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British Columbia Hydro and Power Authority

Review of the Performance Based Regulation Report

Decision and Order G-388-21

December 21, 2021

Before:
D. M. Morton, Panel Chair
A. K. Fung, QC, Commissioner
E. B. Lockhart, Commissioner
R. I. Mason, Commissioner

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Executive Summary

In the British Columbia Utilities Commission (BCUC) decision regarding the British Columbia Hydro and Power Authority's (BC Hydro) Fiscal 2017 to Fiscal 2019 Revenue Requirements Application, the BCUC directed BC Hydro to provide a report to the BCUC that discusses, among other things, the opportunities and challenges associated with the adoption of Performance Based Regulation (PBR) at BC Hydro and a possible approach to adopting PBR.

On February 25, 2019, BC Hydro filed with the BCUC a report regarding the possible adoption of PBR at BC Hydro, along with reports from two experts regarding the matter, which included Dr. Dennis Weisman. The proceeding included additional evidence from Dr. Weisman, as well as experts in incentive ratemaking, Dr. Mark Lowry from Pacific Economics Group Research LLC and Mr. Mark Kolesar.

The central issue in this proceeding is to determine which mechanisms, if any, will provide the best incentives for “cost control, productivity improvements and performance”¹ at BC Hydro, given its unique circumstances.

The Panel is persuaded by the consensus among all three experts who provided evidence in the proceeding that

- all forms of regulation provide incentives to utilities,
- there is a continuum in terms of the strength of these incentives,
- the efficacy and desirability of particular mechanisms depend on the specific circumstances of each utility, and
- BC Hydro's regulatory regime lies somewhere on the incentive continuum.

For these reasons, we do not consider there to be value in analyzing the “overall objectives” or appropriate circumstances for the success of PBR per se.

The Panel finds that the scope of this decision is appropriately limited to reviewing the three incentive mechanisms BC Hydro has proposed to implement in the BC Hydro Fiscal 2023 to Fiscal 2025 Revenue Requirements Application (F2023–F2025 RRA):²

- a three-year test period,
- information-only performance metrics, and
- regular statistical benchmarking, (together BC Hydro's Proposed Incentive Mechanisms)

and the following four additional options:

- a test period longer than three years,
- formulaic rates,
- adding financial incentives to performance metrics, and

¹ BC Hydro Final Argument, p. 1.

² BC Hydro Final Argument, p. 4.

- partial coupling of revenues to incentivize electrification. (together Additional Proposed Incentive Mechanisms)

(all together the Proposed Incentive Mechanisms)

The Panel supports the implementation of all three of BC Hydro's Proposed Incentive Mechanisms. The Panel finds that, all else equal, a three-year test period provides BC Hydro with stronger incentives than a two-year test period for cost control, productivity improvements and performance. The Panel further finds that such an increase in the test period allows greater opportunity for regulatory efficiency and provides improved rate predictability for customers. The Panel finds that statistical benchmarking has the potential to assist in the determination of the reasonableness of BC Hydro's revenue requirement, and that reporting on information-only performance metrics could provide incentives for BC Hydro to improve performance and assist the BCUC's regulation of the utility's performance.

The Panel commends BC Hydro for taking the initiative to include the three Proposed Incentive Mechanisms in the F2023–F2025 RRA. These three mechanisms move BC Hydro's regulatory regime further along the cost of service regulation (COSR)/PBR continuum in the PBR direction.

The Panel finds that two of the four Additional Proposed Incentive Mechanisms (a test period longer than three years and formula driven revenues) would improve BC Hydro's incentives for cost control while also allowing for greater opportunity for regulatory efficiency. We find that the other two Additional Proposed Incentive Mechanisms (partial coupling of low-carbon electrification revenues and financial incentives for specific performance metrics) are not appropriate for BC Hydro at this time.

The Panel finds that a longer test period better serves the objectives of providing incentives for BC Hydro to contain costs and achieve regulatory efficiency compared to a shorter test period. The Panel further finds that there are potential drawbacks of a longer test period, but that these may be alleviated through the appropriate design of other aspects of BC Hydro's regulatory regime.

The appropriate length of BC Hydro's test period is a matter of judgement, and in BC Hydro's judgement, three years is the ideal length because it "strikes an appropriate balance between strengthening the incentive created by setting a pre-determined revenue envelope over multiple years and providing a reasonable cost forecast that is not subject to too many 'unknowns'."³ The Panel disagrees that three years is necessarily the optimal length of test period for BC Hydro. In our view, a test period of at least five years, the current test period for FortisBC Energy Inc. (FEI) and FortisBC Inc. (FBC), is reasonable. That said, the final determination of the appropriate test period for BC Hydro beyond F2025 will be made by a future panel.

The Panel finds that BC Hydro's lack of a profit-maximizing mandate is not a compelling reason for forgoing the benefits of a longer test period. It is not necessary for BC Hydro to be incented to earn more than its allowed return for a formula-based revenue requirement to be effective. It is sufficient merely that BC Hydro is incented to achieve the allowed return, which it acknowledges is the case.

³ BC Hydro Final Argument, p. 59.

In addition to improved incentive power, the Panel also finds that a longer test period better achieves the objective of improving regulatory efficiency for BC Hydro than a shorter test period, all else equal. We believe that adding a fourth and fifth year to a three-year test period will further improve regulatory efficiency and will provide two additional years in which BC Hydro may focus on operating its business and finding additional efficiencies.

The Panel considers a five-year test period to be a reasonable extension of past and current regulatory practice at the BCUC. BC Hydro itself had a three-year test period for the F2017 to F2019 period, so a five-year test period is thus only a two-year increase from recent regulatory practice. Further, two other significant utilities in BC, FEI and FBC, are both in multi-year rate plans of five years from F2020 to F2024, following multi-year rate plans of six years from 2014 to 2019. The BCUC and interveners have recent experience with test periods longer than three years, including how to mitigate their potential disadvantages.

The Panel finds that using an index-based formula rather than a forecast to determine BC Hydro's revenue requirement better supports a longer test period. The Panel finds that to the extent possible, BC Hydro's revenue requirement should be determined using an index-based formula for the following reasons:

- An index-based formula compensates BC Hydro automatically for cost inflation;
- An index-based formula can address the "inherent upward bias" problem with forecasts for longer test periods;
- An index-based formula can mitigate the "informational asymmetry" problem;
- An index-based formula can emulate the competitive market better than forecasts; and
- An index-based formula can be just and reasonable and allows BC Hydro the opportunity to earn its allowed return.

The Panel finds that the selection of an appropriate index of cost inflation should be determined as part of a PBR application process, and that considerations might include the industry-specific relevance of cost indices and the use of multiple indices to reflect different costs incurred by BC Hydro. We further find that the selection of an appropriate productivity factor should also be determined as part of a PBR application process, and that considerations might include how the productivity factor could simulate the competitive pressures lacking for BC Hydro by reflecting industry productivity trends.

The Panel finds that pursuant to sections 59 and 60(1)(b.1) of the *Utilities Commission Act* (UCA) it can be just and reasonable to determine BC Hydro's rates from a revenue requirement derived from an index-based formula rather than from a forecast. In particular, the use of an index-based formula to determine BC Hydro's revenue requirement still allows the utility's rate to "yield a fair and reasonable compensation for the service provided by the utility, or a fair and reasonable return on the appraised value of its property" as required by section 59(5)(b) of the UCA. BC Hydro continues to have the opportunity to earn its allowed return, provided it limits its spending to the BCUC-determined revenue requirement. The method of determining the revenue requirement does not take away this opportunity. Furthermore, nothing in the UCA mandates the exclusive use of forecasts in setting rates. Indeed, section 60(1)(b.1) of the UCA specifically provides that the BCUC may use "any mechanism, formula or other method" of setting rates, and using an index-based formula to determine the revenue requirement is one of those methods.

The Panel finds that it is appropriate to forecast some expenditures that make up the revenue requirement despite other expenditures in the revenue requirement being determined by a formula. Specifically, there are two areas of BC Hydro's expenditures that the Panel considers should continue to be forecast rather than determined by an index:

- Expenditures over which BC Hydro has limited control, and
- Expenditures which are not easily linked to an available index.

The Panel further finds that there are expenditures which, while BC Hydro has control over them, are not easily associated with an available index for calculating their magnitude in future years' revenue requirements. As an example, BC Hydro submits that there are challenges associated with creating a formula for capital in light of the "lumpy nature of capital spending." The Panel expects that such controllable costs would be examined in a PBR proceeding and may be included in BC Hydro's revenue requirement outside the indexed portion of the formula.

The Panel does not recommend implementing revenue coupling for BC Hydro's low-carbon electrification revenues, financial incentives for BC Hydro achieving specific performance metrics or an earnings sharing mechanism at this time.

Thus, the Panel concludes that the following five incentive mechanisms should be adopted for use at BC Hydro:

- A three-year test period F2023–F2025;
- Regular statistical benchmarking;
- Information-only performance metrics;
- A test period of at least five years from F2026; and
- Formula-driven rates from F2026 to accompany the five-year test period.

The expert evidence in this proceeding is compelling that these regulatory mechanisms will improve incentives for BC Hydro for cost control, productivity improvements and performance, while also improving regulatory efficiency.

We acknowledge that BC Hydro has some unique characteristics. However, we are not persuaded that any of these characteristics, including the lack of a mandate for BC Hydro to exceed its allowed return, mean that the regulatory mechanisms will not improve the incentives for the utility to improve its cost control.

Therefore, we direct BC Hydro to file, no later than December 31, 2023, a proposal for its next RRA that includes the following:

- 1. A test period of at least 5 years;**
- 2. A proposed formula for as much as possible of the utility's controllable operations and maintenance (O&M) and capital expenditures, incorporating cost inflation and productivity indices;**
- 3. A proposal for which, if any, of the years F2022–F2025 should be used as the base year;**
- 4. Proposals for specific exclusions from the formula or index approach, if appropriate (including "Y factors" and "Z factors");**

5. **Consideration of whether a different approach is required for growth capital as compared to sustainment capital;**
6. **A proposal for the criteria and reasons, if any, to abandon the PBR approach during the test period (“Off-Ramps”); and**
7. **An assessment of whether annual reviews of BC Hydro’s performance and rates during the test period are appropriate and what they should encompass and exclude.**

1.0 Introduction

On February 25, 2019, the British Columbia Hydro and Power Authority (BC Hydro) filed with the British Columbia Utilities Commission (BCUC), as part of its Fiscal 2020 to Fiscal 2021 Revenue Requirements Application (F2020–F2021 RRA), a report regarding the possible adoption of Performance Based Regulation (PBR) at BC Hydro, along with two expert reports regarding the matter (PBR Report).⁴

On October 11, 2019, the BCUC directed that the PBR Report will not be reviewed as part of the review of the F2020–F2021 RRA⁵ and established a separate proceeding for the review of the PBR Report and related materials.⁶

This decision provides a review of the PBR Report and related evidence and addresses the following key issues:

- An overview of incentive regulation and the scope of this proceeding;
- The suitability of the three incentive mechanisms proposed by BC Hydro;
- The suitability of four additional incentive mechanisms for BC Hydro; and
- The specific steps BC Hydro is directed to take with respect to incentive-based regulation.

1.1 Background

In the BCUC’s decision regarding BC Hydro’s Fiscal 2017 to Fiscal 2019 Revenue Requirements Application (F2017–F2019 RRA), the BCUC expressed concern regarding BC Hydro’s expenditures rising faster than revenues and commented that this would not be sustainable. Although acknowledging BC Hydro’s cost cutting measures, the BCUC noted that a rate setting mechanism that could help BC Hydro accomplish its cost control objectives would be of value. The BCUC also noted that performance-based rate setting mechanisms have been implemented successfully in many jurisdictions. In addition, PBR provides incentives for utilities to improve productivity and create efficiencies to allow for rates to be more effectively managed, while maintaining service quality. The BCUC also noted that FortisBC Energy Inc. (FEI), a natural gas utility in BC of comparable size to BC Hydro, and FortisBC Inc. (FBC), a vertically integrated electric utility, are currently on PBR plans.⁷

Accordingly, the BCUC directed BC Hydro to provide a report to the BCUC that discusses, among other things, the opportunities and challenges associated with the adoption of PBR at BC Hydro and a possible approach to adopting PBR.⁸

⁴ BC Hydro F2020–F2021 RRA, Exhibit B-1, Appendices FF and GG.

⁵ BC Hydro F2020–F2021 RRA, Exhibit A-18, Order G-244-19.

⁶ Exhibit A-1, Order G-245-19.

⁷ BC Hydro F2017 to F2019 RRA, Decision dated March 1, 2018, p. 110.

⁸ BC Hydro F2017 to F2019 RRA, Decision dated March 1, 2018, Directive 28.

1.2 Regulatory Process and Participants

The BCUC established and amended the regulatory timetable for the review of the PBR Report and related materials.⁹ There were sixteen registered interveners and two interested parties to this proceeding. The registered interveners were:

- BC Sustainable Energy Association (BCSEA);
- Catalyst Paper Corporation (Catalyst);
- FortisBC Energy Inc. and FortisBC Inc. (FortisBC);
- Richard McCandless (McCandless);
- Kwadacha Nation and Tsay Keh Dene Nation, together the Zone II Ratepayers Group (Zone II RPG);
- British Columbia Old Age Pensioners' Organization et al. (BCOAPO);
- Paul Willis (Willis);
- Movement of United Professionals (MoveUP);
- Commercial Energy Consumers Association of British Columbia (CEC);
- Clean Energy Association of B.C. (CEABC);
- Association of Major Power Customers of British Columbia (AMPC);
- David Ince (Ince);
- Steve Davis & Associates Consulting Ltd. (Davis-Associates);
- Edlira Gjoshe (Gjoshe);
- BC Non-Profit Housing Association (BCNPHA); and
- Residential Consumer Intervener Association (RCIA).

The BCUC's regulatory review process for the PBR Report included:

- Information from BC Hydro regarding PBR in response to Directive 28 from the BCUC's Decision on BC Hydro's F2017 to F2019 RRA, which includes an expert report, "Report on the Theory and Practice of Performance-Based Regulation" by Dr. Weisman, and an expert report "Assessing the Treatment of Capital Expenditures in Performance-Based Regulation Plans" by Dr. Sappington and Dr. Weisman that were filed in BC Hydro's F2020–F2021 RRA proceeding.
- Two rounds of Information Requests (IRs) that were filed in BC Hydro's F2020–F2021 RRA proceeding;
- A procedural conference;
- A consultant report filed by BCUC Staff and prepared by Pacific Economics Group Research LLC (PEG Research) regarding the basic features and possible applications of PBR to BC Hydro (BCUC Staff Consultant Report) and IRs regarding this report;
- A BCUC facilitated workshop regarding PBR;
- Supplementary evidence filed by BC Hydro in response to the evidence of PEG Research and Dr. Lowry, which includes a supplementary independent expert report from Dr. Weisman and a submission provided by Mr. Kolesar (Supplementary Evidence) and IRs regarding the Supplementary Evidence;
- Oral submissions; and
- Written final and reply arguments.

The proceeding included evidence from three experts in incentive ratemaking:

- 1) Dr. Mark Lowry from PEG Research was retained by BCUC staff to provide background on PBR and identify various types of incentive regulation in use around the world. PEG Research is a leading North

⁹ Orders G-246-19, G-326-19, G-70-20, G-251-20, G-324-20, and G-92-21.

American PBR consultancy. Its personnel have been active in Canadian regulation since the 1990s and have worked for a mix of utilities, trade associations, regulators, government agencies, and consumer and environmental groups.¹⁰

- 2) Dr. Dennis Weisman is Professor of Economics Emeritus at Kansas State University who specializes in economic regulation. He has advised and provided evidence on PBR for many years and written numerous academic articles and coauthored a book on the topic of incentive regulation.¹¹
- 3) Mr. Mark Kolesar was a member of the Alberta Utilities Commission for 12 years, including 6 years as Vice Chair and 2 years as Chair (ending in 2020). During that time, Mr. Kolesar was among the commissioners who presided over the introduction and development of PBR in Alberta.¹²

1.3 Jurisdiction

Section 60(1)(b.1) of the UCA provides that in setting a rate:

the commission may use any mechanism, formula or other method of setting the rate that it considers advisable, and may order that the rate derived from such a mechanism, formula or other method is to remain in effect for a specified period

Pursuant to this section of the UCA, the BCUC had previously approved PBR mechanisms for other utilities, such as FEI and FBC.¹³ The Panel finds it has the jurisdiction pursuant to section 60(1)(b.1) of the UCA to impose PBR mechanisms on BC Hydro for the purposes of rate setting.

1.4 BC Hydro's Mandate Letter and Service Plan

BC Hydro's mandate is set out through a mandate letter from the government of BC (Mandate Letter) and BC Hydro's service plan (Service Plan). The current Mandate Letter states BC Hydro's mandate is "to safely provide reliable, affordable, clean electricity throughout British Columbia." It also outlines Government's three priorities: (1) make life more affordable; (2) deliver the services people count on; and (3) build a strong and sustainable economy that supports jobs throughout the Province. In addition, it sets out the priorities that BC Hydro is expected to make substantive progress on and incorporate into the goals, objectives and performance measures in BC Hydro's Service Plan, which include the following:¹⁴

- Complete the Site C Project by November 2024 at a total cost of no more than \$10.7 billion;
- Continue delivering affordability measures, including demand-side management programs targeted to low-income ratepayers, and any other measures that may be identified through development of BC's Poverty Reduction Strategy;

¹⁰ Exhibit A2-5, p. 1.

¹¹ BC Hydro Final Argument, p. 8.

¹² BC Hydro Final Argument, p. 8.

¹³ By Orders G-165-20 and G-166-20, respectively, the BCUC approved a multi-year rate plan for years 2020 to 2024 for FEI and FBC; By Orders G-138-14 and G-139-14, respectively, the BCUC approved a multi-year performance based ratemaking plan for the years 2014 to 2018 for FEI and FBC.

¹⁴ Exhibit B-8, p. 5; for the most recent version of the Mandate Letter, refer to : [bch-mandate-letter-2019-2020.pdf \(bchydro.com\)](https://www.bchydro.com/bch-mandate-letter-2019-2020.pdf)

- 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;
- Participate in Phase 2 of the comprehensive review of BC Hydro and provide leadership in advancing the Government’s energy and climate strategies;
- Provide comprehensive quarterly and annual performance reports to the Deputy Minister of Energy, Mines and Petroleum Resources (EMPR)¹⁵ on the status of BC Hydro finances and forecasts, other initiatives and directions approved by the BC Hydro Board and the Minister of EMPR, and update the Deputy Minister of EMPR on other emerging trends and issues as they occur;
- 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;
- Perform system upgrades where necessary to ensure that BC Hydro is well-positioned to connect customers in a timely and cost-effective manner; and
- Maintain or improve customer satisfaction by providing timely and responsive service.

BC Hydro’s Service Plan is a three-year plan with strategies, performance measures and targets that align with the objectives in the Mandate Letter. The Service Plan identifies four key goals: (1) “our workforce and the public will be safe;” (2) “customers will experience reliable and responsive service;” (3) “we will help keep electricity affordable for our customers;” and (4) “we will help make renewable, clean electricity British Columbia’s leading energy source.”¹⁶

2.0 Incentive Regulation

In this section the Panel reviews the evidence and sets out its findings on the scope of the proceeding.

Evidence

BC Hydro’s expert, Dr. Weisman, states that incentive regulation or PBR “can be defined 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.”¹⁷ BCUC Staff’s expert, Dr. Lowry, expresses agreement with Dr. Weisman’s definition of PBR.¹⁸ Dr. Lowry states that PBR is intended to encourage better performance through stronger incentives and suggests that a better term for PBR would be “incentive regulation.”¹⁹

However, Dr. Weisman also notes that “[a]ll regulation is incentive regulation” because all forms of regulation put in place incentives for performance. Dr. Weisman observes that “some forms of COSR [cost of service regulation] can actually give rise to more high-powered incentives than regulatory regimes formally designated as PBR plans.” In Dr. Weisman’s opinion, the BCUC’s focus should be on “whether there is a viable alternative to the current form of regulation that holds out the prospect of increasing the incentive power of the regulatory regime, while ensuring that rates are ‘just and reasonable.’”²⁰

¹⁵ This ministry is currently known as the Ministry of Energy, Mines and Low Carbon Innovation

¹⁶ Exhibit B-8, p. 5: Service Plan, p. 8; for the most recent version of the Service Plan, refer to: [2019/20 – 2021/22 Service Plan \(bchydro.com\)](https://www.bchydro.com/2019/20-2021/22-Service-Plan)

¹⁷ Exhibit A2-1, Appendix FF, pp. 4–5.

¹⁸ Transcript Volume 2, p. 107.

¹⁹ Exhibit A2-7, p. 7.

²⁰ Exhibit B-9, BCUC IR 15.1.

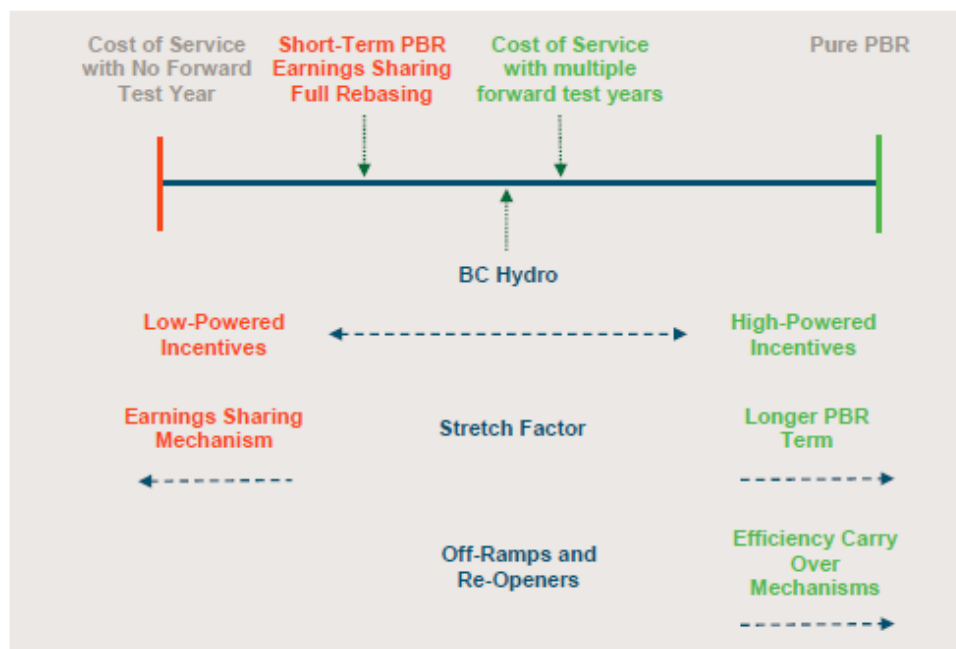
Dr. Weisman explains that COSR and PBR lie along a continuum based on the strengths of the incentives for efficient performance. On the far left of the continuum (extremely weak incentives) is the textbook model of COSR with no regulatory lag. On the far right of the continuum (extremely strong incentives) is the long-term PBR with no earnings sharing or rebasing. Dr. Weisman points out that COSR with a long regulatory lag may be to the right of a short-term PBR regime that incorporates a narrow deadband, pronounced earnings sharing and a full rebasing of rates at the end of the PBR term.²¹

BC Hydro's other expert, Mr. Kolesar, agrees with Dr. Weisman that the COSR and PBR regulatory regimes lie along a continuum based on the strengths of the incentives for efficient performance. Mr. Kolesar observes that the choices before the BCUC are on this continuum, rather than a choice between the two extremes on either end of the continuum.²²

Similarly, Dr. Lowry, observes that "most PBR approaches used today can be characterized as incremental reforms to COSR [...] rather than entirely different regulatory systems."²³

In the following diagram BC Hydro indicates its current position in the continuum described by Dr. Weisman and shows how various mechanisms may change the strength of incentives for efficient performance.

