cost of Service regulation typically referenced in comparisons to PBR differs from what BC Hydro has currently, with the latter providing greater incentives. He confirms that under BC Hydro's existing forecast test period approach to Cost of Service regulation, adding a third year to the test period would increase the incentive for efficient performance, stating:

> "In the textbook model of cost-of-service regulation, the earnings of the regulated firm are capped, and an earnings review can be triggered whenever earnings diverge sufficiently from target levels. In contrast, the form of cost-of-service regulation that applies to BC Hydro specifies a fixed test period over which the regulated firm is not subject to an earnings review and a recalibration of rates to achieve a target rate of return. The distinction between textbook cost-of-service regulation and PBR is often cast in terms of whether the term of the regulatory regime (i.e., regulatory lag) is fixed in advance or determined endogenously on the basis of the regulated firm's earnings. The incentive power

37 Refer to page 250 of Transcript Volume 2.

38 This feature is referenced throughout the evidence filed to date although it is expressed in different ways. Refer to Exhibit A2-1 (page 11-9 and Appendix FF, page 10), to Exhibit A2-5 (page 33) and to Order No. G-47-18 (page 111).

39 For further discussion, refer to page 11-69 of Exhibit A2-1.

of cost-of-service regulation can be ratcheted up considerably if there is a relatively long test period.[40]

Q7. Do you support Dr. Lowry's suggestion of using indexing where practical and, after the last test year, automatically escalating allowed revenue for customer growth or inflation?[41]

A7. No, for the following four reasons:

- First, using an index or formula to create a disconnect between revenues and actual costs does not provide any incremental incentive power compared to the existing approach of using a multi-year cost forecast. As Dr. Weisman confirms:

> "The superior incentive properties of these two different approaches (indexed and non-indexed) turn on the fact that the rate trajectory over the course of the regulatory regime is invariant to the regulated firm's own performance regardless of whether that rate trajectory is determined by the "I – X" formula or by a cost forecast set at the outset of the regulatory regime."[42]
>
> ….
>
> "The incentive power of the regulatory regime would not be expected to differ across the two scenarios… when (i) both the forecast and the formula/index are invariant to the regulated firm's behavior (i.e., the immutability conditions is satisfied); (ii) the regulated firm is financially viable under both scenarios (i.e., the regulated firm is not in or near financial default); (iii) there is no earnings-sharing mechanism under either approach; and (iv) the test period is the same in both scenarios. In both regulatory regimes, the rate trajectory is fixed by a benchmark that is invariant to the

[40] Appendix A, para. 33.
[41] Refer to page 250 of Transcript Volume 2.
[42] Appendix A, para. 21.

> regulated firm's own performance (i.e., the immutability condition is satisfied)."[43]

Further, as Mr. Kolesar explains:

> "There is potentially an argument that, even if the incentives of PBR cannot be fully realized, there is an advantage to adopting PBR because the indexed stream of revenues requires the utility to achieve a specified level of productivity, and accordingly the outcome will better emulate a competitive market outcome. However, in practice, there is no way to determine whether the expected level of productivity under a PBR regime will indeed be any different than what will be achieved under another form of regulation. Although PBR has the appearance of mathematical precision because it is formula-based, determining all the elements of a PBR plan involves a significant amount of judgment on the part of the regulator, and the interplay among the final mix of elements cannot be assumed to deliver a specific intended or measurable level of productivity, relative to what might be achieved under an alternative form of regulation. The principal objective of PBR is to create an incentive for the utility to seek productivity improvements, not to generate a revenue requirement or achieve a specific level of productivity. The ensuing level of achieved productivity will be dependent on how the utility responds to that incentive.";[44]

- Second, a multi-year cost forecast is subject to line-by-line public scrutiny through the regulatory process. Any potential excess amounts can be questioned, often through an oral hearing, and disallowed. This scrutiny is particularly strong in the case of BC Hydro, as a Crown Corporation, owned by the Government of B.C., with a significant public profile. Automatically escalating allowed revenue for customer growth or inflation, after the last test year, would reduce the frequency of this scrutiny;

[43] Appendix A, para. 34.
[44] Appendix B, pages 9-10.

- Third, replacing a multi-year cost forecast with an index or formula, may cause the BCUC or interveners to be less certain about whether allowed revenue has been set too high or may cause BC Hydro to advance mechanisms that guard against the possibility that allowed revenue was set too low. This could prompt the introduction of one or both of the most controversial elements of PBR: an earnings sharing mechanism[45] or a productivity factor;[46] and

- Fourth, in the event that using an index or extending the length of time between revenue requirements applications, whether by automatically escalating allowed revenue or a different approach, prompts the introduction of an earnings sharing mechanism, the incentive power may actually decrease. In his evidence, Dr. Weisman provides an illustrative example and confirms:

> "What this indicates is that a three-year cost-of-service regulation regime with a fixed-rate forecast and no earnings sharing has approximately 33% more incentive power than a 5-year indexed PBR regime with a 50% earnings-sharing mechanism."[47]

Q8. Do you support Dr. Lowry's suggestion of eventually moving to a more comprehensive Multiyear Rate Plan with, among other things, a three to five year term and different attrition relief mechanisms to automatically escalate allowed revenue for different functions?[48]

A8. No, for the same four reasons stated in our answer to Q7 above.

[45] For a discussion of the controversy surrounding earnings sharing mechanisms, refer to section 2.6 of Appendix FF of Exhibit A2-1 and to Appendix A, para. 25 and footnote 8.

[46] For a discussion of the controversy surrounding productivity factors, refer to Appendix A, para. 23 and footnote 7.

[47] Appendix A, para. 43.

[48] Refer to page 258 of Transcript Volume 2.

Q9. Do you support Dr. Lowry's suggestion of regularly scheduled statistical benchmarking studies by the BCUC and BC Hydro?[49]

A9. Yes. Statistical benchmarking studies would help to address any concern with regard to information asymmetry[50] or upward forecasts[51] if multi-year cost forecasts are used to determine allowed revenue. These studies can provide another tool for the BCUC to set rates at efficient levels.[52] BC Hydro provided a benchmarking study as part of its Fiscal 2020 to Fiscal 2021 Revenue Requirements Application.[53]

Benchmarking does have limitations and the results can often be controversial.[54] Therefore, BC Hydro suggests that a beneficial first step would be to involve the BCUC and interveners in a process to set out a terms of reference to guide the objective, scope and frequency of future benchmarking studies. This process would also provide an opportunity for all parties to consider the suggestions on benchmarking that were put forward by Dr. Lowry.[55]

Q10. Do you support Dr. Lowry's suggestion that low-carbon electrification should not be subject to full revenue decoupling?[56]

A10. No. BC Hydro's Load Forecast Variance Deferral Account currently provides full revenue decoupling.[57]

49 Refer to page 253 of Transcript Volume 2.
50 Refer to Appendix A, para. 25 and Appendix B, page 5.
51 Refer to Appendix B, page 5.
52 Refer to section 4 of Appendix FF of Exhibit A2-1.
53 Refer to Appendix T of BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application.
54 Refer to section 4.2 of Appendix FF of Exhibit A2-1 and to page 134 of Transcript Volume 2.
55 Refer to pages 120, 134, 135, 186 of Transcript Volume 2.
56 Refer to page 255 of Transcript Volume 2.
57 Refer to Directive 15 of Order No. G-246-20.

Partial decoupling of low-carbon electrification revenues would mean that customers would not receive all of the incremental revenue from BC Hydro's electrification activities. Rather, the Government of B.C. would retain some of the incremental revenue in the form of higher actual net income. In our response to Q5 above we explain why this would not provide any incremental incentive to BC Hydro and why an alternative approach, of tying any excess net income to incentive pay, would also not be applicable in BC Hydro's case.

The incentive for BC Hydro to pursue low carbon electrification is two-fold: (1) to help our customers and the Government of B.C. to achieve their objectives with regard to the reduction of greenhouse gas emissions, and (2) to generate incremental tariff revenue that can help to offset cost pressures and keep rates low for customers. Dr. Lowry's suggestion would limit the effectiveness of the second incentive because it would limit the extent to which customers would benefit from any incremental revenue from low carbon electrification.

Q11. Do you support Dr. Lowry's suggestion of shared saving performance incentive mechanisms for conservation, non-wire alternatives and systemwide peak load management?[58]

A11. No, for the following six reasons:

- First, since BC Hydro does not have a mandate to maximize profits, a shared saving performance incentive mechanism that relies on revenue adjustments to reward or penalize performance would not provide incremental incentives to BC Hydro. Further discussion on this point is provided in our response to Q5;

[58] Refer to page 254 of Transcript Volume 2.

- Second, BC Hydro is already pursuing conservation, non-wire alternatives and systemwide peak load management.[59] The costs associated with these activities are captured in the DSM Regulatory Account for recovery from ratepayers;[60]

- Third, there is no inherent disincentive that discourages BC Hydro from pursuing these activities. For example, unlike investor-owned utilities, the prospect of building rate base to increase allowed net income does not predispose BC Hydro to advancing capital projects over non-wire alternatives.[61] BC Hydro's allowed net income is not currently tied to rate base.[62] Even if it were, as our response to Q5 explains, BC Hydro's mandate emphasizes affordability for customers and does not mention profit maximization. This means that if non-wire alternatives provide opportunity to reduce costs and benefit customers, BC Hydro is incented to pursue them, regardless of the implications for rate base and allowed net income;

- Fourth, Dr. Lowry's suggestion appears to be based on the premise that BC Hydro may be pursuing excessive levels[63] of Demand-Side Management and initiatives that are not cost-effective[64]. This is premise is incorrect. The Demand-Side Measure Regulation sets out requirements for measures to be cost-effective, which BC Hydro's

59 Refer to section 10.4.2 of Chapter 10 of BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application.

60 Dr. Lowry explains why the use of a regulatory account can help to overcome disincentives to pursue these initiatives on page 29 of Exhibit A2-5.

61 Dr. Lowry explains the connection between rate base and earnings growth on page 9 of Exhibit A2-5.

62 Section 3 of Direction No.8 to the BCUC de-links BC Hydro's allowed net income from its rate base by stipulating that "In regulating and setting rates for the authority for fiscal 2020 and fiscal 2021, the commission must ensure that those rates allow the authority to collect sufficient revenue in each fiscal year to enable the authority to achieve an annual rate of return on deemed equity that would yield a distributable surplus of $712 million."

63 Refer to page 254 of Transcript Volume 2.

64 Refer to Dr. Lowry's response to Zone II RPG IR 6.1 (Exhibit A2-13).

initiatives meet. In addition, BC Hydro also applies the additional test of requiring measures to be lower than the market price under the Utility Cost Test;[65]

- Fifth, the introduction of a shared savings performance incentive mechanism for conservation could discourage measures aimed at providing equitable opportunities across customer classes or targeted opportunities for certain customer groups. In other words, a shared savings performance incentive mechanism could incent BC Hydro to pursue the most cost effective DSM initiatives instead of initiatives driven by policy, regulatory or equity considerations; and
- Sixth, shared savings performance incentive mechanisms can be complex and controversial[66], which could decrease regulatory efficiency.