Figure 1: Relative Incentive Power of BC Hydro's Current Regulatory Framework²⁴



Dr. Lowry identifies four well-established PBR approaches and notes that the approaches are often combined:²⁵

- Relaxation of the link between revenue and system use;

²¹ Exhibit A2-1, Appendix FF, Executive Summary.

²² Exhibit B-8, Appendix B, p. 4.

²³ Exhibit A2-5, p. 16.

²⁴ Exhibit A2-1, Figure 11-3, p. 11-24.

²⁵ Exhibit A2-5, pp. 5–6; Exhibit A2-7, p. 8.

- Targeted performance incentive mechanisms;
- Special incentives to use disfavoured inputs; and
- Multi-year rate plans.

Dr. Lowry identifies some similarities between BC Hydro's current regulation and the well-established PBR approaches. He notes, for example, that BC Hydro's Non-Heritage Deferral Account²⁶ effectively decouples revenues from sales volumes, its demand side management (DSM) program costs are tracked and amortized, its Service Plan has 12 performance metrics, and its rate applications usually feature multiple forward test years.²⁷

Dr. Weisman notes that BC Hydro's current regulatory system has similar characteristics to the early stages of incentive regulation in the telecommunications industry.²⁸ He also notes that BC Hydro's current form of cost-of-service regulation "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."²⁹

Mr. Kolesar makes similar observations as Dr. Weisman that BC Hydro currently has incentive mechanisms. Mr. Kolesar views BC Hydro's mandate to have rates "among the most affordable in North America" as a strong incentive to "ensure that the costs to provide utility service are necessary and prudently incurred, at minimum," as well as incents productivity improvements.³⁰ Mr. Kolesar also explains that BC Hydro's incentive pay provisions are aligned with efficient operation. This is because BC Hydro sets its budget in accordance with the objective to keep rates affordable, and to receive their holdback pay, Executive Team members are expected to achieve the budgets for which they are accountable.³¹

Further, with respect to incentive mechanisms, Dr. Weisman observes that a "PBR plan that is implemented for a particular company should reflect both the type of behavior the regulator wishes to encourage (which can vary across companies) and the unique characteristics of the regulated industry and the regulated company."³² Dr. Weisman explains that PBR is not a "one-size-fits-all" proposition because regulated firms are likely to be heterogenous.³³

Similarly, in Mr. Kolesar's view, a "well-crafted PBR plan can be adopted for municipal power distributors, and for that matter Crown-owned power distributors, if the conditions for its adoption are adequate and the benefits are sufficient to justify the potential effort required to design and implement a workable PBR plan."³⁴

²⁶ On page 44 of the BCUC's Decision to BC Hydro's F2020 to F2021 RRA, the BCUC directed the establishment of the Load Variance Regulatory Account and directed all balances related to load forecast variance be moved from the Non-Heritage Deferral Account to this account and to use the account on an ongoing basis to capture load forecast variances.

²⁷ Exhibit A2-7, p. 64.

²⁸ Exhibit B-9, BCUC IR 15.1.

²⁹ Exhibit B-8, Appendix A, p. 19.

³⁰ Exhibit B-10, CEC IR 15.3.

³¹ Exhibit B-9, BCUC IR 21.2.

³² Exhibit A2-1, Appendix FF, p. 12.

³³ Exhibit A2-1, Appendix FF, p. 25.

³⁴ Exhibit B-9, BCUC IR 16.2.

Dr. Lowry identifies business conditions that may be unique to BC Hydro and notes that some of these conditions, such as being a Crown corporation and being a vertically integrated utility, may make the design of an appropriate PBR regime more challenging.³⁵ However, Dr. Lowry notes that these conditions do not make PBR any less desirable and, in fact being a vertically integrated utility may make PBR more desirable in terms of preserving the loads of large customers and attracting new customers.³⁶

Dr. Lowry also provides some suggestions for further incentive mechanisms or “baby steps” for BC Hydro that would move it towards PBR, but without going “too far”:³⁷

- Three forward test years;
- Use of indexing where practical in RRAs (e.g. operation, maintenance, and administrative (OM&A) expenses);
- Automatic escalation of allowed revenue for customer growth (or inflation) after the last test year;
- Regularly-scheduled statistical benchmarking by BC Hydro and the BCUC (or interveners);
- “Shared saving” performance incentive mechanism (PIM) for conservation;
- PIMs for local “non-wire alternatives” and systemwide peak load management; and
- Strengthened incentives for large load customers, bulk power sales, and low carbon electrification.

In addition to the “baby steps,” Dr. Lowry also suggests a bigger idea, which is a multi-year rate plan with the following elements:³⁸

- A three-to-five-year term;
- Tracked energy and DSM expenses;
- Different attrition relief mechanisms (ARM) that might apply to different functions;
- Y and Z factors that protect BC Hydro’s finances from government policy changes;
- Marketing flexibility;
- Opportunities for pilot programs;
- An efficiency carryover mechanism; and
- PBR workshops and negotiated settlement process.

Positions of the Parties

BC Hydro submits that the evidence in this proceeding, including the consensus view of the three respected experts, Dr. Weisman, Mr. Kolesar and Dr. Lowry, is that all forms of regulation provide incentives to encourage improved performance by utilities, that there is a continuum in terms of the strength of those incentives, and that the efficacy and desirability of particular incentive mechanisms depend on the specific circumstances of

³⁵ Exhibit A2-7, p. 65; Transcript Volume 2, p. 228.

³⁶ Transcript Volume 2, p. 228.

³⁷ Exhibit A2-7, pp. 73–74.

³⁸ Exhibit A2-7, pp. 75–76.

each utility. BC Hydro notes that the experts concur that BC Hydro's current regulatory regime falls part way along the incentive continuum, incorporating various mechanisms that may be characterized as PBR.³⁹

BC Hydro submits that all three experts:⁴⁰

- are, in general, advocates of incentive regulation and PBR;
- recognize that any regulatory regime must take into consideration the unique circumstances of BC Hydro; and
- agree as to the suitability of some PBR mechanisms for BC Hydro, which BC Hydro is pursuing.

However, BC Hydro notes that Dr. Lowry has identified other PBR mechanisms which "remain theoretical and are premised on the existence of conditions that are, in fact, absent for BC Hydro," and that Mr. Kolesar and Dr. Weisman "are unconvinced that the conditions required to enable the successful adoption of some PBR elements are present in the case of BC Hydro, particularly because of BC Hydro's mandate and constraints on its management compensation system."⁴¹

BC Hydro submits that it would be incorrect to assume that PBR always provides stronger incentives than COSR, and that incentive regimes that might formally be labelled "PBR" could have lower incentive properties than a regime labelled "COSR." In BC Hydro's view, any new incentive mechanism should reflect its unique circumstances.⁴²

BC Hydro submits that the central issue before the BCUC in this proceeding is whether, in principle:⁴³

1. a three-year test period, information-only performance metrics and regular statistical benchmarking merit further consideration in the upcoming RRA as potential mechanisms to strengthen the existing incentives for cost control, productivity improvements and performance; and
2. any of the four additional options for future consideration identified by Dr. Lowry has the potential to further increase the incentives for cost control, productivity improvements and performance, either at all or sufficiently to outweigh any disadvantages.

BC Hydro submits that the BCUC should refrain from directing the implementation of any incentive mechanism "without the benefit of a specific proposal and evidence on its implications that would come in a future RRA proceeding."⁴⁴

AMPC submits that it supports the continued use of COSR for BC Hydro because this approach provides greater transparency, is more intuitive, and ensures rates are set based on prudently incurred costs. AMPC submits that

³⁹ BC Hydro Final Argument, p. 1.

⁴⁰ BC Hydro Final Argument, p. 8

⁴¹ BC Hydro Final Argument, pp. 8–9

⁴² BC Hydro Final Argument, pp. 11–12

⁴³ BC Hydro Final Argument, p. 4.

⁴⁴ BC Hydro Final Argument, p.3.

moving fully to PBR would eliminate recent progress in the regulation of BC Hydro and require BC Hydro, interveners and the BCUC to start over with a new methodology.⁴⁵

AMPC does, however, support the use of an indexed and/or formulaic approach for setting rates associated with O&M expenses and capital replacements and renewals. AMPC acknowledges the significant problem of “information asymmetry” for these costs and submits that a simple index or formula would streamline regulation, introduce stronger cost containment incentives and allow BC Hydro operating flexibility.⁴⁶ AMPC supports BC Hydro’s proposed three-year test period, but cautions that statistical benchmarking and information-only performance metrics are only useful if the comparators are relevant to BC Hydro.⁴⁷

BCOAPO submits that there is an opportunity for “PBR-like approaches” to improve BC Hydro’s performance. However, BCOAPO acknowledges that profit-maximization is not part of BC Hydro’s mandate and that PBR mechanisms that rely on profit-maximization as the incentive to improve performance are unlikely to be effective.⁴⁸

BCSEA submits that the question for the Panel in this proceeding is “What new regulatory elements for BC Hydro should be advanced and what possibilities should be rejected?” BCSEA submits that the issue is less about whether PBR has benefits in theory and more about whether in practice a PBR regime would benefit BC Hydro and should actually be implemented.⁴⁹ BCSEA agrees with BC Hydro that the utility’s three proposed PBR mechanisms, a three-year test period, information-only performance metrics and regular statistical benchmarking, warrant inclusion in the next RRA, and that the four additional PBR elements proposed by Dr. Lowry should not be endorsed by the Panel.⁵⁰

CEABC agrees with BC Hydro that regulation is a continuum and not a binary choice between COSR and PBR, and also agrees that some combination of the two approaches is likely to be most effective and efficient for all parties.⁵¹ CEABC does not support a three-year test period in the upcoming RRA but believes it may have value in future. CEABC does not support a test period longer than three years. CEABC supports regularly scheduled benchmarking and information-only performance metrics if appropriate peers can be found and believes financial rewards or penalties could be incorporated in future. CEABC does not believe that total-company formulas or indexes would prove superior to the formulas BC Hydro already employs to forecast its costs. CEABC considers that coupling the revenues associated with low-carbon electrification may provide an incentive for BC Hydro’s management to achieve the government’s greenhouse gas (GHG) reduction goals.⁵²

The CEC submits that the incentives provided by PBR would, in the case of BC Hydro, be useless or even dysfunctional, and that future uncertainties such as the post-pandemic recovery and the progressive electrification of the province serve to diminish the value of PBR. The CEC submits that the incentive

⁴⁵ AMPC Final Argument, pp. 1–2.

⁴⁶ AMPC Final Argument, p. 2.

⁴⁷ AMPC Final Argument, p. 2.

⁴⁸ AMPC Final Argument, p. 2.

⁴⁹ BCSEA Final Argument, pp. 7–9.

⁵⁰ BCSEA Final Argument, pp. 19–22.

⁵¹ CEABC Final Argument, p. 2.

⁵² CEABC Final Argument, pp. 4–8.

mechanisms proposed by BC Hydro will provide for greater improvements in the utility's performance and visibility of that performance improvement.⁵³

The CEC supports BC Hydro's proposed framing of the central issue in this proceeding, but adds four additional foundational concerns:⁵⁴

- What are the overall objectives of implementing PBR, and why should it be considered?
- Is it appropriate for the BCUC to implement PBR during a period of high economic uncertainty, and immediately following a long period of diminished oversight?
- Is PBR suitable for a Crown corporation with changing shareholder requirements and shareholder processes for obtaining, from BC Hydro, additional revenues from fees or providing relief for ratepayers? and
- What alternatives should be considered?

Gjoshe supports the adoption of incremental elements of PBR that would increase incentives for efficient performance at BC Hydro, adding that the use of labels such as "hybrid regime," "modified COSR" and "enhanced PBR regime" is of no consequence.⁵⁵ Gjoshe supports a three-year test period for BC Hydro, performance incentives, benchmarking and the selective use of indexing revenues.⁵⁶

MoveUP submits that the issue in this proceeding is what, if any, modifications should be made to the way BC Hydro's rates are determined, and submits this analysis should be performed by constructing a regulatory regime that works for BC Hydro's "real situation" rather than modifying a conceptual framework to better suit the utility. MoveUP supports the three modifications to the regulatory process that are recommended by BC Hydro.⁵⁷

RCIA submits that the purpose of the proceeding is to agree on the steps and processes to be adopted by BC Hydro to provide incentives to encourage improved utility performance. RCIA defines performance as "achieved outcomes that are objectively demonstrated using an appropriate combination of cost, reliability, and risk measures." RCIA agrees with BC Hydro that all forms of regulation provide incentives for improved utility performance and that different forms of PBR represent points on a continuum. However, RCIA strongly disagrees with BC Hydro that PBR incentive mechanisms "function only or primarily based upon the utility's motivation to exceed allowed ROE [return on equity]."⁵⁸

RCIA proposes three incentive mechanisms for BC Hydro: reporting on performance metrics; using formulas to determining budgets for non-volatile expenditures; and developing longer-term capital and operating forecasts and outlooks informed by the asset management system.⁵⁹

⁵³ CEC Final Argument, pp. 2–3.

⁵⁴ CEC Final Argument, p. 4.

⁵⁵ Gjoshe Final Argument, p. 4.

⁵⁶ Gjoshe Final Argument, pp. 8, 11, 13.

⁵⁷ MoveUp Final Argument pp. 1, 4.

⁵⁸ RCIA Final Argument, pp. 5–6.

⁵⁹ RCIA Final Argument, p. 8.

Zone II RPG agrees with BC Hydro that this proceeding “should be devoted to findings about how certain characteristics of BC Hydro would affect the efficacy and implementation of the various measures raised in this proceeding, and whether any potential benefits can be expected to outweigh the identified challenges.” Zone II RPG further agrees with BC Hydro that incentive regulation is a continuum and not a binary choice between COSR and PBR, and that BC Hydro’s current regulatory regime falls part-way along that continuum.⁶⁰

Zone II RPG supports the adoption of the three additional incentive mechanisms proposed by BC Hydro: a three-year test period; statistical benchmarking; and expanded use of performance metrics. Zone II RPG does not support the implementation of additional PBR measures at this time.⁶¹

BC Hydro replies that there is general acknowledgement among the parties that its current regulatory regime falls part-way along an incentive continuum, and that the “analytical exercise” in this proceeding should be one of “assessing whether the existing incentives for good performance can be strengthened in a way that the expected benefits outweigh the expected disadvantages.” BC Hydro notes the diversity of views among interveners with respect to the specific PBR mechanisms explored in this proceeding, including general support for one or more of BC Hydro’s proposed PBR mechanisms for the F2023–F2025 RRA, no support for a test period longer than three years and limited support for indexed or formula-driven rates.⁶²

Panel Discussion

The Panel agrees with BC Hydro that the central issue in this proceeding is to determine which mechanisms, if any, will provide the best incentives for “cost control, productivity improvements and performance”⁶³ at BC Hydro, given its unique circumstances. None of the interveners who commented explicitly on the overall objectives of the proceeding, with the exception of the CEC, had a materially different view to that of BC Hydro.

The CEC supports BC Hydro’s framing of the central issue in the proceeding, but also proposes that the Panel consider four other “foundational concerns,” including the overall objectives of PBR, the circumstances in which it should be implemented, and what alternatives should be considered. The Panel does not agree that it is appropriate to examine PBR in general, for the following reasons.

The Panel is persuaded by the consensus among all three experts who provided evidence in the proceeding that

- all forms of regulation provide incentives to utilities,
- there is a continuum in terms of the strength of these incentives,
- the efficacy and desirability of particular mechanisms depend on the specific circumstances of each utility, and
- BC Hydro’s regulatory regime lies somewhere on the incentive continuum.

For these reasons, we do not consider there to be value in analyzing the “overall objectives” or appropriate circumstances for the success of PBR per se. This would be at best a theoretical exercise, and we are not

⁶⁰ Zone II RPG Final Argument, pp. 1–2.

⁶¹ Zone II RPG Final Argument, pp. 1–2.

⁶² BC Hydro Reply, pp. 1–2.

⁶³ BC Hydro Final Argument, p. 1.

convinced that it would provide any additional insights into the appropriate incentive mechanisms to add to those that already apply to BC Hydro.

The Panel finds that the scope of this decision is appropriately limited to reviewing the three incentive mechanisms BC Hydro has proposed to implement in the F2023–F2025 RRA:⁶⁴

- a three-year test period,
- information-only performance metrics, and
- regular statistical benchmarking, (together BC Hydro’s Proposed Incentive Mechanisms)

and the following four additional options:

- a test period longer than three years,
- formulaic rates,
- adding financial incentives to performance metrics, and
- partial coupling of revenues to incentivize electrification. (together Additional Proposed Incentive Mechanisms)

(all together the Proposed Incentive Mechanisms)

BC Hydro asserts that these Additional Proposed Incentive Mechanisms were “the four additional options for future consideration identified by Dr. Lowry”⁶⁵ [emphasis added], but the utility does not provide a citation to justify this assertion. In fact, Dr. Lowry provided a list of seven “baby steps” for consideration plus the idea of a multi-year rate plan (MRP), with further ideas for ARMs to accompany the MRP. However, the Panel is content to consider BC Hydro’s suggested list of four additional options because many of Dr. Lowry’s suggestions may be considered to be implementation questions that need not be addressed in this decision. We will comment on Dr. Lowry’s other suggestions as appropriate in the reasons below.

The Panel notes the considerable agreement between all three experts with respect to the value of incentive-based regulation in general, and that no interveners proposed additional incentive mechanisms beyond the seven identified above for consideration.

However, we note the disagreement between BC Hydro and interveners on the merits of each of the Proposed Incentive Mechanisms, which we examine in Sections 3 and 4 below. It is appropriate in this proceeding to make findings about the merits of each of the Proposed Incentive Mechanisms, but we should refrain from directing the implementation of the specific incentive mechanism without the benefit of a specific proposal from the utility in a future RRA proceeding.

⁶⁴ BC Hydro Final Argument, p. 4.

⁶⁵ BC Hydro Final Argument, p. 4.

3.0 BC Hydro's Proposed Incentive Mechanisms

In this section the Panel examines the three incentive mechanisms proposed by BC Hydro for inclusion in the F2023–F2025 RRA.

BC Hydro submits that it is advancing three changes to its existing regulatory framework, which it submits will augment its existing cost-control incentives, improve productivity and achieve superior performance, while retaining and augmenting transparency:⁶⁶

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

3.1 Three-year Test Period

BC Hydro proposes to change the length of its test period starting in F2023 to three years, an increase of one year compared to the two-year test period of the F2020–F2021 RRA.⁶⁷

Evidence

Dr. Weisman, BC Hydro's expert, states that the length of the test period is "one of the key determinants of the incentive power of a regulatory regime," and that "the longer the test period, the stronger the incentives for superior performance, *ceteris paribus*."⁶⁸

Dr. Weisman explains that longer test periods provide a stronger incentive for utilities to make investments to reduce costs because they allow the utility to keep the benefits of their investment for longer before the utility's rates are rebased. After the rebasing, the utility's rates would be lowered to reflect the reduced costs and the utility would no longer benefit from them. Dr. Weisman notes that a modest increase in the length of the regulatory regime has a "significant effect" on increasing its incentive power, although he notes that the strength of the incentive also depends on the share of the gains retained by the utility.⁶⁹ In Dr. Weisman's view, moving from a 2-year to a 3-year test period, regardless of whether it is PBR or COSR, has the potential to confer incremental net benefits relative to the status quo for all stakeholders.⁷⁰

Dr. Lowry considers a three-year test period as "the threshold of a PBR type of system."⁷¹ He suggests a three-year test period as an obvious way for BC Hydro to move further in the direction of PBR.⁷² He agrees that cost containment incentives are strengthened when a utility has longer to profit from its efforts to cut costs. Dr.

⁶⁶ BC Hydro Final Argument, p. 47.

⁶⁷ Exhibit B-8, pp. 11, 20.

⁶⁸ Exhibit B-8, Appendix A, p. 6.

⁶⁹ Exhibit B-8, Appendix A, pp. 13–17.

⁷⁰ Exhibit B-10, Zone II RPG IR 5.1.

⁷¹ Transcript Volume 2, p. 198.

⁷² Transcript Volume 2, p. 250.

Lowry also observes that frequent rate cases, for example to accommodate investments in grid modernization, can give rise to weakened incentives for utilities to manage costs effectively.⁷³

Mr. Kolesar also agrees that reducing the number of years in a test period reduces the incentive for utilities to find productivity improvements. He adds that reducing the number of test years also increases the regulatory burden, a concern exacerbated when “one or more test years are essentially over” before the RRA proceeding is complete. In such circumstances, Mr. Kolesar states that “adding an additional test year may be warranted, particularly if the utility is in a position to update its forecasts.”⁷⁴ He also agrees with Dr. Lowry and Dr. Weisman that a three-year test period will increase the incentive power of COSR by creating a greater disconnect between BC Hydro’s allowed revenue and actual costs. However, he cautions that the longer the forecasting horizon the greater the inherent forecasting bias and challenges arising from informational asymmetry. He notes, though, that the performance metrics and periodic statistical benchmarking reporting proposed by BC Hydro will “further augment the incentive power of COSR.”⁷⁵

Similarly, Dr. Weisman suggests that the ongoing interactions between a utility and its regulator could help mitigate the utility’s incentive to exaggerate its forecasts. This is because a utility that consistently exaggerated its forecasts would lose credibility with its regulator. Dr. Weisman observes:⁷⁶

In other words, how the regulated firm would behave and conduct its operations when there is no “tomorrow” is likely to diverge significantly from how the regulated firm would behave and conduct its operations when there are many “tomorrows.” The multi-period game, which characterizes the interaction between the regulated firm and the regulator, provides a disciplinary mechanism that does not exist in a one-shot or static game.

Positions of the Parties

BC Hydro submits that the experts are unanimous in their support for a three-year test period for its RRAs, and further submits that there are, in principle, four benefits of doing so: the sharpened “stick” incentive, rate predictability for customers, increased regulatory efficiency, and adequate protections to impose forecasting discipline.⁷⁷

BC Hydro submits that a three-year test period would provide stronger incentives than a two-year test period to perform efficiently and reduce costs because it increases “regulatory lag”—the period of time between rebasing of rates. BC Hydro explains this is because the additional year extends the time over which it must manage “upward cost pressures” within its pre-approved revenue “envelope” to achieve its Service Plan performance measures and its allowed ROE. BC Hydro cites the evidence of its expert, Dr. Weisman, who describes incentives as being a combination of “carrots (rewards)” and “sticks (punishments),” and explains that the additional year

⁷³ Exhibit A2-5, pp. 8, 13–14.

⁷⁴ Exhibit B-8, Appendix B, p. 6.

⁷⁵ Exhibit B-9, BCUC 17.3.

⁷⁶ Exhibit B-9, BCUC 12.2.

⁷⁷ BC Hydro Final Argument, p. 47.

of the test period “sharpens the sticks” because the utility is “subject to the risk of financial losses for a longer period of time.”⁷⁸

BC Hydro adds that a three-year test period protects ratepayers from rate increases for a further year, as cost increases in the third year would have to be absorbed by BC Hydro.⁷⁹

BC Hydro submits that adding a third year to the test period provides the “material benefit” of improved regulatory efficiency, allowing the utility to “focus more of its efforts on operating the business and finding additional efficiencies and performance improvements to the benefit of ratepayers.”⁸⁰

Finally, BC Hydro submits that “Adequate Protections Are in Place to Impose Forecasting Discipline,” and cites the evidence from Dr. Weisman that the ongoing relationship between the utility and its regulator imposes discipline on the utility to exercise care when forecasting over a three-year period.⁸¹

AMPC,⁸² BCSEA,⁸³ the CEC,⁸⁴ Gjoshe,⁸⁵ MoveUp,⁸⁶ RCIA⁸⁷ and Zone II RPG⁸⁸ either support BC Hydro’s proposed three-year test period or do not object to it.

AMPC supports increasing the test period for BC Hydro’s RRAs to three years in an effort to increase regulatory efficiency, so long as this does not increase reliance on regulatory and deferral accounts.⁸⁹

BCSEA agrees with BC Hydro that a three-year test period warrants inclusion in the next RRA proceeding and would strengthen incentives, increase regulatory efficiency and retain valued transparency.⁹⁰

Gjoshe supports the three-year test period and submits that it would improve regulatory efficiency and balance ratepayer risk.⁹¹

BCOAPO submits that the BCUC should “seriously consider whether now is the time to move to a three-year test period,” as there are two problems with the rationale for this change. BCOAPO submits that BC Hydro’s contention that the additional year will drive additional efficiencies rests on the assumption that there will be future cost increases not captured in the revenue requirement established for the third year of the test period. If the third year’s revenue forecast is too high, then rebasing the rates in the third year could lead to lower rates. Secondly, BCOAPO argues that not all BC Hydro’s costs are under its control and some of these are difficult to

⁷⁸ BC Hydro Final Argument, pp. 47–48; Exhibit A2-3, MoveUp IR 1.3.1.

⁷⁹ BC Hydro Final Argument, p. 50.

⁸⁰ BC Hydro Final Argument, p. 50.

⁸¹ BC Hydro Final Argument, pp. 50–51.

⁸² AMPC Final Argument, p. 3.

⁸³ BCSEA Final Argument, pp. 19–20.

⁸⁴ CEC Final Argument, p. 13.

⁸⁵ Gjoshe Final Argument, p. 8.

⁸⁶ MoveUp Final Argument, p. 4.

⁸⁷ RCIA Final Argument, p. 10.

⁸⁸ Zone II RPG Final Argument, p. 5.

⁸⁹ AMPC Final Argument, p. 3.

⁹⁰ BCSEA Final Argument, pp. 19–20.

⁹¹ Gjoshe Final Argument, p. 8.

forecast, so more current forecasts of these costs are likely to be more accurate. BCOAPO adds there is no evidence that a three-year forecast would be reasonable, and that the strength of the incentive rests entirely on the credibility of the forecast.⁹²

CEABC does not support a three-year test period in the upcoming RRA because the environment in which BC Hydro operates is currently in an “abnormally high state of flux.” CEABC explains that phase 2 of the government’s Comprehensive Review of BC Hydro has not yet been made public, there may be lingering impacts of the COVID-19 pandemic on the demand for electricity, the cost and in-service date of the Site C dam are uncertain, and the utility’s cost of Mandatory Reliability Standards (MRS) compliance “may extend for a number of years.” CEABC submits that all these factors indicate a greater need for public review of BC Hydro’s operations “at a minimum every two years.”⁹³

CEABC also submits that there is no current long-term resource plan (LTRP) in place, and thus the next RRA anticipated in August 2021 is “mistimed” with the LTRP expected in December 2021 because if any form of PBR were to be included in the next RRA it would have no connection to the LTRP.⁹⁴

BC Hydro submits that neither BCOAPO nor CEABC have identified a reason to question the three main benefits of a three-year test period (increased incentives to control costs, improved regulatory efficiency and rate predictability), but instead focus on whether it will be possible for BC Hydro to prepare reasonable forecasts extending out three years. BC Hydro submits that the BCUC must have confidence in the reasonableness of forecasts any time it approves rates, regardless of the length of the test period, and that for the purposes of this proceeding it is sufficient for the BCUC to find that a three-year test period would provide stronger incentives than a two-year period, all else equal.⁹⁵

Panel Discussion

The Panel finds that, all else equal, a three-year test period provides BC Hydro with stronger incentives than a two-year test period for cost control, productivity improvements and performance. The Panel further finds that such an increase in the test period allows greater opportunity for regulatory efficiency and provides improved rate predictability for customers.

The Panel agrees with BC Hydro’s expert, Dr. Weisman, that a longer test period, all else equal, improves the incentives for the utility to make investments in productivity improvements because it allows the utility to retain the gains from those investments for a longer period of time before the utility’s rates are rebased.

The evidence from Dr. Weisman on this question refers to a longer test period providing stronger incentives all else equal. The Panel considers this is an important qualifier. If, for example, the realized costs were lower than the forecast costs for the later years in the test period, the utility may have less incentive to operate efficiently despite having a longer test period. As BCOAPO has noted, if the third year’s forecast is too high, BC Hydro’s rates might actually be lower if they were to be rebased for the third year. We also acknowledge the views of CEABC that there are many uncertainties surrounding BC Hydro’s costs in the coming years, which makes forecasts challenging even in the short term.

⁹² BCOAPO Final Argument, pp. 19–21.

⁹³ CEABC Final Argument, pp. 4–5.

⁹⁴ CEABC Final Argument, pp. 5–6.

⁹⁵ BC Hydro Reply Argument, pp. 8–9.

That said, as BC Hydro submits in its reply argument, neither BCOAPO nor CEABC challenge the reasons for a longer test period; what they do is to raise valid concerns about the reasonableness of forecasts whatever the length of the test period. The Panel will examine this question in more detail in Section 4.1 below where we consider test periods longer than three years. However, the Panel is satisfied that a three-year test period provides stronger incentives than a two-year test period all else equal, and that three years is a reasonable length for a test period that is based on forecasts. The Panel supports BC Hydro's proposal to apply for a three-year test period in the F2023–F2025 RRA, notwithstanding the potential drawbacks that come with a longer test period which we address in Section 4.1 below.

The Panel also agrees with BC Hydro, other things equal, that an additional year in the test period enhances regulatory efficiency, a point noted by Mr. Kolesar in his evidence. Detailed examinations of BC Hydro's costs to determine their prudence are time-consuming and expensive for the utility, interveners and the BCUC, and conducting such an examination every three years rather than every two years significantly reduces the cost when considered on an annual basis.

The Panel notes that on August 31, 2021, BC Hydro submitted its RRA for the period F2023–F2025, a three-year test period. This Panel makes no findings regarding the reasonableness of the forecasts in the F2023–F2025 RRA, which will be considered on the basis of the evidence in that proceeding.

3.2 Regular Statistical Benchmarking

BC Hydro proposes regularly scheduled statistical benchmarking studies by the BCUC and BC Hydro.⁹⁶

Evidence

Dr. Lowry's report acknowledges that COSR "fulfills several key functions of utility regulation," but criticizes the "heavy weight" it places on "the asymmetry of information between the utility and other members of the regulatory community."⁹⁷

Mr. Kolesar also acknowledges the issue of information asymmetry, along with other challenges to establishing the revenue requirement in COSR. In his submission, he states 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." He also cites "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."⁹⁸

Similarly, Dr. Weisman acknowledges the challenges in rigorously scrutinizing cost forecasts in an environment where there are pronounced information asymmetries. He states that "the regulated firm typically knows far more about its costs (and its ability to reduce them) than the regulator and interveners."⁹⁹

⁹⁶ Exhibit B-8, p. 15.

⁹⁷ Exhibit A2-5, p. 7.

⁹⁸ Exhibit B-8, Appendix B, p. 5.

⁹⁹ Exhibit B-8, Appendix A, p. 10.

Positions of the Parties

BC Hydro submits that statistical benchmarking “can be a useful tool to help the BCUC and interveners evaluate the reasonableness of BC Hydro’s cost forecasts.” BC Hydro explains that statistical benchmarking studies can help address concerns with regard to “information asymmetry or upward forecasts” by providing additional data points that can be used to evaluate the reasonableness of its cost forecasts.¹⁰⁰

BC Hydro also submits that the specific details for the terms of reference for future statistical benchmarking studies are best determined through a BCUC process and informed by input from interveners. BC Hydro anticipates that it will include proposed terms of reference in its upcoming F2023–F2025 RRA, and that following a decision by the BCUC, BC Hydro could include the first benchmarking study as part of the following RRA.¹⁰¹

AMPC cautions that statistical benchmarking studies “are only as useful as the comparators are relevant to BC Hydro and BC Hydro’s framework,” and submits that benchmarking should reflect “relevant comparator jurisdictions, and should include an assessment of the reasonableness of the comparators selected.”¹⁰²

BCOAPO supports in principle the use of benchmarking in establishing the reasonableness of a utility’s revenue requirement, and further supports BC Hydro’s proposal to consult with stakeholders on the types of benchmarking that would be useful. BCOAPO submits that this consultation will be important to help establish a clear understanding of exactly how benchmarking studies can and will inform future decisions regarding BC Hydro’s revenue requirements.¹⁰³

BCSEA submits that regular statistical benchmarking warrants consideration in BC Hydro’s next RRA.¹⁰⁴

CEABC supports regular statistical benchmarking “provided the data for this purpose is readily available, accurate and complete, the methodology for the benchmarking is transparent and the benchmarking is useful in relation to the management of BCH’s operations.”¹⁰⁵

The CEC supports the increased use of statistical benchmarking.¹⁰⁶

Gjoshe is generally supportive of BC Hydro’s proposal with regards to benchmarking but considers that both benchmarking and indexing “are instruments for assessing the reasonableness of BC Hydro’s forecasts.”¹⁰⁷

MoveUp endorses the use of statistical benchmarking as proposed by BC Hydro.¹⁰⁸

¹⁰⁰ BC Hydro Final Argument, p. 52.

¹⁰¹ BC Hydro Final Argument, p. 52.

¹⁰² AMPC Final Argument, p. 3.

¹⁰³ BCOAPO Final Argument, pp. 23–24.

¹⁰⁴ BCSEA Final Argument, pp. 19–20.

¹⁰⁵ CEABC Final Argument, p. 6.

¹⁰⁶ CEC Final Argument, p. 13.

¹⁰⁷ Gjoshe Final Argument, pp. 12–13.

¹⁰⁸ MoveUp Final Argument, p. 4.

RCIA is skeptical that benchmarking BC Hydro's performance against that of other utilities provides useful insight into the utility's activities. RCIA submits that benchmarking exercises can be very subjective, and each utility has its own set of unique circumstances, and that comparisons of BC Hydro's performance against its own historical performance are more appropriate than comparisons against third-party utilities.¹⁰⁹

Zone II RPG supports BC Hydro's proposal to implement statistical benchmarking.¹¹⁰

BC Hydro submits in its reply argument that there is general support for benchmarking, at least in principle. It adds that the concerns regarding the value of benchmarking are addressed in its proposed approach, which will be presented in the F2023–F2025 RRA.¹¹¹

Panel Discussion

The Panel finds that statistical benchmarking has the potential to assist in the determination of the reasonableness of BC Hydro's revenue requirement and acknowledges BC Hydro's inclusion in the F2023–F2025 RRA of proposed terms of reference to guide future statistical benchmarking studies.¹¹²

The BCUC's examination of any utility's RRA is limited by the "information asymmetry" problem, which both Dr. Lowry and Mr. Kolesar acknowledge is a significant challenge to effective regulation in a COSR regime. It is extremely challenging for the BCUC and for interveners in an RRA to assess the reasonableness of the costs in BC Hydro's revenue requirement, and to be satisfied that the utility has taken every available opportunity to innovate and become more efficient. Statistical benchmarking offers one method for the BCUC and interveners to evaluate the reasonableness of BC Hydro's costs without direct hands-on knowledge of the cost details.

We note that no intervener opposes the use of benchmarking, although RCIA is skeptical of its value and other interveners raise concerns about the difficulty of finding appropriate utilities against which to benchmark BC Hydro's costs. The Panel shares those concerns but considers the potential value of benchmarking to be sufficient to warrant examination of BC Hydro's proposal in the upcoming F2023–F2025 RRA.

3.3 Information-only Performance Metrics

BC Hydro proposes reporting information-only performance metrics to provide it with incremental incentives.¹¹³ BC Hydro proposes that specific information-only performance metrics could initially be established through the F2023–F2025 RRA proceeding and BC Hydro would then report on these metrics as part of its RRAs.¹¹⁴

¹⁰⁹ RCIA Final Argument, p. 12.

¹¹⁰ Zone II RPG Final Argument, p. 5.

¹¹¹ BC Hydro Reply, p. 9.

¹¹² Exhibit B-2, page 1-40 to 1-42 in the BC Hydro F2023-F2025 RRA proceeding.

¹¹³ Exhibit B-8, p. 18.

¹¹⁴ Exhibit B-10, Zone II RPG IR 3.3.3.

Evidence

Currently BC Hydro reports to the BCUC on a number of performance metrics, specifically BC Hydro's Annual Service Plan performance measures, annual reports on reliability indices, and various metrics used by BC Hydro to manage its operations.¹¹⁵

Dr. Weisman describes information only performance metrics as metrics where the utility's performance on them would be publicly disclosed, but the utility would not be rewarded or penalized financially for compliance or lack of compliance with them. Dr. Weisman explains that even with the lack of financial rewards or penalties, the utility would still be strongly incented to meet or exceed these metrics. This is because the utility may not want to damage its reputation, as well as the belief that failure to comply with these metrics would increase the likelihood that its regulator would opt for financial rewards or penalties at a future point in time "to get the job done." Dr. Weisman points out that the mere threat of incentives that could be punitive in nature would drive compliance.¹¹⁶

Dr. Weisman states that information-only performance metrics may be more effective in eliciting the desired behaviour from a crown corporation than an investor-owned utility. This is because the failure of a crown corporation in meeting or exceeding its stipulated performance metrics would reflect poorly on the government and its leadership.¹¹⁷

Positions of the Parties

BC Hydro submits that information-only performance metrics, determined through a BCUC process, "could help to achieve the goals of BCUC regulation of BC Hydro." BC Hydro cites the evidence of Dr. Weisman, who states that "non-financial incentives in the form of information-only performance metrics can potentially serve an important role in motivating desired performance."¹¹⁸

BCOAPO,¹¹⁹ BCSEA,¹²⁰ CEABC,¹²¹ the CEC,¹²² MoveUp,¹²³ RCIA¹²⁴ and Zone II RPG¹²⁵ all support BC Hydro's proposal for information-only metrics.

BC Hydro submits in its reply argument that interveners generally support its proposal for information-only performance metrics.¹²⁶

¹¹⁵ Exhibit B-8, p. 19; Exhibit B-10, Zone II RPG IR 3.3.

¹¹⁶ Exhibit B-8, Appendix A, pp. 17–18.

¹¹⁷ Exhibit B-8, Appendix A, p. 18.

¹¹⁸ BC Hydro Final Argument, pp. 52–53.

¹¹⁹ BCOAPO Final Argument, pp. 25–26.

¹²⁰ BCSEA Final Argument, pp. 19–20.

¹²¹ CEABC Final Argument, p. 6.

¹²² CEC Final Argument, p. 13.

¹²³ MoveUp Final Argument, p. 4.

¹²⁴ RCIA Final Argument, p. 8.

¹²⁵ Zone II RPG Final Argument, p. 5.

¹²⁶ BC Hydro Reply Argument, pp. 10–12.

Panel Discussion

The Panel finds that reporting on information-only performance metrics could provide incentives for BC Hydro to improve performance and assist the BCUC's regulation of the utility's performance. We acknowledge BC Hydro's inclusion in the F2023–F2025 RRA of enhancements to its information-only performance metrics and adoption of some suggestions from the CEC and RCIA.¹²⁷

The Panel believes that reporting performance metrics provides an incentive for BC Hydro to maintain and improve its performance in the areas reported on, even if the metrics are “information only” and have no financial rewards or penalties associated with them. This is true because of the reputational harm that would be associated with declining performance or the failure to achieve its targets, and the possibility that such decline or failure might prompt the BCUC to consider attaching penalties or rewards to the associated metrics.

The Panel recommends that the BCUC make publicly available BC Hydro's information-only performance metrics and the utility's reported performance for each of them.

We note that no intervener opposes the use of information-only performance metrics.

3.4 F2023 to F2025 RRA

The Panel commends BC Hydro for taking the initiative to include the three Proposed Incentive Mechanisms in the F2023–2025 RRA.¹²⁸ These three mechanisms move BC Hydro's regulatory regime further along the COSR/PBR continuum in the PBR direction.

4.0 Additional Proposed Incentive Mechanisms

In this section we examine the four Additional Proposed Incentive Mechanisms identified in section 2 above as well as the earnings sharing mechanism (ESM).

Evidence

Dr. Lowry provides the following examples of PBR approaches, which can be and often are combined: (i) multi-year rate plans; (ii) revenue decoupling; (iii) targeted encouragement to use disfavoured inputs; and (iv) performance incentive mechanisms.¹²⁹

Dr. Weisman states that the four mechanisms proposed by Dr. Lowry have the potential to improve a utility's incentives to “perform well.” However, the realization of this potential will depend on the strength of the incentives for superior performance. Dr. Weisman explains that incentives could be financial (e.g. an employee incentive-compensation plan that rewards superior performance) or non-financial (e.g. information-only

¹²⁷ BC Hydro Fiscal 2023 to Fiscal 2025 RRA proceeding, Exhibit B-2, page 1-42 to 1-45.

¹²⁸ BC Hydro F2023–F2025 RRA proceeding, Exhibit B-2, Section 1.3.8, pp. 1-37–1-45.

¹²⁹ Exhibit A2-5, pp. 16–17.

performance metrics). The relative strength of the non-financial incentives depends on the particular institutional framework and governance structure under which the utility operates.¹³⁰

Dr. Weisman further explains that since “leisure is preferred to work,” the requisite “carrot (rewards) and sticks (punishment)” or combination of financial and non-financial incentives, must be in place to motivate superior performance. Even though BC Hydro’s primary and secondary objectives are not profit-maximization, a carefully designed employee compensation plan can motivate superior performance. In addition, even for utilities that are not motivated by profit maximization, a social responsibility to minimize costs could also guide a utility to ensure that its customer rates are no higher than necessary.¹³¹

Dr. Weisman observes that both “carrots and sticks” are used as motivational instruments in competitive markets because they “work best when used in combination with one another to provide stronger incentives for efficiency.” He suggests that for Crown Corporations, such as BC Hydro, there may be a lack of “carrots” since the “reward” does not come in the form of higher profits. Therefore, to the extent that PBR “sharpens the sticks,” it may generate some efficiency gains in Crown Corporations. He notes that although “the gains from adopting PBR are perhaps more tenuous for Crown Corporations simply because there are more opportunities for the incentive power of the PBR regime to be weakened,” PBR has been successfully employed in public enterprises.¹³² Dr. Weisman explains:

To put it succinctly, the “success” of PBR may be less certain in the case of Crown Corporations simply because it requires a greater degree of coordination between government and regulatory governance structures that would be expected to occur naturally in the case of investor-owned, regulated firms.¹³³

Mr. Kolesar states that the BCUC should seek to achieve a balance among the following regulatory objectives:¹³⁴

- 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; and
- The regulatory regime should consider the unique circumstances of BC Hydro.

¹³⁰ Exhibit B-8, Appendix A, p. 5.

¹³¹ Exhibit B-8, Appendix A, p. 6.

¹³² Exhibit A2-3, MoveUP IR 3.1.

¹³³ Exhibit A2-3, MoveUP IR 3.1.

¹³⁴ Exhibit B-8, Appendix B, p. 4.

Mr. Kolesar clarifies that although he has characterized these objectives as specific to a regulatory plan for BC Hydro, he sees these objectives as “generally and properly applicable to a regulatory plan for any utility.”¹³⁵

In addition to the PBR mechanisms already proposed by BC Hydro and described in Section 3 of the decision, Dr. Lowry suggests, among other things, that BC Hydro implement a longer test period of three to five years, an index-based formula to determine the utility’s revenue requirement, partial coupling of low-carbon electrification revenues, and financial incentives for specific performance metrics.¹³⁶ It was these four PBR mechanisms that BC Hydro addressed in its final argument, and which the Panel will address in this decision.

Panel Discussion

As discussed in Section 2 above, the Panel considers all regulation to contain incentives and does not in this decision opine on the overall merits of PBR versus COSR. Rather, we consider the merits of certain specific incentive mechanisms. The evidence above, while general in nature, provides useful context to the evaluation below.