All of the above considered, it is perhaps not surprising that this approach has already been tried and abandoned in British Columbia. While FortisBC was previously subject to a performance-based incentive mechanism for DSM activity, that approach was subsequently discontinued.[67]

Q12. Are there other improvements to BC Hydro's existing cost of service framework that may help to achieve the goals of BCUC regulation of BC Hydro?

A12. Yes. While shared saving performance incentive mechanisms would not be effective, information-only performance metrics, determined through a public process with the BCUC and interveners, would provide incremental incentives

65 Refer to section 10.5.3 of Chapter 10 of BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application.
66 Refer to Dr. Lowry's response to Zone II RPG IR 6.1 (Exhibit A2-13).
67 Refer to FortisBC's response to BCUC IR 1.232.1.1 of Exhibit B-7 of FortisBC's 2014 to 2018 Multiyear Rate Plan proceeding.

to BC Hydro. BC Hydro currently reports to the BCUC on a number of performance metrics. Specifically, BC Hydro has provided Annual Service Plan performance measures as part of Revenue Requirements Applications[68], annual reports on reliability indices[69], and metrics used to manage its operations[70].

BC Hydro recognizes the interest from the BCUC and interveners in performance metrics and believes that information-only performance metrics, determined through a BCUC process, could help to achieve the goals of BCUC regulation of BC Hydro. As Dr. Weisman explains:

> "The Commission may decide to make these performance metrics "informational only." This means that the regulated firm's performance on these metrics would be publicly disclosed, perhaps even reported on the Commission's web site, but it would not be rewarded or penalized financially for compliance or lack of compliance with these performance metrics… The regulated firm may still have strong incentives to meet or exceed these performance metrics even though there are no financial rewards or penalties directly associated with compliance or non-compliance. This underscores an important observation that financial incentives are not the only type of incentives that can be used to motivate superior performance."[71]

[68] For example, refer to Appendix E of BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application.

[69] In accordance with Directive 26 of Order No. G-96-04.

[70] For example, refer to BC Hydro's response to BCUC IR 1.62.1 of Exhibit B-5 in the proceeding on BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application. Directive 68 of Order No. G-246-20 directs BC Hydro to include this information in its Fiscal 2022 Revenue Requirements Application as well.

[71] Appendix A, paras. 46-47.

5 Scope, Process and Timing of Identified Improvements to BC Hydro's Existing Regulatory Framework

In our above responses, we have identified the following changes that we believe would improve BC Hydro's existing cost of service framework:

- A three-year test period (refer to our response to Q6);
- Regularly scheduled statistical benchmarking (refer to our response to Q9); and
- Information-only performance metrics (refer to our response to Q12).

Q13. Do you have a suggested implementation plan for these changes?

A13. Yes. Each of these changes could be implemented starting with the upcoming Fiscal 2023 Revenue Requirements Application. Specifically, the Fiscal 2023 Revenue Requirements Application could:

- Set rates based on a multi-year cost forecast covering a three-year test period (fiscal 2023 to fiscal 2025);
- Include BC Hydro's proposed terms of reference for regularly scheduled statistical benchmarking; and
- Include BC Hydro's proposal for information-only performance metrics.

Prior to submitting the Fiscal 2023 Revenue Requirements Application, BC Hydro could engage with interveners and hold a workshop so that the proposals on performance metrics and benchmarking reflect feedback received from interveners. The Fiscal 2023 Revenue Requirements Application proceeding could then provide a further opportunity to review the proposals before they are finalized through a BCUC Decision.

Q14. Do you have any additional comments at this time with regard to the implementation of PBR?

A14. Yes. Given that PBR is often cited as a way to increase regulatory efficiency, we believe that the following evidence from Mr. Kolesar is worth noting. Specifically, Mr. Kolesar states:

> "However, it is noteworthy that, despite potential assumptions to the contrary, the process is no less onerous than that required under COSR to establish a revenue requirement and set rates, and both PBR and COSR require a significant amount of judgment on the part of the regulator."[72]
>
> …
>
> "Alberta experienced an increase in regulatory filings under PBR, in part because of the nature of some of the Commission's PBR plans, for which the Alberta commission was often criticized. The Commission should carefully analyze and consider the potential regulatory burden under both COSR and PBR."[73]

[72] Appendix B, page 7.
[73] Appendix B, page 11.

BC Hydro
Power smart

BCUC Review of
Performance Based Regulation Report

Supplementary Evidence of
British Columbia Hydro and Power Authority

Appendix A

Dr. Dennis Weisman - Supplementary Report

SUPPLEMENTARY REPORT FOR BC HYDRO

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November 30, 2020

EXECUTIVE SUMMARY

CONTENTS

1.0 INTRODUCTION

1.1 PROFESSIONAL QUALIFICATIONS

1. My name is Dennis L. Weisman. I am a Professor of Economics, *Emeritus* at Kansas State University. My business address is P.O. Box 1646, Eagle, Colorado 81631, USA.

2. I received a B.A. in economics and mathematics from the University of Colorado, an M.A. in economics from the University of Colorado, and a Ph.D. in economics from the University of Florida with a specialization in economic regulation and industrial organization. I have testified in numerous regulatory proceedings to the economic and social impacts of regulatory policies and have served as an advisor to telecommunications firms, electric power companies and regulatory commissions on economic pricing principles, the design of incentive regulation plans, the scope and pricing of mandated wholesale access and competition policy.

3. In Canada, I have presented testimony or filed affidavits with the Canadian Radio-television and Telecommunications Commission (CRTC), the Alberta Utilities Commission and the British Columbia Utilities Commission. My submissions before the CRTC have covered a wide range of topics, including price cap regulation, local forbearance, competitor services, the essential facilities doctrine, predatory pricing and win-back rules. In the United States, I have presented testimony or filed affidavits before regulatory commissions in Arkansas, California, Colorado, Florida, Kansas, Massachusetts, Missouri and Texas. I have also submitted testimony or filed affidavits with the Federal Communications Commission, the United States Court of Appeals for the District of Columbia and the Kansas State Legislature.

4. My primary research interests are in economic regulation, industrial organization and applied microeconomics. I have authored or co-authored more than one-hundred twenty articles, books and book chapters. My research has appeared in the *Antitrust Bulletin*, *Economics Letters*, the *Journal of Regulatory Economics*, the *Yale Journal on Regulation*, the *Southern Economic Journal*, the *Journal of Policy Analysis and Management*, the *Journal of Competition Law and Economics* and the *Federal Communications Law Journal*. My research has also been cited by the U.S. Supreme Court,[1] and the United States Court of Appeals for

[1] *Verizon Communications Inc. v. FCC*, 535 U.S. 467 (2002).

the District of Columbia.[2] I am the co-author of DESIGNING INCENTIVE REGULATION FOR THE TELECOMMUNICATIONS INDUSTRY, published by the MIT Press and the AEI Press in 1996, and THE TELECOMMUNICATIONS ACT OF 1996: THE "COSTS" OF MANAGED COMPETITION, published by Kluwer in 2000. I am also the author of PRINCIPLES OF REGULATION AND COMPETITION POLICY FOR THE TELECOMMUNICATIONS INDUSTRY – A GUIDE FOR POLICYMAKERS, which was published by The Center for Applied Economics in the College of Business at the University of Kansas in 2006. I currently rank in the top 10% of authors as measured by all-time manuscript downloads on the Social Science Research Network (SSRN).

5. At present, I am a member of the editorial boards for the *Journal of Regulatory Economics* and *Information Economics and Policy.* I previously served as an editor for the *Review of Network Economics*. In 2003, I was the guest editor for a special issue of the *Review of Network Economics* on incentive regulation. In 2008, I served as a co-guest editor for a special issue of the *Review of Network Economics* on the contributions of Professor Alfred Kahn to the economics of regulation and competition policy. Finally, I am a member of the Board of Academic Advisors for The Free State Foundation and a contributor to its *Perspectives from FSF Scholars* series.

1.2 OBJECTIVES AND OVERVIEW

6. I have been retained by BC Hydro in this proceeding to respond to four specific questions related to performance-based regulation (PBR). These questions are designed to identify prospective areas of agreement or disagreement with the positions set forth by Pacific Economics Group (PEG) and Dr. Lowry in the PBR report (inclusive of workshop materials) prepared for the BCUC.

7. I hereby confirm that in answering the questions put to me by BC Hydro that (i) I have reviewed the materials prepared by PEG and Dr. Lowry in this process, along with the transcripts of the BCUC workshop; and (ii) I understand, and continue to abide by, my duty of independence. The views expressed herein are solely my own. These views reflect my academic writings, expert evidence as well as my experience in designing and implementing

[2] *Comcast Cable Communications, LLC v. Federal Communications Commission*, 717 F.3d 982 (D.C. Cir. 2013). *United States Telecom Assoc. v. FCC*, No. 15-1063 (D.C. Cir. 2016).

incentive regulation plans as an industry practitioner.

8. The questions that have been put to me by BC Hydro are set forth and answered in Section 2 of this supplementary report.

2.0 THE QUESTIONS AND ANSWERS

2.1 QUESTION 1 AND ANSWER

9. You have defined PBR as "the design and implementation of rules that encourage a regulated firm to achieve desired goals by granting some, but not complete, discretion to the firm." Dr. Lowry has stated that the term PBR "encompasses approaches to regulation designed to strengthen utility incentives to perform well" and has set out four well-established PBR approaches: relaxation of the link between revenue and system use (revenue decoupling), targeted performance incentive mechanisms, special incentives to use disfavored inputs and multi-year rate plans. Please comment on the extent to which these definitions are equivalent and any differences and provide your assessment of the objective of each of the approaches identified by Dr. Lowry.

10. All four approaches to PBR identified by Dr. Lowry have the potential to improve the utility's incentives to "perform well." Whether this potential is realized will turn on the strength of the incentives for superior performance. These incentives may be of a financial or non-financial type. An example of financial incentives is an employee incentive-compensation plan that rewards (punishes) superior (inferior) performance by putting compensation dollars at risk. This would be expected to induce the company to operate as if it were a profit-maximizing entity even though it is not. In addition, as discussed in greater detail below in the response to Question 4, non-financial incentives in the form of information-only performance metrics can potentially serve an important role in motivating desired performance. The relative strength of these non-financial incentives may be expected to turn on the particular institutional framework and governance structure under which the regulated firm operates.

11. The same general principle applies to both management and employees within BC Hydro.

Because effort is costly (i.e., leisure is preferred to work),[3] the requisite carrots and sticks must be put in place to motivate superior performance. A carefully designed employee compensation plan can succeed in doing just that even though BC Hydro may not have profit-maximization as its primary or even its secondary objective.[4] In addition, even when a regulated firm does not have profit-maximization as a primary objective, it may still be guided by a social responsibility to minimize costs to ensure that customer rates are no higher than necessary.

12. In the discussion of the four approaches to PBR outlined by Dr. Lowry, I assume that some combination of financial and non-financial incentives has been put in place to motivate the behavior necessary to achieve superior performance.

Revenue Decoupling

13. Revenue decoupling can represent an important element of a regulatory regime. The additional revenue stability provided by decoupling (i.e., delinking revenues from system use) can potentially extend the period between rate cases or rebasing (i.e., regulatory lag) and thereby strengthen incentives for performance. This is necessarily the case because the additional revenue stability can help to avoid financial windfalls and shortfalls that may trigger the need for a rate case and an earnings review.