4.1 A Test Period Longer than Three Years

Evidence

Dr. Weisman makes three observations about longer test periods and utility incentives: (i) “the share of the efficiency gains retained by the regulated firm has a pronounced effect on the power of the regulatory regime;” (ii) “a modest increase in the length of the regulatory regime has a significant effect on increasing the incentive power of the regulatory regime;” and (iii) there is a tradeoff between the length of the regulatory regime and the degree of earnings sharing.”¹³⁷

To support these observations, Dr. Weisman provides a hypothetical, stylized example, which shows that for a regulated utility that is allowed to retain \$0.50 of each additional dollar in cost savings, lengthening the test period by one year (from five years to six years) increases the average incentive power of the regulatory regime by 16.68 percent.¹³⁸ If that regulated utility is allowed instead to retain the entire \$1 (rather than \$0.50) of its cost savings in each period of the regulatory regime, the average incentive power of lengthening the test period from five years to six years remains the same at 16.68 percent, despite the fact that the cost savings retained by the regulated utility have doubled.¹³⁹

However, when comparing a three-year COSR regime with a fixed-rate forecast and no earnings sharing with a five-year indexed PBR regime with a 50 percent ESM, the former would have approximately 33 percent more incentive power. Dr. Weisman notes that, in this example, the COSR regime would outperform the PBR regime in terms of incentive power whenever the proportion of each dollar of cost savings appropriated through the ESM is greater than 0.3333.¹⁴⁰

¹³⁵ Exhibit B-8, Appendix B, p. 4, footnote 4.

¹³⁶ Exhibit A2-7, pp. 73–76.

¹³⁷ Exhibit B-8, Appendix A, pp. 16–17.

¹³⁸ Exhibit B-8, Appendix A, p. 15.

¹³⁹ Exhibit B-8, Appendix A, pp. 15–16.

¹⁴⁰ Exhibit B-8, p. 16.

Dr. Weisman cites Professors Armstrong and Sappington, who offer the following perspective on COSR regimes:¹⁴¹

Regulatory policy can affect infrastructure investment differently than it affects innovative effort and investment designed to reduce operating costs. To illustrate this point, first consider rate of return regulation [COSR], which promises a fair return on prudently incurred investment. When expropriation can be avoided, such a promise can deliver strong incentives for infrastructure investment. In contrast, because it requires revenues to track costs closely, rate of return regulation (like other forms of “cost-plus” regulation) typically provides limited incentive for innovation and cost reduction.

Now consider price cap regulation, which typically permits revenues to diverge from realized costs for a specified period of time (e.g., four years) but does not promise specific long-term returns on investment. Although such a policy can provide substantial incentive for short-term innovation and cost reduction, it may provide limited incentive for long-term infrastructure investment. Therefore, the choice between rate of return regulation and price cap regulation will depend in part on the type of investment that is most important to secure. In settings where the top priority is to induce the regulated firm to employ its existing infrastructure more efficiently, price cap regulation may be preferable. In contrast, in settings where it is important to reverse a history of chronic underinvestment in key infrastructure, rate of return regulation may be preferable. [Emphasis added]

Dr. Weisman also acknowledges the controversies surrounding ESMs. He states:¹⁴²

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.

With respect to ESM, Dr. Lowry observes that it can “reduce the risk that revenue will deviate substantially from cost.” This reduction in risk can help extend the period between rate cases. However, he also notes that ESM weakens utility performance incentives. Further, ESM design increases regulatory cost and the ESM filings can be a source of controversy. He also points out that offering marketing flexibility can be complicated when an ESM is present. However, there is less need for an ESM if the plan has other risk mitigation measures, such as inflation indexing, cost trackers for capex surges, Z factors, or revenue decoupling.¹⁴³

Dr. Lowry notes that when business conditions faced by a utility are favourable, revenue growth between rate cases roughly matches (and can even exceed) utility cost growth. Infrequent rate cases then create regulatory lag that strengthens utility performance incentives. Customers benefit from base rates that are unchanged in nominal terms and falling in real terms. Further, regulatory cost is low.¹⁴⁴

Dr. Lowry identifies marketing flexibility as a benefit of longer test periods. Dr. Lowry observes that “Multiyear rate plans can afford utilities greater flexibility in the products and terms of services that they offer.” He explains

¹⁴¹ Exhibit A2-1, Appendix FF, p. 45.

¹⁴² Exhibit B-8, Appendix A, p. 10, para. 25, footnote 8.

¹⁴³ Exhibit A2-5, pp. 57–58.

¹⁴⁴ Exhibit A2-5, p. 8.

that generally “the need for marketing flexibility is greater to the extent that demand for utility services is complex, changing, and elastic with respect to the terms of service offered.” He also explains the benefits of marketing flexibility by stating that improved marketing “can bolster utility earnings by increasing revenue, building customer loyalty, and encouraging customers to use utility services in less costly ways. Incremental earnings from better marketing can be shared with customers. Customers also benefit from rate and service offerings that are more tailored to their needs.”¹⁴⁵

Mr. Kolesar acknowledges that reducing the number of test years, in addition to resulting in reduced incentives to finding productivity, increases regulatory burden because there will be more frequent rate cases.¹⁴⁶ However, in his opinion, a PBR plan may be more burdensome and have higher regulatory costs than even multiple rate cases.¹⁴⁷ He explains that, at least at the initial stages of implementation, PBR “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.”¹⁴⁸

Mr. Kolesar notes that Alberta experienced an increase in regulatory filings under PBR.¹⁴⁹ Although he states he is not able to opine on the specifics of how the different industry and regulatory landscapes between BC and Alberta may impact the regulatory filings under PBR, he notes that the number of regulatory filings required under PBR in Alberta were partly due to the number of companies governed by the PBR regime. He also notes that the “capital tracker regime in the first generic PBR plan in Alberta required a significant number of on-going filings.” Further, Mr. Kolesar states that although the number of annual filings under the current PBR plan in Alberta has reduced compared to the predecessor PBR regime, and that these filings are “largely mechanical in nature,” there are still “more routine filings under the PBR regime than generally required under COSR.” In addition, Mr. Kolesar notes that unlike BC, distribution and transmission in Alberta are not vertically integrated and are regulated under different regimes, specifically, distribution is regulated under PBR and transmission is regulated under COSR. In his view, due to the lumpiness of capital investments, a PBR regime for a vertically integrated utility may be more complex to design and implement, particularly with respect to the treatment of capital expenditures.¹⁵⁰

Mr. Kolesar states that the process to establish a revenue requirement and set rates is no less onerous under PBR than under COSR, and both regulatory regimes require a significant amount of judgement on the part of the regulator. He adds that the decoupling of rates from revenue requirement in a typical PBR regime overcomes the two challenges of COSR, namely information asymmetry and an upward forecast bias, and that such a regime allows for a much longer period between rate cases because the notional revenue requirement underlying the approved rates in each year is adjusted in lockstep with the rates as they are indexed pursuant to the PBR formula.¹⁵¹ Mr. Kolesar states that “PBR represents somewhat of an unknown with respect to the amount of regulatory burden the regime will result in, whereas COSR is relatively predictable.” Although he

¹⁴⁵ Exhibit A2-5, p. 54.

¹⁴⁶ Exhibit B-8, Appendix B, p. 6.

¹⁴⁷ Exhibit B-9, BCUC IR 18.1.

¹⁴⁸ Exhibit B-8, Appendix B, p. 11.

¹⁴⁹ Exhibit B-8, Appendix B, p. 11.

¹⁵⁰ Exhibit B-9, BCUC IR 7.1.

¹⁵¹ Exhibit B-8, Appendix B, p. 7.

states he does not have the data necessary to quantify the actual costs associated with PBR versus COSR in Alberta,¹⁵² in his view, a PBR plan may be more burdensome and have higher regulatory costs than even multiple rate cases. He provides the first generation of PBR for distribution utilities in Alberta as an admittedly “extreme example” of this. However, he notes that even under the subsequent PBR regime, there were follow on proceedings, as well as an ongoing requirement for annual PBR filings.¹⁵³

Mr. Kolesar also notes an “inherent upward bias in response to uncertainty” as a challenge in COSR. He explains that as a forecast extends further into the future, there is generally a bias to seek a wider confidence interval around the expected forecast results because a more generous forecast reduces the risk of under-forecasting the impact of future events. He notes that reducing the forecast horizon to fewer years or using a historical rather than forecast test year as examples of alternative approaches to establishing a forecast revenue requirement to counter this inherent bias.¹⁵⁴

With respect to revenue decoupling, Dr. Weisman states that it “can represent an important element of a regulatory regime.” He explains that “the additional revenue stability provided by decoupling [...] can potentially extend the period between rate cases [...] and thereby strengthen incentives for performance.”¹⁵⁵

Positions of the Parties

BC Hydro submits that a test period longer than three years offers questionable benefits and potentially significant disadvantages. BC Hydro submits that the primary rationale for a test period longer than three years cited by Dr. Lowry is the potential for stronger cost containment incentives, and provides two reasons to question whether the longer test period will provide the stronger incentives suggested by theory.¹⁵⁶

First, BC Hydro submits that the absence of a mandate to exceed its allowed ROE “already mutes the incremental efficiency incentive associated with extending the period between rebasing” and that the motivation to seek cost savings to exceed its ROE is absent.¹⁵⁷ BC Hydro further submits that the absence of a mandate to maximize profits, unless it can be emulated using management incentive compensation, limits the efficacy of incentive mechanisms offering the opportunity to achieve an ROE above the allowed ROE.¹⁵⁸

BC Hydro submits it is incented to operate efficiently, in part, because of the mandate it receives from its shareholder, the government of BC. BC Hydro’s mandate emphasizes efficiency and cost control for the purposes of keeping the utility’s rates affordable but does not include an expectation it will achieve an ROE above the allowed ROE.¹⁵⁹ BC Hydro adds that the mandate “determines the incentives to which BC Hydro will and will not respond.”¹⁶⁰

¹⁵² Exhibit B-10, Zone II RPG IR 4.2.

¹⁵³ Exhibit B-9, BCUC IR 18.1.

¹⁵⁴ Exhibit B-8, Appendix B, pp. 5–6.

¹⁵⁵ Exhibit B-8, Appendix A, p. 6.

¹⁵⁶ BC Hydro Final Argument, pp. 54–56.

¹⁵⁷ BC Hydro Final Argument, p. 55.

¹⁵⁸ BC Hydro Final Argument, p. 28.

¹⁵⁹ BC Hydro Final Argument, pp. 13–14, 28–29.

¹⁶⁰ BC Hydro Final Argument, p. 31.

BC Hydro notes the evidence of Mr. Kolesar that “there may be little or no advantage to adopting PBR in terms of economic efficiency” because BC Hydro is not a profit-maximizing firm, and that “the benefits of PBR are unlikely to be fully realized.” BC Hydro also notes the evidence of Dr. Weisman and Dr. Lowry that casts doubt on the “incremental efficiency incentives associated with PBR.”¹⁶¹

BC Hydro submits its mandate incents the utility to re-invest any incremental cost savings into initiatives that support the provision of safe and reliable service or “other identified policy priorities.”¹⁶²

BC Hydro submits that its management compensation structure, which includes “holdback” incentive compensation for achieving Service Plan metrics which are aligned to the Mandate, provides an incentive for executive team members to achieve the utility’s budget.¹⁶³ However, BC Hydro adds that the maximum amount of management rewards cannot increase above a pre-determined cap if excess net income is realized because the utility is bound to observe the Public Sector Employers’ Council (“PSEC”) policy which restricts incentive compensation to a holdback capped at 20 percent of maximum base salary.¹⁶⁴

BC Hydro notes the evidence of Dr. Weisman that in the absence of an incentive-based compensation structure for management, a crown corporation’s incentives for innovation and efficiency may be no stronger under PBR than under COSR,¹⁶⁵ and submits that the restriction on the management compensation scheme prevents the utility from emulating a corporate mandate to exceed the allowed ROE.¹⁶⁶

Second, BC Hydro submits that the length of time between rate rebasing is only one of two factors that determine the incentive power of a regulatory regime, the other input being the share of the efficiency gains retained by the utility. BC Hydro notes that both Dr. Lowry and Dr. Weisman agree that reducing the share of cost savings retained by a utility reduces the incentive power of an MRP.¹⁶⁷

BC Hydro notes the evidence of Dr. Weisman, who provides a worked example to demonstrate that “a three-year test period with a fixed-rate forecast and no earnings sharing has approximately 33 percent more incentive power than a five-year indexed PBR regime with a 50 percent ESM”.¹⁶⁸

BC Hydro also submits that its track record under the existing framework since 2018 suggests that the potential “upside” to PBR is more limited than originally anticipated, noting that rate increases over that period have been below inflation, and the BCUC has both acknowledged BC Hydro’s commitment to cost control and that BC Hydro should be increasing its spending in some areas after years of fiscal restraint.¹⁶⁹

With respect to regulatory efficiency, BC Hydro submits that the BCUC should not pursue a lengthy MRP in the expectation that it will reduce the regulatory burden. BC Hydro cites Mr. Kolesar’s evidence that the adoption of PBR in Alberta resulted in more, not less, regulatory process, and that regulation of BC Hydro might be more

¹⁶¹ BC Hydro Final Argument, pp. 32–36.

¹⁶² BC Hydro Final Argument, p. 30.

¹⁶³ BC Hydro Final Argument, pp. 16–17.

¹⁶⁴ BC Hydro Final Argument, p. 40.

¹⁶⁵ BC Hydro Final Argument, pp. 40–41.

¹⁶⁶ BC Hydro Final Argument, p. 17.

¹⁶⁷ BC Hydro Final Argument, pp. 55–56.

¹⁶⁸ BC Hydro Final Argument, p. 56.

¹⁶⁹ BC Hydro Final Argument, p. 2.

complex than “the Alberta experience” because BC Hydro is a vertically integrated utility and has only recently returned to regulation after a hiatus.¹⁷⁰

BC Hydro submits that another potential benefit of longer test periods, “facilitating marketing flexibility,” is “illusory” in BC because under the UCA BC Hydro is not permitted to change its rate structures automatically.

BC Hydro submits there are three other challenges to implementing “opaque approaches to rate setting.”¹⁷¹

First, BC Hydro submits that PBR is predicated on increasing a utility’s autonomy to seek out efficiencies, and that the BCUC’s ability to regulate the utility has only recently become “less constrained after a 10-year hiatus;” thus, it is likely to be more challenging to secure stakeholder support for an approach that would grant the utility increased autonomy from regulatory scrutiny.¹⁷²

BC Hydro adds that, in addition to the benefits of a longer test period being questionable or illusory, consumer groups may be wary of automatic rate increases.¹⁷³

Second, BC Hydro submits that “extensive adoption” of PBR mechanisms would mean the utility has effectively been subject to three different regulatory regimes (by government, the existing regime and PBR) in a relatively short period of time. It submits that the most effective way to build a strong foundation of “familiarity and comfort” for stakeholders is through successive RRA proceedings.¹⁷⁴

Third, BC Hydro anticipates that some stakeholders will have reservations about the Additional Proposed Incentive Mechanisms because:¹⁷⁵

- reviews of utilities’ costs at frequent intervals are more transparent and accessible than indexing and formulas,
- there may be skepticism about regulatory models that use “profits in excess of the regulated rate of return” as an incentive, and
- it may be difficult to prove that customers have been better off under PBR.

BC Hydro concludes that a three-year test period “strikes an appropriate balance between strengthening the incentive created by setting a pre-determined revenue envelope over multiple years and providing a reasonable cost forecast that is not subject to too many ‘unknowns’.”¹⁷⁶

¹⁷⁰ BC Hydro Final Argument, pp. 56–57.

¹⁷¹ BC Hydro Final Argument, p. 41.

¹⁷² BC Hydro Final Argument, pp. 41–42.

¹⁷³ BC Hydro Final Argument, pp. 58–59.

¹⁷⁴ BC Hydro Final Argument, pp. 42–43.

¹⁷⁵ BC Hydro Final Argument, pp. 44–46

¹⁷⁶ BC Hydro Final Argument, p. 59.

No intervener supports a test period longer than three years for BC Hydro at this time, and BCOAPO,¹⁷⁷ BCSEA¹⁷⁸ CEABC¹⁷⁹ Zone II RPG¹⁸⁰ oppose such a change.¹⁸¹

BCOAPO agrees with BC Hydro that there would be too much uncertainty to review a cost forecast for a period longer than three years and adds that “regulatory effectiveness takes precedence over regulatory efficiency.”¹⁸²

BCSEA agrees with BC Hydro that the benefit of stronger cost containment incentives is questionable in the case of BC Hydro.¹⁸³

CEABC submits it is important that the longer-term plans which are to be examined in BC Hydro’s upcoming LTRP should be incorporated in the utility’s shorter-term planning periods.¹⁸⁴

Zone II RPG submits that more time is required to determine whether a longer test period is appropriate for regulating BC Hydro.¹⁸⁵

BC Hydro in its reply argument notes that no intervener advocates for a test period longer than three years.

Panel Discussion

The Panel finds that a longer test period better serves the objectives of providing incentives for BC Hydro to contain costs and achieving regulatory efficiency compared to a shorter test period. The Panel further finds that there are potential drawbacks of a longer test period, but that these may be alleviated through the appropriate design of other aspects of BC Hydro’s regulatory regime.

The appropriate length of BC Hydro’s test period is a matter of judgement, and in BC Hydro’s judgement, three years is the ideal length because it “strikes an appropriate balance between strengthening the incentive created by setting a pre-determined revenue envelope over multiple years and providing a reasonable cost forecast that is not subject to too many ‘unknowns’.”¹⁸⁶ The Panel disagrees that three years is necessarily the optimal length of test period for BC Hydro, and notes that section 59(4)(a) of the UCA states that the BCUC is the “sole judge” on whether a rate is unjust or unreasonable. In our view, a test period of at least five years, the current test period for FEI and FBC, is reasonable. That said, the final determination of the appropriate test period for BC Hydro beyond F2025 will be made by a future panel.

Improved Incentive Power

¹⁷⁷ BCOAPO Final Argument, p. 27.

¹⁷⁸ BCSEA Final Argument, p. 21.

¹⁷⁹ CEABC Final Argument, p. 6.

¹⁸⁰ Zone II RPG Final Argument, p. 5.

¹⁸¹ Zone II RPG Final Argument, p. 1.

¹⁸² BCOAPO Final Argument, p. 27.

¹⁸³ BCSEA Final Argument, p. 21.

¹⁸⁴ CEABC Final Argument, p. 6.

¹⁸⁵ Zone II RPG Final Argument, p. 1.

¹⁸⁶ BC Hydro Final Argument, p. 59.

In Section 2.0 above we determined that the central issue in this proceeding is which mechanisms will provide the best incentives for “cost control, productivity improvements and performance” at BC Hydro. Further, in Section 3.1 above we agreed with BC Hydro’s expert, Dr. Weisman, that all else being equal a longer test period improves incentives for a utility because it allows the utility a longer period to enjoy the cost savings from any cost-saving initiatives it undertakes. From this position it follows that a five-year test period, all else equal, will provide a stronger incentive for BC Hydro to contain costs than a shorter test period, for example of two or three years.

We also note the evidence from Professors Armstrong and Sappington, cited by Dr. Weisman, who state that when a utility’s rates closely track its costs there is “limited incentive for innovation and cost reduction” whereas permitting rates to diverge from actual costs can provide “substantial incentive for short-term innovation and cost reduction.” The Panel’s view is that this is consistent with and supports the position of Dr. Weisman that all else equal a longer test period improves incentives for a utility.

BC Hydro argues that its absence of a mandate to exceed its ROE “mutes the incremental efficiency incentive associated with extending the period between rebasing,”¹⁸⁷ and that the incentive power of a regulatory regime depends, in part, on the degree to which earnings from cost savings are retained by the utility during the test period versus being shared with ratepayers through an ESM.¹⁸⁸ The Panel notes that both points relate to the degree of incentive power provided by a longer test period but that neither point undermines the general conclusion that, all else equal, a longer test period contains stronger incentives for cost containment than a shorter test period.

The Panel finds that BC Hydro’s lack of a profit-maximizing mandate is not a compelling reason for forgoing the benefits of a longer test period.

BC Hydro submits that, without a profit-maximizing motive, it is not motivated to earn more than its allowed ROE, which “significantly undermines the *incremental* incentive power” of PBR mechanisms.¹⁸⁹ However, BC Hydro also submits that it is motivated to achieve its allowed ROE by the mandate from its shareholder, the government of BC.

The Panel observes that to achieve its allowed ROE, which BC Hydro submits it is motivated to do,¹⁹⁰ the utility’s expenditures must not exceed its forecast expenditures which make up the remainder of the revenue requirement. It is reasonable to assume that BC Hydro would be equally incented to earn its allowed ROE if the utility had to achieve an expenditure target determined by a formula rather than the same target determined by a forecast. For this reason, the fact that BC Hydro is not motivated to earn more than its allowed ROE has no bearing on the incentive power of a revenue requirement determined by a forecast versus a revenue requirement determined by a formula. It is not necessary for BC Hydro to be incented to earn more than its allowed ROE for a formula-based revenue requirement to be effective. It is sufficient merely that BC Hydro is incented to achieve the allowed ROE.

The Panel acknowledges that if BC Hydro were a profit-maximizing firm, there might be additional PBR mechanisms that would incent the utility to seek additional innovations and to reduce its expenditures further

¹⁸⁷ BC Hydro Final Argument, p. 55.

¹⁸⁸ BC Hydro Final Argument, pp. 55–56.

¹⁸⁹ BC Hydro Final Argument, p. 31, emphasis in original.

¹⁹⁰ BC Hydro Final Argument, p. 2.

than required to earn its allowed ROE, and that these mechanisms might share the resulting cost savings between the utility and its ratepayers. To that extent we agree with Mr. Kolesar that the benefits of PBR may not be fully realized for non-profit maximizing firms such as BC Hydro. However, the Panel is satisfied that, for the present, it is sufficient merely that BC Hydro is motivated to earn its allowed ROE and that the longer test period improves the degree of motivation.

We also disagree that BC Hydro's restricted management compensation scheme would inhibit the success of formula-based revenues.

As explained immediately above, it is not necessary to motivate BC Hydro to earn more than its allowed ROE, whether by using a management compensation scheme or other techniques, for a longer test period to be effective. It is sufficient that BC Hydro is incented to achieve the same ROE that it is incented to earn today, which it submits is the case.

In any event, it is not the role of the BCUC to manage BC Hydro's business. Once the BCUC has determined a suitable regulatory regime for BC Hydro with the appropriate incentives, it is the role of BC Hydro's management and shareholder to determine how it responds to those incentives. BC Hydro's shareholder may implement a different management compensation scheme to the one the utility has at present if it considers it appropriate.

BC Hydro notes the evidence of Dr. Weisman, who provides a "hypothetical, stylized example" to illustrate a specific circumstance in which a shorter test period will provide a weaker incentive than a longer test period. While we do not disagree with Dr. Weisman's analysis of that specific circumstance, we do not consider it valid to conclude that a shorter test period necessarily provides a weaker incentive for a utility to control costs than a longer test period. On the contrary, the general conclusion of Dr. Weisman is the opposite; that is, other things being equal, a longer test period provides greater incentive power than a shorter test period, and in fact BC Hydro relies on this general conclusion in its argument for a three-year test period over a two-year test period.