14. Regulatory lag (i.e., length of the test period) is one of the key determinants of the incentive power of a regulatory regime. In general, the longer the test period, the stronger the incentives for superior performance, *ceteris paribus*. As discussed below, even a relatively modest increase in the length of the test period can have a significant effect on increasing the incentive power of a regulatory regime.

Targeted Performance Incentive Mechanisms

15. Targeted performance incentive mechanisms (PIMs) are designed to induce desired behavior

[3] David E. M. Sappington, "Designing Incentive Regulation," *Review of Industrial Organization*, Volume 9, 1994, pp. 262-263.

[4] Nonetheless, a sound PBR regime should also "limit the firm's financial responsibility for factors beyond its control." David E. M. Sappington "Designing Incentive Regulation," *Review of Industrial Organization*, Volume 9(3), June 1994, p. 269.

on the part of the regulated firm with respect to specific performance metrics. For example, the regulator may wish to motivate the utility to improve its performance with respect to (i) service quality/reliability; (ii) customer education on conservation; (iii) demand-side management; (iv) more intensive utilization of selected inputs in production, etc.

16. The regulator has various policy instruments at its disposal that may be used to influence the utility's performance in select areas. These include variations in the allowed rate of return, the degree of earnings sharing, the length of the regulatory regime (regulatory lag) and the efficiency carry-over mechanism (i.e., the share of excess/deficient returns that are carried over into the subsequent regulatory regime). Nonetheless, it is important to recognize that the effectiveness of each of these policy instruments in motivating superior performance will turn on the degree to which the regulated firm (inclusive of management and employees) is rewarded (penalized) for its superior (inferior) performance. As discussed below, financial incentives are an important source of motivation, but they need not be the only source.

Special Incentives to Use Disfavored Inputs

17. In principle, this approach is no different than any other type of performance incentive mechanism (PIM). In other words, the use of disfavored inputs can be encouraged by providing a sufficiently strong financial incentive for the regulated firm. The regulator can encourage the regulated firm to adopt the desired input mix through a combination of rewards and penalties. These rewards and penalties can, in turn, be administered through changes in the allowed rate-of-return, earnings sharing, the length of the test period and the efficiency-carryover mechanism. In addition, as discussed below, non-financial incentives based on information-only metrics may also prove effective in motivating desired performance. Finally, cost trackers that allow for separate cost recovery for specific capital investments can be employed to influence utility performance.

Multi-Year Rate Plans

18. Multi-year rate plans can strengthen the incentive power of the regulatory regime through a combination of external benchmarks (e.g., an $I - X$ index) or a fixed rate trajectory based on cost forecasts for rate setting and by increasing the length of the test period. The degree to which the incentive power of the regulatory regime is increased will depend on the various

parameters of the multi-year rate plan. These parameters include, but are not limited to, the length of the regulatory regime (i.e., regulatory lag), the existence and structure of the earnings-sharing mechanism and the efficiency-carryover mechanism.[5] Various reporting requirements can also be used to motivate desired behavior.

19. In addition, it is important to recognize that there are trade-offs between the various parameters of the PBR regime. For example, a five-year PBR plan with a pronounced earnings-sharing component may actually have lower incentive power than a 3-year test period for cost-of-service regulation regime that is based on a fixed-rate trajectory and no earnings sharing. This observation underscores an important principle. Specifically, the incentive power of a PBR regime is not necessarily greater than that of a carefully designed cost-of-service regulation regime. I provide a stylized example below to illustrate this fact.

2.2 QUESTION 2 AND ANSWER

20. You have observed that while traditional cost-of-service regulation is frequently treated as a discrete alternative to PBR, these two types of regulatory regimes are best understood in terms of lying along a continuum based on the strengths of the incentives for efficient performance and that a high-powered regulatory regime is one in which the regulated firm is responsible for a large share of its actual costs. You have also observed that PBR is commonly referred to as "$I - X$" regulation. Is the use of a formula or index to set rates a necessary characteristic of a PBR regime? Why or why not?

21. No. The use of a formula or index to set rates is not a necessary characteristic of a PBR regime. The superior incentive properties of these two different approaches (indexed and non-indexed) turn on the fact that the rate trajectory over the course of the regulatory regime is invariant to the regulated firm's own performance regardless of whether that rate trajectory is determined

[5] See, for example, Mark E. Meitzen, Phillip E. Schoech and Dennis L. Weisman, "Debunking the Mythology of PBR in Electric Power," *The Electricity Journal*, Volume 31(3), April 2018, pp. 39-46; and Mark E. Meitzen, Phillip E. Schoech and Dennis L. Weisman, "The Alphabet of PBR in Electric Power: Why X Does Not Tell the Whole Story," *The Electricity Journal*, Volume 30(8), October 2017, pp. 30-37.

by the "I – *X*" formula or by a cost forecast set at the outset of the regulatory regime. There are both advantages and disadvantages associated with each approach (i.e., an "*I – X"* index and a cost forecast). The regulator must decide on the specific approach that offers the greatest potential to realize the stated objectives for the regulatory regime, inclusive of the impacts on key stakeholders (i.e., the regulator, the regulated firm, consumers and competitors).

> The two most important lessons to be drawn from the literature surveyed here are that there is no single combination of regulatory settings that is best in all situations and that the various components of a regulatory scheme are interrelated. The most appropriate regulatory scheme for a given situation will depend on the characteristics of the firm and industry being regulated, as well as the institutional environment.[6]

22. For example, the use of *X* factors in PBR plans provides an external benchmark for performance that instills strong incentives for efficiency while delineating a rate trajectory that is designed to emulate competitive market outcomes. This competitive outcome prevails even though the regulated firm is a *de facto* monopolist in its service territory. These observations notwithstanding, experience suggests that *X* factors are one of the most controversial elements of a PBR plan.

23. In the development of the *X* factor, there can be protracted debate with respect to the (i) the time period over which the analysis should be conducted; (ii) the relevant peer group of firms with common (exogenous) characteristics; (iii) the proper method of depreciation and countless other technical matters. This process can easily devolve into a *battle of the statisticians*. These problems may be compounded by the fact that small changes in the methodology can have relatively large effects on the value of the *X* factor. The key observation is that despite broad-based agreement on the "science" some degree of judgement invariably enters into the development of *X* factors.[7]

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[6] Graeme Guthrie, "Regulating Infrastructure: The Impact on Risk and Investment," *Journal of Economic Literature*, Volume 44(4), December 2006, p. 966.

[7] In Canada and the United States, the *X* factor is typically set to reflect expected industry productivity growth. Whereas, in Europe, the *X* factor tends to be more of a "negotiated value." See Stephen Littlechild, REGULATION OF BRITISH TELECOMMUNICATIONS' PROFITABILITY, Department of Industry: Report to the Secretary of State, 1983; and Michael Crew and Paul Kleindorfer, "Incentive Regulation in the United Kingdom and the United States: Some Lessons," *Journal of Regulatory Economics*, Volume 9(3), 1996, pp. 211-225. In principle, there is no real difference between a negotiated *X* factor and a fixed rate trajectory based on a Commission-approved cost forecast.

24. A cost forecast likewise establishes a benchmark for rate changes over the course of the PBR term that is invariant to the regulated firm's own performance. This rate trajectory is not linked directly to the performance (total factor productivity and input price growth) of a peer group of utilities so it may perform less well in emulating competitive market outcomes. Nonetheless, it is increasingly common for indexed PBR plans (i.e., "$I - X$" forms of PBR) in electric power to incorporate utility-specific capital factors. The inclusion of such factors suggests that a formulaic approach to setting rates under PBR may not be markedly superior in emulating competitive outcomes, if it is superior at all, to setting rates based on a cost forecast that delineates a fixed rate trajectory over the term of the regulatory regime.

25. Nonetheless, while the protracted technical debate over the proper value of the X factor is circumvented with this approach, the cost forecasts must still be scrutinized rigorously. This exercise can prove challenging in an environment in which there are pronounced informational asymmetries. In other words, the regulated firm typically knows far more about its costs (and its ability to reduce them) than the regulator and interveners. Furthermore, to the extent that this approach obviates the need for an earnings-sharing mechanism, it eliminates another one of the most controversial elements of PBR.[8]

26. The use of a formula or index to set rates is not a necessary characteristic of a PBR regime. In fact, some of the initial forms of incentive regulation in the U.S. telecommunications industry were simple rate moratoria in which rates were frozen at going-in levels for a stipulated period of time (e.g., 3 years).[9] In fact, this type of incentive regulation is quite similar to the form of cost-of-service regulation that BC Hydro currently operates under wherein the test period is

[8] Earnings sharing can elicit strategic behavior on the part of the regulator and the regulated firm. The regulator can strategically disallow costs to move the regulated firm's returns into the sharing range. The regulated firm can strategically time its capital investments to minimize the earnings that are shared. Allocations of common costs can also prove contentious when the regulated firm has both regulated and unregulated operations. This is the case because allocating more common costs to the regulated side of the business can reduce financial returns and thereby lessen the amount of earnings that must be shared. David E. M. Sappington and Dennis L. Weisman, "Price Cap Regulation: What Have We Learned from Twenty-Five Years of Experience in the Telecommunications Industry?" *Journal of Regulatory Economics*, Volume 38, 2010, Section 8.

[9] David E. M. Sappington and Dennis L. Weisman, "Price Cap Regulation: What Have We Learned from Twenty-Five Years of Experience in the Telecommunications Industry?" *Journal of Regulatory Economics*, Volume 38, 2010, pp. 232-233.

fixed, typically for two or three years.

27. This form of cost-of-service regulation contrasts sharply with the textbook model of cost-of-service regulation wherein the regulated firm's performance benchmark is its own earnings. Hence, when the regulated firm subject to textbook cost-of-service regulation implements efficiency improvements that increase earnings, it may be required to return any excess earnings to consumers in the form of rate reductions. This explains why this form of cost-of-service regulation is criticized on grounds that "no good deed goes unpunished."[10] This form of cost-of-service regulation is an example of a *cost-plus contract*. This is the case because the prices that consumers pay tend to vary directly with the reported costs of the firm and therefore may exhibit greater volatility.

28. The incentives for superior performance increase with (i) the share of the efficiency gains that the regulated firm retains; and (ii) the regulatory lag or the length of time that the regulated firm is allowed to retain them. For this reason, the regulated firm may have relatively weak or relatively strong incentives to undertake cost-reducing innovation under cost-of-service regulation. The key observation is that not all PBR regimes are created equal just as not all cost-of-service regulation regimes are created equal. The design of each regulatory regime, whether it be PBR or cost-of-service regulation, determines its particular incentive properties.

29. In general, in order to preserve ideal incentives for efficiency it is necessary for the regulated firm to perceive that the benchmark that governs its rate trajectory (be it the *X* factor or an *ex ante* cost forecast) does not vary with respect to its own performance. This is sometimes referred to as the *immutability condition*. A regulatory regime in which performance

[10] For example, if the regulated firm undertakes cost-reducing innovation that fails, it risks those costs being disallowed on grounds of imprudence. Conversely, if the cost-reducing innovation is successful, it can trigger a rate case to appropriate ("claw back") excess earnings. It was precisely this type of asymmetric risk-bearing that prompted the change from traditional rate-of-return regulation to price cap regulation in Canada and throughout North America. See David E.M. Sappington and Dennis L. Weisman, "Price Cap Regulation: What Have We Learned from Twenty-Five Years of Experience in the Telecommunications Industry?," *Journal of Regulatory Economics*, Volume 38(3), December 2010, pp. 227-257; and Lawrence A Kolbe and William B. Tye, "The Duquesne Opinion: How Much 'Hope' is there for Investors in Regulated Firms?" *Yale Journal on Regulation*, 1991, Volume 8(1), pp. 113-157.

benchmarks are changed in response to the performance of the regulated firm is said to incorporate a ratchet effect (i.e., "moving the goalposts").[11]

> The regulated firm may be concerned about the "ratchet effect": If it produces at a low cost today, the regulator might infer that low costs are not that hard to achieve and tomorrow offer a more demanding incentive scheme. That is, the firm jeopardizes future rents by being efficient. The ratchet effect is often perceived as a serious problem in regulated industries, procurement, planned economies, and private organizations.[12]

30. Consider the following simple form of PBR. The term of the PBR plan is 3 years and rates are fixed at existing levels for the duration of the PBR regime. This PBR regime would give rise to the same incentives for efficiency as if the regulated firm were subject to "*I – X*" regulation provided that (i) the regulated firm is financially viable in both scenarios; (ii) the computation of the *X* factor is independent of the regulated firm's own performance (i.e., the immutability condition is satisfied); and (iii) there is no earnings sharing mechanism.

31. In both cases, the regulatory regime is a *fixed-price contract*. Provided that rates remain at or below the external benchmark established via the "*I –X*" index or the rate trajectory set at the outset of the regime the regulated firm is the *residual claimant* for its efficiency gains. This means that the regulated firm retains $1 for each $1 in efficiency gains that it achieves until the time of rebasing when rates are realigned with underlying costs.

2.3 QUESTION 3 AND ANSWER

32. You have observed that under cost of service regulation, the incentive power of a regulatory regime can be ratcheted-up considerably if there is relatively long regulatory lag (i.e., the period over which the regulated firm is not subject to an earnings review and a recalibration of rates to achieve a target rate of return). Please comment on the extent to which regulatory lag contributes to incentive power and if there are any other factors. Within this context, please explain the extent to which there may be any difference in incentive power between setting rates based on forecast costs over a three year test period and setting rates based on a formula or index over a three year test period.

[11] To wit, if "too many" goals are scored, the goalposts can be moved back to make scoring more difficult.

[12] Jean-Jacques Laffont and Jean Tirole, A THEORY OF INCENTIVES IN PROCUREMENT AND REGULATION, Cambridge MA: The MIT Press, 1993, pp. 375-6.

33. In the textbook model of cost-of-service regulation, the earnings of the regulated firm are capped, and an earnings review can be triggered whenever earnings diverge sufficiently from target levels. In contrast, the form of cost-of-service regulation that applies to BC Hydro specifies a fixed test period over which the regulated firm is not subject to an earnings review and a recalibration of rates to achieve a target rate of return.[13] The distinction between textbook cost-of-service regulation and PBR is often cast in terms of whether the term of the regulatory regime (i.e., regulatory lag) is fixed in advance or determined endogenously on the basis of the regulated firm's earnings.[14] The incentive power of cost-of-service regulation can be ratcheted up considerably if there is a relatively long test period.[15]

34. The incentive power of the regulatory regime would not be expected to differ across the two scenarios outlined in the question when (i) both the forecast and the formula/index are invariant to the regulated firm's behavior (i.e., the immutability conditions is satisfied); (ii) the regulated firm is financially viable under both scenarios (i.e., the regulated firm is not in or near financial default); (iii) there is no earnings-sharing mechanism under either approach; and (iv) the test period is the same in both scenarios. In both regulatory regimes, the rate trajectory is fixed by a benchmark that is invariant to the regulated firm's own performance (i.e., the immutability condition is satisfied).

35. In general, the incentive power of a regulatory regime depends on (i) the share of the efficiency gains the regulated firm is allowed to retain; and (ii) the length of time that it is allowed to retain them (i.e., regulatory lag). As discussed below, there are trade-offs between these two dimensions of incentive power.

36. With respect to part (i), suppose that the regulated firm invests in cost-reducing innovation

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[13] As discussed above, this particular form of cost-of-service regulation is properly characterized as a non-indexed form of PBR because it is similar to rate case moratoria. The analysis that follows explains in greater detail why such a classification is appropriate.

[14] See, for example, Mark Armstrong, Simon Cowan, and John Vickers, REGULATORY REFORM, Cambridge MA: The MIT Press, 1994, p. 172. The authors note that "The difference is one of degree rather than kind."

[15] For a discussion of the benefits of regulatory lag in strengthening incentives, see Alfred E. Kahn, THE ECONOMICS OF REGULATION, Volume II, New York: John Wiley and Sons, 1971, pp. 48-9.

that yields $1 dollar of cost savings and, in turn, "excess" earnings. In general, there are two mechanisms by which a share of that $1 of cost savings may be appropriated ("clawed back") from the regulated firm. First, the full dollar or a portion thereof may be returned to consumers in the form of a decrease in rates. Second, the full dollar or a portion thereof may be returned to the regulator in the form of shared "excess" earnings. These shared earnings may be used for bill credits, rate refunds, support for low-income households or even infrastructure modernization.[16] Finally, suppose the combination of rate reductions and earnings sharing enables the regulated firm to retain **$0.50** of the additional dollar in cost savings.

37. With respect to part (ii), the longer the regulatory lag or the test period, the stronger the incentive power of a regulatory regime, *ceteris paribus*. Suppose the regulatory regime lasts for 5 periods. In addition, assume that a firm in an unregulated, competitive market is able to retain the fruits of its cost-reducing innovation for 6 periods before market forces appropriate that innovation in the form of a downward price adjustment. This serves as the competitive benchmark for comparative purposes.[17] For expositional purposes, and without significant loss of generality, we abstract from discounting issues across time periods by assuming that the firm's discount rate is zero. This means the firm places the same weight or value on a dollar received today as a dollar received a year from now, or a dollar received 5 years from now.

38. The regulated firm is assumed to make an investment in cost-reducing innovation at the beginning of each period of the PBR regime that reduces costs by precisely $1. The incentive power of the regulatory regime that lasts for 5 periods is measured as a percentage of the competitive benchmark. The regulated firm retains the fruits of its first period innovation for 5 periods before rates are recalibrated. The incentive power of this first-period investment (relative to the 6-year competitive benchmark) is therefore $0.5 \times 5/6 = 0.4167$.[18] The incentive power of the second-period investment (which the regulated firm retains for 4 periods) is 0.5

[16] See David E. M. Sappington and Dennis L. Weisman, DESIGNING INCENTIVE REGULATION FOR THE TELECOMMUNICATIONS INDUSTRY, Cambridge MA.: MIT Press and Washington D.C.: AEI Press, 1996, Chapter 3.

[17] The concept of incentive power was discussed in BCUC IR 200.1.

[18] The regulated firm retains $0.50 of the $1 in cost-reducing innovation and it retains this for a period that is 5/6 as long as the benchmark competitive firm.

× 4/6 = 0.3333.[19] Similarly, the incentive power of the third, fourth and fifth period investments are 0.25, 0.1667 and 0.0833, respectively.

39. The average incentive power over the five-year regulatory regime is therefore computed as $\frac{1}{5} \times (0.4167 + 0.3333 + 0.25 + 0.1667 + 0.0833) = 0.25$. This means that a PBR regime that lasts for 5 periods in which the regulated firm retains 50% of its cost savings has incentive power that is 25% of that of a benchmark competitive firm. Alternatively stated, the incentive power for the competitive firm (0.25) is four times greater than that of the regulated firm (1.0).

40. Suppose now that the PBR regime is 6 years rather than 5 years in duration. What is the effect of lengthening the test period (regulatory lag) by one year on the incentive power of the regulatory regime?[20] The incentive power of this first-period investment (which the regulated firm retains for 6 periods, the same as the competitive benchmark) is 0.5 × 6/6 = 0.5. The incentive power of the second-period investment (which the regulated firm retains for 5 periods) is 0.5 × 5/6 = 0.4167. The incentive power of the third-period through sixth-period investments are readily computed to be 0.3333, 0.25, 0.1667 and 0.0833, respectively. The average incentive power of the six-year regulatory regime is $\frac{1}{6} \times (0.5 + 0.4167 + 0.3333 + 0.25 + 0.1667 + 0.0833) = 0.2917$. This means that a PBR regime that lasts for 6 periods in which the regulated firm retains 50% of its cost savings has incentive power that is approximately 29% of that of a benchmark competitive firm. In this case, lengthening the test period by one year (from 5 years to 6 years) increases the average incentive power of the regulatory regime by 16.68%.[21]

41. Suppose now that the regulated firm is allowed to retain the entire **$1** of its cost savings (rather that $0.50) in each period of the regulatory regime prior to rebasing. This scenario would correspond to pure price-cap or pure revenue cap regulation (i.e., no earnings sharing). The average incentive power of the 5-period and 6-period regulatory regime is 0.5 and 0.5834,

[19] The regulated firm retains $0.50 of that $1 in cost-reducing innovation and it retains this for 4/6 as long as the benchmark competitive firm.

[20] Incorporating an efficiency-carryover mechanism into the regulatory regime would have the same qualitative effect as increasing the length of the test period.

[21] 16.68% = (0.2917- 0.25)/0.25.

respectively.[22] Once again, lengthening the test period by one year (from 5 years to 6 years) increases the average power of the regulatory regime by 16.68%.[23]

42. As a final exercise, it is instructive to explore the trade-offs between the various parameters of regulatory regimes in terms of incentive power. For example, suppose the regulator implements a 3-year cost-of-service regulation regime based on a cost forecast in which the rate trajectory is invariant to the regulated firm's behavior. How does the incentive power of this regime compare to a 5-year PBR regime with an earnings-sharing mechanism that appropriates ("claws back") 50% of each dollar of cost savings?

43. We previously computed the incentive power of the PBR regime to be 0.25. Hence, we need only compute the incentive power of the cost-of-service regulation regime with the three-year test period. The incentive power of this regime would be computed as $\frac{1}{3} \times (0.5 + 0.3333 + 0.1667) = 0.3333$.[24] What this indicates is that a three-year cost-of-service regulation regime with a fixed-rate forecast and no earnings sharing has approximately 33% more incentive power than a 5-year indexed PBR regime with a 50% earnings-sharing mechanism.[25] In fact, the cost-of-service regulation regime would outperform the PBR regime in terms of incentive power whenever the "earnings tax" (i.e., the proportion of each dollar of cost savings appropriated through the earnings-sharing mechanism) is greater than 0.3333.[26]

44. Three conclusions follow from this hypothetical, stylized example. First, the share of the efficiency gains retained by the regulated firm has a pronounced effect on the power of the

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[22] Note that the incentive power in this case is precisely twice that of the 5-year and 6-year PBR regimes with a 50% earnings-sharing mechanism.