BC Hydro suggests that the "upside" to PBR is more limited than previously anticipated because the utility's rate increases since 2018 have been below inflation.¹⁹¹ The Panel does not disagree that the utility's recent rate increases have been below inflation but considers the more relevant statistic to be operating costs. Rates are affected by both a utility's operating costs and its billing determinants, such as volume of sales. The purpose of PBR is to provide incentives for utilities to contain their operating costs, which in the long term is required to contain rates.

In the F2022 RRA decision the BCUC commented on BC Hydro's "significant and potentially lasting" 12.2 percent increase in base operating costs.¹⁹² The increase in operating costs of 12.2 percent may not have led to a similar increase in rates in the short term because of changes in BC Hydro's sales volume or some other factor. However, such large increases in operating costs are not sustainable in the long term without increases in rates, and incentive schemes such as PBR are intended to motivate utilities' behavior to constrain the increases in rates as much as possible by controlling costs.

Improved Regulatory Efficiency

¹⁹¹ BC Hydro Final Argument, p. 2.

¹⁹² BC Hydro F2022 RRA, Decision dated June 17, 2021, pp. 25–27.

In addition to improved incentive power, the Panel also finds that a longer test period better achieves the objective of improving regulatory efficiency for BC Hydro than a shorter test period, all else equal. As we noted above, BC Hydro argues that adding a third year to a two-year test period provides the “material benefit” of improved regulatory efficiency and allows the utility to “focus more of its efforts on operating the business and finding additional efficiencies and performance improvements to the benefit of ratepayers.” We believe that adding a fourth and fifth year to a three-year test period will further improve regulatory efficiency, and will provide two additional years in which BC Hydro may focus on operating its business and finding additional efficiencies.

We also note that the conclusion that a longer test period improves regulatory efficiency is supported by Dr. Lowry¹⁹³ and implicitly supported by Mr. Kolesar, who states that “reducing the number of test years...increases the regulatory burden because the utility will be before the regulator more frequently.”¹⁹⁴

The Panel notes the evidence of Mr. Kolesar from his experience at the Alberta Utilities Commission (AUC) with respect to the regulatory burden of introducing PBR. While Mr. Kolesar states that the AUC experienced an increase in regulatory filings, we note that there are significant differences between the introduction of PBR in Alberta and the incentive-based measures being considered for BC Hydro. According to Mr. Kolesar, Alberta introduced a “generic PBR plan,” in contrast to the introduction of an incentive scheme for a single utility, BC Hydro. We consider the implementation of PBR at a single utility should be simpler, other things being equal, than creating a generic PBR plan that must accommodate a wider variety of possible circumstances. Further, the Alberta PBR plan was introduced at multiple distribution utilities, which would inevitably lead to more regulatory filings than if only one utility were involved. We also note that Mr. Kolesar does not quantify the actual costs associated with PBR versus COSR in Alberta. The Panel concludes that there is no compelling evidence from the AUC’s experience that the introduction of incentive-based regulation would increase the overall regulatory effort with respect to BC Hydro.

The Panel also notes that FEI estimates it reduced its annual regulatory costs under PBR by \$365,000 compared to its most recent COSR RRA, and FBC reduced its annual costs by \$300,000. Additional benefits of PBR plans stated by FortisBC include increased utility focus on managing and growing its business and creating operational flexibility to address energy industry issues. In addition, FortisBC believes that the longer-term nature of a PBR plan frees up resources to allow FEI and FBC to focus on revenue-generating and load building activities in addition to meeting customer expectations and addressing other challenges and opportunities.¹⁹⁵

Marketing Flexibility

The Panel agrees with BC Hydro that longer test periods do not, alone, facilitate marketing flexibility. We also agree that the UCA does not permit BC Hydro to change its rate structures without the approval of the BCUC.

That said, to the extent that BC Hydro does implement new and innovative services with the approval of the BCUC, it will be able to retain the economic benefits of those innovations for longer with a longer test period.

¹⁹³ Exhibit A2-5, p. 8.

¹⁹⁴ Exhibit B-8, Appendix B, p. 6.

¹⁹⁵ FortisBC Application for Approval of a Multi-Year Rate Plan for the Years 2020 through 2024, Decision dated June 22, 2020, pp. 11, 15.

Thus, a longer test period is no disincentive to marketing innovation, and may provide some incremental incentive, other things being equal. The Panel therefore views a longer test period to be supportive of BC Hydro's electrification plan included in the F2023–F2025 RRA and therefore supports the government of BC's CleanBC plan to reduce greenhouse gas emissions in BC.¹⁹⁶

Potential Drawbacks

The conclusion the Panel draws from the evidence is that, in general, a longer test period provides more incentive power and improved regulatory efficiency compared to a shorter test period, but that it is too simplistic to assume that a longer test period alone will necessarily lead to a better regulatory regime for BC Hydro. As is clear from the evidence, and as BC Hydro has noted, there are some potential drawbacks to a longer test period, which we examine below.

Forecasting a utility's future costs becomes more difficult as the length of the test period increases, as BC Hydro¹⁹⁷ notes, and we note specifically the evidence of Mr. Kolesar regarding the "inherent upward bias in response to uncertainty" which causes forecasters to seek a "more generous forecast" as the forecast extends further into the future to reduce the risk of under-forecasting the impact of future events. However, there are several regulatory approaches available to mitigate the problems of forecasting over longer test periods and specifically overcoming the "inherent upward bias" problem, two of which are revenue decoupling and attrition relief.

BC Hydro already uses "revenue decoupling," by which its revenues are not affected by differences between its forecast load and the realized load. Using the Load Forecast Deferral Account, any such differences, whether under or over recoveries of costs by BC Hydro, are recovered from or returned to ratepayers in future periods. BC Hydro therefore takes no revenue risk for load forecasting errors regardless of how far into the future they are made.

In addition, there are various "attrition relief mechanisms" (ARMs) available to allow a utility's revenue requirement to change between rate cases without the need for detailed cost forecasts for every year of the test period, thus mitigating the "inherent upward bias" problem of forecasting over longer test periods. The Panel will consider various ARMs to accompany a longer test period in Section 4.2 below, most specifically the use of an index-based formula.

The Panel notes BC Hydro's submissions that it will be more challenging to secure stakeholder support for PBR because the approach grants the utility increased autonomy from regulatory scrutiny,¹⁹⁸ and that consumer groups may be wary of automatic rate increases.¹⁹⁹ We acknowledge that the majority of interveners in this proceeding do not support the use of a formula for setting BC Hydro's rates, although both RCIA,²⁰⁰ representing residential consumers, and AMPC,²⁰¹ representing major power consumers, favor some form of indexing to set BC Hydro's rates. If we were to seek unanimity among all stakeholders prior to setting rates, we would likely

¹⁹⁶ Exhibit B-2-3-1, chapter 10 and appendix U, in the BC Hydro F2023-F2025 RRA proceeding.

¹⁹⁷ BC Hydro Final Argument, p. 59.

¹⁹⁸ BC Hydro Final Argument, pp. 41–42.

¹⁹⁹ BC Hydro Final Argument, pp. 58–59.

²⁰⁰ RCIA Final Argument, p. 10.

²⁰¹ AMPC Final Argument, p. 2.

never do so. Instead, the BCUC is legislatively bound to set rates that are just and reasonable and not unduly discriminatory or preferential. As we explain in Section 4.2 below, setting rates using an index-based formula is consistent with section 59 of the UCA in that the approach allows BC Hydro the opportunity to recover its prudently incurred costs and to earn its allowed ROE.

The Panel also notes that the BCUC has set rates for FortisBC utilities, which have many of the same stakeholders as BC Hydro, using an index-based formula between 2014 and 2019, and that, for example, FEI was motivated to save expenses varying between \$191 million and \$246.9 million in each of the six years, and returned a total of \$76.8 million to ratepayers.²⁰² Whatever the degree of stakeholder support for implementing PBR at FortisBC, the BCUC did not consider that the lack of unanimous support was an impediment to PBR's implementation or to there being benefits from it. Similarly, we do not consider lack of unanimous support from BC Hydro's stakeholders to be an impediment to implement PBR for this utility.

The Panel shares the view of BCOAPO that regulatory effectiveness is at least as important as regulatory efficiency. Taken to its logical extreme, if increasing the length of the test period improves regulatory efficiency, then never having another RRA proceeding might be considered the "ideal" state of regulatory efficiency for BC Hydro, but few would argue that this would provide the most effective form of regulation. What the Panel seeks is the appropriate balance between improving efficiency through longer periods between rate cases and improving the effectiveness of regulation by better aligning the incentives of the utility with the public interest.

BC Hydro submits²⁰³ that "extensive adoption" of PBR at the utility would mean it has effectively been subject to three regulatory regimes (by government, the existing regime and PBR) in a relatively short period of time, and that successive RRA proceedings are the most effective way to build "familiarity and comfort" for its stakeholders.²⁰⁴ The Panel does not share BC Hydro's concern in this regard for several reasons.

Firstly, the Panel does not consider that a longer test period combined with an ARM necessarily constitutes "extensive adoption" of PBR. The details of BC Hydro's PBR implementation will be determined in a subsequent proceeding, and that proceeding will determine how "extensive" the implementation will be.

Secondly, in the Panel's view stakeholders have already had a reasonable amount of time to build "familiarity and comfort" with the utility's operations and expenditures. The BCUC has had increasing regulatory oversight over BC Hydro since F2017,²⁰⁵ and the utility's existing regime of forecast-based revenue requirements will shortly have been examined in four successive RRA proceedings, covering a consecutive period of nine fiscal years.²⁰⁶

Thirdly, and most importantly, the Panel considers it is more important for a regulatory regime to be effective than for it to be constant. The benefits of stronger incentives for innovation and cost reduction and improved regulatory efficiency explained above are worth the effort to change BC Hydro's regulatory regime. In Section 4.2 below the Panel will also examine some of the limitations of the current regulatory regime, including

²⁰² FortisBC Application for Approval of a Multi-Year Rate Plan for the Years 2020 through 2024, Decision dated June 22, 2020, p. 6.

²⁰³ BC Hydro Final Argument, pp. 42–43.

²⁰⁴ BC Hydro Final Argument, p. 42.

²⁰⁵ Exhibit A2-1, Chapter 11, pp. 11-8, 11-63.

²⁰⁶ F2017–2019, F2020–2021, F2022 and F2023–2025

informational asymmetry, the “inherent upward bias” problem and challenges emulating competitive markets, which may be mitigated by using an index-based formula in conjunction with a longer test period.

BC Hydro also submits that stakeholders will have reservations about additional PBR mechanisms because frequent review of utilities’ costs is more transparent, there may be skepticism about utilities earning profits in excess of the regulated return, and it may be difficult to prove that customers have been better off under PBR.²⁰⁷ The Panel does not consider any of these three considerations to be a compelling reason not to implement PBR.

First, no matter how frequently they occur, the transparency of reviews of BC Hydro’s revenue requirement will always be limited by the informational asymmetry problem. Under PBR it is typical for a utility to have a transparent, in-depth proceeding to set the initial revenue requirement and then higher-level annual reviews of performance during the test period, an approach used in the BCUC’s regulation of the two FortisBC utilities since the 1990s.²⁰⁸ The Panel is satisfied that this balances the need for transparency with the need for regulatory efficiency.

Second, the Panel is not considering PBR mechanisms to motivate BC Hydro to earn profit in excess of its allowed ROE, as we explained earlier in this section.

Third, it may indeed be difficult to prove that customers have been better off under PBR. But it is also difficult to prove how well-off customers are under a forecast approach to setting a revenue requirement, not least because of the informational asymmetry problem. We note the \$76.8 million in cost savings FEI reports that it has returned to its customers between 2014 and 2019,²⁰⁹ and the general support for incentive regulation and PBR from all three experts who submitted evidence in this proceeding which BC Hydro refers to in its argument.²¹⁰

Conclusion

The Panel considers a five-year test period to be a reasonable extension of past and current regulatory practice at the BCUC. BC Hydro itself had a three-year test period for the F2017–F2019 period, so a five-year test period is thus only a two-year increase from recent regulatory practice. Further, two other significant utilities in BC, FEI and FBC, are both in multi-year rate plans of five years from F2020 to F2024, following multi-year rate plans of six years from 2014 to 2019. The BCUC and interveners have recent experience with test periods longer than three years, including how to mitigate their potential disadvantages.

A five-year test period is thus an incremental step for BC Hydro, which has the potential to strengthen incentives for cost containment and to improve regulatory efficiency during that period.

²⁰⁷ BC Hydro Final Argument, pp. 44–46.

²⁰⁸ Exhibit B-1, p. B-25, FEI-FBC 2020–2024 MRP proceeding.

²⁰⁹ FortisBC Application for Approval of a Multi-Year Rate Plan for the Years 2020 through 2024, Decision dated June 22, 2020, Table 1, p. 6.

²¹⁰ BC Hydro, Final Argument, p. 8.

4.2 Formula-driven Revenues

In simple terms, BC Hydro describes PBR as setting rates through a formula that de-links costs and rates for a specified period. BC Hydro points out that a typical approach to PBR in the electricity industry is a hybrid plan where some costs are subject to a PBR formula and other costs are set through COSR.²¹¹

BC Hydro adds that under PBR, an inflation factor (“I” factor) escalates a utility’s rates or revenue by an inflation index. A productivity factor (“X” factor) offsets the inflation factor and is meant to represent the average productivity gains of a representative industry peer group, so that they can be passed on to customers through lower rates.²¹²

In response to the BCUC’s request for a discussion of the types of PBR plans that may be suitable for BC Hydro, BC Hydro states that a hybrid plan would be the most suitable and that the PBR formula should be a revenue cap.²¹³

Evidence

Dr. Weisman explains that PBR formulas typically have an inflation index referred to as “I” less a productivity offset referred to as “X”. They also typically incorporate “Z factors” and a “stretch factor (S)”. Dr. Weisman explains.²¹⁴

PBR formulae also typically incorporate Z factors, which allow the rate adjustment formulae to reflect one-time, exogenous events beyond the regulated firm’s control that are not fully reflected in the other parameters of the rate adjustment formula (e.g., changes in tax/environmental policy). In addition, it is common in PBR plans to include a stretch factor (S) in the rate adjustment formula to reflect the increased productivity growth that is expected from the change from traditional COSR to PBR. This stretch factor is sometimes referred to as a consumer productivity dividend because it is an *ex ante* productivity growth increment that confers upon consumers greater real price reductions or a slower rate of price growth. Hence, the annual rate adjustment formula can be expressed by

$$(1) \% \Delta P = I - X - S + Z,$$

where $\% \Delta P$ is the annual (maximum) percentage change in price.

Dr. Weisman also explains that utilities in the electric power industry often include a supplemental capital factor (K) to address the fact that under a standard PBR formula, a utility may not generate sufficient revenues to adequately fund required infrastructure improvements. Further, a PBR formula may include a “Y factor” to account for “recurring expenses which the utility has no control (e.g. transmission charges) and therefore the utility is allowed a full pass-through. The revised rate adjustment formula is given by (2) $\% \Delta P = I - X - S + Z + K + Y$.”²¹⁵

²¹¹ Exhibit A2-1, pp. 11-3, 11-13.

²¹² Exhibit A2-1, p. 11-13.

²¹³ Exhibit A2-1, p. 11-13.

²¹⁴ Exhibit A2-1, Appendix FF, pp. 31–32.

²¹⁵ Exhibit A2-1, Appendix FF, p. 33.

Examples provided by BC Hydro of items that may merit “Y factor” treatment include BC Hydro’s recovery mechanisms for its variance and regulatory accounts for previously incurred costs, DSM expenditures, and miscellaneous revenue and subsidiary net income.²¹⁶ Some general observations made by BC Hydro regarding cost indices that could be used to determine the inflation factor (I) include:

- (i) they should be industry specific and reflect the nature of the costs in that industry;
- (ii) it is typical to use multiple indices with each component of the composite index weighted according to the breakdown of costs subject to the PBR formula; and
- (iii) having the actual bargaining mandate determined by the Public Sector Employers’ Council Secretariat form part of the composite index could be an option.

However, BC Hydro states that if the BCUC were to decide to adopt PBR for BC Hydro, then specific considerations with regards to the inflation factor should be determined as part of a PBR application process.²¹⁷

Dr. Weisman states that PBR plans should be more broad-based rather than target financial incentives too specifically on a single dimension of the firm’s performance to avoid the firm’s inclination “to devote excessive attention to this one dimension and neglect other important dimensions.” However, he acknowledges that while PBR plans should be more broad-based, “a well-designed PBR plan should hold the firm financially responsible for dimensions of its performance over which it exercises significant control, and relieve the firm of financial responsibility for performance dimensions over which it has little or no control.”²¹⁸ He also points out that some PBR plans treat capital expenditures and operating expenditures differently, recognizing that the firm has limited control of the infrastructure requirements necessary to provide service and more control over how the service is actually provided. The differing treatment, however, “can lead to inefficient capital/labor substitution in the firm’s production processes.”²¹⁹

Dr. Lowry explains that the ARM is one of the most important components of an MRP. ARMs can substitute for rate cases and cost trackers because they adjust rates for trends in input prices, demand, and other external business conditions that affect utility earnings. ARMs can escalate rates or allowed revenue and can address cost challenges without weakening performance incentives.²²⁰

“Rate caps” limit rate growth and are sometimes called “price caps.” Under a price cap plan, allowed rate escalation is typically applied separately to multiple service “baskets.” Utilities can typically raise rates for services in each basket by a common percentage that is determined by the ARM, cost trackers, and any earnings sharing adjustment. Dr. Lowry further explains that price caps have been used to regulate industries “where it is desirable for utilities to market their services aggressively and promote system use. This will generally be so to the extent that utilities have excess capacity and use of their systems does not involve negative externalities.”

²¹⁶ Exhibit A2-1, pp. 11-53, 11-55; Exhibit A2-3, BCSEA IR 58.2.

²¹⁷ Exhibit A2-2, BCUC IR 192.2.

²¹⁸ Exhibit A2-1, Appendix FF, pp. 13–14.

²¹⁹ Exhibit A2-1, Appendix FF, p. 26.

²²⁰ Exhibit A2-5, p. 37; Exhibit A2-7, p. 36.

Price caps make utility earnings more sensitive to the kWh and kW of system use when rates have high usage charges. This strengthens the utility's incentives to encourage greater use of its system.²²¹

Dr. Weisman states that price cap regulation encourages the regulated utility to increase demand when there are positive price-cost margins. However, this may be viewed as less favourable in the electric power sector as there may be a desire to curtail consumption due to environmental concerns. He identifies this as one of the reasons why revenue caps and revenue-per-customer caps (along with revenue decoupling) are common forms of PBR in the electric distribution industry.²²²

On the other hand, Dr. Lowry explains that under "revenue caps," the escalator permits growth in allowed revenue. However, allowed revenue growth typically does not equal rate growth because the growth rates of allowed revenue and billing determinants differ. Dr. Lowry explains that revenue caps are often paired with a revenue decoupling mechanism that relaxes the link between revenue and system use. However, even in the absence of decoupling, revenue caps have "intuitive appeal" because revenue cap escalators deal with the drivers of cost growth, whereas price cap escalators must also reflect the trends in billing determinants.²²³

BC Hydro explains that under a price cap, its customers would not benefit if government policy resulted in actual load being greater than forecast because the PBR formula would cap BC Hydro's rates rather than the total allowed revenue. Therefore, if BC Hydro's actual revenue was greater than forecast, its actual net income would be higher than forecast and the difference would not be refunded to ratepayers. Conversely, under a revenue cap, its customers would benefit if government policy resulted in actual load being greater than forecast because the PBR formula would cap BC Hydro's total allowed revenue and any amount in excess of that total would be deferred and refunded to ratepayers.²²⁴

Dr. Lowry suggests four types of ARM:²²⁵

- Forecast ARM;
- Indexed ARM;
- Hybrid ARM; and
- Rate freeze.

Forecast ARM

Dr. Lowry explains that a forecasted ARM proposal is primarily based on multi-year cost proposals, which are sometimes called forecasts. A revenue cap requires a forecast of the (net) cost of service; whereas a price cap requires, additionally, a forecast of billing determinants.²²⁶ Allowed revenue based on cost forecasts typically results in a predetermined "stairstep" trajectory (e.g. 3 percent growth in 2022, 2.5 percent growth in 2023,

²²¹ Exhibit A2-5, p. 37.

²²² Exhibit A2-1, Appendix FF, p. 17.

²²³ Exhibit A2-5, p. 37.

²²⁴ Exhibit B-5, BCUC IR 189.2.

²²⁵ Exhibit A2-5, pp. 38–43

²²⁶ Exhibit A2-5, p. 38.

etc.).²²⁷ The greatest challenge with forecasted ARMs is the difficulty of establishing a just and reasonable multi-year cost forecast. Dr. Lowry notes that an important advantage of forecasted ARMs is their ability to be tailored to various cost trajectories. However, a disadvantage is that forecasted ARMs usually do not protect utilities from unforeseen changes in inflation. Another challenge is the difficulty in establishing a just and reasonable multi-year cost forecast. He explains that “[u]tilities are generally incentivized to overstate required cost growth while consumer advocates are incented to understate it.” This can often lead to controversy.²²⁸

Indexed ARMs

Dr. Lowry explains that the indexing approach to ARM design is based primarily on industry cost trend research, which revealed that utility costs display patterns that can often provide the basis for just and reasonable adjustments to rates or revenue between rate cases. Cost trends are normally broken down into input price and productivity trends using indexes. This approach is sometimes portrayed as simulating competitive conditions because prices in competitive markets also reflect industry input price and productivity trends.²²⁹ An advantage of the indexing approach is the ability to reduce utilities’ operating risk without weakening the performance incentives because this approach automatically compensates utilities for key external cost drivers such as inflation and customer growth. Another advantage is the containment of controversies over cost forecasts. Disadvantages of the indexing approach include the potential inability to appropriately compensate utilities for capital expenditure surges because index-based ARMs are typically based on long-run cost trends. However, necessary capital expenditure surges can be addressed by cost trackers, but trackers involve their own complications. Another disadvantage of the indexing approach is that it can involve complex statistical cost research that is sometimes controversial.²³⁰

Dr. Weisman’s first principle in designing a sound PBR regime that benefits all key stakeholders is that “a PBR plan should create the same efficiency incentives as those experienced in a competitive market while satisfying stipulated service quality and conservation metrics.”²³¹ Consistent with this principle, Dr. Weisman states that competitive rate changes can occur under a PBR regime for a crown corporation. He explains:²³²

Provided that the X factor is developed in accordance with sound economic principles, regulators can be assured that the maximum-permissible rate changes are consistent with the competitive market standard that is called for in PBR Principle 1. Hence, the fact that the PBR regime is being applied to a crown corporation vis-à-vis a profit-maximizing enterprise does not present any insurmountable difficulties insofar as permissible rate changes that emulate a competitive market standard are concerned.