[23] 16.68% = (0.5834 – 0.50)/0.5.

[24] In the first period, the incentive power is 3/6 = 0.5. In the second and third periods, the incentive power is 2/6 = 0.3333 and 1/6 = 0.1667, respectively. Summing the incentive power values for each period and dividing by 3 yields an average incentive power over the three-year cost-of-service regulation regime of 0.3333.

[25] 33.33% = (0.3333 – 0.25)/0.25.

[26] Let t denote the level of the "earnings tax." The PBR and cost-of-service regulation regimes have the same incentive power when $(1 - t) \times 0.5 = 0.3333$. Solving this expression for t yields the break-even "earnings tax," $t^B = 0.3333$. Hence, when $t > 0.3333$ the incentive power is higher under the cost-of-service regulation regime and when $t < 0.3333$ the incentive power is higher under the PBR regime, *ceteris paribus*.

regulatory regime. Second, a modest increase in the length of the regulatory regime has a significant effect on increasing the incentive power of the regulatory regime. Finally, there is a tradeoff between the length of the regulatory regime and the degree of earnings sharing.

2.4 QUESTION 4 AND ANSWER

45. Are financial incentives in the form of rewards and penalties always required to induce a regulated firm to comply with Commission-determined performance metrics?

46. No. Suppose the Commission identifies a set of performance metrics related to conservation and the use of disfavored inputs. The Commission may decide to make these performance metrics "informational only." This means that the regulated firm's performance on these metrics would be publicly disclosed, perhaps even reported on the Commission's web site, but it would not be rewarded or penalized financially for compliance or lack of compliance with these performance metrics.

47. The regulated firm may still have strong incentives to meet or exceed these performance metrics even though there are no financial rewards or penalties directly associated with compliance or non-compliance. This underscores an important observation that financial incentives are not the only type of incentives that can be used to motivate superior performance. This the case for the following reasons. First, the regulated firm may have a sufficiently strong sense of social responsibility that it would not want its reputation impugned as a result of lack of compliance with these performance metrics. A company's reputation is a valuable asset, one that is markedly easier to maintain than it is to rehabilitate. Second, the company may believe that failure to comply with these performance metrics would increase the likelihood that at some future point in time the Commission would opt for financial rewards and penalties "to get the job done."

48. The company may rightfully be concerned that if it forced the Commission's hand in this reward, the financial rewards and penalties that are ultimately put in place may be heavy on the sticks and light on the carrots. In other words, there may be a punitive nature to them as a direct result of the company's failure to comply with the (information-only) performance metrics. Hence, there is a "threat component" that would tend to drive compliance that is

independent of actual financial incentives. We can think of this in terms of *regulatory contestability* – the mere threat of regulation can elicit the desired behavior.[27] For these reasons, it is not necessarily the case that financial incentives would be required to induce compliance with Commission's performance metrics.

49. In addition, it is important to highlight the fact that in the specific case of BC Hydro, the Company essentially serves "two masters" in the form of the BC Commission and its government owner. The failure on the part of the company to comply with information-only performance metrics would likely not be received any more favorably by the government than by the Commission. It is therefore quite plausible to believe that information-only performance metrics may be more effective in eliciting the desired behavior from a crown corporation than they would be for an investor-owned utility. The failure of the crown corporation to meet or exceed the stipulated performance metrics would reflect poorly on the government and its leadership.

3.0 CONCLUSION

50. The answers to the four questions put to me by BC Hydro give rise to the following conclusions. First, financial rewards and penalties are not the only form of incentives that can motivate desired behavior. Second, there are trade-offs in the design of regulatory regimes than can result in a shorter-duration cost-of-service regulation regime dominating a longer-duration PBR regime with earnings sharing in terms of incentive power. Third, earnings sharing can have a pronounced effect in decreasing the power of the regulatory regime. Fourth, lengthening the regulatory lag (e.g. increasing the test period from 2 to 3 years) can have a significant effect in increasing the power of the regulatory regime.

51. I repeat and underscore an observation that I made in the conclusion of my PBR report.

> Finally, if the PBR regime is not developed in accordance with sound economic principles, or there is not a strong commitment to the fundamental tenets of PBR on the part of either the regulator or the government, the significant resources required

[27] See, for example, Amihai Glazer and Henry McMillan, "Pricing by the Firm under Regulatory Threat," *The Quarterly Journal of Economics*, Volume 107(3), 1992, pp. 1089-1099.

> to design and implement a PBR regime would be difficult to justify. The adoption of PBR may simply fail the cost-benefit test under these conditions.[28]

52. As a final observation, it is conceivable that the cost-benefit test for a formal PBR regime is likely to be more difficult to pass in the case of BC Hydro. The specific form of cost-of-service regulation under which the company currently operates is properly characterized as a form of PBR. Moreover, with a three-year (or longer) test period this type of regulatory regime may well give rise to greater incentive power than an indexed form of PBR with a term of 5 years that incorporates a significant earnings-sharing component. This suggests that at least in terms of incentive power, the Commission may well be taking a step backward if it opted for this type of PBR regime.

[28] Dennis L. Weisman, "A Report on the Theory and Practice of Performance-Based Regulation," December 12, 2018, Exhibit A2-1, Appendix FF, p. 63.

BC Hydro
Power smart

BCUC Review of
Performance Based Regulation Report

Supplementary Evidence of
British Columbia Hydro and Power Authority

Appendix B

Mr. Mark Kolesar – Submission

Submission of

Mark Kolesar

to the

British Columbia Utilities Commission

Respecting

Review of British Columbia Hydro and Power Authority's

Performance Based Regulation Report – Project No. 1599045

November 27, 2020

Introduction and Summary of Opinion

My name is Mark Kolesar. I am the Managing Principal at Kolesar Buchanan & Associates Ltd. As a former regulator with extensive experience in both cost of service regulation (COSR) and performance-based regulation (PBR), I have been engaged by British Columbia Hydro and Power Authority (BC Hydro or the Company) to provide opinion evidence to the British Columbia Utilities Commission (BCUC or the Commission) on the following question.

Given that BC Hydro is not a profit maximizing utility, are there implications that should be considered in the design of the regulatory regime for the company.

Appendix One to this submission provides a copy of my letter of instruction from Fasken Martineau DuMoulin LLP on behalf of BC Hydro.

I have provided in this submission an overview of alternative forms of regulation currently under consideration by the BCUC in this proceeding, and an analysis of how both a profit-maximizing and a non-profit-maximizing utility can be expected to respond to the incentives provided in both cost of service regulation and performance-based regulation. I have then considered evidence on the culture, processes and procedures, compensation scheme and the expectations of the Company's shareholder, and concluded that BC Hydro is not a profit-maximizer and will be unlikely to fully respond to the incentives of PBR. Accordingly, I conclude that the benefits of PBR are unlikely to be fully realized.

Given this finding, I set out six regulatory objectives that the BCUC should seek to balance in making its determination with respect to the form of regulatory regime to be adopted for BC Hydro. I also provide some perspectives on each of the objectives for the Commission to consider, given the characteristics of BC Hydro and other matters.

I encourage the Commission to consider the perspectives provided in this submission when weighing the evidence in this proceeding and determining the form of regulatory regime for BC Hydro. The Commission should consider whether BC Hydro's culture, processes and procedures, compensation scheme and the expectations of its shareholder are adequately attuned to the incentives of PBR, and whether, upon weighing all of the Commission's objectives, a form of COSR might better suit the circumstances of BC Hydro.

Please note that the footnotes are an integral part of this submission and should be read in full.

Qualifications

I have over 30 years of experience in the regulated utilities sector, having worked in the areas of regulation and public policy, external relations, marketing, strategy and business development, and mergers and acquisitions. This includes over 20 years of corporate experience in the telecom sector, where I was Vice President, Economic Affairs at TELUS, one of Canada's largest telecommunications companies. I recently concluded my tenure with the Alberta Utilities Commission, where I was a Commission member for twelve years, including six years as Vice Chair and two years as Chair of the Commission.

During my time at the Alberta Utilities Commission, I issued over 1600 decisions on revenue requirement, rate setting, facilities' cost approvals and siting, rate of return, utility acquisitions and divestitures, market design, etc.; including designing and approving several generations of performance-

based regulation plans for five distribution utilities and one transmission utility. While at the Alberta Utilities Commission I regulated investor owned utilities, by which I mean utilities owned by publicly traded entities (e.g. Atco Electric) as well as municipally owned utilities (e.g. EPCOR and ENMAX).[1]

I taught for over twenty years at the University of Alberta and the University of Calgary as sessional faculty. My principal teaching areas were Strategy Development and Implementation, and Business Planning, although I also taught a number of courses in finance, engineering economics and management accounting.

I have also published articles in academic journals, including Info and The Journal of Internet Research. I currently sit on the Advisory Board of the Center for Research in Regulated Industries at Rutgers University.

I am a frequently invited speaker at conferences, having recently participated on Webinars for Public Utilities Fortnightly, Rutgers University, the Canadian Association of Members of Regulatory Tribunals, the Hawaii Energy Conference and GridFoward2020.

My extensive experience as a regulator, and specifically my experience in approving both COSR and PBR regimes for both publicly traded utilities and municipally owned utilities, as well as my education and other experience and qualifications are related specifically and directly to the question I have been asked to opine on.

My detailed curriculum vitae is attached as Appendix Two.

Duty of Independence

I confirm that I have a duty to assist the Commission and I have a Duty of Independence. Accordingly, I am not an advocate for any party and I am acting as an independent consultant and all of the opinions set out in this submission are my own. I am solely responsible for the content of this submission.

I have prepared this submission in accordance with the Duty of Independence and if called to give oral or written testimony, I will give that testimony in conformity with the Duty of Independence.

Discussion

Objectives of the BCUC in regulating BC Hydro

The British Columbia Utilities Commission is an independent regulatory agency of the BC government, operating under the *Utilities Commission Act*. As such, the Commission is responsible for ensuring that the utilities they regulate provide safe, reliable energy services at just and reasonable rates while ensuring the utilities are afforded a reasonable opportunity to recover their prudently incurred costs and earn a fair return on their investments. The Commission has the authority to determine the form of regulation that, in its view, will achieve these objectives.

[1] During my tenure at the Alberta Utilities Commission, I approved PBR plans for EPCOR Distribution, ENMAX Distribution and ENMAX Transmission, all which are profit maximizing public enterprises.

Alternative Forms of Regulation

In this proceeding the Commission is considering whether to adopt Performance-based regulation (PBR) to achieve its legislated mandate in regulating BC Hydro, rather than cost-of-service regulation (COSR), as contemplated in BC Hydro's revenue requirements application of February 25, 2019 for the fiscal years 2020 and 2021.[2]

This proceeding may be characterized as a dichotomous choice between two forms of regulation; COSR and PBR. However, the choices before the Commission fall on a continuum between what may be seen as the two extremes between COSR and PBR. In this regard, I agree with Dr. Weisman that:

> Whereas traditional cost-of-service regulation (COSR) is frequently treated in the literature as a discrete alternative to PBR, these two types of regulatory regimes are best understood in terms of lying along a continuum based on the strengths of the incentives for efficient performance…[3]

Accordingly, the Commission has a range of regulatory regime alternatives by which it may achieve its objectives in regulating BC Hydro. In choosing a regulatory regime for BC Hydro, the Commission should seek to achieve a balance among the following objectives. [4]

- The regulatory regime should emulate the results achieved in a competitive market to the greatest extent possible;
- The regulatory regime should provide an opportunity for BC Hydro to recover its prudently incurred costs and earn its fair return;
- The regulatory regime should be understandable;
- The regulatory regime should avoid regulatory burden and streamline regulation to the greatest extent possible;
- The regulatory regime should make parties better off relative to other regulatory alternatives, so that both BC Hydro and its customers share in the benefits of the plan;[5]
- The regulatory regime should consider the unique circumstances of BC Hydro.

In the matter of implications that should be considered in the design of the regulatory regime for the Company given that BC Hydro is not a profit maximizing entity, the Commission should consider these implications with respect to its achievement of each of the above objectives, among other matters.

Incentives in COSR and PBR

As a precursor to examining the implications that should be considered in the design of the regulatory regime for BC Hydro, given that it is not a profit maximizing entity, it is instructive to consider at a high

[2] BC Hydro's Fiscal 2020 to Fiscal 2021 Revenue Requirements Application (Exhibit B-1)
[3] Exhibit A2-1 Appendix FF: A REPORT ON THE THEORY AND PRACTICE OF PERFORMANCE-BASED REGULATION by Dennis L. Weisman Ph.D., December 12, 2018. Page 1
[4] Although I have characterized these objectives as specific to a regulatory plan for BC Hydro, in my view these objectives are generally and properly applicable to a regulatory plan for any utility.
[5] I am mindful here of the finding of the Supreme Court of Canada in **ATCO Gas and Pipelines Ltd. v. Alberta (Utilities Commission), 2015 SCC 4** that "in Canadian law, 'just and reasonable' rates or tariffs are those that are fair to both consumers and the utility" I. [7]

level the incentives created at the opposite ends of the continuum of alternatives available to the Commission (i.e. COSR and PBR), and how the regulated utility both with and without an incentive to maximize profits can be expected to respond.

COSR

Briefly, a COSR regime establishes a forecast revenue requirement deemed necessary to satisfy the service obligations of the utility at the level of quality established by the regulator for a future period and then approves rates intended to recover that revenue requirement.

The process generally involves a line-by-line analysis of the utility's costs, including those related to administrative expenses; operations and maintenance expenses; opening rate base and the related deprecation, taxes and return; projected capital additions for both capital maintenance and incremental capital investments necessary to replace aging infrastructure and to satisfy expected load growth, and the concomitant depreciation, taxes and return; the utility's capitalization policies; any cost allocations and the related allocation methodologies; the calculation of necessary working capital; the embedded cost of debt and additions to debt; and the allowed return on equity investment. In addition, the analysis usually considers the requirement for and effects of various reserve accounts, deferral accounts and flow-through cost accounts.

The process to establish a forecast revenue requirement is well known to the Commission, BC Hydro and interested parties; so, there is no need to walk through that process here. However, it is worth noting that there are some fundamental challenges faced by the utility, its regulator and interested parties in establishing a forecast revenue requirement under COSR.

Perhaps the most significant challenge arises from informational asymmetry. The utility has access to more information and understands its business better than the regulator or interested parties, which makes it difficult for them to fully understand and assess the reasonableness[6] of the utility's proposed revenue requirement. This is not to imply that the utility will engage in any iniquitous activities to circumvent the efforts of the regulator to ascertain the reasonableness of its forecast. Indeed, utilities are usually well engaged in helping the regulator understand their applications. However, given the inherent difficulty in any forecasting exercise, the utility itself may be challenged to generate a forecast it considers reasonable. The challenge for the regulator and other parties resides in the sheer volume and complexity of the information on the record of the proceeding, making it hard for them to undertake a thorough assessment of the application. Without a sufficient understanding of the inner workings of the utility, it may be difficult to even know what questions to ask.

A second challenge in cost of service regulation is an inherent upward bias in response to uncertainty. As a forecast extends further into the future, forecasters generally seek a wider confidence interval around the expected forecast result because there is simply less certainty about the expected outcome. A more generous forecast reduces the risk of under-forecasting the impact of future events. There are, of course, alternative approaches to establishing a forecast revenue requirement that may assist in

[6] I intentionally use the term "reasonableness" rather than "prudence" because at the revenue requirement forecast stage of a COSR regime it is not possible to assess the prudence of expenditures that have not yet been undertaken. The test for the regulator at this stage is whether the forecast revenue requirement is reasonable.

countering this inherent bias, for example reducing the forecast horizon to fewer test years or using an historical rather than forecast test year.

However, reducing the number of test years has the countervailing effect of reducing the incentive to find productivity improvements. It also increases regulatory burden because the utility will be before the regulator more frequently. The latter concern may be exacerbated when regulatory lag leads to a delay in approvals, so that one or more test years are essentially over before the proceeding is complete. In such circumstances, adding an additional test year may be warranted, particularly if the utility is in a position to update its forecasts.

Finally, there are other elements in the purview of a COSR proceeding mentioned above, such as capitalization policies, cost allocations, and various reserve, flow through and deferral accounts which add a layer of complication to the process of establishing a reasonable forecast and which may further constrain achievement of the desired incentives.

None of this is to say that COSR should not be adopted. There may be very good reasons to implement a COSR regime. In addition to the potential advantages of COSR discussed below, COSR may be a good alternative when certain conditions are present in the utility's market, precisely because it does not break the link between costs and revenues. Given the lumpiness of capital additions in most utilities,[7] when a utility is forecasting significant load growth a PBR plan may struggle to adequately align the cost of capital additions required to serve increased load with the projected revenue provided by the PBR formula and the increase in billing determinants. The potential mis-alignment of revenues and costs may be more severe when the utility's billing determinants are fairly stable, but it has aging infrastructure that requires replacement, resulting in significant capital additions to serve existing customers. Although a PBR regime will include factors to account for capital additions, these may be less effective than COSR in adequately recognizing the effect of capital requirements on utility costs.[8]

Once the forecast revenue requirement is established by the regulator, rates are approved to recover the revenue requirement in each of the years that are the subject of the regulatory regime and the utility is set on a "revenue trajectory" for the duration of that regime. Barring any sufficiently significant events that might compel the regulator to bring the utility in for a subsequent review prior to the end of the current regime (or that might compel the utility to apply for a subsequent review), this revenue trajectory is not altered.

Given that the annual revenue requirement that underlies the revenue trajectory in each of the years in the utility's current regime is based on a forecast, it is certain that the actual revenue requirement in any year will be different than the forecast. The utility will face various deviations from the projected revenues and costs in each year with which it must contend, as the various elements that made up the forecast may vary either positively or negatively from forecast over time. Some of these variances will

[7] The issues arising in the design of a PBR regime from the lumpiness of capital investment may be further exacerbated when the utility is vertically integrated; providing generation, transmission and distribution.
[8] In Alberta, the Commission struggled with the development of K factors to deal with capital growth in its PBR regimes. Initially, the Commission's attempt to apply a growth factor to account for capital additions in transmission was found wanting. Later, the Commission recognized that it had not adequately accounted for load growth in its approach to capital trackers and made an adjustment to its PBR regime. Overall, its approach to accounting for capital growth outside of the capital recovered by the I-X element of the PBR plan proved to be burdensome and was the subject of much criticism.

reduce revenues or increase costs. In these circumstances, whether it is profit maximizing or not, the utility will seek to adjust its behavior in response in order to recover its costs and continue to earn its regulated return. Hence, even in the absence of a profit maximizing incentive, the utility under COSR may be compelled to seek productivity improvements to overcome certain unanticipated revenue or cost "shocks" over time.

However, a profit maximizing utility will be compelled to seek productivity improvements beyond those necessary to simply recover from reductions in projected revenues or increases in costs sufficient to earn its allowed return. The profit maximizing utility will seek a return beyond the regulated return approved by the regulator. To be clear, the "allowed return" on investment is somewhat of a misnomer. It is the regulated return approved as part of the revenue requirement, pursuant to the fair return standard, and upon which rates are set and the revenue trajectory is established, but the utility is not prohibited from earning a return in excess of the allowed return. Indeed, the utility is expected to respond to this incentive and to seek productivity improvements under COSR, thereby emulating to some extent the results expected in a competitive market, and in so doing retain any return in excess of the allowed return. This utility behavior is expected under normal circumstances pursuant to the regulatory bargain on the assumption that, at the end of the current regulatory regime, customers will benefit because the productivity improvements achieved in the current regime will be accounted for in the subsequent regime and passed on to consumers in future rates.

PBR

Pure PBR, as the term was used by Dr. Weisman,[9] de-couples the setting of rates from revenue requirement and caps rates or revenues over a period that exceeds the period typically adopted for COSR regimes, excludes earnings sharing and rebasing, and includes other elements generally found in a PBR regime (e.g. Y, Z, K factors).

There is no need in this discussion to go over the process of developing a PBR plan. The details are well laid out on the record of this proceeding. However, it is noteworthy that, despite potential assumptions to the contrary, the process is no less onerous than that required under COSR to establish a revenue requirement and set rates, and both PBR and COSR require a significant amount of judgment on the part of the regulator.

De-coupling the setting of rates from revenue requirement overcomes the two challenges of COSR discussed above, informational asymmetry and an upward forecast bias. There is essentially a notional revenue requirement underlying the indexed revenue for each year of the PBR plan that assumes that the utility's costs will increase as predicted by the I factor and that the utility will be able to achieve the level of productivity dictated by the X factor in the PBR formula. This also allows for a much longer regulatory regime because the notional revenue requirement underlying the approved rates in each year of the PBR plan is adjusted in lockstep with the rates as they are indexed pursuant to the PBR formula. The assumed productivity gains in the X factor of the PBR formula provide an incentive for the utility to seek out productivity improvements, while the longer period of time over which the regulatory regime is in place encourages at least the profit maximizing utility to seek productivity improvements

[9] Exhibit A2-1 Appendix FF: A REPORT ON THE THEORY AND PRACTICE OF PERFORMANCE-BASED REGULATION by Dennis L. Weisman Ph.D. December 12, 2018. Page 1

that might only unfold over the longer term and reap the benefits of an increase in shareholder returns for the duration of the PBR term.

As with COSR, once the PBR formula is established and the other elements of the PBR plan are approved by the regulator and put into motion, the utility is set on a "revenue trajectory" for the duration of that regime; a revenue trajectory governed by the PBR formula. And, as with COSR, the utility will face various fluctuations in revenues and costs each year with which it must contend, both positive and negative. Some of these variances will reduce revenues or increase costs. Again, whether it is profit maximizing or not, the utility will seek to adjust its behavior and seek productivity improvements to overcome certain unanticipated revenue or cost "shocks" over time in order to recover its costs and continue to earn its regulated return.

As expected, a profit maximizing utility will be compelled to seek productivity improvements beyond those necessary to simply adjust to deviations in projected revenues and costs in order to earn its allowed return. The profit maximizing utility will seek a return beyond the regulated return approved by the regulator, again emulating perhaps more strongly the results expected in a competitive market. And, as with COSR, this utility behavior is expected under normal circumstances pursuant to the regulatory bargain on the assumption that, at the end of the current regulatory regime, customers will benefit because the productivity improvements achieved in the current regime will be accounted for in a subsequent regime and passed on to consumers in future rates.