Mr. Kolesar observes that there may an advantage to adopting PBR even if the incentives cannot be fully realized 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, he acknowledges that there is no way to determine whether the expected level of productivity under a PBR regime would have

²²⁷ Exhibit A2-7, p. 50.

²²⁸ Exhibit A2-5, p. 39.

²²⁹ Exhibit A2-5, pp. 39–40.

²³⁰ Exhibit A2-5, p. 41.

²³¹ Exhibit A2-1, Appendix FF, p. 21.

²³² Exhibit A2-1, Appendix FF, p. 59.

been different from what would have been achieved under a different regulatory regime. Further, although a formula-based approach may appear to be precise, a significant amount of judgment is required to determine all the elements of a PBR plan, “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.”²³³ He explains:

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.²³⁴

However, like Dr. Lowry, Dr. Weisman also observes the complexity of the indexing approach, and cautions that the process “can easily devolve into a battle of the statisticians.”²³⁵ Dr. Weisman states that using a formula or index to set rates is not a necessary characteristic of a PBR regime. He explains:²³⁶

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. There are both advantages and disadvantages associated with each approach (i.e., an “I – X” index and a cost forecast) [...]

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.

[...]

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.

[...]

²³³ Exhibit B-8, Appendix B, p. 10

²³⁴ Exhibit B-8, Appendix B, p. 10

²³⁵ Exhibit B-8, Appendix A, p. 9.

²³⁶ Exhibit B-8, Appendix A, pp. 9–12.

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. [...] The design of each regulatory regime, whether it be PBR or cost-of-service regulation, determines its particular incentive properties.

[...]

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.

Similarly, Mr. Kolesar suggests that a PBR plan, in particular indexing, could become a source of regulatory burden due to the complexity involved to design the plan. He states: “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.”²³⁷

However, Mr. Kolesar acknowledges that COSR is also not without its own complexities and challenges. He states:²³⁸

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 of the utility’s proposed revenue requirement [...] 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.

Hybrid ARMs

Dr. Lowry explains that hybrid approaches to ARM design use a mix of index research and cost forecasts, for example the use of indexes to address OM&A and forecasts to address capital expenditures. An advantage of indexing OM&A is protection from hyperinflationary episodes and limiting forecasting controversies to capital expenditures. Forecasting capital expenditures can accommodate diverse capital cost trajectories. Dr. Lowry points out that there could be added advantages to having separate methods for addressing OM&A and capital

²³⁷ Exhibit B-8, Appendix B, p. 11.

²³⁸ Exhibit B-8, Appendix B, p. 5.

expenditures, such as a particular desire for a claw back of capital expenditure underspends. A disadvantage to hybrid approaches is that capital cost forecasts can be complex and controversial.²³⁹

Dr. Weisman states that a PBR plan should include “as much capital as feasible under the price (revenue) cap subject to the guidelines provided by the PBR principles.” He explains that when the “carve out” for supplemental capital is unduly large within a PBR regime, the merits of adopting PBR may be questionable.²⁴⁰

Mr. Kolesar points out the challenges with applying an I-X type of formula exclusively to O&M. He states:²⁴¹

If the objective is to apply an I-X type formula only to O&M expenses, there are additional considerations. First, developing a productivity factor for O&M alone is a difficult task, largely because Total Factor Productivity measures are not easily bifurcated into measures of O&M, as distinct from capital; and it is not clear that partial productivity factors can be reasonably or easily developed and may not pass academic muster. Secondly, applying an I-X to O&M alone may be detrimental in that it may provide an incentive to shift costs from O&M to capital and vice versa, potentially negatively influencing the achievement of dynamic efficiencies in the firm and increasing costs in the long run.

Rate Freeze

Dr. Lowry explains that some MRPs involve a “rate freeze” where the ARM does not provide for rate escalations during the plan. Revenue growth would depend on growth in billing determinants and tracked costs. Under this approach, utilities are compensated when the growth in costs matches the growth in their billing determinants. Examples of favourable operating conditions that make a rate freeze approach feasible include utilities that have slow input price inflation and rapid technology change and demand growth, and utilities that have experienced mergers and acquisitions that created temporary but sizable cost containment opportunities or economies of scale. Dr. Lowry notes that several vertically integrated utilities in the US which have limited need to increase their generation rate base have been approved to have rate freezes. As long as a few costs that are growing are tracked or accorded a forecasting treatment, these utilities do not require further rate escalation for several years (i.e. a “tracker/freeze” approach to ARM design).²⁴²

Considerations for Vertically Integrated Electric Utilities

With respect to vertically integrated electric utilities (VIEUs), Dr. Lowry notes that in the past, indexed ARMs may not have been appropriate. This is due to VIEUs traditionally having revenue trajectories that resembled stair steps because “big cost increases when major additions to generation and transmission plant came into service alternated with period of slow cost growth as these additions depreciated.” Further, the exact timing of major plant additions was often uncertain due in part to construction delays. As such, forecasted ARMs, Hybrid ARMs, Tracker/freeze ARMs, and separately regulating generation, transmission, and power distribution while

²³⁹ Exhibit A2-5, p. 42.

²⁴⁰ Exhibit A2-1, Appendix FF, p. 47.

²⁴¹ Exhibit B-9, BCUC IR 18.4.

²⁴² Exhibit A2-5, p. 43.

reserving indexed ARMs for distributor services have been favoured over indexed ARMs for VIEUs. However, some VIEUs are presently experiencing more gradual cost growth because fewer generation capacity additions are needed and capacity that is built tends to be more modular.²⁴³

Dr. Lowry states that BC Hydro focused on the indexing approach in its recent PBR papers.²⁴⁴ Dr. Lowry acknowledges that although comprehensive indexing for a vertically integrated utility is not widely done, it is feasible.²⁴⁵ He suggests the use of indexing, such as an OM&A revenue escalator as a sensible way for BC Hydro to move further in the direction of PBR without going too far.²⁴⁶ He suggests, however, that a stair step or hybrid ARM could be less risky for a company than an index ARM.²⁴⁷

Position of BC Hydro

BC Hydro notes that Dr. Lowry identifies four types of ARM that can be used with multi-year rate plans: indexing, stairstep, hybrid and tracker freeze. BC Hydro submits that stairstep ARM is synonymous with BC Hydro's current forecast test year approach.²⁴⁸

BC Hydro submits that the use of a formula or index to set rates is not a necessary characteristic of a PBR regime and identifies four²⁴⁹ reasons why it believes a formula or indexed based approach to setting rates should not be pursued.²⁵⁰

1. A Forecast and Indexing Can Be Equally Effective at Creating Incentives

BC Hydro submits that an index or formula would not provide any incremental incentive to find productivity improvements compared to the existing approach of using a multi-year cost forecast and cites Dr. Weisman in explaining that the superior incentive properties of these two different approaches 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 which of the two methods is used. BC Hydro adds that Dr. Lowry characterizes the incentive properties of using forecasts to determine revenues in an MRP is "strong" if there is no earnings sharing mechanism to weaken it.²⁵¹

2. Design complexity can create controversy and acceptance challenges.

BC Hydro submits that while the choice between an index or a cost forecast does not change the incentive power of the regulatory regime, the complexity of designing an index-based rate can impact the extent of stakeholder confidence in the regime. BC Hydro identifies four "notable design challenges."²⁵²

²⁴³ Exhibit A2-5, p. 45.

²⁴⁴ Exhibit A2-7, p. 34.

²⁴⁵ Transcript Volume 2, pp. 263–264.

²⁴⁶ Transcript Volume 2, pp. 250–251.

²⁴⁷ Transcript Volume 2, pp. 263–264.

²⁴⁸ BC Hydro Final argument, pp. 18-19.

²⁴⁹ These are numbered reasons 1, 2, 4 and 5 in BC Hydro Final Argument, pp. 59 to 64; there is no reason number 3.

²⁵⁰ BC Hydro Final Argument, p. 59.

²⁵¹ BC Hydro Final Argument, pp. 59–60.

²⁵² BC Hydro Final Argument, p. 60; BC Hydro states that there are "[t]hree notable design challenges" but then goes on to present four of them.

First, BC Hydro submits that indexing is “opaque,” and that the design of PBR, the inter-relationship among its various elements and the determination of these factors is “highly specialized and is primarily the domain of experts.” BC Hydro adds that this complexity makes PBR “inherently less accessible to customers and the public generally,” and that a multi-year cost forecast provides “better insight into BC Hydro’s operations than an index or formula and will allow the BCUC and interveners to develop greater familiarity and understanding of BC Hydro’s costs over time.”²⁵³ BC Hydro notes the agreement between Dr. Weisman and Dr. Lowry on the complexity and controversy surrounding aspects of PBR.²⁵⁴

Second, BC Hydro submits that the treatment of capital within an MRP “adds complexity and is often controversial,” noting the agreement between Dr. Weisman and Dr. Lowry in this regard. BC Hydro also notes Dr. Lowry’s evidence that creating a formula for capital can be challenging given the “lumpy nature of capital spending” and the problem of accommodating “capital surges.” BC Hydro acknowledges the evidence that capital surges can be addressed through cost trackers but notes these “involve their own complications.”²⁵⁵

Third, BC Hydro submits that while indexing only operating costs would eliminate the challenges related to capital, it would offer its own complexities. BC Hydro explains that removing large amounts of costs from the index or formula, such as capital costs, would weaken whatever incentive properties may be associated with a longer test period. Further, BC Hydro notes the evidence of Mr. Kolesar that developing separate productivity factors for operating costs and for capital is “a difficult task” and that applying a formula for operating costs alone may be detrimental in that it may provide an incentive to shift costs from operating to capital and vice versa.²⁵⁶

Fourth, BC Hydro submits that the complexity of indexing is amplified by the fact that it is a vertically integrated utility, potentially requiring different considerations for each line of its business. BC Hydro notes the evidence of Dr. Lowry that “comprehensive indexing for a vertically integrated utility is...not widely done.”²⁵⁷

3. A formula or index offers a false sense of precision

BC Hydro submits that the use of a formula provides “a false sense of precision” because both PBR and COSR require a significant amount of judgement on the part of the regulator, and the potential that allowed revenue may be set too high or too low exists whether a cost forecast or an index or formula is used, particularly given the extent to which BC Hydro’s costs are not correlated with potential index or formula metrics such as customer growth or inflation.²⁵⁸

4. An index or formula does not necessarily eliminate the need for forecasts

BC Hydro submits that the use of an index or formula does not necessarily eliminate the need for forecasts. BC Hydro cites the examples of costs excluded from the formula, such as capital, and where there is doubt as to whether costs are truly linked to inflation or other index parameters. BC Hydro also points to resilience investments like MRS, vegetation management, and safety that BC Hydro submits do not drive system, customer or load growth but are nonetheless important investments.²⁵⁹

²⁵³ BC Hydro Final Argument, pp. 60–61.”

²⁵⁴ BC Hydro Final Argument, p. 61.

²⁵⁵ BC Hydro Final Argument, pp. 61–62.

²⁵⁶ BC Hydro Final Argument, pp. 62–63.

²⁵⁷ BC Hydro Final Argument, p. 63.

²⁵⁸ BC Hydro Final Argument, p. 63.

²⁵⁹ BC Hydro Final Argument, pp. 64–65.

Positions of the Interveners

In general, most interveners agree with BC Hydro's opposition to a formula or index, or do not consider it to be appropriate at this time. BCOAPO "does not support a scheme that would see the use of a formulaic or indexed approach."²⁶⁰ BCSEA submits that "an indexing or formula approach to determining BC Hydro's revenue requirement is not advisable."²⁶¹ CEABC submits that a fully formulaic approach to regulation would be extremely difficult to implement and would not offer any advantage over the present approach, noting that BC Hydro currently uses a variety of complex formulas to project its future costs.²⁶² Zone II RPG submits that more time is required to determine whether a longer test period is appropriate for regulating BC Hydro.²⁶³

Gjoshe urges the BCUC to "leave the door open" to selective consideration of indexing over time to incent efficiency and productivity at BC Hydro.²⁶⁴

RCIA proposes a formula-driven budgeting approach where the budget level will be prescribed based upon the average of prior period actuals, adjusted as appropriate to account for escalation and productivity gains. It proposes that this approach would apply to O&M as well as routine and non-volatile capital expenditures in BC Hydro's generation, transmission and distribution teams. It defines routine and non-volatile capital expenditures as ones where the aggregate budgets are similar from year to year, such as pole-top transformer replacement programs.²⁶⁵

RCIA submits that this methodology affords BC Hydro appropriate flexibility to meet its performance improvements in a manner it considers optimal, which could take the form of procurement or contracting cost efficiencies, or process re-engineering. RCIA believes that following a formula-driven approach to budgeting O&M and non-volatile capital is easier and simpler for all parties and is less prone to the natural tendency of parties to argue for budgets that will achieve their preferred financial outcomes.²⁶⁶

BC Hydro states that RCIA's argument is conceptually flawed in that the expert evidence is that the incentive for cost-minimization is the same whether the performance benchmark (e.g. rate cap) is based on external formulae, or a cost forecast at the outset of the regulatory regime. Furthermore, mechanistically relying upon BC Hydro's own past cost trends to set future rate caps or forecasts implicitly assumes a steady-state environment that does not exist. Moreover, the legal test for rate-setting requires an assessment of what is reasonable and prudent, not what is "frugal" as contemplated by RCIA. BC Hydro also submits that RCIA's approach introduces a "ratcheting" effect—operating efficiently today means the rolling three-year average will be ratcheted downwards in later years, which quickly becomes punitive for the utility, and, if anything, is a disincentive to reduce costs today since the utility knows it will be harmed in the long-term.²⁶⁷

²⁶⁰ BCOAPO Final Argument, p. 28.

²⁶¹ BCSEA Final Argument, p. 22.

²⁶² CEABC Final Argument, p. 6.

²⁶³ Zone II RPG Final Argument, p. 1.

²⁶⁴ Gjoshe Final Argument, p. 13.

²⁶⁵ RCIA Final Argument, p. 10.

²⁶⁶ RCIA Final Argument, p. 10.

²⁶⁷ BC Hydro Reply Argument, pp. 16–17.

AMPC supports the use of indexing and/or a simple formula approach for rate setting specifically related to O&M expense and capital replacements/renewals. It submits there is significant information asymmetry for these costs, which makes it extremely difficult and time-consuming to assess their reasonableness. AMPC submits that adopting a simple indexing or formulaic approach such as inflation would streamline regulation, introduce stronger cost containment incentives, and allow for operating flexibility and efficient operations for BC Hydro. It adds that this approach would maintain COSR for all other expenditures that are more easily reviewed and tested.²⁶⁸

BC Hydro submits that AMPC is over-selling the potential benefits of this approach. It submits that the use of a formula does not relieve the BCUC of its obligation to set rates that are just and reasonable, and that the formula must produce a rate trajectory that provides the utility with a reasonable opportunity to cover its prudently incurred costs and earn a fair rate of return. BC Hydro adds that it has held much of its operating cost budget below inflation in recent years, and the increases in base operating costs have been driven by the need to reinvest in areas like MRS, cybersecurity, and vegetation management, all of which have been identified by the BCUC as requiring additional investment. BC Hydro submits it is unrealistic to expect that these important initiatives could be achieved with an inflationary increase.²⁶⁹

BC Hydro also reiterates that determining an appropriate formula would not be “simple,” as assumed by AMPC, but would be controversial, and that there would inevitably be “protracted debate” about what costs should and should not be included under the formula.²⁷⁰

Panel Discussion

For the reasons set out below, the Panel makes the following findings regarding formula-driven revenues:

- a hybrid ARM with a revenue cap is the most appropriate approach for determining BC Hydro’s revenue requirement;
- to the extent possible, BC Hydro’s revenue requirement should be determined using a formula;
- the formula should use appropriate indices to account for changes in BC Hydro’s costs over time and should also incorporate a productivity factor;
- it is appropriate to use forecasts for determining some aspects of BC Hydro’s revenue requirement; and
- by supporting the implementation of a longer test period for the utility, a hybrid ARM furthers the objectives of improved incentives for BC Hydro and regulatory efficiency.

In making these findings the Panel considers the different forms of ARM available, why a formula-driven ARM is preferable to a forecast for determining most of BC Hydro’s revenue requirement, why some elements of BC Hydro’s revenue requirement should still be determined on a forecast basis, and why BC Hydro’s objections to formula-based ratemaking are not compelling. This section examines further these considerations.

Forms of ARM

²⁶⁸ AMPC Final Argument, p. 2.

²⁶⁹ BC Hydro Reply Argument, pp. 14–15.

²⁷⁰ BC Hydro Reply Argument, p. 15.

An appropriately designed ARM enables the benefits of improved incentives and regulatory efficiency which can be obtained from a longer test period, which the Panel has already determined in section 4.1 above to be appropriate for regulating BC Hydro. The ARM is one of the most important components of an MRP, as it substitutes for rate cases as a means to adjust rates during an MRP, addressing utilities' cost challenges without weakening their performance incentives.

According to Dr. Lowry, there are four types of ARM:

- forecast ARM;
- index ARM;
- hybrid ARM; and
- tracker/freeze ARM.

First, the Panel concludes that the “tracker/freeze” approach is not appropriate for BC Hydro at this time. No party in this proceeding makes submissions on this form of ARM, and the evidence from Dr. Lowry is that rate freezes are only applicable in certain circumstances such as periods of low inflation. There is no evidence in this proceeding to support the use of the tracker/freeze approach for BC Hydro at present.

The remaining options for the Panel's consideration are the forecast ARM, the index ARM, or some combination of the two: the hybrid ARM. In the following sections we provide the reasons why the index ARM is appropriate for setting BC Hydro's revenue requirement to the greatest extent possible, and also why it is still appropriate to forecast certain of BC Hydro's costs. In other words, we believe a hybrid ARM is appropriate for BC Hydro with an emphasis on indexing where possible.

Another consideration when designing an ARM for BC Hydro is whether the BCUC should implement a revenue cap or a rate cap (also known as a price cap). No parties made submissions on this question specifically, but appear to have assumed that the Panel would only be considering a revenue cap. For the following reasons the Panel finds that that a revenue cap is a more appropriate form of ARM for BC Hydro than a rate cap.

We note the evidence of BC Hydro that if a price cap were to be implemented, its customers would not reap the rewards or assume the risk of variations in realized demand relative to forecast demand. BC Hydro operates today with “revenue decoupling,” whereby its customers take the risk or reap the rewards of variations in realized demand relative to forecast demand, and there is no evidence before the Panel to suggest that this approach should be changed. The Panel will address in Section 4.3 below the more limited question regarding partial coupling of BC Hydro's electrification revenues.

The Panel also notes the evidence of Dr. Lowry that revenue cap escalators have “intuitive appeal” as they deal with the drivers of cost growth, such as cost inflation trends, whereas price cap escalators must also reflect trends in system usage. For this reason, the Panel concludes that a revenue cap would be simpler to implement than a price cap.

The Panel notes that revenue caps are used by FortisBC in its MRP, and thus the BCUC and interveners have more than a decade of experience with them in BC, whereas we have no experience with price caps in BC. A

revenue cap is therefore more likely to be easier to implement at BC Hydro and more likely to be better understood by all stakeholders than a price cap at this time.

Index ARM versus Forecast ARM

The Panel finds that using an index-based formula rather than a forecast to determine BC Hydro's revenue requirement better supports a longer test period, which the Panel has already determined allows greater opportunity for regulatory efficiency and the incentives for BC Hydro to contain costs.

Specifically, the Panel finds that to the extent possible, BC Hydro's revenue requirement should be determined using an index-based formula for the following reasons:

- An index-based formula compensates BC Hydro automatically for cost inflation;
- An index-based formula can address the "inherent upward bias" problem with forecasts for longer test periods;
- An index-based formula can mitigate the "informational asymmetry" problem;
- An index-based formula can emulate the competitive market better than forecasts; and
- An index-based formula can be just and reasonable and allows BC Hydro the opportunity to earn its allowed return.

Utilities such as BC Hydro experience cost pressures such as increasing cost of labour and materials during the periods between rate cases. The longer the periods between rate cases, during which the utility's rates are fixed, the greater the risk that the utility incurs unexpected cost pressures for which it is not compensated.

Determining BC Hydro's future revenue requirements using a formula that escalates each year based on a cost inflation index ensures that the utility is compensated for the actual cost inflation increases that occur during the period between rate cases, as measured by the chosen index. The Panel considers this indexed approach to be preferable to forecasting cost inflation increases at the beginning of the test period because in the latter case BC Hydro may not be fully compensated if actual cost inflation is higher than forecast, and conversely the utility might be over-compensated if inflation is lower than forecast.

The Panel finds that the selection of an appropriate index of cost inflation should be determined as part of a PBR application process, and that considerations might include the industry-specific relevance of cost indices and the use of multiple indices to reflect different costs incurred by BC Hydro.

An index-based formula is also superior to the forecast method in addressing the "inherent upward bias" problem. As noted in Section 4.1 of this decision, Mr. Kolesar observes that the further out in time a forecast extends, the more the forecaster is biased to a "generous" forecast to reduce the risk of under-forecasting the impact of future events. A revenue requirement based on such a forecast would be biased towards the utility over-collecting revenue, and this bias would increase as the length of the forecast increases to accommodate a longer test period. Growing a utility's revenue requirement based on a cost inflation index mitigates the inherent upward bias problem by avoiding the need to forecast cost inflation increases, because the revenue requirement will grow each year according to the actual cost inflation increases incurred.

Mr. Kolesar's evidence is that one of the most significant challenges of COSR, which relies on cost forecasts, is "informational asymmetry," whereby utilities have access to more information and understand their business

better than the regulator, making it difficult for the regulator to assess the reasonableness of the utility's proposed revenue requirement. In the Panel's view, a formula using a cost inflation index is superior to forecasts of cost inflation because the formula relieves the BCUC and interveners of the need to assess BC Hydro's forecast future cost increases at a line-by-line level, relying instead on the revenue requirement covered by formula being inflated as a whole by an appropriate cost index.

A formula-based revenue requirement can also incorporate a productivity factor, the "X factor" in the "I-X" term of the formula explained above. The Panel finds that such a productivity factor enables the BCUC to incorporate expected efficiencies into the revenue requirement better than a forecast of cost saving because the productivity factor removes the need to understand where, on a line-by-line basis, future cost savings might come from.

Mr. Kolesar's evidence is that the regulatory regime for BC Hydro, indeed for all utilities, "should emulate the results achieved in a competitive market to the greatest extent possible." The Panel concurs, and notes that this is consistent with the conclusion reached by the BCUC in the AES Inquiry, which found that, due to regulation being costly, time-consuming and limited by informational asymmetries, competition, where feasible, provides societal benefits and consumer protection more efficiently and effectively than regulation.²⁷¹

In the Panel's view, using a formula to determine BC Hydro's revenue requirement emulates a competitive market better than setting the revenue requirement using forecasts. In a competitive market, prices reflect industry input price and productivity trends, as Dr. Lowry notes in his evidence. As a monopoly, BC Hydro does not have competitive pressures to limit its price increases, and part of the BCUC's role is to substitute for that lack of competitive pressure. We note Dr. Weisman's evidence that the use of an "X factor" in the revenue requirement formula is "designed to emulate competitive market outcomes" and that, compared to a formula, a forecast "may perform less well in emulating competitive outcomes."

We also note that Dr. Weisman states that provided that the productivity factor in a PBR formula is developed in accordance with sound economic principles, regulators can be assured that the resulting rate changes are consistent with the efficiency incentives that would be experienced in a competitive market, and the fact that the PBR regime is not being applied to a profit-maximizing enterprise does not present any insurmountable difficulties in this regard.

As a result of the informational asymmetry problem already noted, it is challenging for the BCUC to identify how well forecast future costs compare to industry input cost trends and where productivity improvements might be made. Limiting BC Hydro's revenue requirement increases using a formula based on a cost index and a productivity factor allows the BCUC to ensure that these factors which would otherwise be imposed by the presence of competition are imposed on BC Hydro, without needing to examine what Mr. Kolesar refers to as the "sheer volume and complexity" of BC Hydro's detailed cost forecasts.

The Panel finds that the selection of an appropriate productivity factor should be determined as part of a PBR application process, and that considerations might include how the productivity factor could simulate the competitive pressures lacking for BC Hydro by reflecting industry productivity trends.

²⁷¹ FortisBC Utilities, FortisBC Energy Inc. Inquiry regarding the Offering of Products and Services in Alternative Energy Solutions and Other New Initiatives, AES Inquiry Report dated December 27, 2012, p. 14.

The Panel finds that pursuant to sections 59 and 60(1)(b.1) of the UCA it can be just and reasonable to determine BC Hydro's rates from a revenue requirement derived from an index-based formula rather than from a forecast. In particular, the use of an index-based formula to determine BC Hydro's revenue requirement still allows the utility's rate to "yield a fair and reasonable compensation for the service provided by the utility, or a fair and reasonable return on the appraised value of its property" as required by section 59(5)(b) of the UCA. BC Hydro continues to have the opportunity to earn its allowed ROE, provided it limits its spending to the BCUC-determined revenue requirement. The method of determining the revenue requirement does not take away this opportunity. Furthermore, nothing in the UCA mandates the exclusive use of forecasts in setting rates. Indeed, section 60(1)(b.1) of the UCA specifically provides that the BCUC may use "any mechanism, formula or other method" of setting rates, and using an index-based formula to determine the revenue requirement is one of those methods.

The Panel does not agree with BC Hydro²⁷² that a forecast and indexing are necessarily equally effective at creating incentives for BC Hydro. The Panel agrees that the two methods can, at least for shorter test periods, provide equal incentives to utilities to contain costs. It is also possible, as Dr. Weisman has shown, to find a theoretical set of circumstances in which a forecast provides superior incentive power compared to indexing.

However, as the Panel noted in Section 4.1 above, the evidence from Dr. Weisman and others is that other things being equal, a longer test period improves the incentives for utilities to contain costs. It is the longer test period which creates increased incentives for utilities to contain costs, not necessarily the use of an index. The use of an index supports a longer test period better than a forecast, and for that reason an index is superior to a forecast in creating stronger incentives for BC Hydro to contain costs.

We note that even if a forecast and indexing were equally effective at creating incentives, which we do not find to be necessarily true, a longer test period would still create superior incentives for BC Hydro to contain costs, as we found in Section 4.1 above.

BC Hydro raises the objection that PBR is complex and controversial, particularly with respect to vertically integrated utilities, and notes the agreement between Dr. Weisman and Dr. Lowry on this point.²⁷³ The Panel agrees that PBR can be complex but does not agree that potential complexity is a compelling reason not to pursue the benefits associated with formula or index-based rates.

The Panel agrees with the evidence of all three experts that there is complexity in designing the appropriate index-based formula to use to determine BC Hydro's revenue requirement. The choice of an appropriate cost inflation index and productivity factor and the selection of which expenditures should be excluded from indexing will require expertise and expert evidence and will doubtless be controversial. The BCUC must also determine whether it is appropriate to have different cost inflation indices and productivity factors for each of BC Hydro's generation, transmission and distribution functions, given that BC Hydro is a vertically integrated utility.

However, forecast-based revenue requirements are not free from complexity and controversy; expertise is required to examine a utility's operations and finances to identify opportunities for innovation and cost savings, and expert evidence is required to set its cost of capital. It is not unusual for controversy to arise over the level

²⁷² BC Hydro Final Argument, pp. 59–60.

²⁷³ BC Hydro Final Argument, pp. 61–63.

of a utility's expenditure required to deliver safe and reliable service. As Dr. Lowry states, "Utilities are generally incentivized to overstate required cost growth while consumer advocates are incented to understate it."

In the Panel's view, the transition from BC Hydro's current regulatory regime to an index-based formula replaces one set of complex and controversial issues with another. We acknowledge that the transition is not trivial, but for the reasons already set out in this decision we are confident that the effort will create a more effective regulatory framework for BC Hydro.

With regard to acceptance, the Panel does not agree with BC Hydro that PBR is inherently less accessible than a forecast revenue requirement. All utility regulation is inherently complex, and arguably "opaque," to use BC Hydro's term for index-based formulas. The BCUC is satisfied that the use of index-based rates at FortisBC since the 1990s demonstrates that PBR can be sufficiently understood by "customers and the public generally."²⁷⁴

The Panel agrees with BC Hydro²⁷⁵ that both PBR and COSR require a significant amount of judgement on the part of the regulator. The Panel does not believe that either regulatory regime offers "precision," as COSR and formula-based rates are both forecasts to some degree. The issue at hand is which scheme provides the best incentives, and for the reasons set out above in this decision, the Panel considers formula-based rates provide better incentives and improved regulatory efficiency.

Some costs should still be forecast

The Panel finds that it is appropriate to forecast some expenditures that make up the revenue requirement despite other expenditures in the revenue requirement being determined by a formula.

Based on the evidence in this proceeding, the Panel considers that the index-based formula to determine BC Hydro's revenue requirement should apply to as many of BC Hydro's expenditures as possible. The Panel notes the evidence of Dr. Weisman that PBR plans "should be more broad-based rather than overly targeted" to avoid incenting utilities to devote "excessive attention" to some dimensions of its performance while neglecting others.

That said, the Panel agrees with BC Hydro²⁷⁶ that the use of an index or formula does not necessarily eliminate the need for forecasts. However, we disagree that this is a reason not to implement indexing for other aspects of the utility's revenue requirement. The balance to be struck is to include as many expenditures as possible in the "envelope" to which the indexing formula applies, but to avoid giving BC Hydro incentives to cut back on expenditures that the BCUC considers it appropriate to increase (e.g. cyber-security) or to punish the utility for costs beyond its control.

Specifically, there are two areas of BC Hydro's expenditures that the Panel considers should continue to be forecast rather than determined by an index:

- Expenditures over which BC Hydro has limited control, and

²⁷⁴ BC Hydro Final Argument, p. 61.

²⁷⁵ BC Hydro Final Argument, p. 63.

²⁷⁶ BC Hydro Final Argument, p. 64.

- Expenditures which are not easily linked to an available index.

The Panel finds that expenditures over which BC Hydro has limited control should not be subject to indexing in a PBR formula. The Panel notes Dr. Weisman's evidence that a well-designed PBR plan should hold a utility financially responsible only for the dimensions of its performance over which it exercises significant control. If expenditures outside BC Hydro's control were inflated using an index, BC Hydro would be at risk of under or over recovering its realized costs in these areas without having control over the outcome.

Two mechanisms were presented in evidence which accomplish the exclusion of certain expenditures from indexing. Dr. Weisman refers to a "Y factor" and a "Z factor" which may be used in PBR formulas to allow for the complete recovery of costs in a utility's revenue requirement and which are not calculated according to an index. The Y factor refers to "recurring expenditures over which the utility has no control," and the Z factor refers to costs related to "one-time, exogenous events" beyond the utility's control.

Various examples of expenditures which may merit "Y factor treatment" have been provided in this proceeding, including recovery mechanisms for variance and regulatory accounts for previously incurred costs, and BC Hydro's DSM expenses. An example of an expenditure which may merit "Z factor treatment" is a change in tax policy.

The Panel concludes that both a Y factor and a Z factor may be applicable to the PBR formula for BC Hydro, and that it is appropriate to determine which expenditures should be included in each category in a PBR proceeding. The Panel expects that the values for the Y factor, being recurring events, would be forecast by BC Hydro, whereas the Z factor amounts, being one-time and unexpected, would not be forecast but recovered once they are identified and quantified.

The Panel further finds that there are expenditures which, while BC Hydro has control over them, are not easily associated with an available index for calculating their magnitude in future years' revenue requirements. As an example, BC Hydro submits that there are challenges associated with creating a formula for capital in light of the "lumpy nature of capital spending." The Panel expects that such controllable costs would be examined in a PBR proceeding and may be included in BC Hydro's revenue requirement outside the indexed portion of the formula.

The Panel notes that the approach of applying an index-based formula to as many of BC Hydro's controllable expenditures as possible is consistent with the submission of the RCIA, which is that indexing should cover "O&M as well as routine and non-volatile capital expenditures,"²⁷⁷ and that of AMPC, which is that indexing should cover "Operating and Maintenance expense and capital replacements/renewals."²⁷⁸ The Panel recommends that a future PBR proceeding consider including at least these expenditures in an indexed formula.

The Panel notes that the approach described in the foregoing reasons is consistent with the regime adopted in the BCUC's regulation of FortisBC, in that the revenue requirement for FortisBC is determined by a formula which includes a Y and a Z factor. The approach adopted for FortisBC is sometimes referred to as the "building block" approach, however, in the BCUC decision regarding FortisBC Energy Inc.'s Multi-Year Performance Based

²⁷⁷ RCIA Final Argument, p. 10.

²⁷⁸ AMPC Final Argument, p. 2.

Ratemaking Plan for 2014 Through 2018, the BCUC adopted the building block approach which FortisBC described as one where “O&M and capital expenditures are assessed separately and in some cases some or all capital expenditures are handled outside of the formula.”²⁷⁹ The Panel makes no determination in this decision as to whether operating and capital expenditures should be assessed separately, although we acknowledge that this is a possibility. We note Dr. Weisman’s evidence that PBR plans should be as broad-based as possible and should include as much capital as possible. This will be a matter for the BCUC in the proceeding in which BC Hydro’s PBR implementation is considered.

4.3 Partial Coupling of Low-Carbon Electrification Revenues

Evidence

Dr. Lowry explains revenue decoupling as a mechanism that:²⁸⁰

adjusts a utility’s rates mechanistically to help its *actual* revenue track its *allowed* revenue more closely. Most decoupling systems have two basic components: a **revenue decoupling mechanism (“RDM”)** and a revenue adjustment mechanism. The RDM tracks variances between actual and allowed revenue and adjusts rates periodically to reduce them. A rate rider is commonly used to draw down these variances by raising or lowering rates. [Emphasis in original]

Dr. Lowry further explains that revenue decoupling encourages DSM initiatives and distributed generation. It also encourages experimental rate designs. Decoupling would also result in less frequent rate cases, except in cases where a utility has very rapid growth in its revenue per customer.²⁸¹ However, the negatives to revenue decoupling are that it may not incent a utility to promote low carbon electrification, retain and attract large industrial customers, and it may also destabilize rates and cause rate increases during a recession.²⁸²

Dr. Lowry observes that BC Hydro currently has full revenue decoupling through its Non-Heritage Deferral Account²⁸³ because the account adjusts revenue for margin fluctuations between rate cases. However, BC Hydro’s approach to decoupling does not provide any automatic escalation to allowed revenue.²⁸⁴

Dr. Lowry suggests that excluding some of BC Hydro’s revenues from revenue decoupling or partially decoupling these revenues could be an option worth considering. He explains:²⁸⁵

²⁷⁹ FortisBC Energy Inc.’s Multi-Year Performance Based Ratemaking Plan for 2014 Through 2018, Decision dated September 15, 2014, p. 19.

²⁸⁰ Exhibit A2-5, p. 19.

²⁸¹ Exhibit A2-5, p. 20; Transcript Volume 2, pp. 145–146, 151.

²⁸² Transcript Volume 2, p. 147.

²⁸³ On page 44 of the BCUC’s Decision to BC Hydro’s F2020–F2021 RRA, the BCUC directed the establishment of the Load Variance Regulatory Account and directed all balances related to load forecast variance be moved from the Non-Heritage Deferral Account to this account and to use the account on an ongoing basis to capture load forecast variances.

²⁸⁴ Exhibit A2-5, p. 109.

²⁸⁵ Exhibit A2-5, p. 112.

These revenues might include those from large-volume customers and/or electrification of transportation. If revenues from electrification continue to be fully decoupled, the incentive to aggressively pursue this goal could alternatively be strengthened with a PIM.

BC Hydro's mandate provided by the Government of BC is premised on two outcomes: (1) helping its customers and the Government of BC achieve their objectives with respect to the reduction of greenhouse gas emissions and (2) generating incremental tariff revenue that can help offset cost pressures and keep rates low for customers.²⁸⁶

Positions of the Parties

BC Hydro submits that coupling its low-carbon electrification revenues is ill-suited to the utility's circumstances and would harm ratepayers. BC Hydro explains that currently all its revenues are decoupled through the Load Forecast Variance Account and as a result any incremental revenue associated with variances between forecast and realized load flows to ratepayers. Coupling its low-carbon electrification revenues would divert those revenue variances to BC Hydro's shareholder.²⁸⁷

BC Hydro submits that Dr. Lowry's suggestion to consider coupling the utility's low-carbon electrification revenues is premised on the assumption that the utility will be more motivated to pursue electrification because its shareholder receives the full benefit of these additional revenues. BC Hydro submits that it is already motivated to pursue electrification through its mandate from the government of BC.²⁸⁸

BC Hydro submits that, all else equal, the diversion of these additional revenues to the shareholder would mean higher rates paid by the utility's ratepayers, and that for there to be a net benefit to ratepayers BC Hydro would need to respond to the financial incentive sufficiently to more than offset the revenues diverted to the shareholder. BC Hydro submits that under partial coupling of low-carbon electrification revenues, ratepayers would be worse off than they are today because they would unnecessarily forgo some of the revenue benefit of the utility's electrification initiatives.²⁸⁹

BCOAPO submits that BC Hydro is already motivated to pursue low-carbon electrification initiatives as a result of the mandate, and also through the *Clean Energy Act* and the Greenhouse Gas Reduction Regulation which taken together direct the BCUC to ensure rates allow the recovery of costs associated with electric vehicle charging stations. BCOAPO submits that BC Hydro's regulatory regime should not be revised to include revenue coupling.²⁹⁰

BCSEA submits that there is no need to change the revenue decoupling mechanism at BC Hydro because its current regulatory regime under the BCUC already removes the revenue-based disincentive for the utility to pursue DSM. BCSEA adds that the Government of BC is already "highly motivated" to maximize low-carbon electrification and coupling BC Hydro's revenues for these services would weaken the "virtuous circle" whereby

²⁸⁶ Exhibit B-9, BCUC IR 6.3.

²⁸⁷ BC Hydro Final Argument, p. 69.

²⁸⁸ BC Hydro Final Argument, pp. 69–70.

²⁸⁹ BC Hydro Final Argument, pp. 69–71.

²⁹⁰ BCOAPO Final Argument, pp. 29–30.

additional revenues make it easier to boost low-carbon electrification.²⁹¹ BCSEA submits that the proposal to couple revenues to incent low-carbon electrification should be set aside.²⁹²

CEABC submits that coupling low-carbon electrification revenues could boost BC Hydro's motivation towards GHG-reducing electrification initiatives. CEABC explains that if BC Hydro's low-carbon electrification revenues were coupled, variances between forecast and realized revenues would go directly to the utility's net income, which would alter the return to the shareholder, the Government of BC. CEABC submits that in the case of targets set by the government this is not inappropriate as it would make BC Hydro's management accountable to the shareholder for achieving what are, in effect, the shareholder's objectives for GHG reductions. CEABC further submits that BC Hydro has a significant amount of influence over the outcome of its low-carbon electrification initiatives, unlike other forecasts which are based on exogenous variables such as inflation or population growth.²⁹³

BC Hydro submits in reply that CEABC's position is based on flawed reasoning. BC Hydro explains that the utility's initiatives are only one component of the government's plan to achieve its GHG reduction objectives, and the responsibility to meet these objectives is not BC Hydro's alone. BC Hydro adds that coupling low-carbon electrification revenues would divert benefits away from its customers to motivate the utility to pursue electrification which it is already mandated to do, and that the utility is not motivated by the financial incentives contemplated.²⁹⁴

Panel Discussion

The Panel does not recommend implementing revenue coupling for BC Hydro's low-carbon electrification revenues at this time.

The Panel views that coupling the low-carbon electrification revenues would provide a small additional incentive for BC Hydro management to achieve the utility's low-carbon electrification targets in addition to the motivation provided by the utility's mandate. This is because if the low-carbon electrification revenues were coupled, then any low-carbon electrification revenues earned in excess of the low-carbon electrification forecast would earn more profit for BC Hydro and could be used to offset profit deficiencies in other areas of the utility's operations. Even if management is not incented to have BC Hydro earn more than its allowed ROE, management is incented to achieve the allowed ROE, and a surplus of low-carbon electrification revenues over the forecast would contribute to profits and make earning the allowed ROE easier, possibly offsetting any failures to earn forecast profits in other areas.

Coupling low-carbon electrification revenues would, however, provide a financial incentive, albeit also likely to be small, for BC Hydro's management to set the forecast of low-carbon electrification revenues as low as possible. This is because the lower the forecast, the easier it would be to achieve the forecast, which if the low-carbon electrification revenues were coupled would be a necessary component of BC Hydro earning the allowed ROE and hence management achieving its bonus. Given the government's targets for GHG emissions and the benefits that electrification may bring in this regard, the Panel does not consider it wise to provide an incentive

²⁹¹ BCSEA Final Argument, pp. 10–11.

²⁹² BCSEA Final Argument, pp. 20–21.

²⁹³ CEABC Final Argument, pp. 7–9

²⁹⁴ BC Hydro Reply Argument, pp. 18–20

for BC Hydro's management to set lower forecasts for low-carbon electrification revenues and possibly miss the opportunity to motivate the rest of the utility to achieve more such revenues.

Given these conflicting incentives, the relative newness of low-carbon electrification initiatives to BC Hydro and the existence of its mandate that has the potential to motivate BC Hydro to implement low-carbon electrification initiatives, the Panel considers that implementing revenue coupling for BC Hydro's low-carbon electrification revenues is not necessary or advisable at this time.

4.4 Financial Incentives for Specific Performance Metrics

Evidence

Dr. Lowry states that PIMs can strengthen financial incentives to perform well in targeted areas.²⁹⁵ However, he cautions that it may be difficult to correctly value performance and establish appropriate award and penalty rates for PIMs.²⁹⁶ Also, each PIM may have its own complexities, and consideration should be given to whether the incremental benefits of the PIM outweigh the incremental regulatory costs since PIMs generally do not streamline regulation.²⁹⁷ Further, he points out that many consumer advocates oppose PIMs with awards due to concerns about overpayment for performance.²⁹⁸

Dr. Lowry further explains that the need for PIMs depends on other features of the regulatory system. For example, there would be a greater need for PIMs in an MRP compared to in the absence of an MRP. Similarly, there would be a greater need for a DSM PIM in the absence of revenue decoupling and the amortization of DSM expenses.²⁹⁹

Dr. Weisman states that since BC Hydro does not have a profit maximization mandate, a shared saving performance incentive mechanism that relies on revenue adjustments to reward or penalize performance would not provide BC Hydro with incremental incentives. Further, shared savings PIMs can be complex and controversial, which could decrease regulatory efficiency.³⁰⁰

A PBR regime that penalizes a utility for failure to meet benchmarks established for performance metrics has been used in BC. For example, FortisBC's recent PBR regimes have included penalties if there is a serious degradation of service levels attributable to the actions or inactions of the utility. Under these regimes, failure to meet service quality indicator benchmark thresholds could result in a reduction to the share of earnings sharing retained by the utility, if the BCUC determined it represented a serious degradation of service levels attributable to the actions or inactions of the utility. However, the reduction in earnings depends on there being earnings above the allowed return.³⁰¹

²⁹⁵ Exhibit A2-5, p. 25.

²⁹⁶ Exhibit A2-5, p. 26.

²⁹⁷ Transcript Volume 2, pp. 115–116.

²⁹⁸ Exhibit A2-5, p. 26.

²⁹⁹ Transcript Volume 2, p. 114.

³⁰⁰ Exhibit B-8, pp. 16, 18.

³⁰¹ Exhibit B-10, MoveUP IR 3.1.

Positions of the Parties

BC Hydro submits that the BCUC should eschew attaching financial rewards or penalties to BC Hydro's performance against metric targets for four reasons.³⁰²

First, BC Hydro submits that there is no reason to expect that the potential to earn more than the allowed ROE for meeting performance targets will strengthen the existing incentive. BC Hydro explains that there is no disincentive to overcome with respect to DSM investments because the utility has a mandate to promote energy conservation and is indifferent to any loss of revenue because of its revenue decoupling mechanism. BC Hydro adds that the introduction of a performance incentive mechanism for conservation could discourage measures aimed at providing equitable DSM opportunities across customer classes or targeted to certain customer groups.³⁰³

Second, BC Hydro submits that the BCUC has previously recognized that financial penalties associated with performance metrics should only be applied against earnings in excess of a utility's allowed ROE. In the absence of such excess earnings, the BCUC's only remedy is to exercise its statutory powers, and because BC Hydro has no mandate to achieve more than its allowed ROE the threat of withholding such excess earnings does not provide a means of strengthening incentives for the utility.³⁰⁴

Third, BC Hydro notes Dr. Lowry's evidence that "overpayment for performance has promoted many consumer advocates to oppose" performance measures with rewards, and that regulators have encountered practical problems such as over- or under-compensation, diminishing incentive properties over time, and focusing on some objectives to the detriment of other important objectives.³⁰⁵

Finally, BC Hydro notes Dr. Lowry's evidence that performance incentive measures should not be pursued with the expectation of reduced regulatory process.³⁰⁶

Panel Discussion

The Panel does not recommend implementing financial incentives for BC Hydro achieving specific performance metrics at this time.