BC Hydro is Not a Profit Maximizer

I note and agree with the comments of Dr. Weisman in the executive summary to his report:

> The expected gains from adopting PBR may be subject to greater uncertainty in the case of crown corporations because they are de facto subject to two different regulatory authorities—the regulatory commission and the government owner. Nonetheless, PBR plans have been successfully applied to public enterprises.[10]

A matter to be considered by the Commission in this proceeding is whether BC Hydro, as a public enterprise, will be in a position to adequately respond to the more powerful incentives to seek out productivity improvements offered by PBR, given the absence of a mandate to maximize profits. In other words, will the expected gains from adopting PBR be fully realized.

A mandate letter to Mr. Kenneth G. Peterson, Executive Chair of BC Hydro's board of directors, dated February 21, 2019, from Ms. Michelle Mungall, the Minster responsible for BC Hydro, sets out the government's expectations for the Company.[11] This mandate letter recognizes BC Hydro's mandate to safely provide reliable, affordable, clean electricity throughout British Columbia. It goes on to set out some specific objectives, including the following (emphasis added):

> Continue to implement the Government direction resulting from Phase 1 of the comprehensive review of BC Hydro, and make all reasonable efforts to limit rate increases to the amounts projected in the F2020 to F2024 rates forecast

[10] Exhibit A2-1 Appendix FF: A REPORT ON THE THEORY AND PRACTICE OF PERFORMANCE-BASED REGULATION by Dennis L. Weisman Ph.D. December 12, 2018. Executive Summary

[11] https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/accountability-reports/openness-accountability/bch-mandate-letter-2019-2020.pdf

> Participate in Phase 2 of the comprehensive review of BC Hydro, which will examine opportunities to keep rates low and strategically position BC Hydro for long term success, within the context of a rapidly evolving international and continental energy sector and provincial and federal climate action strategies
>
> Provide comprehensive quarterly and annual performance reports to the Deputy Minister of Energy, Mines and Petroleum Resources (EMPR) on the status of BC Hydro finances and forecasts, as well as other initiatives and directions approved by the BC Hydro Board and the Minister of EMPR
>
> Continue to deliver planned capital projects on time and on budget to maintain the reliability of the system, while providing community benefits and training and apprenticeship opportunities

BC Hydro has a mandate to "safely provide reliable, affordable, clean electricity throughout British Columbia" while making "all reasonable efforts to limit rate increases" and to complete projects "on time and on budget." The Company is required to "provide comprehensive quarterly and annual performance reports … on the status of BC Hydro finances and forecasts." These shareholder-directed objectives promote a culture of cost control, and processes and procedures aimed at satisfying budget expectations, but not for the purpose of increasing profits, as would be the case in a publicly traded profit maximizing entity.

BC Hydro is expected to earn and provide to its shareholder, the government of British Columbia, a net income in the amount required by Direction 8.[12] There is no expectation for the Company to deliver a net income in excess of that amount. Indeed, any earnings in excess of that amount may be viewed as unpalatable, as they may lead to allegations that rates have been higher than they otherwise should have been.[13] While Direction 8 is time limited with respect to the matter of return and the determination of allowed return may be altered after fiscal 2021, there would still be no expectation that the Company's net income should exceed the approved amount, barring a change in the expectations of its shareholder.

Executive compensation in the Company, as approved by its board of directors, includes incentive pay for executives and directors, based on BC Hydro's Service Plan performance measures.[14] None of these performance measures can be interpreted as promoting profit maximization.[15] On the contrary they

[12] Direction 8 to the BC Utilities Commission relates to BC Hydro's distributable surplus (allowed net income). It stipulates that in regulating and setting rates for the Company for fiscal 2020 and fiscal 2021, the Commission must ensure that those rates allow the authority to collect sufficient revenue in each fiscal year to enable the authority to achieve an annual rate of return on deemed equity that would yield a distributable surplus of $712 million.
[13] One of the constant criticisms of PBR in Alberta was that the earnings of the companies in excess of the allowed return meant that rates were higher than they otherwise should be. It was difficult for certain critics of PBR to comprehend the longer-term objectives and the mechanics of PBR, so these criticisms were often difficult to allay.
[14] These performance measures are set out in BCUC IR 1.42.10.1 Attachment 1, in Exhibit B-5.
[15] Ordinarily regulators do not allow companies to recover executive compensation related to the achievement of profitability targets, because these costs are not associated with the delivery of service and are for the benefit of shareholders. However, such compensation measures are nonetheless a common feature of profit maximizing companies, the costs of which are borne by shareholders.

support reliable and responsive service delivery, ensure that rates are "among the most affordable in North America," promote safety, and deliver on a number of other policy objectives such as energy conservation, clean energy and aboriginal relations.

The Commission should consider whether BC Hydro's culture, processes and procedures, compensation scheme and the expectations of its shareholder are attuned to the incentives of PBR. Following the discussion above with respect to the incentives under both COSR and PBR to seek productivity improvements, and how both the profit maximizing firm and the non-profit maximizing firm can be expected to respond, it is most likely that BC Hydro will respond to fluctuations in revenues and costs under either regime by seeking productivity improvements sufficient to earn the return expected by its shareholder, but no more. In the absence of a mandate from the BC government for BC Hydro to modify its performance expectations so as to maximize its net income, the productivity gains normally expected from PBR may not be fully realized.

Balancing the Regulatory Objectives for BC Hydro

As discussed above, in choosing a regulatory regime for BC Hydro, the Commission should seek to balance a number of objectives, considering the implications of BC Hydro not having a mandate to maximize profits, among other things.

The regulatory regime should emulate the results achieved in a competitive market to the greatest extent possible

Any regulatory model on the continuum from COSR to PBR will emulate the results achieved in a competitive market to the extent that it constrains the utility from exercising monopoly power and exacting monopoly rents from consumers. And arguably, if the regulatory regime also creates incentives for the utility to seek productivity improvements, then the regime will be better at emulating the results expected from a competitive market. Indeed, this is one of the arguments in favour of PBR. However, if the utility is limited in its capacity to act on the incentive to seek productivity improvements, then achievement of this this objective may be diminished relative to other regulatory objectives.

There is potentially an argument that, even if the incentives of PBR cannot be fully realized, there is an advantage to adopting PBR because the indexed stream of revenues requires the utility to achieve a specified level of productivity, and accordingly the outcome will better emulate a competitive market outcome. However, in practice, there is no way to determine whether the expected level of productivity under a PBR regime will indeed be any different than what will be achieved under another form of regulation. Although PBR has the appearance of mathematical precision because it is formula-based, determining all the elements of a PBR plan involves a significant amount of judgment on the part of the regulator, and the interplay among the final mix of elements cannot be assumed to deliver a specific intended or measurable level of productivity, relative to what might be achieved under an alternative form of regulation.[16] The principal objective of PBR is to create an incentive for the utility to seek productivity improvements, not to generate a revenue requirement or achieve a specific level of

[16] By way of example, although the productivity offset (X factor) is often based on a Total Factor Productivity (TFP) study, the setting of an X factor is a matter of judgement for the regulator and should consider other factors, including the influence of the other elements of the PBR plan. The actual efficacy of the chosen X factor will depend on the influence of other elements of the PBR plan such as the going in rates, the other factors in the PBR formula, and the impact of off-ramps, re-openers, earning sharing mechanisms or earnings carry over mechanisms; all of which can affect the incentives normally associated with the productivity offset.

productivity. The ensuing level of achieved productivity will be dependent on how the utility responds to that incentive.

The regulatory regime should provide an opportunity for BC Hydro to recover its prudently incurred costs and earn its fair return

Every alternative regulatory regime on the continuum between COSR and PBR, if properly constructed, will provide an opportunity for the Company to recover its prudently incurred costs. BC Hydro can be afforded an adequate opportunity to recover its prudently incurred costs and earn its return under either COSR or PBR, and will have an incentive to do so.

The regulatory regime should be understandable

BC Hydro has argued that cost of service regulation is more transparent and accessible while PBR is more esoteric, relying on specialized expertise.[17] I generally agree with this statement, but it does not mean that a PBR regime cannot be understandable if well explained. The challenge for the Commission will be to explain it. COSR is well understood by most parties because it has been the common method of regulation for a long time. Because PBR is less common and derives from an economic orientation, rather than an accounting orientation, it is not as easily understood.

The experience in Alberta was that PBR was difficult to explain and therefore often criticized. It was difficult for certain critics of PBR to step outside of the COSR mindset and comprehend the longer-term objectives and the mechanics of PBR.

If the Commission adopts PBR for BC Hydro, the Commission can and should takes steps to ensure that the regime, its reasons for adopting it, and the rationale for all of the elements in its PBR plan are well explained. This will be particularly important following the Supreme Court of Canada's decision in *Canada (Minister of Citizenship and Immigration) v. Vavilov, 2019 SCC 65*, pursuant to which the courts are likely to provide less deference to regulatory tribunals than in the past, should the Commission face a court challenge to its decision with respect to this proceeding.

The regulatory regime should avoid regulatory burden and streamline regulation to the greatest extent possible

PBR promises less regulatory burden because the term of a PBR plan is generally longer than the term under COSR and the utility is presumed to be "set free" to manage its business rather than focus on regulatory filings. However, that promise is not always so easily realized. PBR, at least at the initial stages of implementation, often requires a number of supplemental or concurrent regulatory proceedings to deal with matters such as the annual rates adjustment under the PBR formula, the periodic calculation and approval of K, Y and potentially Z factors, the monitoring of quality metrics, and alike. Alberta experienced an increase in regulatory filings under PBR, in part because of the nature of some of the Commission's PBR plans, for which the Alberta commission was often criticized. The Commission should carefully analyze and consider the potential regulatory burden under both COSR and PBR.

[17] Exhibit A2-1, page 11-67

The regulatory regime should make parties better off relative to other regulatory alternatives, so that both BC Hydro and its customers share in the benefits of the plan

Determining the relative merits of COSR and PBR and the sharing of benefits is admittedly a difficult task. COSR, because it is accounting oriented and has a shorter term, is easier for most parties to understand and the sharing of benefits as between the utility and customers is theoretically easier to demonstrate because it is possible to link rates and revenues to a calculated revenue requirement, both on a forecast and actual basis. However, because PBR breaks the link between rates and revenues and the costs of the utility (the utility's revenue requirement), it is much more difficult to demonstrate the sharing of benefits.

Under PBR, the immediate benefit to customers is in the predictability of rates and the limitation on rate increases over the PBR term resulting from the annual indexing of rates over the PBR term. The longer-term benefit is realized at the end of the PBR term when the productivity gains are passed on to customers in a subsequent regulatory regime. The benefit to the utility is in the opportunity to realize and retain returns in excess of the allowed return.