For the same reasons as provided in Section 4.3 above, the Panel considers that financial incentives for BC Hydro achieving specific performance metrics may have some incentive value. Management is incented to have BC Hydro reach its allowed ROE, and additional profit earned from achieving specific performance metrics may be used to offset any failures to earn forecast profit in other areas.

That said, the Panel considers that the incentive power of such financial incentives is small, and at present not worth the regulatory effort to pursue. Further, BC Hydro will be exploring expanded information-only performance metrics in the F2023–F2025 RRA and the Panel prefers that the BCUC evaluate BC Hydro's behavior

³⁰² BC Hydro Final Argument, p. 65.

³⁰³ BC Hydro Final Argument, pp. 65–66.

³⁰⁴ BC Hydro Final Argument, pp. 66–68.

³⁰⁵ BC Hydro Final Argument, p. 68.

³⁰⁶ BC Hydro Final Argument, pp. 68–69.

in response to the information-only performance metrics before deciding whether there would be a net benefit to adding financial incentives.

4.5 ESM

Evidence

As mentioned above in Section 4.1 of this decision, Dr. Weisman states that when comparing a three-year COSR regime with a fixed-rate forecast and no earnings sharing with a five-year indexed PBR regime with a 50 percent ESM, the former would have approximately 33 percent more incentive power. Dr. Weisman notes that, in this example, the COSR regime would outperform the PBR regime in terms of incentive power whenever the proportion of each dollar of cost savings appropriated through the ESM is greater than 0.3333.³⁰⁷ Similarly, Dr. Lowry notes that an ESM, despite having some benefits, weakens utility performance incentives.³⁰⁸

Panel Discussion

BC Hydro's final argument does not include ESMs as one of the additional options for future consideration.³⁰⁹ Notwithstanding this omission, and the lack of meaningful submissions from any party on the topic of ESMs, the Panel does not support the implementation of an ESM for BC Hydro at this time. We note Dr. Lowry and Dr. Weisman both agree that ESMs reduce the incentive power of a multi-year rate plan, and that there may be controversy surrounding the appropriate degree of earnings sharing.

5.0 Panel Determination

As the Panel determined in Section 2 above, the central issue in this proceeding is to determine which regulatory mechanisms will provide the best incentives for cost control, productivity improvements and performance at BC Hydro. We limited the scope of this proceeding to a review of BC Hydro's three Proposed Incentive Mechanisms and four Additional Proposed Incentive Mechanisms.

The Panel found in Section 3 above that all three Proposed Incentive Mechanisms (three-year test period, regular statistical benchmarking and information-only performance metrics) would be improvements to BC Hydro's current regulatory regime and would provide the utility with stronger incentives. No intervenor opposed any of the three Proposed Incentive Mechanisms, which BC Hydro has introduced in its F2023–F2025 RRA.

The Panel also found, in Section 4 above, that two of the four Additional Proposed Incentive Mechanisms (a test period longer than three years and formula driven revenues) would improve BC Hydro's incentives for cost control while also allowing for greater opportunity for regulatory efficiency. We found that the other two Additional Proposed Incentive Mechanisms (partial coupling of low-carbon electrification revenues and financial incentives for specific performance metrics) are not appropriate for BC Hydro at this time.

Thus, the Panel concludes that the following five incentive mechanisms should be adopted by BC Hydro:

³⁰⁷ Exhibit B-8, p. 16.

³⁰⁸ Exhibit A2-5, pp. 57–58.

³⁰⁹ BC Hydro Final Argument, p. 4.

- A three-year test period F2023–F2025;
- Regular statistical benchmarking;
- Information-only performance metrics;
- A test period of at least five years beginning in its next RRA; and
- Formula-driven rates for BC Hydro’s controllable O&M and capital expenditures to accompany the five-year test period.

The expert evidence in this proceeding is compelling that these regulatory mechanisms will improve incentives for BC Hydro for cost control, productivity improvements and performance, while also improving regulatory efficiency.

We acknowledge that BC Hydro has some unique characteristics. However, we are not persuaded that any of these characteristics, including the lack of a mandate for BC Hydro to exceed its allowed return, means that the regulatory mechanisms will not improve the incentives for the utility to improve its cost control.

Therefore, we direct BC Hydro to file, no later than December 31, 2023, a proposal for its next RRA that includes the following:

- 1. A test period of at least 5 years;**
- 2. A proposed formula for as much as possible of the utility’s controllable O&M and capital expenditures, incorporating cost inflation and productivity indices;**
- 3. A proposal for which, if any, of the years F2022–F2025 should be used as the base year;**
- 4. Proposals for specific exclusions from the formula or index approach, if appropriate (including “Y factors” and “Z factors”);**
- 5. Consideration of whether a different approach is required for growth capital as compared to sustainment capital;**
- 6. A proposal for the criteria and reasons, if any, to abandon the PBR approach during the test period (“Off-Ramps”); and**
- 7. An assessment of whether annual reviews of BC Hydro’s performance and rates during the test period are appropriate and what they should encompass and exclude.**

DATED at the City of Vancouver, in the Province of British Columbia, this 21st day of December 2021.

Original signed by:

Name

D. M. Morton

Panel Chair / Commissioner

Original signed by:

A. K. Fung, QC
Commissioner

Original signed by:

E. B. Lockhart
Commissioner

Original signed by:

R. I. Mason
Commissioner



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**ORDER NUMBER
G-388-21**

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

British Columbia Hydro and Power Authority
Review of the Performance Based Regulation Report

BEFORE:

D. M. Morton, Panel Chair
A. K. Fung, QC, Commissioner
E. B. Lockhart, Commissioner
R. I. Mason, Commissioner

on December 21, 2021

ORDER

WHEREAS:

- A. On February 25, 2019, the British Columbia Hydro and Power Authority (BC Hydro) filed its Fiscal 2020 to Fiscal 2021 (F2020–F2021) Revenue Requirements Application (RRA) with the British Columbia Utilities Commission (BCUC);
- B. Directive 28 of the BCUC’s decision on the F2017–F2019 RRA directed BC Hydro to provide a report to the BCUC that discusses, among other things, the opportunities and challenges associated with the adoption of Performance Based Regulation (PBR) at BC Hydro and a possible approach to adopting PBR (PBR Report);
- C. BC Hydro provided the PBR Report as part of its F2020–F2021 RRA along with two expert reports regarding the matter as Appendices FF and GG to the F2020–F2021 RRA;
- D. On October 11, 2019, by Order G-244-19, the BCUC directed that the PBR Report will not be reviewed as part of the review of the F2020–F2021 RRA and by Order G-245-19, dated October 11, 2019, the BCUC established a proceeding for the review of the PBR Report and related materials;
- E. The BCUC established and amended the regulatory timetable for the review of the PBR Report and related materials by Orders G-246-19, G-326-19, G-70-20, G-251-20, G-324-20 and G-92-21; and
- F. The BCUC has considered the PBR Report, along with the evidence and submissions filed in the proceeding and makes the following determinations.

NOW THEREFORE pursuant to sections 59 to 60 of the *Utilities Commission Act*, and for the reasons outlined in the decision issued concurrently with this order, the BCUC orders BC Hydro to file, no later than December 31, 2023, a proposal for its next RRA that includes the following:

1. A test period of at least five years;
2. A proposed formula for as much as possible of the utility's controllable operations and maintenance and capital expenditures, incorporating cost inflation and productivity indices;
3. A proposal for which, if any, of the years F2022–F2025 should be used as the base year;
4. Proposals for specific exclusions from the formula or index approach, if appropriate (including “Y factors” and “Z factors”);
5. Consideration of whether a different approach is required for growth capital as compared to sustainment capital;
6. A proposal for the criteria and reasons, if any, to abandon the PBR approach during the test period (“Off-Ramps”); and
7. An assessment of whether annual reviews of BC Hydro's performance and rates during the test period are appropriate and what they should encompass and exclude.

DATED at the City of Vancouver, in the Province of British Columbia, this 21st day of December 2021.

BY ORDER

Original signed by:

D. M. Morton
Commissioner

List of Acronyms

Acronym	Description
AMPC	Association of Major Power Customers of British Columbia
ARM	Attrition relief mechanism
AUC	Alberta Utilities Commission
BC Hydro	British Columbia Hydro and Power Authority
BCNPHA	BC Non-Profit Housing Association
BCOAPO	British Columbia Old Age Pensioners' Organization et al.
BCSEA	BC Sustainable Energy Association
BCUC	British Columbia Utilities Commission
Catalyst	Catalyst Paper Corporation
CEABC	Clean Energy Association of B.C.
CEC	Commercial Energy Consumers Association of British Columbia
COSR	Cost of service regulation
Davis-Associates	Steve Davis & Associates Consulting Ltd.
DSM	Demand side management
EMPR	Energy, Mines and Petroleum Resources
ESM	Earnings sharing mechanism
F2020–F2021 RRA	BC Hydro Fiscal 2020 to Fiscal 2021 Revenue Requirements Application
F2023–F2025 RRA	BC Hydro Fiscal 2023 to Fiscal 2025 Revenue Requirements Application
FBC	FortisBC Inc.
FEI	FortisBC Energy Inc.
FortisBC	FortisBC Energy Inc. and FortisBC Inc.
GHG	Greenhouse gas
Gjoshe	Edlira Gjoshe
I factor	Inflation factor
Ince	David Ince
IR	Information Request
K	Supplemental capital factor
LTRP	Long-term resource plan

McCandless	Richard McCandless
MoveUP	Movement of United Professionals
MRP	Multi-year rate plan
MRS	Mandatory Reliability Standards
O&M	Operations and maintenance
OM&A	Operation, maintenance, and administrative
PBR	Performance Based Regulation
PEG Research	Pacific Economics Group Research LLC
PIM	Performance incentive mechanism
PSEC	Public Sector Employers' Council
RCIA	Residential Consumer Intervener Association
RDM	Revenue decoupling mechanism
S	Stretch factor
UCA	Utilities Commission Act
VIEUs	Vertically integrated electric utilities
Willis	Paul Willis
X factor	Productivity factor
Zone II RPG	Kwadacha Nation and Tsay Keh Dene Nation, together the Zone II Ratepayers Group

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

British Columbia Utilities Commission
Review of British Columbia Hydro and Power Authority's Performance Based Regulation Report

EXHIBIT LIST

Exhibit No.	Description
<i>COMMISSION DOCUMENTS</i>	
A-1	Letter dated October 11, 2019 – BCUC Order G-245-19 establishing a proceeding and appointing the Panel for the British Columbia Hydro and Power Authority Review of the Performance Based Regulation Report
A-2	Letter dated October 11, 2019 – BCUC Order G-246-19 establishing a Regulatory Timetable
A-3	Letter dated November 14, 2019 – Procedural conference information
A-4	Letter dated December 12, 2019 – BCUC Order G-326-19 furthering the Regulatory Timetable with Reasons for Decision
A-5	Letter dated March 9, 2020 – BCUC clarification on high level topics to BCUC Staff Consultant Report
A-6	Letter dated March 17, 2020 – BCUC requesting submissions on rescheduled workshop dates
A-7	Letter dated March 27, 2020 – BCUC Order G-70-20 amending the regulatory timetable
A-8	Letter dated September 1, 2020 – BCUC facilitated workshop information
A-9	Letter dated September 17, 2020 – BCUC Request for Submissions on Further Process
A-10	Letter dated October 6, 2020 – BCUC Order G-251-20 amending the regulatory timetable

- A-11 Letter dated December 9, 2020 – BCUC Order G-324-20 amending the regulatory timetable
- A-12 Letter dated December 21, 2020 – BCUC Information Request No. 1 to BC Hydro on Supplementary Evidence
- A-13 Letter dated March 1, 2021 – BCUC Request for Oral Submissions on possible scenarios
- A-14 Letter dated March 23, 2021 – BCUC Order G-92-21 amending the regulatory timetable

COMMISSION STAFF DOCUMENTS

- A2-1 Letter dated October 25, 2019 – British Columbia Hydro and Power Authority Fiscal 2020 to Fiscal 2021 Revenue Requirements Application - Chapter 11, Appendix FF and Appendix GG dated February 25, 2019
- A2-2 Letter dated October 25, 2019 – British Columbia Hydro and Power Authority Fiscal 2020 to Fiscal 2021 Revenue Requirements Application - Responses to BCUC IR 189.1 to 200.2 dated June 6, 2019
- A2-3 Letter dated October 25, 2019 – British Columbia Hydro and Power Authority Fiscal 2020 to Fiscal 2021 Revenue Requirements Application - 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
- A2-4 Letter dated October 25, 2019 – British Columbia Hydro and Power Authority Fiscal 2020 to Fiscal 2021 Revenue Requirements Application - Responses to BCUC IR 231.3, 281.1 to 287.1 dated September 3, 2019
- A2-5 Letter dated February 28, 2020 – BCUC staff filing Consultant Report by Pacific Economics Group Research LLC - Performance-Based Regulation: Basic Features and Possible Applications to BC Hydro
- A2-6 Letter dated September 9, 2020 – BCUC staff filing presentation document BCUC Performance Based Regulation: An Introduction Dated September 9, 2020
- A2-7 Letter dated September 9, 2020 – BCUC staff filing consultant presentation document Pacific Economics Group Research LLC Review of BC Hydro’s PBR Report Dated September 9, 2020
- A2-8 Letter dated November 16, 2020 – BCUC staff filing consultant response to BCSEA IR No. 1
- A2-9 Letter dated November 16, 2020 – BCUC staff filing consultant response to BCOAPO IR No. 1

- A2-10 Letter dated November 16, 2020 – BCUC staff filing consultant response to CEABC IR No. 1
- A2-11 Letter dated November 16, 2020 – BCUC staff filing consultant response to CEC IR No. 1
- A2-12 Letter dated November 16, 2020 – BCUC staff filing consultant response to Gjoshe IR No. 1
- A2-13 Letter dated November 16, 2020 – BCUC staff filing consultant response to Zone II RPG IR No. 1

APPLICANT DOCUMENTS

- B-1 **BRITISH COLUMBIA HYDRO AND POWER AUTHORITY (BC HYDRO)** – Letter dated October 18, 2019 – Providing a comprehensive list of F2020-F2021 Revenue Requirement Application evidence list that should be placed on the Evidentiary Record
- B-2 Letter dated November 18, 2019 – BC Hydro submission prior to Procedural Conference
- B-3 Letter dated November 22, 2019 – BC Hydro submitting COSR Timeline Document at Procedural Conference
- B-4 Letter dated March 16, 2020 – BC Hydro submission regarding regulatory timetable
- B-5 Letter dated March 19, 2020 – BC Hydro submitting response regarding Workshop Dates
- B-6 Letter dated June 30, 2020 – BC Hydro submitting clarifying questions and high-level topics
- B-7 Letter dated September 30, 2020 – BC Hydro submitting response regarding further process
- B-8 Letter dated November 30, 2020 – BC Hydro submitting Supplementary Evidence
- B-9 Letter dated February 4, 2021 – BC Hydro submitting responses to BCUC Information Request No. 1
- B-10 Letter dated February 4, 2021 – BC Hydro submitting responses to Intervener Information Requests No. 1
- B-11 Letter dated February 16, 2020 – BC Hydro submitting response regarding further process

INTERVENER DOCUMENTS

- C1-1 **BC SUSTAINABLE ENERGY ASSOCIATION (BCSEA)** – Letter dated October 22, 2019 - submitting evidence list
- C1-2 BCSEA – Intervener
- C1-3 Letter dated March 17, 2020 – BCSEA submitting clarification questions regarding BCUC Staff Consultant Report
- C1-4 Letter dated March 18, 2020 – BCSEA submitting response regarding Workshop
- C1-5 Letter dated June 30, 2020 – BCSEA submitting written clarifying questions or high-level topics to BCUC Staff Consultant
- C1-6 Letter dated September 30, 2020 – BCSEA submitting response regarding further process
- C1-7 Letter dated October 28, 2020 – BCSEA submitting Information Request No. 1 to BCUC Staff Consultant
- C1-8 Letter dated January 7, 2021 – BCSEA submitting Information Request No. 1 to BC Hydro on Supplementary Evidence
- C1-9 Letter dated February 16, 2020 – BCSEA submitting response regarding further process
- C2-1 **CATALYST PAPER CORPORATION (CATALYST)** – Intervener
- C3-1 **FORTISBC ENERGY INC. AND FORTISBC INC. (FORTISBC)** – Intervener
- C4-1 **RICHARD McCANDLESS (McCANDLESS)** – Intervener
- C5-1 **KWADACHA NATION AND TSAY KEH DENE NATION, TOGETHER THE ZONE II RATEPAYERS GROUP (ZONE II RPG)** – Intervener
- C5-2 Letter dated March 17, 2020 – Zone II RPG submitting clarification questions regarding BCUC Staff Consultant Report
- C5-3 Letter dated March 23, 2020 – Zone II RPG submitting response regarding Workshop

- C5-4 Letter dated September 30, 2020 – Zone II RPG submitting response regarding further process
- C5-5 Letter dated October 28, 2020 – Zone II RPG submitting Information Request No. 1 to BCUC Staff Consultant
- C5-6 Letter dated January 7, 2021 – Zone II RPG submitting Information Request No. 1 to BC Hydro on Supplementary Evidence
- C5-7 Letter dated February 16, 2020 – Zone II RPG submitting response regarding further process
- C5-8 Letter dated March 19, 2021 – Zone II RPG submitting response to BCUC Exhibit A-13
- C6-1 **BRITISH COLUMBIA OLD AGE PENSIONER’S ORGANIZATION ET AL. (BCOAPO)** – Intervener
- C6-2 Letter dated March 24, 2020 – BCOAPO submitting response regarding Workshop
- C6-3 Letter dated June 30, 2020 – BCOAPO submitting written clarifying questions or high-level topics to BCUC Staff Consultant
- C6-4 Letter dated September 30, 2020 – BCOAPO submitting responses to BCUC on further process
- C6-5 Letter dated October 28, 2020 – BCOAPO submitting Information Request No. 1 to BCUC Staff Consultant
- C6-6 Letter dated January 7, 2021 – BCOAPO submitting Information Request No. 1 to BC Hydro on Supplementary Evidence
- C6-7 Letter dated February 16, 2020 – BCOAPO submitting response regarding further process
- C7-1 **PAUL WILLIS (WILLIS)** – Intervener
- C7-2 Letter dated September 30, 2020 – Willis submitting response regarding further process
- C8-1 **MOVEMENT OF UNITED PROFESSIONALS (MOVEUP)** – Intervener
- C8-2 Letter dated March 12, 2020 – MoveUP submitting clarification questions regarding BCUC Staff Consultant Report
- C8-3 Letter dated March 17, 2020 – MoveUP submitting response regarding Workshop
- C8-4 Letter dated June 29, 2020 – MoveUP submitting supplemental questions

C8-5	Letter dated September 30, 2020 – MoveUP submitting response regarding further process
C8-6	Letter dated January 4, 2021 – MoveUP Information Request No. 1 to BC Hydro on Supplementary Evidence
C8-7	Letter dated February 13, 2020 – MoveUP submitting response regarding further process
C9-1	COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BRITISH COLUMBIA (CEC) – Intervener
C9-2	Letter dated March 17, 2020 – CEC submitting clarification questions regarding BCUC Staff Consultant Report
C9-3	Letter dated March 24, 2020 – CEC submitting response regarding Workshop
C9-4	Letter dated June 30, 2020 – CEC submitting written clarifying questions or high-level topics to BCUC Staff Consultant
C9-5	Letter dated September 30, 2020 – CEC submitting responses to BCUC on further process
C9-6	Letter dated October 28, 2020 – CEC submitting Information Request No. 1 to BCUC Staff Consultant
C9-7	Letter dated January 7, 2021 – CEC submitting Information Request No. 1 to BC Hydro on Supplementary Evidence
C9-8	Letter dated February 16, 2020 – CEC submitting response regarding further process
C10-1	CLEAN ENERGY ASSOCIATION OF BC (CEABC) – Intervener
C10-2	Letter dated March 24, 2020 – CEABC submitting response regarding Workshop
C10-3	Letter dated September 30, 2020 – CEABC submitting response regarding further process
C10-4	Letter dated October 28, 2020 – CEABC submitting Information Request No. 1 to BCUC Staff Consultant
C10-5	Letter dated January 7, 2021 – CEABC submitting Information Request No. 1 to BC Hydro on Supplementary Evidence
C10-6	Letter dated February 16, 2021 – CEABC submitting response regarding further process
C10-7	Letter dated March 19, 2021 – CEABC submitting response to BCUC Exhibit A-13
C11-1	ASSOCIATION OF MAJOR POWER CUSTOMERS OF BRITISH COLUMBIA (AMPC) – Intervener
C11-2	Letter dated September 30, 2020 – AMPC submitting responses to BCUC on further process

- C11-3 Letter dated January 7, 2021 – AMPC submitting Information Request No. 1 to BC Hydro on Supplementary Evidence
- C11-4 Letter dated February 16, 2020 – AMPC submitting response regarding further process
- C11-5 Letter dated March 19, 2021 – AMPC submitting response to BCUC Exhibit A-13
- C12-1 **DAVID INCE (INCE)** – Intervener
- C13-1 **STEVE DAVIS & ASSOCIATES CONSULTING LTD. (DAVIS-ASSOCIATES)** – Intervener
- C14-1 **EDLIRA GJOSHE (GJOSHE)** – Intervener
- C14-2 Letter dated March 25, 2020 – Gjoshe submitting late response regarding Workshop
- C14-3 Letter dated June 30, 2020 – Gjoshe submitting written clarifying questions or high-level topics to BCUC Staff Consultant
- C14-4 Letter dated September 30, 2020 – Gjoshe submitting response regarding further process
- C14-5 Letter dated October 28, 2020 – Gjoshe submitting Information Request No. 1 to BCUC Staff Consultant
- C15-1 **BC NON-PROFIT HOUSING ASSOCIATION (BCNPHA)** – Intervener
- C16-1 **RESIDENTIAL CONSUMER INTERVENOR GROUP (RCIG)** - Letter dated January 22, 2021 Request to Intervene by Lindsay Thompson, Midgard Consulting
- C16-2 Letter dated February 16, 2020 – RCIG submitting response regarding further process

INTERESTED PARTY DOCUMENTS

- D-1 **INNERGEX RENEWABLE ENERGY (INNERGEX)** - Submission dated October 21, 2019 Request for Interested Party Status by Nicola Vaughan
- D-2 **MINISTRY OF ENERGY AND MINES (MEM)** - Submission dated November 28, 2019 Request for Interested Party Status by Jack Buchanan