However, there are a number of challenges in demonstrating these benefits, particularity relative to the benefits on COSR. First, the promised predictability of rates is often circumvented by the less predictable impact of Y, K and potentially Z factors on annual rate increases. Secondly, it is hard to demonstrate that the productivity gains achieved by the utility throughout the PBR term are actually passed on to customers at the end of the PBR term. It will take a degree of diligence on behalf of a subsequent panel of the Commission to put the necessary regulatory processes into place to identify and account for those productivity gains in a subsequent regime. Finally, it is difficult to demonstrate that the rates under PBR were lower, or at least no higher than what rates would have been under PBR. These challenges with respect to PBR often make it difficult for the regulator to respond to criticisms that the utility has benefited from PBR more than customers.

The regulatory regime should consider the unique circumstances of BC Hydro

The analysis and discussion above concluded that, under PBR, it is most likely BC Hydro will seek productivity improvements sufficient to earn the return expected by its shareholder, but no more. Given this finding, the Commission should consider whether BC Hydro's culture, processes and procedures, compensation scheme and the expectations of its shareholder are adequately attuned to the incentives of PBR, and whether, upon weighing all of the Commission's objectives, a form of COSR might better suit the circumstances of BC Hydro.

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November 16, 2020
File No.: 301539.00032

Via Email
Privileged and Confidential

Kolesar Buchanan & Associates Ltd.
47 Tuscany Glen Place
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Attention: Mark Kolesar

Dear Sirs/Mesdames

Re: British Columbia Utilities Commission ("BCUC") Review of British Columbia Hydro and Power Authority's ("BC Hydro") Performance Based Regulation Report (the "Regulatory Proceeding")

This will confirm your engagement for the provision of an independent expert report which may be introduced into evidence in the above-referenced proceeding. We confirm that we act on behalf of BC Hydro.

Apart from our instructions below as to the format of your report, the contents of your report are entirely for you in the exercise of your independent professional judgment. We are retaining you to provide independent expert evidence for the above captioned Regulatory Proceeding, not as an advocate for our client. The integrity of your conclusions is dependent upon your objectivity.

Matters on Which Your Opinion is Requested

We request your independent objective opinion with respect to the following question:

> *Given that BC Hydro is not a profit maximizing utility, are there implications that should be considered in the design of the regulatory regime for the company?*

In order to facilitate your analysis and the preparation of your report, BC Hydro will make available any information that you require, including the following exhibits and documents from the Regulatory Proceeding:

1. Exhibit A2-1: BC Hydro PBR Report, dated February 25, 2019.[1]

2. Exhibit A2-2: BC Hydro responses to BCUC IR 189.1 to 200.2, dated June 6, 2019.[2]

3. Exhibit A2-3: BC Hydro responses to BCOAPO IR 86.1, 87.1, 88.1; BCSEA IR 58.1, 58.2; MoveUP IR 2.1 to 4.3.1, dated June 6, 2019.[3]

4. Exhibit A2-4: BC Hydro responses to BCUC IR 231.3, 281.1 to 287.1, dated September 3, 2019.[4]

5. Exhibit A2-5: Pacific Economics Group Research LLC, *Performance-Based Regulation: Basic Features and Possible Applications to BC Hydro*, February 28, 2020.[5]

6. Workshop Transcript, Transcript Volume 2, dated September 8, 2020.[6]

Overview of the Structure of Your Report

We request that your independent expert report be set out consistently with the following structure.

A. Introduction and Summary of Opinion

Your introduction should

- reference the nature of your engagement as an independent expert as per this letter,
- identify the question posed to you, and
- set forth, in a summary fashion, your independent objective opinion.

B. Qualifications

Please state your professional qualifications, technical education, training and experience. Explain how your expertise relates to the subject matter of your opinions. Your detailed *curricula vitae* should be attached as an appendix to your report.

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[1] https://www.bcuc.com/Documents/Proceedings/2019/DOC_56044_A2-1-BCH-F2020-21-RRA-Ch11-Appendix-FF-GG.pdf.

[2] https://www.bcuc.com/Documents/Proceedings/2019/DOC_56045_A2-2-BCH-F2020-21-RRA-BCUC-IR1-resp.pdf.

[3] https://www.bcuc.com/Documents/Proceedings/2019/DOC_56046_A2-3-BCH-F2020-21-RRA-BCOAPO-BCSEA-MoveUP-IR1-resp.pdf.

[4] https://www.bcuc.com/Documents/Proceedings/2019/DOC_56047_A2-4-BCH-F2020-21-RRA-BCUC-IR2-resp.pdf.

[5] https://www.bcuc.com/Documents/Proceedings/2020/DOC_57375_A2-5-Staff-Consultant-Report.pdf.

[6] https://www.bcuc.com/Documents/Transcripts/2020/DOC_59148_2020-09-08-Transcript-Volume2-Workshop.pdf.

C. Duty of Independence

We confirm that you have a duty to assist the Commission and are not to be an advocate for any party ("Duty of Independence"). In this section of your report, we require that you certify the following:

- You are aware of your Duty of Independence;
- You have prepared your report in accordance with the Duty of Independence; and
- If called to give oral or written testimony, you will give that testimony in conformity with the Duty of Independence.

D. Discussion

Under this heading, you should set out in full your independent objective opinion on the issue. You should provide the reasons for your opinion including reference to pertinent facts or assumptions, any research you conducted that led you to form the opinion, and any applicable technical or other documents, standards, guidelines, etc.

E. Conclusion

You may provide a conclusion if you wish.

Appendices

Please include this letter and your *curricula vitae* as appendices to your report. If additional instructions are required, then supplementary letters should also be attached to your report. You may attach any other documents or schedules that are integral to your analysis.

In conclusion, if you have any questions with respect to the nature and scope of your engagement, please contact the writer at your soonest convenience.

Yours truly,

FASKEN MARTINEAU DuMOULIN LLP

o
Matthew Ghikas
Personal Law Corporation

cc: Chris Sandve
Senior Manager - Capital, Finance and Planning
BC Hydro

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With over 30 years of experience in the regulated utilities sector, I have worked in the areas of regulation and public policy, external relations, marketing, strategy and business development, and mergers and acquisitions. I have over 20 years of corporate experience in the telecom sector, where I was Vice President, Economic Affairs at one of Canada's largest telecommunications companies. I recently concluded my tenure with the Alberta Utilities Commission, where I was a Commission member for twelve years, including six years as Vice Chair and two years as Chair of the Commission.

Major Areas of Expertise

Public Utility Regulation

- As Vice Chair and then Chair of the Alberta Utilities Commission, managed the regulatory agenda and overall policy direction of the Commission, including day to day organizational, management, financial and policy decisions.
- While at the Alberta Utilities Commission, issued over 1600 decisions on revenue requirement, rate setting, facilities' cost approvals and siting, rate of return, utility acquisitions and divestitures, market design, etc.; including designing and approving several generations of performance-based regulation plans for five distribution utilities and one transmission utility.
- While at TELUS, developed and executed activities aimed at influencing the Federal Government Standing Committee on Regulations and Government. Prepared submissions and made presentations to external stakeholders, including the Legislative Committees on the Broadcasting Act and the Telecommunications Act.
- Conceived and implemented an innovative proposal to bring the telecommunications industry together with consumer groups to negotiate a settlement in lieu of an upcoming proceeding. Garnered industry and regulator support for the proposal, developed and implemented the process and framework for the negotiations, and participated as the company's chief negotiator.
- Created the Economic Affairs Department at TELUS to support strategy development in customer facing business units. As Vice President, Economic Affairs, ensured the organization's regulatory strategies aligned with business and corporate strategies.
- Member of a special task force that conducted the privatization of Alberta Government Telephones. Planned the transition to federal regulation, managed various public policy issues and assisted in the corporate structure design. Assisted in drafting the prospectus and supported the due diligence process.

Consulting and Teaching

- Assisted the Hawaii Public Utilities Commission in a workshop to consider its next generation performance-based regulation plan.
- Facilitated the development of a five-year strategic plan for the EPCOR Centre for the Performing Arts (now Arts Commons).
- Consulted on the viability of business proposals, most recently in the areas of food product manufacturing and bio-fuel production.
- Developed the initial business plan for the Faculty of Engineering at the University of Calgary for the development of the Beakerhead festival, combining science, education and the arts. The festival has been running successfully since 2013.
- Over 20 years of experience teaching adult learners at the university level, predominately in business management, strategy and planning.

Employment History

Consultant	Current
Alberta Utilities Commission	
Vice Chair, Chair	2012 to 2020
Commission Member	2008 to 2012
Consultant	2007 to 2008
TELUS Corporation	
Vice President, Economic Affairs	2004 to 2007
Assistant Vice-President, Regulatory and Public Policy	2000 to 2004
Director, Regulatory	1994 to 2000
Senior Marketing and Business Development Analyst	1993 to 1994
Director, Policy & Government Affairs	1992 to 1993
Regulatory Analyst	1988 to 1992
Public Utilities Board of Alberta	
Applications Officer	1985 to 1988
Alberta Government Telephones	
Economic (Costing & Capital Budgeting) Analyst	1980 to 1985

Education

MBA – Managerial Economics and Finance – University of Ottawa 1979

BA (Honours) – Philosophy – University of Ottawa 1976

Publications, Testimony & Selected Presentations

Publications

- Kolesar, M. and Levin, S. (2004) "Rationalizing interconnection arrangements in competitive communications markets" in: Bohlin, E., Levin, S.L., Sung, N. & Yoon, C.H. (Ed); Global economy and digital society, London, UK Elsevier.
- Kolesar, M. and Weisman, D.L. (2003) "Accommodative competitive entry policies and telecommunications regulation" *Info*, Vol 5 No 1 pp.34-40.
- Kolesar, M.B. and Galbraith, R.W. (2000) "A services-marketing perspective on e-retailing: implications for e-retailers and directions for further research" *Internet Research*, Vol 10, No 5, pp. 424-438.

Testimony

- Testimony before Canadian Radio-television and Telecommunications Commission in *Review of Price Cap Framework Public Notice CRTC 2006-5.* Subject Matter: Telecom Markets in Canada.
- Testimony before Canadian Radio-television and Telecommunications Commission in *Price Cap Review and Related Issues Public Notice CRTC 2001-37*. Subject Matter: Quality of Service.
- Testimony before the Canadian Radio-television and Telecommunications Commission in *New Media- Call for Comments Public Notice CRTC 98-2 & Public Notice CRTC 1998-82.* Subject Matter: Public Policy Implications of the Impact of New Media on the Canadian Broadcasting Industry.

Selected Invited Presentations

- "How will the pandemic change the electric utility industry's regulatory bargain? A Second Look", Rutgers University, Centre for Research in Regulated Industries, Webinar, July 28, 2020.
- Keynote Address, Grid Forward 2019, Seattle, Washington, October 2019.
- Conference Host, CAMPUT Annual Conference, Calgary, Alberta, May, 2019.
- Keynote Speaker, Alberta Rural Electrification Associations AGM, Edmonton, Alberta, March, 2014.
- "Canadian Telecommunications Regulation of Interconnection and Unbundling" *Presentation to the Pakistan Telecommunications Authority*; Industry Canada, Ottawa, Ontario, October 10, 2000.
- "Next Generation Packet Networks and the Regulation of Interconnection and Unbundling" *28th Annual Telecommunications Policy Research Conference*, Alexandria, Virginia. September 23-25, 2000.
- "A Services-Marketing Perspective on E-Retailing" E-Commerce Summit, Rome, Italy, October 1999.